

An aerial night photograph of a wastewater treatment plant. The facility is illuminated with warm yellow lights, highlighting its various structures, including a large circular tank on the left and several rectangular buildings in the center. The plant is situated in a valley, with a river or stream visible to the left and a large, dark mountain range in the background under a twilight sky. The foreground shows a road with light trails from passing vehicles.

# QUEENSTOWN LAKES DISTRICT COUNCIL

## THREE WATERS ASSET MANAGEMENT PLAN 2018/19 – 2027/28

## DOCUMENT HISTORY

Document History	Date	Prepared	Approved	Signature
2017/18 AMP Development & Review	February 2018	Polly Lambert / Mark Baker	Myles Lind	

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# SECTION ONE - ASSET MANAGEMENT OVERVIEW

## 1.1 INTRODUCTOIN

Within this document, drinking water, water supply, wastewater and stormwater are sometimes referred to collectively as the 'three-waters'.

As the primary water supplier to the District, QLDC is 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.

QLDC also provides reticulated wastewater services (also known as sewerage services). Reticulated wastewater systems are recognised internationally as the most cost-effective and efficient method of protecting public health in urban areas from outbreaks of waterborne diseases that are associated with human and business liquid wastes. Reticulated systems also enable cost effective treatment and disposal, which helps to support improved environmental outcomes.

The strategic objectives for Three Waters management are:

- To ensure no contamination of public water supplies attributed to three waters infrastructure;
- Adverse effects on the environment from three waters infrastructure are managed/mitigated; and
- Ensure compliance with resource consents.

Stormwater systems are provided to protect private properties and buildings from rainwater and groundwater. Effective management of rainwater within these systems is vital to controlling erosion and land stability, as well as ensuring public amenity of open spaces and protection of the environment.

## 1.2 AMP PURPOSE AND SCOPE

The purpose of this Asset Management Plan (AMP) is to detail 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.

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

- Drinking water to urban homes and businesses of the district. It is critical to the wellbeing and prosperity of our district that those services are safe, reliable and cost-effective.
- Reticulated wastewater services to most urban zones in the district. Reticulated wastewater systems are recognised internationally as the most efficient method of collecting urban domestic and business liquid wastes for treatment while protecting public health and the environment.
- Stormwater drainage to protect private buildings, roads and structures from rainfall runoff and ponding. 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.

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.

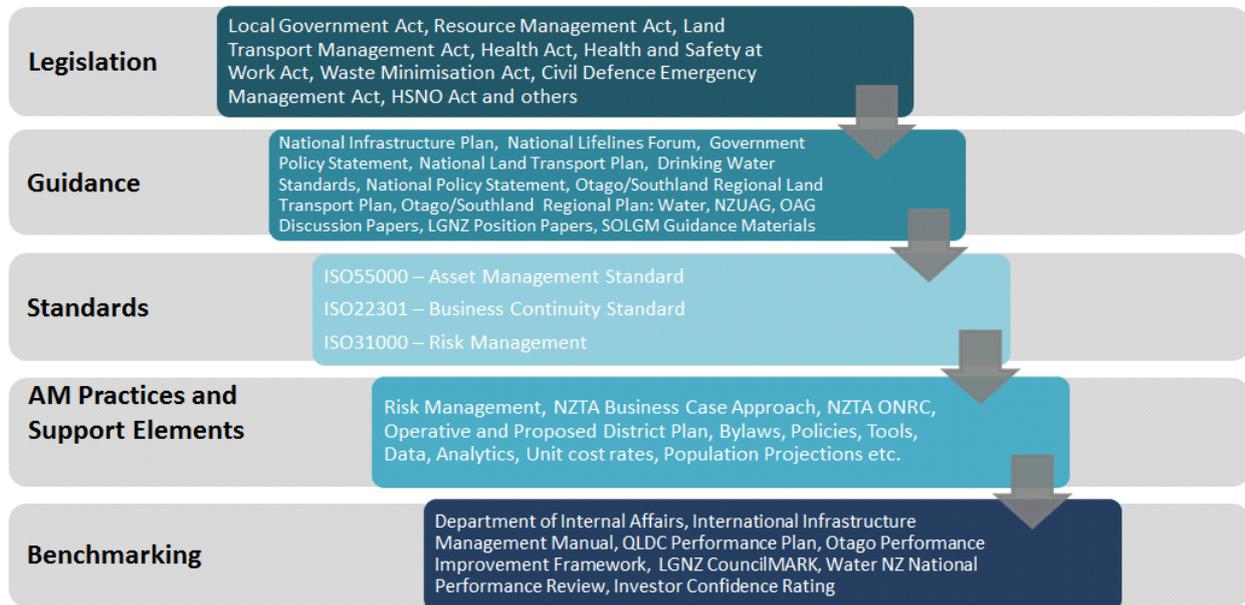
The AMP has been prepared based on what QLDC's professional engineers believe is required to adequately maintain and renew in a 'whole of life' manner, the (expanding) network. Any changes in funding levels required by the community through the Long Term Plan (LTP) process, will be captured in the LTP and used to inform subsequent annual revisions of the AMP.

Changes to the planned investment programmes will be documented and described in alignment with QLDCs 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, each year.

### 1.3 GOVERNING FRAMEWORK

A fundamental aspect of asset management is that it must align with the legislation and central government guidance of the day. Figure 1 illustrates QLDC’s hierarchy of operational frameworks.

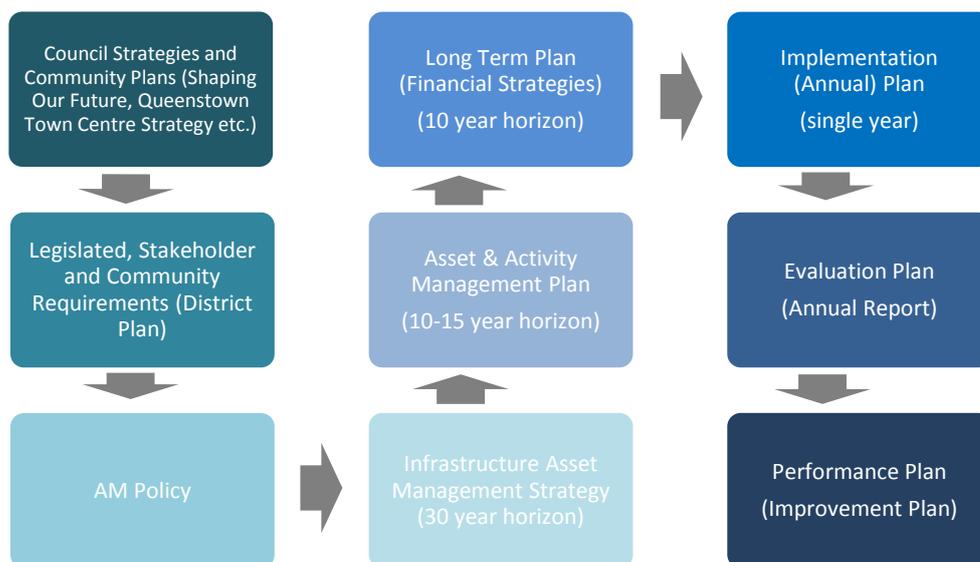
Figure 1 Governing Framework



### 1.4 ASSET MANAGEMENT FRAMEWORK

QLDC’s approach to implementing the above governing framework is illustrated in Figure 2 below. This approach has been developed to meet key legislative requirements and support robust asset management practices. Legislated, stakeholder and community requirements, along with business performance information inform QLDC’s Asset Management Policy and Infrastructure Asset Management Strategy (IMAS). The 30-year (design horizon) for the IAMS seeks to identify emerging issues for service delivery over the longer term. The strategic matters identified in the IAMS are investigated, analysed and scoped under the supervision of the Chief Engineer. These scoped interventions are submitted as better business cases (BBC) to the Asset Planning Manager for programming into the 10 to 15-year Asset/Activity Management Plans (AM Plans). AM Plans are to be reviewed and updated annually.

Figure 2 Asset Management Framework



The first 10-years of intervention programmes from the AM Plans are required to be consulted on with the community before being adopted into the Long Term Plan (LTP). The last 5 years of programmes identified in the AM Plans support a process to enable time for QLDC to investigate and gain an understanding of matters prior to

community consultation and potential inclusion into the LTP.

The LTP sets out how QLDC and the community intend to balance competing priorities while delivering desired community benefits. The LTP outlines the strategic direction and responses (investment plans) for 10 years. The LTP is reviewed on a three-year cycle.

The first year of the LTP programme is revised immediately prior to the planned year of implementation through an annual public consultation process to become the Implementation Plan (Annual Plan) for delivery.

QLDC reports on the progress and success of its investment and service delivery annually in its Evaluation Plan (Annual Report), which is published late in each calendar year. Improvement opportunities identified through all aspects of this process are captured in the Performance Plan and are used to inform programmed continuous improvement actions within the AM activities. The Performance Plan is monitored and reported to Senior Management on a quarterly basis.

## 1.5 ASSET MANAGEMENT OBJECTIVES

QLDC was established in 1989 as a local authority (having the functions, responsibilities and powers of a territorial authority). Over the past 15 years the District has seen considerable growth combined with legislative changes. QLDC has sometimes struggled to consistently deliver services that meet community needs in a financially sustainable manner. This was most notable when in August 2010 the Office of the Auditor General sighted QLDC's 2009 LTP as "not financial prudent". Since this time, QLDC has progressively sought to mature its asset management approaches, including and emphasising the need to evaluate the lifecycle costs of all asset decisions to ensure future budgets accommodate foreseeable needs without imposing unsustainable liabilities on future generations.

QLDC's vision for asset management is:

*"To 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 translates into specific objectives for asset management:

- To deliver more efficient use and maintenance of existing infrastructure assets;
- To best manage demand for new assets with better integration with the District Plan, urban design and other non-infrastructure approaches;
- To regularly measure and advance the maturing of our AM practices;
- To continuously develop the capacity and capability of our staff in asset management and risk management; and
- To progressively improve the transparency and robustness (effectiveness) of investment decision making through evidence based investment (better business case approach).

The following summarises particular objectives and philosophies as to how QLDC manages its infrastructure assets:

- Replacement of existing assets: With the exception of critical assets (as identified under the QLDC Risk Management Framework) all assets will be operated under a run to fail model as they can likely be replaced with generic or off the shelf replacement parts with only minor disruption to customer services.
- Response to growth (or decline) in the demand for services: QLDC will measure, update and confirm demand for services on an annual basis to ensure future projections for services are based on best available information, and is able to take into account effectiveness of demand management programmes.
- Allowance for planned increases (or decreases) in service levels: QLDC will research, test and engage on the setting of service levels to best balance service efficiency and effectiveness, customer expectations, legal requirements and community affordability. Any significant service level change will be consulted on through the provisions of the Local Government Act (LGA).
- Provision of resilience of infrastructure assets by identifying and managing risks: As outlined in the National Infrastructure Plan (NIP), QLDC has completed a natural hazard assessment across the district. This has been combined with latest generation asset criticality assessments. QLDC has a balanced programme of asset reinforcement, relocation and de-risking supporting its insurance and other financial provisions for risk management.
- As much as practicable, optimise and extend the effective life / capacity of existing infrastructure to reduce investment in new infrastructure. (i.e. make best use of what is already in place).

## SECTION TWO - UNDERSTANDING & DEFINING REQUIREMENTS

In providing the Three Waters services, QLDC has responsibility to ensure:

- The community is consulted on all significant decisions as required by the **Local Government Act 2002**;
- The methods used to fund Three Waters comply with the **Local Government (Rating) Act 2002**;
- To provide adequate firefighting capability in urban areas supplied with water; and
- Structures and sanitary services comply with the **Building Act 2004**.

Legislation, standards and industry guidance that influence how QLDC delivers the Three Waters services include:

### Resource Management Act

Enacted in 1991, the Resource Management Act seeks to promote the sustainable management of natural and physical resources. Sustainable management means managing the use and protection of resources in a way, which enables communities to provide for their social, economic, and cultural well-being while meeting the reasonably foreseeable needs of future generations.

### Health & Safety at Work Act

This is a new Act, which came into force in 2015 to provide for a balanced framework to secure the health and safety of workers and workplaces by protecting workers and other persons against harm to their health, safety, and welfare by eliminating or minimising risks arising from work or from prescribed high-risk plant.

### Waste Minimisation Act

The Waste Minimisation Act 2008 encourages a reduction in the amount of waste we generate and dispose of. The aim is to reduce the environmental harm of waste and provide economic, social and cultural benefits.

### Hazardous Substances and New Organisms Act

The purpose of this Act is to protect the environment, and the health and safety of people and communities, by preventing or managing the adverse effects of hazardous substances and new organisms.

### Civil Defence Emergency Management Act

The Civil Defence Emergency Management Act 2002 creates a framework within which New Zealand can prepare for, deal with, and recover from local, regional and national emergencies.

### Health Act

The Health Act 1956 seeks to improve and protect public health and ensure all proper steps are taken to secure the abatement of any nuisance or removal of any conditions likely to be injurious to health or offensive.

### Drinking Water Standards

Recognises the essential health benefits of safe and reliable water supplies to communities. It imposes on QLDC, under the power of the Health Act, to take all practicable steps to ensure an adequate supply of drinking water and ensure that drinking water complies with the Drinking Water Standards. As at June 2017, QLDC water supplies, as a whole, do not meet the Drinking Water Standards and significant investment in water treatment throughout the District has been identified in this document to meet QLDCs obligations.

### Havelock North Water Inquiry

In September 2016, the Government established an Inquiry into the Havelock North water contamination event. The Inquiry has proceeded in two stages. Stage 1 focuses on identifying what happened, what caused the outbreak, and assessing the conduct of those responsible for providing safe drinking water to Havelock North. Stage 2 has made recommendations which if adopted seek to address the likelihood of such an outbreak occurring again.

### National Infrastructure Plan

Updated in late 2015, the National Infrastructure Plan set out to progressively ensure our infrastructure is resilient and coordinated and contributes to strong economic growth and high living standards. Specifically it requires that

New Zealand will have modern, integrated and efficient infrastructure supported by mature asset management practices, through the consideration of both demand and supply side solutions and systems benchmarking.

### 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.

### National Policy Statement for Urban Growth and Development

The National Policy Statement (NPS) enables central government to prescribe objectives and policies for matters of national significance, which are relevant to achieving the sustainable management purpose of the Resource Management Act 1991 (RMA). In particular; ensuring urban environments can meet demand and provide choices to meet the needs of people, communities and future generations for a range of dwelling types, locations, working environments and places to locate businesses; robust evidence processes to inform planning decisions; and urban environments that can respond to the changing needs of people, communities and future generations. This NPS stipulates that closer working relationships between planning and infrastructure providers occur. To this end QLDC, has formulated the QLDC NPS Project Team across the organisation, including Planning and Development, Property and Infrastructure, Corporate Services and Finance to ensure that requirements are met. Refer to section 3.4 for further detail on Urban Boundaries.

### National Policy Statement for Freshwater Management

The NPS for Freshwater Management provides direction on how local authorities should carry out their responsibilities under the RMA for managing fresh water. The Government has announced a plan to improve New Zealand's waterways so that 90% are 'swimmable' by 2040. At the moment, 72% are considered safe to swim in, most of the time. Improving 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.

### Otago/Southland Regional Plan: Water

This plan promotes the sustainable management of Otago's water resources. To achieve this, the plan has policies and methods (which include rules) to address issues of use, development and protection of Otago's freshwater resources, including the beds and margins of water bodies.

### Standards:

Use of standards aid in the creation of products and services that are safe, reliable and of good quality. The following International Organisation for Standards (ISO) have been aligned and where appropriate adopted for use throughout QLDC's asset management planning framework:

[ISO 22301:2012](#) provides a framework to plan, establish, implement, operate, monitor, review, maintain and continually improve a Business Continuity Management System (BCMS). It is expected to help organisations protect against, prepare for, respond to, and recover when disruptive incidents arise. QLDC is currently adopting this standard but it is not fully embedded within the organisation as yet.

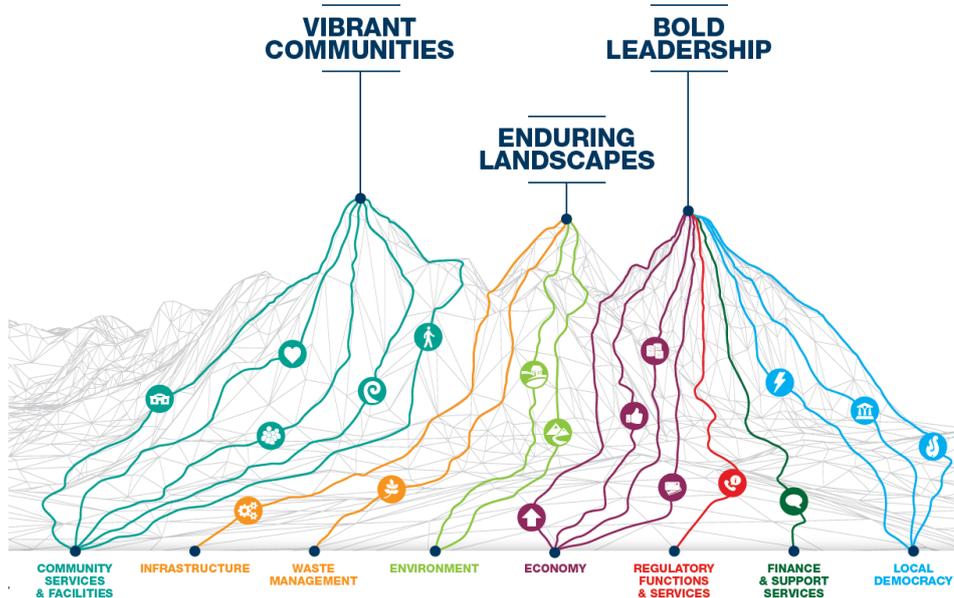
[ISO 31000:2009](#) is a family of standards relating to Risk Management. The purpose of this standard is to provide principles and generic guidelines on risk management. QLDC has adopted this standard within the Risk Management Framework.

[ISO 55000:2014](#) is an international standard covering management of physical assets. QLDC is aligning all asset management documentation to this standard but has no plans to seek accreditation at this time.

## 2.1 STRATEGIC ASSESSMENT

QLDC have introduced the concept of 'The Big Three influencing factors in the 2018 LTP. The map below describes what we plan to achieve over the next ten years. The map also represents the relationships and interactions we have with the community and our natural environment.

Figure 3 Strategic Map



It is QLDC’s responsibility to manage the community infrastructure assets in an efficient and effective way to best support a resilient community where environmental sustainability and low impact living is highly valued. Good custodianship of these assets requires that QLDC monitors and understands implications of changes in its business-operating environment. The following have been identified as the most significant challenges affecting core infrastructure:

- Growth
- Natural environment
- Legal and Political
- Built environment
- Economy

These challenges are covered in detail in the IAMS however this AMP will focus on the factors that need to be taken into consideration when managing the Three Waters activities. The AMP will explore the strategic response to those which have the most impact on delivering QLDC’s high priority customer outcomes.

The following strategic assessments are currently under development and when completed, intend to clearly define the problems, benefits and consequences identified within each priority influencing factor in the above diagram.

### 2.1.1 Rapid Growth

#### Strategic Assessment - Rapid Growth

##### Strategic Context

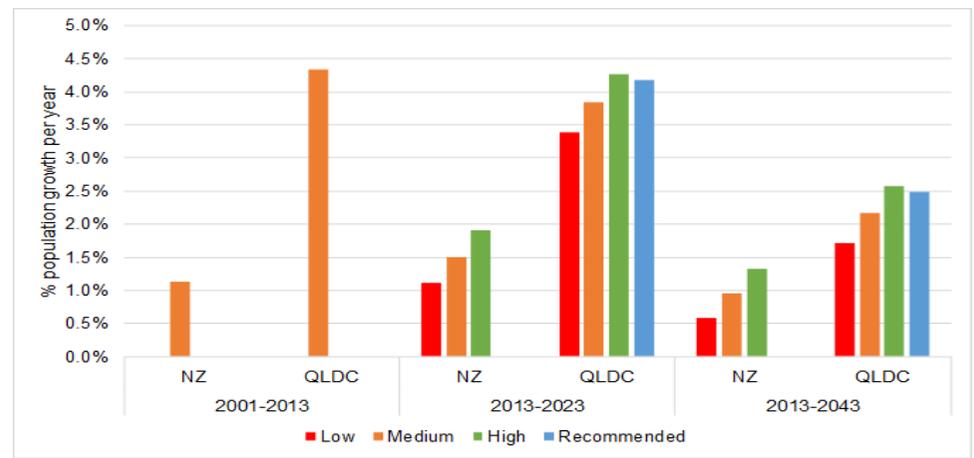
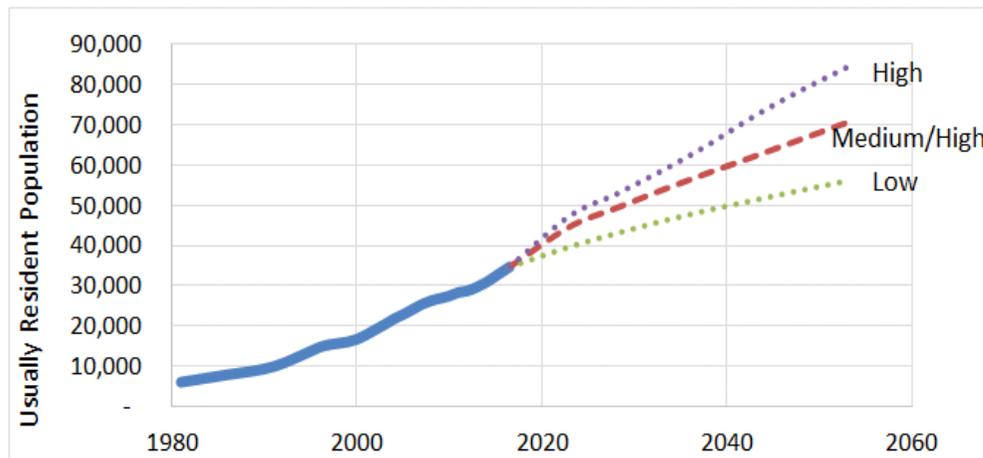
The District is entering its third population growth spurt of over 7% per annum with predictions of 7+% per annum for the next 7 to 10 years. The extent and speed of this growth means the community is facing numerous opportunities but is also faced with challenges. An increase in productivity means a thriving economy however; this also leads to lack of affordable housing, education and health facilities at capacity. Three Waters is at the heart of accessing and delivering these services across the District and region and increased population leads to traffic growth, changes in land use and urbanisation has increased our asset base which is putting pressure on QLDCs current capacity to maintain the network. QLDC strives to address the issues stemming from rapid growth whilst protecting the liveability of our district.

##### Evidence

The population of the greater Queenstown Lakes District is projected to increase by over 50% from 29,700 in 2013 to a forecast 50,600 in 2043. Of this growth, most of it is expected to occur in the Queenstown/Frankton/ Lake Hayes/Arrowtown/ Speargrass Flat area. Under the revised 2017 medium-high population growth projections, the District's population is expected to increase by 102% to 66,355 by 2048. Resident population growth in the District has typically been around 4.1% per year since 1996. However since the 2013 Census, the resident population has grown from 28,800 to 32,400 – a 12.5% increase in 2 years. This rate of growth is high when compared to most other towns in New Zealand.

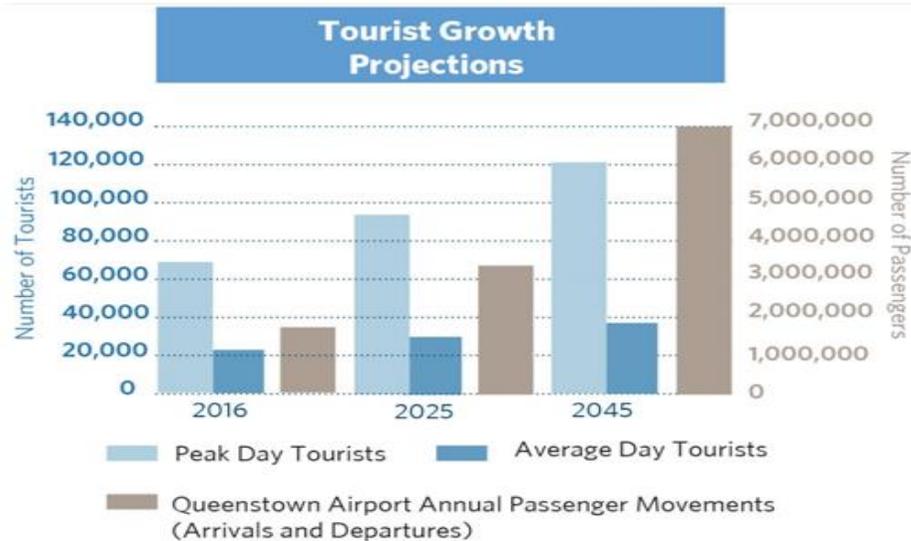
Figure 4 Historic & Projected Population 1980 to 2060 (ref: Statistics NZ & QLDC Growth Projections to 2058, May 2017)

Figure 5 National & Local % Growth (ref: Statistics NZ & QLDC Growth Projections to 2058, 25 May 2017) 25



Strategic Assessment - Rapid Growth

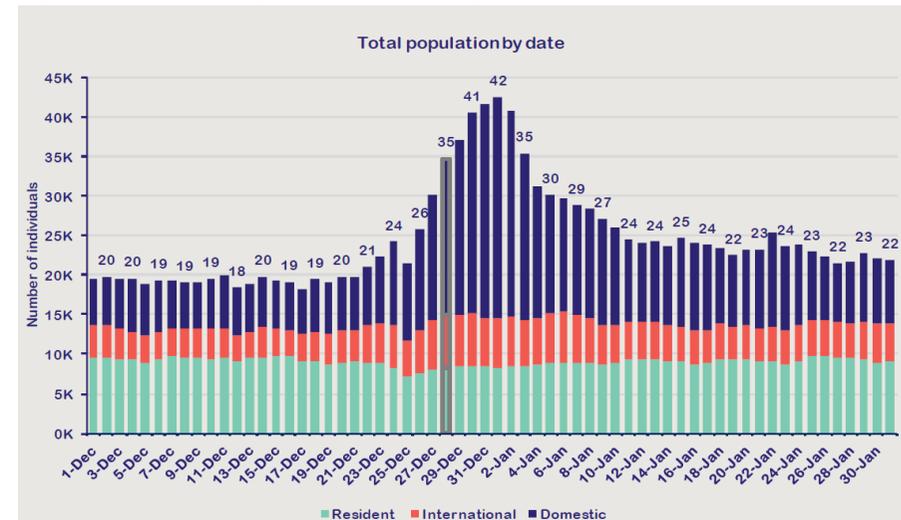
Figure 6 Queenstown Integration Transport Strategy – Tourist Growth Projections



In Wanaka alone, the population peaks December 31st and January 1st. Christmas day experience a trough on number of individuals. There were 35K individuals on the 28th December, Visitors numbered 20LK domestic and 7K international visitors. These were combined with 8K residents.

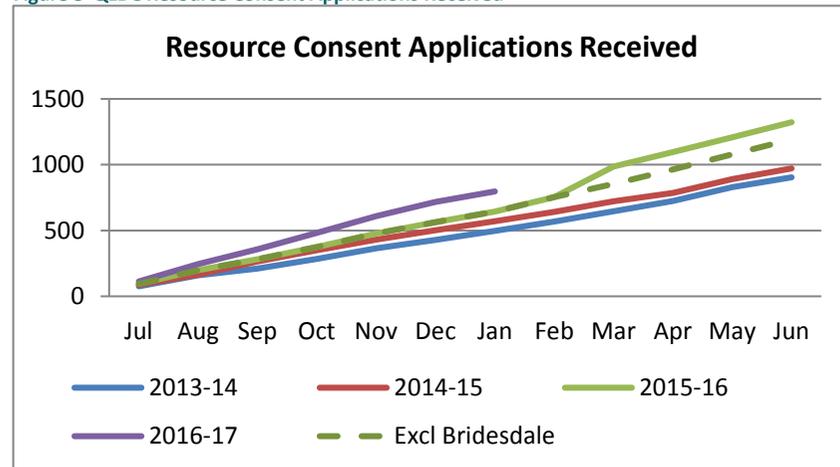
Queenstown Lakes District is identified in the NPS on Urban Development Capacity as one of five high growth urban areas in New Zealand, along with Auckland, Tauranga, Hamilton and Christchurch.

Figure 7 Queenstown Integration Transport Strategy – Number of Visitors By Day



Strategic Assessment - Rapid Growth

Figure 8 QLDC Resource Consent Applications Received



**Last Financial Year trend against previous financial years:**

The number of applications received at the end of **2015-2016** represents a:

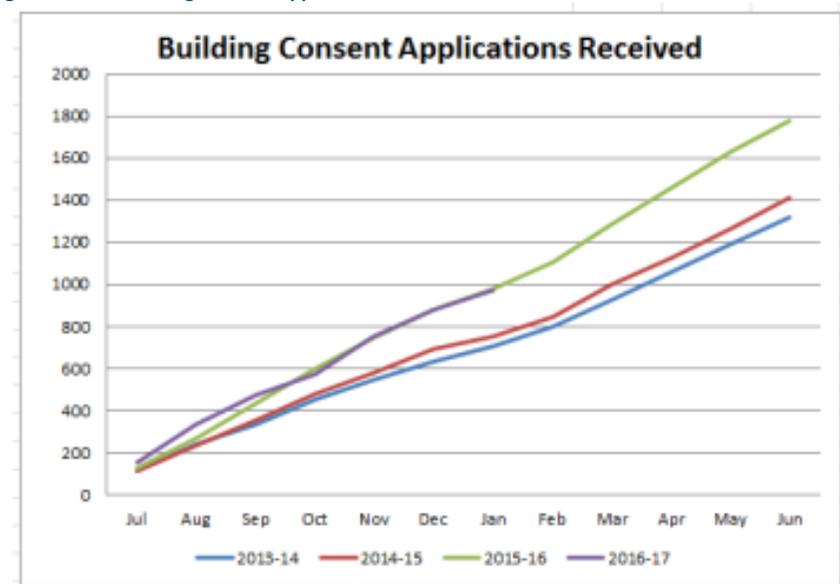
- \* 23% increase on last year (2014-2015)
- \* 32% increase on two years ago (2013-2014)

**Forecasting Current Financial Year against previous financial years:**

If the first two quarters of the current financial year are doubled to model the complete current financial year we would get the following trends:

- \* 20% increase on last year (2015-2016)
- \* 48% increase on two years ago (2014-2015)
- \* 59% increase on three years ago (2013-2014)

Figure 9 QLDC Building Consent Applications Received



**Building Consent Trending**

**Last Financial Year trend against previous financial years:**

The number of BC applications received at the end of **2015-2016** was 1778.

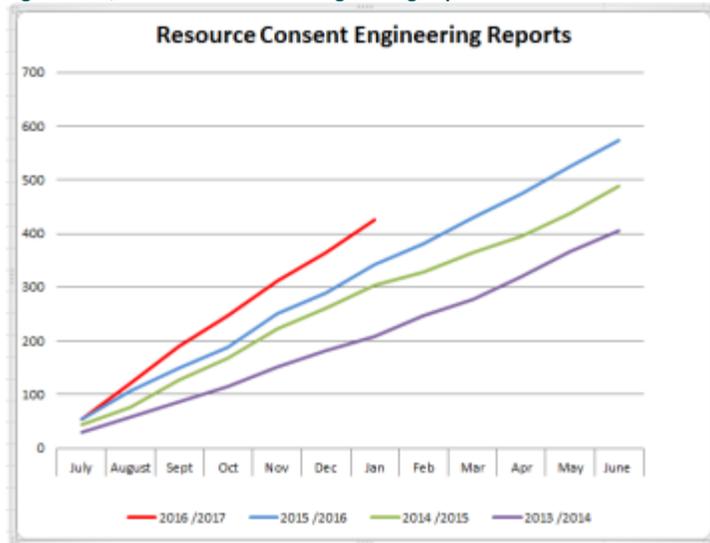
This represents a:

- \* 26% increase on last year (2014-2015)
- \* 35% increase on two years ago (2013-2014)

Our ability to process these consents within the statutory timeframes has deteriorated in 2015-2016. The year on year average for % completed on time has decreased from 96% in 2014-2015 to 73% for 2015-2016. While factors such as the 2016 International Accreditation New Zealand remediation have contributed to this drop in performance, the underlying fundamentals relate to a lack of departmental capacity to meet the increasing levels of market demand.

Strategic Assessment - Rapid Growth

Figure 10 QLDC Resource Consent Engineering Reports



Resource Consent Trending

**Last Financial Year trend against previous financial years:**

Resource Management Engineering Report requests are up 25% YTD from same period in 2015-16. These increases are occurring at a rate of 25% year on year since 2013. These increases directly impact engineering detailed design assessments (Engineering Acceptance) and subdivision inspections which have increased at a similar rate and been complicated by more detailed forms of development.

Strategic Assessment - Rapid Growth

Figure 11 Tourism GDP growth in Queenstown-Lakes District and New Zealand (Infometrics)

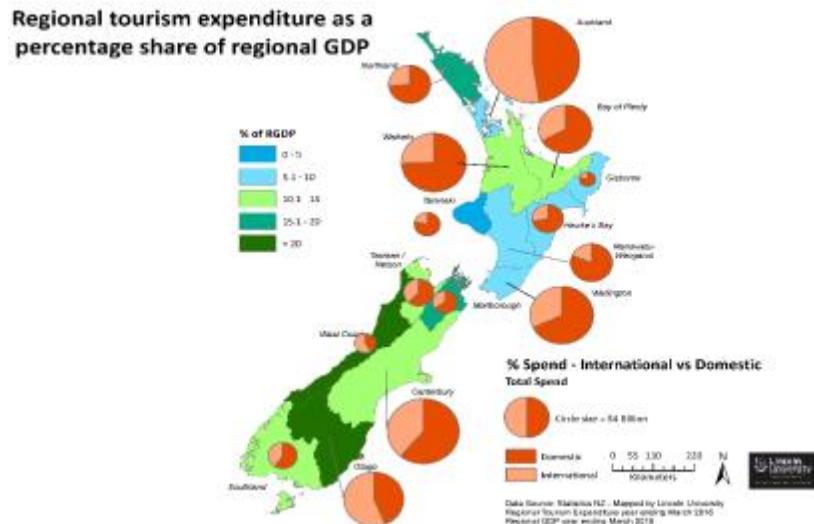
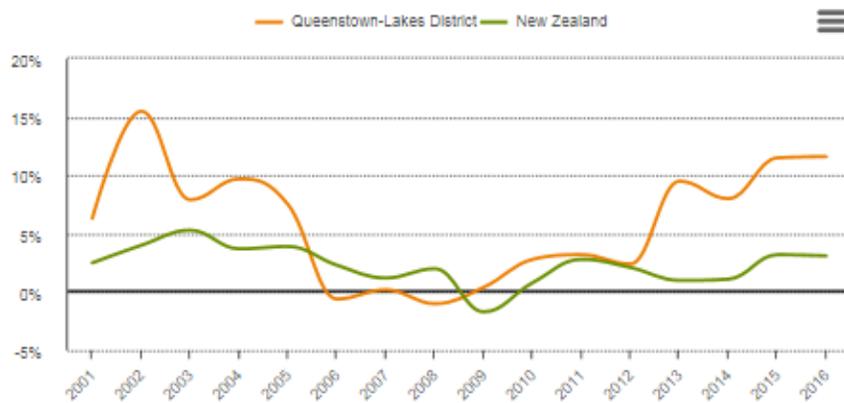


Figure 12 Tourism Industry Aotearoa Regional tourism's GDP contribution March 2016



## 2.1.2 Challenging Natural Environment

### Strategic Assessment - Challenging Natural Environment

#### Strategic Context

- **Topography:** The Queenstown Lakes District covers a total area of 9,357 km<sup>2</sup> and includes a number of significant lakes (Lake Hāwea, Lake Wakatipu, and Lake Wanaka). 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.
- **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.
- **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. The District is a semiarid climate (all day sun, good drainage and little traffic) to lake side/swamp (damp, poor drainage, little sun, heavy frosts, heavy traffic).

#### Evidence – Topography

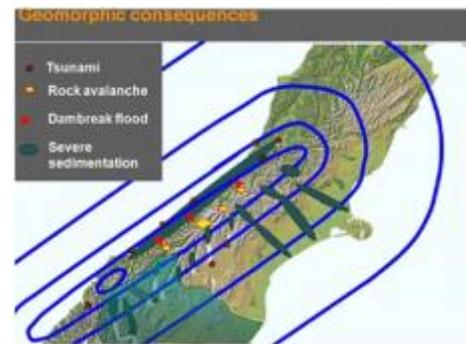
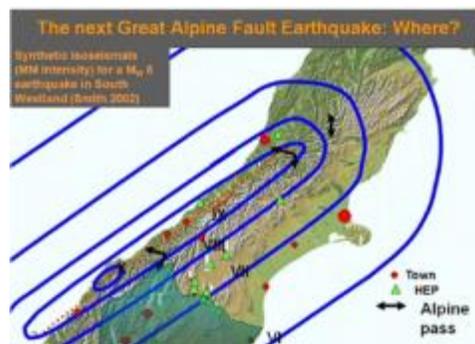
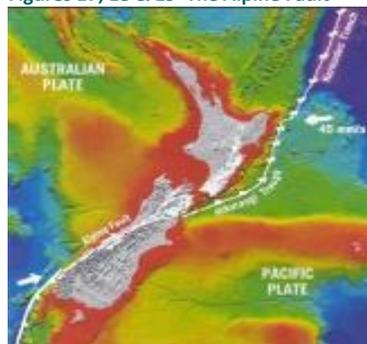
Figures 13,14, 15 & 16 District Views



Strategic Assessment - Challenging Natural Environment

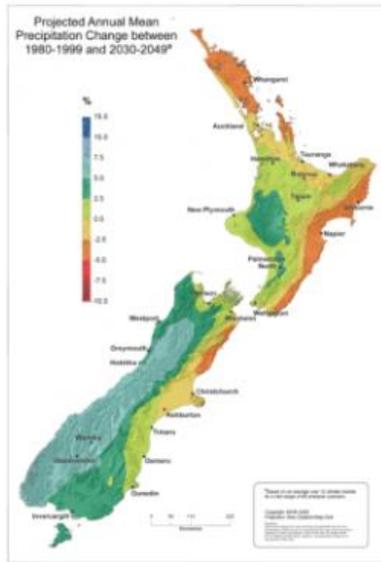
**Evidence – Geology**

Figures 17, 18 & 19 The Alpine Fault



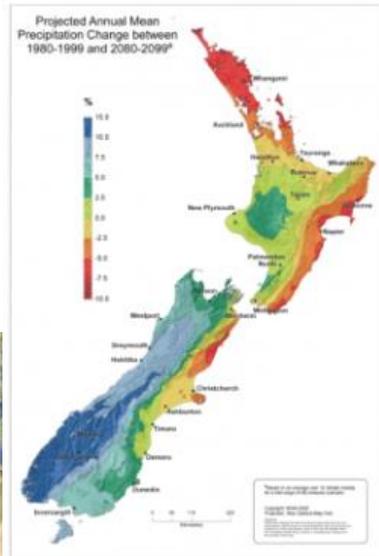
REFERENCE: [HTTP://WWW.ORG.GOVT.NZ/INFORMATION-AND-SERVICES/NATURAL-HAZARDS/GREAT-ALPINE-FAULT-EARTHQUAKE/](http://www.orc.govt.nz/information-and-services/natural-hazards/great-alpine-fault-earthquake/)

In addition to the Alpine Fault in the northwest of the District, the three main areas of local faulting are the Hollyford, the Moonlight Fault System and the Nevis-Cardrona Fault System. Return periods for these and other fault systems in or adjacent to the District are thought to be in high 1000s to 10s of 1000s of years. Sections of faults in these systems tend to be approximately 50 km in length – longer than the fault sections that ruptured in Canterbury earthquake sequence that began in September 2010. The Alpine Fault, immediately to the North West of the District, has an estimated return period of approximately 300 years, with the most recent significant event being in 1717. The length of fault that could rupture in a major Alpine Fault event would likely be at 400 km, resulting in an emergency generated 100s of times more powerful than the recent Canterbury quakes, of over magnitude 8.

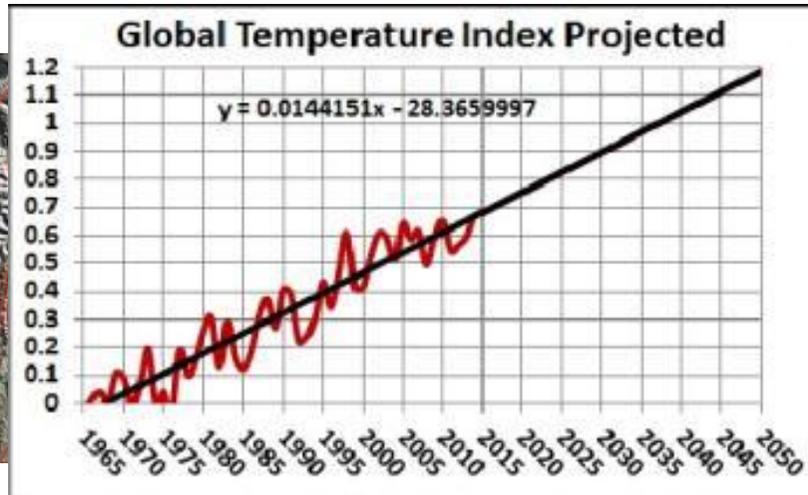


Figures 20 & 21 Active Faults in the District The Ministry for the Environment\* following longer term changes in the

- REFERENCE:  
[HTTP://WWW.MFE.GOV.TZ/CLIMATE-CLIMATE-CHANGE-AFFECTS-NZ/HOW-CHANGE-AFFECT-MY-REGION/OTAGO](http://www.mfe.govt.nz/climate-climate-change-affects-nz/how-change-affect-my-region/otago) Temperatures are



- rainfall is likely to increase by 29%
- The number of storms is expected



in where average annual rainfall is likely to increase by 12% by 2090. Seasonal projections indicate that winter by 2090. to increase in winter and decrease in summer. The intensity of these storms is likely to increase in winter and decrease in summer.

- The frequency of extreme winds is likely to increase by between 2% and 5 % in almost all regions of New Zealand in winter, and decrease by a similar amount in summer.
- Significant decreases in seasonal snow are projected for the Otago region. The duration of snow cover is also likely to decrease, particularly at lower elevations. The District is likely to see a shift towards increasing rainfall instead of snowfall as snowlines rise to higher elevations due to rising temperatures.

predicts the Districts climate:

[CHANGE/HOW-MIGHT-CLIMATE-](#)

likely to be around 0.9°C warmer by 2045, compared to 1990.

- Otago is expected to become wetter, particularly winter and spring

Figures 22\*\*\*, 23\*\*\* & 24\*\* Global & National Temperatures Warming

Strategic Assessment - Challenging Natural Environment

\*\*REFERENCE: [HTTP://WWW.ROPERLD.COM/SCIENCE/GLOBALTEMPERATURE\\_GLOBALWARMING.HTM](http://www.roperld.com/science/globaltemperature_globalwarming.htm)

\*\*\* REFERENCE: [HTTPS://WWW.NIWA.CO.NZ/OUR-SCIENCE/CLIMATE/INFORMATION-AND-RESOURCES/CLIVAR/SCENARIOS](https://www.niwa.co.nz/our-science/climate/information-and-resources/clivar/scenarios)

### 2.1.3 Variable Legal Political Environment

#### Strategic Assessment - Variable Legal / Political Environment

##### Strategic Context

- **Central Government** - political focus can have a major impact on the strategic direction of QLDC e.g. focus on freight or encouraging self-drive tourism.
- **Local Governance** – 3 yearly cycle can impact direction of policies.
- **Government Policy Statement (GPS) on Transport** - the addition of tourism to the GPS, rather than a focus on just freight provides impetus for tourism focus infrastructure changes and the importance of the districts tourism to the national economy.
- **National Policy Statement (NPS) on Urban Development Capacity**– Recognition of Queenstown as a high growth area and impetus for planning and infrastructure team to work together.
- **Housing Infrastructure Fund (HIF)** - Central Government’s recognition of the growth in certain parts of New Zealand and the District through making \$1 billion available to assist high growth councils to advance infrastructure projects important to increasing housing supply. QLDC has secured \$50 million – 3,200 houses. Two new greenfield sites (Quail Rise South and Ladies Mile) on the Frankton Flats and an extension of the Kingston township.
- **Ministry of Business, Innovation and Employment (MBIE) Tourism** – Regional Mid-sized Tourism Facilities Grant Fund and the new Tourism Infrastructure Fund.

Figures 25 & 26 Central Government Elections



Figures 27 & 28 Central Government in Queenstown

## Queenstown's "exceptional circumstances" to attract Government funding

DEBBIE JAMESON  
Last updated 17:21, May 24 2017



Tourism Minister Paula Bennett and Queenstown Lakes Mayor Jim Rout go walkabout in Queenstown. Debbie Jameson

Tourism Minister Paula Bennett has promised Queenstown special access to Government funding and resources to cope with the overwhelming costs of tourism due to its "exceptional circumstances."

The funds are outside of the previously announced \$102 million tourism infrastructure fund.

## No visitor levy but other sweeteners possible - Steven Joyce

DEBBIE JAMESON  
Last updated 17:24, April 20 2017



Finance Minister Steven Joyce and Clutha Southland MP Todd Barclay in Queenstown. Debbie Jameson

Finance Minister Steven Joyce has all but ruled out a visitor levy in this year's budget but indicated other sweeteners are on their way for small towns struggling to cope with large numbers of tourists.

Speaking to the Queenstown Chamber of Commerce Joyce said he had always been reluctant to impose a visitor levy because it can't always be assumed that visitor numbers will continue growing at the same level.

"We are still a really small percentage of tourism worldwide and we're also a pretty long flight from most of the world. So we are a relatively high cost destination in world terms."

## 2.1.4 Demanding Built Environment

### Strategic Assessment - Demanding Built Environment

#### Strategic Context

The term built environment refers to network infrastructure and assets that provide the setting for community activity. This can range from buildings and parks to whole subdivisions and towns and includes the supporting infrastructure, such as water supply, waste water, stormwater, roads, energy and telecommunications.

Infrastructure is installed in tranches however, it is required to be replaced over time to maintain affordability of the investment. There are a number of issues which affect the performance of the assets and the ability to renew them, these are discussed throughout the document. The local climate conditions and elevation shortens the construction period. Topographic and seismic conditions, combined with seasonal changes may also accelerate deterioration of assets.

#### Planning & Development

Operative District Plan (ODP): Made operative 10 December 2009, sets how QLDC will manage the environment and what activities you can do as of right, what activities you need resource consent for, and how certain activities may be carried out.

Proposed District Plan (PDP): A review is under way to produce a plan which is easier to use and reduce the number of rules and limits on your freedom to develop, balanced with providing reasonable protection of important things such as sunlight, privacy and landscape values. The Transport Chapter is up for review in 2017, and introduces ONRC classifications.

Land Development and Subdivision Code of Practice (CoP): Ensures that land development and subdivision infrastructure is designed and constructed utilising best practice the QLDC.

**Land Use Changes** – urbanisation/ intensification of housing.

Figures 29, 30 & 31 QLDC's Operative & Proposed District Plan



Volume 1 Operative District Plan



Volume 2 Proposed Changes (to th...



Volume 3 Operative District Plan...

The need to forecast carefully where subdivision and development is likely to occur; plan well ahead for how the future land use will be best served from the community Three waters point of view, and programme the work to meet the identified needs at the most optimum time.

#### Housing Infrastructure Fund (HIF)

QLDC has secured \$50 million – 3,200 houses in central government's new HIF. Two new greenfield sites (Quail Rise South and Ladies Mile) on the Frankton Flats and an extension of the Kingston township.

## Strategic Assessment - Demanding Built Environment

### Ladies Mile

The proposed Ladies Mile medium density residential development could provide a further 1,000 residential dwellings for the district. It includes provision for public Three waters infrastructure .



### Quail Rise

The Quail Rise South project will enable construction of up to 1,100 residential dwellings in close proximity to Frankton Flats. The development includes a new road linking Ferry Hill Drive to the roundabout at the junction of SH6 and Hawthorn Drive, and pedestrian/cycleway access beneath SH6.



### Kingston

It is proposed to bring forward the provision of Three Waters infrastructure schemes to Kingston. This will enable the development of Special Zoned land and other sites within Kingston township, allowing approximately 950 more houses. Benefits include affordable housing for the district and improved public health for the existing community.



### Utility Works

An example is the BP round about in Frankton, Queenstown – water main upgrades were undertaken prior to Delta obtaining funding for the undergrounding of cabling and having to rip up road again.

Strategic Assessment - Demanding Built Environment

Figures 32 & 33 Hawthorn Drive roundabout construction and Delta Poles



### 2.1.5 Challenging Economy

#### Strategic Assessment - Challenging Economy

##### Strategic Context

QLDC is a District with a thriving economy which is strongly driven by tourism, both domestic and international. A rapidly rising residential population has driven development, which is providing a booming construction industry. Subdivision and the resultant development enables the creation of new housing and land use opportunities, and is another key driver of the District's economy.

Queenstown Lakes has experienced very strong economic (GDP) growth over the last decade (over double the New Zealand average), with population and visitor growth providing the main stimulus. Visitor and lifestyle-related industries (accommodation, food services, rental services and recreation services) and property and service industries (construction and construction services, general professional services, health services, real estate) have grown strongly. GDP per capita has not grown as fast. Employment has grown very strongly but estimated labour productivity in the District is well below the national level and earnings from salaries and wages are relatively low. Median income from all sources is, however, relatively high, likely reflecting that a high proportion of income is from investment and self-employment.

As a key selling point for New Zealand's Tourism Industry, the district has a large impact on the National Tourism Economy.

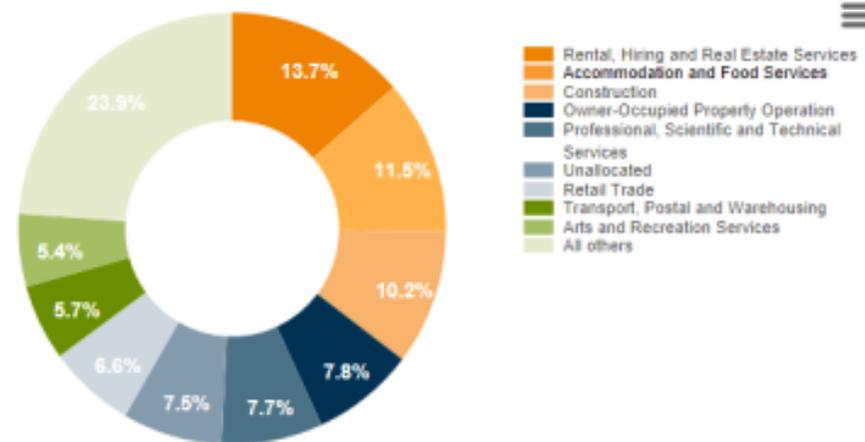
Figures 34 Queenstown & New Zealand Gross Domestic Product

#### GDP growth



Figures 35 Industry proportion of 2016 Gross Domestic Product

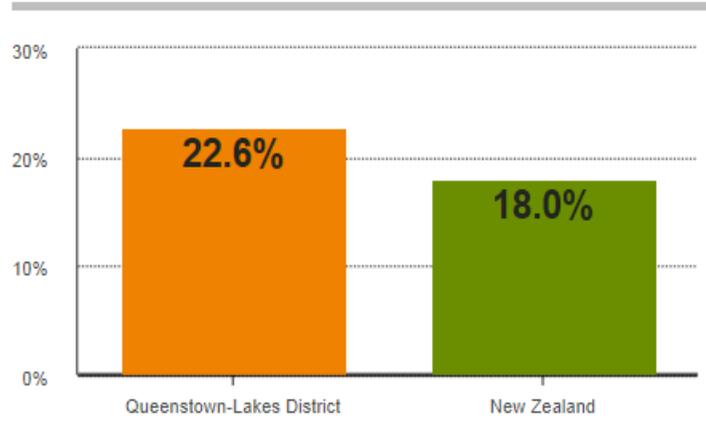
#### Industries: Proportion of GDP (2016)



Strategic Assessment - Challenging Economy

Figures 36 Queenstown & New Zealand Self-Employment Rate 2016

Self employment rate, 2016



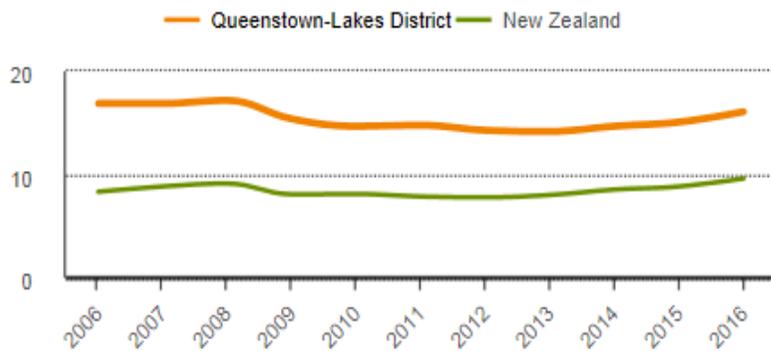
Figures 37 Queenstown Lakes District and New Zealand's Tourism GDP

Tourism share of total GDP



Figures 38 Queenstown & New Zealand Housing Affordability

Housing affordability (higher is less affordable)



Figures 39 Queenstown Lakes District and New Zealand's Tourism Share of GDP

Tourism GDP growth in Queenstown-Lakes District and New Zealand



## 2.2 LEVELS OF SERVICE REVIEW

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. This methodology is underpinning the Long Term Plan programme. In developing target service levels, there is a continuum which ranges from the minimum levels described, through a range of levels which are increasingly desirable, up to an upper level or maximum level of service. The “optimal” service level balances risk, benefits, cost and affordability (appetite and ability to pay).

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.

Ideally different service level options can be modelled and evaluated for risk, costs and benefits at a finer level however this was not deemed to be suitable at this point as the models require to be upgraded to complete an exercise of this type in an effective manner. All Three Waters hydraulic and hydrological Models will continue to be upgraded to this level prior to assist in further reviews of these LOS.

Future reviews will include community consultation, allowing for a more rigorous and informed setting of service levels. It should be noted that Council could be placed in a difficult position with regulators and the community when they set a service level only to find out later that it is unaffordable. Regularly testing different service levels and their risks and costs is good-practice asset management. It is important to recognise that there may be varying “optimal” levels of service across the district, due to the fact that smaller communities are relatively more costly to serve.

### 2.2.1 Water Supply for On Demand Supplies Only (as Defined by the QLDC Water Supply Bylaw<sup>1</sup>)

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<sup>2</sup>.

#### Minimum Levels of Service

- A minimum of 180 litres per person per day of safe drinking water.
- No breach of resource consent resulting in successful prosecution by the Otago Regional Council.
- A minimum water pressure to each residential property of 200kPa at the property boundary 98% of the time.
- Firefighting supplies in Council approved residential, commercial and industrial areas provide fire flow, at 60% of annual peak demand, 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

*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.*

- Minimum available reservoir storage across each network should be the greater of:
  - 24 hours of average day storage

<sup>1</sup> [Water Supply Bylaw](#), Queenstown Lakes District Council, 2015

<sup>2</sup> Drinking-water Standards for New Zealand, Ministry of Health, [MoH Drinking Water Standards](#)

- 12 hours of peak day storage
- 6 hours of average day storage plus the greatest firefighting storage requirement for the network as defined by SNZ PAS 4509:2008 and section 3.2.5.
- Pump stations that supply schemes with reservoir storage are required to be able to supply peak day demand utilising a maximum of 16 hours pump run time per day (67% utilisation) of the duty/assist pump(s).
- Redundancy will be available for all pump station facilities that allows the following:
  - No interruption of service for planned or unplanned maintenance of a single pump. In a situation of unplanned maintenance 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.
  - No interruption of service, on an average day, due to power outages of less than 6 hours.

### Other Target Levels of Service

- Maximum water pressure:
  - Distribution mains:
    - 600kPa at the property boundary, where serviced by asbestos cement pipelines.
    - 750kPa at the property boundary, where serviced by other material pipelines.
  - Trunk Mains: no maximum limit, but the pressure rating of pipe will allow for the steady state pressure and potential surge.
- A maximum of 30% water loss across each network. To be measured by night flow testing or a water balance exercise.
- Water velocities:
  - not greater than 2 metres per second under normal demand,
  - not greater than 3 metres per second under firefighting scenarios.
- Head loss:
  - Not greater than 5 metres per kilometre under normal demand,
  - Not greater than 10 metres per kilometre under firefighting scenarios.
- Water reservoirs are expected to operate above 60% full, under normal demand conditions.

### 2.2.2 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.

### 2.2.3 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

- A minimum peak wet weather flow (PWWF) capacity to convey a 1 in 5 year average return interval 24 hour duration simulated storm. Capacity is deemed to be consumed when either of the following criteria are met:
  - Surcharging of a manhole (or other point asset) is greater than 1 m above the soffit of the pipe.
  - Surcharging of a manhole (or other point asset) is within 1 m of the lid level of the asset.
- Pump station duty/assist pump capacity is to be greater than 110% of the peak wet weather inflow.
- Pump station redundancy, under loss of power supply or planned/unplanned pump maintenance, to be either of the following:

- 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.

*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<sup>3</sup>.*

### **Other Target Levels of Service**

- Water velocities in pressure pipes not greater than 2 metres per second under peak wet weather flow conditions.
- Head loss in pressure pipes not greater than 5 metres per kilometre under peak wet weather flow conditions.
- A minimum conveyance velocity of 0.75m/s in all gravity pipes, to ensure self-cleansing, at the diurnal peak of average dry weather flow (ADWF).
- All manholes, that have either a history of surcharging and dislodging the manhole cover or are within the 100 year ARI flood area will have either:
  - A stainless steel safety grille capable of carrying a 100 kg point load
  - A permanently bolted manhole lid

## 2.2.4 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.

### **Minimum Target Levels of Service**

- A minimum stormwater system (conveyance, detention, overland flow, etc) capacity that, during a simulated 24 hour duration, 10 year return period storm, will ensure:
  - That no consented habitable floors for building platforms, are flooded.
  - That no erosion to private property occurs.

### **Other Target Levels of Service**

- All manholes, that have a history of surcharging and dislodging the manhole cover or are within the 100 year ARI flood area will have either:
  - A stainless steel safety grille capable of carrying a 100 kg point load
  - A permanently bolted manhole lid

*Please note:*

- *Simulated 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.*

<sup>3</sup> QLDC Criticality Framework, 2017,

## 2.3 COMMUNITY OUTCOMES, GOALS AND PERFORMANCE MEASURES

In light of the LGA changes, QLDC's key outcomes are based on core functions: 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 have been working with other Otago local authorities to adopt a standard set of performance measures for the region from 2016/17.

Local authorities are required to incorporate mandatory performance measures developed by the Department of Internal Affairs (DIA) in the development of their 2018–2028 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. The QLDC LTP will be confirmed early 2018 for inclusion in the 2018-21 LTP. The table below provides details of the measures.

**Table 1 Three Waters Performance Measures - QLDC LTP 2018-2028**

High performing core infrastructure services: Performance Measure	Baseline as at June 2017	Year 18/19 Target	Year 19/20 Target	Year 20/21 Target	Year 27/28 Target
<b>Water Supply</b>					
Compliance of each municipal water supply with the NZ Drinking Water Standards for protecting public health, specifically: *a)bacteriological compliance; and *b) protozoal compliance	Full compliance combined - 55% (2015/16 result), a) 75% b)14%	Full compliance by 2027			
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	34 mins	urgent <60mins non urgent <1,440mins (1 day)			
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	688mins	urgent <1,440mins (1 day) non urgent <10,080mins (7 days)	urgent <1,440mins (1 day) non urgent <10,080mins (7 days)	urgent <1,440mins (1 day) non urgent <10,080mins (7 days)	urgent <1,440mins (1 day) non urgent <10,080mins (7 days)
Number of complaints per 1000 connections to a public water reticulation network about *a) the clarity of drinking water	1.1 per 1,000 connections	<4 per 1000 connections	<4 per 1000 connections	<4 per 1000 connections	<4 per 1000 connections
Number of complaints per 1000 connections to a public water reticulation network about *b) the taste of drinking water	0.1 per 1,000 connections	<4 per 1000 connections	<4 per 1000 connections	<4 per 1000 connections	<4 per 1000 connections
Number of complaints per 1000 connections to a public water reticulation network about *c) the odour of drinking water	0.1 per 1,000 connections	<4 per 1000 connections	<4 per 1000 connections	<4 per 1000 connections	<4 per 1000 connections
Number of complaints per 1000 connections to a public water reticulation network about *d) the pressure or flow of drinking water	10.0 per 1,000 connections	<4 per 1000 connections	<4 per 1000 connections	<4 per 1000 connections	<1 per 1000 connections
Number of complaints per 1000 connections to a public water reticulation network about *e) the continuity of supply of drinking water	0.1 per 1,000 connections	<4 per 1000 connections	<4 per 1000 connections	<4 per 1000 connections	<1 per 1000 connections
Number of complaints per 1000 connections to a public water reticulation network about *f) the way in which a	0.0 per 1,000 connections	<2 per 1000 connections	<2 per 1000 connections	<2 per 1000 connections	<2 per 1000 connections

High performing core infrastructure services: Performance Measure	Baseline as at June 2017	Year 18/19 Target	Year 19/20 Target	Year 20/21 Target	Year 27/28 Target
local government organisation responds to issues with a water supply					
Average consumption of water per connection per year	529.42L	<510KL/Conn/year	<500KL/Conn/year	<480KL/Conn/year	<450KL/Conn/year
Percentage of water lost from each municipal water reticulation network	31%	<30% overall	<30% overall	<30% overall	<15% overall
<b>Wastewater</b>					
** 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	9 min	<60 min	<60 min	<60 min	<60 min
** 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	142 min	<240 min (4 hours)	<240 min (4 hours)	<240 min (4 hours)	<240 min (4 hours)
** Annual number of dry weather overflows from a municipal sewerage system per 1000 sewerage connections	2.1	<3 per 1,000 connections			
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	100%	100%	100%	100%	100%
** Number of complaints per 1000 properties connected to a municipal sewerage system about: *a) odour *b) faults *c) blockages *d) the territorial authority's response to issues with its sewerage system	a) 1.6 per 1,000 connections b) 4.5 per 1,000 connections c) 1.6 per 1,000 connections d) 0.0 per 1,000 connections	a) <5 per 1,000 connections b) <5 per 1,000 connections c) <5 per 1,000 connections d) <5 per 1,000 connections	a) <5 per 1,000 connections b) <5 per 1,000 connections c) <5 per 1,000 connections d) <5 per 1,000 connections	a) <5 per 1,000 connections b) <5 per 1,000 connections c) <5 per 1,000 connections d) <5 per 1,000 connections	a) <5 per 1,000 connections b) <5 per 1,000 connections c) <5 per 1,000 connections d) <5 per 1,000 connections

High performing core infrastructure services: Performance Measure	Baseline as at June 2017	Year 18/19 Target	Year 19/20 Target	Year 20/21 Target	Year 27/28 Target
<b>Stormwater</b>					
** Number of flooding events each year to (consented) habitable floors per 1000 properties resulting from overflows from a municipal storm water system	0	<2 Per 1,000 properties			
** 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%	100%
** 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	<3 hours	<3 hours	<3 hours
** Number of complaints per 1000 properties connected to a municipal sewerage system about: *a) faults (including blockages) with a municipal stormwater system	7.83 *includes issues raised by contractors	<5 per 1,000 properties			

## 2.4 COMMUNITY EXPECTATIONS

QLDC is becoming a more customer focused organisation, to this end we are striving to understand the requirements of the Community to provide robust evidence in decision making. This is achieved through better consultation with the community, and engagement with ratepayers and customers.

QLDC has adopted a combination of email, social media, radio messaging and websites to inform the public about changing infrastructure conditions. Disruptions include snow and ice in winter; storm damage; pipe and road works; boil water notices; crashes and police operations. QLDC has also relaunched its text alert system. Specific channels are:

- Road report email list (4,450 recipients, sent daily 6.30am in winter and as required at any time);
- QLDC Facebook page (14,881 followers);
- QLDC Twitter feed (2,969 followers);
- Community text alerts (list of 1,564);
- Community Facebook pages, chosen to match the location of the disruption);
- Breakfast radio – The Hits, More FM, Radio Wanaka, Radio Glenorchy;
- QLDC website;
- Queenstown traffic web cameras (link to Stanley St and Ballarat St signals via NZTA website);
- Crown Range weather station and webcam.

### 2.4.1 Request for Service (RFS)

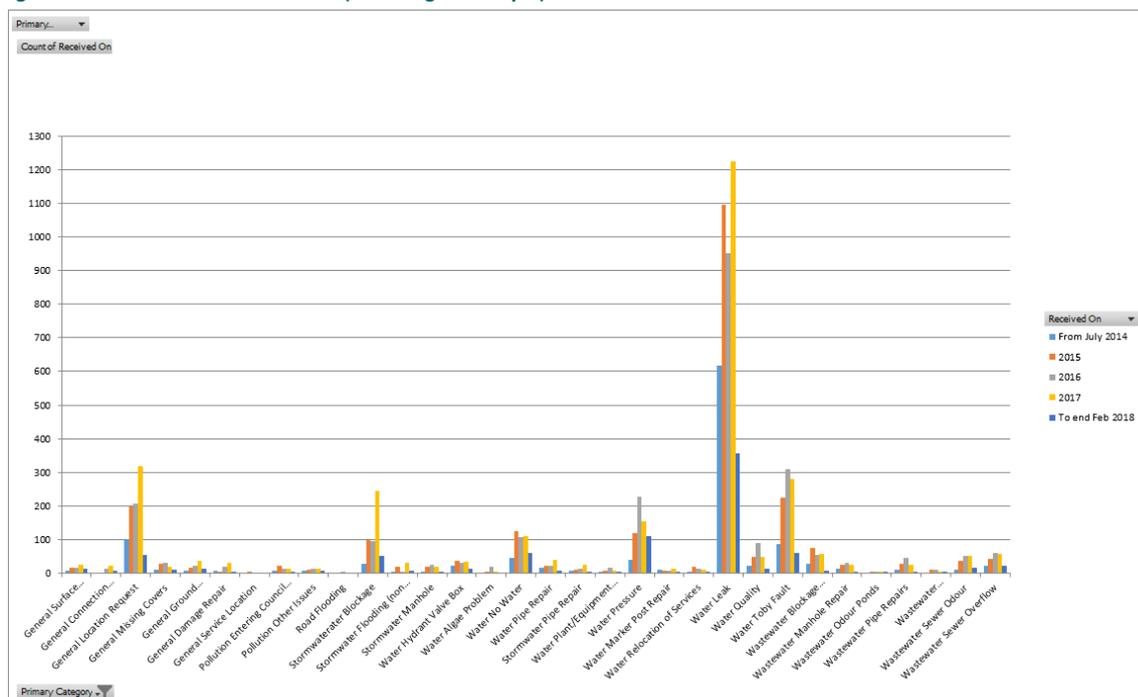
Customer interaction is largely recorded through our Customer Management System (TechOne). Request for Service are recorded, actioned and monitored at a corporate level and a councilor level.

QLDC have worked to integrate the Customer Service System with our VAMS asset management system, 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 QLDC Three Waters team (internal and external contractors) received 2,942 general enquiries for service in compared to 1,144 in 2014. A significant volume of these are requests for water leaks. An existing Operations and Maintenance team vacancy has been filled which is improving performance in this area, however this is offset by the significant uplift in volume.

The chart below shows an overview the Request For Service received between 2014-2017.

**Figure 40 Overview of total RFS Count (excluding Lake Hayes)**



\*In July 2014 QLDC moved its Customer Request System from NCS / KBase to Technology One, this has led to a difficulty to aligning RFS categories over time.

### 2.4.2 Stakeholders 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 for, the Queenstown-Lakes District.' The key stakeholders and our philosophy of engagement are listed in Table 2.

**Table 2 Key Stakeholders**

Stakeholder	Philosophy of Engagement
<b>Ministry of Health and Otago Regional Council</b>	QLDC collaborates with both the Ministry of Health and Otago Regional Council to ensure compliance with drinking water standards and resource consents.
<b>Senior Management and Elected Members</b>	Working to ensure QLDC has accurate data for evidence based decision making as well as leading a committed and co-ordinated effort across all sections of an organisation in terms of asset management.
<b>Internal Staff</b>	QLDCs approach is to co-ordinate the education, communication, and awareness of asset management processes in the three waters sector.
<b>Supply Partners and Service Providers</b>	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 customer. Physical works providers that are delivering fit for purpose service levels and are innovating. Continuing to build awareness and understanding of AM processes across QLDC's external partners.
<b>Customers</b>	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 All adjoining property owners Local ratepayers and residents associations Local businesses
<b>Collaborative Partners</b>	Partnership with delivering services such as neighbouring, regional and local councils, emergency (NZ Police/Fire/Ambulance) and civil defence authorities, and Department of Conservation. Working with other network providers that utilise three waters for service provision such as electricity, gas, telecommunications and water.

### 2.4.3 QLDC Annual Residents Survey 2016/17

QLDC strives to deliver an affordable LTP with a strong focus on efficiency and value. QLDC demonstrates accountability by seeking annual feedback from residents about their performance over that year. This feedback helps QLDC to understand what they are doing well and where they might improve. Since 1995, QLDC has been conducting annual satisfaction surveys as a way to assess residents' needs and satisfaction with Council services.

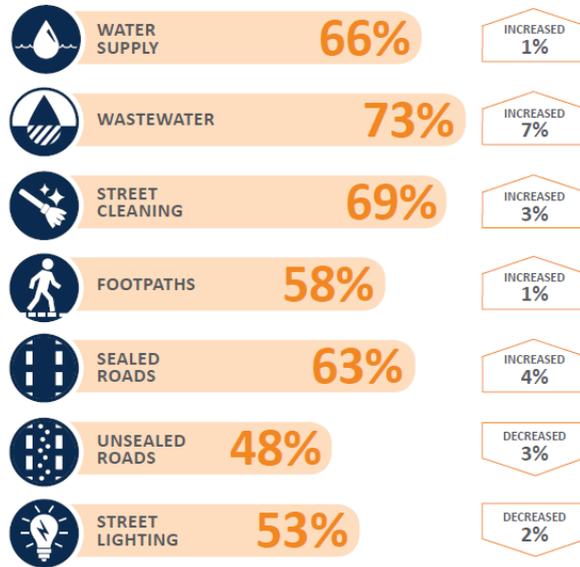
The 2016/17 satisfaction with infrastructure measures remains largely similar to previous years. Satisfaction is highest with wastewater, which has also increased significantly this year. Satisfaction with street cleaning and sealed roads have also increased this year, while satisfaction with water supply and footpaths remain similar to last year's results. Satisfaction with street lighting and unsealed roads has decreased this year although these changes are not statistically significant. Notably, respondents aged under 34, those who own a holiday home in the area, or residents who are non-ratepayers in the area appear to be more satisfied with infrastructure.

Parking appears to be an issue for a number of respondents, with almost half mentioning parking as a service that the Council needs to improve. Further to this, unsatisfied results are high amongst respondents in relation to the suitability of the parking arrangements provided for the amount of traffic in both Queenstown and Wanaka. Satisfied results have decreased significantly this year for parking enforcement. Notably, parking

appears to be a bigger issue for respondents aged under 34 and those from Queenstown or Frankton. Consideration should be given to how to improve parking in all areas of the District.

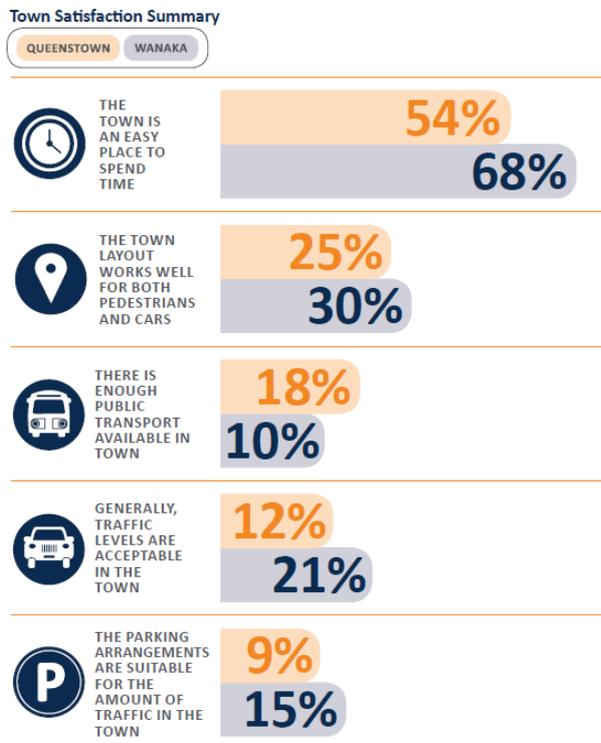
The summary below shows this year’s satisfied result for each measure associated with infrastructure, as well as the percent change from 2015/16’s results.

Figure 41 2016/17 Percentage Change In Satisfaction With Infrastructure



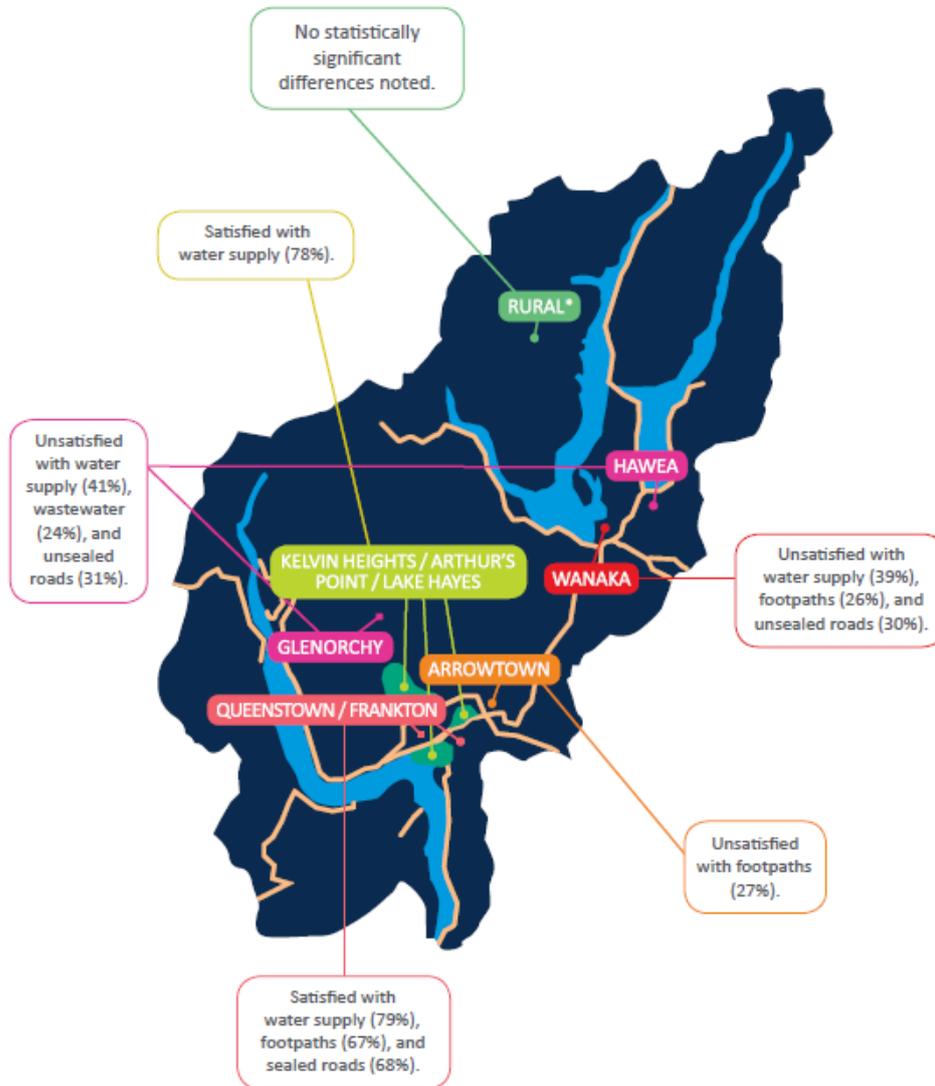
The town being an easy place to spend time is the measure with the highest satisfaction levels amongst both those who visit Wanaka and Queenstown regularly. Satisfaction with the layout, availability of public transport, traffic levels, and parking arrangements is relatively lower within both towns.

Figure 42 2016/17 Town Satisfaction Summary



Highlighted below are results that are statistically significantly higher than the total result.

Figure 43 2016/17 Infrastructure Area Differences



\* Includes Makarora, Luggate, Kingston, and Gibbston.

## SECTION THREE - LIFECYCLE PLANNING

Lifecycle asset management is about considering all asset management options and strategies to deliver the agreed level of service and to inform decision-making for asset renewal, replacement, upgrades and disposal. Effective lifecycle planning is about making the right investment at the right time to ensure the asset delivers the desired level of service over its full-expected life, at the minimum total cost.

This section explains QLDC's approach for:

- Providing new or upgraded assets to improve service levels, providing for growth and demand;
- Operating and maintaining assets;
- Renewing or replacing assets; and
- Disposing of assets at the end of their useful life.

All asset data has been extracted / reported as at January 2018.

### 3.1 NETWORK STATISTICS

QLDC maintains assets across the Three Waters networks, a summary of which can be found below in Table 3. 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.

Table 3 Asset Details as at 30 June 2017

Activity	Asset Type	Units	Total
<b>Water</b>	Mains	km	469
	Mains Average Age	Years	20
	Demand Units	Units	23,356
	Water Production	m <sup>3</sup> /Year	10,221,058
	Treatment Plants	No	13
	Pump Stations	No	35
<b>Wastewater</b>	Mains	km	421
	Mains Average Age	Years	18
	Demand Units	Units	22,001
	Wastewater Generation	m <sup>3</sup> /Year	4,650,042
	Treatment Plants	No	4
	Pump Stations	No	62
<b>Stormwater</b>	Mains/Culverts	km	225
	Mains Average Age	Years	20
	Pump Stations	No	0

### 3.2 SCHEME SUMMARIES

QLDC has developed a single page fact sheet for each water supply and wastewater scheme. The wastewater schemes are currently in development, to be completed end 2018. All financial data is as at 30th June 2017.

**Hawea Water Supply**



Number of properties connected by SUIP (Separate Use or Inhabited Part): 870

Water Grading (2017): This scheme is not graded

Drinking Water Standards (2016/17):

Parameter	Compliance
Bacterial	Yes
Protozoa	No

**Source/Intake** Groundwater: 4 bores & Lake Hawea (as an emergency supply)

**Treatment** Disinfection – See Water Safety Plan

**Production Volume (m3/day)**

	2012/13	2013/14	2014/15	2015/16	2016/17
<b>Average Volume:</b>	629	643	696	836	832
<b>Peak Volume:</b>	2,168	1,874	2,407	2,554	2,452
<b>Peak Factor:</b>	3.45	2.91	3.46	3.06	2.95

Numbers have changed since 2017 AMP due to improved data processes/understanding.

**Resource Consent** Expiry: 19<sup>th</sup> January 2050

**Current water take limits**

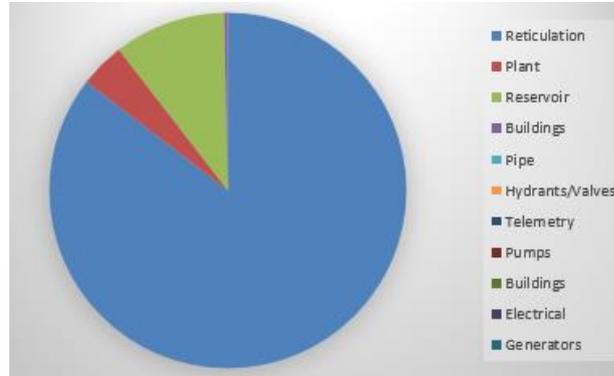
- 180 L/s
- 13,500 m3/day
- 100,175 m3/month
- 1,202,100 m3/year

Asset Type	Units	Water
Hydrants	No.	100
Meters	No.	19
Reticulation	Km.	19.6
Rising Mains	Km.	0.2
Valves	No.	818

Asset Type	Units	Water
Pump Station Facilities	No.	1
Storage/Reservoirs Facilities	No.	2
Water Sources	No.	2
Treatment Plant Facilities	No.	2

**Network Value** \$4,751,610

**2016 Current Asset Book Value**



**Key Strategic Issues**

- \* The Council will provide reliable drinking water that is safe to drink
- \* To provide connection for new subdivision within QLDC service area not currently serviced by private scheme

**Growth and Development**

Usually Resident Population  
From 2,847 in 2018 to 4,321 by 2033

Visitors – Peak Day:  
From 5,651 in 2018 to 8,057 by 2033

**Significant Expenditure Projects**

- |   |   |
|---|---|
| Water Supply - Renewals - Hawea   | Reticulation extension down Caples Av and Cemetery Rd   |
| Upgrade of Hawea treatment capacity to meet DWS   | Pre-Planning & Design / Capex Business Case Development   |
| Carry out Cryptosporidium monitoring as per DWSNZ   | Implement Demand Management and Metering  |
| Growth component - to reduce the frequency of water service pressure/flow disruptions (outage/unavailability) | Asset Management improvements: Policy, documentation, data/process improvements and network analytics |
| Network optimisation works  |   |

**Total Capital Expenditure** 2018/19 to 2032/33: \$2,119,469

**Queenstown Water Supply**



Number of properties connected by SUIP (Separate Use or Inhabited Part): 8,902  
 Water Grading (2017): This scheme is not graded  
 Drinking Water Standards Compliance (2016/17):

Parameter	Two Mile	Kelvin Heights
Bacterial	Partial	Partial
Protozoa	No	No

**Source/Intake** Lake Wakatipu – 2 intakes at Kelvin Heights and Fernhill (Two Mile intake)

**Treatment** Disinfection – See Water Safety Plan

**Production Volume (m3/day)**

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
<b>Average Volume:</b>	15,130	13,673	15,087	15,178	15,138	14,224
<b>Peak Volume:</b>	23,508	18,830	21,001	21,237	22,254	18,894
<b>Peak Factor:</b>	1.55	1.38	1.39	1.40	1.47	1.33

Numbers have changed since 2017 AMP due to improved data processes/understanding.

**Resource Consent for Kelvin Heights** Expiry: 1<sup>st</sup> April 2040

**Resource Consent for Fernhill (Two Mile)** Expiry: 1<sup>st</sup> February 2042

**Current water take limits**

**Current water take limits**

350 L/s 15,000 m3/day

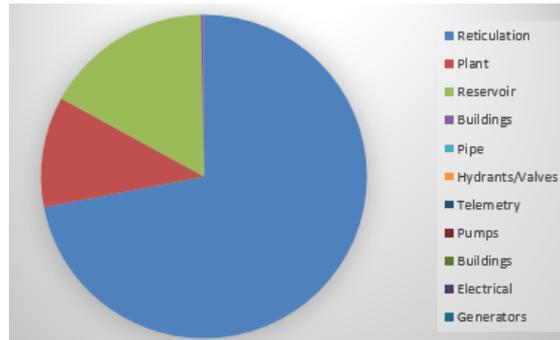
365 L/s 30,000 m3/day

Asset Type	Units	Water
Hydrants	No.	794
Meters	No.	114
Reticulation	Km.	131.2
Rising Mains	Km.	3.8
Valves	No.	4,549

Asset Type	Units	Water
Pump Station Facilities	No.	13
Storage/Reservoirs Facilities	No.	11
Water Sources	No.	2
Treatment Plant Facilities	No.	2

**Network Value** \$47,380,076

**2016 Current Asset Book Value**



**Key Strategic Issues**

\* QLDC Infrastructure Strategy 2015-2045. "Providing safe drinking water is important to maintaining public health and compliance with legislation, as well as protecting the districts tourist based economy."

\* Under the Health (Drinking Water) Amendment Act 2007, the Queenstown Water Supply is a large water supply and therefore the legal requirement to take all practical steps to comply with DWSNZ 2005/08 applied on 1 July 2012.

**Growth and Development**

Usually Resident Population:

Total Visitors – Peak Day:

From 14,057 in 2018 to 17,943 by 2033

From 31,846 in 2018 to 42,531 by 2033

(Includes Frankton, Frankton East, Kelvin Heights, Queenstown Bay, Queenstown Hill & Sunshine Bay)

**Significant Expenditure Projects**

Growth component - to reduce the frequency of water service pressure/flow disruptions (outage/unavailability)

Asset Management improvements

Frankton Flats Construction

Water Supply - Renewals - Queenstown

Upper Commonage & Larchwood Reticulation

Algae Interim Investigations

Water Treatment Plants = Two Mile, Shotover Country

Pressure zones management in Queenstown

Middleton Development

Frankton Flats supply main section 1

Ladies Mile / Lake Hayes Network

Upgrades to meet NZDWS

Kawarau Falls Bridge Crossing

Decommission & isolate Kelvin Heights WTP

SOC bores - Quail Rise rising Main

Frankton flats supply Main Section 2 & 3

Pre-Planning & Design / Capex Business Case

Quail Rise South and Ladies Mile HIF

Lakeview Development

Reservoirs = Kelvin Heights, Hanleys Farm (x2),

Developer Growth Models QTN

Quail Rise, Kelvin Peninsular

Shotover Country Borefield and Pump Station Upgrades

Cryptosporidium Monitoring – Kelvin Heights

SCADA System

PRVs for Frankton

Water Quality IT Systems

Water Meter System Development

Rising Main - Shotover Country to Glenda Drive

Water Metering IT/Billing System

District Wide Water Metering

Fernhill Reservoir Land Access

Demand Management Queenstown

Hanley's Farm Supply Line

Frankton Flats - Construct Reticulation

Resource Consents – Two Mile, Shotover Country

SOC bores - Quail Rise rising Main

Backflow Prevention

Rising Main Upgrade Two Mile - Reservoir

Kawarau Bridge to Frankton Flats Ring Main

Drinking water chlorination refits

**Total Capital Expenditure** 2018/19 to 2032/33: \$145,730,000

### Arthur's Point Water Supply



Number of properties connected by SUIP  
(Separate Use or Inhabited Part): 368

Water Grading (2017): This scheme is not graded

Drinking Water Standards (2016/17):

Parameter	Compliance
Bacterial	Yes
Protozoa	No

**Source/Intake** Groundwater: 2 bores

**Treatment** UV and emergency chlorination

**Production Volume**  
(m3/day)

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
<b>Average Volume:</b>	346	256	433	397	430	456	510	439
<b>Peak Volume:</b>	522	600	1,412	2,254	895	933	1,262	825
<b>Peak Factor:</b>	1.51	2.34	3.26	2.38	2.08	2.05	2.48	1.88

Numbers have changed since 2017 AMP due to improved data processes/understanding.

**Resource Consent** Expiry: 1<sup>st</sup> December 2042

**Current water take limits**

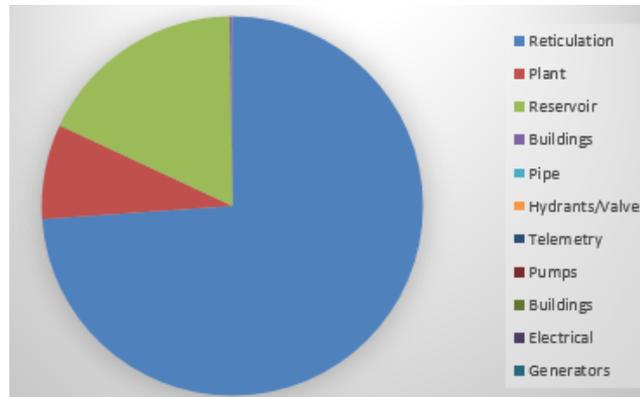
49 L/s  
3,385 m3/day  
105,000 m3/month  
823,200 m3/year

Asset Type	Units	Water
Hydrants	No.	54
Meters	No.	4
Reticulation	Km.	9.4
Rising Mains	Km.	0.9
Valves	No.	374

Asset Type	Units	Water
Pump Station Facilities	No.	1
Storage/Reservoirs Facilities	No.	1
Water Sources	No.	1
Treatment Plant Facilities	No.	1

**Network Value** \$3,893,427

**2016 Current Asset Book Value**



### Key Strategic Issues

- \* The Council will provide reliable drinking water that is safe to drink
- \* To provide connection for new subdivision within QLDC service area not currently serviced by private scheme

### Growth and Development

Usually Resident Population:

From 1,122 in 2018 to 1,588 by 2033

Total Visitors – Peak Day:

From 1,677 in 2018 to 2,288 by 2033

### Significant Expenditure Projects

Bore head upgrades, water treatment facility upgrades to comply with DWS  
Water Supply - Renewals - Arthurs Point  
Growth component - to reduce the frequency of water service pressure/flow disruptions (outage/unavailability)  
UV Treatment Upgrade to meet NZDW  
Renewal of Resource Consents

Arthurs Point Water Supply - Bulk and Commercial Metering  
New Bores to meet DWS. Bore #1 then Bore #2  
Asset Management improvements: Policy, documentation, data/process improvements and network analytics  
Pre-Planning & Design / Capex Business Case Development  
Carry out Cryptosporidium monitoring as per DWSNZ

**Total Capital Expenditure** 2018/19 to 2032/33: \$3,684,548

**Wanaka Water Supply**



Number of properties connected by SUIP (Separate Use or Inhabited Part): 6,710  
 Water Grading (2017): This scheme is not graded  
 Drinking Water Standards Compliance (2016/17):

Parameter	Western	Beacon Point
Bacterial	Yes	Yes
Protozoa	No	No

**Source/Intake** Lake Wanaka - 2 intakes at Beacon Point and Western

**Treatment** Chlorine dosing only

**Production Volume (m3/day)**

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
<b>Average Volume:</b>	2,159	2,120	6,121	7,684	8,186	8,254	9,475
<b>Peak Volume:</b>	3,982	4,275	17,180	19,539	20,419	21,251	24,890
<b>Peak Factor:</b>	1.84	6.88	2.93	2.54	2.49	2.57	2.627

Numbers have changed since 2017 AMP due to improved data processes/understanding.

**Resource Consent for Beacon Point** Expiry: 5<sup>th</sup> November 2043      **Resource Consent for Western** Expiry: 5<sup>th</sup> November 2043

**Current water take limits**

400 L/s      27,216 m3/day      680,400 m3/month

**Current water take limits**

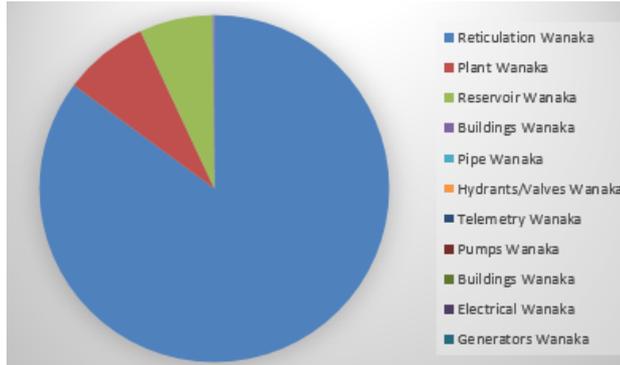
200 L/s      12,960 m3/day      324,000 m3/month

Asset Type	Units	Water
Hydrants	No.	880
Meters	No.	52
Reticulation	Km.	182
Rising Mains	Km.	3.6
Valves	No.	6,544

Asset Type	Units	Water
Pump Station Facilities	No.	7
Storage/Reservoirs Facilities	No.	5
Water Sources	No.	3
Treatment Plant Facilities	No.	3

**Network Value** \$43,824,473

**2016 Current Asset Book Value**



**Key Strategic Issues**

\* QLDC Infrastructure Strategy 2015-2045. "Providing safe drinking water is important to maintaining public health and compliance with legislation, as well as protecting the districts tourist based economy."

\* Under the Health (Drinking Water) Amendment Act 2007, the Wanaka Water Supply is a large water supply and therefore the legal requirement to take all practical steps to comply with DWSNZ 2005/08 applied on 1 July 2012

**Growth and Development**

Usually Resident Population:

From 9,139 in 2018 to 13,246 by 2033  
 (includes Luggate)

Total Visitors – Peak Day:

From 25,210 in 2018 to 32,479 by 2033  
 (includes Luggate)

**Significant Expenditure Projects**

Reservoirs = Beacon Pt, Upper Mt Iron, Hawthenden (plus additional storage)

Pump Stations = Hawthenden, Beacon Pt  
 Aubrey Rd duplicate main

Upper Hawthenden - Reservoir to Studholme Road reticulation

Earthquake shutoff valves - Hawthenden reservoir  
 Construct new Booster PS for Far Horizon / Western pressure

Aubrey Road & Mt Iron Bulk Meters

Pre-Planning & Design / Capex Business Case Development

Wanaka Airport reticulation

Hidden Hills Booster Pump

Growth component - to reduce the frequency of water service pressure/flow disruptions

Western filtration/UV

Booster Pump Station - Bills Way

Upper Mt. Iron - Reservoir to Upper Pressure Zone

Mt Aspiring Rd Reticulation - from Studholme Rd  
 Beacon Point Reservoir Meter and connection for Northlake

Western CBD

Hawthenden Rising Main - Stage 1 & 2

Western Wanaka Reticulation Upgrades  
 Kelleher Drive Extension

Asset Management improvements: Policy, documentation, data/process improvements and network analytics

Design & construct new Beacon Point WTP  
 Transmission Pipeline (stage 1 & 2) going west  
 Decommission Western Intake, reservoir & associated facilities

Pressure zone reconfiguration

Implement Demand Management and Metering

MAR Booster and WYC Borefield

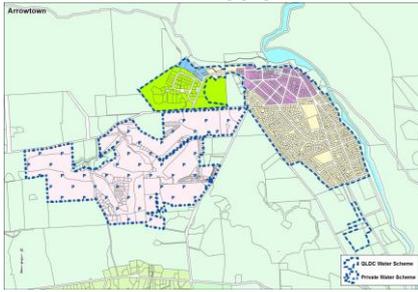
Radiological Monitoring (Luggate, Arrowtown, Lake Hayes, Wanaka)

Renewal of Resource Consents

Mt Aspiring Rd booster to address fire fighting

**Total Capital Expenditure 2018/19 to 2032/33:** \$76,329,939

### Arrowtown Water Supply



Number of properties connected by SUIP (Separate Use or Inhabited Part): 1,551

Water Grading (2017): This scheme is not graded

Drinking Water Standards (2016/17):

Parameter	Compliance
Bacterial	Yes
Protozoa	No

**Source/Intake** Groundwater: 1 bore / Groundwater: 1 well

**Treatment** UV and chlorination

**Production Volume (m3/day)**

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
<b>Average Volume:</b>	5,306	1,585	1,632	2,078	2,139	1,931	2188	
<b>Peak Volume:</b>	14,393	2,918	4,790	3,774	3,980	3,973	4,731	5,485
<b>Peak Factor:</b>	2.71	1.84	2.93	1.82	1.86	2.06	2.16	2.13

Numbers have changed since 2017 AMP due to improved data processes/understanding.

**Resource Consent** Expiry: 1<sup>st</sup> October 2021

**Current water take limits**

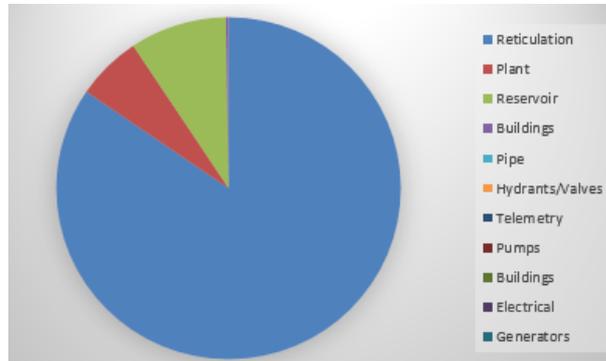
108 L/s  
7,800 m3/day  
234,000 m3/month  
1,105,200 m3/year

Asset Type	Units	Water
Hydrants	No.	184
Meters	No.	15
Reticulation	Km.	30
Rising Mains	Km.	1.1
Valves	No.	1,205

Asset Type	Units	Water
Pump Station Facilities	No.	2
Storage/Reservoirs Facilities	No.	1
Water Sources	No.	1
Treatment Plant Facilities	No.	1

**Network Value** \$7,804,449

**2016 Current Asset Book Value**



### Key Strategic Issues

\*QLDC Infrastructure Strategy 2015-2045. "Providing safe drinking water is important to maintaining public health and compliance with legislation, as well as protecting the districts tourist based economy."

\*Regional Plan for Water:

-To provide for the water needs of Otago's primary and secondary industries, and community domestic water supplies

-ORC are going to consult on water allocation in the Arrow catchments

### Growth and Development

Usually Resident Population:

From 2,925 in 2018 to 3,252 by 2033

Total Visitors – Peak Day:

From 3,622 in 2018 to 4,036 by 2033

### Significant Expenditure Projects

Asset Management improvements: Policy, documentation, data/process improvements and network analytics  
Arrowtown WPS upgrade to existing bore  
Arrowtown Reservoir Stabilisation - Stage 2  
Radiological & Crypto Monitoring (Water Safety Plan Reviews)  
Arrowtown new Reservoir

Growth component - to reduce the frequency of water service pressure/flow disruptions  
Water Supply - Renewals - Arrowtown  
Water Demand Management  
Pre-Planning & Design / Capex Business Case Development  
Treatment Plant Upgrade

**Total Capital Expenditure:** 2018/19 to 2032/33: \$15,571,367

**Luggate Water Supply**



Number of properties connected by SUIP (Separate Use or Inhabited Part): 213

Water Grading (2017): This scheme is not graded

Drinking Water Standards (2016/17):

Parameter	Compliance
Bacterial	Yes
Protozoa	No

**Source/Intake** Groundwater: 2 bores

**Treatment** pH correction only

**Production Volume (m3/day)**

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Average Volume:	89	192	158	161	180	216	200
Peak Volume:	121	1,193	538	490	642	724	544
Peak Factor:	1.37	3.03	3.39	3.04	3.57	3.34	2.72

Numbers have changed since 2017 AMP due to improved data processes/understanding.

**Resource Consent** Expiry: 14<sup>th</sup> November 2043 **Current water take limits**

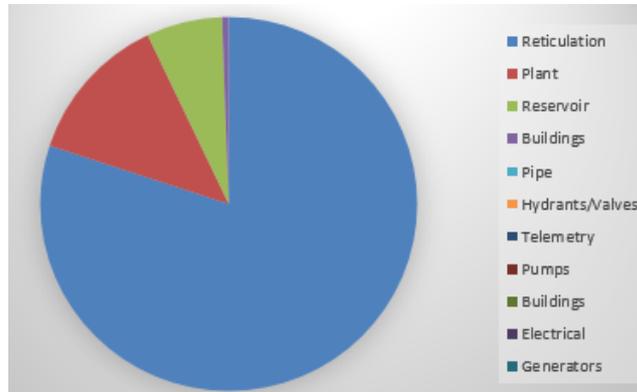
20 L/s  
1,437 m3/day

Asset Type	Units	Water
Hydrants	No.	39
Meters	No.	6
Reticulation	Km.	5.8
Rising Mains	Km.	0.4
Valves	No.	180

Asset Type	Units	Water
Pump Station Facilities	No.	1
Storage/Reservoirs Facilities	No.	1
Water Sources	No.	1
Treatment Plant Facilities	No.	1

**Network Value** \$1,818,961

**2016 Current Asset Book Value**



**Key Strategic Issues:**

\*QLDC Infrastructure Strategy 2015-2045. "Providing safe drinking water is important to maintaining public health and compliance with legislation, as well as protecting the districts tourist based economy."

\*Regional Plan for Water:

-To provide for the water needs of Otago's primary and secondary industries, and community domestic water supplies

-ORC are going to consult on water allocation in the Arrow catchments

**Growth and Development**

Usually Resident Population:

Included in Wanaka figures

Total Visitors – Peak Day:

Included in Wanaka figures

**Significant Expenditure Projects**

Asset Management improvements: Policy, documentation, data/process improvements and network analytics  
Water Supply - Renewals - Luggate  
Luggate - Reservoir upgrades  
Radiological & Crypto Monitoring (Water Safety Plan Reviews)  
Demand Management Luggate

Growth component - to reduce the frequency of water service pressure/flow disruptions  
Pre-Planning & Design / Capex Business Case Development  
Luggate water supply treatment upgrade  
  
Renewal of Resource Consent  
New bore supply & new reservoir

**Total Capital Expenditure** 2018/19 to 2032/33: \$5,774,314

### Glenorchy Water Supply



Number of properties connected by SUIP (Separate Use or Inhabited Part): 278  
Water Grading (2017): This scheme is not graded  
Drinking Water Standards (2016/17):

Parameter	Compliance
Bacterial	Yes
Protozoa	No

**Source/Intake** Groundwater: 2 bores

**Treatment** No treatment

**Production Volume** (m3/day)

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
<b>Average Volume:</b>	352	246	271	226	248	228	274	279
<b>Peak Volume:</b>	835	850	748	786	498	564	791	560
<b>Peak Factor:</b>	2.69	2.06	2.43	3.48	2.00	2.48	2.89	2.00

Numbers have changed since 2017 AMP due to improved data processes/understanding.

**Resource Consent** Expiry: 2<sup>nd</sup> December 2044

**Current water take limits**

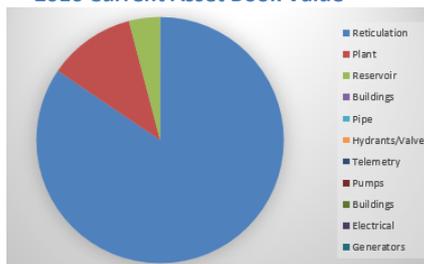
62.7 L/s	5,400 m3/day
49,248 m3/month	599,184 m3/year

Asset Type	Units	Water
Hydrants	No.	39
Meters	No.	6
Reticulation	Km.	10.1
Rising Mains	Km.	0.4
Valves	No.	261

Asset Type	Units	Water
Pump Station Facilities	No.	1
Storage/Reservoirs Facilities	No.	1
Water Sources	No.	0
Treatment Plant Facilities	No.	0

**Network Value** \$2,347,074

**2016 Current Asset Book Value**



### Key Strategic Issues

#### 2015-45 Infrastructure Strategy:

- \*Manage water needs of district to acceptable level
- \*Key service levels (affecting public health) are maintained
- \*Core infrastructure meets current and future needs, are fit for purpose, efficient to run and cost effective

**Health Act 1956 - Amended 2007:** 69V - Compliance with Drinking Water Standards

#### Regional Plan for Water:

- To provide for the water needs of Otago's primary and secondary industries, and community domestic water supplies
- <5 pressure / flow complaints per 1000 water connections

#### Compliance with:

- Drinking Water Standards for New Zealand by 2018. DWSNZ expected to change in 2018 as a result of Havelock North inquiry outcomes
- MoH advice to "reconsider reliance on secure bore water status" and "consider implementing appropriate and effective treatment" for untreated supplies (Director General Statement under Health Act 1956 s69ZZZC, 20 December 2017)
- 100% Compliance with Resource Consents
- - Building Code
- - HSE Act

### Growth and Development

Usually Resident Population: From 481 in 2018 to 701 by 2033	Total Visitors – Peak Day: From 1,118 in 2018 to 1,553 by 2033
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#### Significant Expenditure Projects

Asset Management improvements: Policy, documentation, data/process improvements and network analytics	Growth component - to reduce the frequency of water service pressure/flow disruptions
Water Supply - Renewals - Glenorchy	Pre-Planning & Design / Capex Business Case Development
Glenorchy Water Supply Upgrades - bores	Earthquake shutoff valves - Glenorchy
Glenorchy Water Main - Reservoir Bypass	New Glenorchy Water Reservoir
Glenorchy Water Standby generator	Glenorchy Water Supply - Accuflow
Renewal of Resource Consent	Carry out Cryptosporidium monitoring as per DWSNZ
Bores 1 & 2 upgrades (phased)	Glenorchy Water Supply Upgrades - Treatment

**Total Capital Expenditure** 2018/19 to 2032/33: \$6,986,746

**Lake Hayes Water Supply**

Number of properties connected by SUIP (Separate Use or Inhabited Part): 1,772

**Lakes Hayes**



Drinking Water Standards (2016/17):

Parameter	Compliance
Bacterial	Yes
Protozoa	Yes

**Shotover Country**



Water Grading (2017): This scheme is not graded  
Drinking Water Standards (2016/17):

Parameter	Compliance
Bacterial	Yes
Protozoa	Yes

**Source/Intake** Lakes Hayes - 2 bores      Lake Hayes Estate – 1 bore (not currently used)      Shotover Country – 1bore

**Treatment** Lakes Hayes – UV, chlorination and pH correction      **Treatment** Shotover Country – UV, chlorination and cartridge filtration

Production Volume (m3/day)	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Average Volume:	713	617	607	653	658	724
Peak Volume:	2,205	2,299	2,219	2,269	1,960	2,450
Peak Factor:	3.09	3.73	3.66	3.48	2.98	3.38

Numbers have changed since 2017 AMP due to improved data processes/understanding.

**Resource Consent for Lake Hayes**

Expiry: 20<sup>th</sup> May 2027

**Current water take limits**

40 L/s  
2,200 m3/day  
15,400 m3/week

**Resource Consent for Lake Hayes Estate**

Expiry: 23<sup>rd</sup> April 2039

**Current water take limits**

2.2 L/s  
690 m3/day  
21,390 m3/month  
251,850 m3/year

**Resource Consent for Shotover Country**

Expiry: 1<sup>st</sup> February 2045

**Current water take limits**

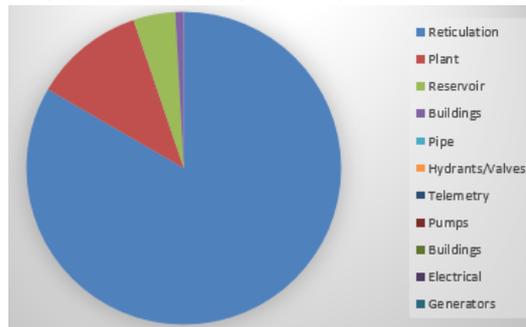
65 L/s  
3,219 m3/day  
35,643 m3/month  
419,494 m3/year

Asset Type (Lake Hayes)	Units	Water
Hydrants	No.	215
Meters	No.	258
Reticulation	Km.	40.4
Rising Mains	Km.	4.3
Valves	No.	1,225
Pump Station Facilities	No.	4
Storage/Reservoirs Facilities	No.	3
Water Sources	No.	3
Treatment Plant Facilities	No.	3

Asset Type (Shotover Country)	Units	Water
Hydrants	No.	63
Meters	No.	0
Reticulation	Km.	21.9
Rising Mains	Km.	1.3
Valves	No.	867
Pump Station Facilities	No.	0
Storage/Reservoirs Facilities	No.	0
Water Sources	No.	0
Treatment Plant Facilities	No.	0

\* Significance assets yet to be vested in Council

**Network Value \$9,384,558      2016 Current Asset Book Value**



**Key Strategic Issues:**

\*QLDC Infrastructure Strategy 2015-2045. "Providing safe drinking water is important to maintaining public health and compliance with legislation, as well as protecting the districts tourist based economy."

\*Regional Plan for Water:

- To provide for the water needs of Otago's primary and secondary industries, and community domestic water supplies
- ORC are going to consult on water allocation in the Arrow catchments

**Growth and Development**

Usually Resident Population:

From 3,339 in 2018 to 5,213 by 2033

(Lakes Hayes & Lake Hayes South Figures only)

Total Visitors – Peak Day:

From 2,374 in 2018 to 3,633 by 2033

### Significant Expenditure Projects

Asset Management improvements: Policy, documentation, data/process improvements and network analytics  
Water Supply - Renewals – Lake Hayes  
Lake Hayes Estate Water Metering  
Lake Hayes Water Supply Capacity Upgrade  
Lake Hayes Estate WS - Additional Capacity for Shotover Country  
Ladies Mile Reservoir

Growth component - to reduce the frequency of water service pressure/flow disruptions  
Pre-Planning & Design / Capex Business Case Development  
Water Supply Renewals - Reticulation  
Arrowtown - Lakes Hayes Water Supply Connection  
Radiological & Crypto Monitoring (Water Safety Plan Reviews)  
Renewal of Resource Consent

**Total Capital Expenditure** 2018/19 to 2032/33: \$5,251,383

**Project Shotover Treatment Plant**



**Schemes Supplied:** Arrowtown, Arthurs Point, Queenstown, Lake Hayes (inc Lake Hayes Estate) and Shotover Country

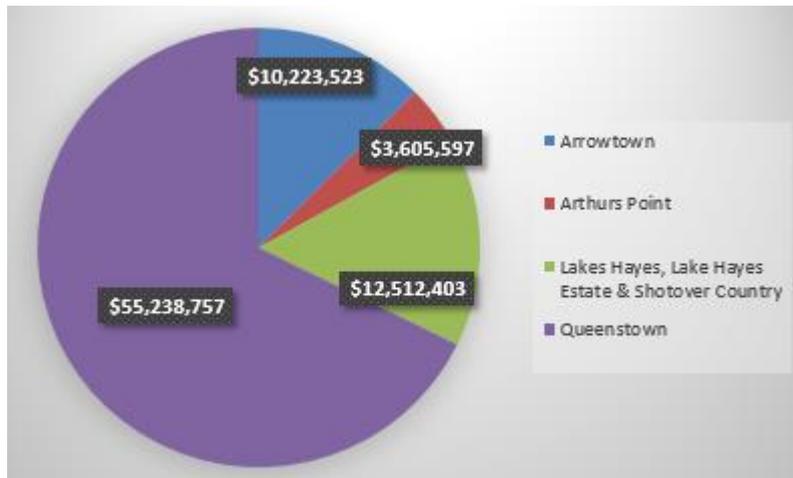
**Type of System:** Combined MLE plant and Pond system with UV disinfection

Wastewater Volume (m3/day)	2015	2016	2017	
	Average Volume:	9,549	9,378	9,501
	Peak Volume:	11,896	12,313	12,042

**Flow Discharge Limit:** The volume of treated wastewater discharged shall not exceed:  
 (a) an annual average flow of 9,285 cubic metres per day  
 (b) a peak season wet weather flow maximum of 26,672 cubic metres per day

**Resource Consent:** Expiry: 31<sup>st</sup> December 2022      **Discharge to:** Water  
 Expiry: 31<sup>st</sup> December 2031                      **Discharge to:** Land

**Network Value** \$81,580,280                      **2016 Current Asset Cost**



**Growth and Development**                      Under development – coming from Demand Forecasting Model

**Significant Expenditure Projects**  
 Project Shotover - Disposal Field                      Project Shotover Upgrade - Stage 3

**Total Capital Expenditure** 2018/19 to 2032/33: \$25,939,600

**Queenstown Wastewater Collection Scheme**



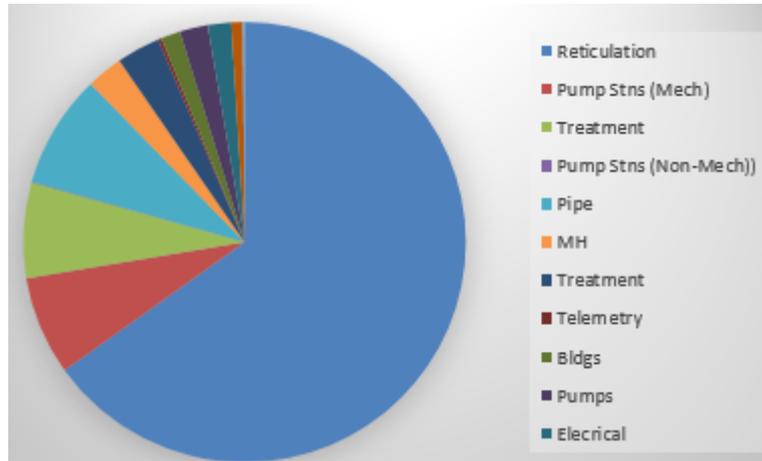
Number of connections in scheme: 11,757

**Treatment Plant : Project Shotover**

Asset Type	Units	Water
Mains	Km	119
Rising Mains	Km	16
Valves	No.	91
Pump Stations	No.	13

**Network Value** \$55,238,757

**2016 Current Asset Cost**



**Growth and Development**

Under development – coming from Demand Forecasting Model

**Significant Expenditure Projects (>\$4M)**

CBD to Frankton Reticulation	Project Shotover Upgrade - Stage 4
Wastewater - Renewals - Queenstown	Wastewater - Asset Management Improvements
Recreation Ground Pump Station - Stage 1	
WW - Growth Component For Projects Beyond LTP (2025)	

**Total Capital Expenditure** 2018/19 to 2032/33: \$97,311,782

**Arthurs Point Collection Scheme**



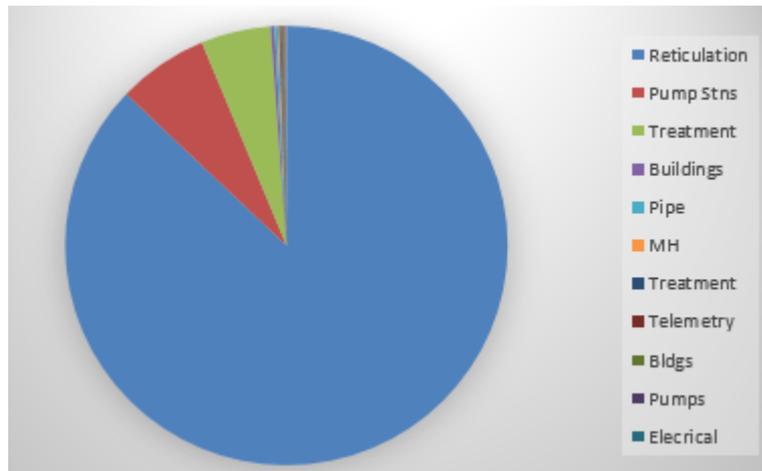
Number of connections in scheme: 628

**Treatment Plant : Project Shotover**

Asset Type	Units	Water
Mains	Km	9.8
Rising Mains	Km	2.2
Valves	No.	6
Pump Stations	No.	2

**Network Value** \$3,605,597

**2016 Current Asset Cost**



**Significant Expenditure Projects**

Wastewater - Asset Management Improvements	WW - Growth Component For Projects Beyond LTP (2
Wastewater - Renewals - Arthurs Point	Arthurs Point Scheme Design
Edith Cavell Bridge to Arthurs Point PS Trunk Main	Project Shotover Upgrade - Stage 4

**Total Capital Expenditure** 2018/19 to 2032/33: \$2,970,457

**Lake Hayes (inc Lake Hayes Estate) & Shotover Country Wastewater Collection Scheme**

Lake Hayes & Shotover Country combined number of connections: 1,251

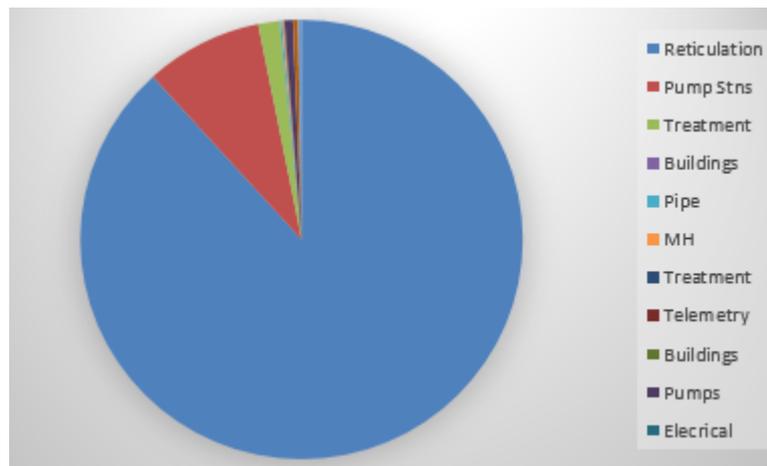


**Treatment Plant : Project Shotover**

Asset Type	Units	Water
Mains	Km	40
Rising Mains	Km	17
Valves	No.	23
Pump Stations	No.	11

**Network Value** \$12,512,402

**2016 Current Asset Cost**



**Significant Expenditure Projects**

Wastewater - Renewals - Lake Hayes

Wastewater - Asset Management Improvements

Project Shotover Upgrade - Stage 4

WW - Growth Component For Projects Beyond LTP (2

Ladies Mile HIF

**Total Capital Expenditure** 2018/19 to 2032/33: \$5,706,642

**Arrowtown Wastewater Collection Scheme**



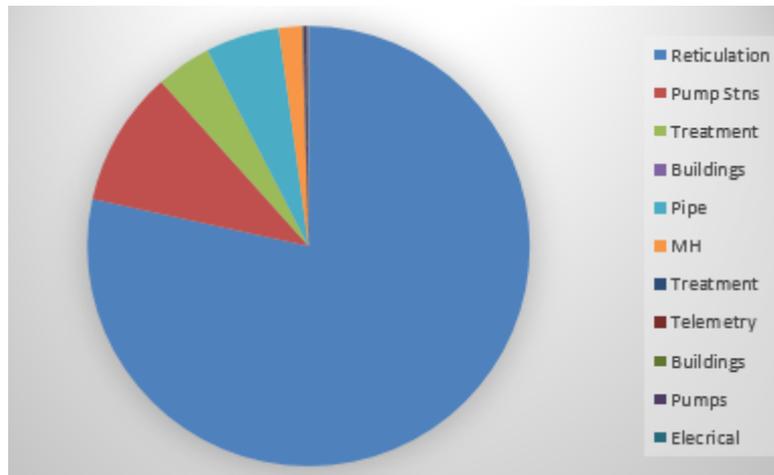
Number of connections in scheme: 1,539

**Treatment Plant : Project Shotover**

Asset Type	Units	Water
Mains	Km	26
Rising Mains	Km	2.9
Valves	No.	1
Pump Stations	No.	4

**Network Value** \$10,223,523

**2016 Current Asset Cost**



**Significant Expenditure Projects**

Wastewater - Renewals - Arrowtown  
 Wastewater - Asset Management Improvements  
 Project Shotover Upgrade - Stage 4

WW - Growth Component For Projects Beyond LTP (2  
 Arrowtown - Scheme Design

**Total Capital Expenditure** 2018/19 to 2032/33: \$7,876,452

**Wanaka Collection System and Project Pure Treatment Plant**

Number of connections in scheme: 6,185



**Type of System:** SBR Plant with UV disinfection.

Wastewater Volume (m3/day)	2013	2014	2015	2016
	<b>Average Volume:</b> 2,760	2,923	2,998	3,126
	<b>Peak Volume:</b> 4,949	4,727	4,742	5,091

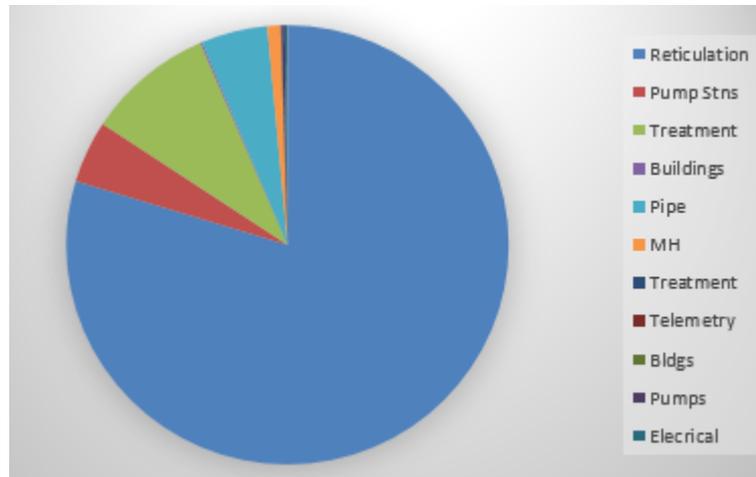
**Flow Discharge Limit:** Volume of wastewater discharged to the disposal field shall not exceed 26,400 cubic metres per calendar day, at a maximum discharge loading rate per each rapid infiltration trench of 2,000 millimetres per calendar day

**Resource Consent** Expiry: 30<sup>th</sup> September 2041      **Discharge to:** Land

Asset Type	Units	Water
Mains	Km	121.2
Rising Mains	Km	12.2
Valves	No.	86
Pump Stations	No.	19

**Network Value** \$55,951,044

**2016 Current Asset Cost**



**Growth and Development**

Under development – coming from Demand Forecasting Model

**Significant Expenditure Projects**

Wastewater - Renewals - Wanaka  
 Wastewater - Asset Management Improvements  
 Project Pure Treatment Upgrade

WW - Growth Component For Projects Beyond LTP (2)  
 Construction of New Rata St Wastewater PS  
 Project Pure (Treatment Upgrades) Stage 3

**Total Capital Expenditure** 2018/19 to 2032/33: \$45,451,888

**Hawea Wastewater Collection and Treatment Scheme**



**Areas Supplied:** Hawea Township  
 Number of connections in scheme: 638

**Type of System:** Pond system

Wastewater Volume (m3/day)	2013	2014	2015	2016	2017	
	<b>Average Volume:</b>	207	220	222	239	270
	<b>Peak Volume:</b>	444	426	399	431	605

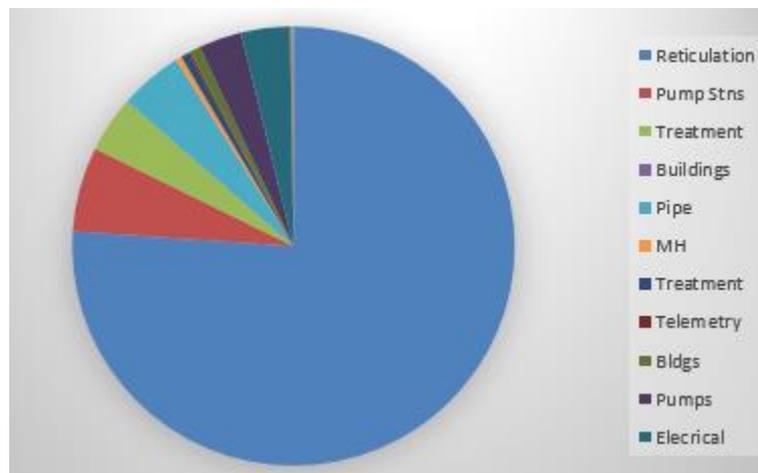
**Flow Discharge Limit:** The volume of effluent discharged shall not exceed 775 cubic metres per day

**Resource Consent** Expiry: 12<sup>th</sup> November 2022      **Discharge to:** Land – cut and carry system

Asset Type	Units	Water
Mains	Km	18
Rising Mains	Km	2.7
Valves	No.	10
Pump Stations	No.	5

**Network Value** \$6,711,376

**2016 Current Asset Cost**



**Growth and Development**

Under development – coming from Demand Forecasting Model

**Significant Expenditure Projects**

Wastewater - Renewals - Hawea	WW - Growth Component For Projects Beyond LTP (2
Wastewater - Asset Management Improvements	Hawea Scheme Design
Hawea Wastewater Treatment Upgrade Investigation and Construction	Nichol St Pump Station Upgrade
New Resource Consent - Makarora	

**Total Capital Expenditure** 2018/19 to 2032/33: \$9,462,250

**Cardrona Wastewater Treatment Scheme**



Number of connections in scheme: TBA

**Type of System:** Fixed Activated Sludge Treatment system

**Flow Discharge Limit:** The volume of effluent discharged shall not exceed 34 cubic metres per day

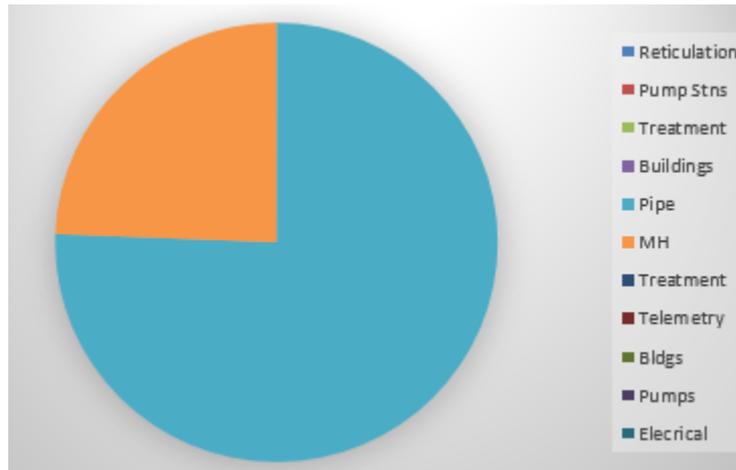
**Resource Consent** Expiry: 1<sup>st</sup> June 2021

**Discharge to:** Land

Asset Type	Units	Water
Mains	Km	TBA
Rising Mains	Km	TBA
Valves	No.	TBA
Pump Stations	No.	TBA

**Network Value** \$247,810

**2016 Current Asset Cost**



**Growth and Development**

Under development – coming from Demand Forecasting Model

**Significant Expenditure Projects**

Cardrona Scheme Design  
 Renewal of Resource Consent - Cardrona Wastewater - Renewals - Cardrona

Cardrona New Wastewater Scheme  
 WW - Growth Component For Projects Beyond LTP (2 Wastewater - Renewals - Cardrona 2

**Total Capital Expenditure** 2018/19 to 2032/33: \$5,962,755

**Luggate Wastewater Collection Scheme**



Number of connections in scheme: 62

**Resource Consent** Expiry: 30<sup>th</sup> June 2021

**Discharge to:** Land

**Treatment Plant:** Package treatment plant called a Rotating Biological Contactor (RBC). Vested January 2018.

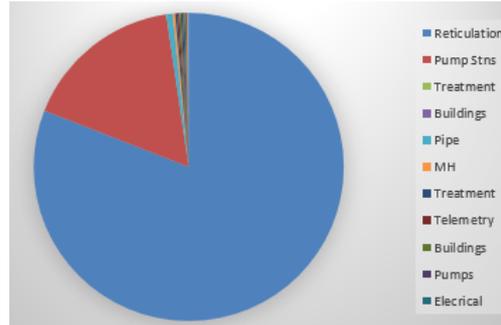
**Wastewater Volume (m3/day)**

	2013	2014	2015	2016
<b>Average Volume:</b>	33	24	38	34
<b>Peak Volume:</b>	58	31	47	44

Asset Type	Units	Water
<b>Mains</b>	Km	2.9
<b>Rising Mains</b>	Km	0.7
<b>Valves</b>	No.	0
<b>Pump Stations</b>	No.	5

**Network Value** \$1,108,213

**2016 Current Asset Cost**



**Significant Expenditure Projects**

WW - Growth Component For Projects Beyond LTP (2025)  
 Wastewater - Asset Management Improvements  
 Luggate Scheme Design

Wastewater - Renewals - Luggate

Luggate, Upgrade Treatment Plant / Connect to Proje  
 Luggate Reticulation - extension into unserved area.

**Total Capital Expenditure** 2018/19 to 2032/33: \$5,377,081

### 3.3 NETWORK MANGEMENT

#### 3.3.1 Organisation Restructure

In response to various factors, including a report in 2013 from the Office of the Auditor General, in which QLDC were cited as an example of bad asset management, QLDC underwent a large organisational change. It was identified that planning and asset management need to improve, and this led to a restructure within Property and Infrastructure. An activity based matrix approach was developed which brought together staff who undertook similar roles across different disciplines. This enables cross-pollination and sharing with a key focus in removing planning staff away from operational and reactive works, freeing time for forward thinking and planning. Contract management is a key area where this has seen benefits; there has been a move to using a standardised contract form NZS3917 across all contracts, which assists better contract management across all portfolios as staff can build better understanding of the contract form. For further information on procurement and contract management, refer to Section Five Asset Management Enablers. Table 3 identifies the structure format.

**Table 3 QLDC Property & Infrastructure Structure**

General Manager (Property & Infrastructure)				
Three Waters	Asset Planning	Operations & Maintenance	Project Delivery	Strategy and Performance
Transport				
Parks & Open Space				
Solid Waste				
Property				

#### 3.3.2 Organisational Background /Context

To give context to the restructure there were underlying issues which supported the need for change.

- Concerns with perpetual turnover of staff in the past has led to a lack of continuity and longevity with a material reduction in corporate knowledge and the over-reliance on consultants. While it is unlikely there will be a huge change in the demographic and transient nature of staff, to counter this at a Corporate level, QLDC are trying to retain staff by becoming a more attractive employer and to develop and document processes, focus on data and systems rather than a reliance on internal knowledge and craft.
- QLDC had become reliant on consultants and this had led to a limited working corporate knowledge of the condition of our roads and what investment was required to achieve outcomes.

### 3.4 URBAN BOUNDARIES

“Urban environment” is defined in the National Policy Statement - Urban Development Capacity 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

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

In the Wakatipu 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-UDC. 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-UDC definition of 'urban environment'. This includes Arrowtown given its location within

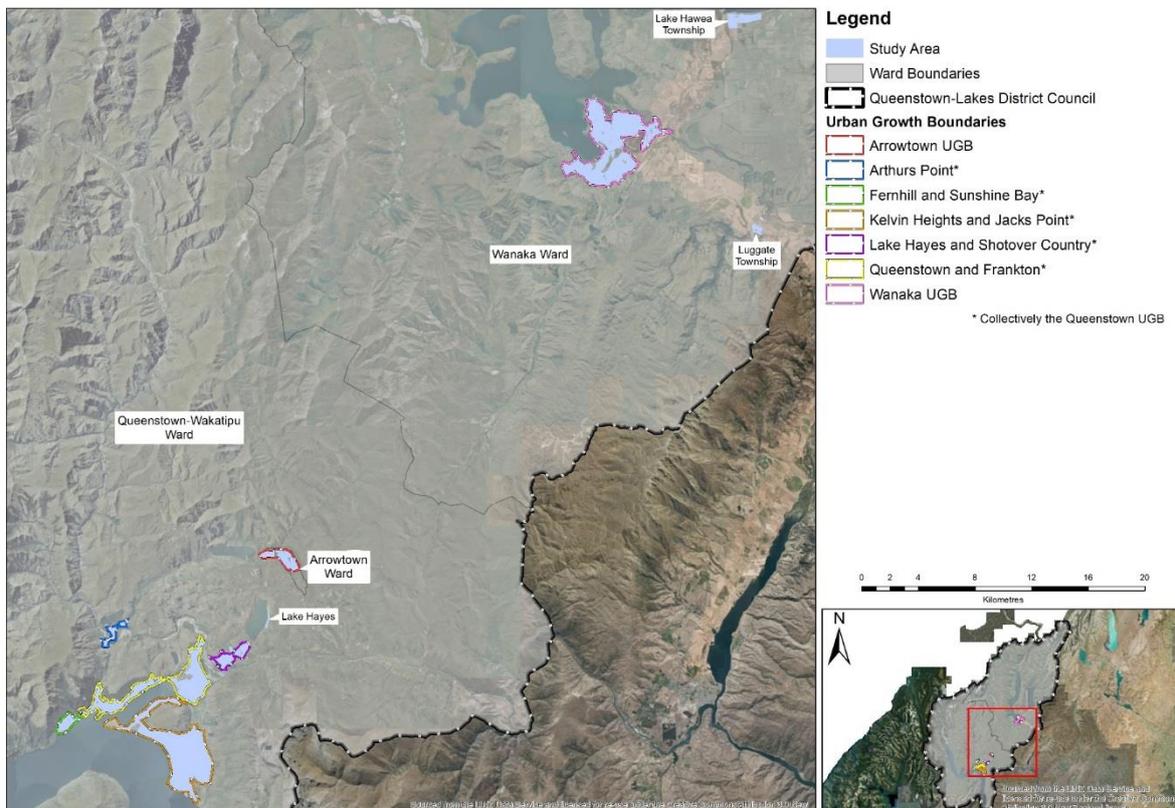
the Wakatipu Basin and that practically it functions as part of this same Queenstown 'urban environment'. This urban environment falls within the extent of the Queenstown-Wakatipu and Arrowtown Wards (SNZ), which are collectively referred to as the Wakatipu Ward for this report.

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 Wanaka, and in the Council's view form part of the Wanaka urban environment. However, Makarora does not function as part of Wanaka and is excluded.

The above approach helps define the urban environment for the purpose of the BDCA (and HDCA). 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 Hawea (but excluding Hawea Flat), Luggate and also the Low Density Residential (LDR) zone adjacent to Lake Hayes.

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<sup>4</sup>. 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 acknowledge that 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.

Figure 43 QLDC NPS-UDC Urban Environment Study Area



<sup>4</sup> Capacity outside of the urban environment has not been modelled in any detail but is discussed at a high level.

### 3.5 CONSENTS

Further to the legislation discussed in section 2, 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 the 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 in section 2.3, the Department of Internal Affairs has introduced mandatory non-financial performance measures. These measures are reported in QLDCs Annual Report, the latest beginning in 2016/17. Two of these measures are in direct correlation to resource consents:

#### **Wastewater Performance measure two (management of environmental impacts):**

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

- a) abatement notices;
- b) infringement notices;
- c) enforcement orders; and
- d) 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.

#### **Stormwater Performance measure two (management of environmental impacts):**

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

- e) abatement notices; and
- f) infringement notices; and
- g) enforcement orders; and
- h) 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.

Tables 4 through 7 report all current QLDC consents in relation to the Three Waters activities:

Table 4 Current QLDC Water Take Consents

RM14.278.01	19/01/2050	HAWEA, APPROXIMATELY 130 METRES NORTH EAST FLORA DORA PARADE AND CAPELL AVENUE	TO TAKE AND USE GROUNDWATER FROM THE HAWEA BASIN AQUIFER FOR THE PURPOSE OF HAWEA COMMUNITY WATER SUPPLY
2008.235	1/11/2043	LAKE HAWEA, APPROXIMATELY 240 METRES NORTH WEST OF THE INTERSECTION OF ACCESSWAY ROAD AND DOMAIN ROAD, HAWEA.	TO TAKE AND USE WATER AS PRIMARY ALLOCATION FOR THE PURPOSE OF COMMUNITY SUPPLY.
98018	1/03/2018	GLENDHU BAY	TO TAKE 8 LITRES PER SECOND FROM LAKE WANAKA FOR THE PURPOSE OF SUPPLYING GLENDHU BAY MOTOR CAMP WITH DOMESTIC WATER.
2008.459	5/11/2043	LAKE WANAKA, IMMEDIATELY TO THE SOUTH EAST OF THE WATERFALL CREEK RECREATION RESERVE, APPROXIMATELY 680 METRES NORTH WEST OF THE INTERSECTION OF SARGOOD DRIVE AND SUNRISE BAY DRIVE, WANAKA.	TO TAKE AND USE WATER AS PRIMARY ALLOCATION FROM LAKE WANAKA FOR THE PURPOSE OF COMMUNITY SUPPLY.
2008.46	5/11/2043	LAKE WANAKA, AT BEACON POINT, APPROXIMATELY 1.2 KILOMETRES NORTH EAST OF THE INTERSECTION OF MT GOLD PLACE AND MINARET RIDGE, WANAKA.	TO TAKE AND USE WATER AS PRIMARY ALLOCATION FROM LAKE WANAKA FOR THE PURPOSE OF COMMUNITY SUPPLY.
95632	1/09/2025	ROYS BAY, WANAKA.	TO TAKE 13,515 CUBIC METRES OF WATER PER DAY FROM LAKE WANAKA FOR THE PURPOSE OF A COMMUNITY SUPPLY FOR WANAKA AND ALBERT TOWN COMMUNITIES.
99378	22/09/2019	BORE ON WESTERN CORNER OF WANAKA AIRPORT PROPERTY. (WELL NO. G400103)	TO TAKE 240,000 LITRES OF GROUNDWATER PER DAY AT A MAXIMUM RATE OF 2.8 LITRES PER SECOND FOR THE PURPOSE OF IRRIGATION, PUBLIC AMENITY SUPPLY AND DOMESTIC SUPPLY TO LEASEHOLD SITES WITHIN THE WANAKA AIRPORT PROPERTY.
RM11.177.01	30/08/2036	WANAKA, APPROXIMATELY 900 METRES NORTH WEST OF THE INTERSECTION OF BALLANTYNE ROAD AND THE WANAKA-LUGGATE HIGHWAY (STATE HIGHWAY 6).	TO TAKE AND USE GROUNDWATER FROM THE WANAKA BASIN CARDRONA GRAVEL AQUIFER FOR THE PURPOSE OF COMMUNAL DOMESTIC SUPPLY, COMMERCIAL AND INDUSTRIAL USE.
2009.158	2/12/2044	LOCATION OF POINT OF ABSTRACTIONS: 2 BORES, APPROXIMATELY 410 METRES SOUTHEAST OF THE INTERSECTION OF MULL STREET AND INVINCIBLE DRIVE, GLENORCHY.	TO TAKE AND USE GROUNDWATER FOR THE PURPOSE OF COMMUNITY SUPPLY.
2008.464	14/11/2043	APPROXIMATELY 160 METRES NORTH EAST OF THE INTERSECTION OF LUGGATE-CROMWELL ROAD (STATE HIGHWAY 6) AND PISA ROAD, LUGGATE.	TO TAKE AND USE GROUNDWATER FOR THE PURPOSE OF COMMUNITY SUPPLY.
2001.822	20/05/2027	RUTHERFORD ROAD, LAKE HAYES	FOR THE PURPOSE OF A COMMUNITY WATER SUPPLY
RM14.077	23/04/2039	LAKE HAYES, APPROXIMATELY 445 METRES SOUTH EAST OF THE INTERSECTION OF WIDGEON PLACE, ONSLOW ROAD, QUILL STREET AND RERE ROAD, QUEENSTOWN	TO TAKE AND USE GROUNDWATER FOR THE PURPOSE OF COMMUNITY WATER SUPPLY

RM14.313	1/02/2045	QUEENSTOWN, APPROXIMATELY 540 METRES SOUTH SOUTHEAST OF THE INTERSECTION OF OLD SCHOOL ROAD AND FRANKTON-LADIES MILE HIGHWAY (STATE HIGHWAY 6)	TO TAKE AND USE GROUND WATER FOR THE PURPOSE OF COMMUNITY SUPPLY
2007.665	1/02/2042	APPROXIMATELY 500 METRES SOUTH WEST OF THE INTERSECTION OF FERNHILL ROAD AND GLENORCHY-QUEENSTOWN ROAD, QUEENSTOWN	TO TAKE AND USE WATER AS PRIMARY ALLOCATION FROM LAKE WAKATIPU FOR THE PURPOSE OF COMMUNITY SUPPLY.
2004.552	1/04/2040	LAKE WAKATIPU, KELVIN HEIGHTS INTAKE STRUCTURE, PENINSULA ROAD QUEENSTOWN	TO TAKE AND USE SURFACE WATER FOR THE PURPOSE OF A COMMUNITY WATER SUPPLY
2005.762	1/12/2042	ADJACENT TO THE SHOTOVER RIVER, APPROXIMATELY 500 METRES UPSTREAM OF THE EDITH CAVELL BRIDGE, ARTHURS POINT, QUEENSTOWN.	TO TAKE AND USE GROUNDWATER FOR THE PURPOSE OF A COMMUNITY WATER SUPPLY.
2007.049	1/10/2021	ARROWTOWN	TO TAKE AND USE SURFACE WATER AS PRIMARY ALLOCATION FROM THE CONFLUENCE OF BUSH CREEK AND THE ARROW RIVER.
2007.41	1/10/2021	BUSH CREEK, APPROXIMATELY 3 KILOMETRES UPSTREAM OF THE CONFLUENCE OF BUSH CREEK AND THE ARROW RIVER.	TO TAKE UP TO 61.8 LITRES PER SECOND OF WATER FROM BUSH CREEK FOR THE PURPOSE OF TOWN SUPPLY.

Table 5 Current QLDC Bore Consents

RM16.143.01	NO EXPIRY	<p>SITE 1: CARDRONA, APPROXIMATELY 280 METRES SOUTH OF THE INTERSECTION OF CARDRONA VALLEY ROAD AND PROSPECTORS LANESITE 2: CARDRONA, APPROXIMATELY 430 METRES SOUTH OF THE INTERSECTION OF CARDRONA VALLEY ROAD AND PROSPECTORS LANESITE 3: CARDRONA, APPROXIMATELY 350 METRES SOUTH SOUTHEAST OF THE INTERSECTION OF CARDRONA VALLEY ROAD AND PROSPECTORS LANESITE 4: CARDRONA, APPROXIMATELY 670 METRES SOUTH SOUTHEAST OF THE INTERSECTION OF CARDRONA VALLEY ROAD AND PROSPECTORS LANESITE 5: CARDRONA, APPROXIMATELY 750 METRES SOUTH SOUTHWEST OF THE INTERSECTION OF CARDRONA VALLEY ROAD AND PROSPECTORS LANESITE 6: CARDRONA, APPROXIMATELY 840 METRES SOUTH SOUTHEAST OF THE INTERSECTION OF CARDRONA VALLEY ROAD AND PROSPECTORS LANESITE 7: CARDRONA, APPROXIMATELY 770 METRES SOUTH SOUTHWEST OF THE INTERSECTION OF CARDRONA VALLEY ROAD AND PROSPECTORS LANESITE 8: CARDRONA, APPROXIMATELY 1 KILOMETRE SOUTH SOUTHWEST OF THE INTERSECTION OF CARDRONA VALLEY ROAD AND PROSPECTORS LANESITE 9: CARDRONA, APPROXIMATELY 200</p> <p>Refer to CSVUE for full text</p>	TO DRILL UP TO NINE DRILL HOLES AND TO CONSTRUCT UP TO THREE BORES FOR THE PURPOSE OF ACCESSING GROUNDWATER
RM14.224.01		QUEENSTOWN, APPROXIMATELY 92 METRES NORTH EAST OF THE INTERSECTION OF THE TUCKER BEACH ROAD AND SHOTOVER DELTA ROAD	TO CONSTRUCT UP TO SIX BORES FOR THE PURPOSE OF ACCESSING GROUNDWATER

RM14.254.01	QUEENSTOWN, APPROXIMATELY 520 METRES SOUTH EAST OF THE INTERSECTION OF OLD SCHOOL ROAD AND FRANKTON-LADIES MILE HIGHWAY (STATE HIGHWAY 6)	TO CONSTRUCT UP TO 6 BORES FOR THE PURPOSE OF ACCESSING GROUNDWATER
RM14.223.01	QUEENSTOWN, APPROXIMATELY 500 METRES SOUTH EAST OF THE INTERSECTION OF ONSLOW ROAD AND QUILL STREET	TO CONSTRUCT UP TO SIX BORES FOR THE PURPOSE OF ACCESSING GROUNDWATER  FOR A UNLIMITED TERM
RM13.072.01	ARTHURS POINT, APPROXIMATELY 370 METRES NORTH WEST OF THE INTERSECTION OF OXENBRIDGE TUNNEL ROAD AND ARTHURS POINT ROAD, QUEENSTOWN	TO CONSTRUCT A BORE FOR THE PURPOSE OF ACCESSING GROUNDWATER
RM11.141.01	Queenstown, approximately 200 metres west of the intersection of Lake Avenue and Birse Street	QUEENSTOWN, APPROXIMATELY 200 METRES WEST OF THE INTERSECTION OF LAKE AVENUE AND BIRSE STREET
RM11.140.01	WANAKA, APPROXIMATELY 895 METRES NORTHWEST FROM THE INTERSECTION OF RUBY ISLAND ROAD AND MOUNT ASPIRING ROAD	TO CONSTRUCT UP TO 2 BORES FOR THE PURPOSE OF ACCESSING GROUNDWATER
RM11.140.02	WANAKA, APPROXIMATELY 70 METRES WEST FROM THE INTERSECTION OF LAKESIDE ROAD AND TRAMORE STREET	TO CONSTRUCT UP TO 2 BORES FOR THE PURPOSE OF ACCESSING GROUNDWATER
RM11.027.01	Beacon Point Wanaka, approximately 2.3 kilometres north west of the intersection of Outlet Road and Aubrey Road Pembroke Park Wanaka, approximately 160 metres south west of the intersection of Dungarvon Street and Ardmore Street Scotts Beach, Lake Hawea, approximately 150 metres south east of the intersection of Capell Avenue and Floradora Parade	TO CONSTRUCT UP TO 10 BORES FOR THE PURPOSE OF GROUND WATER INVESTIGATION
2010.246	WANAKA, APPROXIMATELY 945 METRES EAST SOUTHEAST OF THE INTESECTION OF WANAKA-MOUNT ASPIRING ROAD AND MOTATAPU ROAD, WANAKA	TO CONSTRUCT A BORE FOR A WET WELL PUMP STATION AT THE GLENDHU BAY WATER SUPPLY INTAKE PIPELINE
2010.115	APPROXIMATELY 120 METRES NORTHEAST OF THE INTERSECTION OF HAWEA CONTROL STRUCTURE ROAD AND DOMAIN ROAD, LAKE HAWEA	TO CONSTRUCT A BORE FOR THE PURPOSE OF ACCESSING GROUNDWATER FOR AN UNLIMITED TERM
2010.116	APPROXIMATELY 460 METRES EAST NORTHEAST OF THE INTERSECTION OF MUIR ROAD AND CHARLES COURT, LAKE HAWEA	TO CONSTRUCT A BORE FOR THE PURPOSE OF ACCESSING GROUNDWATER FOR AN UNLIMITED TERM
2010.117	APPROXIMATELY 130 METRES EAST OF THE INTERSECTION OF FLORA DORA PARADE AND SCOTTS BEACH ROAD, LAKE HAWEA	TO CONSTRUCT A BORE FOR THE PURPOSE OF ACCESSING GROUNDWATER FOR AN UNLIMITED TERM
2008.462	APPROXIMATELY 212 METRES NORTHEAST OF THE INTERSECTION OF WILLOW PLACE AND PENINSULA ROAD, QUEENSTOWN.	TO CONSTRUCT A BORE FOR THE PURPOSE OF CONSTRUCTING A WET WELL FOR AN UNLIMITED TERM.

2008.219		IMMEDIATELY WEST OF THE INTERSECTION OF LAKESIDE ROAD AND AUBREY ROAD, WANAKA.	TO CONSTRUCT A BORE FOR THE PURPOSE OF DEWATERING A CONSTRUCTION SITE.
2008.142		JUBILEE PARK, APPROXIMATELY 180 METRES SOUTH EAST OF THE INTERSECTION OF VEINT CRESCENT AND PARK STREET, QUEENSTOWN.	FOR THE PURPOSE OF GEOTECHNICAL INVESTIGATION FOR AN UNLIMITED TERM.
2007.649		AT FOUR SITES AROUND THE INTERSECTION OF COAL-PIT ROAD AND GIBBSTON BACK ROAD INTERSECTION, GIBBSTON.	TO CONSTRUCT UP TO FOUR BORES FOR THE PURPOSE OF MONITORING GROUNDWATER.
2007.647		THE CONFLUENCE OF THE KAWARAU RIVER AND THE SHOTOVER RIVER APPROXIMATELY 1.8 KILOMETRES SOUTH EAST OF THE INTERSECTION OF GLENDA DRIVE AND MARGARET PLACE, LOWER SHOTOVER, QUEENSTOWN	TO CONSTRUCT A BORE FOR THE PURPOSE OF INVESTIGATING AND MONITORING A RIVER DELTA.
2007.136		APPROXIMATELY 90 METRES SOUTH-EAST OF THE INTERSECTION OF KENT STREET AND GLOUCESTER STREET, KINGSTON	TO CONSTRUCT A BORE FOR THE PURPOSE OF TAKING GROUNDWATER
2007.144		WATER SUPPLY BORE: APPROXIMATELY 100 METRES EAST OF THE INTERSECTION OF LUGGATE ROAD AND BALLANTYNE ROAD, ALBERT TOWN, WANAKA.	TO CONSTRUCT A BORE FOR THE PURPOSE OF TAKING GROUNDWATER TO CONSTRUCT TWO BORES FOR THE PURPOSE OF GROUNDWATER MONITORING, FOR AN UNLIMITED TERM.
2004.981		APPROXIMATELY 750 METRES WEST OF THE CLUTHA RIVER AND 1250 METRES NORTH OF STATE HIGHWAY 6, WANAKA AERODROME, WANAKA	TO CONSTRUCT A BORE FOR THE PURPOSE OF GROUNDWATER MONITORING
2004.982		APPROXIMATELY 750 METRES WEST OF THE CLUTHA RIVER AND 1250 METRES NORTH OF STATE HIGHWAY 6, WANAKA AERODROME, WANAKA	TO CONSTRUCT A BORE FOR THE PURPOSE OF GROUNDWATER MONITORING FOR AN UNLIMITED TERM
2007.328		APPROXIMATELY 170 METRES SOUTH OF THE INTERSECTION OF STATE HIGHWAY 6 AND VICTORIA FLATS ROAD, GIBBSTON.	TO CONSTRUCT A BORE FOR THE PURPOSE OF TAKING GROUNDWATER.
RM17.280.01		Wanaka, approximately 200 metres north west of the intersection of Marina Access and Lakeside Road	To construct 3 piezometer/monitoring wells for the purpose of geotechnical investigation

Table 6 Current QLDC Wastewater Consents

RM13.215.01	18/03/2044	QUEENSTOWN, APPROXIMATELY 1.2 KILOMETRES SOUTH SOUTHEAST OF THE INTERSECTION OF SHOTOVER DELTA ROAD AND FRANKTON-LADIES MILE HIGHWAY (STATE HIGHWAY 6)	TO DISCHARGE CONTAMINANTS TO AIR FOR THE PURPOSE OF OPERATING THE QUEENSTOWN WASTE WATER TREATMENT PLANT
RM13.215.04	31/12/2022	QUEENSTOWN, APPROXIMATELY 1.2 KILOMETRES SOUTH SOUTHEAST OF THE INTERSECTION OF SHOTOVER DELTA ROAD AND FRANKTON-LADIES MILE HIGHWAY (STATE HIGHWAY 6)	TO DISCHARGE TREATED WASTEWATER TO WATER
RM13.215.03	31/12/2031	QUEENSTOWN, APPROXIMATELY 1.2 KILOMETRES SOUTH SOUTHEAST OF THE INTERSECTION OF SHOTOVER DELTA ROAD AND FRANKTON-LADIES MILE HIGHWAY (STATE HIGHWAY 6)	TO DISCHARGE TREATED WASTEWATER TO LAND

2008.238	18/03/2044	QUEENSTOWN, APPROXIMATELY 1.2 KILOMETRES SOUTH SOUTHEAST OF THE INTERSECTION OF SHOTOVER DELTA ROAD AND FRANKTON-LADIES MILE HIGHWAY (STATE HIGHWAY 6)	TO DISCHARGE TREATED WASTEWATER TO LAND
RM13.073.01	12/03/2043	AREA A: WANAKA AIRPORT, APPROXIMATELY 650 METRES EAST OF THE INTERSECTION OF WANAKA-LUGGATE HIGHWAY (STATE HIGHWAY 6) AND MOUNT BARKER ROAD AREA B: WANAKA AIRPORT, APPROXIMATELY 540 METRES NORTHEAST OF THE INTERSECTION OF WANAKA-LUGGATE HIGHWAY (STATE HIGHWAY 6) AND MOUNT BARKER ROAD AREA C: WANAKA AIRPORT, APPROXIMATELY 655 METRES NORTHEAST OF THE INTERSECTION OF WANAKA-LUGGATE HIGHWAY (STATE HIGHWAY 6) AND MOUNT BARKER ROAD	TO DISCHARGE CONTAMINANTS TO AIR, NAMELY ODOUR AND AEROSOLS, FOR THE PURPOSE OF DISPOSAL OF WASTEWATER FROM THE WANAKA WASTEWATER TREATMENT PLANT BY SPRINKLER IRRIGATION AT WANAKA AIRPORT
RM13.073.02	12/03/2043	AREA A: WANAKA AIRPORT, APPROXIMATELY 650 METRES EAST OF THE INTERSECTION OF WANAKA-LUGGATE HIGHWAY (STATE HIGHWAY 6) AND MOUNT BARKER ROAD AREA B: WANAKA AIRPORT, APPROXIMATELY 540 METRES NORTHEAST OF THE INTERSECTION OF WANAKA-LUGGATE HIGHWAY (STATE HIGHWAY 6) AND MOUNT BARKER ROAD AREA C: WANAKA AIRPORT, APPROXIMATELY 655 METRES NORTHEAST OF THE INTERSECTION OF WANAKA-LUGGATE HIGHWAY (STATE HIGHWAY 6) AND MOUNT BARKER ROAD	TO DISCHARGE TREATED WASTEWATER TO LAND FOR THE PURPOSE OF DISPOSAL OF WASTEWATER FROM THE WANAKA WASTEWATER TREATMENT PLANT
RM16.064.01	1/06/2021	CARDRONA, APPROXIMATELY 140 METRES SOUTH OF THE INTERSECTION OF CARDRONA VALLEY ROAD AND PROSPECTORS LANE	TO DISCHARGE TREATED DOMESTIC AND COMMERCIAL WASTEWATER TO LAND FOR THE PURPOSE OF DISPOSAL OF WASTEWATER FROM THE CARDRONA WASTEWATER TREATMENT PLANT
RM10.308.01	12/11/2022	LAKE HAWEA, APPROXIMATELY 600 METRES SOUTH OF THE INTERSECTION OF DOMAIN ROAD AND CEMETERY ROAD	TO DISCHARGE CONTAMINANTS TO AIR FOR THE PURPOSE OF DISCHARGING TREATED WASTEWATER.
RM10.308.02	12/11/2022	LAKE HAWEA, APPROXIMATELY 600 METRES SOUTH OF THE INTERSECTION OF DOMAIN ROAD AND CEMETERY ROAD	TO DISCHARGE CONTAMINANTS TO LAND FOR THE PURPOSE OF DISCHARGING TREATED WASTEWATER.
2010.24	30/10/2045	GLENDHU BAY CAMPING GROUND, APPROXIMATELY 780 METRES EAST SOUTHEAST OF THE INTERSECTION OF WANAKA-MOUNT ASPIRING ROAD AND MOTATAPU ROAD, WANAKA	TO DISCHARGE ODOUR TO AIR FOR THE PURPOSE OF OPERATING WASTEWATER DISPOSAL SYSTEM.
2010.239	30/10/2045	Glendhu Bay Camping Ground, approximately 780 metres east southeast of the intersection of Wanaka-Mount Aspiring Road and Motatapu Road, Wanaka	TO DISCHARGE TREATED WASTEWATER TO LAND FOR THE PURPOSE OF DISPOSAL OF WASTEWATER FROM GLENDHU BAY CAMPING GROUND.
2005.485	30/09/2041	NORTH-NORTH-WEST OF THE EXISTING WANAKA AIRPORT BUILDING, APPROXIMATELY 1,600 METRES SOUTH-WEST OF THE CLUTHA RIVER/MATA-AU AND 800 METRES NORTH OF STATE HIGHWAY 6, APPROXIMATELY 8 KILOMETRES SOUTH-EAST OF WANAKA AND ALBERT TOWN AND 4 KILOMETRES NORTH-WEST OF LUGGATE.	TO DISCHARGE CONTAMINANTS INTO AIR FROM WASTEWATER TREATMENT, FOR THE PURPOSE OF OPERATING THE WANAKA BASIN WASTEWATER TREATMENT AND DISPOSAL SYSTEM.
2005.484	30/09/2041	NORTH-NORTH-WEST OF THE EXISTING WANAKA AIRPORT BUILDING, APPROXIMATELY 1,600 METRES SOUTH-WEST OF THE CLUTHA RIVER/MATA-AU AND 800 METRES NORTH OF STATE HIGHWAY 6, APPROXIMATELY 8 KILOMETRES SOUTH-EAST OF WANAKA AND ALBERT TOWN AND 4 KILOMETRES NORTH-WEST OF LUGGATE.	TO DISCHARGE TREATED WASTEWATER TO LAND FOR THE PURPOSE OF DISPOSAL OF WASTEWATER FROM THE WANAKA BASIN WASTEWATER TREATMENT AND DISPOSAL SYSTEM.

2003.568	4/03/2019	DEEP CREEK BEACH, SKIPPERS CANYON.	TO DISCHARGE TREATED DOMESTIC SEWAGE EFFLUENT TO LAND FROM ABLUTION FACILITIES FOR THE PURPOSE OF DISPOSAL OF SEPTIC TANK EFFLUENT.
2002.578	1/12/2022	ALBERT TOWN RECREATIONAL RESERVE. APPROXIMATELY 1.38 KILOMETRES SOUTH WEST OF THE INTERSECTION OF LAKE HAWEA-ALBERT TOWN ROAD AND DUBLIN BAY ROAD.	TO DISCHARGE UP TO 5 CUBIC METRES PER DAY OF TREATED SEWAGE TO LAND. FOR THE PURPOSE OF DISPOSING OF SEPTIC TANK EFFLUENT.
94228	1/10/2020	ARROWTOWN-FRANKTON	TO VENT THE ARROWTOWN-FRANKTON SEWER AT FOUR POINTS THROUGH BIOFILTERS AND AT THE FRANKTON SEWAGE TREATMENT PLAN MILLISCREEN GREASE TRAP.

Table 7 Current QLDC Other Consents – watercourse Diversion, Stream Work etc.

RM17.019.01	1/09/2047	Unnamed tributary of Lake Wakatipu, approximately 110 metres north northwest of the intersection of Kent Street and Gloucester Street, Kingston	To disturb the bed of an unnamed tributary of Lake Wakatipu for the purpose of stream maintenance
RM11.163.03	1/07/2046	MATUKITUKI RIVER	TO DIVERT FLOOD WATER WITHIN THE MATUKITUKI RIVER FOR THE PURPOSE OF PROTECTING AN EXISTING ROAD
RM11.005.02	28/02/2036	VON RIVER AND STATION BURN, MT NICHOLAS STATION, VON ROAD APPROXIMATELY 6.5KM SOUTH WEST FROM INTERSECTION WITH MT NICHOLAS-BEACH BAY ROAD, MT NICHOLAS	TO DISCHARGE SEDIMENT TO THE VON RIVER AND STATION BURN FOR THE PURPOSE OF INSTREAM WORKS ASSOCIATED WITH FLOOD PROTECTION WORKS
RM11.005.01	28/02/2036	VON RIVER, MT NICHOLAS STATION, VON ROAD APPROXIMATELY 6.5KM SOUTH WEST FROM INTERSECTION WITH MT NICHOLAS-BEACH BAY ROAD, MT NICHOLAS	TO TEMPORARILY DIVERT THE VON RIVER FOR THE PURPOSE OF FLOOD PROTECTION WORKS.
RM11.005.03	28/02/2036	VON RIVER, MT NICHOLAS STATION, VON ROAD APPROXIMATELY 6.5KM SOUTH WEST FROM INTERSECTION WITH MT NICHOLAS-BEACH BAY ROAD, MT NICHOLAS	TO TEMPORARILY DIVERT THE VON RIVER FOR THE PURPOSE OF FLOOD PROTECTION WORKS.
RM16.110.01	26/08/2041	PT SEC 13 BLK XX SHOTOVER SD	TO DISTURB THE BED OF AN UNNAMED TRIBUTARY OF HORNE CREEK FOR THE PURPOSE OF MAINTAINING OF THE WATER COURSE
RM16.152	4/07/2051	FRANKTON, APPROXIMATELY 325 METRES NORTH WEST OF THE INTERSECTION OF JOE O'CONNELL DRIVE, FRANKTON-LADIES MILE HIGHWAY (STATE HIGHWAY 6) AND HANSEN ROAD	TO DISCHARGE CONTAMINANTS TO AIR FOR THE PURPOSE OF OPERATING A BACK UP GENERATOR
RM11.361	7/02/2027	AN UNNAMED TRIBUTARY OF LAKE WANAKA, GLENDHU BAY, 70 METRES NORTH WEST OF THE INTERSECTION OF THE MOTATAPU AND WANAKA-MOUNT ASPIRING ROADS WANAKA	TO DISTURB THE BED OF AN UNNAMED TRIBUTARY OF LAKE WANAKA FOR THE PURPOSE OF CARRYING OUT MAINTENANCE WORKS. TO DISTURB THE BED OF AN UNNAMED TRIBUTARY OF LAKE WANAKA FOR THE PURPOSE OF CARRYING OUT MAINTENANCE WORKS.

RM11.327.02	12/12/2036	UNNAMED TRIBUTARY OF CARDRONA RIVER, APPROXIMATELY 50 METRES EAST OF THE INTERSECTION OF CARDRONA VALLEY ROAD AND PRINGLES CREEK ROAD, CARDRONA	TO DISCHARGE CONTAMINANTS, NAMELY SEDIMENT, TO AN UNNAMED TRIBUTARY OF CARDRONA RIVER FOR THE PURPOSE OF DRAINAGE WORKS AND CHANNEL CLEARANCE
2007.638	25/01/2043	AN UNNAMED TRIBUTARY OF THE CLUTHA RIVER/MATA-AU, APPROXIMATELY 1 KILOMETRE NORTH OF THE INTERSECTION OF AUBREY ROAD AND STATE HIGHWAY 6, ALBERT TOWN, WANAKA	TO DAM AN UNNAMED TRIBUTARY OF THE CLUTHA RIVER/MATA-AU FOR THE PURPOSE OF ESTABLISHING A STORMWATER MANAGEMENT SYSTEM
RM14.311.01	1/12/2024	LAKE WAKATIPU, APPROXIMATELY 150 METRES SOUTH WEST OF THE INTERSECTION OF BEACH STREET AND PARK STREET, QUEENSTOWN	TO DISTURB AND PLACE A STRUCTURE ON THE BED OF LAKE WAKATIPU FOR THE PURPOSE OF EROSION PROTECTION WORKS
RM13.317	1/01/2022	SHOTOVER RIVER, APPROXIMATELY 1.1 KILOMETRES SOUTH EAST OF THE INTERSECTION OF MARGARET PLACE AND GLENDA DRIVE, FRANKTON	0.1 TO DIVERT THE FLOW OF THE SHOTOVER RIVER 02. LAND USE CONSENT TO DISTURB THE BED OF THE SHOTOVER RIVER 03. TO DISCHARGE SILT AND SEDIMENT TO THE SHOTOVER RIVER FOR THE PURPOSE OF MAINTAINING A DISCHARGE CHANNEL FROM A WASTEWATER TREATMENT PLANT
RM11.327.01	12/12/2036	UNNAMED TRIBUTARY OF CARDRONA RIVER, APPROXIMATELY 50 METRES EAST NORTH EAST OF THE INTERSECTION OF CARDRONA VALLEY ROAD AND PRINGLES CREEK ROAD	TO CONSTRUCT TWO NEW CULVERTS, TO ALTER EXTEND AND REPLACE EXISTING CULVERTS AND TO DISTURB THE BED OF AN UNNAMED TRIBUTARY OF CARDRONA RIVER FOR THE PURPOSE OF DRAINAGE WORKS AND CHANNEL CLEARANCE.
2000.548B		QUEENSTOWN GARDENS, FROM THE BEACON ON THE SOUTH SIDE OF GARDENS FOR DISTANCE OF APPROXIMATELY 270 METRES TOWARDS PARK STREET, QUEENSTOWN	TO RECLAIM THE BED OF LAKE WAKATIPU FOR THE PURPOSE OF FORESHORE PROTECTION
2003.836	8/06/2039	BULLOCK CREEK, BETWEEN DUNMORE AND BROWNSTON STREETS, WANAKA	TO DISTURB THE BED, PLACE ROCK AND REPLACE A BRIDGE OVER BULLOCK CREEK FOR THE PURPOSE OF BANK STABILISATION AND ACCESS OVER THE CREEK.
2004.062	31/03/2039	OLEARYS PADDOCK, SUNSHINE BAY, QUEENSTOWN	TO DIVERT A WATERCOURSE THROUGH A PIPE FOR THE PURPOSE OF REDUCING FLOODING OF PROPERTIES
2002.267	1/06/2032	UNNAMED WATERCOURSE THROUGH LOWER STEWART STREET AND LOCAL PURPOSE RESERVE AT FRANKTON MOTOR CAMP, LAKE AVENUE, FRANKTON	TO DIVERT A SECTION OF A WATERCOURSE FOR THE PURPOSE OF EROSION PREVENTION.
2002.164	26/04/2037	BENDEMEER BAY RESERVE	TO DISTURB THE CREEKBED OF AN EPHEMERAL CREEK AND TO BURY A PIPE UNDER THE BED FOR THE PURPOSE OF TRANSPORTING SEWAGE.
2001.998	9/04/2038	EAST CREEK, LAKE HAYES	TO DISTURB THE CREEKBED OF EAST CREEK IN THE CONSTRUCTION OF A PIPE BRIDGE . FOR THE PURPOSE OF TRANSPORTING SEWAGE.
2001.999	9/04/2038	MILL CREEK, LAKE HAYES	TO DISTURB THE CREEKBED OF MILL CREEK AND TO BURY TWO PIPES UNDER THE BED. FOR THE PURPOSE OF TRANSPORTING SEWAGE AND WATER.

2002.13	9/04/2038	NORTH CREEK, LAKE HAYES	TO DISTURB THE CREEKBED OF NORTH CREEK AND TO BURY TWO PIPES UNDER THE BED. FOR THE PURPOSE OF TRANSPORTING SEWAGE AND WATER.
2001.96	15/02/2022	BEACON POINT, LAKE WANAKA, APPROXIMATELY 0.8 KILOMETRES WEST OF THE LAKE OUTLET	FOR THE PURPOSE OF COMMUNITY WATER SUPPLY
2000.42	1/10/2020	BUSH CREEK, BUSH CREEK RECREATION RESERVE, ARROWTOWN	TO DISTURB A CREEK BED FOR THE PURPOSE OF WATER SUPPLY PROTECTION
99406	1/04/2025	TRUE RIGHT BANK OF THE SHOTOVER RIVER, TUCKER BEACH, WAKATIPU BASIN	TO PLACE ROCK PROTECTION WORK FOR THE PURPOSE OF PROTECTING THE CLOSED TUCKER BEACH LANDFILL.
95003	1/01/2029	HOME CREEK, SITUATED TO THE EAST OF GORGE ROAD.	TO DIVERT HOME CREEK FOR THE PURPOSE OF MAINTAINING THE FLOOD PROTECTION SCHEME.
95006	1/01/2029	HOME CREEK, SITUATED TO THE EAST OF GORGE ROAD.	TO CARRY OUT EXCAVATION WORK ON THE BED OF HOME CREEK FOR THE PURPOSE OF MAINTAINING THE FLOOD PROTECTION SCHEME.
LUR019	1/06/2027	ONE MILE CREEK	TO EXTEND THE EXISTING CULVERT AT ONE MILE CREEK BY 12 METRES INCLUDING THE INSTALLATION OF A FISH REFUGE SYSTEM.

## CONTINUOUS PROGRAMME BUSINESS CASE

### 3.6 INTRODUCTION

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 promptly address reactive works as they arise. Into the future QLDC must continue to build on the available data and technology systems to achieve a better understanding of the existing asset base, so as to enable informed and targeted capital investments. This approach will provide true value to the ratepayers, whilst providing a sound infrastructure platform from which to support the growing district.

### 3.7 WHAT ARE PROBLEMS FOR MAINTENANCE, OPERATIONS AND RENEWALS?

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

Significant advances have been made over recent years to improve the quality of the data held by the council, particularly concerning its buried assets and their condition. Collecting asset data is not a one off exercise, and continual investment will be required to preserve a high quality data set.

QLDC have identified the key responses to our issues must be driven by improving data and analysis to enable sound planning.

## CAPITAL PROGRAMME BUSINESS CASE

### 3.8 INTRODUCTION

The Capital Programme Business Case presents a high-level plan of what our Three Waters network aim to achieve. They capture a series of key investment objectives to ensure that all new Three Waters infrastructure meets a number of minimum standards – primarily quality, quantity (demand from population growth) and Level of Service.

Within each individual area of Three Waters, a specific set of success factors are used to infer our decision-making during the business case process.

### 3.4 THE 'BBC' APPROACH

NZ Treasury's developed and produced a "Better Business Case" (BBC) approach to investment planning. The BBC approach provides a comprehensive framework for articulating, amongst other things:

- The nature of the problem being addressed, and what the consequences are
- What evidence exists for the problem and its consequences
- The need to address the problem back to key legislative and organisational strategies and drivers
- What benefits will arise from successfully addressing the problem

This approach has been refined by NZTA and guidelines and supporting materials have been developed known as the Business Case Approach (BCA). All investments which require NZTA funding must follow the NZTA BCA process, in accordance with the ONRC evidence requirements. For consistency, QLDC has extended the BCA approach cover property and three waters investment decisions. In this case the ONRC evidence requirements have been paralleled with this BBC Outcomes Framework.

As a result of following a structured approach, QLDC can be very clear about what its objectives are for any investment, as well as being able to measure success. QLDC's implementation of the BBC framework is thus a core part of providing Council and ratepayer's assurance that investment is happening at the right place, the right time and for the right price.

Figure 44 QLDC Three Waters Strategy Review Strategic Case





### 3.5 INVESTMENT OBJECTIVES

Whilst the primary investment drivers for new Three Waters infrastructure continue to be led by quality and quantity, a series of investment objectives are listed in our Business Case Outcomes Framework to ensure our capital plan programme maintains its focus on service delivery. This helps us ensure that new Three Waters infrastructure is 'right place, the right time and for the right price'.

#### 3.5.1 Wastewater

##### Objective 1: Safety / Public Health

- To ensure no illness is attributed to inadequate public wastewater infrastructure

##### Objective 2: Reliability

- To reduce the frequency of uncontrolled wastewater discharges

##### Objective 3: Resilience

- To reduce the impact of uncontrolled wastewater discharges

##### Objective 4: Environment

- Adverse effects are managed / mitigated
- Ensure total compliance relating to consented discharges to the environment
- Ensure complaints are limited to less than 5 per 1000 connections per year.

##### Objective 5: Accessibility

- To provide connection form new subdivision within QLDC service area not currently serviced by private scheme

##### Objective 6: Efficiency

- To improve capital efficiency
- Aim to achieve positive Net Present Values (NPV) in capital infrastructure investments.
- Ensure the cost of wastewater treated remains below \$2.35 / m<sup>3</sup>

#### 3.5.2 Water

##### Objective 1: Safety / Public Health

- To ensure full compliance to DWSNZ by 2028.
- To ensure no illness is attributed to inadequate public drinking water supply

##### Objective 2: Reliability

- To maintain key Levels of Service at all times.
- To reduce the frequency of water service pressure / flow disruptions.

##### Objective 3: Resilience

- To ensure no service outages of greater than 6 hours.
- To reduce the impact of pressure / flow disruptions.
- To improve levels of emergency storage within the network as per

#### Objective 4: Environment

- Adverse effects are managed / mitigated
- To ensure no contamination of public water supplies attributed to Three Waters network.
- Ensure compliance against all abstraction consents.

#### Objective 5: Accessibility

- To provide connection form new subdivision within QLDC service area not currently serviced by private scheme

#### Objective 6: Efficiency

- To improve capital efficiency
- Aim to achieve positive Net Present Values (NPV) in capital infrastructure investments.
- Ensure the cost of treated water supplied remains below \$0.90 / m<sup>3</sup>

### 3.5.3 Stormwater

#### Objective 1: Safety / Public Health

- To ensure no physical injuries to persons are attributed to Three Waters network.

#### Objective 2: Reliability

- To reduce the frequency of flooding events to private property.
- <2 per 1000 connections flooding events each year to habitable floors
- <5 stormwater complaints per 1000 connections

#### Objective 3: Resilience

- To reduce the impact of flooding events to private property.

#### Objective 4: Environment

- Adverse effects on the environment are managed / mitigated
- Maintain clear delineation and separation of sewage and stormwater systems.
- To ensure no contamination of receiving freshwater bodies attributed to stormwater network.

#### Objective 5: Accessibility

- Stormwater capacity to cater for all proposed development

#### Objective 6: Efficiency

- To improve capital efficiency
- Aim to achieve positive Net Present Values (NPV) in capital infrastructure investments.

### 3.5.4 Development of masterplans

The primary output from the completion of the strategic / programme business cases completed for the Three Waters schemes across the district has been the development of new master plans. These master plans are based on a the use of hydraulic network modelling to ensure that the future Three Waters networks incorporate performance improvements together with expansion and capacity upgrades to service new areas and an increasing customer base.

As growth (quantity) and compliance (quality) parameters have reached critical tipping points in recent years, the need to develop masterplans for our Three Waters network became abundantly clear.

### 3.5.5 Holistic Capital Works Programme

Over the next 10 years and beyond, QLDC is facing its largest infrastructure capital works programme to date. The issues described in this AMP are relevant across all infrastructure portfolios and include:

- \$164 million transport programme to be delivered from 2018 to 2012;
- Delivery of HIF;
- Internal projects such as Project Connect (one Council building).

The front loaded nature of the programme will place pressure on QLDC from both a financial perspective and a capacity to deliver as well as coordinating with external agencies and stakeholders, e.g. ORC.

#### Water

From a water supply perspective, the first 3 years of the LTP includes the installation and construction of some major infrastructure that includes new water pump stations, reservoirs and trunk mains. Some of these projects build on existing strategies with previous LTP funding allowing for early commencement of enabling works. The delivery of the master plan component projects across the district will also be aided by the development of concept designs that will increase the certainty of pipeline alignments, network operation and supply, pressure and flow metered zones.

#### Wastewater

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. The connection of both Luggate and Hawea to the Project Pure Wastewater Treatment Plant are examples of how we intend to utilize the benefit of an existing high performance treatment plant whilst, at the same time, working to decommission those plants that have historically struggled to achieve environmental compliance.

#### Stormwater

Investment in new and improved stormwater systems is spread more evenly across the 10-year LTP period. The projects allocated funding have emanated from a review of stormwater catchment management plans coupled with hydraulic modelling and include a combination of ‘easy wins’ as well as larger more complex projects such as the Frankton flats stormwater conveyance system.

### 3.5.6 Improvement Programme Overview

Queenstown Water Master Plan	
QLDC Infrastructure Strategy 2015-2045 states “Providing safe drinking water is important to maintaining public health and compliance with legislation, as well as protecting the districts tourist based economy.” Under the Health (Drinking Water) Amendment Act 2007, the Queenstown Water Supply is a large water supply and therefore the legal requirement to take all practical steps to comply with DWSNZ 2005/08 applied on 1 July 2012.	
Problem	Key Problems: <ul style="list-style-type: none"> <li>➤ An unprotected and uncontrolled water source is leading to unknown risks to public health - 40%.</li> <li>➤ Limited data, evidence and justification means we may be making poor investment decisions - 20%.</li> <li>➤ Public perceptions, poor communication and limited understanding of risks/values leads to a reluctance to invest or value water - 40%.</li> </ul>
Benefit	Key Benefits: <ul style="list-style-type: none"> <li>➤ Resilience – to reduce the impact of pressure/flow disruptions - 10%.</li> <li>➤ Safety/Public Health – to ensure no illness attributed to inadequate public water supply – 60%.</li> <li>➤ Reliability – to reduce the frequency of water service pressure/flow disruptions - 30%.</li> </ul>

Queenstown Water Master Plan	
Recommended Programme	<p>Here is a brief summary of what the preferred programme can deliver: Membranes at Two Mile + SOC Bores:</p> <ul style="list-style-type: none"> <li>➤ Stage 1: Involves installing new bores at SOC and piping to Frankton Flats. Interim chlorine dosing to be installed until WTP operational.</li> <li>➤ Stage 2: Involves constructing a 14 MLD membrane WTP at Two Mile and a 12 MLD membrane WTP at SOC.</li> <li>➤ Stage 3: Involves adding another 15 MLD capacity to the SOC WTP.</li> <li>➤ Advantages: existing takes are utilised; limited network upgrades are required; water is delivered quickly into rapidly developing Frankton Flats area; problematic Kelvin Heights intake is abandoned.</li> <li>➤ Disadvantages are: Two treatment plants to maintain and operate; high risk crossing of Shotover River</li> </ul>
Management Case	<p>In the initial years, QLDC will complete investigations, finalise preferred options and develop a final concept. In parallel complete investigations with regards ownership / procurement / operational models.</p> <p>A key advantage of a Design, Build &amp; Operate type arrangement is the contractual obligation does not sit on council's balance sheet as debt. Therefore, council will have greater ability to deliver these projects within QLDC's liability management policy.</p> <p>Frankton Flats supply requirements are critical and are budgeted in 17/18 Annual Plan, QLDC will utilise a traditional design and installation methodology to complete the additional trunk main, supplied from SoC Bores (upgraded) and crossing the Shotover Bridge to Glenda Drive.</p> <p>The Management Case has been prepared based on traditional delivery model, procured, owned and operated by Council.</p>

Combining Queenstown and Wanaka treatment plants (and potentially networks) can produce economies of scale that lends procurement and ownership towards a PPP solution. This initial approach will provide QLDC with the opportunity to develop intellectual property for a preferred solution and performance criteria, allowing QLDC to effectively negotiate with any third party if required; in addition, this allows time for the market to position and support the opportunity.

Wanaka Water Master Plan	
<p>QLDC Infrastructure Strategy 2015-2045 states "Providing safe drinking water is important to maintaining public health and compliance with legislation, as well as protecting the districts tourist based economy."</p> <p>Under the Health (Drinking Water) Amendment Act 2007, the Wanaka Water Supply is a large water supply and therefore the legal requirement to take all practical steps to comply with DWSNZ 2005/08 applied on 1 July 2012.</p>	
Problem	<p>Key Problems:</p> <ul style="list-style-type: none"> <li>➤ An unprotected and uncontrolled water source is leading to unknown risks to public health - 40%.</li> <li>➤ Limited data, evidence and justification means we may be making poor investment decisions - 20%.</li> <li>➤ Public perceptions, poor communication and limited understanding of risks/values leads to a reluctance to invest or value water - 40%.</li> </ul>
Benefit	<p>Key Benefits:</p> <ul style="list-style-type: none"> <li>➤ Resilience – to reduce the impact of pressure/flow disruptions - 10%.</li> <li>➤ Safety/Public Health – to ensure no illness attributed to inadequate public water supply – 60%.</li> <li>➤ Reliability – to reduce the frequency of water service pressure/flow disruptions - 30%.</li> </ul>

Recommended Programme	<p>Here is a brief summary of what the preferred programme can deliver: Membranes at one site (Network Option 3E).</p> <ul style="list-style-type: none"> <li>➤ Stage 1: Involves constructing a 26 MLD membrane WTP at Beacon Point with 6,000m3 of additional storage and new network trunk infrastructure.</li> <li>➤ Stage 2: Involves constructing a new 5,000m3 reservoir at Hawthenden and new high level trunk infrastructure.</li> <li>➤ Stage 3: Pipeline along Studholme Road for ultimate.</li> <li>➤ Advantages: Delivers well on the benefits being sought (a positive NPV) at an acceptable level of risk; efficiencies in building and operating one WTP; existing consent has sufficient capacity for full township; higher elevation than Western; services the majority of Wanaka already; greater residual value in the existing assets than Western; storage is dispersed across the township; network upgrades can be staged, providing greater flexibility to adapt to demand.</li> <li>➤ Disadvantages: Algae may blind membranes; significant network upgrades required across town.</li> <li>➤ Based on the cost estimates, considering staging, and resilience in the network, the recommended option is a combination of Option 3A and Option 3C, and will be referred to as Option 3E. This option is the implementation of Option 3A with the inclusion of the new pump station and new reservoir (Hawthenden), abandoning the Western Reservoir.</li> </ul>
Management Case	<p>In the initial years, QLDC will complete investigations, finalise preferred options and develop a final concept. In parallel complete investigations with regards ownership / procurement / operational models.</p> <p>A key advantage of a Public-Private Partnership type arrangement is the contractual obligation does not sit on council's balance sheet as debt. Therefore, council will have greater ability to deliver these projects within QLDC's liability management policy.</p> <p>The Management Case has been prepared based on traditional delivery model, procured, owned and operated by Council.</p>

### Luggate Water Supply Strategic Business Case

#### **QLDC Infrastructure Strategy 2015-2045 states:**

- The Council will provide reliable drinking water that is safe to drink
- Manage water needs of district to acceptable level
- Key service levels (affecting public health) are maintained
- Core infrastructure meets current and future needs, are fit for purpose, efficient to run and cost effective

#### **Health Act 1956 - Amended 2007:**

- 69V - Compliance with Drinking Water Standards

#### **Regional Plan for Water:**

- To provide for the water needs of Otago's primary and secondary industries, and community domestic water supplies
- To maintain long term groundwater levels and water storage in Otago's aquifers

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Problem</p>	<p>Key Problems:</p> <ul style="list-style-type: none"> <li>➤ Public Health Risk; The existing bores at Luggate, Wanaka Airport and Corbridge Downs are unsecured and no treatment is provided (4 log credits required, 0 achieved). Luggate bores also have high turbidity events</li> <li>➤ Reliability; Current demand at Luggate is exceeding capacity of bores. The level in bore 1 drops below the low bore probe at peak demand. Residents have removed many of the water restrictors installed by QLDC. (Average daily consumption is 50% higher than Council benchmark;             <ul style="list-style-type: none"> <li>○ 43 properties &gt;2,000l/d;</li> <li>○ 5 properties &gt;5,000l/d). There is 200m<sup>3</sup> of reservoir storage at Luggate (200m<sup>3</sup> = &lt;24hrs of average demand, 12hrs peak demand = ~300m<sup>3</sup>).</li> </ul> </li> <li>➤ Accessibility; Luggate Park subdivision will increase the number of service connections- the latest demand forecast indicates an increase from 172 to 452 over the next 40 years. Wanaka Airport is expecting significant growth</li> </ul>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Recommended Programme</p>	<p>The preferred option is a new deep borehole source located in close proximity to Wanaka Airport. This would be a secure borehole source and therefore require 3-log treatment (UV assumed). A new reservoir located at Wanaka Airport will provide security of supply to Luggate while also providing for firefighting requirements at the airport. A new 4km pipeline will run between the new borehole source and Luggate. The Corbridge wellhead will be upgraded and point of entry treatment installed on all potable supplies. The Corbridge source would be reclassified as a Rural drinking water supply.</p> <ul style="list-style-type: none"> <li>➤ There is some risk in locating a suitable source that provides the required amount of water, therefore an allowance has been made for a groundwater investigation, and the drilling of a test bore.</li> <li>➤ Due to the immediate risk associated with water quality it is recommended that chlorine dosing be implemented at the Luggate and Airport bores in the short term to minimise the risk associated with pathogens. A number of upgrades to the Airport and Luggate wellheads should also be implemented to minimise the risk of contamination (identified as immediate upgrades in the borehole security report)</li> <li>➤ Due to the immediate risk associated with water supply at Luggate, the reinstallation of flow restriction devices should be implemented in the short term. There may be other demand management opportunities that can be implemented in the medium term to reduce operational costs and infrastructure sizing requirements. Demand management would also reduce the risk of supply shortfalls if the new water source is deferred.</li> </ul>

<b>Arrowtown Water Supply Strategic Business Case</b>	
<p><b>QLDC Infrastructure Strategy 2015-2045 states:</b></p> <ul style="list-style-type: none"> <li>➤ The Council will provide reliable drinking water that is safe to drink</li> <li>➤ Manage water needs of district to acceptable level</li> <li>➤ Key service levels (affecting public health) are maintained</li> <li>➤ Core infrastructure meets current and future needs, are fit for purpose, efficient to run and cost effective</li> </ul> <p><b>Health Act 1956 - Amended 2007:</b></p> <ul style="list-style-type: none"> <li>➤ 69V - Compliance with Drinking Water Standards</li> </ul> <p><b>Regional Plan for Water:</b></p> <ul style="list-style-type: none"> <li>➤ To provide for the water needs of Otago's primary and secondary industries, and community domestic water supplies</li> <li>➤ To maintain long term groundwater levels and water storage in Otago's aquifers</li> </ul>	
<b>Problem</b>	<p>Key Problems:</p> <ul style="list-style-type: none"> <li>➤ Current demand (frequently &gt;75l/s in summer, peak 83l/s) exceeds capacity of existing pumps (60l/s). This results in low reservoir (firefighting reserve) levels and excessive run hours on both pumps.                             <ul style="list-style-type: none"> <li>○ Well unprotected and high risk of contamination</li> <li>○ No protection in network for bacteria.</li> <li>○ A history of E.coli events.</li> </ul> </li> <li>➤ Water monitoring data indicates leaks in the network</li> <li>➤ Growth is occurring in Millbrook and there are pressures from developments outside of the scheme boundary for connection (e.g. Arrowtown Lifestyle Retirement Village on McDonnell Road - 120 villas, 75 apartments, 100 bed care home)</li> <li>➤ Bores not compliant with DWS criteria (Bore Security Report - Beca - April '17)</li> </ul>
<b>Recommended Programme</b>	<p>The preferred option is to keep the existing bore, decommission well and upgrade pump capacity at existing bore.</p> <ul style="list-style-type: none"> <li>➤ Add one new bore (same size as duty pump) plus a spare boxed pump (upgrade of wellhead at existing bore also required so that all bores have secure wellheads).</li> <li>➤ Undertake cryptosporidium sampling to prove that 3-log credits will be sufficient (i.e. no upgrade required now to existing UV treatment and residual chlorination).</li> <li>➤ Storage 1 - Retain existing reservoirs and construct new 2200m3 reservoir at one new site. Infrastructure required includes construction of new booster PS at existing WTP &amp; pumping main pipework, falling main pipework from new reservoir to reticulation and access road.</li> <li>➤ One new UV reactor required by year 8 for redundancy/resilience (including under Supply options).</li> <li>➤ Demand status quo due to low benefit cost ratio for the more ambitious demand management options (due to infrastructure already being at capacity). Status quo investments included for existing bore and cryptosporidium sampling.</li> </ul> <p>The preferred option provides a supply scheme that will cater for current demand projections in 2048 (ie a 30 year lifespan - subject to ongoing demand forecast updates).</p>

<b>Glenorchy Water Supply Strategic Business Case</b>	
<p><b>QLDC Infrastructure Strategy 2015-2045 states:</b></p> <ul style="list-style-type: none"> <li>➤ The Council will provide reliable drinking water that is safe to drink</li> <li>➤ Manage water needs of district to acceptable level</li> <li>➤ Key service levels (affecting public health) are maintained</li> <li>➤ Core infrastructure meets current and future needs, are fit for purpose, efficient to run and cost effective</li> </ul> <p><b>Health Act 1956 - Amended 2007:</b></p> <ul style="list-style-type: none"> <li>➤ 69V - Compliance with Drinking Water Standards</li> </ul> <p><b>Regional Plan for Water:</b></p> <ul style="list-style-type: none"> <li>➤ To provide for the water needs of Otago's primary and secondary industries, and community domestic water supplies</li> <li>➤ To maintain long term groundwater levels and water storage in Otago's aquifers</li> </ul>	
<b>Problem</b>	<p>Key Problems:</p> <ul style="list-style-type: none"> <li>➤ Existing tanks have extensive visible cracking and need replacing.</li> <li>➤ The minimum storage for existing use = 350m<sup>3</sup> (fire fighting requirements + operational). The existing reservoir storage is 90m<sup>3</sup>. ADF = 245m<sup>3</sup>/day (1.5m<sup>3</sup>/connection/day). PDF = 800m<sup>3</sup>/day</li> <li>➤ Bore supply is currently untreated; Log credits required = 4, log credits achieved = 0</li> <li>➤ Bores not compliant with DWS criteria (Bore Security Report - Beca - April '17)</li> </ul>
<b>Recommended Programme</b>	<p>The preferred option is to replace the old reservoir tanks with a new larger reservoir that meets full LoS target levels and fire fighting and operational requirements. The construction of this new reservoir is anticipated to be on higher ground (Bible Terrace) that will serve to increase network pressures.</p> <p>The business case also recommends the following approach to supply and treatment;</p> <ul style="list-style-type: none"> <li>➤ Retain the existing position of the Glenorchy bore PS as the primary site for supply and water treatment in Glenorchy.</li> <li>➤ Undertake a condition assessment of the bores to determine anticipated end of life time.</li> <li>➤ Allow for the drilling of two new bores at the same site should the condition assessment deem that the existing bores require renewal.</li> <li>➤ Allow for the installation of new bore pumps if and when the new bores are drilled.</li> <li>➤ Assess the findings of the cryptosporidium sampling in order to determine whether 3-log credit treatment will be sufficient.</li> <li>➤ Retain the chlorine disinfection system recently installed and improve to make this permanent so that treatment protection in the network exists for bacteria compliance against DWSNZ.</li> </ul> <p>The preferred option provides a supply scheme that will cater for current demand projections out until 2048 (ie a 30 year lifespan - subject to ongoing demand forecast updates).</p>

### 3.6 OVERALL IMPROVEMENT PROGRAMME FOR 2018/28

The tables below represents the Three Waters submission made to the 2018/28 QLDC TYP as of November 2017. The tables highlight all major capital projects by scheme and by sequence and also includes HIF. These were designed to assist with various procurement strategies we are presently working on to aid delivery of this roughly \$40million/year programme. This will be updated when the programme has been adopted. The attached document is the first version I used to compile

Legend:

- Preliminary works, feasibility and investigation
- Detailed design
- Construction
- System and facility commissioning

WANAKA WATER		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	
ITEM	TITLE	YEAR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		NARRATION															
1.0	BEACON POINT RESERVOIR	New (second) 6000m3 reservoir adjacent to existing one.		\$ 1,240,000	\$ 4,650,000												
2.0	BEACON POINT WTP	New water treatment plant		\$ 2,530,000	\$ 1,990,000	\$ 8,310,000	\$ 8,310,000										
3.0	TRANSMISSION PIPELINE	Large dia cross town watermain to convey from Beacon pt res to south wanaka.															
3.1	SECTION 1: ALPHA SERIES SECTION	Faulks Terrace and Stone St to edge of Alpha series subdivision then through Meadowstone subdivision.		\$ 800,000	\$ 730,000												
3.2	SECTION 2: MACPHERSON & GOLFCOURSE RD	2000m of large dia watermain down MacPherson & Golfcourse Rd to service south Wanaka.		\$ 160,000	\$ 1,900,000												
3.3	SECTION 3: STUDHOLME RD SECTION	1000-1200m length on Studholme Rd to Mt Aspiring Rd.				\$ 170,000	\$ 800,000										
3.4	SECTION 4: ANDERSON RD SECTION	1330m of 500mm dia watermain down Anderson Road					\$ 100,000	\$ 1,720,000									
4.0	CONSTRUCT NEW BOOSTER PS	New water pump station required for for Far Horizon / western pressure zone.						\$ 70,000	\$ 450,000								
5.0	PRESSURE ZONE RECONFIGURATION.	PRVs and network upgrades as part of pressure zone reconfiguration.							\$ 220,000								
6.0	DECOMMISSION WESTERN INTAKE.	Final task only once new supply scheme is fully commissioned & operational.								\$ 450,000							
7.0	BEACON POINT CAPACITY UPGRADES																
	BEACON POINT INTAKE PUMP STATION	Major upgrade to increase supply capacity							\$ 200,000	\$ 620,000	\$ 1,980,000						
	BEACON PT FALLING MAIN UPSIZING	Increase pipeline dia of 525mm falling main to 630mm										\$1,600,000					
8.0	NEW HAWTHENDEN RESERVOIR	intended to service south Wanaka											\$ 15,000	\$ 1,760,000	\$5,485,000	\$5,485,000	

QUEENSTOWN WATER			2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
ITEM	TITLE	NARRATION	0	1	2	3	4	5	6	7	8	9	10	11	12
<b>1.0</b>	<b>SHOTOVER BORES PUMP STATION &amp; WTP</b>														
1.1	SHOTOVER COUNTRY BORE PS & WTP	Construction of bore PS & pumping main over Shotover bridge into Frankton.	\$ 2,351,537												
1.2	SHOTOVER COUNTRY BORE PS & WTP	Construction of WTP & building		\$ 1,790,000											
<b>2.0</b>	<b>QUAIL RISE RESERVOIR</b>														
2.1	STAGE 1: QUAIL RISE RESERVOIR	Construction of filling main to new Quail Rise reservoir.		\$ 500,000	\$ 3,900,000										
2.2	STAGE 2: QUAIL RISE RESERVOIR	Design and construct 1 x new 5,000m3 reservoir			\$ 700,000	\$ 4,800,000									
2.3	STAGE 1: QUAIL RISE RESERVOIR	Falling main from new reservoir to frankton flats				\$ 390,000	\$ 2,450,000								
<b>3.0</b>	<b>FRANKTON FLATS SUPPLY</b>														
3.1	SECTION 1: KAWARAU BRIDGE TO FRANKTON FLATS RING MAIN	Frankton ring main up robertson st to ear.		\$ 848,820											
3.2	SECTION 2: FRANKTON FLATS SUPPLY MAIN SECTION 3	Large dia watermain from bp frankton roundabout to kawarau bridge.		\$ 400,000	\$ 2,520,000										
3.3	SECTION 3: FRANKTON FLATS SUPPLY MAIN	Large dia watermain along SH6 from Glenda Dr to BP Frankton roundabout.				\$ 450,000	\$ 2,800,000								
<b>4.0</b>	<b>HANLEY FARMS WATER SUPPLY</b>														
4.1	HANLEY'S FARM RESERVOIR 1	New 4000m3 storage reservoir, supply mains and pipework		\$ 500,000		\$ 703,000	\$ 4,471,000								
<b>5.0</b>	<b>NEW WATER TREATMENT PLANTS</b>														
5.1	TWO MILE WTP	High spec upgrade to shotover country bore wtp		\$ 500,000		\$ 480,000	\$ 1,430,000	\$ 5,980,000	\$ 5,980,000						
5.2	SHOTOVER COUNTRY WTP	High spec upgrade to shotover country bore wtp								\$ 430,000	\$ 1,210,000	\$ 5,070,000	\$ 5,000,000		
<b>6.0</b>	<b>NETWORK OPTIMISATION</b>														
6.1	PRVs FOR FRANKTON	PRVs installs across Frankton flats								\$ 40,000	\$ 320,000				
6.2	DECOMMISSION KELVIN HTS WTP	Decommission kelvin hts intake										\$ 200,000			
<b>7.0</b>	<b>CAPACITY UPGRADES</b>														
7.1	SHOTOVER COUNTRY BORE PS & WTP	Pump upgrade								\$ 70,000	\$ 440,000				
7.2	HANLEY'S FARM RESERVOIR 2	Design and construction of second storage reservoir										\$ 490,000	\$ 3,070,000		
7.3	QUAIL RISE RESERVOIR 2	Design and construction of second new 5,000m3 reservoir												\$ 700,000	\$ 4,870,000

GLENORCHY WATER SUPPLY			2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
			0	1	2	3	4	5
ITEM	TITLE	NARRATION						
<b>1.0</b>	<b>NEW RESERVOIR</b>							
	DESIGN & ENABLING WORKS	Land acquisition	\$ 100,215					
	CONSTRUCTION	Construction of new 500m3 plus storage reservoir		\$ 800,000				
<b>2.0</b>	<b>BORES PUMP STATION</b>							
	DESIGN & ENABLING WORKS	Consents and planning		\$ 300,000				
	CONSTRUCTION	Drill 2 x new production bores at existing site			\$ 600,000			
<b>3.0</b>	<b>TREATMENT PLANT</b>							
	DESIGN & CONSTRUCTION	New WTP building				\$ 750,000		

ARROWTOWN WATER SUPPLY			2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
<b>1.0</b>	<b>BORE PUMP STATION UPGRADE</b>							
	UPGRADE OF EXISTING BORE	New bore pump & switchgear to increase pump capacity.		\$ 412,500				
	INSTALLATION OF NEW BORE	Drill & commission new production bore. Convert existing pump house to electrical PS		\$ 732,000				
<b>2.0</b>	<b>NEW RESERVOIR</b>							
	CONSTRUCTION OF NEW RESERVOIR	Capacity TBC.		\$ 400,000	\$ 1,215,000	\$ 1,660,000		
	NEW BOOSTER (RESERVOIR FILLING) PUMP STATION	Water PS required to convey water to new reservoir				\$ 796,000		

LUGGATE WATER SUPPLY			2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
<b>1.0</b>	<b>NEW BORE PUMP STATION</b>							
	FEASIBILITY & INVESTIGATION	Test bores, ground water investigations	\$ 40,000					
	DESIGN	New WTP & Pump station design		\$ 108,000				
	CONSTRUCTION	New WTP & Pump station			\$ 1,448,000			
<b>2.0</b>	<b>LUGGATE - WANAKA AIRPORT WATERMAIN</b>							
	DESIGN	Water pipeline design	\$ 55,000					
	CONSTRUCTION	New watermain along SH6		\$ 1,650,000				
<b>3.0</b>	<b>RESERVOIR</b>							
	CONSTRUCTION	New storage reservoir			\$ 413,000			
	COMMISSIONING	New supply system up and running				\$ 49,000		

WANAKA WASTEWATER	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
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TASK	DESCRIPTION					
DESIGN UPGRADE AT GORDON RD WWPS	New pumps, rising main and manifold req. Increase storage					
CONSTRUCTION UPGRADE AT GORDON RD WWPS	Construction of capacity upgrade					
CONSTRUCTION	Construct new rising main from Wanaka Airport to P Pure					
NEW RATA STREET WWPS	Construction of new PS and trunk main to reconfig ww system					
PROJECT DEADLINE	Existing Hawea WWTP consent expires 2023					

QUEENSTOWN WASTEWATER	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
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TASK	DESCRIPTION					
FRANKTON TRACK TRUNK MAIN RENEWAL	6km sewer main between QTN and Frankton Beach WWPS					
RECONFIG KAWARAU PLACE WWPS	New gravity sewer main					
DUPLICATE FRANKTON FLATS GRAVITY MAIN TO RATA STREET	Construct new large dia gravity main					
NEW REC GROUND WASTEWATER PUMP STN	Construction of new WWPS & rising main					
PROJECT SHOTOVER WWTP UPGRADE	Capacity upgrade (new MLE tank, decommission ponds)					
FOG TREATMENT FACILITY AT SHOTOVER WWTP	Design and construction					
QUAIL RISE SOUTH SEWER MAIN	Sewer main down SH6 to Shotover WWTP					
SEWER RISING MAIN UP ROBERTSON ST	Extend rising main from Kawarau Bridge (Frankton side) to terminal manhole off Mountain Ash Dr					
WILLOW PLACE RISING MAIN UPGRADE	Renewal of rising main as part of Robertson St new sewer					

**LUGGATE WASTEWATER SERVICING** 2017/18 2018/19 2019/20 2020/21 2021/22 2022/23

TASK	DESCRIPTION	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
FEASIBILITY & INVESTIGATIONS	Concept design. Pipeline route, PS location						
DESIGN	Pipeline & pump station design						
CONSTRUCTION	New pipeline and pump station						
COMMISSIONING	New supply system up and running						
EXTEND LUGGATE WW RETIC	Extend sewer system in Luggate, remove septic tanks						
DECOMMISSION LUGGATE WWTP	Current consent expires 2021						

**PROJECT PURE UPGRADES & DEVELOPMENT** 2017/18 2018/19 2019/20 2020/21 2021/22 2022/23

SCREEN UPGRADES	New duty / standby screening system to increase screen capacity						
CENTRIFUGE UPGRADE	New duty / standby centrifuge system						
LUGGATE CONNECTION	P Pure starts to receive Luggate sewerage						
PPURE CAPACITY UPGRADE DESIGN	Design for new third SBR tank installation						
PPURE CAPACITY UPGRADE	Construction and commissioning						
INSTALL FOG TREATMENT FACILITY AT P PURE	Design and construction						
HAWEA CONNECTION	12km pipeline from Hawea to P Pure (inc over River Clutha)						

**HAWEA WASTEWATER SERVICING** 2017/18 2018/19 2019/20 2020/21 2021/22 2022/23

ENABLING WORKS: PLANNING & CONSENTS	River Clutha pipe bridge						
DESIGN	Full pumping system design (WWPS & pipeline)						
CONSTRUCTION	12km pipeline from Hawea to P Pure (inc over River Clutha)						
SYSTEM COMMISSIONING							
PROJECT DEADLINE	Existing Hawea WWTP consent expires 2023						

**CARDRONA WASTEWATER** 2017/18 2018/19 2019/20 2020/21 2021/22 2022/23 2023/24 2024/25

TREATMENT PLANT UPGRADE	Improvements works in order to achieve consent compliance							
SCHEME EXTENTION WITH MAJOR UPGRADE TO	Capacity & treatment upgrade to WWTP. Extend retic scheme							

**GLENORCHY WASTEWATER** 2017/18 2018/19 2019/20 2020/21 2021/22 2022/23 2023/24 2024/25

NONE	New treatment plant outside of 10 yr LTP							
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QUEENSTOWN STORMWATER			2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
ITEM	TASK	DESCRIPTION						
<b>1.0</b>	<b>FRANKTON FLATS</b>							
	NORTH EAST FRANKTON FLATS STORMWATER	Swale & large dia pipeline from Frankton flats (Fivemile) to lake Wakatipu.		\$7,000,000				
<b>2.0</b>	<b>FRANKTON</b>							
	KAWARAU PLACE STORMWATER	Duplication of the existing pipe to allow pipe containment in a 50 year event.		\$ 100,664				
	MAGNOLIA PLACE STORMWATER	Duplication of the existing pipe to allow pipe containment in a 50 year event.		\$ 78,699				
<b>3.0</b>	<b>QUEENSTOWN HILL &amp; CBD</b>							
	QUEENSTOWN MINOR WORKS	Upgrades of existing piped network to 10 year pipe containments		\$ 78,352				
	UPPER BELFAST RD (QUEENSTOWN)	Construction of a new pipe system from an existing stream system to new pipe on Belfast terrace.		\$ 58,000				
	BELFAST TERRACE (QUEENSTOWN)	Construction of a new pipe system from Belfast terrace to Horne Creek				\$ 20,000	\$ 250,000	\$1,668,890
	RECREATIONAL GROUND & CBD (QUEENSTOWN)	Major conveyance system for CBD [unlikely to proceed. investigations for Horne Creek will determine what is required]		\$ 20,000	\$ 450,000	\$1,941,371	\$1,941,371	
	INVESTIGATIONS HORNE CREEK (QUEENSTOWN)	Investigations to establish Horn Creek forecast flows		\$ 30,000				
	ANDERSON HEIGHTS (QUEENSTOWN)	Construction of a new pipe system from Killarney way along Anderson Heights connecting to the new rec ground system.			\$ 20,000	\$ 85,000	\$ 832,901	
	WINDSOR PLACE TO EDINBURGH DRIVE (QUEENSTOWN)	Construction of a new supplementary pipe from Windsor Place to the open channel on Edinburgh Drive.						\$ 120,669
<b>4.0</b>	<b>LAKEVIEW DEVELOPMENT, QUEENSTOWN</b>							
	LAKEVIEW LAKEVIEW DEVELOPMENT (QUEENSTOWN)	Two stormwater mains required to run with new outlet into lake.		\$1,128,205	\$ 483,516			

<b>WANAKA STORMWATER</b>			<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>	<b>2021/22</b>	<b>2022/23</b>
1.0	AUBREY RD	Prelim investigations to determine requirement of a detention pond at Kelleys flat recreation reserve.		\$ 30,000				
2.0	BULLOCK CREEK INVESTIGATIONS	Investigations to establish forecast flows		\$ 30,000				
3.0	THREE PARKS STORMWATER OUTLET (CROSSING RIVERBANK RD TO CARD	Stormwater culvert to convey overland flow from Three Parks catchment.		\$ 214,047				
4.0	BREMNER PARK RD/BEACON POINT RD	Interim solution to divert stormwater to lake from Bremner park. 300mm dia pipe plus new manhole.		\$ 60,999				
5.0	WILEY RD/BEAMONT/BEACON PT	New discharge outlet from intersection Beaumont rd / Wiley Rd to the lake to divert overland flow.				\$ 200,000	\$1,206,707	
6.0	MT ASPIRING COLLEGE	Upgrade drainage discharge in the vicinity of high school.					\$ 25,000	\$ 350,000
7.0	BILLS WAY	Replace existing 450mm dia pipe with 900mm dia pipe along Bills way and the lake.					\$ 25,000	\$ 200,000

## MANAGING RISK & RESILIENCE – QLDC RISK FRAMEWORK

### 3.7 RISK MANAGEMENT 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. QLDC’s Audit and Risk Committee provides guidance on the effectiveness of the QLDC’s RMF, internal controls, legislative and regulatory compliance, external audits and financial reporting.

The RMF provides clear guidance on the classification of risk likelihood and consequences. Consequences are considered using PESTLE, ie. across political, economic, social, technical, legal and environmental dimensions.

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 end result of this integration will be each investment decision being based on a consistent, robust and quantitative assessment of risk.

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.

Further information on QLDC’s Risk Management framework and processes can be found in the IAMS.

### 3.8 CRITICALITY FRAMEWORK (CF)

Critical assets can be defined as those that “are especially significant to societal wellbeing and therefore merit priority attention by utilities in emergency response and recovery” they are also defined as those which have a “high consequences of failure” for example, a transport route may be critical because it carries high volume of traffic, or if it is the only route to a hospital.

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, are 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). QLDC’s Criticality Framework (CF) uses the IIMM basic approach, importantly for QLDC’s criticality assessment, the RMF 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 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 from Stage One and amends these to suit specific assets (i.e. location, size

etc.). The purpose is to specifically prioritise 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.

### 3.9 EARTHQUAKE LOSS ESTIMATE

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 was assessed 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 of the 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.

**Table 8 Summary of QLDC Infrastructure Assets and Values**

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
<b>TOTAL</b>		<b>1,488</b>	<b>100%</b>

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

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 1 – 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 2 – 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 45 Earthquake Scenario 1

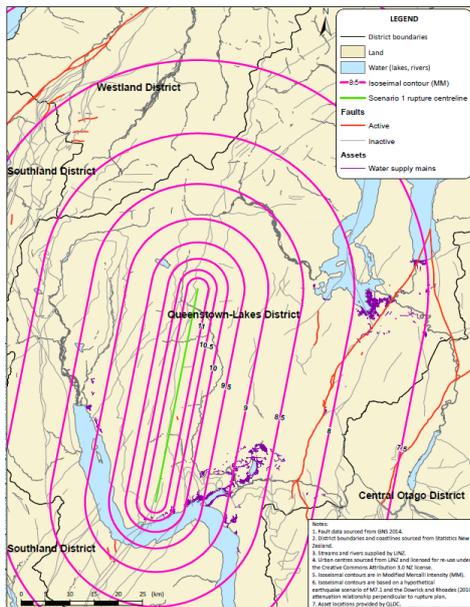
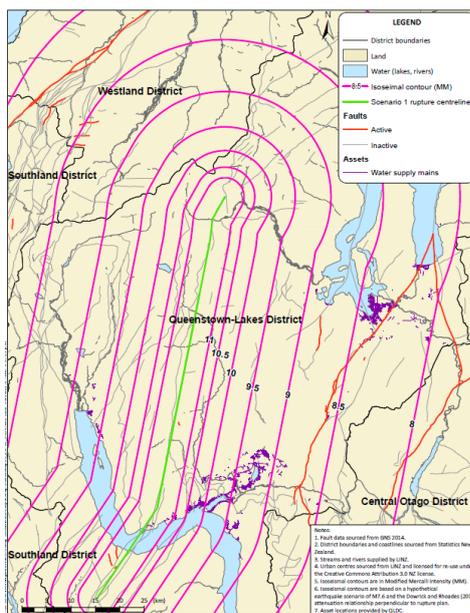


Figure 46 Earthquake Scenario 2



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.

**Table 9 QLDC Probable Maximum Loss and Foreseeable Maximum Loss**

Scenario	Utility	Asset Type	Damage Estimate (\$m)		
			10 <sup>th</sup> Percentile	Mean	90 <sup>th</sup> 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
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

## SECTION FOUR - FINANCIAL MANAGEMENT

Over the next 10 years and beyond, QLDC is facing its largest and compounding complex infrastructure capital works programme. The issues described in this AMP are relevant across all infrastructure portfolios and include:

- \$476 million to deliver the transport programme over the next 10 years;
- \$10 million for increased wastewater treatment capacity;
- Delivery of HIF;
- Internal projects such as Project Connect (One Council building).

The immensity of the programme places immense pressure on QLDC from a financial perspective and a capacity to deliver as well as coordinating with external agencies and stakeholders.

From a Three Waters perspective, the first 3 years of the LTP will be focused on enablers to facilitate delivery such as consents, land purchase and scoping and design.

QLDC are exploring options and mechanisms to address around the risk of capacity to deliver intended programmes.

- Approaching the 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.
- Grouping similar projects together to incentivise the supply chain by increasing potential value. i.e. a programme around multiple Three Waters reservoirs
- Reviewing the Build, Operate, Manage, Transfer models
- Maximising good rates by having longer contract periods and potential extensions.

All capital and operational expenditure in this document is inflated to annual plan year only.

The Local Road Maintenance Programme may see some minor amendments however, QLDC deem this programme will deliver the outcomes as outlined in this BCA AMP.

### 4.1 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 Policy must state 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. A summary of how operational and capital expenditure will be funded, based on the 2018-28 Long Term Plan, is in the following section.

### 4.2 FUNDING SOURCES

#### 4.2.1 Funding Operational Expenditure

**Water** - This activity is largely private good in nature and QLDC recognises that the best way of recovering cost would be via volumetric charges and water meters.

**Wastewater** - This activity is largely private good and the operational costs will therefore be funded by a Targeted Uniform Sewerage Charge which is charged out on the basis of the number of connected pans / urinals within the property. A rating unit used primarily as a residence for one household shall be deemed to have not more than one pan / urinal in accordance with the Local Government (Rating) Act 2002. Remission policies have been developed in relation to the application of this rate to businesses with multiple connections and to various non-profit organisations.

**Stormwater** – This activity is largely public good in nature and will therefore be funded 100% from a Targeted Stormwater Rate based on Capital Value and applied on a ward basis to all urban properties.

**Table 10 Proposed Funding by Activity**

Activity	Economic Benefit Assessment		Funding Targets		Funding Mechanism	
	Private	Public	Private	Public	Private	Public
Water	90%	10%	100%	0%	Targeted Uniform Rate (water) / Targeted CV Rate	-
Wastewater	90%	10%	100%	0%	Sewerage Charge	-
Stormwater	0%	100%	0%	100%	-	Stormwater CV Rate

#### 4.2.2 Funding Capital Expenditure

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.

### 4.3 FUNDING RISKS

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

- Insufficient QLDC funding to meet the levels of service;
- Funding sources for the repair of damage caused to Three Waters assets 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.

#### 4.4 AMP FINANCIAL ASSUMPTIONS

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);
- QLDC will be able to acquire all necessary properties, and all required resource consents, in a timely manner;
- The extent to which new Three Waters assets will be vested in QLDC will be as forecasted;
- Low maintenance and construction cost escalation.

#### 4.5 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 IPSAS 17) 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.

Reconciliation to the 2016 revaluation data was undertaken in July 2017 to understand the changes to the valuation results. Figure 47 summarises the assets as valued by Rationale as at 1 July 2016 and reconciliation by QLDC Finance as at 1 July 2017.

Figure 47 Asset Values

QLDC 3Waters Asset Valuation 1 July 2016 Revaluation – Report			1 July 2017 – QLDC Finance				
Activity	Scheme	Gross Replacement Cost	Depreciated Replacement Cost	Annual Depreciation	Depreciated Replacement Cost	Annual Depreciation	
WATER		<b>186,196,008</b>	<b>139,102,013</b>	<b>2,864,647</b>	<b>143,360,219</b>	<b>2,872,123</b>	
	Arrowtown	11,940,127	8,006,620	179,725	8,207,074	180,102	
	Arthurs Point	4,733,223	3,840,839	73,685	3,858,487	74,155	
	Glenorchy	3,083,305	2,334,570	48,553	2,349,159	48,640	
	Hawea	8,236,564	6,520,568	134,111	6,900,515	129,760	
	Lake Hayes	14,695,592	12,116,082	245,740	13,245,931	318,878	
	Luggate	2,316,901	1,823,889	43,105	1,853,895	43,979	
	Queenstown	72,850,953	50,073,153	1,147,241	51,518,045	1,153,327	
	Shotover Country	4,989,431	4,864,261	72,531	4,881,107	72,700	
	Wanaka & Albert Town	62,859,440	49,109,936	914,749	51,301,525	923,282	
	Unknown	490,472	412,095	5,207			
		<b>220,157,616</b>	<b>157,689,185</b>	<b>3,632,427</b>	<b>188,596,913</b>	<b>3,636,199</b>	
SEWER	Arrowtown	14,757,538	9,751,697	234,839	12,137,752	247,803	
	Arthurs Point	4,614,121	3,682,257	73,159	6,061,792	84,414	
	Hawea	8,697,277	6,369,617	145,809	6,393,918	146,002	
	Lake Hayes	17,545,938	14,604,158	236,376	17,564,108	260,490	
	Luggate	1,563,204	1,225,591	31,567	1,232,259	31,657	
	Queenstown	84,925,664	53,375,712	1,423,709	75,428,226	1,369,574	
	Shotover Country	4,082,761	3,866,628	48,574	4,125,588	60,063	
	Wanaka & Albert Town	83,856,012	64,717,350	1,435,031	65,653,270	1,436,196	
	Unknown	115,101	96,175	3,363			
			<b>150,005,188</b>	<b>119,828,089</b>	<b>1,876,802</b>	<b>120,843,800</b>	<b>1,876,849</b>
STORMWATER	Arrowtown	9,205,108	7,458,001	111,786			
	Arthurs Point	3,243,280	2,820,075	40,690			
	Glenorchy	666,163	555,344	8,096	Wakatipu	68,575,766	1,047,971
	Lake Hayes	10,334,219	8,802,930	130,716			
	Queenstown	53,363,082	40,145,888	656,660			
	Shotover Country	8,159,364	7,985,590	99,985			
	Albert Town	7,213,005	6,291,639	90,735			
	Hawea	2,526,439	2,113,442	31,786	Wanaka	52,268,034	828,878
	Luggate	1,711,053	1,453,505	23,082			
	Wanaka	53,510,832	42,143,566	682,352			
Unknown	72,643	58,109	914				
		<b>150,005,188</b>	<b>119,828,089</b>	<b>1,876,802</b>	<b>120,843,800</b>	<b>1,876,849</b>	
<b>TOTAL</b>		<b>556,358,812</b>	<b>416,619,287</b>	<b>8,373,876</b>	<b>452,800,932</b>	<b>8,385,171</b>	

Excludes Wanaka Bores as it is being capitalise in 2018 year

Refer to Section 5.9 for data confidence

#### 4.5.1 Exclusions

The following were specifically excluded from the valuation:

The effect of the relevant provisions of the RMA or other legislation on any asset replacement.

- It should be noted that stormwater mud tanks and culverts are not included in the valuation as they are deemed to be roading assets and are therefore included in the roading valuation;
- Stormwater channels have not been included in the valuation as QLDC's asset data does not clearly differentiate between natural watercourses and constructed channels;
- Restoration, dismantling, or removal obligations have not specifically been considered in this valuation for any assets; and
- Borrowing cost, construction cost and construction period assumptions have not been specifically considered in this valuation for any assets.

#### 4.5.2 Depreciation (loss of service potential)

As per QLDC’s Depreciation Policy referred to in the 2015-15 Annual Report, assets, with the exception of land under roads, are depreciated on a straight-line (SL) basis to write off the fair value of the asset to its estimated residual values over its estimated useful life.

**Table 11 Depreciation of Assets**

Infrastructural Assets		
<b>Sewerage</b>	1.67% - 10%	SL
<b>Water supply</b>	1.67% - 10%	SL
<b>Stormwater</b>	1.67% - 10%	SL

#### 4.6 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.
- (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 breakages and/or blockages as the pipe 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. complete electrical failure of a pumping station, meaning it is unable to convey sewage)

##### 4.6.1 Monitoring the Backlog Trends

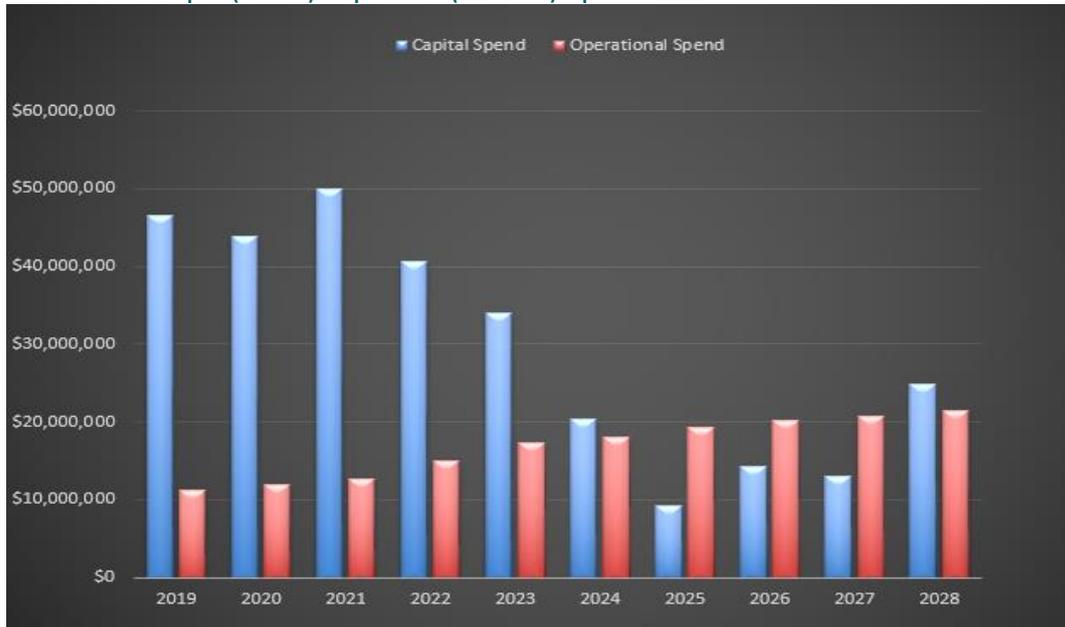
Data is critical to determining if maintenance and renewal effort is being deployed efficiently. QLDC gauge the residual life of its buried assets through a number of different approaches, depending on the nature of the asset. For gravity sewers a programme of closed circuit television (CCTV) inspections allow 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.

#### 4.7 TOTAL EXPENDITURE

In addressing the key strategic issues, QLDC has a multi-million dollar Investment Programme on new and replacement infrastructure between 2018/19 and 2028/29 (LTP 2018).

Figure 48 Three Waters Capital (inflated) & Operational (uninflated) Expenditure to Annual Plan Year



#### 4.8 CAPITAL EXPENDITURE

Figure 49 shows the expected expenditure inflated to annual plan, year-on-year up to 2027/28. It is important to note, due to the size of the programme the years 1 to 3 is being developed in detail and years 4 to 10 has limited detail.

Figure 49 Infrastructure Capital Expenditure Projections

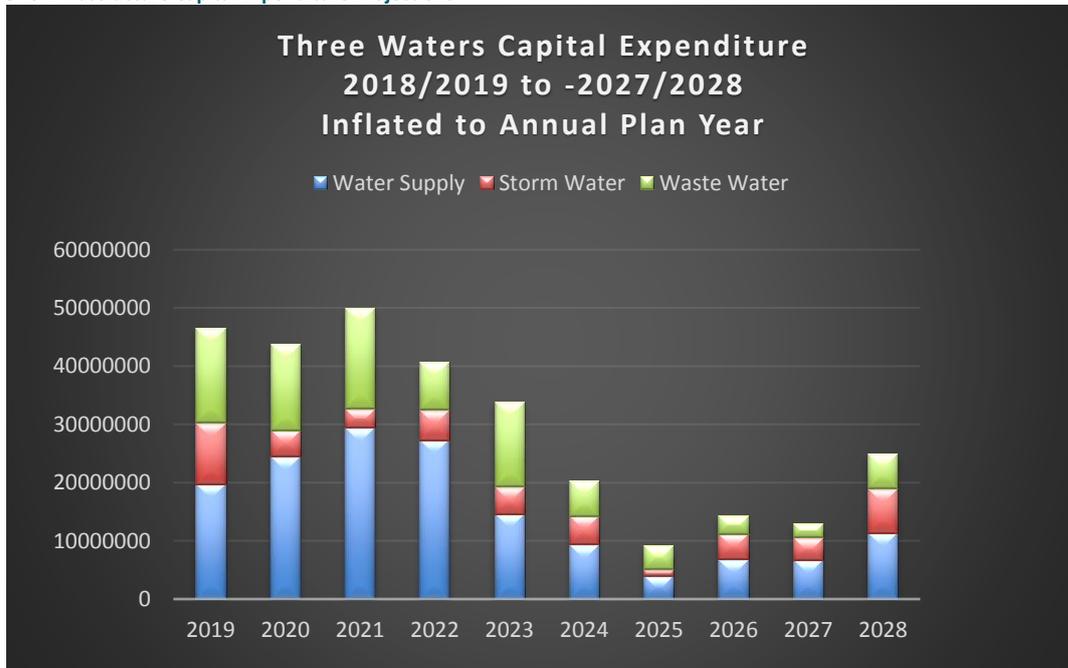


Figure 50 shows the expected expenditure year-on-year up to 2027/28, by driver (growth, asset renewal or level of service). Spend in the first ten years is primarily driven by growth and delivering levels of service to the District, as highlighted below:

Figure 50 Infrastructure Capital Expenditure Drivers

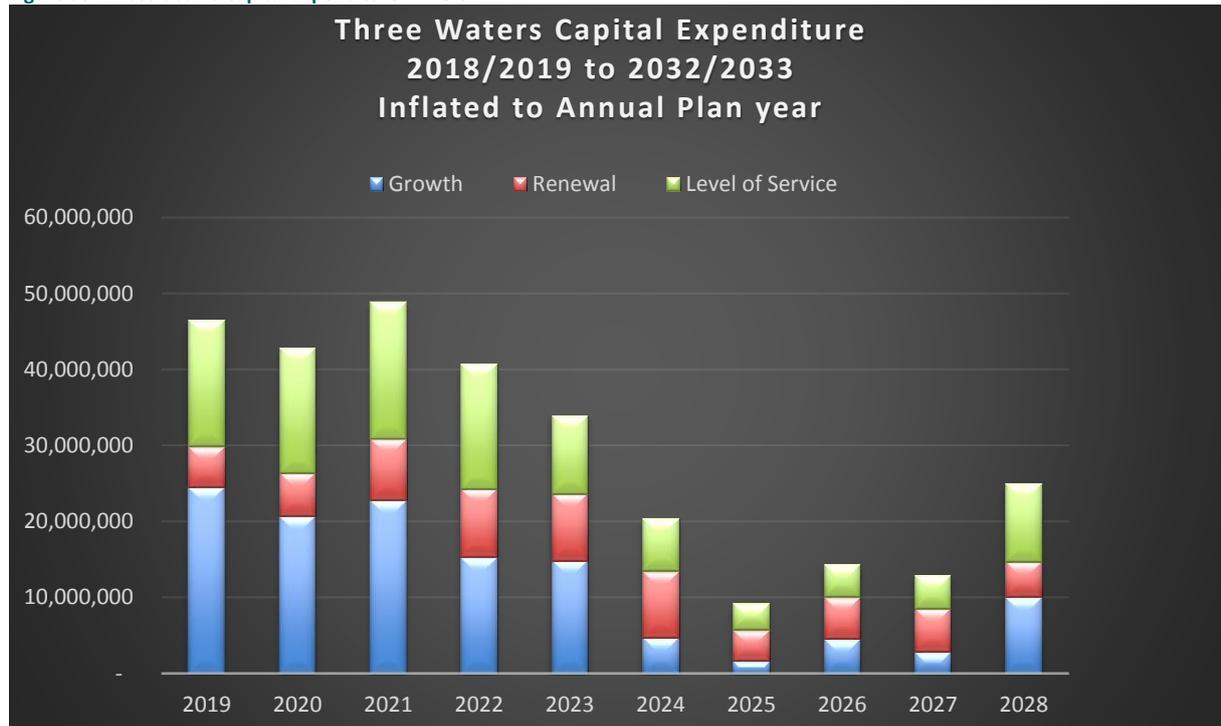


Table 12 shows the current capital investment programme for the next 30 years for Three Waters projects with a values of over \$5M.

Table 12 Three Waters Projects over \$5M

Activity	Project Name	Total from Start Year	Cost from Start Year to End Year	Project Start Year	Project Completion Year
Storm Water	Queenstown Stormwater - Design and Minor Works	\$15.3M	\$15.3M	2018/19	2031/32
Storm Water	Stormwater - Asset Management Improvements	\$14.1M	\$14.1M	2016/17	2048/49
Storm Water	Wakatipu Stormwater Capital Works	\$14.8M	\$14.8M	2017/18	2044/45
Storm Water	Kingston HIF	\$5.8M	\$5.8M	2018/19	2025/26
Storm Water	Upper Stone Creek / Tenby St WNK13	\$5M	\$5M	2025/26	2028/29
Storm Water	North East Frankton Flats Stormwater	\$17.2M	\$17.2M	2018/19	2028/29
Waste Water	CBD to Frankton Reticulation	\$10.2M	\$10.2M	2016/17	2023/24
Waste Water	Glenorchy New Wastewater Scheme	\$7.9M	\$7.9M	2016/17	2031/32
Waste Water	WW - Growth Component For Projects Beyond LTP (2025)	\$54M	\$54M	2035/36	2047/48
Waste Water	Project Pure Treatment Upgrade	\$6M	\$6M	2017/18	2021/22
Waste Water	Project Shotover Upgrade - Stage 3	\$28.1M	\$28.1M	2018/19	2031/32
Waste Water	Project Shotover Upgrade - Stage 4	\$33.3M	\$33.3M	2028/29	2043/44
Waste Water	Wastewater - Asset Management Improvements	\$16M	\$16M	2016/17	2047/48
Waste Water	Kingston Scheme Design HIF	\$19M	\$19M	2018/19	2047/48
Waste Water	Construction of New Rata St Wastewater PS	\$7.2M	\$7.2M	2019/20	2029/30
Water Supply	Kingston Water Supply New Scheme - HIF Project	\$6.5M	\$6.5M	2018/19	2020/21
Water Supply	Design & construct new Beacon Point WTP	\$20.2M	\$20.2M	2018/19	2021/22
Water Supply	New Two Mile Water Treatment Plant	\$35.7M	\$35.7M	2016/17	2044/45
Water Supply	Design & construction new (second) Beacon Point reservoir	\$14.7M	\$14.7M	2018/19	2029/30
Water Supply	Growth Component For Projects Beyond LTP	\$20.5M	\$20.5M	2024/25	2047/48

Water Supply	Water Supply - Asset Management Improvements	\$16M	\$16M	2016/17	2047/48
Water Supply	New Shotover Country Water treatment Plant	\$35.1M	\$35.1M	2016/17	2040/41
Water Supply	Ladies Mile / Lake Hayes Network	\$7M	\$7M	2018/19	2022/23
Water Supply	New Hawthenden reservoir	\$18.5M	\$18.5M	2029/30	2041/42
Water Supply	Transmission Pipeline (stage 1)	\$5.5M	\$5.5M	2019/20	2021/22

#### 4.9 OPERATIONAL EXPENDITURE

Operational expenditure for the 10 year period is shown in Figure 51 and 52. Wastewater operational costs continue to increase over the period due to Project Shotover and the building of new wastewater scheme at Glenorchy. Water operational costs continue to increase over the period due to the building of new water schemes at Kingston and the new HIF projects.

Operational expenditure has not been inflated.

Figure 51 Three Waters Operational Expenditure

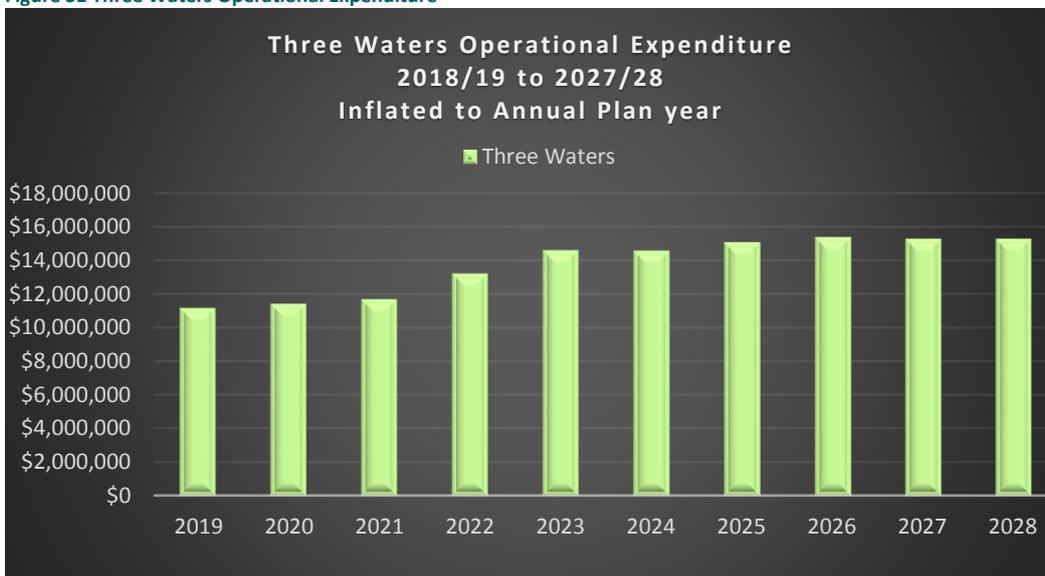
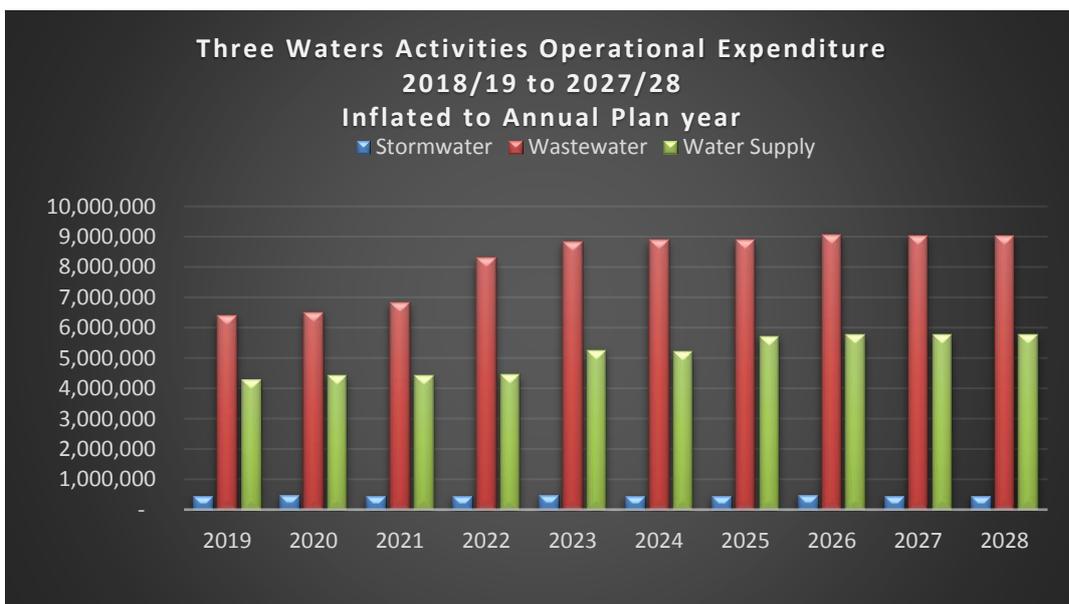


Figure 52 Three Waters Operational Expenditure By Activity



#### 4.10 KEY ASSUMPTIONS, CONFIDENCE AND RELIABILITY

Parts of the natural environment will deteriorate with increased urbanisation and population growth. Raw water quality will become more polluted, both naturally (lake snow/algae/turbidity) and with an increase in development and/or changes in urban run-off and other contaminants (metals – zinc, copper and hydrocarbons).

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.

Lake level and valleys are prone to flooding and alluvial re-direction i.e. Kinloch.

There is an increasing issue with discharge and contaminants resulting from road runoff into stormwater and potentially water supplies.

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.

##### **Drinking Water Standards:**

To determine the health impacts of a contamination event, we have considered a “Havelock North event” occurring in our district. QLDC could expect hospitalisations of up to 161 people, with as many as 25,000 people effected and as many as 70 fatalities. Those most at risk are people who are elderly, very young, and already sick, on dialysis or on chemotherapy.

Using the Ministry of Health’s data, the local cost of a contamination event in our district could reasonably be estimated to exceed \$75 million. These costs cover immediate medical care and lost productivity only.

In addition, adverse international media coverage would place significant risk on the districts tourism economy – estimated at \$6.8 million per day.

Proportionally there will be an increase of users in the community who are vulnerable to contaminants in water supplies; consequently, QLDC will have to get better at providing safe and reliable water, through meeting drinking water standards. With an increasing population under the age of five, pressure on schools also leads to congestion and safety impacts at peak time school drop off and collection.

There are a number of asset types where QLDC seeks to better understand changing customer needs through improved data and analysis:

Recent pipeline failures within the water supply network are indicating that an era of PVC pipe is failing far earlier than expected. This is thought to be due to the pipe standard used being more brittle than modern PVC materials.

## SECTION FIVE – ASSET MANAGEMENT ENABLERS

### 5.1 SIGNIFICANCE

QLDC considers the water supply infrastructure and sewerage treatment plants to be a strategic asset in terms of the Local Government Act 2002 Section 90(2). Strategic assets are those assets that are important to the long-term goals of Council, a failure of one of those assets will be detrimental to realising those goals. QLDC lists its strategic assets in the Significance & Engagement Policy.

The following will trigger the Special Consultation Process:

1. Any decision that transfers or changes ownership or control of strategic assets to or from the Council is a significant matter;
2. The sale or transfer of shareholding of any of the listed assets will trigger the Special Consultation Process;
3. Long term lease of strategic assets (other than land).

QLDC is currently reviewing its Significance and Engagement Policy for inclusion in the 2018/28 LTP, this review is expected to be completed by early 2018.

### 5.2 EFFICIENTLY AND EFFECTIVELY PROCURE AND MANAGE

#### Improved Organisational Contract Management

A key benefit of the new QLDC organisational structure bringing skill bases and staff with similar roles together. This enables cross-pollination across the disciplines. Contract management is a key area where this has seen benefits; there has been a move to using the NZS3917 contract form across all contracts, which assists better contract management across all portfolios as staff understands the contract form better. Further discussion discussed in Section Three.

#### Professional Services

QLDC is reducing the number of consultants used; however there are always areas where Professional Service Consults are required. These services are procured through a 'General Engineering Panel'.

#### Capital Works

QLDC Projects are undertaken in line with the Capital Works Property and Infrastructure Capital Works Procedures Manual. The manual provides guidance on the systems and procedures required to deliver Capital Works Projects by QLDC. Although comprehensive, the extent to which the procedures are applied is determined on scale, value, complexity and risks associated with a project. Procurement is in line with Procurement Strategies.

#### Local Government Act Section 17a

The LGA was amended in August 2014, to bring in the Government's second phase of legislative reform to improve the operation, efficiency and effectiveness of local government. One of the new provisions in the amendment was the introduction of Section 17A – Delivery of Services.

This section requires Council to undertake reviews of the cost effectiveness of current arrangements for undertaking its activities, specifically looking at governance arrangements, funding arrangements and how each service is delivered, for example, contracted out, shared service, in house etc.

The Otago Mayoral Forum expressed support for a joint Otago review process to be undertaken, and in January 2016, the Otago Chief Executive Forum convened a Project Team to scope this work. The Project Team consists of a representative from each council, and its purpose has been:

- To consider the activities of each council and determine if there is an opportunity to undertake joint reviews, and
- To develop a two stage programme of work.

Facilitated workshops are to be completed by mid-September 2017 reporting to the Mayoral Forum by December 2017. Final report to all Councils is due by March 2018.

### Collaboration

Closer relationships are being developed between QLDC and its contractors. Regular liaison meetings and early engagement have been fundamental to building our AMP and Continuous 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; and
- 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 team to address the requirements of the National Policy Statement for Urban Growth and Capacity .
- 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.
- QLDC has a strong relationship with the Districts business community and is building its relationship with Iwi (Ngāi Tahu).

## 5.3 POLICY AND SYSTEMS

QLDC's Asset Management Policy provides the overall direction to guide the sustainable management of QLDC's asset portfolio as a platform for service delivery. Together with the Infrastructure Asset Management Strategy (IAMS), it shows how QLDC intends to progressively improve and mature asset management across QLDC.

Critical to the management of Three Waters assets, and therefore service delivery to consumers, is the need to capture and update data on the network. Information is fundamental for establishing systems models, their calibration and planning future options.

Primary responsibility for maintaining and updating the asset register lies with QLDC. The authority for updating equipment within a facility has been delegated to the maintenance contractor. The contractor can update facility asset data, expired assets, relocate assets and add new assets.

There are a number of support elements (tools, systems and procedures) which complete best practice asset management. These are discussed further within the IAMS.

A key policy area for development involves developing and socializing policy setting for levels of service to establish levels where they currently don't exist and to test those that do exist.

## 5.4 BENCHMARKING

### Asset Management Maturity - International Infrastructure Management Manual 2017

Benchmarking is a method by where local authorities can compare their performance to industry-accepted practice, standards or other guidelines. This helps gain context of how well a particular local authority is performing relative to its peers or the wider industry. Having a performance measurement process such as benchmarking for the operational performance of Council services is a fundamental part of public accountability.

As part of the continuous improvements in asset management practices, QLDC again undertook an Asset Management Maturity Assessment – based on the NAMS IIMM guidelines (International Infrastructure Management Manual). The review includes the activities of Transport and Three Waters and was completed in December 2017, with the previous assessment held in December 2016 and 2015.

The 2017 review included achievements since 2016, and key areas of strength and opportunities for improvement for each activity.

Key observations in relation to the infrastructure activities of transport and three water are:

- The quality and substantiation of the Asset/Activity Management Plans and ten year programmes put

forward for the 2018 TYP (when compared to the 2015 TYP)

- The capital planning database transition to in-house management is completed and is used as a single source of information for all capital programmes (Annual Plan, TYP, Asset/Activity Management Plans, Infrastructure Strategy);
- The Strategy and Planning team is now fully resourced and, amongst other things, has been further developing strategic business cases for major projects / programmes in the TYP with the BBC process starting to be worked through to design and delivery stages. A new role is also focussed on better management of development infrastructure which has been an issue in the past;
- Disaster loss modelling has been undertaken to better understand the resilience of the network to earthquakes and the potential financial consequences. A network resilience plan is a future goal;
- There has been further development of the criticality framework;
- There is a Council-wide programme for using Promapp to map workflow processes across Council to improve quality, alignment and efficiency. At this stage the focus has been on documenting processes and establishing quality controls is a future target; and
- Work is being done to review ownership / management of data for consistent provision and use of information across Council.

Figure 53 illustrates the 2012, 2015, 2016 and 2017 average scores for each AM function while Figure 54 highlights the scores by the Three Waters function for each activity assessed.

Figure 53 2012 to 2017 Asset Management Assessment Average Scores

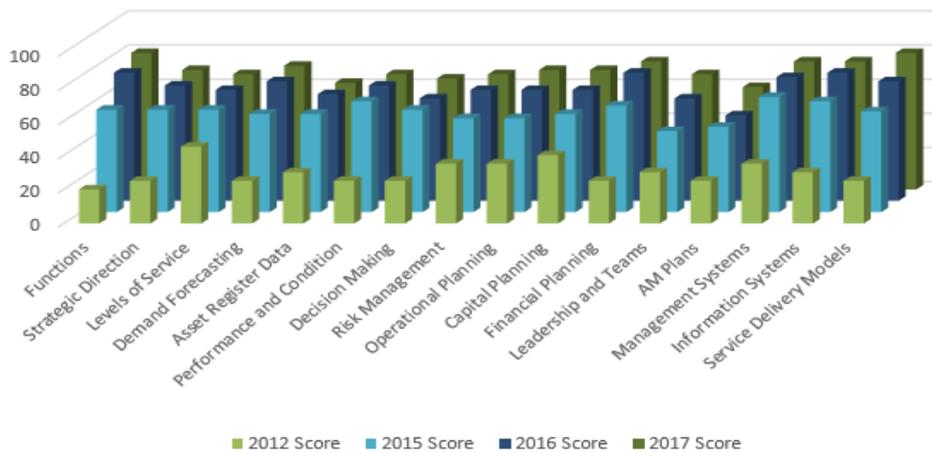
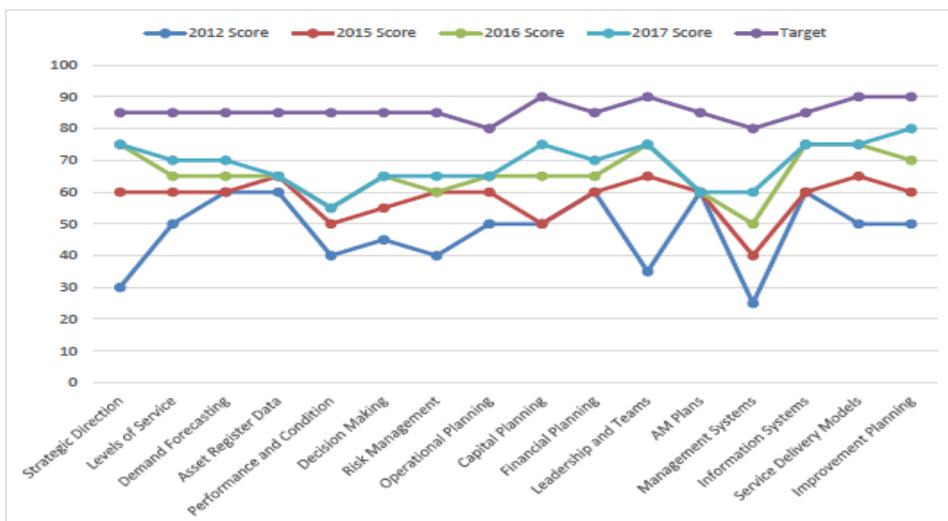


Figure 54 Scores by Asset Management Function



While it is good that progress is being made against the asset management improvements, it is also very positive to see that previous improvements are being embedded into business-as usual practices. Investment and attention are required to maintain scores as well as improve them.

The following aspects of QLDC's asset management status are focus areas for improvements:

- Attention be given to managing the quality and effectiveness of processes (documentation, review, audit processes);
- Priority be given to bringing in the asset criticality work into operational and CAPEX planning processes – the work is running in parallel but needs to dovetail – as well as regional and local 'lifelines' projects;
- Levels of service and cost options for key areas be explored with the new Council as part of the Asset/Activity Plan development leading into the next TYP; and
- Establish KPIs to monitor and demonstrate the benefits being achieved through asset management improvements.

### Local Government Excellence Programme

Queenstown Lakes District Council was selected as a Foundation Council for the local government New Zealand standards programme. The new system outlined in the excellence programme lined up with QLDC's and the sectors strategic plans to lift the value of services to the community. The local government standards system will demonstrate and improve the value and services of councils by measuring qualitative and quantitative indicators across leadership, finance, service delivery and community engagement.

Through the programme, participating councils will be assessed every three years, given a standard from A to C, and the results publicised. Councils will discuss results with communities and use the assessments to plan improvements.

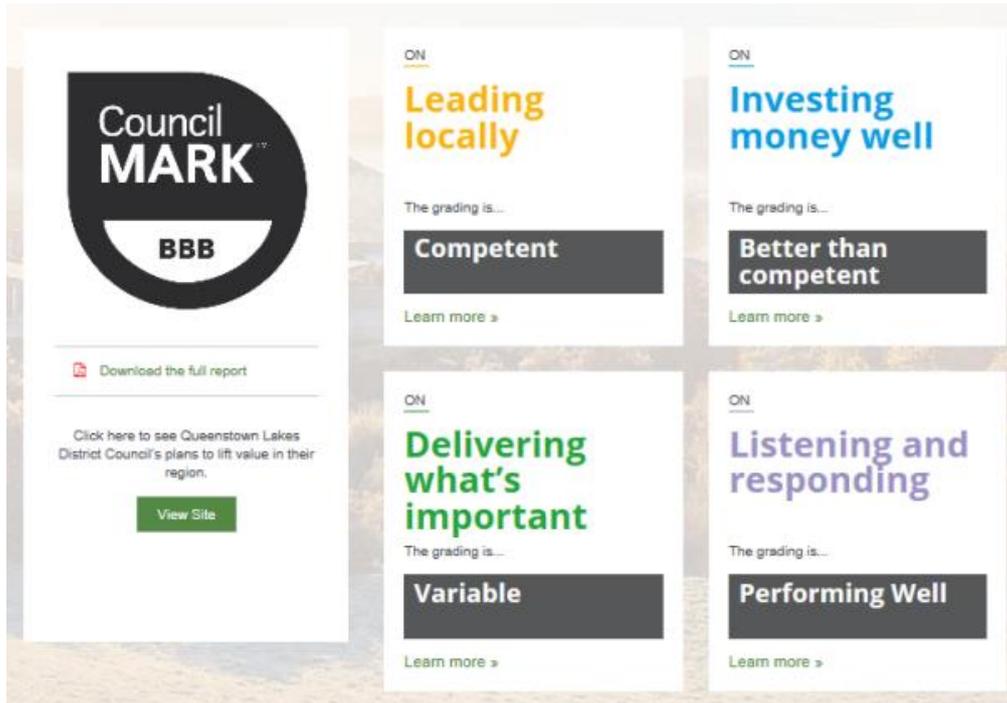
#### Key Learnings:

The assessment occurred over a two-day period in September 2016, during the assessment discussions with staff and managers demonstrated there was a good sense of what the QLDC was and was not doing well, with a growing realisation through the two review days that QLDC needed a much stronger vision and direction. The management team appears well equipped to take up this challenge. There are key learnings from this review as follows:

- Planning: The point of inflection for a Council to change direction from being development led to planning led is difficult to pick, but with this Council clearly needs to move from facilitating developers interests to managing the needs of a small metropolitan community with substantial out-reach populations.
- Rates: This Council is a leading example of using targeted rates to better share the rate burden of a tourism based city.
- Emergency leadership: In emergency management, which is a material issue for this district, there is clear leadership in emergency planning that may be replicable elsewhere.
- Systems management: Prioritisation of management effort in improving utility asset management was beneficial to the Council's grading. In contrast, the previous lack of prioritisation of Council property management, although pragmatic, showed in a poor assessment. However, the incremental investment to improve that activity is less now that the core asset management skills and systems are established.

#### Rating:

Figure 55 CouncilMark Rating 2017



#### Overview:

- Queenstown Lakes District Council has managed past growth in a financially prudent manner and now needs to find a more proactive, forward view for its district in the face of continuing growth pressure.
- The Council attends to governance. It attends well to decision-making, actively manages the Chief Executive's contract and is continuing to develop its approach to risk management. Having two independent members on the Finance, Audit and Risk Committee (one being the chair) is good practice, and the committee itself is active.
- The Council has a financial strategy that is in line with its current reactive policy of managing for growth. It is prudent in the level of debt it takes on, and it makes full use of targeting and development contributions. Infrastructure for new suburbs is now funded to 85 per cent of costs, although this excludes community facilities.
- The Council has given priority to the three waters (drinking water, stormwater and wastewater), and it is now able to identify both the location and state of its pipes.
- The Council has identified and is using various channels for communicating with ratepayers.

The full report can be found here:

<http://www.lgnz.co.nz/about-councilmark/participating-councils/queenstown-lakes-district-council/>

#### National Performance Review

Queenstown Lakes District Council has again taken part in Water NZ's National Performance Review. This annual review provides a benchmarking tool for local authorities and other organisations providing public drinking water, wastewater and stormwater services. Water New Zealand has undertaken this review since 2007 and it provides annual and trending information since then. Results for the 2016/17 review will be available later in 2018.

## 5.5 AUDITS

### 5.5.1 Long Term Plan and Annual Reports Audits

QLDC uses external auditors (Deloitte 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 below two points relating to infrastructure processes were raised by Deloitte during the 2017 audit process of the Annual Report.

### Waters Valuation

<b>Rating:</b>	<b>High</b>
<b>Ease of Fix:</b>	<b>Complex</b>
<b>Observation:</b>	<p>The Three Waters revaluation report provided by Rationale noted the following:</p> <ul style="list-style-type: none"> <li>• Current asset module Hansen has not been working effectively in terms of integrating with GIS since December 2016;</li> <li>• Data inconsistencies within Hansen/GIS were noted by Rationale and infrastructure team, similar to in the 2013 valuation; and</li> <li>• Multiple management points were noted within the Rationale valuation report including data inconsistencies noted.</li> </ul>
<b>Risk:</b>	<p>There is a risk that Hansen is not up to date with all assets included in GIS and therefore assets are not able to be monitored due to data inconsistencies. If a new database is implemented there is a risk that data could be lost through changing modules as well as all the valuation data now sitting in Hansen.</p>
<b>Recommendations:</b>	<p>We recommend that management ensure that an efficient outcome to the asset module issues can be resolved.</p> <p>We also recommend that data inconsistencies are looked into and updated before the next valuation as well as management points in the report by the valuer are reviewed. We note through discussion with the infrastructure team that this is a work in progress.</p>
<b>Management Response:</b>	<p>QLDC accepts these recommendations.</p> <p>There are actions underway to resolve these matters. The system integration and data inconsistency issues are planned to be resolved by December 2019 – when the Hansen asset management platform will be retired and the system moved to the QLDC Corporate System – Technology One.</p>

### Vested Assets

<b>Rating:</b>	<b>Moderate</b>
<b>Ease of Fix:</b>	<b>Medium</b>
<b>Observation:</b>	<p>In the current year that some vested assets were not categorised in the correct year, with assets being capitalised in the current year in which should have been in the prior year and vice versa. We noted that the process has changed during the year to make this more efficient, however a large process had to occur during the audit by Infrastructure staff to understand the error and correct this in the annual report.</p>
<b>Risk:</b>	<p>There is a risk that vested assets recorded are not recorded in the correct year.</p>
<b>Recommendations:</b>	<p>We recommend to ensure that the improved process continues, and that checks are done by management to ensure that the new processes are going to achieve the previous issues.</p>
<b>Management Response:</b>	<p>QLDC accepts these recommendations.</p> <p>With regards to roading assets, a change to the quantity and quality of roading data received through the subdivision process has already seen a marked improvement in vested asset data. This is supported by the Resource Management Engineering team holding back compliance sign off (224c approval) if the data is not provided. QLDC are working with its contractors to ensure that data is entered into the road</p>

<b>Rating:</b>	<b>Moderate</b>
<b>Ease of Fix:</b>	<b>Medium</b>
	<p>asset management system in a timely and accurate manner to reflect the annual vested assets.</p> <p>In addition, a review of the overall QLDC subdivision process, and in particular, the sub-processes around the vesting of assets has been progressing for a number of months. This project is being led by the Knowledge Management Department. We expect this project to be completed by June 2018.</p>

## 5.6 ISO 55000

A high-level assessment of QLDC's compliance with the requirements of the International Standard, ISO 55000:2014, was carried out during the 2015 AM Maturity Assessment.

Working towards ISO 55000 is being considered as a medium to long term goal, however, seeking full accreditation is likely to be resource intensive and unwarranted unless legislation or regulation imposes the requirement.

QLDC is, however, seeking to align AM practices with ISO 55000 requirements. To achieve this alignment, significant focus is being given to the following areas:

- Documentation of processes and 'system interactions'
- Internal audit, review and improvement processes to be incorporated as 'business as usual' activities
- More detailed understanding of the asset management context and external and internal drivers, and how these translate into AM objectives ('line of sight' from corporate objectives to operational activities)

## 5.7 DATA CONFIDENCE

QLDC uses the International Infrastructure Management Manual (IIMM) rating system for data confidence. Further information on this can be found in the IAMS.

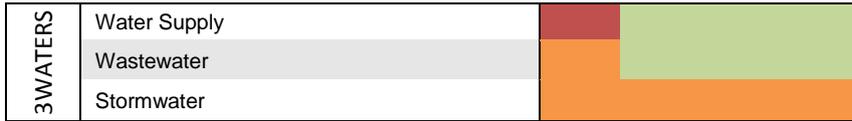
### Water Supply and Wastewater:

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. The lack of confidence in asset condition is due to a lack of systems integration and analytics rather than poor core data, improved systems are being implemented in the 2017/18 year that will significantly improve QLDCs analytical capability.

### 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 mudtanks and associated assets. Asset performance has become out of date in recent years but a programme of hydraulic modelling is planned for 2018/19. The lack of confidence in asset condition is generally due to a lack of systems integration and analytics, improvements are being implemented in the 2017/18 year that will significantly improve this.

Figure 56 Overall Confidence of asset data



	Asset Condition	Asset Performance	Data Completeness	Overall Confidence of Asset data	
Water Supply	Red	Green	Green	Green	A
Wastewater	Orange	Green	Green	Green	B
Stormwater	Orange	Orange	Orange	Orange	C
					D
					N/A

**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/A** Data does not exist or is not relevant

### 5.8 METADATA STANDARDS

QLDC are investigating the implementation of volume 1 of the New Zealand Metadata Standards in conjunction with the upgrade to use Technology One’s Enterprise Asset management module in 2018/19. This will allow a greater understanding of QLDCs asset data and its associated data confidence, as well as simplified national benchmarking and improve analytics.

# SECTION SIX – ASSET MANAGEMENT PERFORMANCE PLAN

QLDC’s Asset Management Performance Plan is a high level view of the key areas of improvement identified to enhance the asset management planning process within QLDC. Achieving this Performance Plan will align QLDC’s asset management practices to the higher end of the “Intermediate” level as represented in the IIMM 2015 guidelines. QLDC is currently sitting in the lower “Intermediate” level.

Figure 57 International Infrastructure Management Manual (IIMM) AM Maturity Index (2015)

Aware	Minimum	Core	Intermediate	Advanced
0-20	25-40	45-60	65-80	85-100

Intermediate = reliable register of physical, financial and risk attributes recorded in an information system with data analysis and reporting functionality. Systematic and documented data collection process in place

Timelines for completion are assigned to the actions based on priority. The key focus is on process and data integrity; ensuring that processes 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.

Status of the Performance Plan is reported to Senior Management quarterly.