



Queenstown Lakes District Council

2015-2045 Infrastructure Strategy

March 2015

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1.0 Background

This document represents Queenstown Lake District Councils first 30-year strategy as required under the 2014 reforms to the Local Government Act 2002. This is an important document as Council seeks to continuously improve the provision of core services to the community. This document focuses on the core infrastructure services of: drinking water supplies, wastewater collection and treatment, stormwater management and discharge, roading and footpaths.

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

As the primary water supplier to the district, Council is required to provide a supply of water to homes and business 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.

Council 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 urban public health from outbreaks of waterborne diseases associated with human and business liquid wastes. Reticulated systems also enable cost effective treatment and disposal which helps to mitigate adverse environmental outcomes.

Stormwater systems are provided to manage rainwater and groundwater away from private properties. Effective management of rainwater with these systems is vital to controlling erosion and avoiding property damage, as well as ensuring public amenity of open spaces and protection of the environment. Council is also aware there may be a requirement in the future for stormwater treatment. Any decision around stormwater treatment will be based on resource consent requirements which would undergo public consultation.

Council owns and operates transportation corridors (and associated support infrastructure, i.e. street lights, signage etc.) for providing the community with safe and efficient access to their homes, schools, places of work, recreational areas and public services. These corridors also support the local economy by enabling the efficient movement of goods and services.

Managing and maintaining these core services to ensure efficient, effective and reliable service delivery to the community requires thinking strategically and sound asset management practices. A key characteristic of the district is the high proportion of tourist and peak season demands on the existing infrastructure.

The primary purpose of this strategy is to identify significant issues or investment requirements in the core infrastructure services over the next 30 years. These requirements are then given effect through Councils 15-year Asset Management Plans (AMP). The AMPs then inform the TYP, which undergoes public consultation before being adopted

The process for developing this strategy is threefold:

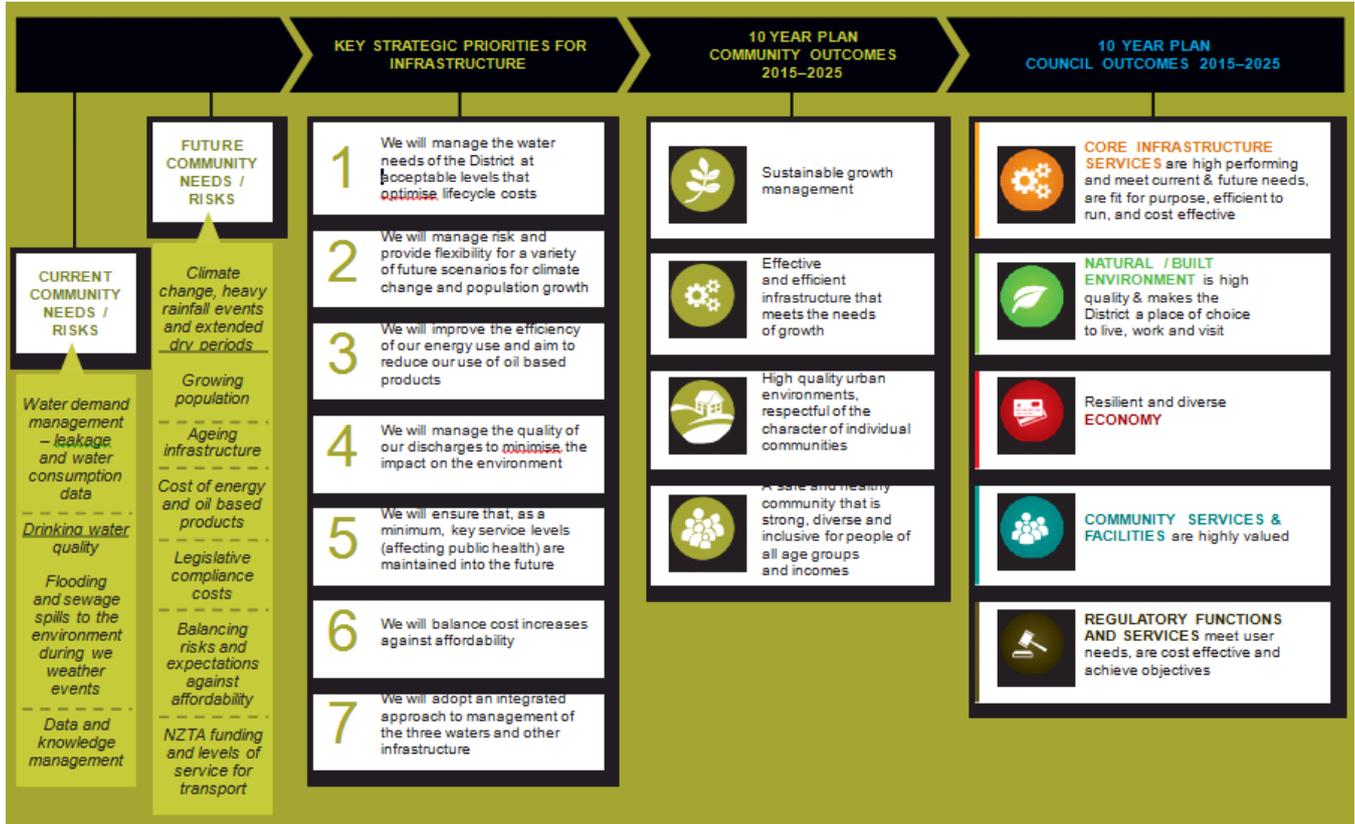
1. Analysis of the geographical and demographic context in which the Council is operating;
2. Analysis of the key capital expenditure drivers, significant infrastructure issues and risks, which are based upon historical network data , performance data and local knowledge;
3. Development of a major projects and investment programme (capital expenditure of \$3.5 million or more) timeline as the most likely future scenario.

2.0 Key Strategic Priorities

In determining the basic elements of this strategy, we have considered the TYP 2012-2022 Community outcomes, the risks to our community for the next 30 years. From this process we have identified key strategic priorities that will need to be monitored, analysed and responded to over this extended period.

Figure 1 summarises the elements of the strategy linked to the 10 Year Plan 2015-2025.

FIGURE 1 KEY STRATEGIC PRIORITIES AND GOALS



3.0 QLDC Context

Queenstown Lakes District Council (QLDC) was established in 1989 as a local authority (having the functions, responsibilities and powers of a territorial authority). The Queenstown Lakes District replaced the former Lakes County, Queenstown Borough, Vincent County and Arrowtown Borough Councils. QLDC operates within the area operated by the Otago Regional Council.

3.1 Geographic Context

The Queenstown Lakes District has a land area of 8,705 km² not counting its inland lakes (Lake Hāwea, Lake Wakatipu, and Lake Wanaka). The region has an estimated resident population of 29,000 (2013 Census). The total area of the district (including lakes) is 9,357 km².

Queenstown (Māori: Tahuna) is the largest centre in Central Otago, and the second largest in Otago after Dunedin. Based on the 2013 Census, the usually resident population of the Queenstown urban area (including Fernhill, Frankton and Kelvin Heights) is 15,000, an increase of 15% since 2006.

Queenstown is a resort town in Otago in the south-west of New Zealand's South Island. It is built around an inlet called Queenstown Bay on Lake Wakatipu, a long thin Z-shaped lake formed by glacial processes, and has spectacular views of nearby mountains such as The Remarkables, Cecil Peak, Walter Peak and just above the town; Ben Lomond and Queenstown Hill.

Wanaka was originally settled during the gold rush of the 19th century and is the second largest town in the district. It is situated at the southern end of Lake Wanaka, adjacent to the outflow of the lake to the Clutha River. It is the gateway to Mount Aspiring National Park. Wanaka is primarily a resort town with both summer and winter seasons and is based around the many outdoor opportunities. Owing to the growing tourism business and the increasing number of retirees in Wanaka, large growth is occurring, with a population increase of up to 50% in the past 10 years.

Other towns in the district include Arrowtown, Kingston, Glenorchy, Lake Hawea, Cardrona, Makarora and Luggate. The district is now known for its commerce-oriented tourism, especially adventure and ski tourism.

FIGURE 2 QUEENSTOWN LAKES URBAN AREAS 2014



The district is 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 with a low average rainfall of 636mm per year create a unique climate within New Zealand.

The Ministry for the Environment* predicts the following longer term changes in the districts climate over the next 100 years:

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

- Otago is expected to become wetter, particularly in winter and spring where average annual rainfall is likely to increase by 12 per cent by 2090. Seasonal projections indicate that winter rainfall is likely to increase by 29 per cent by 2090.
- The number of storms is expected 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 per cent 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.

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

Changes in climate will have an effect on the performance and lifespan of QLDCs infrastructure. Some of these effects may be positive (i.e. possible increased efficiency of wastewater treatment processes due to increased temperatures) and some may be negative (i.e. more extreme freeze / heat cycles making road surfaces age more quickly). The actual extent and severity of these effects will be investigated progressively over the term of this plan in order to best manage the infrastructure and ensure affordability to the community.

3.2 Demographic Context

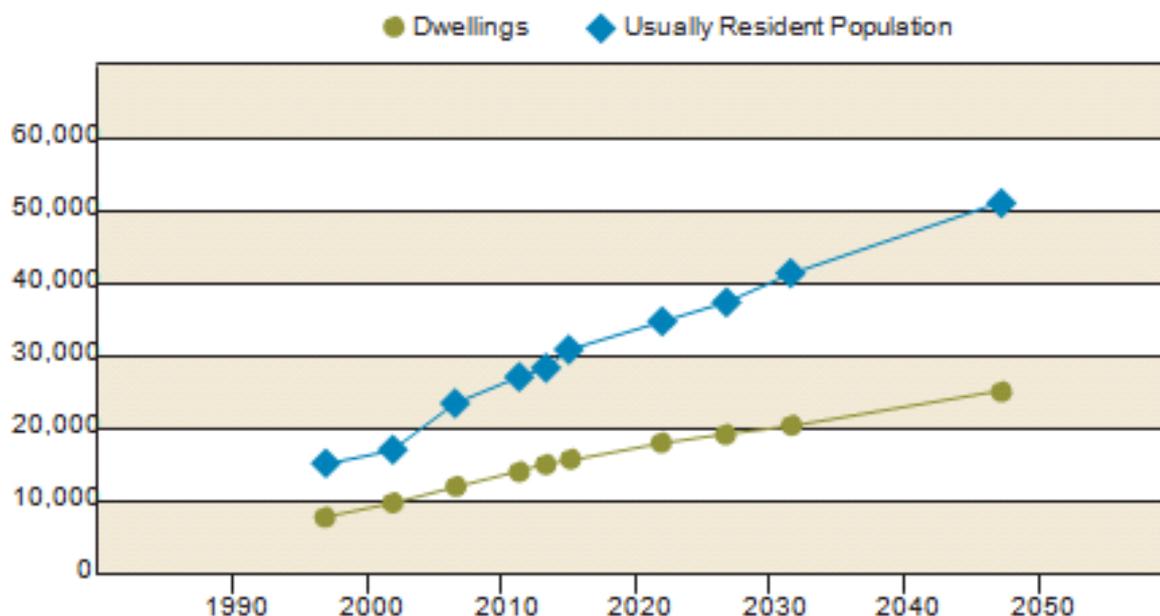
The Queenstown Lakes District is experiencing a period of significant population growth. This places increased pressures on the three waters and transport services in terms of capacity and extents. The district is a recognised tourism destination that supports economic growth across the southern part of the South Island. The natural environment of the district consists of a variety of systems including rivers, lakes, basins, wetlands, bush remnants, uplands, mountains and shorelines. This combination plays a significant role in the quality of life in the district by providing recreation, economic, residential, conservation and servicing opportunities. As such, the district is attractive to local and international investment in housing, services and visitor related activities.

Resident population growth in the district has typically been around 4.1% per year since 1996, while dwelling growth has been around 3.6% per year. This rate of growth is high when compared to most other towns in New Zealand.

Under the medium population growth projections the district's population is expected to increase by 64% from 30,700 in 2015 to 50,300 by 2045.

Over the next 30 years it is expected that there will be 19,600 additional residents and 8,700 additional dwellings in the district.

FIGURE 3 QUEENSTOWN LAKES DISTRICT MEDIUM POPULATION PROJECTION 2015-2045 (REF. QLDC GROWTH PROJECTIONS, RATIONALE, 2014)



4.0 Assumptions with Timing in Relation to Asset Management Plans and the Draft Long Term Plan

Council produced its first internal draft of this Infrastructure Strategy in June 2014. This document was then able to inform and guide the Asset Management Plans (AMP) developed in late 2014. In the development of the AMP, latest engineering investigation work was able to be included which in some cases has superseded the assumptions and knowledge at the time of drafting the Infrastructure Strategy. The key changes in assumptions have been captured below, and where appropriate, the assumptions within the Infrastructure Strategy have been updated from the AMPs. It is further recognised that through the development of the Long Term Plan, and its associated community consultation processes, assumptions and timing of investments may further be altered, prior to the LTP being adopted. These changes will not be included within this Infrastructure Strategy until it is next reviewed and updated.

The following significant capital investments may be subject to change in terms of inclusion, timing or scale:

- Project Shotover
- Eastern Arterial Road *
- Queenstown Convention Centre
- Wanaka Sports Facility
- Wanaka Swimming Pool
- Three Parks Development
- Jardine’s Water Supply
- Project Pure Future Upgrades
- Wanaka South Capacity Upgrades

* The timing for this project has been brought forward to 2018 in the draft TYP

5.0 Data Confidence

QLDC recognises the importance of data confidence and its role in making good, informed decisions. This includes benefits in minimising second guessing, applying of 'adjustment factors' and limiting conflicting opinions based on related, but dissimilar data sets. Without data confidence, the QLDC will struggle to be informed and make the best investment decisions for the community.

A key focus of QLDC is improving the quality of its data and making better use of that data for informing decisions. To support this outcome, an Information Analyst role and an Asset Data Analyst role have been created with QLDC's Infrastructure Asset Planning. Some of the programmes established later in this Strategy include assumptions that better data and information has been collected as time goes by and that some of the underlying strategies will be reviewed and revised (as appropriate) as improved information becomes available.

Key assumptions included within this strategy are QLDC:

- Will progressively investigate and implement new approaches to provide for better capture of asset data, including true operations and maintenance costs,
- Will update and refine the required renewal expenditure based upon the improved data,
- Renewals programmes will be adjusted based on a structured programme of condition and performance monitoring, and
- Asset renewal profiles and depreciation rates/calculations will be reviewed as improved information becomes available.

QLDC has only one corporate data repository for each of its core infrastructures.

Transportation - Asset management has been supported by the Road Asset and Maintenance Management (RAMM) system for many years. RAMM provides the repository for asset inventory and condition data, reporting, asset valuation and maintenance contract administration tools.

The data in the RAMM database is regularly audited by NZTA in their capacity as co-sponsor of the QLDC investment programme. However, with the change to the One Network Road Classification (ONRC) system being rolled out by NZTA it has become apparent that the quality and quantity of information held with the databases will need to improve to meet the new 'evidence based investment decision' model which the ONRC requires. It is the move to the ONRC approach, and not the current quality of the data which will have the greatest effect on the roading investment programme moving forward.

NZTA have signalled that QLDC, when compared to other similar councils, has a high level of investment relative to the scale of its roading network. NZTA have signalled that councils will likely need to take on more risk in terms of how they invest in their roading networks under the ONRC approach. This is a fundamental shift in the current methodology for developing the roading investment programme for all councils.

NZTA have also signalled that introduction of the ONRC methodology which will have fully replaced the legacy investment development methodology by June 2018. (Note – QLDC is planning to have the ONRC implemented by June 2017, to enable a full year of operation under the ONRC ahead of the NZTA deadline).

NZTA have indicatively signalled it is likely that the QLDC renewals programme may be reduced and the safety and drainage investment programmes may be increased. Overall, it is expected that the total roading investment programme will decrease progressively, with the exception of large, one off projects from time to time (i.e. Eastern Access Road).

Three Waters - Hanson is the repository for three waters asset electronic data storage and reporting system which captures and stores electronic records relating to asset inventory, work history, valuation, condition and investment.

Recent analysis on the Hansen datasets has shown that there are null values/missing data in static record (i.e. diameters, materials, length etc.) for legacy assets. This missing data is not occurring for new assets. Without improvements to these datasets, there is an increased risk of unforeseen asset failure and increased frequency of service outages. QLDC is proactively working to improve the completeness and quality of its water records

As with most councils, there are some areas for improvement in the completeness and quality of the data sets. As such, the methodology for developing the QLDC investment programmes has been based primarily on best engineering judgement. A factor of safety has been applied through the conservative application of the three waters computer models. These models are not yet calibrated, but have been used to identify performance issues and upgrades required to the three waters networks. These programmes will be reviewed over time as funding is approved to further develop and calibrate the computer models. Improvements in the computer models are programmed in the draft TYP to commence from July 2015.

As the datasets are improved, the model calibration programme is completed (planned for the next two years) and the levels of service / risk management framework (including Treasury's Better Business Case Model) are implemented over the next 12 months, the current investment programme will become more robust. As a whole the value of the investment programme will likely decrease as data confidence improves and there is an increased transparency on the balance between investment and risk.

In summary, the implications of the data confidence ratings for the accuracy of the financial forecasts are outweighed by the upcoming changes in investment programme development methodology. The current programmes are likely delivering an over investment at this time (as a whole). However, these programmes are expected to be reduced as the new evidence / risk based methodologies (along with data improvements) come into effect over the next 12 – 36 months

6.0 Compliance with Local Government Act

S101B (4)(b)(ii) requires the Council to identify when the local authority expects the decisions will be required.

The information provided regarding capital investment programmes is provided on the basis of best available information at the time. These programmes are based on legacy master plans, policies and technical strategy documents. These documents are periodically reviewed to ensure they continue to meet legislative requirements and industry recognised practices.

A decision gate for all investment identified in the adopted LTP is set by the Delegations Register. Approval to proceed (fund) a project is at the decision of the Council (or CEO if so delegated by the Council). Typically the decision to proceed on a project is identified in advance on the Councils Meeting Schedule, and is decided on after public consultation through the LTP or a Special Consultative Process, as defined in the LGA. Typically a formal decision from Council will be required 1 – 3 years ahead of any significant capital expenditure, depending on the levels of community interest.

S101B(4)(c) requires the Council to “include the following assumptions on which the scenario is based: (i) the assumptions of the local authority about the life cycle of significant infrastructure assets:

QLDC asset life cycles are based in industry standard life cycles, periodically reviewed by internal technical staff and supported by specialist engineering consulting firms. In addition, QLDC seeks to supplement this approach with:

- Research and prioritising of the areas of greatest risk – refine and update infrastructure risk register (in accordance with the risk management framework)
- Continue and improve our programme of asset condition assessment to establish asset's remaining useful life and maintenance / replacement programme (currently based on nominal industry standard working lives for different asset types).
- Identify, implement and improve asset management systems to provide accurate and timely information for effective asset management, asset planning and performance monitoring.
- Through the newly created Asset Performance team: investigate cost effective asset maintenance programmes to reduce or mitigate risk of failure to provide agreed levels of service and where asset maintenance programmes prove too costly, develop asset replacement programmes.
- Seek continuous improvements to the asset management process based on benchmarking with industry groups (ie NAMS).

S101B(4)(c) requires the Council to “include the following assumptions on which the scenario is based: (ii) the assumptions of the local authority about growth or decline in the demand for relevant services:

As outlined in the Strategy, growth in population, both residents and tourists, is predicted to continue to increase over time.

Through the water metering programme, the inflow and infiltration programme, pipeline renewals programme, along with intensification, per capita consumption patterns for water supply and wastewater are predicted to decrease over time.

Stormwater per capita demands are expected to remain unchanged where increases in impermeable surfaces are offset with appropriate sustainable urban design and potential increases in rainfall events over the longer term.

Per capita use of cycleways and roads is expected to increase in the short to medium term at a rate similar to growth.

S101B(4)(c) requires the Council to “include the following assumptions on which the scenario is based: (iii) the assumptions of the local authority about increases or decreases in relevant levels of service;”

The Community Water Services AMP has been developed based on maintaining the ‘existing levels of service’.

Likewise, the Community Transportation AMP has been developed based on maintaining the ‘existing levels of service’. Through the ONRC approach, this is expected to continue, however there are expected improvements efficiency in investment through an increased focus in using data to ensure upgrades do not occur ahead of when they are actually required.

7.0 Analysis of Capital Expenditure Drivers, Significant Infrastructure Issues and Risk

In general, decisions to invest (or not) in infrastructure are mostly influenced by legislative requirements, delivering levels of service and managing risks.

The risk management processes used by QLDC were upgraded in late 2013 to be aligned with the international standard ISO 31000:2009 which defines risk management principles and guidelines. A full description of the risks identified in the table below can be found in the QLDC Community Water Services Asset Management Plan (AMP) and Community Transport Asset Management Plan (AMP)

The key decisions QLDC has to make generally relate to investment in core infrastructure. These investment decisions are driven off four key considerations:

- What are the most appropriate service levels for the district
- When should existing infrastructure be replaced;
- When should QLDC invest in improving the existing service; and
- How much should be invested now to provide infrastructure for a growing community.

The tables on the following pages summarise the significant infrastructure issues facing the district. The table also includes the current understanding of the matter and proposed response to those issues and the likely implications of undertaking, or not undertaking the actions/investments proposed. In some instances, the same principal response action is capable of addressing several infrastructure issues.

TABLE 1 SIGNIFICANT INFRASTRUCTURE ISSUES FOR QUEENSTOWN LAKES DISTRICT

| WATER SUPPLY | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Current and future development needs of the community (including environmental protection) - Population growth impact <i>(How much needs to be invested?)</i> | Principal options (most likely scenario) for response | Implications |
| <p>Expansion of the water supply systems will be required to provide and maintain current levels of safe water supplies across the metropolitan areas.</p> <p>Key areas:</p> <ul style="list-style-type: none"> - Wanaka - Frankton Flats - Frankton Road - Kelvin Peninsula | <p>The current strategy is to optimise the use of the existing water supply infrastructure. This requires increasing the ability to produce clean water and efficiently distribute the water around the district to existing and new customers.</p> <p>Key decision points will be:</p> <ul style="list-style-type: none"> - Continuation of small-scale local water sources or rationalisation to fewer, larger water supplies - The timing of, and increased use of non-infrastructure solutions (education, metering and demand management) to best manage future service requirements while balancing affordability <p>The proposed future for Wanaka’s water supplies is to continue to be based on small scale supplies, with a new reservoir to service South Wanaka. A new water source is proposed at a location between the existing two lake-supply intake points.</p> <p>The proposed future for Queenstown’s water supplies is to rationalise the number of intakes and treatment plants, to improve economies of scale, improve risk management and reduce supply costs over the longer term. In the interim, additional treated water storage (reservoirs) will be required to service growth along Frankton Road, Kelvin Heights and Frankton Flats.</p> <p>The following key projects are anticipated to service growth:</p> <ul style="list-style-type: none"> - Wanaka - Hawthenden Reservoir 2029–35, \$10M - Frankton Flats Servicing by 2022, \$6.5M - Wanaka South Servicing by 2025, \$8M | <p>Growth projections are important in understanding the potential increases to demand and avoid the need for water restrictions. These could also impact water pressure, overall customer satisfaction and fire-fighting capability</p> <p>Pressure fluctuations also expose the network to breakages or water outages.</p> |

| <p>Current and future development needs of the community (including environmental protection) - Population growth impact <i>(How much needs to be invested?)</i></p> | <p>Principal options (most likely scenario) for response</p> | <p>Implications</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Development will continue to occur around the district (outside the metropolitan areas), and may need to be connected into a council operated water supply.</p> | <p>Each new development is assessed on a case by case basis for inclusion (connection) to council owned and operated water supply schemes. Where connections are not feasible, developers are responsible for securing their own safe and reliable water supply.</p> <p>Non-metropolitan 'private schemes' are a community's choice for providing a cost effective, short to medium term solution, to providing water supplies to people who choose to live in non-urban areas of the district.</p> <p>Key decisions will be:</p> <ul style="list-style-type: none"> - Under what circumstances council would take over management and operation of private schemes (i.e. a broader public safety concern) and - On what basis would these schemes then be funded. | <p>The business case for operating and managing new schemes will need to consider the levels of service and the future cost of maintenance.</p> |
| <p>On a resident population basis, water consumption rates are high when compared to other areas of New Zealand. These need to be well understood so that capacity upgrade investment is effective.</p> <p>Key issues: communities exhibit high peak summer demand, which is heavily influenced by large visitor numbers and weather demands (private garden watering / irrigation).</p> | <p>Queenstown is understood to have elevated water network losses (water leakage rates) driven by the terrain creating higher pressures within the piped network.</p> <p>Wanaka is understood to be affected by seasonal variation in demand rates of usage, ie. high consumption rates due to peak summer demand .</p> <p>In March 2014, Council approved a staged demand investigation programme. This programme will be progressively implemented over a 6 year period and includes trial volumetric metering and water loss management programmes.</p> <p>Capital expenditure for demand management of approximately \$0.6M is anticipated in the period up to 2018.</p> | <p>As confirmed by other councils in Australia and New Zealand, public education and other demand management tools are understood to be important factors in being able to defer new investment in water supply upgrades, to ensure overall community affordability.</p> |

| Meeting the 10 Year Plan Level of Service – <i>'reliable drinking water that is safe to drink'</i> <i>(When should we invest?)</i> | Principal options (most likely scenario) for response | Implications |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Council is required to report on compliance with the New Zealand drinking water standards for:</p> <ul style="list-style-type: none"> - Microbiological - Protozoa <p>These standards seek to reduce the risk of a public health event originating from public water supplies. That being, the higher the level of compliance, the less likely a public health event will occur.</p> <p>All council water treatment plants meet the microbiological criteria. However, the council's water treatment plants do not currently fully comply with the Protozoa criteria and treatment upgrades are required.</p> | <p>Current solutions rely on the high quality of the raw water sources (the cleanliness of the water) in our lakes and underground supplies. Moving forward council is focused on further improving water quality through providing increased treatment (disinfection).</p> <p>Council is proposing to progressively install UV treatment systems at its water treatment plants. However, before the decision is made to fully implement disinfection treatment at all treatment plants, an understanding must be gained as to the effectiveness of these treatment technologies, particularly during high turbidity events.</p> <p>A key decision point will be when the performance of UV treatment is proven to be appropriate and effective for the district.</p> <p>Proposed future solutions for some water supplies may require the provision of additional clarification or filtration systems to ensure effective disinfection is achieved.</p> <p>The proposed rationalisation of water supplies in Queenstown may assist in managing the risks and reducing the treatment costs associated with a requirement to increase treatment to continue to meet drinking water standards.</p> <p>Proposed projects:</p> <ul style="list-style-type: none"> - To develop the Kelvin Peninsula (Jardine) community intake that would supply the entire Queenstown area with water that meets drinking water standards. Timeline 2025-2035, \$39M. - Wanaka UV upgrades by 2038, \$5M | <p>Providing safe drinking water is important to maintaining public health and compliance with legislation, as well as protecting the districts tourist based economy.</p> |

| Meeting the 10 Year Plan Level of Service – <i>'reliable drinking water that is safe to drink'</i> <i>(When should we invest?)</i> | Principal options (most likely scenario) for response | Implications |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Algae in water sources</p> <ul style="list-style-type: none"> - Wanaka - Wakatipu | <p>Council will monitor its water sources to best enable early identification of potential algae issues. Early notification of potential issues provides council with an increased range of options for managing any potential algae event from a specific water source. These options can include, turning off a source for a period of time, sourcing from alternative intakes, increasing maintenance on filters or installing additional treatment.</p> <p>The proposed new borefield near the Wanaka Yacht Club will offer an alternate source that will enable council to continue to meet supply needs, should it need to stop abstraction from one of the lake intakes due to an algae event.</p> <p>Council will continue to monitor technology being developed to identify new and innovative means of managing algae that could be appropriate for the district.</p> | <p>When water abstracted for drinking water treatment contains algae, blockages can occur in filters and odours may develop in the treated water supplies.</p> <p>Providing safe drinking water is important to maintaining public health.</p> |
| <p>The need to provide new community water supply schemes, due to growth or other drivers/events e.g. community expectation, public health concerns.</p> | <p>Due to a proposed plan change in Kingston and the subsequent projected increases in development and water service requirements, QLDC is seeking to better understand Kingston's future infrastructure requirements.</p> <p>Future responses may need to consider alternative funding models to make these schemes affordable.</p> <p>The following scheme and estimated expenditure have been identified:</p> <ul style="list-style-type: none"> - Kingston New Water Scheme 2021-22 \$3.5M | <p>Providing safe drinking water is important to maintaining public health and compliance with legislation, as well as protecting the districts tourist based economy.</p> |

| Meeting the 10 Year Plan Level of Service – <i>'reliable drinking water that is safe to drink'</i> <i>(When should we invest?)</i> | Principal options (most likely scenario) for response | Implications |
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| <p>Network performance requirements related to:</p> <ul style="list-style-type: none"> - Fire Fighting Standards (pressure and flow regulations) - Backflow Prevention | <p>Fire-fighting zones need to be reviewed on a regular basis to ensure they remain appropriate as development occurs and water supply boundaries are adjusted or expanded.</p> <p>Council plans to review its water supply pressure zones on at least a 10 yearly basis to ensure that the current network layout is appropriate, efficient and best serving the community.</p> <p>The following schemes and estimated expenditure have been identified:</p> <ul style="list-style-type: none"> - Wanaka Network Upgrades, 2015-2030, \$8M - Queenstown Network Upgrades, 2015-19, \$5.4M <p>The water supply can be contaminated if water is drawn back into the council water supply pipes from a private property or a business premises – this is known as 'back flow'. Council is in the process of developing a set of regulations to better monitor, manage and prevent backflow through its proposed new water services bylaw.</p> | <p>Council is required by law to maintain fire-fighting standards.</p> <p>Appropriate network performance upgrades and improving water regulations are required to protect public health and prevent contamination of water supply networks.</p> |
| Assets critical to service delivery – resilience issues. <i>(When should we invest?)</i> | Principal options (most likely scenario) for response | Implications |
| <p>Maintaining Queenstown's drinking water source through water supply intakes and key pipelines.</p> <p>Water supply from critical supply chains:</p> <ul style="list-style-type: none"> - Frankton Road (10km main) - Wanaka (5km main) | <p>Current mitigations are emergency storage in reservoirs, standby pumps, back-up generators and duplicate rising mains on key water intakes and pump stations.</p> <p>Reservoir storage in response to an event is based around 4 hours of peak day flow plus 1 hour of indirect peak flow.</p> <p>Critical assets have been identified through Public Health Risk Management Plans (PHRMPs) and risk management strategies developed. These plans consider how the network will perform when an intake is out of action, and what mitigation options are available.</p> <p>A key decision for the community is how much clean water storage should be provided by council in case of a production outage.</p> | <p>Understanding critical infrastructure risks and resilience issues are important in avoiding water shortages and in some cases water outages. Council has a typical storage provision which allows up to four hours for remedying an issue and fully restoring water production.</p> |

| Assets critical to service delivery – renewal, maintenance and operating issues <i>(When should we replace it?)</i> | Principal option (most likely scenario) for response | Implications |
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| <p>Current understanding of the condition and actual remaining useful life of these assets needs improving.</p> <p>In particular the understanding of how maintenance costs vary with asset age needs improving so that better decisions can be made to optimise asset lives without undue increases in service failures (minimise lifecycle costs).</p> | <p>The current approach for affordability is to maximise the useful life of existing assets and defer projects as long as it is sensible to. This process is being refined through the use of the updated risk management framework and the application of improved data sources to verify more accurately the assets end-of-life.</p> <p>Implementing condition assessment programmes will improve the understanding of critical assets and manage the risk of failure. Once condition is understood, Council will be able to better predict the remaining lives of its assets, and optimise its new investment programmes and service delivery standards, ensuring lifecycle costs are minimised. Asset information is captured by QLDC’s operations contractors which can inform renewal and maintenance programmes.</p> <p>Capital expenditure on renewals of \$35M is expected for the period 2015-2045</p> <p>Significant investment in renewals is expected in the following years:</p> <ul style="list-style-type: none"> - 2026 Kelvin Heights Pump Station (PS) \$0.6M - 2024 Western Wanaka PS \$1.3M - 2030 Beacon Point PS \$1.4M - 2030 Kelvin Heights PS \$0.6M <p>Operational expenditure of \$267M is expected for the period 2015-2045.</p> <p>Additional investment is also being made in improving the quantity and quality of information held on key council infrastructure assets. This will progressively enable more robust and timely investment decisions on asset replacement.</p> | <p>Capturing and reporting on asset condition is needed to inform investment decisions, and confirm whether assets will be replaced before the end of their useful life, or only after there is evidence of reductions in the level of service (water outages).</p> |

| WASTEWATER | | |
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| Current and future development needs of the community (including environmental protection) | Principal options (most likely scenario) for response | Implications |
| <p>- Population growth impact (How much needs to be invested?)</p> | | |
| <p>Providing infrastructure upgrades in response to servicing new developments (population growth). Key areas:</p> <ul style="list-style-type: none"> - Queenstown CBD to Frankton - Frankton Flats - Wanaka South | <p>Current approach is to maximise the useful life of existing assets by flow management (computer control systems, building storage tanks etc.) and reducing water entering the wastewater system that is not wastewater (inflow and infiltration controls).</p> <p>Future options would also consider reducing the criticality of key assets through providing alternative flow paths (duplicating key pipelines or reconfiguring primary flow routes / bypasses). This approach can help reduce the risk of known single points of failure that would result in discharges of wastewater into lakes and waterways and other high public usage areas. (i.e. the wastewater pump station at Marine Parade)</p> <p>Wastewater capital expenditure of \$155M is expected to provide for future increased capacity, reduced risk of overflows and provide additional redundancy within the system.</p> | <p>Growth related projects are important to decrease the likelihood of wastewater overflow events, which could impact the environment, private property and public health.</p> <p>The regional council can issue an abatement notice or prosecute if significant events occur.</p> |
| <p>Providing new schemes in response to servicing new development (population growth).</p> <ul style="list-style-type: none"> - Wanaka and surrounds - Already completed in Wakatipu Basin | <p>Future consideration is being given to connecting the towns of Hawea, Luggate and Cardrona to the Wanaka treatment plant.</p> <p>Key decision points are likely to be based on public health, environmental protection and affordability. Future responses may need to consider alternative funding models to make these schemes affordable. The connection of Hawea to the Wanaka wastewater scheme removes the requirement to upgrade the Hawea treatment plant, which is nearing its resource consent limits.</p> <p>2021 – 2033 Wanaka Treatment Plant – Stages 2 & 3 Upgrades \$7.5M</p> | <p>The cost of these schemes may be impacted by resource consent requirements and future levels of service.</p> <p>The regional council can issue an abatement notice or prosecute if significant events occur.</p> |

| <p>Meeting the 10 Year Plan Level of Service – <i>‘reliable wastewater collection and treatment services that protect public health and the environment’</i></p> <p><i>(When should we invest?)</i></p> | <p>Principal options (most likely scenario) for response</p> | <p>Implications</p> |
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| <p>Upgrading the Queenstown wastewater treatment plant to reduce adverse effects on the environment through improving effluent quality.</p> <p>Existing resource consents for the current treatment plant have expired and new consents are being sought.</p> | <p>All wastewater generated in the metropolitan areas of the Wakatipu basin is treated at the Queenstown wastewater treatment plant. This has required the decommissioning of and piping of a number of local wastewater schemes to the Queenstown treatment plant located on the Shotover River delta. The current oxidation pond treatment plant is being upgraded to improve discharge quality required by the draft resource consents. The treatment plant is also being upgraded in stages to meet new developments and growth within its service area. This upgrade is known as Project Shotover.</p> <p>Capital expenditure of approximately \$21M is expected for Project Shotover by 2018, with additional staged expenditure for further upgrades planned as:</p> <p>2018-20 Disposal Field \$8M (resource consent requirement) 2027 Stage 3 Upgrade \$10M (provide for planned growth) 2044 Stage 4 Upgrade \$10M (provide for planned growth)</p> | <p>Completion of Project Shotover is important to protect the Shotover River.</p> <p>The regional council can issue an abatement notice or prosecute if significant events occur.</p> |
| <p>Improving service delivery whilst maintaining affordability.</p> <ul style="list-style-type: none"> - Wastewater overflows impacting property | <p>Council has recently increased its proactive maintenance of wastewater pipelines to mitigate blockages before they result in overflows (discharges of wastewater to the environment or private property).</p> <p>Blockages of the wastewater pipes occur when tree roots, foreign matter such as bricks and stones and well as wastewater debris build up over time, blocking the pipes.</p> | <p>Undertaking the proposed actions will help prevent public health issues and contamination of local environments.</p> <p>The regional council can issue an abatement notice or prosecute if significant events occur.</p> |

| Meeting the 10 Year Plan Level of Service – ‘reliable wastewater collection and treatment services that protect public health and the environment’ (When should we invest?) | Principal options (most likely scenario) for response | Implications |
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| <p>New community wastewater schemes (Currently private schemes and are not Council assets)</p> | <p>Glenorchy and Cardrona are areas of interest to Council for new or alternative schemes due to existing public health risks.</p> <p>Key decision points are based on environmental protection, protection of public health and affordability.</p> <p>Capital expenditure is expected for these schemes.</p> <ul style="list-style-type: none"> - Cardrona by 2018, \$3.6M - Glenorchy by 2017, \$5.3M | <p>Completion of these projects is important to mitigate the effects of potential contamination of local water bodies, which could impact tourism and the local economy.</p> <p>Councils have an interest in ensuring that privately operated wastewater schemes in the district are safe and reliable, meeting all public safety and environmental objectives.</p> |

| Assets critical to service delivery – resilience issues. <i>(When should we invest?)</i> | Principal options (most likely scenario) for response | Implications |
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| <p>Critical infrastructure risk (preventing single points of failure / ability to take assets out of service for maintenance).</p> <p>Preventing contamination of water sources/supplies (lakes and rivers).</p> | <p>The current response is focused on pump station (mechanical) and power outages.</p> <p>Critical assets have been identified and formal risk management strategies are being developed. A framework has been developed for ‘at risk’ pump stations – a programme of works identified to address high risk sites.</p> <p>Future options would consider reducing the criticality of key assets through providing alternative flow paths (asset duplication, catchment diversion or bypasses). This approach can help reduce the risk of known single points of failure that result in discharges of wastewater into lakes and waterways and other high public usage areas.</p> <p>High level risk areas include</p> <p>Wastewater Transmission (Pump Stations and Mains): Frankton Beach PS, Marine Parade PS, Dungarvon Street PS, Project Pure Main PS, Riverbank Road PS, Lake Hayes Road PS, Frankton Road Sewer, Kelvin Heights Sewer, Project Pure Rising Main</p> <p>Wastewater Treatment Plants: Shotover WWTP, Wanaka WWTP, Hawea WWTP</p> | <p>Undertaking network improvement projects will mitigate the risk of wastewater overflows, which could impact public health and property.</p> <p>The regional council can issue an abatement notice or prosecute if significant events occur.</p> |

| Assets critical to service delivery – renewal, maintenance and operating issues <i>(When should we replace it?)</i> | Principal options (most likely scenario) for response | Implications |
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| <p>Assets will generally be replaced at the end of their useful life. Some more critical assets will be replaced in accordance with condition and risk assessments.</p> <p>Current understanding of the condition and actual remaining useful life of these assets needs improving.</p> <p>In particular the understanding of how maintenance costs vary with asset age needs improving so that better decisions can be made to optimise asset lives without undue increases in service failures (minimise lifecycle costs).</p> | <p>The asset replacement programme is currently based on assets reaching their end of useful life (asset failure or repeat failures). This approach is widely used for non-critical assets at other towns around New Zealand.</p> <p>The register of critical assets is being revised to capture better information on condition, remaining asset useful life, and risk of failure. In addition, detailed engineering inspections are planned to improve understanding and maximise asset operating life, while managing risks.</p> <p>Capital expenditure on renewals of \$71 M is expected for the period 2015-2045</p> <p>Operational expenditure of \$180 M is expected for the period 2015-2045.</p> <p>Additional investment is also being made in improving the quantity and quality of information held on key council infrastructure assets. This will progressively enable more robust and timely investment decisions on asset replacement.</p> | <p>Improving understanding of critical assets is important in mitigating the risk of not meeting resource consent conditions, which could result in prosecution under the Resource Management Act.</p> <p>In addition, cross connections and infiltration (rain and ground water entering the wastewater system causing it to become overloaded) will continue to be of importance. As the piped network ages, the volumes of ground water and rainwater entering the network may increase, affecting capacity.</p> |

| STORMWATER | | |
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| Current and future development needs of the community (including environmental protection) | Principal options (most likely scenario) for response | Implications |
| <p>- Population growth impact (How much needs to be invested?)</p> | | |
| <p>Providing timely infrastructure upgrades in response to servicing new developments (population growth). Key areas:</p> <ul style="list-style-type: none"> - Frankton Flats - Wanaka South <p>Key Issue – avoiding an increase in the frequency and severity of stormwater ponding events as development continues and weather patterns change.</p> | <p>Catchment management plans are currently focussed on developer led solutions in these key areas.</p> <p>Council are focused on providing the best mix of piped stormwater networks and overland flow paths. This approach is used in other areas of New Zealand to manage investment costs, while maintaining amenity values in open spaces and natural water courses. A small number of projects have been included in the councils long term plan (LTP) over the next 10 years to progressively upgrade and improve stormwater services.</p> <p>Council is aware that failure to provide an adequate stormwater system also increases the likelihood of overloading of the wastewater systems, resulting in wastewater overflows, and possible resource consent breaches at treatment plants.</p> <p>Stormwater growth investment is planned, including:</p> <ul style="list-style-type: none"> • Wanaka - Stone St reticulation upgrade \$4M • Wanaka - Rata St / Aubrey Road Upgrade \$3.5 • Queenstown Stormwater - Horne Creek to Rec Ground \$4M • Queenstown Stormwater - Design and Minor Works \$13M • Frankton Flats Stormwater - \$4M <p>This programme is in the process of being reviewed alongside the councils Subdivision code of practice / infrastructure design manual and the latest climate change predictions.</p> | <p>Undertaking network improvement projects will help maintain property and public safety (ponding) on roads and footpaths.</p> <p>In addition, the improvements would help mitigate the risk of overloading the wastewater system with stormwater.</p> |

| Meeting the 10 Year Plan Level of Service – ‘storm water drainage services protect public health and private properties’ <i>(When should we invest?)</i> | Principal options (most likely scenario) for response | Implications |
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| <p>Providing timely infrastructure upgrades in response to improving effectiveness of services and minimising adverse effects (discharge quality and quantity) on the environment.</p> <p>Responding to flooding events in the Queenstown and Wanaka CBDs associated with lake levels.</p> | <p>Councils draft catchment management plans (CMPs) identified expenditure to increase the current levels of service and address future predicted stormwater issues. This programme is currently under development in conjunction with the infrastructure design manual before being consulted on through the 2018 TYP process.</p> <p>The implications of the Otago Regional Council’s “Proposed Plan Change 6A (Water Quality) Regional Plan: Water for Otago” may impact on the levels of service for receiving water, requiring additional expenditure in the future. Continued engagement with the Otago Regional Council and Central Otago District Council on the future requirement for improved flood protection schemes and management of the broader watershed (i.e. acceptable lake levels and river capacity.)</p> | <p>Monitoring and responding to broader watershed issues is important in reducing the frequency of lake flooding into low lying development areas.</p> <p>Engaging with ORC and CODC is important in ensuring quality stormwater outcomes for the district.</p> |
| Assets critical to service delivery – resilience issues <i>(When should we invest?)</i> | Principal options (most likely scenario) for response | Implications |
| <p>Critical infrastructure risk (culvert blockage from debris during rainfall event, increasing the risk of flooding to land and property). Slips and landslides could also result from flooding or overloading of stormwater infrastructure.</p> | <p>Council proactively inspects and clears key stormwater culverts ahead of a predicted heavy rainfall event.</p> <p>Council also reactively responds to flooding events on an as reported basis. This type of response is appropriate and best meets current needs and rainfall patterns of the district.</p> <p>Council will continue to monitor key stormwater culverts and the debris captured (type and scale) to enable its land development policies and stormwater management practices remain efficient and effective.</p> | <p>Understanding critical infrastructure and proactively undertaking maintenance (inspections and clearing) will help reduce the frequency and likelihood of localised stormwater flooding events and risk to property.</p> |

| Assets critical to service delivery – renewal, maintenance and operating issues <i>(When should we replace it?)</i> | Principal options (most likely scenario) for response | Implications |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Assets will generally be replaced at the end of their useful life. Some more critical assets will be replaced in accordance with condition and risk assessments.</p> <p>Current understanding of the condition and actual remaining useful life of these assets needs improving.</p> | <p>Renewals programme is currently based on remaining asset useful life, although there is limited knowledge of asset age and condition.</p> <p>The current approach for affordability is to maximise the useful life of existing assets and defer projects as long as it is sensible to. Significant investment in renewals is expected in years 2035 and 2036 in Wanaka and Queenstown.</p> <p>Operational expenditure of \$18M is expected for the period 2015-2045.</p> <p>Capital expenditure on renewals of \$8M is expected for the period 2015-2045</p> <p>Additional investment is also being made in improving the quantity and quality of information held on key council infrastructure assets. This will progressively enable more robust and timely investment decisions on asset replacement.</p> | <p>Improving understanding of critical assets may well help mitigate the frequency of localised stormwater flooding events, which can impact property.</p> |
| <p>Council operates secondary and overland flow paths, these assets are often used as amenity areas by the public and community ie. recreation fields next to Memorial Hall</p> | <p>Secondary and overland flow paths are an important option in managing large rainfall events as they remove the requirement for over investment in stormwater pipelines.</p> <p>Council will consider on a case by case basis other areas where secondary and overland flow options are preferable to construction of large stormwater pipes.</p> | <p>Improved use of secondary and overland flow paths can reduce the required investment in stormwater networks and in addition it serves as an effective method of reducing possible effects of erosion and overloading stormwater systems.</p> |

| TRANSPORT | | |
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| Current and future development needs of the community (including environmental protection) | Principal options (most likely scenario) for response | Implications |
| <p>- Population growth impact (How much needs to be invested?)</p> | | |
| <p>Frankton Road is a fundamental component of transportation in the Wakatipu Basin, connecting Queenstown Town Centre with Frankton, the airport and satellite areas including Kelvin Heights, Jacks Point, Quail Rise, Lower Shotover, Lake Hayes and beyond.</p> <p>Forecasted traffic growth may result in major delays and by 2026, bumper to bumper traffic, travelling an average speed of 20km/h.</p> | <p>Public transport improvement options include:</p> <ul style="list-style-type: none"> - In the short term regular bus services - Longer term 'park and ride' facilities and water-based ferry services. - Dedicated bus / multi passenger lanes. - Upgrade intersections and reducing turning movements. - Potential road widening and increase to four lanes. - Secondary route from Frankton to Gorge road (via Tucker Beach) or connection from Kelvin Peninsula. <p>At this time, light rail solutions are not considered feasible.</p> | <p>Public transport solutions are required to minimise delays and congestion. The business case for road widening and secondary route options will need to consider:</p> <ul style="list-style-type: none"> - Acquisition of land/property; - Capital expenditure; - Environmental impact; - Community safety; - Local economy. |
| <p>Congestion in Queenstown Town Centre .</p> | <p>Establish a primary alternative route from Frankton Road to One Mile Roundabout, via Melbourne Street, Henry Street, Man Street and Thomson Street.</p> <p>Key Project: Queenstown Town Centre Strategy - Capital expenditure estimated in the range of \$26M</p> | <p>Improvements are aimed at easing the congestion impact on Stanley Street and Shotover Street as part of the Town Centre street network.</p> <p>The business case for establishing a primary alternative route to alleviate congestion will need to consider:</p> <ul style="list-style-type: none"> - Acquisition of land/property; - Environment; - Community safety; - Local economy. |

| Meeting the 10 Year Plan Level of Service – ‘a transport network that accommodates seasonal and future growth’ (When should we invest?) | Principal options (most likely scenario) for response | Implications |
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| <p>In Frankton, develop a network of roads in support of growth, including Queenstown Events Centre, Frankton Flats, Remarkables Park, Queenstown Airport and schools.</p> | <ul style="list-style-type: none"> - New roads to and within Frankton Flats (including land rezoned through plan change 19). - State highway improvements (road widening and intersection improvements). - Eastern Arterial Road (link road connecting Glenda Drive to the airport and south). - Secondary access to Queenstown airport (Tex Smith Lane). - Connection between Eastern Arterial Road and new Kawarau Falls Bridge. - Secondary access to Queenstown Events Centre. <p>The following project has been identified:</p> <ul style="list-style-type: none"> - Eastern Arterial new road – link SH6 \$9M 2020 * <p>* The timing for this project has been brought forward to 2018 in the draft TYP.</p> | <p>The business case for a network of roads to support growth will need to consider:</p> <ul style="list-style-type: none"> - Acquisition of land/property; - Growth of new businesses; - Improving access to Remarkables park, schools and airport to maintain traffic flow; - Safe access to the Events Centre from SH6 by managing congestion. |
| <p>In Wanaka, to develop a network of roads to support growth areas, including greenfield development area Three Parks, Wanaka sports facility and north Wanaka.</p> | <p>Provision of new roading network, and longer term public transport connection.</p> <p>New roads to and within Three Parks with the possible linkages to State Highway 6 (potentially a roundabout between Puzzling World entrance and Andersons Road roundabout)</p> <p>North eastern corridor (Ballantyne, Hedditch and Lismore Roads).</p> | <p>Completion of works will alleviate pressure on the state highway connection between Albert Town and Wanaka, and a North eastern corridor provides secondary access via north Wanaka.</p> <p>The business case for a network of roads to support growth will need to consider:</p> <ul style="list-style-type: none"> - Acquisition of land/property; - Growth of new businesses; |

| Meeting the 10 Year Plan Level of Service – ‘a transport network that accommodates seasonal and future growth’ (When should we invest?) | Principal options (most likely scenario) for response | Implications |
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| <p>Community reliance on cars as primary mode of transportation resulting in traffic congestion and delays. This is currently observed between Queenstown and its satellites and is predicted longer term to occur in Wanaka as growth areas develop.</p> | <ul style="list-style-type: none"> - Improved provision of public transport services (i.e. increased frequency and routes of services) - Investigate incentives and improve public education for increasing patronage of public transport services. - Provision of alternative routes to reduce congestion in known hotspots (i.e. CBD and Queenstown Town Centre Strategy, connections between Queenstown and Frankton, and other high growth areas including Kelvin Heights and Jacks Point.) - Longer term, as development continues in Wanaka, provide alternative routes with growth areas of Three Parks (including new Wanaka Sports Facility), north Wanaka and Albert Town. - Free car parking for car pools | <p>Providing an efficient and effective public transport system may help reduce reliance on private cars, ease congestion and delays and improve safety which may ultimately affect the local economy.</p> |
| <p>Visitor and resident ability to access businesses and accommodation through car parking in town centres. Wanaka – predicted that an additional 270 car parks may be required by 2026.</p> | <ul style="list-style-type: none"> - Development of ‘park and ride’ facilities - In Queenstown - development of car parking in Athol Street, Boundary Street and Ballarat Street. - Wanaka - re-configure existing car parking areas and investigate provision of new car park facilities. - Review District Plan car parking rules. - Manage car parking demand through improved cycling, walking, parking pricing and education. - Improve public transport | <p>Easing town centre congestion and overflow of parking into residential areas will help maintain the tourist experience and residents use of the town centres.</p> |
| <p>‘Nga Haerenga - The New Zealand Cycle Trail’ Expanding the NZ cycleway network through the Queenstown Lakes District to provide for growth of cycling and cycle tourism.</p> | <p>Support the NZ Cycle Trail Network Expansion Project, including potential links between Wakatipu basin, Wanaka and the West Coast.</p> <p>Expansion of trails within QLDC needs to be balanced with the on-going maintenance costs of these networks.</p> | <p>Growth in cycle tourism may economically benefit the district.</p> |

| Meeting the 10 Year Plan Level of Service – ‘a transport network that accommodates seasonal and future growth’ (When should we invest?) | Principal options (most likely scenario) for response | Implications |
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| Cycleway and walkway networks to be formed, with appropriate signage and surfacing. Network to provide an alternative to roads / vehicle transport and also to develop as a district attraction in their own right. | Route improvement projects, new tracks and upgrading existing tracks. Combined upgrades, for example Mt Aspiring Road. | Increasing patronage on cycleways and footpaths may help ease congestion. |
| Accessible and safe cycle and walkways that attract people away from roads. | Connection of cycleways to provide alternative “off road” network. Provision of dedicated cycle lanes Safety improvements including targeting intersections, speed limits, lighting. Cycle safety and education programmes, in particular targeting schools. | Cycle safety, is a necessary part of cycling becoming an acceptable alternative to vehicle use, particularly for school children. |
| Limited public transport currently operating in district options, in particular bus and ferry services. Vehicle numbers (utilisation) on main roads are reaching levels such that it is becoming more difficult for pedestrians to cross the road (i.e. to access bus stops along Frankton Road in particular). | Develop ‘park and ride’ facilities and connection with ferry services on Lake Wakatipu. Provision of improved / safe bus stops and shelters. Access to bus stops to include safe pedestrian access across main roads, in particular Frankton Road. (i.e. pedestrian crossings, traffic islands with safety barriers and/or provision of traffic lights) | Improving accessibility and safety of people getting to, and on public transport will increase the viability of alternative transport and help reduce congestion. |
| Pressure to improve access to Mt Aspiring National Park via Mt Aspiring and Glenorchy Roads | To extend sealing up to key National Park Car parks. Capital expenditure allocation of \$2.6M in 2018-2021 for seal extensions | It is important that infrastructure capacity is able to cope at peak times to ensure traffic flow and access to events that support the local economy. |

| Meeting the 10 Year Plan Level of Service – ‘a transport network that accommodates seasonal and future growth’ (When should we invest?) | Principal options (most likely scenario) for response | Implications |
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| Major tourist attractions, events and holidays creating traffic peaks that combined have the potential to gridlock the network. For example ski season and summer school holidays and in Wanaka combination of Easter and the biannual Warbirds event. | Intersection upgrades, public transport integration, ‘park and ride’ development and traffic management plans. | It is important that existing infrastructure capacity is able to cope at peak times to ensure traffic flow and access to events that support the local economy. |
| Ensuring sufficient space for coach manoeuvring and parking, particularly in town centres and at accommodation nodes. | Intersection upgrades. Consider a CBD bus interchange. Bus parking (overnight) to be provided out of town centre. | Maintaining pedestrian safety, managing congestion and pollution (air quality and noise) are important to the tourist and resident experience of town centres. |
| Increased pressure to seal unsealed roads as vehicle numbers increase throughout the district, there will be increased patronage of ‘back’ roads, exposing drivers to conditions they may not be used to. | Provision of clear signage at entrance ways to key unsealed roads warning drivers of road condition. Provision of speed limit signs at bends on unsealed roads. General speed restrictions on all unsealed roads. The One Network Road Classification (ONRC) will drive QLDC to assess the economic and social outcomes of any decisions made on the works programme. Consider maintenance costs of sealed and unsealed roads and does this drive value for money for the community. | Appropriate information for drivers of the road conditions and speed limits / restrictions is an important safety measure. |
| <ul style="list-style-type: none"> - Limited routes into district via state highways: Kingston to Frankton, - Kawarau George to Queenstown, - Tarras to Wanaka and - West Coast (Haast Pass) to Wanaka. Routes susceptible to closure from accidents and major natural events, including, flooding, snow, avalanche, subsidence, rock falls, landslides and fire. | NZTA stabilisation works at Nevis Bluff. NZTA upgrading of Kingston Road - slumping and rock stabilisation works. Haast Road prone to landslide – NZTA improved travel warning systems. NZTA winter maintenance programmes. | Closure of routes results in lengthy diversions (2 to more than 10 hours) with disruption to travel and tourist connections. Stabilisation helps ensure road user safety. |

| Meeting the 10 Year Plan Level of Service – ‘a transport network that accommodates seasonal and future growth’ <i>(When should we invest?)</i> | Principal options (most likely scenario) for response | Implications |
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| <p>Crown Range Road provides most direct route between Queenstown and Wanaka and to Cardrona / Snow Park ski areas. Winter conditions and inexperienced tourist drivers contribute to accidents.</p> <p>Susceptible to closure in natural events (rock falls / landslides) and winter conditions - snow/ice.</p> <p>Heavy and long vehicles are diverted via SH6 through Cromwell.</p> | <p>Manage winter conditions on Crown Range Road, including grit programme and snow ploughing.</p> <p>Upgrading of road surface and installation of passing bays and lanes.</p> <p>Weather and tourist information and education.</p> <p>SH6 via Cromwell to remain as heavy and long vehicle route.</p> | <p>Council operates an annual programme for managing winter conditions to reduce associated risks.</p> |
| Assets critical to service delivery – resilience issues <i>(When should we invest?)</i> | Principal options (most likely scenario) for response | Implications |
| <p>State highway (NZTA) bridges over Kawarau and Shotover Rivers at Kawarau Falls, Kawarau Bungy/Chard Road, Victoria Flats and Lower Shotover/Quail Rise, vulnerable to damage from earthquakes and flooding (single points of network failure).</p> <p>Historic Kawarau Falls Bridge only southern connection, one way with traffic delay times increasing and no earthquake strengthening.</p> | <p>Proposed new Kawarau Falls Bridge - two lane bridge downstream from Historic Kawarau Falls Bridge (NZTA).</p> <p>The historic Kawarau Falls bridge will be retained as a pedestrian and cycleway.</p> <p>NZTA will continue to monitor and manage its key state highway assets.</p> <p>NZTA asset management plan 2015-18 - capital expenditure \$17 M.</p> | <p>Funding required to strengthen historic bridge and for on- going maintenance.</p> |

| Assets critical to service delivery – resilience issues <i>(When should we invest?)</i> | Principal options (most likely scenario) for response | Implications |
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| <p>Historic Edith Cavell Bridge over Shotover River at Arthurs Point (Heritage New Zealand Category 1) provides only alternative access into Queenstown.</p> <p>This historic bridge is one lane with limited driver visibility and tight horizontal and vertical alignment onto/off the bridge and no provision for pedestrians or cyclists.</p> | <p>Add cycleway and footbridge.</p> <p>Earthquake strengthening and new bridge.</p> <p>Capital expenditure required: cycleway and footbridge \$750,000 and +\$1m for earthquake strengthening. The new bridge is beyond the 30 Year Strategy.</p> | <p>Traffic wait times increasing and safety issue around vehicles queuing.</p> |
| <p>Rural bridges vulnerable to damage from earthquakes and flooding, including landslides.</p> | <p>Bridge work to address load / seismic capacity, flood capacity, height and width restrictions and safety and side protection standards.</p> <p>Remedial work on Rees bridge.</p> <p>Capital expenditure on Rees River bridge - \$3M.</p> | <p>Risk factors to rural bridges include scour susceptibility, seismic robustness and durability and degradation.</p> <p>Bridges critical to providing access to rural communities.</p> |
| Assets critical to service delivery – renewal, maintenance and operating issues <i>(When should we replace it?)</i> | Principal options (most likely scenario) for response | Implications |
| <p>Increased rates of deterioration of sealed road surfaces, pavements and footpaths due to traffic growth, increased tourist vehicles, storm events and extreme winter freeze / summer bake climate conditions.</p> | <p>On-going programme of sealed road resurfacing and pavement rehabilitation work.</p> <p>Programme of winter snow ploughing, de-icing and gritting in conjunction with education and road reports.</p> | <p>Completion of works is important to improve safety and network reliability, which impact the economy and local communities.</p> |
| <p>Deterioration of unsealed roads with potential isolation of rural communities and tourist inaccessibility.</p> | <p>On-going programme of re-metalling and sealing</p> <p>On-going investigation into supply and Otta sealing programme.</p> | <p>Minimising deterioration of unsealed roads may improve safety and level of service.</p> |

8.0 Major Projects Timeline (most likely future scenario)

Following the analysis of context, capital expenditure drivers, significant issues and risk, the major new infrastructure projects (defined for the purpose of this strategy, as being \$3.5 million or more of capital expenditure) expected to be undertaken in the 2015-45 period are shown in the timeline below.



9.0 Indicative Estimates and Key Assumptions of Projected Capital and Operating Expenditure

All expenditure in this document is represented in ‘dollars of today’ and has not been inflated for future years. Expenditure is inflated for future years within the long term plan. The following table reflects QLDC’s methodology for applying inflation to the capital forecasts. We source economic predictions from Business and Economic Research Limited (BERL is a NZ company who specialise in economic research, analysis, advice and consultancy):

TABLE 1 APPLYING INFLATION TO CAPITAL FORECASTS (REF: RATIONALE FEB 2015)

| Investment Years | Uninflated Capex | | Inflated Capex | |
|------------------|----------------------|----------------------|----------------------|----------------------|
| | Transportation | Three Waters | Transportation | Three Waters |
| 2016 - 2020 | \$61,786,397 | \$78,061,802 | \$64,103,544 | \$84,171,253 |
| 2021 - 2025 | \$44,365,841 | \$40,990,911 | \$51,717,231 | \$52,110,468 |
| 2026 - 2030 | \$35,414,615 | \$69,430,461 | \$47,055,259 | \$105,084,453 |
| 2031 - 2045 | \$108,163,845 | \$79,532,787 | \$176,638,359 | \$160,413,300 |
| TOTAL | \$249,730,699 | \$268,015,961 | \$339,514,393 | \$401,779,474 |

10.0 Infrastructure Investment Programme

10.1 Total Expenditure

In addressing the issues identified in the previous section of this strategy, QLDC expects to spend around \$785M on new or replacement infrastructure between 2015 and 2045. Over the same period, \$877M is expected to be spent on operating costs, (excluding interest, overheads and depreciation). These figures are anticipated to be spread across the infrastructure asset activity areas as follows:

TABLE 2 TOTAL INFRASTRUCTURE SPEND 2015 – 2045 (CAPITAL & OPERATIONAL)

| Infrastructure Activity | Capital Expenditure | Operational Expenditure |
|-------------------------|------------------------|-------------------------|
| Water | \$89,173,520 | \$141,961,813 |
| Wastewater | \$155,385,125 | \$179,498,930 |
| Stormwater | \$23,457,317 | \$18,145,919 |
| 3 Waters total | \$268,015,961 | \$339,606,662 |
| Transport | \$249,730,699 * | \$198,665,296 * |
| TOTAL | \$785,762,622 | \$877,878,620 |

* These values are predicted to reduce through the implementation of ONRC

Total annual expenditure for 3 Waters and Transport for the 30 year period is shown in Figure 4.

FIGURE 4 TOTAL INFRASTRUCTURE SPEND (CAPITAL & OPERATIONAL)

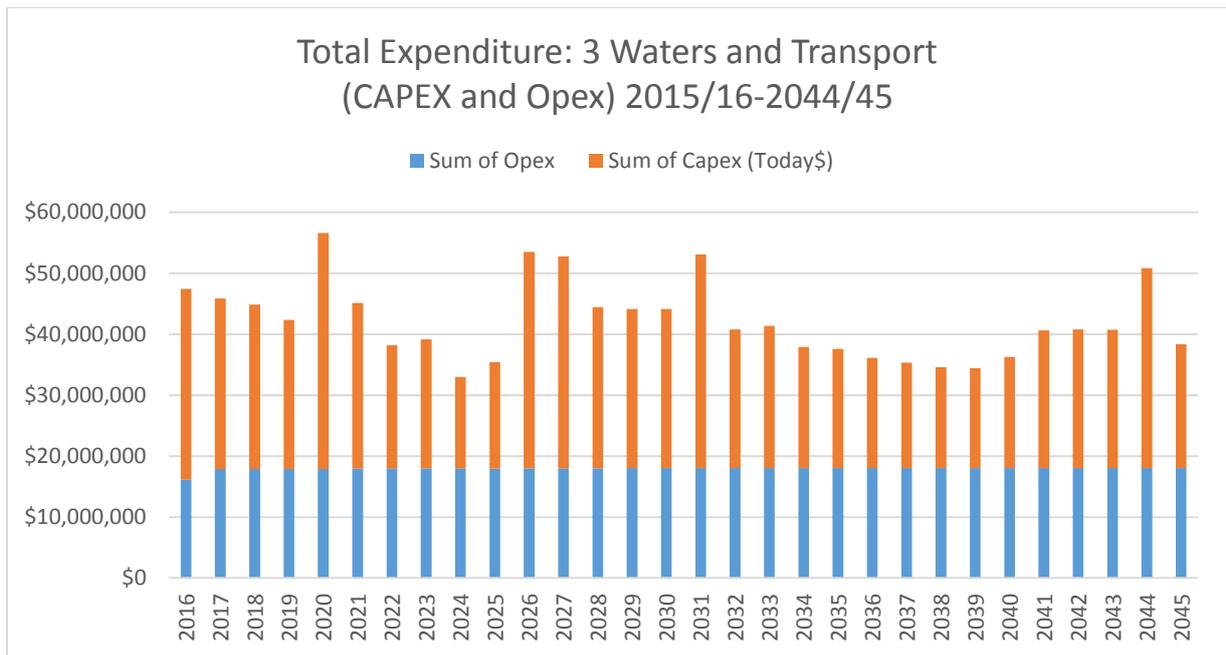


Figure 5 shows that capital and operation spend are generally split evenly. The exceptions are in years 2016 and 2017 which is driven by Project Shotover – Queenstown wastewater plant upgrade, with further stages of Project Shotover expected in 2026 and 2027.

Figure 6 highlights increased capital spend in years 2020 and 2025 due to the Eastern Arterial and Edith Cavell Bridge projects.

FIGURE 5 TOTAL INFRASTRUCTURE SPEND (CAPITAL & OPERATIONAL) FOR THREE WATERS

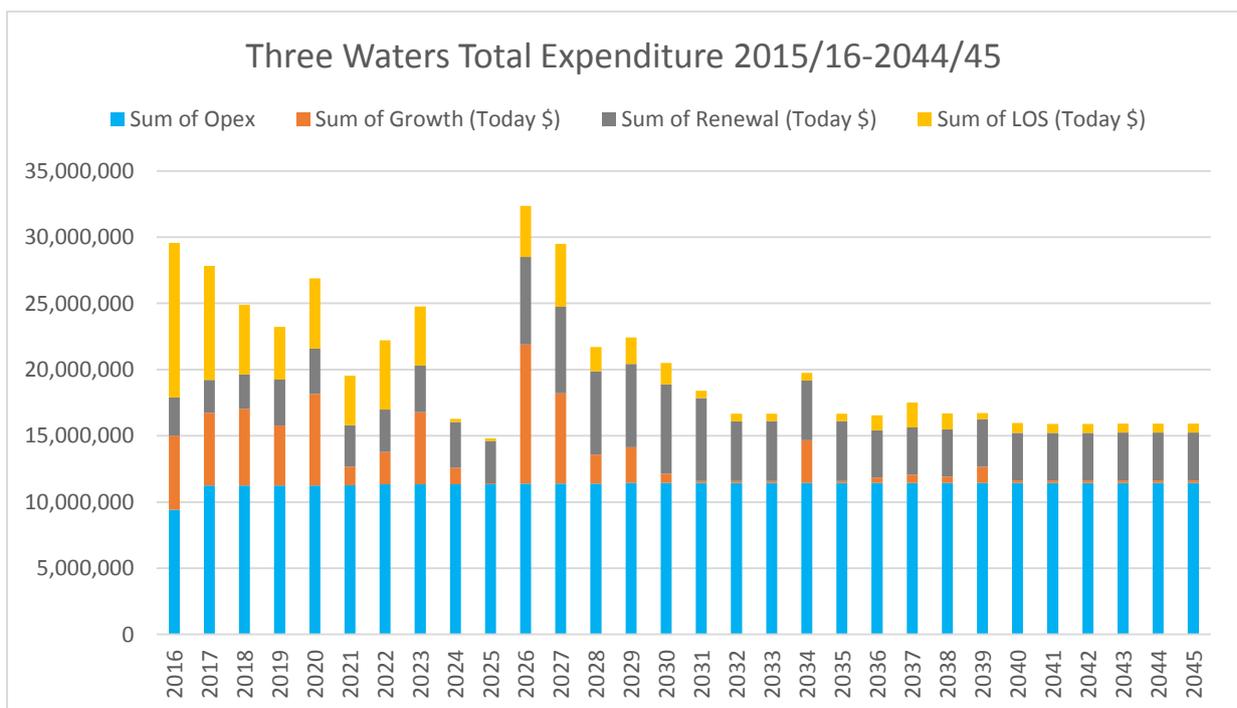
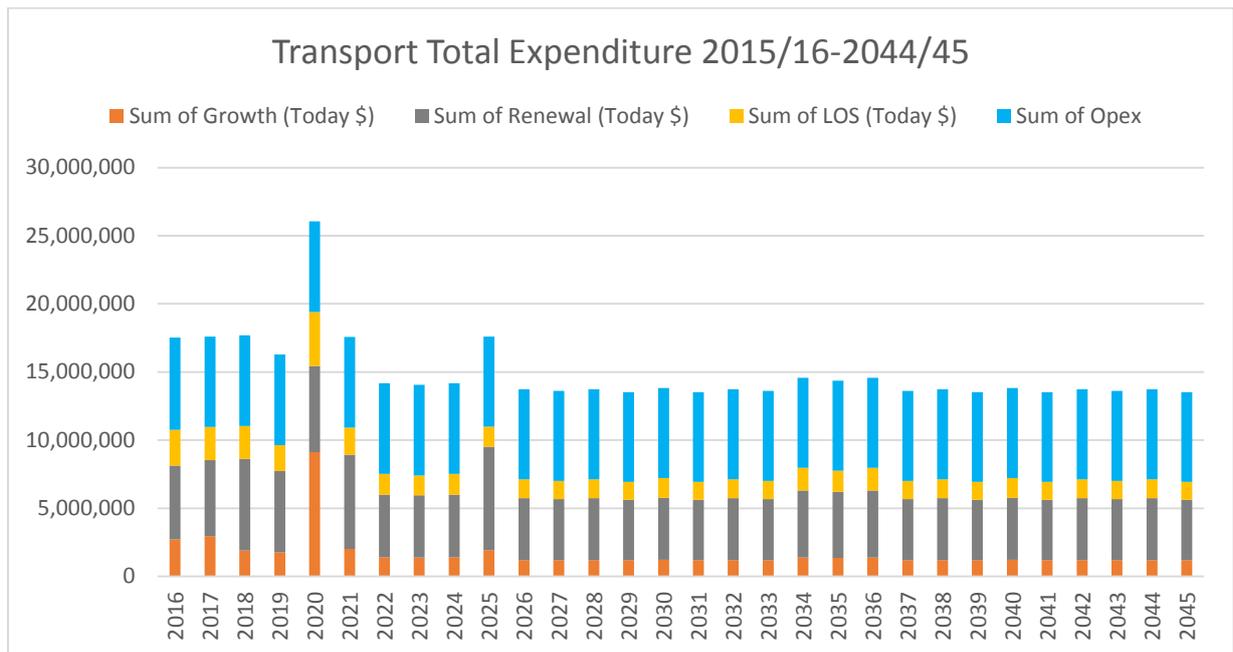


FIGURE 6 TOTAL INFRASTRUCTURE SPEND (CAPITAL & OPERATIONAL) FOR TRANSPORT



10.2 Capital Expenditure Highlights

Figure 7 & 8 shows the expected expenditure year-on-year up to 2045, by driver (growth, asset renewal or level of service). Capital expenditure is projected to exceed \$15 million for 4 of the years, as highlighted below:

- 2016/17 – Project Shotover Upgrade Stage 1
- 2019/20 – Frankton Flats new road – Eastern Arterial Road
- 2026-27 – Wanaka growth projects (service reservoir and rising mains)
- 2026-27 – Project Shotover Upgrade Stage 3

Spend in the first ten years is driven by growth and delivering levels of service to the district.

FIGURE 7 INFRASTRUCTURE THREE WATERS EXPENDITURE PROJECTIONS (BY DRIVER (GROWTH, IMPROVEMENTS, RENEWALS))

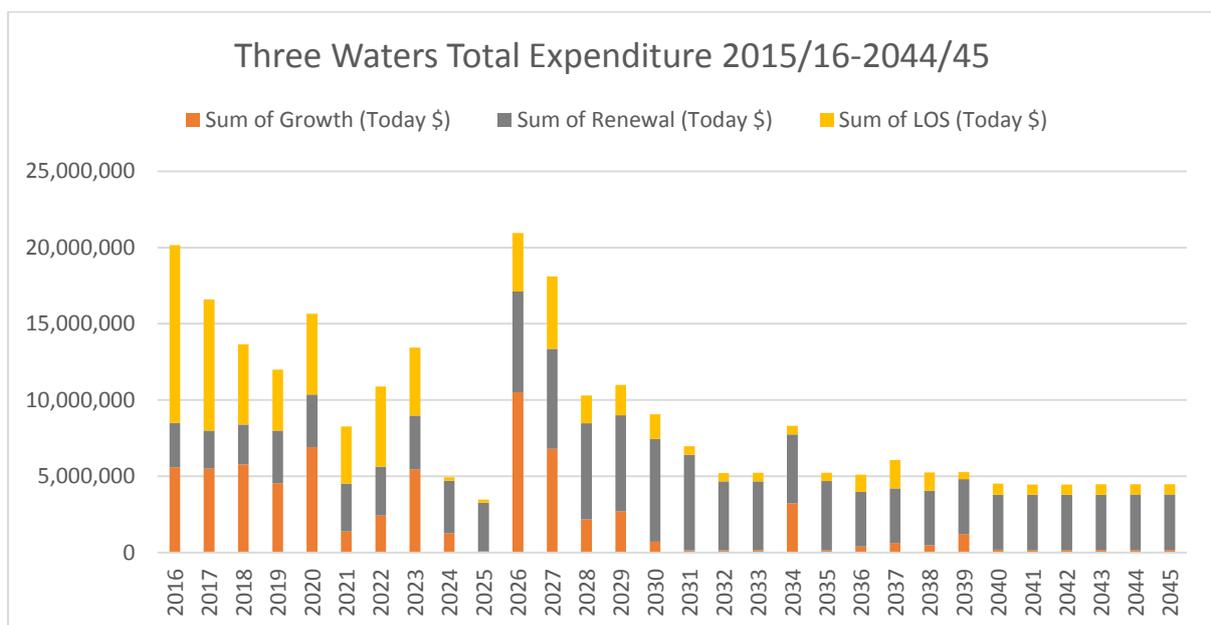
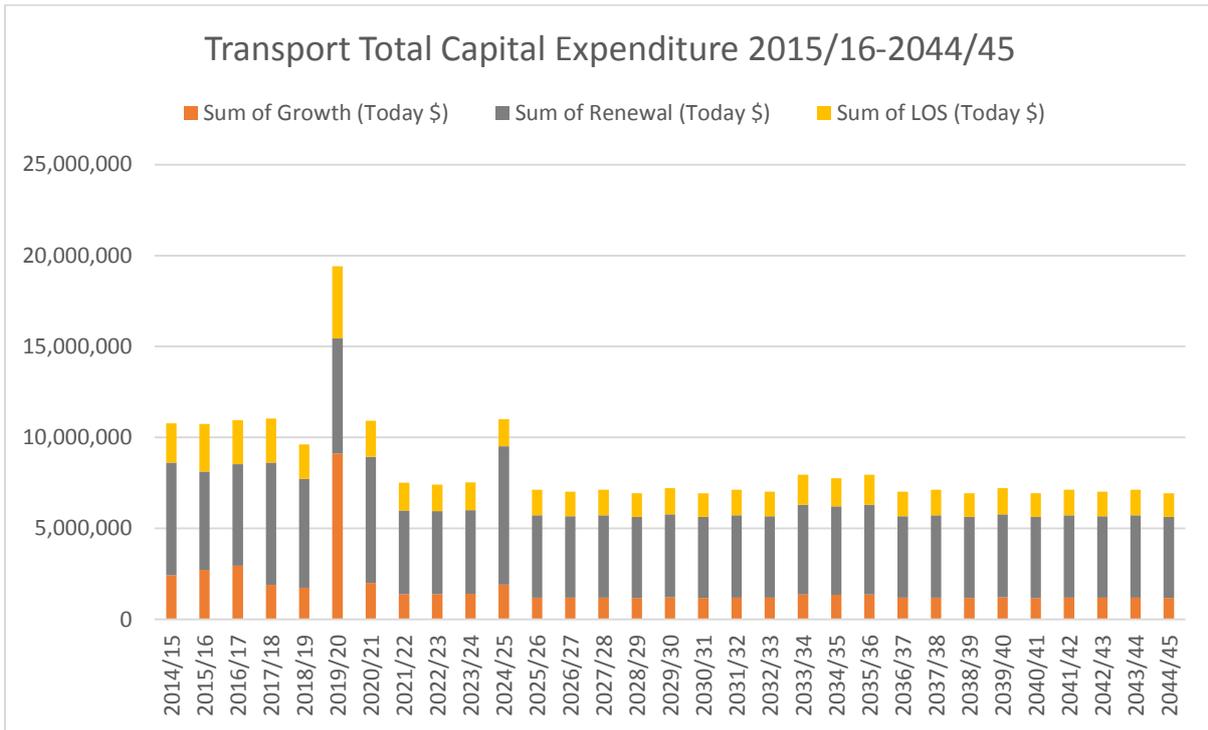


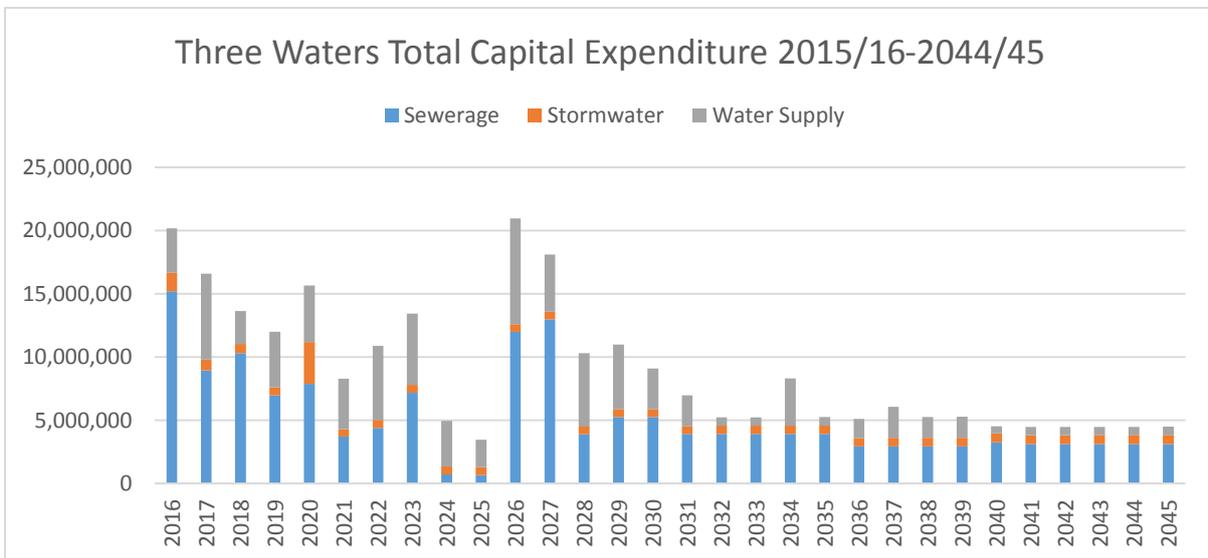
FIGURE 8 INFRASTRUCTURE TRANSPORT EXPENDITURE PROJECTIONS (BY DRIVER (GROWTH, IMPROVEMENTS, RENEWALS))



Total capital expenditure by each of the three waters activities is shown in Figure 9 below.

Expenditure in the first 2 years of the period is driven by wastewater expenditure due to Project Shotover. Expenditure to 2026 is then broadly split between water and wastewater with minor spend on stormwater infrastructure.

FIGURE 9 INFRASTRUCTURE THREE WATERS CAPITAL EXPENDITURE (BY INFRASTRUCTURE ACTIVITY)



Operational expenditure for the 30 year period is shown in Figures 10 and 11 (excluding depreciation and interest, including operations, maintenance and overheads). No allowance has been made for growth or inflation. Operational costs for wastewater undergo a step change increase in 2017 following the completion of the Project Shotover wastewater plant upgrade, but are otherwise expected to remain flat. It is expected that this will result in a decrease in costs on a per capita basis over time.

FIGURE 10 INFRASTRUCTURE THREE WATERS OPERATIONAL EXPENDITURE (BY INFRASTRUCTURE ACTIVITY)

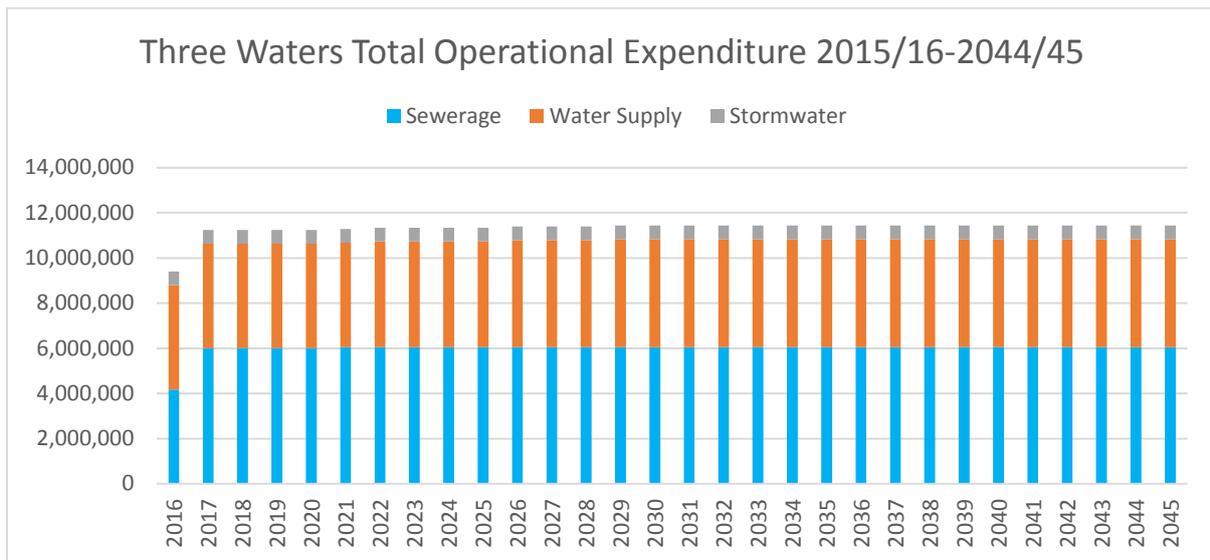
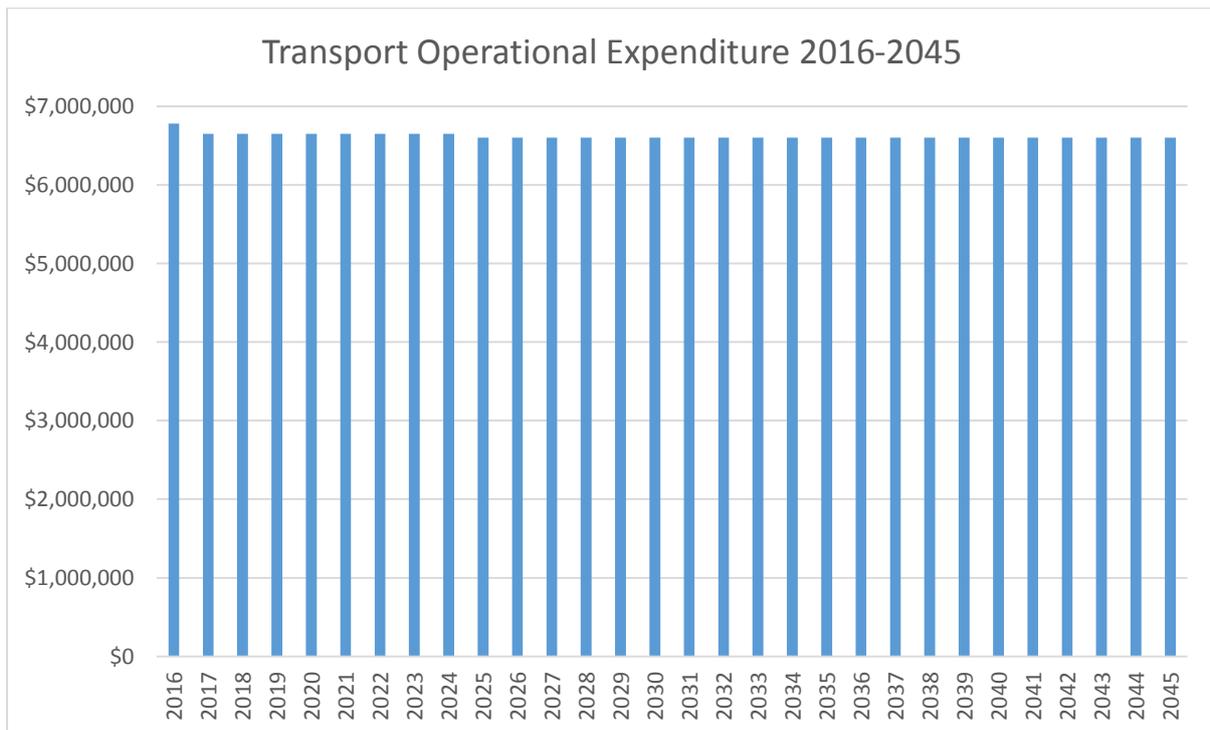


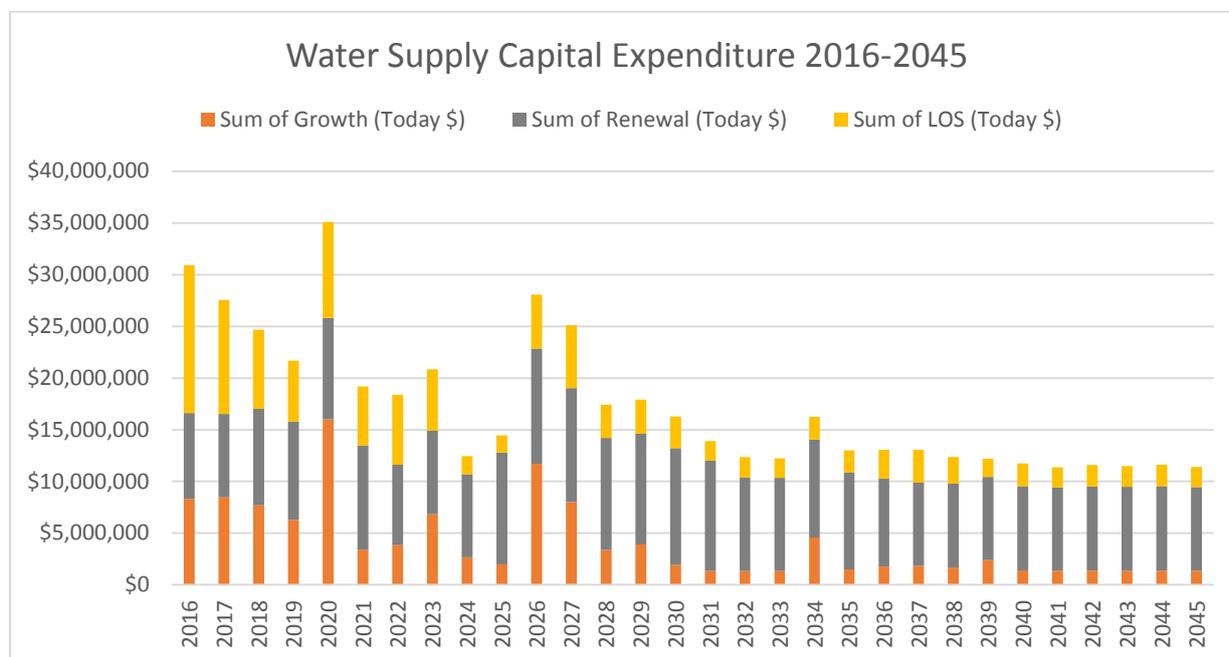
FIGURE 11 INFRASTRUCTURE TRANSPORT OPERATIONAL EXPENDITURE (BY INFRASTRUCTURE ACTIVITY)



10.3 Major Water Capital Works Programme Summary

Figure 12 illustrates the projected capital expenditure associated with the management of QLDC water infrastructure assets out to 2045.

FIGURE 12 WATER CAPITAL EXPENDITURE (BY DRIVER)



Major new infrastructure projects (defined, for the purpose of this strategy, as being \$3.5 million or more of capital expenditure) that are expected to be undertaken in the 2015-2045 period are shown in the table below. The estimated capital costs are expressed in 2015 New Zealand Dollars.

| Major Work - Water | Cost | Timing | Assumption |
|---------------------------------------------------------------|--------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wakatipu District - New Water Supply (Jardines Intake) | \$39M | 2025 to 2035 | A new intake, treatment plant and network infrastructure for Queenstown and surrounding communities, to meet future growth, and drinking water standards (further investigation work required) |
| Frankton Flats Capacity Upgrades | \$6.5M | By 2022 | Investment will be driven by growth |
| Wanaka South Capacity Upgrades | \$8M | By 2025 | Investment will be driven by development and growth |
| Kingston New Water Supply | \$3.5M | 2021 | Assumed water and wastewater schemes will occur at the same time to introduce delivery/procurement efficiencies |

Implications of uncertainty - Water

The network expansion and treatment rationalisation programmes of the water supplies are understood at a concept level. Detailed planning investigations will be required to confirm preferred pipeline alignments, sizes and locations of reservoirs. Decisions around rationalisation of treatment and water takes will require broader consultation with the community and the Ministry of Health. As such the council does not currently hold resource consents to enable these programmes to proceed at this time. Once further analysis has been completed, Council will seek to engage with key stakeholders prior to seeking resource consents to enable the works to proceed. Resource consents are expected to take up to two years to be granted from date of lodging an application. The specific conditions contained within any future resource consents have the potential to add further costs to water supply projects, either during their construction or for the duration of the useful life of the scheme. These will need to be understood from a risk and affordability perspective to ensure any decision for investment is sound and in the best interests of the community.

Although there is a high level of confidence in resident population growth projections, there is less certainty around future consumption (consumer usage) rates. Consumption rates affect overall demand for services and depending on the effectiveness of any demand management programmes, the timing of some investments may be able to be deferred. In addition, a greater understanding of visitor projections and consumption rates is required to ensure investment programmes are timely and affordable.

The treatment solutions identified for the new Queenstown intake have assumed that filtration treatment will be required in combination with disinfection treatment in order to meet the national drinking water standards. However, if the current treatment trials for implementing disinfection only treatment are able to prove compliance with the drinking water standards, the planned investment in filtration treatment will be deferred possibly by a decade or longer.

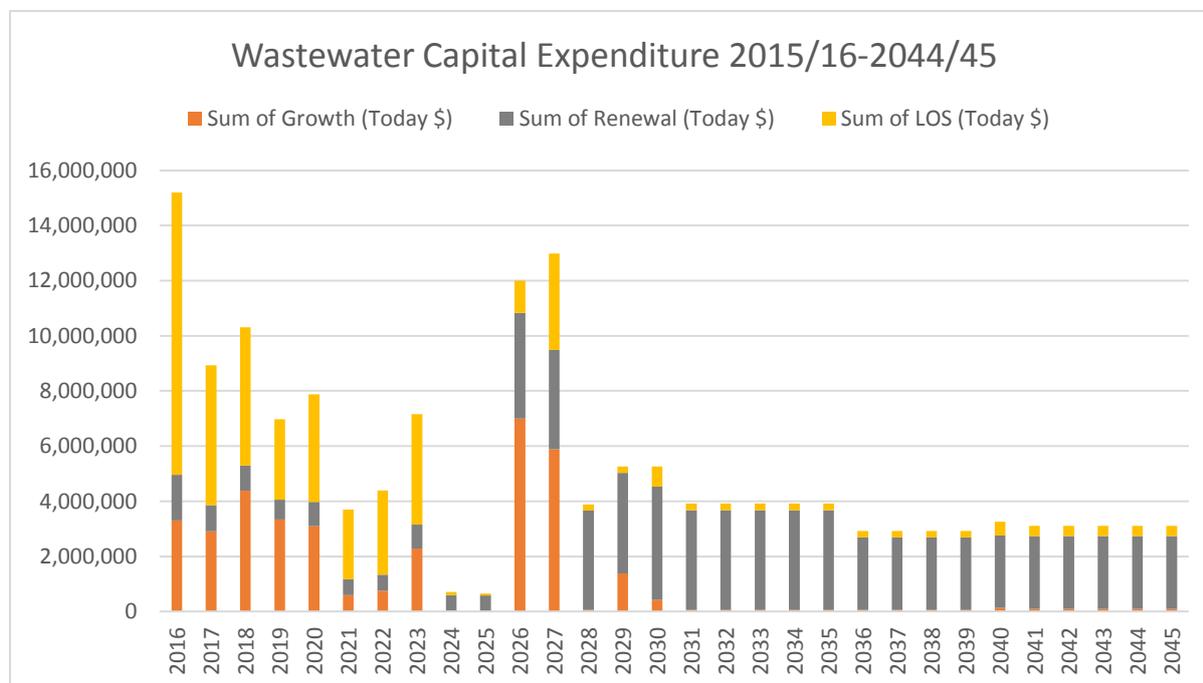
The councils small (community) water treatment schemes have assumed UV treatment only will be required to meet drinking water standards as they typically use bore water. However, if additional treatment such as filtration is required, this will require an increase the investment required.

If Council was to decide to takeover the management and operation of private water supply schemes, upgrades may be required to meet drinking water standards, which are currently not planned for in this strategy.

10.4 Major Wastewater Capital Works Programme Summary

The chart below illustrates the projected capital expenditure associated with the management of QLDC wastewater infrastructure assets out to 2045.

FIGURE 13 WASTEWATER CAPITAL EXPENDITURE (BY DRIVER)



Major new infrastructure projects (defined, for the purpose of this strategy, as being \$4million or more of capital expenditure) that are expected to be undertaken in the 2015-2045 period are shown in the table below. The estimated capital costs are expressed in 2015 New Zealand Dollars. Excluded from this are the new Cardrona and Glenorchy Wastewater schemes as costs are below the \$4M threshold.

| Major Work - Wastewater | Cost | Timing | Assumption |
|-------------------------------------------------------------------------------|--------|--------------|---------------------------------------------------------------------------------------------------------------------------------|
| Project Shotover – Stage 1 | \$21M | 2015 to 2018 | Contractors appointed – scheme has commenced |
| Project Shotover – Disposal Field | \$8M | 2022 | |
| Project Shotover – Stage 3 & 4 Upgrades | \$20M | 2027 to 2044 | \$10M per stage assumed to upgrade the treatment plant with latest technology / level of service driven |
| Project Pure – Stage 2 & 3 Upgrades | \$7.5M | 2021 to 2033 | \$3.75M per stage assumed to upgrade the treatment plant with latest technology / level of service driven |
| Lake Hawea Wastewater Treatment Upgrade Investigation and Construction | \$4.2M | 2023 | A decision will need to be made to connect to Project Pure (Wanaka wastewater scheme) prior to the Lake Hawea consent expiring. |

| Major Work - Wastewater | Cost | Timing | Assumption |
|----------------------------------------|--------|--------|-----------------------------------------------------------------------------------------|
| Glenorchy New wastewater Scheme | \$4.3M | 2017 | Scheme will commence in the 2015 LTP period, driven by community need and affordability |

Implications of uncertainty - Wastewater

Understanding the size of rainfall events is important when defining acceptable levels of risk and defining future programmes of investment. The impacts of significant events (and back to back events) are not understood in detail, and there is therefore some uncertainty around capacity driven infrastructure projects. The performance of any drainage system can also be heavily influenced by lake levels and rates of ground water infiltration. The consequence of these variables is some of these investments may be less effective than was planned and potentially increased investment may be required to meet agreed outcomes.

There are also levels of uncertainty around the quality and standards by which new wastewater infrastructure is built. Even if built to standard, these systems are easily affected by changes to landscaping and other changes to private properties and roading networks that enable stormwater to enter the wastewater system. These cross-connections increase the likelihood of foreign matter ingress, blockages, sewerage overflows and increasing volumes (and costs) at the districts treatment plants.

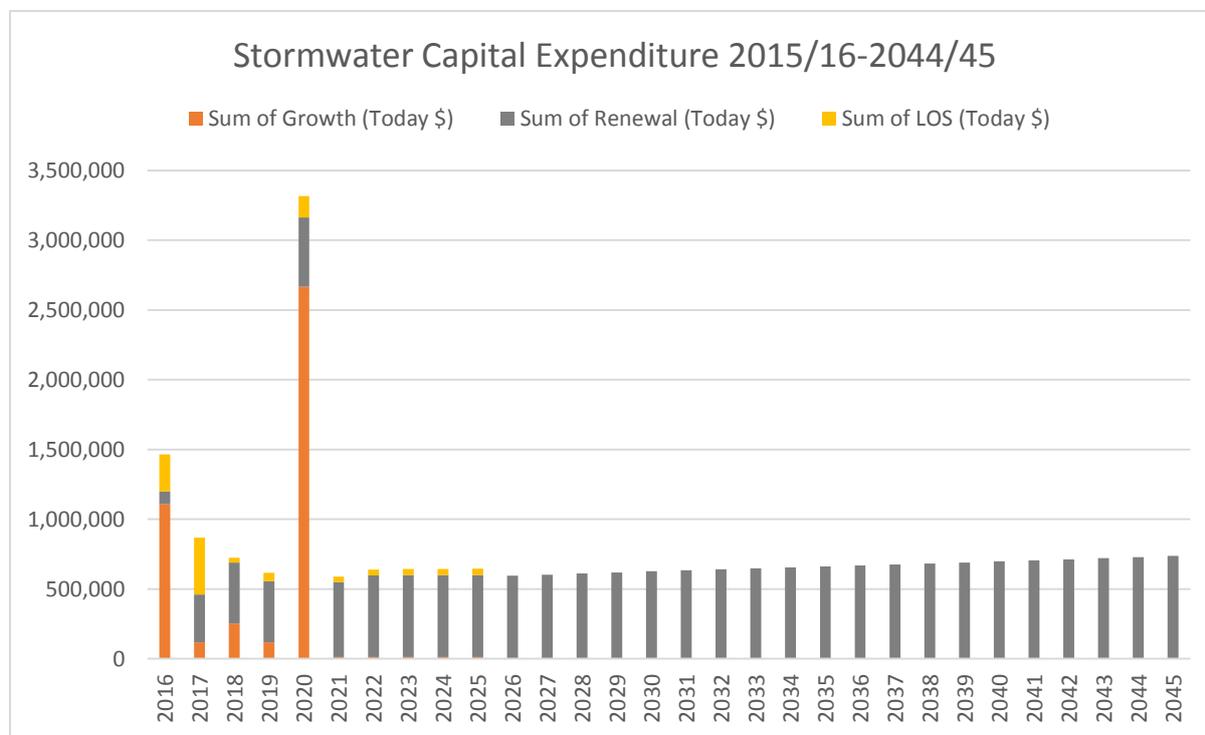
Additional work will need to be undertaken to understand the rates of deterioration of the existing wastewater networks. Due to the corrosive atmosphere within these systems, pipelines can deteriorate and block or collapse resulting in sewerage overflows and odour nuisance. Council has implemented a plan to review and improve its monitoring of network condition to better inform design standards and investment programmes.

There is a degree of uncertainty around the conditions that may be placed on the resource consents for new wastewater schemes. This may impact on future costs and revised timings for scheme delivery. It is important that council put forward robust arguments during consenting processes to ensure that the operation of a scheme under resource consent balances environmental outcomes and community affordability.

10.5 Major Stormwater Capital Works Programme Summary

The chart below illustrates the projected capital expenditure associated with the management of QLDC stormwater infrastructure assets out to 2045.

FIGURE 14 STORMWATER CAPITAL EXPENDITURE 2015-2045 (BY DRIVER)



Major new infrastructure projects (defined, for the purpose of this strategy, as being \$3 million or more of capital expenditure) that are expected to be undertaken in the 2015-2045 period are shown in the table below. The estimated capital costs are expressed in 2015 New Zealand Dollars.

| Major Work - Stormwater | Timing | Assumption |
|-------------------------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frankton Flats Stage 2 | 2020 | Investigations and future investment plans for stormwater management are currently under development. This programme may change through the 2018 TYP. |
| Hawea Stormwater - Design and Minor Works | 2033-45 | |
| Queenstown Stormwater - Design and Minor Works | 2033-45 | |
| Fernhill Stormwater - Design and Minor Works | 2033-39 | |

Implications of uncertainty - Stormwater

Understanding the size of rainfall events is important when defining acceptable levels of risk and defining future programmes of investment. The impacts of significant events (and back to back events) are not understood in detail, and there is therefore some uncertainty around capacity driven infrastructure projects.

In addition, engagement needs to be undertaken with the community to best understand the requirements of an integrated stormwater solution – integrated management vs. conveyance solutions. The performance of the stormwater system can also be heavily influenced by lake levels.

The consequence of these variables is some of these investments may be less effective than planned and potentially increased investment may be required to meet agreed outcomes.

There is a degree of uncertainty around the conditions that may be placed on the resource consents and whether investment in stormwater treatment will be required in the future. This may impact on future costs and revised timings for scheme delivery. It is important that council put forward robust arguments during consenting processes to ensure that the operation of a scheme under resource consent balances environmental outcomes with community affordability.

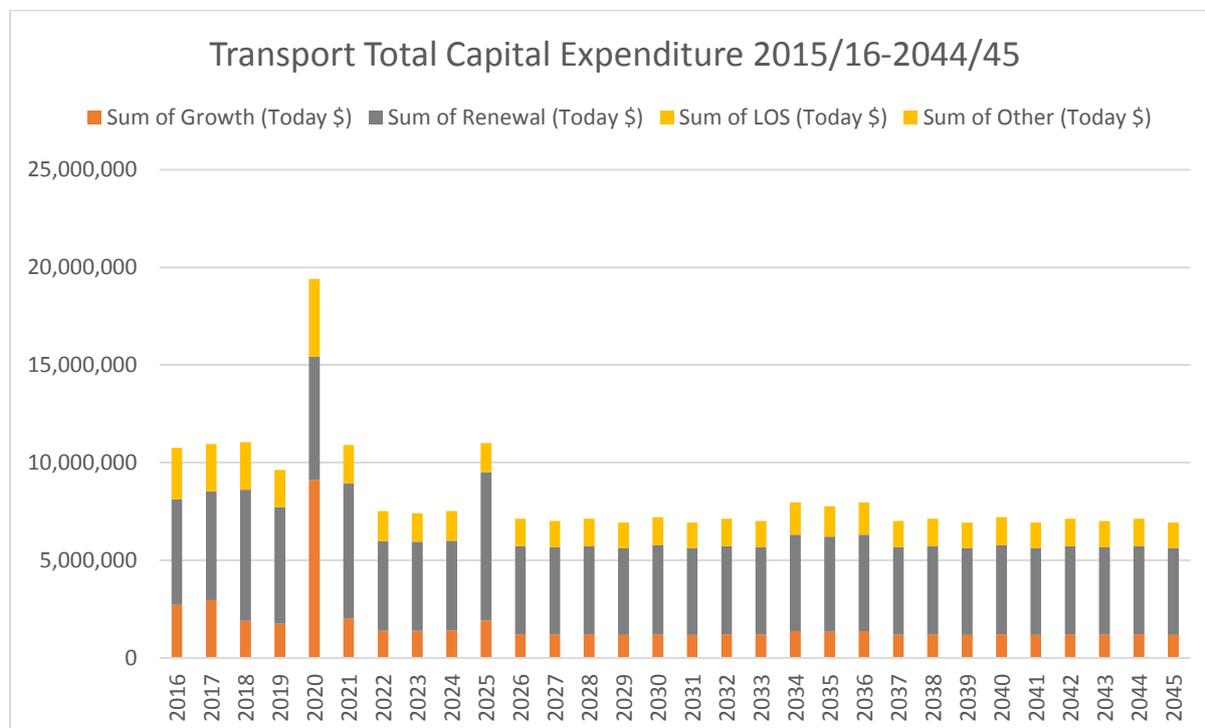
There is a level of uncertainty regarding the continued use and capacity of overland flow paths. Further investment could be required due to upgrade or modify overland flow paths to better protect private properties.

The implications of the Otago Regional Council's "Proposed Plan Change 6A (Water Quality) Regional Plan: Water for Otago" are currently unknown. There may be an increase in investment required to address environmental matters or water quality for the districts lakes and rivers.

10.6 Major Transport Capital Works Programme Summary

The chart below illustrates the projected capital expenditure associated with the management of QLDC transport infrastructure assets out to 2045.

FIGURE 15 TRANSPORT CAPITAL EXPENDITURE 2015-2045 (BY DRIVER)



Major new infrastructure projects (defined, for the purpose of this strategy, as being \$3 million or more of capital expenditure) that are expected to be undertaken in the 2015-2045 period are shown in the table below. The estimated capital costs are expressed in 2015 New Zealand Dollars.

| Major Work – Transport | Cost | Timing | Assumption/Source |
|----------------------------------------------------------------------------------------|-------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Queenstown Town Centre Strategy, Stage 1 Melbourne Henry (construction) | \$10M | 2031 | Inner Queenstown Transport Study (2008) LTP 2012/22 Spreadsheet |
| Queenstown Town Centre Strategy Stage 2 Henry-Man (construction) & Dublin to Suburb St | \$12M | 2041 | Inner Queenstown Transport Study (2008) LTP 2012/22 Spreadsheet |
| Frankton Flats new road – New link SH6 Eastern Arterial Road | \$9M | 2020 | Wakatipu Transportation Strategy (2007) Page 5-6. 10 year plan volume 3 / page 11 * The timing for this project has been brought forward to 2018 in the draft TYP. |

| Major Work – Transport | Cost | Timing | Assumption/Source |
|------------------------|------|---------|------------------------------------------------------------------------------------------------------------------|
| Rees Bridge | \$5M | 2015-25 | Identified in Bridge inspection Report 2013 / 2014 draft. Major works required due to aggregate build up. |

Implications of uncertainty - Transport

Council sources around 50% of its funding for transportation projects and expenditure from NZTA. Through the National Funding Assistance Review (FAR), NZTA have signalled that they will be reducing the funding available to council progressively over the next 10 years. After 10 years, NZTA have signalled a levelling out of funding. The extent of the proposed reduction is not yet understood and it is likely Council may be required to review its investment plans. It is possible that levels of service (i.e. quality of roads or acceptable levels of congestion) will have to change as Councils seeks to deliver its roading programme with reduced NZTA funding.

Council is also looking at other options by where the ownership of special purpose roads such as the Crown Range and the road to Glenorchy would be moved from Council to NZTA. Although this would save the Council money in maintenance, it may also result in changes to the levels of service (i.e. quality of roads or number of closure days) on those roads.

Improvements to public transportation patronage and use of cycle trails, combined with education programmes could go some way to ensuring Councils roads continue to deliver current levels of service. Diversification of transport options is a key tool in managing congestion (user demand) at peak times of the day. Other options such as increases to local funding may also provide an alternative, however this solution would need to be well understood and consulted on with the community ahead of any such decision.

There is a degree of uncertainty around the conditions that may be placed on the resource consents for any new roading project and the levels of investment in stormwater treatment that might be required in the future. This may impact on future costs and revised timings for scheme delivery. It is important that council put forward robust arguments during consenting processes to ensure that the construction and operation of a new road best balances environmental outcomes with community affordability.

One Network Road Classification (ONRC) System

The ONRC is a new initiative from New Zealand Transport Agency, supported by Local Government New Zealand for the provision of a nationally consistent framework that will inform future transport planning, investment choices, maintenance and operational decisions. Prior to the 2018 Long Term Plan, ONRC will seek to standardise the road user experience nationally and drive consistent transportation asset management throughout New Zealand. Council is on programme to transition to ONRC by October 2016.

The ONRC promotes a customer focus and investment decisions will be based on whether the roads are fit for purpose and meeting the needs of the users through requiring nationally consistent evidence-based investment decision making. That will require the Council to undertake a risk management based approach on the timing of maintenance and investment. Under this approach, the Council will ensure roads are usable and will not allow that risk to extend to the failure of the road, resulting in excessive or unnecessary rehabilitation costs. The Council supports the implementation of the ONRC system and will start to use the ONRC technical and customer levels of

service to guide the development of its maintenance and renewals plans from the 2015/16 financial year.

11.0 Summary

This is Council's first infrastructure strategy. Council has a sound understanding of the issues facing the district with regards to the provision of core three-waters and transportation infrastructure as presented in this strategy. It is acknowledged that additional improvements are required in the areas of asset data and asset planning practices which have been identified in this strategy.

The three-waters and roading activities are well engaged with asset planning, with a number of key master planning documents having been produced in recent years, along with a full suite of Asset Management Plans being produced in late 2014. These plans are underpinned by the newly formed Infrastructure Asset Planning team with a commitment to continuously improving asset management practices, asset data records (i.e. age and condition) and management of asset life cycles, including investment programming.

The major issues identified in this strategy are the effects of growth and the potential requirement to renew portions of these assets over the next thirty years. A number of activity specific issues are also considered in this document, including public safety, future resource consent requirements and engagement with the ORC and NZTA.

Consideration of issues shows that there is an ongoing need to progressively improve asset management practices as well as moving to evidence based investment programming to ensure that investment programmes are targeted, timely and affordable. This will ensure that issues are well understood, options considered, investment programmes are prudent and service delivery outcomes are delivered in the most affordable manner.