Te Kaunihera-ā-Rohe o Ruapehu
Ruapehu District Council

WATER SUPPLY

ASSET MANAGEMENT PLAN

2021-2031

RUAPEHU DISTRICT COUNCIL LONG TERM PLAN 2021-2031

BETTER, FOR YOU. Council MARK™

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1 VISION, COUNCIL FOCUSES AND COMMUNITY OUTCOMES

Drive and support the development of safe, prosperous rural communities that are able to thrive and capitalize on our agriculture, business and tourism sectors while sustaining our beautiful environment

Council Focuses

Improve the well-being and quality of life for our communities by:

- Creating and retaining jobs
- Growing incomes and opportunities
- Increasing the ratepayer base
- Providing sustainable infrastructure
- Providing value for money in all we do
- Ensuring the people who benefit from council spending contribute their fair share of the costs
- Working with government and others to gain funding for key projects so as to reduce the financial burden on Ruapehu ratepayers
- Creating collaborative partnerships with tangata whenua

Council has stated its core priorities in the form of Community Wellbeing Outcomes. These Outcomes are Council's 'true north' for planning and decision making. Every project that Council undertakes links back to at least one of the wellbeing outcomes. They are a key way we measure success.

2 SPATIAL PLAN

THREE MAIN ROLES OF RUAPEHU DISTRICT IN NEW ZEALAND

1. A centre of outdoor adventure, sport, a place to relax in nature and a visitor destination.
2. Rural areas for sustainable food production and diversification of the primary sector.
3. A desirable place to live with a unique offering, providing people with different lifestyle choice

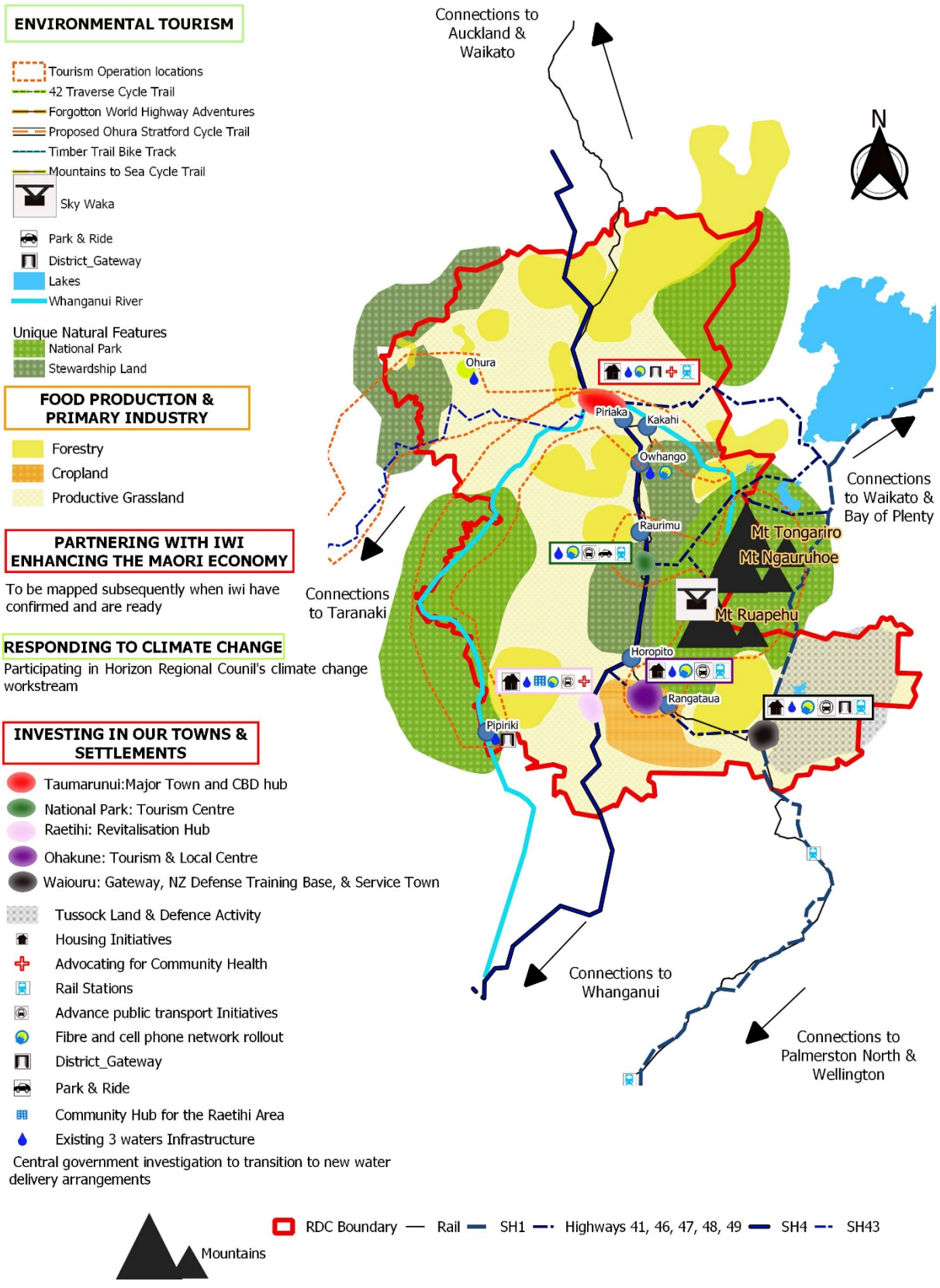
PRINCIPLES

- Fairness
- Affordability
- Resilience
- Long Term benefits- Sustainability
- Community at Heart

TOP THREE DISTRICT SHAPING MOVES

1. Strategic focus on housing, employment, town centres and infrastructure
2. Caring for rural communities and the environment
3. Collaborative partnership with Tangata Whenua

REVITILISATION PLANS & PROJECTS	RURAL COMMUNITIES AND ENVIRONMENTAL PROJECTS	COLLABORATIVE PARTNERSHIPS
• Ruapehu District Housing Strategy • Raetihi Integrated Council Service Centre & Community Hub • Raetihi Revitilisation Plan • Ohakune Spatial Plan • Taumarunui Future Housing and Community Plan • National Park Community Plan • Rangataua Community Plan	• Bridge replacement • Create and extend cycle-ways • Advocating on increasing necessary service accessibility (e.g. health services, transport services etc.) for our rural communities • Significant investment in three waters upgrades	• Council to continue strengthening relationship with local Iwi/ Hapu • Council currently developing the Liveability study which will be used as a foundation to create a wellbeing strategy


ENVIRONMENTAL TOURISM
Tourism Operation locations
42 Traverse Cycle Trail
Forgotton World Highway Adventures
Proposed Ohura Stratford Cycle Trail
Timber Trail Bike Track
Mountains to Sea Cycle Trail
Sky Waka
Park & Ride
District_Gateway
Lakes
Whanganui River
Unique Natural Features
National Park
Stewardship Land
FOOD PRODUCTION & PRIMARY INDUSTRY
Forestry
Cropland
Productive Grassland
PARTNERING WITH IWI ENHANCING THE MAORI ECONOMY
To be mapped subsequently when iwi have confirmed and are ready
RESPONDING TO CLIMATE CHANGE
Participating in Horizon Regional Counil's climate change workstream
INVESTING IN OUR TOWNS & SETTLEMENTS
Taumarunui:Major Town and CBD hub
National Park: Tourism Centre
Raetihi: Revitalisation Hub
Ohakune: Tourism & Local Centre
Waiouru: Gateway, NZ Defense Training Base, & Service Town
Tussock Land & Defence Activity
Housing Initiatives
Advocating for Community Health
Rail Stations
Advance public transport Initiatives
Fibre and cell phone network rollout
District_Gateway
Park & Ride
Community Hub for the Raetihi Area
Existing 3 waters Infrastructure
Central government investigation to transition to new water delivery arrangements
Connections to Auckland & Waikato
N
Ohura
Piriaka
Kakahi
Owhango
Raurimu
Mt Tongariro
Mt Ngauruhoe
Mt Ruapehu
Horopito
Rangataua
Pipiriki
Connections to Taranaki
Connections to Waikato & Bay of Plenty
Connections to Whanganui
Connections to Palmerston North & Wellington
Mountains
RDC Boundary
Rail
SH1
Highways 41, 46, 47, 48, 49
SH4
SH43

3 THE RUAPEHU DISTRICT

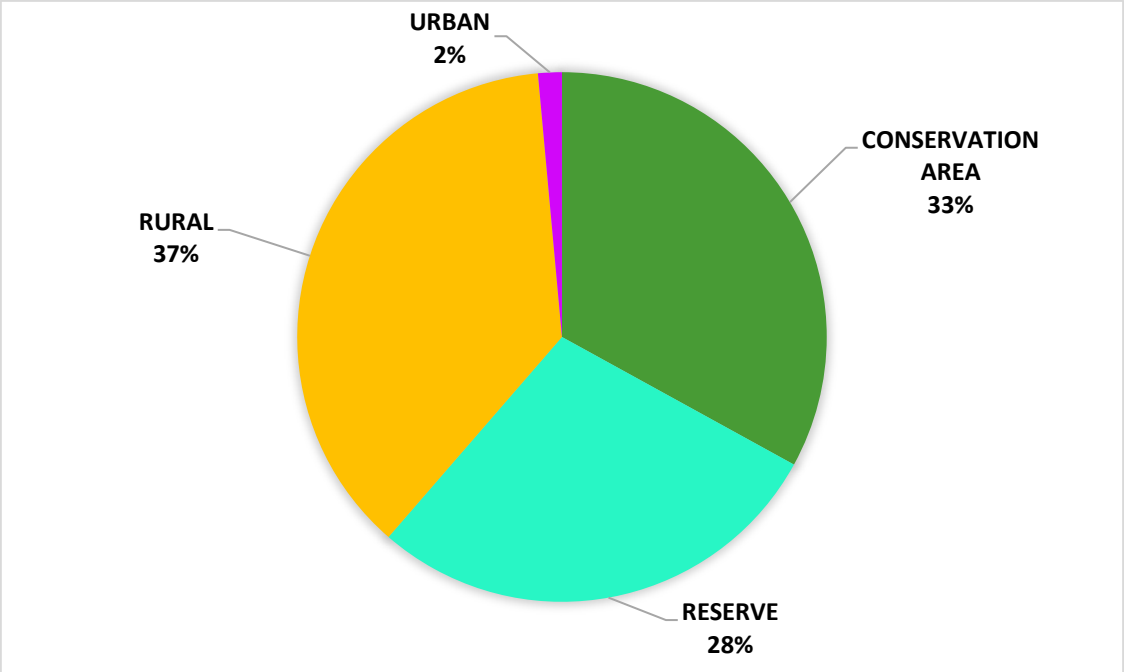
ENVIRONMENTAL

THE PLACE

The Ruapehu District is a land-locked area covering 6,733km², with a usual resident population of 12,309 (Statistics NZ, Census 2018). The projected population of the District in 2021 is expected to increase to 13,328. Ruapehu is one of New Zealand's largest districts by land area, however has a relatively small and dispersed population base with one of the lowest population densities in the country (0.02 persons per hectare). The Ruapehu District is also a growing tourist destination, and enjoys a significant and steadily increasing number of visitors each year.

There are approximately 11,220km of streams and rivers in the District. For context the total river network of NZ is approx. 425,000km. The district makes up 2.64% of NZ's rivers and streams.

Below is a breakdown of the land zoning within the District, based on the 2010 Ruapehu District Plan. Zones that are less than 1% are not on the graph but are included in the table.



Row Labels	Sum of Area in HA
Active Reserve	0.01%
Commercial	0.01%
Conservation Area	32.81%
Future Residential	0.01%
Industrial	0.06%
Reserve	28.19%
Residential	1.33%
Rural	36.96%
Urban Settlement	0.02%
Out of District	0.60%
Grand total	100.00%

THE NATURAL ENVIRONMENT

The district's landscape is varied, ranging from rolling pastoral hill country and indigenous forest to the volcanic plateau of the Desert Road and New Zealand Army land at Waiouru. East of the district, features the Tongariro National Park, which includes the mountains Tongariro, Ngauruhoe and Ruapehu. In the West, the Whanganui National Park and the Whanganui River dominate the landscape boasting a rich history and diverse wildlife.

The Ruapehu District borders the Rangitikei and Whanganui Districts in the South, Waitomō District in the North, Taupō District to the East and the Stratford and New Plymouth Districts to the West.

The Ruapehu environment is pristine, with a relatively low number of heavy industries or high intensity residential development. This environment makes the district attractive to tourists who seek to visit natural and unspoiled landscapes. Tourist numbers continue to grow and, with the advent of the cycleway projects under development, this growth is expected to continue.

TONGARIRO NATIONAL PARK

The Tongariro National Park is New Zealand's oldest national park, it is listed as a World Heritage Area and is a significant draw card for tourists both domestic and international. The park includes the Whakapapa and Turoa ski fields as well as important walks such as the Tongariro Alpine Crossing. Visitor numbers at three sites around the Central Plateau (Taranaki Falls, Tongariro Alpine Crossing and Tongariro Northern Circuit) continue to increase year on year.

CLIMATE

According to the Köppen-Geiger climate classification, the climate of the district is listed as "Cfb, warm and temperate".

The elevation of towns in the north of the district range from 187m to 443m above sea level, while the elevation of towns in the south of the district range from 524m 1123m above sea level. The average annual temperature in the north of the district's townships range from 11.6 – 13 Degrees Celsius while the average annual temperature of townships in the south of the district range from 8.1 – 11.1 Degrees Celsius. The average annual rainfall for townships in the north of the district range from 1342mm – 1776mm while the average annual rainfall for townships in the south of the district range from 1103mm – 2775mm.

At an altitude of 199m above sea level, Taumarunui experiences a significant amount of rainfall during the year with seasonal projections showing rain is set to increase by 7% – 16% during winter and decrease up to 5% during Autumn by 2090[1]. The average annual temperature for Taumarunui is 12.9 °C, reaching low-mid 30s in the summer and -1 or -2 in the winter. A reduction in the number of snow days experienced annually is projected throughout New Zealand, including the Central Plateau.

Greatest warming in summer / autumn and least in winter and spring. Increase in water temperatures predicted. Amount of warming will depend on river elevation, catchment size and water source (snow melt or not). There is an expected increase in hot days with 50-60 hot days per year between Taumarunui and Whanganui. The district is also expected to have a decrease in frost / cold nights. Larger decreases at higher elevations of Central Plateau are also predicted. Annual average precipitation is predicted to increase 15-20% by 2090. *(Climate Change Implications for the Manawatū – Whanganui Region 2019 NIWA report, pp17-19).*

With Storm surges, flooding and storms predicted to increase over the next 30 years, network resilience is a significant issue, particularly on the Desert Road and Stateway Highway 4 North of Whanganui. Changing weather patterns has increased risk on Councils infrastructure, parts of which are already vulnerable. Improved access to data and information will continue to allow Council to communicate with our communities clearly and consistently *(Waka Kotahi, 2021-31 Regional Summary Version 1.1pg 109 – 113).*

[1] MFE, Climate Change Projections for the Manawatu-Wanganui Region,

CLIMATE CHANGE ACTION

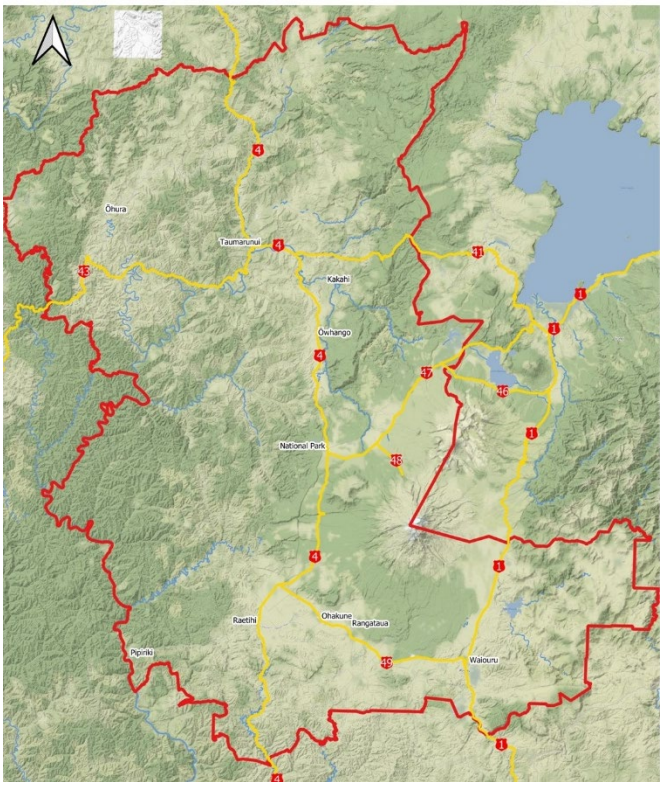
With Central Government declaring a climate change emergency in December 2020, government agencies are expected to be carbon neutral by 2025.

Like other local authorities throughout the country, Council are in the initial phase of developing a climate change strategy. Council is working with Toitū, an enviro-science agency, to measure Councils carbon emissions to establish a baseline understanding of the current risks and opportunities present within the district. Phase two of this work involves using the information collected from phase one to develop a suitable climate change / sustainability strategy. Council aims to complete phase one within the next financial year (2021/22).

As part of this work, Council signed a Memorandum of understanding to work regionally with Horizons Regional Council and other regional territorial authorities. Currently a regional climate change risk assessment (RCCRA) is underway and Tonkin & Taylor are contracted to assist the region with this project, including technical work, report writing and project facilitation. NIWA and Massey University have also been sub-contracted to assist. Council is also in the initial setup phase of recording and monitoring their carbon footprint. Once a data driven understanding of the problem is established, Council plans to assess vulnerabilities and risk against priority values/objectives, identify options and pathways to increasing resilience in these areas, develop a climate change adaptation strategy, implement cross sectorial approach and monitor the effectiveness of these strategies.

Although Council is in the initial planning stage, but it is important to note that some climate related practices have already been incorporated into asset management practices. The purpose of developing a climate change strategy is to develop a framework of how to improve current practices to address potential issues that Ruapehu District is vulnerable to and to give decision making framework for responses and investment outcomes. Balancing the demand for significant infrastructure investment while responding to global issues is challenging for a small district with a low ratepayer database to implement.

MAP OF RUAPEHU DISTRICT



CULTURAL

SETTLEMENT

The remoteness of the area surrounded by its natural resources allowed for Māori to flourish prior to European settling.

The first major European influence came in the 1840s with missionaries settling on the southern reaches of the Whanganui River. Regular steamboat services up and down the Whanganui River commenced in the late 1890s, firstly to Pipiriki then, eventually, to Taumarunui. Its advantage as an access and trading route saw tourism and trade flourish. Due to improved roads the main riverboat trade ceased in the 1920s.

Completed in 1908, the main trunk railway became New Zealand's most significant land route and one of its greatest engineering achievements. Running through the heart of the district, the dense forest, steep inclines and deep gullies prompted ingenious solutions such as the Raurimu Spiral and the Makatote Viaduct. Passenger services began in 1909. With a high population of Māori still residing in the district today, many are a representation of the large number of iwi and hapū in both a pre and post settlement phase.

SOCIAL

TOWNSHIPS LOCATED THROUGHOUT THE DISTRICT

There are five main towns within the district, they all serve as central service points for neighboring communities.

- Taumarunui is the main service centre for the surrounding settlements and agricultural land (sheep, cattle, deer and dairy) and forestry plantations. Taumarunui is one of the key gateways for tourism into the district and is establishing itself as the centre of cycle tourism within the district.
- National Park is a village style town, located between Tongariro and Whanganui National parks, it's known for its hiking and biking trails and kayaking.
- Ohakune caters for the ski industry and cycle ways, as well as the surrounding horticultural and farming activity. As part of their tourism attraction, Ohakune hosts a number of festivals, one of which is the Mardi Gras.
- Raetihi is a rural township servicing farming, market gardening and forestry. It forms a gateway to the historic Whanganui River settlement of Pipiriki, which is an also an end point for the popular Whanganui River tours.
- Waioruru is situated at the southern end of the district and is home of Waiouru Military camp, one of New Zealand's army bases on state highway 1. The defense area in Waiouru is a landmark in the local community with facilities including the National Army Marae and the National Army Museum, which is a popular visitor destination.

THE POPULATION

The usually resident population of the Ruapehu District is 12,309 according to the 2018 census. It has been estimated that the recent small but steady population growth will continue and that the population is set to reach 13,238 by 2021. The District experienced population decline between 2001 and 2016 and began to show signs of recovery in 2017. Under all population scenarios (high, medium and low) Ruapehu District's population is projected to increase slowly over the next 10 years at predicted rates of between 0.7% (low) to 1.967% (high).

Given the steadily increasing visitor numbers to the district, the increase in Councils investment into economic development, and the support from central government for improving visitor infrastructure, it is anticipated that all peak population components will increase to cater for visitor industry growth (see Planning Assumptions – Population Projections).

Council has undertaken five ratepayer surveys (2008, 2010, 2013, 2016, and 2019) to track the holiday home environment within the District and to attempt to quantify the level of use of these homes. Whilst this survey is an important information source for understanding the holiday home environment; due to its nature and the variance in responses that is likely to occur across the survey timeframes, it should be noted that the results come with a high level of uncertainty. However, given the importance of holiday home visitor numbers to establishing an estimated peak population for the District it is necessary to use this information to estimate future holiday home visitor numbers, whilst recognising its level of uncertainty.

Based on the survey responses, between 2010 and 2019 there was an average annual increase of 1.55% in the number of holiday homes per year (approximately 29 homes per year) across the District. Over this same period the average number of people staying per home ranged from 4.4 – 4.7. Based on the survey, each holiday home was used on average 27 nights per year. See Planning Assumptions – Population Projections for projected holiday home data.

ECONOMY

Gross Domestic Product in Ruapehu measured $668m in the year up to March 2019, up 1.4% from the year earlier. New Zealand's GDP increased by 3% over the same period. Economic growth in Ruapehu District has averaged 0.9% over the last 10 years compared with an average of 2.19% in the national economy[2].

In 2019, the most significant component of the Ruapehu economy was 'agriculture, forestry and fishing', these collectively make 34.4% share of business units and 20.3% of GDP. "All others" services contribute to 24.4% of the Districts GDP. The third largest contributed to the Districts GDP is Public Administration and Safety contributing 12.1%.

The fastest growing industries in the District are 'Agriculture, Forestry and Fishing' (annual growth of 10.3% compared to 2018), Rental, Hiring and Real Estate Services (annual growth of 18.3% compared to 2018) and Construction (annual growth of 12.7% compared to 2018). It is important to note that while the latter two industries indicate more growth than the first, their contribution to GDP is 136m, 43m and 45m respectively[3].

Strong visitor numbers, emerging tourist opportunities and the growth in holiday homes combine to ensure that tourism continues to be an important sector for the District. The tourism industry contributed $127m towards District GDP in 2019 (compared to 110m in 2018)[4]. The industry employed approximately 1511 people in in 2019, up 11.3% on 2018. Total tourism expenditure increased to 212m in 2019 up 9% on 2018's 194m[5].

Of the 212m spent in the district by tourists in 2019, 163m came from domestic tourists while 48.3m was spent by international visitors.

[2] Infometrics, https://ecoprofile.infometrics.co.nz/Ruapehu%20District/Gdp/Growth
[3] Infometrics, https://ecoprofile.infometrics.co.nz/Ruapehu%20District/Gdp/GrowthIndustries
[4] Infometrics, https://ecoprofile.infometrics.co.nz/Ruapehu%20District/Tourism/TourismGdp
[5] Infometrics, https://ecoprofile.infometrics.co.nz/Ruapehu%20District/Tourism/TourismSpend

VISITOR NUMBERS

Holiday home and commercial accommodation statistics continue to indicate growth in overnight tourism. Over the past 10 years there has been an average annual increase of 2.49% in occupancy rates of commercial accommodation. Both the number of guest nights and number of guest arrivals has increased and, pre COVID-19, this trend was projected to continue. Population Projections have made the assumption that day visitors will mirror commercial accommodation visitor statistics as we do not currently have a reliable source with which to count day visitors to the district. Anecdotally and on consideration of the nature and type of tourist activities in the District, we can state that the District will be receiving a significant number of day visitors.

Cycle Trail The Ruapehu District is developing a reputation as a destination for off-road mountain biking. Two 'Great Rides' are located within the District; the Timber Trail to the North and the Mountains to Sea cycle trail to the South. To capitalize on this opportunity, Council is in the process of developing a cycle trail strategy for the district.

RUAPEHU ALPINE LIFTS

Between 2011 and 2015 there was a 10% decrease in skier numbers on the mountain as a whole. $100m was invested into Ruapehu Alpine Limits to broaden the appeal of the mountain. The investment was used to develop their state of the art Sky Waka Gondola, and it has successfully managed to increase the number of skiing visitors between 2017 and 2019, with 390,000 guests arriving to the mountain in 2019 alone[6]

[6] Ruapehu Alpine Lifts Limited 2019 Annual Report, https://www.mtruapehu.com/ral/annual-reports

4 ASSET MANAGEMENT

INTRODUCTION TO ASSET MANAGEMENT PLANNING AT RUAPEHU DISTRICT COUNCIL

ASSET MANAGEMENT OBJECTIVES AND INDUSTRY STANDARDS

Council has adopted a systematic approach to the long-term management of its assets by preparing this Asset Management Plan.

The key objective of asset management is to "meet a required level of service, in the most cost effective manner, through the management of assets for present and future customers" (IIMM, 2011). Asset Management Plans (AMPs) are a key component of the strategic planning and management of Council, with links to the LTP and service contracts. AMPs underpin the Long Term Plan (LTP) and consultative processes that have been put in place to engage the community.

AMPs aims to deliver a range of benefits to the community as well as to the provider of the services, the main ones being:

(a) Maintaining, replacing and developing assets over the long term to meet required delivery standards and foreseeable future needs in a cost-effective way.
(b) Continually improving asset management practices and service delivery to the customers.
(c) Complying with Statutory Requirements and Regulations.
(d) Standards Association of New Zealand: provides a range of standards covering required or recommended practice and which may impact directly on assets or management of contracts.
(e) The Asset Management Plans have been developed in accordance with the National Asset Management Steering (NAMS) Infrastructure Management Manual. They include forecasted population growth, the level of service expected by the customers, the condition of the asset, planned maintenance and replacement which ensures a complete and consistent approach to the long term planning of assets.

RATIONALE AND INFRASTRUCTURE STRATEGY

Infrastructure represents a major investment which, in developed countries, has been built up progressively over the last 100 years or longer. This is reason enough for applying the best asset management skills to ensure that it continues to provide sustainable and economic service.

Compelling reasons for ensuring that best practices are applied to our national infrastructure include:

(a) Infrastructure networks provide the platform for economic and social development
(b) Infrastructure and property assets increasingly meet recreational and other needs of the community
(c) Good quality infrastructure is the cornerstone of public health and safety
(d) Good quality infrastructure mitigates potential adverse environmental impacts of society
(e) Asset management practices advance the sustainability of infrastructure services
(f) Benchmarking condition and performance promotes innovation and efficiencies.

(this is an excerpt from the NZ Asset Management Support website. *http://www.nams.org.nz/pages/173/infrastrcuture-asset-management-defined.htm*)

WORK PROGRAMMES

Activity work programmes derive from:

(a) The priorities that Council identifies during consultation with the community,
(b) Asset condition surveys,
(c) Agreed levels of service, and
(d) Strategic planning documents (eg. Growing Ruapehu, Council's Economic Development Strategy, adopted 2015, updated 2018 and 2021)

5 LEVELS OF ASSET MANAGEMENT PLANS

CORE AMPS

The development of an AMP is a process of continuous improvement. The entry level AMP is what is commonly referred to as the Core AMP – it reflects a rudimentary knowledge of the asset (such as the asset register and inferred age, condition and performance), associated Levels of Service and the long-term cash flow predictions.

ADVANCED AMPS

At the other end of the spectrum are Advanced AMPs. Movement towards the development of such plans is a continuous process of data collection, verification, higher confidence levels of outputs and a systematic iterative approach to treatment options (renewal and maintenance options), while steadily reducing the number of assumptions historically used.

Advanced AMPs aim to employ predictive modelling, risk management and optimised decision-making (ODM) techniques, in order to evaluate options and to identify optimum long term plans to deliver the Levels of Service agreed with the community to achieve outcomes.

As new condition, performance and risk assessment techniques and systems evolve, or as technologies associated with asset renewal are improved, the level of sophistication of the AMP will improve.

RUAPEHU DISTRICT COUNCIL'S AMPS

RDC's first AMPs were produced in 1996. They were reviewed and updated in 2006, 2009, 2012, 2015 and 2018 and 2021.

The objective of the review and update is to improve the quality of the AMPs and maintain them to at least a core-plus level. RDC's AMPs consist of a mixture of "bottom up" analysis (for asset inventory, age, maintenance history, faults etc.) as well as "top down" analysis (for condition and performance).

Having reached core-plus level means there is still room for improvement and sophistication. How that will be achieved is laid out in the Improvement Plan section of this plan. Continuous improvement will be periodically measured/reviewed/audited by external reviewers, and through revisions of this document.

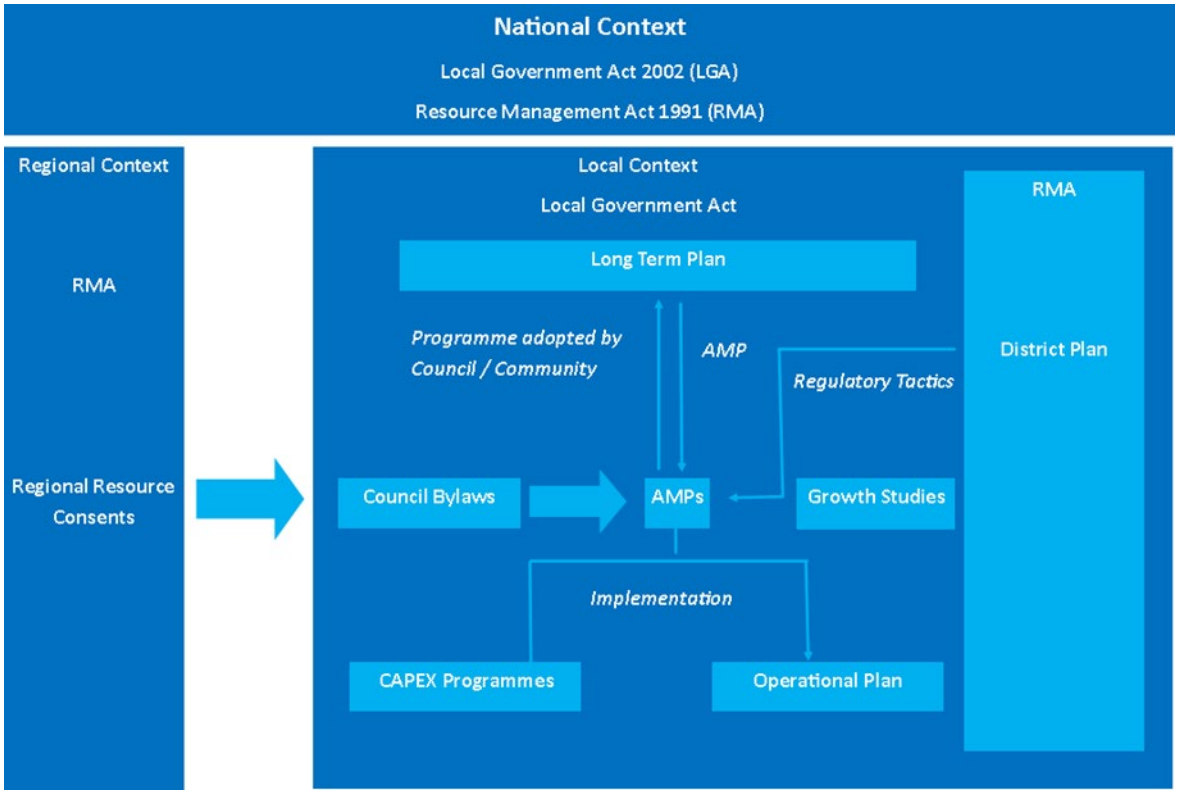
FUTURE IMPROVEMENTS

In 2019 the 2018-28 Asset management plans were peer reviewed. The objective of the assessment was to focus on the overall quality of the AMPs, to identify the strengths and weaknesses of each plan, and to allow RDC to prioritise improvements to the plans. The peer review identified whether progress had been made on maturity level of the AMPs by comparing score to the 2015 peer reviews.

AMPs include an improvement plan that outlines the tasks, resources and deliverables required to achieve the target asset management maturity level that is appropriate to those assets.

6 PLANNING REQUIREMENTS AND LOCAL GOVERNMENT PROCESSES

Integrated asset management is done in the context of the wider environment. The Local Government environment has both expectations and restrictions placed on it through Central Government legislation and Regional Council Plans. Council needs to take into account both the national and regional plans and environment when developing its strategic plans. The following chart shows the relationship with the wider environment.



LEGAL REQUIREMENTS

Section 10 of the Local Government Act 2002 (LGA) states that the purpose of Local Government is;

(a) To enable democratic local decision-making and action by, and on behalf of, communities; and

(b) To promote the social, economic, environmental, and cultural well-being of communities in the present and for the future.

Our AMPs demonstrate Council's approach to these ideas as follows:

(a) Democratic local decision making and accountability - Council seeks community feedback on the strategic direction of Council's AMP as part of the LTP process as well as through consultation on work programmes and individual projects as discussed in Part 3. Outcomes from these consultations are combined with asset knowledge and engineering best practice to produce management plans for Council's assets that are sustainable, appropriate and acceptable to the Ruapehu community.

(b) Efficient and Effective service delivery - Effective local government relies on information as the basis of good decision-making and accountability. Council is committed to monitoring and

continually improving the information that this Plan is based on and the processes and frameworks which guide decision making.

(c) Consideration of the needs of present and future generations – Council uses data collected from a number of sources to develop assumptions on future growth (or decline) in demand to underpin planning. AMPs also use other information (e.g. asset conditions reports, inspections, legal compliance checks, research reports, audits etc.) as the basis for forward planning to help ensure that the infrastructural asset renewal and replacement will adequately service both today and tomorrow's communities

(d) Cost effective service delivery - Council promotes cost effective service delivery through periodic reviews, tendering and contract negotiations and using and promoting shared services.

(e) Promotes the wellbeing of the District – Council promotes the social, economic, environmental, and cultural well-being of communities by responsibly managing and planning for its assets for the present and future communities.

The LGA requires councils to develop and publish an Infrastructure Strategy. This is a strategic plan for the future community looking forward 30 years.

ASSET MANAGEMENT PLANS AND THE LONG TERM PLAN / ANNUAL PLAN PROCESS

Planning processes tend to be circular with built in reviews. The AMPs and LTP need to have regular review cycles, and monitoring of the Goals, Levels of Service and KPIs. The AMPs are reviewed every three years, in line with the ten year LTP cycle, but work programmes can also change each year, in response to outside pressures, budget constraints and new projects becoming apparent.

The ability to be responsive each year is through the Annual Plan process.

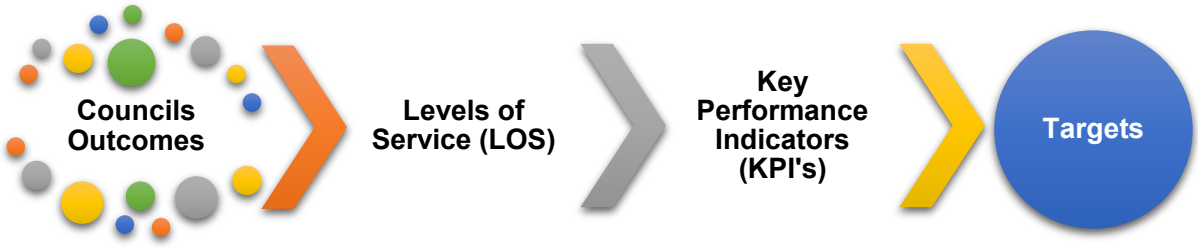
The AMPs detail the Goals, Levels of Service, KPIs and the targets which contribute to the organisation's Vision and Mission. They also identify demand changes and risks.

The review process considers the overall impact of the proposed programmes to deliver the defined Levels of Service to the Ruapehu community. This review moderates competing priorities within the context of community affordability and may result in some projects being deferred, and some reductions to ongoing programmes.

The yearly adopted work programmes and budgets and the implications of any changes made from the proposed AMP are identified in appendix A of each AMP. These changes and implications will then be a key input into subsequent plan reviews.

7 LEVELS OF SERVICE, KEY PERFORMANCE INDICATORS AND TARGETS

The Levels of Service (LoS) for each activity are derived from Council's strategic goals in the context of community affordability. KPIs and targets have been developed to measure whether or not Council is achieving those LoS.



CHANGES IN LEVELS OF SERVICE

A change in LoS will either be reflected as a requirement to increase or decrease the LoS.

Any significant change will need to be consulted on with key stakeholders and the community.
The outcomes of that consultation must then be incorporated into the decision making process.

LEVELS OF SERVICE RELATIONSHIP TO ASSET MANAGEMENT PLANNING

One of the basic cornerstones of sound asset management is 'to provide the levels of service that the current and future community want and are prepared to pay for'.

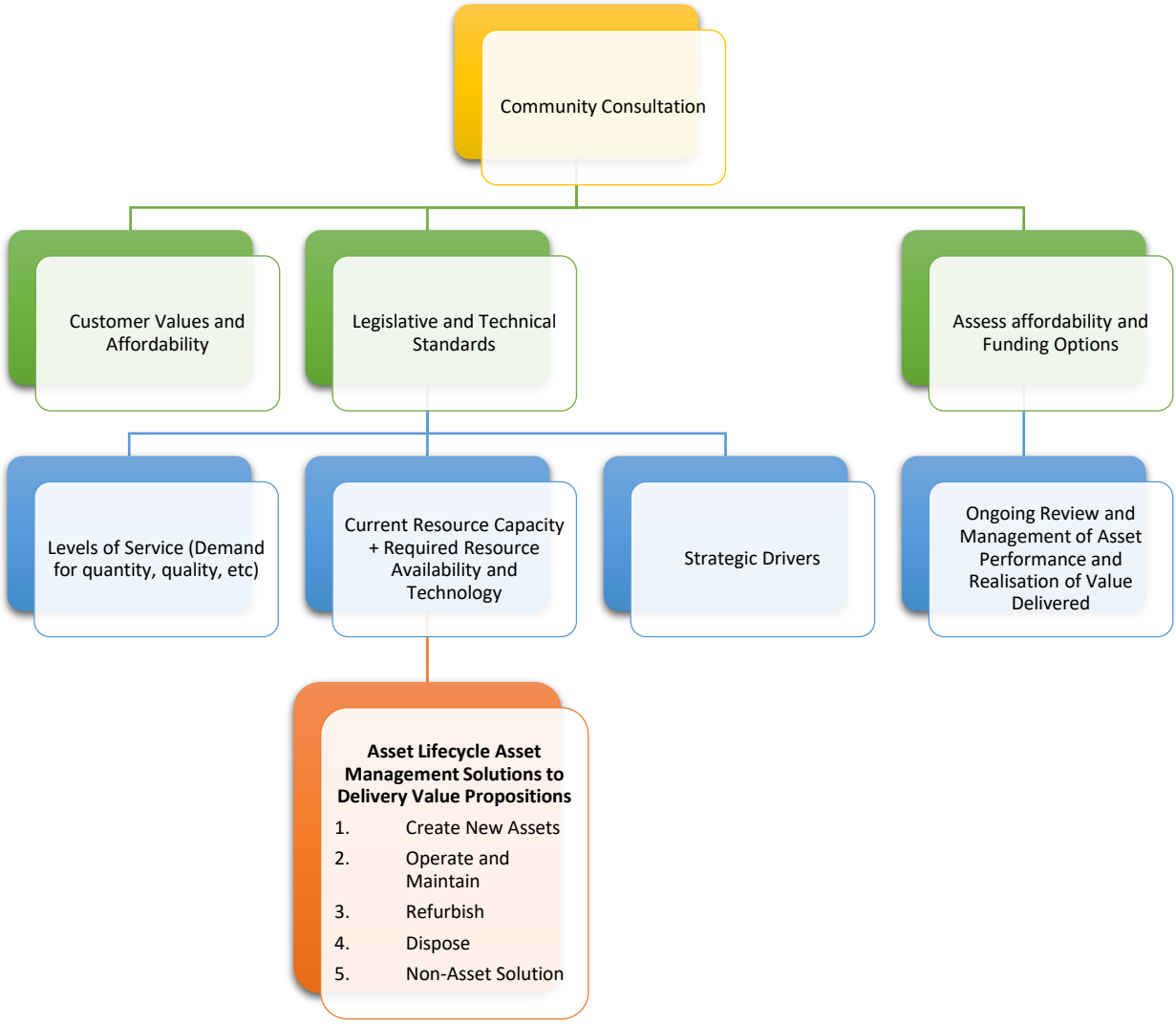
LoS therefore provide the platform for all decisions relating to management of assets. Before developing detailed asset management strategies, Council needs to consult on the LoS with the community with consideration given to the following:

(a) Planned outcomes
(b) Legislative requirements
(c) Technical constraints
(d) Community affordability

A key objective of the Asset Management Plan is to match the LoS provided by the asset with the expectation of stakeholders and Council's strategic goals and legislative requirements.
Levels of Service:

(a) describe the type and level of service to be offered, for example, how many times a year public grass is mown, and/or how long the grass should be cut,
(b) are an outcome of a cost/benefit analysis of the services offered,
(c) enable stakeholders to assess suitability, affordability, and equity of the services offered.

The following figure shows LOS relationship to Asset Management Planning.



8 COMMUNITY ENGAGEMENT

Ruapehu is demographically and geographically diverse. Therefore Councils 'Community Engagement' approaches, platforms and modes of engagement are multi-faceted to be inclusive of all key stakeholders and communities across the district to ensure their ideas and thinking inform Council's decision making.

RDC's key stakeholders are inclusive of and not limited too;

- Community Groups
- Non-government Organisations
- District Health Boards
- Federated Farmers
- Real estate agencies
- Business Groups

COUNCILS OBLIGATIONS AND ENGAGENT APPROACH

All Community Engagement is undertaken in reference to Council's Engagement Strategy 2020, the RDC Significance and Engagement Policy[7], Council's obligations as outlined in the Local Government Act Section 10 A-E, and in reference to the Treaty of Waitangi.

Active engagement approach will depend on the degree of significance an issue has to a community and will utilise various modes of engagement as necessary to engage successfully with any given issue, community and demographic. The following are Councils key modes of engagement:

- Social Media Channels
- Website
- Information and displays at the information centers, i-Sites and libraries
- Targeted community newsletters & email lists e.g non -resident ratepayer
- Information and displays in local social hubs
- Informational flyers or letters sent through mail
- Mail and phone surveys
- Community hui & meetings
- Council and Community Board meetings
- Stakeholder/target community meetings/workshops
- Operational meetings
- Open chat spaces
- Community working & action groups
- Informal meetings

There are legislative minimums outlined in the Significance and Engagement policy concerning consultation timeframes and public information. However, Council understands that different communities will need additional time and communication.

[7] (Section 5.1 of the RDC Significance and Engagement Policy outlines the approach Council uses to determine significance, in line with the legislative requirements outlined in the LGA; Section 76AA, 78, 81, 82, 82A and 83 Special Consultative Procedure)

THE LOCAL GOVERNMENT ACT 2002 AND COMMUNITY ENGAGEMENT

The Local Government Act 2002 (LGA) requires Council to consult with affected and interested parties in making decisions. Before implementing LoS changes, options analysis and the selection of the best practicable and preferred options must be done using a coherent and transparent process.

The LGA also requires Council to establish and maintain processes to provide opportunities for Māori to contribute to its decision-making processes and make information available to them (LGA 2002 section 81). Under the RMA, Council has specific obligations in relation to the Treaty of Waitangi and Māori interests. Council works with the Ruapehu District Māori Council as its first reference group for discussions with Iwi and hapu.

Council ensures that all interested stakeholders have an opportunity to influence the LoS decisions through various means. One of these is thorough engagement and consultation during the Long Term Plan process. For the 2021-31 LTP the following engagement took place:

PRE-ENGAGEMENT (AUGUST – NOVEMBER 2020)

Specific Stakeholder pre-engagements were also held through formal and informal meetings, meet and greet situations, township drop-ins and through email outreach. Engagement have occurred with Federated Farmers, Women's refuge, Taumarunui Youth and Community Trust, Waituhi Business centre, Recruitment Ruapehu, Real Estate agencies, Enterprising Taumarunui, phone and internet providers, Waikato District Health Board, Age Concern and businesses across the region.

Over 200 out-reach emails have also been sent to those who have requested contact on key Council engagements at previous community hui. For our Long Term Plan Pre-Engagement process, seven community Hui were held in townships, and villages across the district in Ohakune, Ohura, Raetihi, Taumarunui, National Park, Owhango and Pipiriki. At these community Hui, held over August to November, the CEO, Mayor, various elected members and senior staff updated attendees on our key assets and activities, Covid-19 recovery and targeted community issues in a conversational and flexible model taking questions and being responsive to unique community issues and concerns. Attendees were also made aware of the Long Term Plan, what it is, and how it informs what Council does in detail in for the forthcoming three years and sign posts key goals or desired outcomes over the next decade.

Community members could add issues and concerns to be considered as part of the LTP planning process. With the guidance and support of the Ruapehu Māori District Council, an additional two targeted Māori Community hui engagements were held at Raetihi Marae on November 24 and at Kauriki Marae on November 30. At these Hui a new avenue of engagement was established with host expressing the positive move, highlighted with robust discussions on representation and community issues. These are in the process of being amalgamated into our pre engagement documents.

SOCIAL MEDIA

Throughout the pre engagement process social media channels have been used extensively with over 20 "what's on your mind" posts introducing and familiarising the public with the LTP process and asking for ideas, issues and inputs over May, June and July. An additional 40 posts went out over July to October advertising community hui. Each post had a reach of between 800 and 1000, meaning the specific post appeared and was viewed on the Facebook newsfeed of the aforementioned number and facilitated over 250 engagements through the form of a comment, like or share. Social media comments have been included as appropriate to inform the LTP planning process.

COMMUNITY INTEREST GROUPS

Specific Stakeholder pre-engagements were also held through formal and informal meetings, meet and greet situations, township drop-ins and through email outreach. Engagement have occurred with Federated Farmers, Women's refuge, Taumarunui Youth and Community Trust, Waituhi Business centre, Recruitment Ruapehu, Real Estate agencies, Enterprising Taumarunui, phone and internet providers, Waikato District Health Board, Age Concern and businesses across the region. Over 200 out-reach emails have also been sent to those who have requested contact on key Council engagements at previous community hui.

CONSULTATION (MARCH – APRIL 2021)

CONSULTATION DOCUMENT

A consultation document was produced, discussing the "big issues" facing Council and the District in the coming decade (and beyond). It outlined the challenges, options for addressing them and the implications of each of those options.

LOCALISED COMMUNITY MEETINGS

Seven LTP community meetings were held in National Park, Ohura, Taumarunui, Owhango, Raetihi, Ohakune and Waiouru - each town with its own aspirations, issues, perspectives and concerns. All of these meetings were live streamed on Facebook to ensure participation and increase outreach to non-resident ratepayers.

In addition to community based meetings, informal community catch ups with opportunities to go through issues raised in consultation documents was undertaken across the district over the first two weeks of the consultation cycle. Consultation documents were also left at key community hubs and with organisations to ensure document reach into the more remote communities in the district.

To ensure outreach to non-resident rate payers and those that could not attend physical meetings, all seven face to face meetings held across the District were live streamed on Facebook. In addition, there was a mail out to non-resident ratepayers which outlined key issues and online sources and avenues to access additional LTP materials and the submission process.

KEY COMMUNITY ISSUES

Location	Public Meeting Attendance	Online Views	Key Community Issues
National park	2	610	a) Affordability of National Park plan. b) Timing of non-commercial visitor rate increase
Ohura	8	425	a) Concerned about water quality b) Supportive of the proposed Forestry Targeted Rate increase c) Encourage council to Maintain & retain community assets
Waiouru	5	1200	a) Safety and parking issues at playground cost of housing winter workers b) Concerned about rate levels
Taumarunui	23	1500	a) Rate rises b) Impact of forestry on roading, c) Toilet and playground upgrades in central Taumarunui, d) Housing- agree that housing is an issue and wants to see council do something about it. e) Improving conversation, consultation and collaboration with Maori

Raetihi	14	692	a) Forestry b) Options for three waters c) Housing, d) Need for banking services/ hub in town
Owhango	17	736	a) Climate change b) Council's carbon footprint c) Securing clean drinking water d) Improve communications around water notices e) Fresh water monitoring for swimming
Ohakune	11	390	a) Effect of short term stays properties b) Community poverty c) Water consumption monitoring/ three waters d) Lack of employee housing

FACEBOOK

Community engagement via Facebook has been increasing in the last 2 year, encouraging Council that this is a very effective form of engaging with members of the community who might not otherwise give feedback.

SUMMARIES OF THE "BIG ISSUES"

Around 7000 A4 flyers summarising the LTP issues were distributed to every household including to out-of-District ratepayers and freely throughout the community. As well as the flyer, we had summary pages on the individual consultation issues. These were used widely in all forms of conversation with the community.

NEWSPAPER & RADIO

The consultation was supported by advertising in local papers and local radio stations. The summary pages of the CD were utilised for newspaper advertising alongside key focus articles, and key Council staff spoke on the CD in further detail on the local radio station.

WEBSITE

The website was an important platform for making all the consultation material easily available, as well as the large amount of supporting documentation that goes into the Long term Plan. The online submission form was well utilized by submitters, facilitating a streamlined submission process.

MĀORI ENGAGEMENT

Marae based meeting were valuable in the pre engagement process as this demonstrated the importance of needing to participate alongside the community in the formal process of Long Term Plan consultation. This was reflected in the number of Māori who attended the community meetings.

Council also ensured Māori organisations and their respective representatives had access to the consultation documents, supporting materials and information about the submission process and options.

YOUTH ENGAGEMENT

Youth engagement was conducted through Ruapehu Youth Council, more specifically the Taumarunui – Ohura Youth Ambassadors (TOYA). Unfortunately, the Waimarino – Waiouru Youth Ambassadors did not hold their first meeting until after consultation closed. While staff did not attend high school groups/assemblies as they usually do, Youth Councilors were asked to encourage their friends to submit on the LTP. Council received comprehensive feedback to the consultation document from TOYA that adequately captured the voice of the youth in the district.

OTHER RELATED ISSUES

ROAD WORKS

- There was a community wide support for cycle and trail track to be established in the district, In particular a track that connects Raetihi and Ohakune.
- Sealing of roads in or adjacent to villages where there is a dust hazard in Otapouri road.
- District wide support for the Land Transport Forestry Targeted Rate. There were concerns about the damage done to the district owned roads by heavy vehicles operated by forestry companies.

3 WATERS- WATER SUPPLY/ STORM WATER/ WASTE WATER

- Concern about the three waters scheme currently being proposed by Central Government
- Clarity was sought on public/private water schemes.
- Fresh water management, water quality and allocation is a concern across the district.

TOWN REVITALISATION

- Overwhelming support for the Town revitilisation work supported by Council. Residents see the value of this work on the local economy and are ready to embrace future works.
- There were concerns about allocation of funds, residents of Ohakune advocated for more funding to be allocated to growing their town of their potential to grow the district.
- Residents of Rangataua indicated that they were a growing community and that they would like Council to support their town development projects.

HOUSING

- People are concerned about the lack of housing option in the district.
- Housing is an obstacle to getting people from out of the district.
- Concern around the quality of houses within the district.
- Residents were supportive of the idea of Council partnering up with others organizations to provide affordable houses.
- Supportive of the short term accommodation rate. People felt that these if these houses were available for long-term rent, it would relieve the impending housing crisis.

9 RISK MANAGEMENT

INTRODUCTION

Risk is “the effect of uncertainty on objectives” (AS/NZS ISO 31000:2009). Risk Management is the coordination of activities to direct and control an organization with regard to risk.
Risks will be assessed at one of three levels of risk:

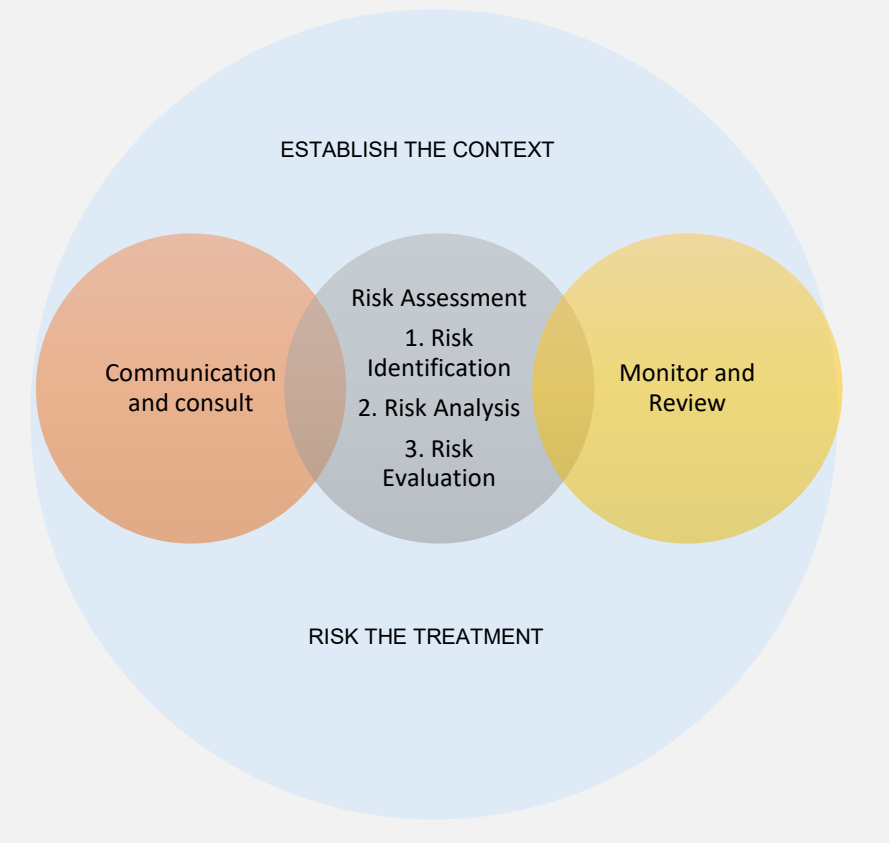
(a) Corporate (or strategic) risk – considers risk affecting the management of RDC
(b) Activity (or operating) risk – considers risk affecting the management of RDC activities
(c) Project (or ad-hoc) risk – considers risk affecting projects, individual assets or functions

Risk management can be applied across an entire organization, to its business unit activities and to specific functions, projects and assets. Risk management may also be applied to specific tasks within any area of the business.

RDC’s risk assessment framework is simplified from the Joint Australian New Zealand International Standard: Risk Management – Principles and Guidelines (AS/NZS ISO 31000:2009).

Activity risk management is the process of identifying and managing risks associated with the ownership and management of activity assets used to achieve activity objectives. The benefits of taking additional measures to further manage risk and the costs of those measures are inputs into a risk action plan.
The purpose of this Activity Risk Management Process (see Figure 1) is to provide guidance on how to identify, assess, and treat risks at the activity level.
The outcome of the risk management process is to:

(a) Emphasize the importance of continuing to provide the activity’s services and manage risks
(b) Continually identify improvements required to activity services to avoid risk events, to minimize their impact or to realise identified opportunities.



RISK MANAGEMENT PROCESS

The risk management process is designed to ensure that:

(a) All significant risks to the community, activity users, the environment and RDC are identified and understood

(b) The highest risks for the short to medium term are identified

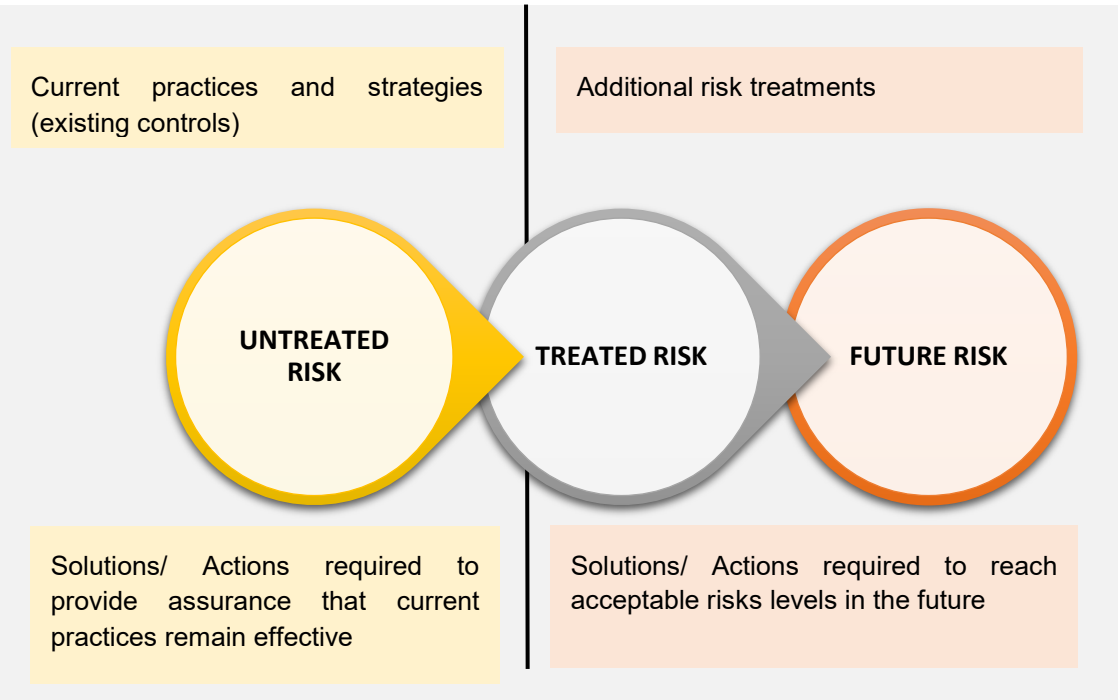
(c) Risk treatments that best meet business needs are applied

(d) Responsibilities for managing risk are allocated to specific staff

Risk exists in a raw, untreated or inherent state as well as in the present, treated or residual state. The difference between the two states are the controls/treatments that exist at present. Analysis of controls assists in identifying the more important controls and the risks associated with these controls failing.

The risks recorded in the risk register include analysis of the treated risk.

Gaps between untreated and treated risk indicate the importance of effective current controls to manage untreated risk events. Accordingly, improvement actions should focus on the things that will further assure RDC that current controls are effective.



ESTABLISH THE CONTEXT

The context for risk management is defined by:

(a) The external context within which RDC operates

(b) The internal context of the RDC organization

(c) RDC's strategic and operational objectives

The following steps were undertaken to establish the context:

(a) The relationship between RDC and the environment has been defined and RDC's strengths, weaknesses, opportunities and threats identified to provide an understanding of the 'big picture' potential risk areas and opportunities to manage these risks

(b) Internal and external stakeholders were considered and/or consulted to identify the extent of consequence to be included

(c) RDC's capabilities to meet the LoS were identified
(d) Broad categories for sources of risk of not achieving the LoS and areas of impact, were identified

EXTERNAL CONTEXT

RDC does not operate in a vacuum. It interacts with and responds to a multi-dimensional context (see Table 1).

Changes, trends or issues in that context may impact on RDC's ability to fulfil its operational or strategic objectives.

Dimension	Description
Political	Changes in government or government policy
Economic	Economic trends, market movements (e.g. foreign exchange, interest rates, monetary policy, labour)
Societal / Cultural	Social or cultural issues, changes in demographics, public opinion.
Technological	Emerging technologies and practices, innovations
Legal/ Regulatory	New or changed regulations, contractual or compliance requirements
Environmental	Changes in natural environment (e.g. climate change)
Industrial / Commercial	Industry trends and pressures

These drivers impact on activity risks as well as corporate risks.

INTERNAL CONTEXT

The risk assessment is oriented by RDC's objectives:
(a) Risks are things which might impact on the achievement of the objectives, whether positively or negatively.
(b) Risks are evaluated with respect to the magnitude and likelihood of the potential impact on objectives.

RDC is engaged in a number of activities with respect to the provision of community services and the management of facilities and assets.

RDC targets its activities to help achieve the Community Outcomes described in the LTP. Each activity targets some of the Outcomes and all Outcomes are targeted by one or more activities.
RDC carries out its activities through a number of business processes. On a day-to-day basis, each process fulfils a key operational outcome (see Table 2).

Process Dimension	Business Processes	Process Outcomes
Finance	Financial systems and controls Funding and credit Procurement.	RDC can demonstrate value for money across operational and capital expenditure. Funding is secured and timely, and debt servicing is cost-effective. Procurement appropriately allocates risk, is ethical, and delivers value for money.
Governance, Control & Compliance	Compliance. Internal control. Relationships with community and Elected Members	RDC operates within the requirements of the law. RDC maintains effective relationships with elected members, the community, and other stakeholders. Management maintains effective controls.
Information Management	Systems and technology.	Information and communication services enable RDC activities and are cost-effective, and secure.
Operations and Service Delivery	Service delivery.	Service delivery is efficient, timely, and customer focused.

Process Dimension	Business Processes	Process Outcomes
People	Health and safety. Recruitment & retention. Staff knowledge and skills. Resource planning.	RDC provides safe work environments for all staff. The right people are recruited and retained. Staff have the knowledge, skills, and commitment to deliver competently on roles and responsibilities. Resourcing requirements are effectively planned.
Planning and Strategy	Business improvement planning. Planning to meet future requirements. Emergency Response/Business Continuity Planning.	RDC is committed to continuous improvement. RDC effectively plans for future growth, renewals, and LoS over the short and long term. RDC can effectively respond to a major event or disaster and restore business as usual.
Property and Assets	Maintenance. Project delivery. Asset information. Insurance. Safety and security.	Facilities are fit for purpose and reliable, and are maintained as cost- effectively as possible. New assets and capabilities are delivered on time, on budget, and to specification. RDC has accurate and up-to-date information on all its assets. RDC's insurance cover is consistent with its risk appetite. Facilities and equipment are secured from unauthorized use, theft, or damage.

IDENTIFY THE RISKS

Risk identification needs to consider the level of the risk assessment and both the internal and external sources of risk.

The Activity Level Perspective is concerned with the effectiveness of business processes across an activity or business unit. The activity level risk assessment therefore looks at the business processes across the activity or business unit to identify risks which may impact on the achievement of the activity objectives.

From the Activity perspective, external sources of risk are events, trends, hazards, contractor actions or third-party actions arising outside RDC or within the broader RDC organization external to the activity or business unit. Internal sources of risk include the actions, behaviors and practices of business unit staff, hazards and accidents, and missing, failed, inadequate or inappropriate assets, systems, processes or procedures.

Activity risks arise from the responsibilities of RDC staff, RDC assets and the activities and assets of contractors delivering services to RDC. Contractors have their own risk management practices in place. RDC monitors contractor management of risk.

Risks should be identified by examining impacts on the activity, its associated assets and desired outcomes from different consequences.

PROCESS FOR IDENTIFYING AND DESCRIBING RISKS

Identify and describe specific current risks.

(a) All possible risks affecting the asset activity need to be identified.
(b) Consider risks that might arise from different types of sources of risk e.g. the process dimensions in table 2.
(c) Where risks are identified, they should be clearly described. The proper description of each risk should include the following elements:
(i) Event: the specific event or situation of concern.
(ii) Cause: the specific factors giving rise to the situation or event.
(iii) Impacts: the specific impacts on activity performance or objectives which may result.

ANALYSE RISKS

Each identified risk should be analysed to:

(a) Understand the source of the risk

(b) Understand the scope, magnitude and likelihood of the potential impacts on achievement of objectives

(c) Understand the effectiveness of RDC's current systems and practices with respect to controlling or mitigating the risk

Detailed analysis of individual risks may be warranted or required where there is significant uncertainty about the nature, likelihood or potential impacts of a risk or where there is a need to quantify the risk to reliably justify the business case for treatment.

The level of detail in the analysis should be commensurate with the level of risk and the ultimate purpose for which the information will be used. Reliable quantitative analysis of risk requires accurate information about probability and consequence, and considerable analytical resources. This kind of analysis will generally not be necessary in order to justify management priorities for most risks.

Risks may initially be identified in a workshop setting and evaluated based on the group consensus of the workshop participants. This kind of qualitative, top-down assessment can be an efficient way of establishing a strategic view of the risk profile and identifying key priorities for further investigation.

EVALUATE RISKS

Use the four steps in the Risk Management Framework (see figure 3) to assess and manage the risk.

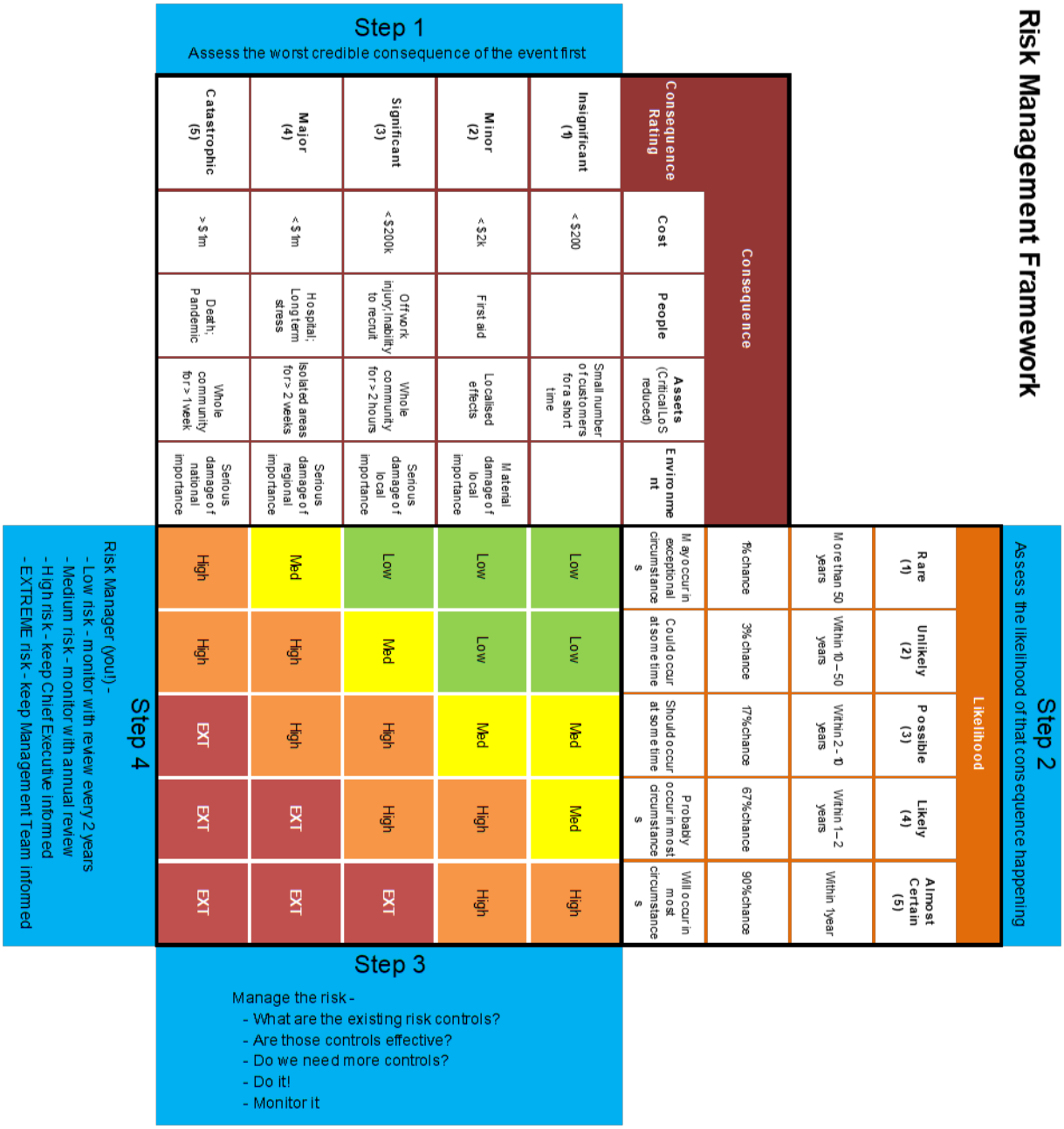
The evaluation of risks should take into account:

(a) What is known about the risk including factors influencing consequence and likelihood.

(b) The effectiveness of RDC's current systems and practices with respect to controlling or mitigating the risk (see figure 5).

Risk evaluation involves evaluating the consequence and likelihood scores for each of the identified risks.

Table 4 defines the scale for evaluating consequence. Table 6 defines the scale for evaluating likelihood. The risk rating is given by the combination of the Consequence and Likelihood scores.



ASSESS THE CONSEQUENCES – STEP 1

Assess the worst, credible consequence of the event before assessing the likelihood.

Use table 4 below as a guide to scoring the consequences.

Consequence Types	Factor	1. Insignificant	2. Minor	3. Significant	4. Major	5. Catastrophic
Financial/ Economic	Loss/variance	< $20	< $2,000	< $200,000	< $1m	**> $1m**
	Revenue loss or cost to restore service	Minimal	Some	Significant	Major	**Catastrophic**

Consequence Types	Factor	1. Insignificant	2. Minor	3. Significant	4. Major	5. Catastrophic
Health & Safety	Health		Negligible injury/health concern	Minor injury/health concern	Serious injury/health concern (including long term stress)	Pandemic or > 30% of staff infected
	Injury	No possibility of physical harm	Can resume work the same or next day	Off work injury of < 1 week	Off work injury of > 1 week	Off work injury of > 6 months or permanent disability or loss of life
	Medical attention needed			Required	Hospitalisation	Widespread long-term hospitalisation required
Human Resources	Staff turnover	< 10%	< 15%	< 20%	< 30%	> 30%
	Relationships			Poor relationships between silos		Breakdown of communication between silos
	Recruitment			Inability to recruit into key skilled positions	Inability to recruit into key positions on an ongoing basis	
Reputation	Adverse media	Once	> once	> 1 week	> 2 weeks or regionally	National publicity, eg, “Fair Go”
	Dis-satisfaction through the media		An individual	1 stakeholder group	> 1 stakeholder groups or > 1 month	Extensive or > 2 months
	Customer complaints		Isolated	Systematic	Relating to > 1 business area	
	Loss of stakeholder confidence		Minor community interest			Major; public agitation for action
	Legal impact		Negligible	Minor technical legal challenge or breach of law or compliance	Some legal constraints imposed, minimal fine	High profile legal challenge or prosecution with heavy fine
Operational - External	Loss of service	Some	Some	Serious	Serious	Serious
	Reduced LoS	Some	Localised	Significant	Major	Serious
	Spread and duration	Small number of customers for the short term	Some areas for < 1 day	A community for > 2 hours or some areas for > 1 day	A community for > 1 day or some areas for > 2 weeks	A community for > 1 week
	Consequential loss in the community	Minimal	Some	Significant	Major	Catastrophic
	Example		Water supply and/or sewage out for several streets for 9 hours	Water supply and/or sewage out for a community for 25 hours	Water supply contaminated	Water supply and/or sewage out for 2 communities for 1 week

Consequence Types	Factor	1. Insignificant	2. Minor	3. Significant	4. Major	5. Catastrophic
Operational - Internal	Effect		Specific staff affected for < 2 weeks	Management diverted for < 2 weeks	Management diverted for > 2 weeks	Management diverted for > 2 months
	Organisational changes		Change internal processes	Minor restructure	Restructure a team	Restructure a group
	Distraction		Some but for a short time			Significant and widespread
	Inefficiency			< 1 month	> 1 month	> 6 months
	Staff morale		Minor impact over a short time	Moderate with potential for some resignations	Major with some resignations	Severe with loss of a significant number of key staff
	Decision making process			Delays	Process breaking down	Total process breakdown
Project Management	Projected project cost overrun	< $20	< $2,000	< $200,000	< $1m	> $1m
	Quality		Minor quality issues on a small internal project	Minor quality issues on an external project	Quality issues on an external project affecting usability	Outputs from a major project are unusable
	Timeliness			Delays on an external project > 10% or > 1 month	Delays on an external project > 20% or > 6 months	Project abandoned
Environmental Protection	Impact	Negligible	Material damage of local importance	Serious damage of local importance	Serious damage of regional importance	Serious damage of national importance
	Prosecution		Possible	Expected	Confirmed	Confirmed
	Fully reversible	< 1 week	< 3 months	< 1 year	< 10 years	Not fully reversible
Legal & Regulatory Compliance	Sued or fined	< $20	< $2,000	< $200,000	< $1m	> $1m
	Legal impact			Prosecution	Decisions are over turned	Rates are invalidated

ASSESS THE EFFECTIVENESS OF EXISTING RISK TREATMENTS / CONTROLS – STEP 3

Identify RDC's existing/current controls.

Assess the effectiveness of current controls.

(a) Systems and practices can only control risk where they are effectively applied and practiced. Effectiveness refers to:

i. Reliability: That systems and practices are performed at the appropriate frequencies and times

ii. Effectiveness: That systems and practices achieve what they were designed to achieve
iii. Completeness: That systems and practices provide adequate coverage in relation to the risk(s) they are intended to control

The effectiveness of the current systems and practices in controlling risk should be rated by selecting the appropriate rating from Table 4.

Table 5: Rating Effectiveness of Controls

Rating	Description
Excellent	Fulfils requirements thoroughly. Robust, reliable, with positive measurable performance
Good	Generally fulfils requirements. Generally robust, reliable, and measurable but some room for improvement
Fair	Fulfils minimum requirements. Minimum levels of effectiveness and reliability achieved OR effectiveness and reliability has not been measured
Poor	Not fulfilling requirements. Considerable gaps in effectiveness and reliability
Very Poor	Current systems and practices are completely ineffective due to poor design, performance or both

Assessments of the effectiveness of controls may be based on management assertions or the results of internal audits.

Identification and assessment of the existing controls may be recorded in some cases.

ASSESS THE LIKELIHOOD OF THAT CONSEQUENCE – STEP 2

Assess the likelihood of that consequence happening after taking into consideration the effectiveness of RDC's existing/current controls.

Table 6: RDC Risk Likelihood Scale

Level	Dimension	Qualitative Descriptor	Probability Descriptor	Frequency Descriptor
5	Almost Certain	The event or situation is almost certain to occur	> 90%	< 1 year
4	Likely	The event or situation will probably occur	60% – 90%	1 – 2 years
3	Possible	The likelihood of the event or situation occurring is about the same as it not occurring OR The likelihood is not known or cannot be judged with confidence.	40% – 60%	2 – 10 years
2	Unlikely	The event or situation will probably not occur	10% – 40%	10 – 50 years
1	Rare	The event or situation could occur but is considered highly improbable	< 10%	> 50 years

RISK RATING

The evaluation of consequences, controls and likelihood will determine the risk rating for the Treated Risk i.e. the risk as it is today with all the present controls operating as they are today.

The risk rating is determined using Table 7 based on the assessed combination of Consequence and Likelihood. The risk rating assigns a degree of significance to the assessed level of risk and provides guidance on the appropriate management response (see Table 8).

Table 7: Risk Assessment Matrix

Consequence					
Likelihood	Insignificant (1)	Minor (2)	Significant (3)	Major (4)	Catastrophic (5)
Almost Certain (5)	Med	High	Ext	Ext	Ext
Likely (4)	Med	High	High	Ext	Ext
Possible (3)	Low	Med	High	High	Ext
Unlikely (2)	Low	Low	Med	High	High
Rare (1)	Low	Low	Med	Med	High

MANAGE THE RISK – STEP 3

Manage the risk -

(a) Review the existing risk controls?
(b) Review whether those controls are effective?
(c) Do we need more controls?
(d) Do it!
(e) Monitor it

RISK TREATMENT – STEP 4

Where any risk is evaluated to be High or Extreme, additional management options should be identified and investigated to treat the risk. The concept of practicability ensures that the value of the proposed treatment actions is assessed against the costs of implementing those proposed treatment actions (new controls), rather than just working from the highest risk down regardless of cost.

RDC has adopted the following broad treatment strategy for the levels of risk:

Table 8: Risk Treatment Strategy

Extreme Risk	Treat risk Risk Manager keeps Management Team informed
High Risk	Treat risk Risk Manager keeps Chief Executive informed
Medium Risk	Risk Manager monitors with annual review
Low Risk	Risk Manager monitors with review every two years

10 LIFECYCLE MANAGEMENT

Asset lifecycle management is an integrated approach to optimising the life cycle of an asset, beginning at planning all the way through to disposal. This includes the integration of operations, maintenance, renewals, and development.
Council undertakes a lifecycle management approach with its assets by applying the following broad strategies:

PLANNING AND PROCUREMENT

The need for a new asset is determined by:

a) Changes in legislated levels of service
b) Nearing end of asset life (rising maintenance costs)
c) Public demand

Planning for the development of a new asset is undertaken in compliance with Council's Procurement Strategy and the Procurement and Termed Contracts (PTC) Policy. The PTC Policy takes into account whole of life costs which informs the significance and sustainability of the projects. The significance of the project may lead to community consultation under the Significance and Engagement Policy.

OPERATIONS

Council manages assets in a manner that minimizes the long term overall total cost in the following ways:

a) Inspection and monitoring is scheduled and undertaken at a frequency deemed necessary based on the risks inherent in a given asset. Risks may include failure in LoS, costs, public health and safety and Council reputation.
b) Asset monitoring processes include periodic performance and condition assessments of built assets.
c) Customer enquiries and complaints are recorded in the "Request for Service (RFS)" database, summarizing data on the date, time, details, responsibility and action taken.
d) The inspection programme is modified as appropriate in response to unplanned maintenance trends.

Competitive pricing is ensured by following Council's Procurement Strategy and Policy.

MAINTENANCE

Council maintains assets in a manner that minimizes the long term overall total cost.

(a) Unplanned maintenance: A suitable level of preparedness for prompt and effective response to asset failures will be maintained by ensuring suitably trained and equipped staff to allow prompt repair of critical assets and mitigation of any hazards. Term contracts specify response times.
(b) Planned maintenance: A programme of planned asset maintenance will be undertaken to minimize the risk of asset failure or, where justified, when considering financial, safety and social impacts. Major maintenance needs will be identified through the scheduled asset condition inspections and those generated from the investigation of customer complaints. Competitive pricing will be ensured by following Council's Procurement Strategy and Policy.

RENEWALS

Council renews assets when justified by:

(a) Risk: The risk of failure and associated financial and social impact justifies action (eg, probable extent of damage, safety risk, community disruption).
(b) Asset Performance: When an asset fails to meet the required level of service. Non-performing assets are identified by the monitoring of asset reliability, efficiency and quality during routine inspections and operational activity. Indicators of non-performing assets include repeated and/or premature asset failure, inefficient energy consumption, and inappropriate or obsolete components.
(c) Economics: When it is no longer economical to continue repairing the asset (ie, the annual cost of repairs exceeds the annualized cost of renewal).
(d) Efficiency: New technology and management practices relating to increased efficiencies and savings will be actively researched, evaluated and, where applicable, implemented.

Renewal requirements for key asset groups will be identified through the scheduled asset condition inspections, the investigation of customer complaints and a practical knowledge of the network. Renewal works will be prioritised and programmed in accordance with the following criteria or, in urgent cases, undertaken immediately.

(a) Public safety risk.
(b) Criticality of assets to accommodate needs.
(c) Criticality of assets to achieve service standards and Outcomes.
(d) Financial risk of deferring work.
    (i) Intensity of usage.
    (ii) Environmental risk.
    (iii) Political preference.
(e) Renewal works identified in accordance with the renewal strategies may be deferred if the cost is beyond the community's ability to fund it. This can occur when higher priority works are required on other infrastructure assets, there are short-term peaks in expenditure or if an inadequate rating base exists.
(f) When renewal works are deferred, the impact of the deferral on economic efficiencies and the asset's ability to achieve or contribute to the required service standards will be assessed. Although the deferral of some renewal works may not impact significantly on the short-term operation of assets, repeated deferral will create a liability in the longer term.
(g) Deferred work is recorded in each Asset management plan. Instead of existing sentence

Competitive pricing will be ensured by following Council's Procurement Strategy and Policy.

DEVELOPMENT

Development works will be planned in response to identified service gaps, growth and demand issues, risk issues and economic considerations.
When evaluating significant development proposals, the following issues will be considered:
(a) The contribution the new or improved assets will make to the current and anticipated future LoS and Outcomes.
(b) The risks and benefits anticipated to be made from the investment.
(c) The risks faced by not proceeding with the development works. These could include safety risks, social risks and political risks.
(d) Ability and willingness of the community to fund the works.
(e) Future operating and maintenance cost implications.

Significant development works will be prioritised and programmed with contributions from:
(a) Targeted user groups (eg. tourism operators, industry groups, adjacent residents).
(b) The general community (through public consultation).
(c) Council staff and consultants who may be engaged to provide advice to the Council.
(d) The LTP/EAP process.
(e) The elected Council. (Significant proposals are subject to Council decision and available funding.)

Competitive pricing will be ensured by following Council's Procurement Strategy and Policy.

DISPOSAL

Disposal is any of the activities associated with the disposal of a decommissioned asset. Assets may become surplus to requirements for any of the following reasons:
(a) Under utilisation.
(b) Obsolescence.
(c) Provision exceeds required LoS.
(d) Asset no longer provides the service or fulfils the purpose for which it was intended.
(e) Uneconomic to upgrade or operate.
(f) Policy change.
(g) Service provided by other means (eg, private sector involvement).
(h) Potential risk of ownership (safety, financial, environmental, legal, social, vandalism).

Asset disposal processes will comply with Council's legal obligations under the LGA 2002, or other relevant legislation, eg. Public Works Act 1981, which covers:

(a) Consultation and/or public notification and offer back procedures prior to sale.
(b) Restrictions on the minimum value recovered.
(c) Use of revenue received from asset disposal.

Assets surplus to current or anticipated future needs or requirement will be sold in accordance with relevant legislation and Council policies to minimise future maintenance costs or other liabilities and to obtain a return on underutilised assets. Both the Public Works Act and the LGA refer to these processes.

All relevant costs of disposal will be considered when considering disposal options. These costs may include:

(a) Evaluation of options.
(b) Consultation advertising.
(c) Obtaining resource consents.
(d) Professional services, including engineering, planning, legal, survey.
(e) Demolition/site clearing/make safe costs.

The use of revenue arising from the sale of assets, or the source of funds required to dispose of assets, will be decided by Council during consideration of the asset's disposal.

Competitive pricing will be ensured by following Council's Procurement Strategy and Policy.

11 FINANCIAL SUMMARY

INTRODUCTION

Council is facing significant affordability challenges over the next ten years.

With the total capital expenditure proposed across all asset groups reaching almost $36.5 in year one, Council's debt is forecast to increase to $56.5m in the first three years of the Plan (2021-24). Longer term capital projects will further increase debt to $$100.3m by year 10 (2031). For context, the end of the 2020/21 financial year, saw Council's debt at $33.4m.

Council continues to pursue funding support from central government for infrastructure works that relate to increasing statutory compliance requirements and/or pressure on infrastructure from increasing visitor numbers. Any grants or subsidies received from government will reduce the amount of debt funding Council will require.

Council must manage its capital projects within the guidance of Council's Financial Strategy.

EXPENDITURE CATEGORIES

Expenditure and revenue projections within this plan have been classified as capital (new and renewal) or operating, in accordance with generally accepted accounting practice. The capital expenditure categories are detailed below. The capital projects are categorised as growth, renewal or LoS.

Capital Expenditure Categories		
Renewals	Planned	**Planned replacement of existing assets using a modern equivalent asset. This can be driven by a number of issues including break history, condition surveys and maintenance renewals.**
	Unplanned	**Unplanned replacement of assets due to unplanned failures.**
LoS	Customer	**Unplanned replacement of assets due to unplanned failures.**
	Statutory (or Compliance)	**Replacement, upgrading or installation of new assets to achieve the customer outcomes defined in the LoS, such as water service reliability.**
	Planned (or Capacity)	**Replacement, upgrading or installation of new assets to achieve compliance with the statutory obligations defined in the LoS, such as health and safety.**
	Network Improvements	**Upgrades to existing assets to meet increased capacity requirements.**
Growth	Development Pressure	**Local upgrades of assets to accommodate incoming population.**
	Vested Assets	**Purchase of vested assets from new developments.**

KEY ASSUMPTIONS

The basis for the financial forecasts is explained in the lifecycle management plans. The following general assumptions have been made in preparing the ten year expenditure forecasts:

(a) All expenditure is stated in dollar values as at December 2020, with allowances made for inflation over the ten year planning period.

(b) The rate and pattern of urban growth and development continues as assumed and noted earlier in this Section.

(c) Maintenance costs are based largely on historical expenditure and assume there are no significant changes in contract rates (above the rate of inflation).
(d) Maintenance and renewal allocations have been based on preserving current LoS. No significant optimisation works have been allowed for.

The most significant potential changes to the financial projections shown will result from the factors below:

(a) Changes in the desired LoS, and service standards, from those identified in this AMP.
(b) Assumptions have been made as to the average useful lives and average remaining lives of the asset groups based on current local knowledge and experience, historical trends, and predictive modelling outputs.
(c) These are routinely reviewed and the accuracy improved based on real time assessments of asset deterioration.

CONFIDENCE LEVELS

The confidence in data used as a basis for the financial forecasts has been assessed using the grading system from the NZWWA NZ Guidelines for Infrastructure Asset Grading Standards, as summarised below.

Grade	General Meaning	
A	Highly Reliable	Data based on sound records, procedures, investigations and analysis which is properly documented and recognised as the best method of assessment.
B	Reliable	Data based on sound records, procedures, investigations and analysis which is properly documented but has minor shortcomings, eg, the data is old, some documentation is missing and reliance is placed on unconfirmed reports or some extrapolation.
C	Uncertain	Data based on sound records, procedures, investigations or analysis which is incomplete or unsupported, or extrapolation from a limited sample for which Grade A or B data is available.
D	Very Uncertain	Data based on unconfirmed verbal reports and/or cursory inspection and analysis.

Confidence grades for each Activity are provided in Part 3.

12 CONTINUOUS IMPROVEMENT

INTRODUCTION

Council's vision for the quality of AMPs is to match best practice for comparable local authorities, which are defined as rural authorities with small urban towns (eg. South Taranaki District Council, Waitomo District Council, Rangitikei District Council).

A desktop review was prepared by GHD in 2019 to assess the 2018-28 AMPs. The objective was to focus on the overall quality of the AMP and to highlight the improvements that have been achieved since the previous assessment in 2014. A further review of the 2021-31 AMPs will be undertaken in 2021.

Refer to "Plan Improvements and Monitoring" in Part 3 for more information.
Refer to Asset Management Policy.

APPROACH

Effective asset management practices are demonstrated by Council's ability to meet the following criteria that are the focus of our detailed review. The sophistication to which Council undertakes each of these activities is dependent on our strategic goals and the benefits that can be obtained from improving our practices.

(a) Asset Knowledge - The appropriateness, reliability and accessibility of data and the processes associated with the use and maintenance of asset data.
(b) Strategic Planning Processes - The processes used in the implementation of Asset Management activities including failure planning, risk management, service level reviews and long term financial planning.
(c) Current Asset Management - The processes used in the implementation of Asset Management activities including capital expenditure programmes and operations and maintenance management.
(d) Asset Management Plans - That identify the optimum lifecycle management tactics and resources.
(e) Information Systems - To support (and often replicate) Asset Management processes and store/manipulate data.
(f) Organisational Tactics - Including organisational, contractual and people issues.

The current and appropriate practice levels (for a three-year target) in asset management were assessed using the rating schedule shown below. The size of the "gap" between current and appropriate practice provides an indication of the priority that should be placed on improving in that area.

Quality Level	Score
Best Possible	100
Excellence	85
Competence	70
Systematic Approach	45
Awareness	25
Innocence	0

"Appropriate" practice was assessed with consideration of the guidelines for "basic" and "advanced" AMPs issued by the Officer of the Auditor General (refer http://www.auditnz.govt.nz/publications/asset-management/asset-management-for-public-entities,) and appropriate practice expectations for a Council our size. The "advanced" requirements for AMPs defined in the guidelines are consistent with the AMP outputs required for the LTP as stated in Schedule 10 of the LGA.

The Audit Office has publicly stated their expectation that organisations should soon be able to demonstrate achievements in advanced asset management practices. Council's primary goal is to achieve legislative compliance, if this has not already been achieved.

13 AMP REVIEW AND MONITORING

AMP REVIEW

To ensure the AMP remains useful and relevant, the following ongoing process of plan monitoring and review will be undertaken:

(a) Formal adoption of the plan principles and Outcomes by Council.
(b) Review and formally adopt LoS.
(c) Revise AMP annually to incorporate and document changes to works programmes, outcome of service level review and new knowledge resulting from the asset management improvement programme.
(d) Quality assurance audits of asset management information to ensure the integrity and cost-effectiveness of data collected.
(e) Peer review – three yearly audits will be undertaken to assess the effectiveness with which this plan meets corporate objectives (periodic internal audits will be undertaken to assess the adequacy of asset management processes, systems and data, and external audits will be undertaken to measure performance against desired practice).
(f) Where appropriate, measuring and updating the levels of service customer and technical measures (KPIs) and comparing them and tracking trends over time against the LOS targets that are listed in AMP. The trigger for revisiting the programme will be if the trends are worsening. The programme will also be revisited to respond to needs that may arise after the Plan has been adopted.

This is summarised below.

Activity	Action	Target Date
AMP Review and Development	External review of AMP information by Audit NZ	Late October-early November 2020
	Adoption of AMP by Council	20 June 2021
	Annual review of Plan context by Asset Management team. Check AMP content for consistency with adopted Council programmes and plans. Compliance with agreed asset management improvement programmes.	Annually by 30 June
	GAP review of the AMP including an assessment of the effectiveness and adequacy of asset management processes, systems and data.	30 June 2022
	Adoption of reviewed AMP by Council.	April 2024
	External review of AMP information by Audit New Zealand.	December 2023
LoS	Review technical and/or LoS performance measures (including public consultation process) and formally adopt LoS.	30 June 2023
	Consolidate performance against actual technical and/or LoS performance measures delivered and report in Annual Report.	Annually
Risk	Review of risk framework.	30 June 2023
	Annual review of risk registers by Asset Management team	Annually

AMP MONITORING

The indicators below will be monitored to measure the effectiveness of this AMP.

Indicator	Measure	Source of Information
Compliance with legislative requirements	Unqualified audit opinion relating to AMP outputs	Audit NZ reports
Quality of services delivered	100% compliance with LOS targets	Annual Plan reporting
Quality of risk management	No event occurring outside of risk profile	Audit of Risk Register

APPENDIX 1 – LIST OF ACRONYMS

AADT	Average Annual Daily Traffic
AC	Asbestos Cement (Pipes)
AC	Asphaltic Concrete (Land Transport)
AD	Annual Depreciation
AEE	Assessment of Environmental Effects
AEP	Annual Exceedance Probability (eg, 10% is once in 10 years)
AI	Age Factor Index (Land Transport)
AMP(s)	Asset Management Plan(s)
AMS	Asset Management Systems
Army	NZ Army (based in Waiouru)
AS/NZS	Australian Standard/NZ Standard
AV GAS	Aviation Gas
BCA	Better Case Approach
BCP	Business Continuity Plan
CAA	Civil Aviation Authority
CAM	Commercial Accommodation Monitor
CAPEX	Capital Expenditure
CAA	Civil Aviation Authority
CAR	Civil Aviation Regulations (Taumarunui Airport)
CAR	Corridor Access Request (Land Transport)
CBD	Central Business District
CCTV	Closed Circuit Television
CDEM	Civil Defence Emergency Management

CAS	Crash Analysis System (Land Transport)
CI	Condition Index (Land Transport)
CIMS	Co-ordinated Incident Management System
CLOS	Customer Level(s) of Service (Land Transport)
CMMS	Computer Maintenance Management System
CO(s)	Community Outcome(s)
Council	Ruapehu District Council
CPP	Competitive Pricing Procedures
DC(s)	Development Contribution(s)
DIA	Department of Internal Affairs
DOC	Department of Conservation
EAP	Exceptions Annual Plan
EF	Emissions Factor (Waste)
EOC	Emergency Operations Centre (Civil Defence)
ERP	Emergency Response Plan
ESL	Envirowaste Services Limited
ETI	Enterprising Taumarunui Incorporated
ETS	Emissions Trading Scheme (Waste)
FAR	Financial Assistance Rate
FC(s)	Financial Contribution(s)
FIS	Financial Information Systems
FMC	Financial Management Contractor
FWP	Forward Works Programme (Land Transport)
GIS	Geographical Information System (computer programme)

GPS	Government Policy Statement
GRC	Gross Replacement Cost
HCV	Heavy Commercial Vehicles (Land Transport)
Horizons	Horizons Regional Council
HPMV	High Productivity Motor Vehicle
HR	Human Resources
HSE Act	Health and Safety in Employment Act 1992
HSNO	Hazardous Substances and New Organisms (Act 2004)
I&I	Inflow and Infiltration (water, wastewater)
IAF	Investment Assessment Framework
IAS	International Accounting Standards
IFRS	International Financial Reporting Standards
IIMM	International Infrastructure Management Manual
IQP	Independent Qualified Person
IS	Information Services
IT	Information Technology
KPI(s)	Key Performance Indicator(s)
LCM	Lifecycle Management
LG(R)A 2002	Local Government (Rating) Act 2002
LGA 1974 or 2002	Local Government Act 1974 or 2002
LOS	Level(s) of Service
LR	Local Road
LT Act	Land Transport Act 1998
LTMA	Land Transport Management Act 2003 and Amendment 2008

LTP	Long Term Plan
LTSV	Long Term Strategic View
MAV	Maximum Acceptable Value
MCA	Multi-Criteria Analysis (Waste)
MCTOW	Maximum Certified Take Off Weight (Taumarunui Airport)
MDPE	Medium Density Polyethylene (pipes)
MEA	Modern Equivalent Asset
MFE/MfE	Ministry for the Environment
MOH	Ministry of Health
MOU	Memorandum of Understanding
NAASRA	National Association of Australian State Roading Authority (Land Transport)
NAMS	National Asset Management Steering (Group)
NBS	New Building Standard
NES	National Environmental Standard
NIP	National Infrastructure Plan
NLTP	National Land Transport Programme
NOTAMS	Notice to Air Men (Taumarunui Airport)
NPS	National Policy Statement
NRB	National Research Bureau
NZGAAP	NZ Generally Accepted Accounting Guidelines
NZHPT	NZ Historical Places Trust
NZIAS	NZ Equivalent to International Accounting Standard
NZTA	Waka Kotahi New Zealand Transport Agency
ODM	Optimum Decision Making

ODRC	Optimised Depreciation Replacement Cost
OHA 2000	Ohakune 2000
OMR	Ohakune Mountain Road
ONRC	One Network Road Classification
OPEX	Operational Expenditure
ORC	Optimised Replacement Cost
ORRIS	Owhango Residents and Ratepayers Incorporated Society
PES	Performance Evaluation System
PHRMP(s)	Public Health Risk Management Plan(s) (now called Water Safety Plans)
PMB	Polymer Modified Bitumen
PPFM	Planning, Programming and Funding Manual (Land Transport)
QV	Quotable Value (NZ) Ltd
RAL	Ruapehu Alpine Lifts
RAMM	Road Assessment and Maintenance Management System)
RCA	Road Controlling Authority
RDC	Ruapehu District Council
RDMC	Ruapehu District Māāori Council (Te Kaunihera Māori a Rohe o Ruapehu)
REG	Road Efficiency Group
RFS	Request(s) for Service
RISA	Road Infrastructure Safety Assessment
RLTS	Regional Land Transport Strategy
RMA	Resource Management Act 1991
RMTF	(Ministerial) Road Maintenance Task Force
RUL	Remaining Useful Life

SAML	Stress Absorbing Membrane Layer
SCADA	Supervisor Control and Data Acquisition
SCI	Surface Condition Index (Land Transport)
SG(s)	Strategic Goal(s)
SLIM	Street Light database (Land Transport)
SPARC	Sport and Recreation NZ (Grants)
SPR	Special Purpose Road
SWC	Shallow Stormwater Channel (Land Transport)
TA(s)	Territorial Authority(s)
TAC	Tongariro Alpine Crossing
TNZ Act	Transit New Zealand Act 1989 and Amendments Acts 1995 and 1997
TR Act	Traffic Regulations Act 1976
TUAC	Targeted Uniform Annual Charge (Rate)
URP	Usual Resident Population
UV	Ultra Violet
VKT	Vehicle Kilometres Travelled (Land Transport)
VPD	Vehicles Per Day
WK	Waka Kotahi New Zealand Transport Agency
WMA	Waste Minimisation Act 2008
WMAP	Waste Minimisation Action Plan
WDC	Wanganui District Council
WMM(P)	Waste Management and Minimisation (Plan)
WSP(s)	Water Safety Plan(s) (previously Public Health Risk Management Plan(s)
WSSA	Water and Sanitary Services Assessment

PLANNING ASSUMPTIONS AND POPULATION PROJECTIONS 2021-2031

PART ONE

INTRODUCTION

The Local Government Act 2002 requires Council to disclose all significant forecasting assumptions underpinning the Long Term Plan. These planning assumptions reflect the best knowledge and data available at the time of planning and are subject to audit.

PURPOSE

The purpose of this document is to provide realistic, evidence based, well planned and researched forecast assumptions to underpin Council's Long Term Plan 2021 - 2031, and specifically, the Asset Management Plans. These planning assumptions are to be used in the forward planning for the population, infrastructure and economy of the Ruapehu District. Forecasting assumptions are important pieces of information in their own right as population shifts cause change in demand and is therefore a major driver of expenditure. Growth and decline do not always have a linear relationship to changes in levels of demand on a service and it is therefore necessary to analyse at a local level with local knowledge, verified by authentic data.

METHOD AND ASSOCIATED LIMITATIONS

The assumptions in this document have been formulated using the results from a number of sources, most of which are solely reliant on Statistics New Zealand (StatsNZ). Given the lower than expected return rate of the 2018 census (90% in 2018 compared to 94% in 2013)[8], StatsNZ had to delay the release of many data sets, including population projections.

Given the aforementioned delay, combined with a regional attitude of distrust in the StatsNZ methodology[9], it was proposed to jointly purchase population and household projections for all territorial authorities and two (of three three) DHBs within the Horizons region (unfortunately, excluding the Waikato District Health Board). Both Berl and Infometrics have been contracted to produce projections for the region with the former utilising building consents as one of the base data sets for its population projections. The later proposed to base its population projections on employment projections for each council in the region, offering an additional data set for future planning. Data sources used to produce these planning assumptions are listed below. A complete list of resources can be found in the reference section of this document.

(a) Statistics New Zealand
(b) Infometrics
(c) Berl
(d) Profile ID, Community ID
(e) Ministry of Business, Innovation and Employment
(f) Department of Conservation
(g) Treasury
(h) Multiple local tourism operators
(i) Visit Ruapehu
(j) Ruapehu District Council
    i Out of District Rate Payer Survey
    ii Rating database
    iii Building database

LIMITATIONS

All assumptions made in this document contain some inherent uncertainty. The uncertainty has been minimised by utilising and cross referencing as many data sources and reputable opinions as possible.

[8] https://www.stats.govt.nz/news/update-on-release-of-2018-census-data

[9] Anecdotal

Since February 2020, the level of uncertainty has been increased by the world wide outbreak of the COVID-19 pandemic and the subsequent nationwide lockdown.

TO NOTE

As at 1 January 2018, the *area unit* classification was replaced by the *statistical area 2* (SA2) classification. Additionally, the boundaries of many area units/statistical areas were altered. The 13 area units of 2013 (and previous census) have been replaced with 10 statistical areas. The amalgamation of areas and boundary changes have been listed below. For a visual representation of the following changes, visit https://datafinder.stats.govt.nz/ or https://profile.idnz.co.nz/ruapehu/census-2018

2013 AREA UNIT SIZE (SQ KM)	2018 SA2 SIZE (SQ KM)
Otangiwai – Heao: 345.67 SQ KM	Otangiwai – Ohura: 2011.70 SQ KM
Ohura: 3.25 SQ KM	
Ngapuke: 1285.11 SQ KM	Ngapuke: 621.83 SQ KM
Tarrangower: 3.17 SQ KM	Taumarunui North: 3.595 SQ KM
Taumarunui Central: 6.88 SQ KM	Taumarunui Central: 5.54 SQ KM
Sunshine – Hospital Hill: 5.15 SQ KM	
Manunui: 5.04 SQ KM	Taumarunui East: 4.52 SQ KM
Raurimu: 1366.36 SQ KM	National Park: 1375.28 SQ KM
203 National Park: 0.89 SQ KM	
Owhango: 0.93 SQ KM	
Tangiwai: 2693.58 SQ KM	Tangiwai: 2696.63 SQ KM
Raetihi: 3.89 SQ KM	Raetihi: 3.86 SQ KM
Ohakune: 8.47 SQ KM	Ohakune: 6.44 SQ KM
Waiouru: 5.79 SQ KM	Waiouru: 5.01 SQ KM

Change from Area Unit to SA2

PART TWO

SUMMARY OF SIGNIFICANT PLANNING ASSUMPTIONS

ASSUMPTION AREA	DETAILS OF POTENTIAL RISK + REASON	LEVEL OF CERTANTY	POTENTIAL FINANCIAL CONSEQUENCE
1. LEGISLATIVE / CENTRAL GOVT			
The proposed Local Government (Rating of Whenua Maori) Amendment Bill is passed	There is potential risk that upwards of $465,000 in rates arrears is wiped. This will have a potentially significant impact on Council's need to plan for development and an eventual change in land use and potential increase in rating base.	Neutral	Moderate
	The assumption has been made that writing off arrears will not affect rates as it will be an accounting book entry only	Likely	Low
Taumata Arowai—the Water Services Regulator Act 2020 is passed	The assumption has been made that there will be a complete restructure and implementation of system-wide reforms to regulate drinking water and source water, and targeted reforms to improve the regulation and performance of wastewater and stormwater networks. The second Bill will outline the exact effect this new legislation will have on territorial authorities. There is a significant risk that this will alter Water Services LoS, challenge current infrastructure and staffing levels.	Very likely	Significant
Infrastructure Funding and Financing Act 2020 is passed	This Act provides a funding and financing model for the provision of infrastructure for housing and urban development and will reduce the impact of local authority financing and funding constraints. While the assumption has been made that it is unlikely that RDC will utilise these provisions during the next planning period, it is however important to note.	Unlikely	Low
Potential Resource Management Act Amendments	It is assumed that amendments will be made to the RMA however, these changes will more likely target large development projects in high density areas therefore have little effect on the Ruapehu District.	Likely	Moderate
Declaration of Climate Emergency	The assumption has been made that due to the recent declaration of a Climate Emergency by Central Government, and the ongoing effects that Climate Change will have on Ruapehu's infrastructure and economy, resourcing will need to be made available in order to develop an appropriate Climate Emergency response.	Very likely	Moderate

ASSUMPTION AREA	DETAILS OF POTENTIAL RISK + REASON	LEVEL OF CERTANTY	POTENTIAL FINANCIAL CONSEQUENCE
Climate Change Response (Zero Carbon) Amendment Act 2019	Climate change response continues to dominate legislative reform and in turn, expectations and responsibilities of Local Authorities are shifting. The amendments made to the Act provide a framework and commission through which New Zealand can develop and implement "clear and stable climate change policies" that contribute to the global effort under the Paris Agreement. The Act itself identifies Council as a Reporting Organisation which means that Council may be called upon by the Minister or Commission to provide information on Climate Change Adaptation. The assumption has been made that resourcing will need to be made available in order to meet these expectations.	Very likely	Moderate
COVID-19			
New Zealand borders will remain closed to international tourists and visitors until at least 2021	There is a risk that there will be no international tourists or visitors to the area until at least June 2021, and potentially longer. Until this time, foreign tourist spending the District will remain nil.	Very Likely	Significant
Another outbreak of COVID will usher in another level 3 - 4 lock down	There is a risk that a level 3 or 4 lock down will be imposed on Ruapehu communities.	Likely	Significant
Levels of Service	The assumption has been made that there will be no changes to levels of service.	Likely	Low
2. POPULATION / GROWTH			
Increase in Usually Resident Population (URP) in all townships (SA2's) within the District	The assumption has been made that all identified communities (SA2's) within the District will experience an increase in Usually Resident Population (URP) over the next 10 years, experiencing a mixture of low, medium and high growth levels. - The URP of townships within the District will experience yearly growth ranging from 0.7% - 1.967% per year. - The total District URP is expected to increase 15% between 2021 - 2031.	Likely	Moderate
Proportion of under 5's and over 70's set to increase	The assumption has been made that, District wide, under a medium growth scenario, the proportion of under 5's and over 75's is set to increase 57% and 45% respectively.	Likely	Low

ASSUMPTION AREA	DETAILS OF POTENTIAL RISK + REASON	LEVEL OF CERTANTY	POTENTIAL FINANCIAL CONSEQUENCE
Increase in Peak Population in all townships within the District	The assumption has been made that the Peak Population (combination of URP, Holiday Homes, Commercial Accommodation, and Day Visitors) will increase in all identified communities (SA2's) within the District. - The Peak Population of all townships will experience yearly growth ranging from 0.77% - 2.2% per year. - The total District Peak Population is set to increase 12% between 2021 - 2031.	Likely	Moderate
3. INFRASTRUCTURE			
Assets and asset lives (replacement, revaluation, depreciation)	The assumption has been made that low quality asset condition assessments will lead to poor infrastructure capital decision making.	Highly Likely	Moderate – Significant
	The assumption has been made that excepting water infrastructure, all other assets will deliver the required level of service over their documented useful life as reflected in the Revenue And Financing Policy.	Likely	Moderate
	Revaluation of fixed assets is done annually for property. It includes an assessment of the useful (economic) life of the asset. This is in accordance with the Council's accounting policies detailed under "Property, Plant and Equipment and Infrastructural Assets" which includes further detail of revaluation policies and the estimated useful life of various assets. The revaluations are based on the BERL inflation rates. The revaluation impact is broadly equivalent to the increase in the Local Government Cost Index.	Likely	Moderate
	Depreciation rates on planned asset acquisitions are based on an average percentage of their components and the estimated useful life of the various assets.	Likely	Moderate
State highway 4 (Whanganui-Raetihi Road)	There is a risk that compromised access to and through SH4 could lead to economic impacts resulting from short term interruption and loss of economic opportunity.	Unlikely	Low
Ohakune Water Treatment Plant	The assumption has been made that the Capital work programme estimates and MBIE funding are not sufficient to complete all elements of proposed works and ratepayers will need to part fund this	Likely	Significant

ASSUMPTION AREA	DETAILS OF POTENTIAL RISK + REASON	LEVEL OF CERTANTY	POTENTIAL FINANCIAL CONSEQUENCE
Subdivisions and Land Use	The assumption has been made that ongoing subdivisions in Ohakune will cause additional pressures on 3 waters infrastructure resulting in Council not being able to consent buildings.	Likely	Significant
Resource Consents	It has been assumed that all resource consents will be renewed but in many cases, with increasing environmental standards. The expected time to obtain resource consents is factored into project timelines and the increased standards.	Likely	Significant
Rateable Assessments	The assumption has been made that the number of rateable assessments will continue to experience small scale growth of approximately 0.16%	Likely	Neutral
4. ECONOMY			
Tourism and visitor numbers continue to rely on domestic tourism	The assumption has been made that International borders will remain closed, international tourist numbers remain nil into the near future. Local tourism operators rely solely on domestic tourism for the foreseeable future.	Extremely Likely	Significant
The number of holiday homes will continue to increase in each of the three major urban areas	The assumption has been made that pre-COVID, holiday home numbers were set to increase approx. 1.21% on average per year. Throughout COVID this is unlikely, however, this trend is expected to return with the recommencement of a fully functioning tourism economy.	Likely	Moderate
5. NATURAL ENVIRONMENT			
Occurrence of Natural Disasters	Small natural disasters can be funded out of budgetary provisions. Council will require financial and other assistance from Central Government for large-scale events or disasters.	Likely	Significant
Increase in rainfall	Seasonal projections show winter rainfall increasing by 7-16% in Taumarunui by 2090. It is unclear what this increase looks like out to 2031. There is not enough data to plan for increase/decrease in rainfall in other areas. This in itself is a risk.	Neutral	Moderate
Increase in average annual temperature	Temperatures are likely to be 0.7˚C to 1.1˚C warmer by 2040 effecting evapotranspiration of soil and dams as well as snow days.	Neutral	Moderate
Decrease in snowfall	A reduction in the number of snow days experienced annually is projected; potentially effecting local economies reliant on snow seeking visitors.	Likely	Moderate – Significant

ASSUMPTION AREA	DETAILS OF POTENTIAL RISK + REASON	LEVEL OF CERTANTY	POTENTIAL FINANCIAL CONSEQUENCE
6. FINANCIAL			
Rates Receivables (Debtors)	It has been assumed that rates receivable as a percentage of rates will remain at current levels. There is a risk that rates receivables are significantly higher than that forecast due to a number of reasons, such as the effect of COVID 19 and economic issues. This would impact on cash flow requirements, increasing borrowing for operational costs.	Neutral	Moderate
External Funding For Roads	The forecast financial statements are based on the assumption that Council will be able to claim 74% of all maintenance and renewal costs for district roads in line with currently known NZTA work categories and classifications. Forecast co-investment from Waka Kotahi NZTA may be reduced due to impact from COVID-19. Council's financial assistance rate will increase to 75% in 2021/22 for local roads and 100% for Special purpose roads, with local roads reducing to 74% thereafter. Should the outcome result in less roading expenditure items being covered by the subsidy, the work programme for roading could be impacted. Any decrease in funding would require modification to planned projects and work programmes and may result in delays to both. Where it is not possible to decrease funding, there is the potential to impact on borrowing and rates.	Likely	Significant
Vested Assets	The assumption has been made that no Vested Assets have been budgeted over the next ten years	Neutral	Low
Government subsidies	While it is expected that Council will receive some Government funding for Land Transport, Housing, Cycle Trails and Three Waters and possibly other capital projects over the next ten years, the lack of certainty around this means that (and the assumption has been made) no subsidies have been factored into the budgets	Low	Moderate

ASSUMPTION AREA	DETAILS OF POTENTIAL RISK + REASON	LEVEL OF CERTANTY	POTENTIAL FINANCIAL CONSEQUENCE
Inflation	The preparation of the budget has included inflation assumptions based on BERL forecasting for the Local Government Sector. There is a high level of uncertainty associated with these inflation assumptions. If the impact of inflation on Council's budgets turns out to be higher than forecast and Council does not wish to generate additional revenue by increasing rates, then either additional operational efficiencies or reduction in service levels or planned capital expenditure would need to be considered. Should the impact of inflation be lower than forecast, there will be a favourable impact on Council's operating and capital expenditure budgets.	Likely	Moderate
CAPEX Feasibility - Three Waters	There is a strong chance that additional funding support from Central Government will be available to fast track drinking water reform changes. However, this LTP cannot include this possibility with key assumptions due to timing of any such announcements. As affordability has been removed from Local Government as a defence, RDC has forecast considerable debt impacts to Council as full compliance is an absolute non-negotiable now. The assumption has been made that practical delivery against the very ambitious LTP works forecast will face the challenges of supply chain constraints, and active monitoring will be required to minimise the risk of non compliance by due dates.	Likely	Significant
CAPEX Feasibility - Other Works	With regards to Land Transport, there is a well established supply chain, and committed funding. There is potential that some bridge work not covered by NZTA will require RDC to fund which it would do through debt. These are one off items in what is otherwise a very stable work program. A number of Township Revitilization outcomes that are to be debt funded to account for inter-generational equity. These would go ahead in consultation with community regardless of external funding, but Council is very open to using proposed budgets as 'seed funding' with other partners to deliver further value than forecast. However, 3rd party investment can not be assumed in this LTP, and as such counts as 100% RDC investment. Practical delivery will have strong political and community support, and supply chain issues are somewhat lessened in this activity due to lower competition for resources from out of district or competing priorities. The assumption has been made that these the capital works costs will not vary significantly from those budgeted	Likely	Moderate

ASSUMPTION AREA	DETAILS OF POTENTIAL RISK + REASON	LEVEL OF CERTANTY	POTENTIAL FINANCIAL CONSEQUENCE
Interest rates	The interest rates used are based on an estimate of what will occur in the future combined with known rates that are currently fixed under current borrowings with the LGFA which Council joined in 2018. The assumption has been made that all borrowings will be renewed under similar terms and conditions except that interest rates applied to replacement and new borrowings annually will range from 1.7% to 3.4% in year ten of the LTP 2021-31. There is a high degree of uncertainty around borrowing costs due to the fluctuations of interest rates. Interest costs and debt repayment have been estimated in accordance with the Treasury Investment and Liability Management Policy.	Likely	Moderate - Significant

Overview of Planning Assumptions

LEVEL OF CERTAINTY	POTENTIAL FINANCIAL CONSEQUENCE
5 – Very likely	Significant
4 – Likely	Moderate
3 – Neutral	Low
2 – Unlikely	
1 – Very unlikely	

LEGISLATIVE / CENTRAL GOVERNMENT

Over the past decade there has been a substantial increase in the level of delegation from central government to local government through legislative reforms. In almost all cases there has been little funding provided to develop the policy and/or deliver these new services. This has meant that the services have had to be funded from efficiency gains, local user charges, and an increase in rates, or a combination of all these mechanisms. In some instances there has been a need to increase resources, such as staff, consultants and contractors.

The following legislative changes have been identified as possible risks to RDC and therefore considered in the planning assumptions.

LOCAL GOVERNMENT (RATING) ACT 2002

Proposed changes to the Local Government (Rating) Act 2002 will reduce rating barriers for owners of Māori land who want to use and develop their whenua (land). Currently, unpaid rates arrears prevent the development of Māori land. Under the proposal, local authority Chief Executives will have the power to write off rates arrears on all land (including general land) if they consider the rates are unrecoverable, including rates arrears inherited from deceased owners of Māori land. Most of the rates arrears on Māori freehold land are on unused land and the majority of this is from non-payment of penalties rather than the original rates bills. For example, in the Ruapehu District, there is a 4000sq m parcel with annual rates of $823.05 and rates arrears of $56,623.18. Of that overdue amount, only $5,863.66 is made up of rates charges and $50,553.78 is made up of penalties. As at June 2020:

- There are 755 Māori Freehold rating units in the district making up 8% of all rating units.
- There are 9,134 General rating units (9889 total rateable units). These 755 Māori Freehold rating units comprise 111,000ha, 16% of all total land in the Ruapehu District (673,315ha total).
- Of these 755 Māori Freehold rating units, 318 are non-rateable or receive a full rates remission under Councils current Category A Maori Land Rates Remission Policy.
- Of the 9,134 General rating units 535 are non-rateable, (22 of these being 50% non-rateable).
- Of the 437 rateable Māori Freehold units, 54 (12%) are in rate arrears, totalling $465,000. å
- Of the 8,598 rateable General rating units, 252 (3%) are in rates arears, totalling $1,387,000. It is important to note that an unknown number of General rating units may have been at some stage, Māori Freehold land.

Area of Impact: *Urban, commercial and rural development, Māori Economic Development, Environmental Planning*
Forecasted Assumption(s):
There is potential risk that upwards of $465,000 in rates arrears is wiped. This will have a potentially significant impact on Council's need to plan for development and an eventual change in land use and potential increase in rating base.
The assumption has been made that writing off arrears will not affect rates as it will be an accounting book entry only.
Level of certainty*: Likely*
Potential Financial Consequence*: Low - Moderate*

TAUMATA AROWAI – THE WATER SERVICES REGULATOR BILL AND SUBSEQUENT BILLS

The Taumata Arowai – Water Services Regulator Bill implements the Government's decision to create a new regulatory body to oversee, administer, and enforce the drinking water regulatory system. This bill will establish Taumata Arowai, the Water Services Regulator, as a new Crown agent and provides for its objectives, functions, operating principles, and governance arrangements[10]. It is expected that Taumata Arowai will 'go live' on or before July 2021. **This Bill will be complemented by a separate Bill** that will give effect to decisions to implement system-wide reforms to the regulation of drinking water and source water, and targeted reforms to improve the regulation and performance of wastewater

[10] http://www.legislation.govt.nz/bill/government/2019/0202/latest/LMS294345.html

and stormwater networks. The second Bill will outline the exact effect this new legislation will have on territorial authorities.

- Expectations (financial and otherwise) of RDC not entirely clear as yet.
- Shared service model likely to be most common option for small Territorial Authorities such as RDC.

Area of Impact: *Water Services, Finance, Environmental Planning, Human Resources*
Forecasted Assumption(s): *The assumption has been made that there will be a complete restructure and implementation of system-wide reforms to regulate drinking water and source water, and targeted reforms to improve the regulation and performance of wastewater and stormwater networks. The second Bill will outline the exact effect this new legislation will have on territorial authorities. Significant risk that this will alter Water Services LoS, challenge current infrastructure and staffing levels.*
Level of certainty*: Very Likely*
Potential Financial Consequence*: Significant*

INFRASTRUCTURE FUNDING AND FINANCING BILL

This bill would establish a new funding and financing model to support the provision of infrastructure for housing and urban development. The new model intends to address the challenges local authorities face in relation to financing housing-related infrastructure and supply serviced urban land[11]. It sets up a flexible, legislative framework that will enable councils and developers to overcome one of the key constraints they face and provides them with a new tool to fund and finance infrastructure without being hindered by financing constraints, or high upfront infrastructure costs; it does this by allowing a third party, other than a council, to finance the construction of infrastructure[12].

The funding and financing model proposed is the Special Purpose Vehicle (SPV). A SPV is a separate legal entity created by an organisation with its own assets. The bill enables SPVs, which are companies, limited partnerships, Crown entities, or other persons to:

- Be responsible for both financing and construction of the infrastructure assets.
- Service the finance raised to cover the costs of the infrastructure via the levy.

Area of Impact: *Three Waters, Roading, Environmental Planning*
Forecasted Assumption: *The assumption has been made that it is unlikely that RDC will utilise these provisions during the next planning period, it is however important to note that they are available to Council.*
Level of certainty*: Neutral*
Potential Financial Consequence*: Low*

POTENTIAL RESOURSE MANAGEMENT ACT AMENDMENTS

It is assumed that amendments will be made to the RMA however, these changes will more likely target large development projects in high density areas therefore have little effect on the Ruapehu District.

Area of Impact: *All Council operations*
Forecasted Assumption: *The assumption has been made that due to the recent declaration of a Climate Emergency by Central Government, and the ongoing effects that Climate Change will have on Ruapehu's infrastructure and economy, resourcing will need to be made available in order to develop an appropriate Climate Emergency response.*
Level of certainty: *Very Likely*
Potential Financial Consequence*: Moderate*

[11] https://www.parliament.nz/en/pb/sc/make-a-submission/document/52SCTI_SCF_BILL_93461/infrastructure-funding-and-financing-bill

[12] https://www.parliament.nz/en/pb/hansard-debates/rhr/combined/HansDeb_20191217_20191217_48

DECLARATION OF CLIMATE EMERGENCY

Following the warmest winter on record and 1,800 jurisdictions in 32 countries world-wide, New Zealand's government declared a Climate Emergency and committed to a carbon-neutral government by 2025.

Area of Impact: *Policy and Planning*
Forecasted Assumption: *The assumption has been made that resourcing will need to be made available in order to meet these expectations.*
Level of certainty: *Very Likely*
Potential Financial Consequence*: Moderate*

CLIMATE CHANGE RESPONSE (ZERO CARBON) AMENDMENT ACT 2019

Climate change response continues to dominate legislative reform and in turn, expectations and responsibilities of Local Authorities are shifting. The amendments made to the Act provide a framework and commission through which New Zealand can develop and implement "clear and stable climate change policies" that contribute to the global effort under the Paris Agreement. The Act itself identifies Council as a Reporting Organisation which means that Council may be called upon by the Minister or Commission to provide information on Climate Change Adaptation.

Area of Impact: *Policy and Planning*
Forecasted Assumption: *The assumption has been made that resourcing will need to be made available in order to meet these expectations.*
Level of certainty: *Very Likely*
Potential Financial Consequence*: Moderate*

COVID-19

The worldwide outbreak of COVID-19 has added to the unpredictability of the planning environment. There is a risk for another level 3 – 4 lock down to occur in New Zealand which will significantly affect Ruapehu communities and also that international tourists will not return to NZ until 2021/22.

Area of Impact: *All Council Activities*
Forecasted Assumption: *The assumption has been made that New Zealand borders will remain closed to international tourists and visitors until at least 2021/22.*
Level of certainty: *Likely*
Potential Financial Consequence*: Significant*

POPULATION

Identifying shifts in populations amongst town and village centres, including the demographics of said populations, is an important mechanism with which to measure projected dependency on vital assets. *Peak population* is the fundamental tool used to plan for the usage of key infrastructure and assets within the District. The peak population of the Ruapehu District has been calculated by combining Usually Resident Population (URP), Holiday Home visitor numbers (HH), Commercial Accommodation visitor numbers (CAM) and Day Visitor numbers (DV). Each of these measurements are important in their own right and are therefore discussed and explored both separately and collectively. This subsection briefly analyses past population and demographic shifts in addition to providing population projections at a District and SA2 level.

Forecasted Assumption(s):

1. *The assumption has been made that all identified communities (SA2's) within the District will experience an increase in Usually Resident Population (URP) over the next 10 years, experiencing a mixture of low, medium and high growth levels.*
   The URP of townships within the District will experience yearly growth ranging from 0.7% - 1.967% per year.
   - The total District URP is expected to increase 15% between 2021 – 2031
2. *The assumption has been made that the Peak Population (combination of URP, Holiday Homes, Commercial Accommodation, and Day Visitors) will increase in all identified communities (SA2's) within the District.*
   - The Peak Population of all townships will experience yearly growth ranging from 0.77% - 2.2% per year.
   - The total District Peak Population is set to increase 12% between 2021 – 2031
3. *The assumption has been made that, District wide, under a medium growth scenario, the proportion of under 5's and over 75's is set to increase 57% and 45% respectively.*

Level of certainty: *Likely*
Potential Financial Consequence: *Moderate*

USUALLY RESIDENT POPULATION: DEMOGRAPHICS PAST AND PRESENT

The first component of peak population that is explored is that of Usually Resident Population (URP); those who permanently reside in the Ruapehu District. This section explores past and present URP demographics and is then followed by URP projections.

AT A GLANCE:

	RUAPEHU DISTRICT	MANAWATU-WANGANUI	NEW ZEALAND
Number of people	12,309	238,797	4,699,755
Median age	39.0 years	39.4 years	37.4 years
Males	6,288	117,123	2,319,558
Females	6,021	121,671	2,380,197
Number of Māori	5,337	54,570	775,836
Māori median age	27.0 years	25.0 years	25.4 years

Overview of District Demographics

Statistics New Zealand, InfoShare[13], have estimated that the population of the Ruapehu District decreased from 15,550 in 2000 to 13,150 in 2010. Shifting focus to the past decade, the District's population continued to decline until 2013 where it seems to have plateaued. We are now expecting to experience small scale growth similar to that experienced 2013 – 2020.

[13] http://infoshare.stats.govt.nz/ViewTable.aspx?pxID=11a49800-c875-49a8-844d-18e0ae71d282

AGE AND SEX

An integral part, however not the sole focus, of projecting the demographic makeup of our communities lies in understanding our past. The following tables compare results of the past three census (2006, 2013, and 2018) via '*service age groups'*. Service age groups are one of many groupings that can be used to compare shifts in population and are particularly useful when taking into account services that each age group are more/less prone to utilising. Please note that when comparing the below, not all service age groups are dispersed evenly in terms of years.

Age structure - Service age groups[14]	2006			2013			2018		
Service age group (years)	No.#	RDC %	NZ %	No.#	RDC %	NZ %	No.#	RDC %	NZ %
Babies and Pre-schoolers (0 to 4)	1,026	7.6	6.8	1,002	8.5	6.9	900	7.3	6.3
Primary Schoolers (5 to 11)	1,653	12.2	10.1	1,251	10.6	9.4	1,389	11.3	9.6
Secondary Schoolers (12 to 17)	1,389	10.2	9.2	1,014	8.6	8.3	870	7.1	7.7
Tertiary education and independence (18 to 24)	1,149	8.5	9.6	1,005	8.5	9.6	918	7.5	9.3
Young workforce (25 to 34)	1,593	11.7	12.9	1,296	10.9	12.1	1,557	12.6	14.1
Parents and homebuilders (35 to 49)	2,997	22.1	22.6	2,205	18.6	20.6	2,079	16.9	19.3
Older workers and pre-retirees (50 to 59)	1,734	12.8	12.1	1,767	14.9	13.2	1,761	14.3	13.0
Empty nesters and retirees (60 to 69)	1,062	7.8	8.1	1,290	10.9	10.1	1,647	13.4	10.4
Seniors (70 to 84)	837	6.2	7.2	852	7.2	8.0	1,023	8.3	8.5
Elderly aged (85 and over)	132	1.0	1.4	165	1.4	1.7	165	1.3	1.8
Total population	**13,572**	**100.0**	**100.0**	**11,847**	**100.0**	**100.0**	**12,309**	**100.0**	**100.0**

Summary of Past Service Age Groups

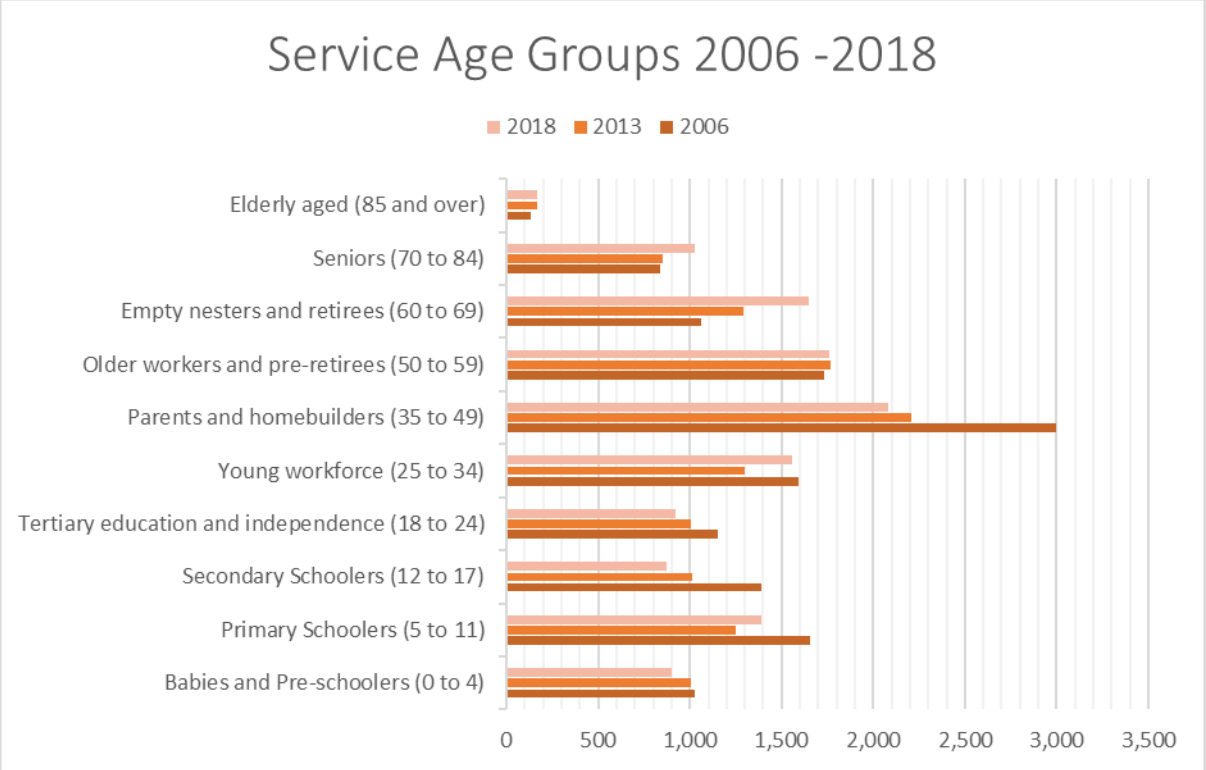
The above table in summary:

SERVICE AGE GROUP (YEARS)[15]	2006	2013	2018
Babies and Pre-schoolers (0 to 4)	1,026	1,002	900
Primary Schoolers (5 to 11)	1,653	1,251	1,389
Secondary Schoolers (12 to 17)	1,389	1,014	870
Tertiary education and independence (18 to 24)	1,149	1,005	918
Young workforce (25 to 34)	1,593	1,296	1,557
Parents and homebuilders (35 to 49)	2,997	2,205	2,079
Older workers and pre-retirees (50 to 59)	1,734	1,767	1,761
Empty nesters and retirees (60 to 69)	1,062	1,290	1,647
Seniors (70 to 84)	837	852	1,023
Elderly aged (85 and over)	132	165	165
Total population	**13,572**	**11,847**	**12,309**

[14] Profile ID

[15] Profile ID

Summary of Past Service Age Groups Simplified



The tables above illustrate that;

- Of the population shift between 2006 and 2018, a significant proportion of departures from the District were aged 5 – 17 and 35 – 49.
- The proportion of those aged 60 – 84 grew significantly.
- Between 2006 – 2018, there was little change in the proportional make up of those aged 50 – 59. This information suggests that most remained in the District and then moved into the next service age group (60 - 69) which saw the largest proportional growth of all of the service age groups.

COMPONENT 1: ESTIMATED PROJECTED POPULATION – USUALLY RESIDENT POPULATION (URP)

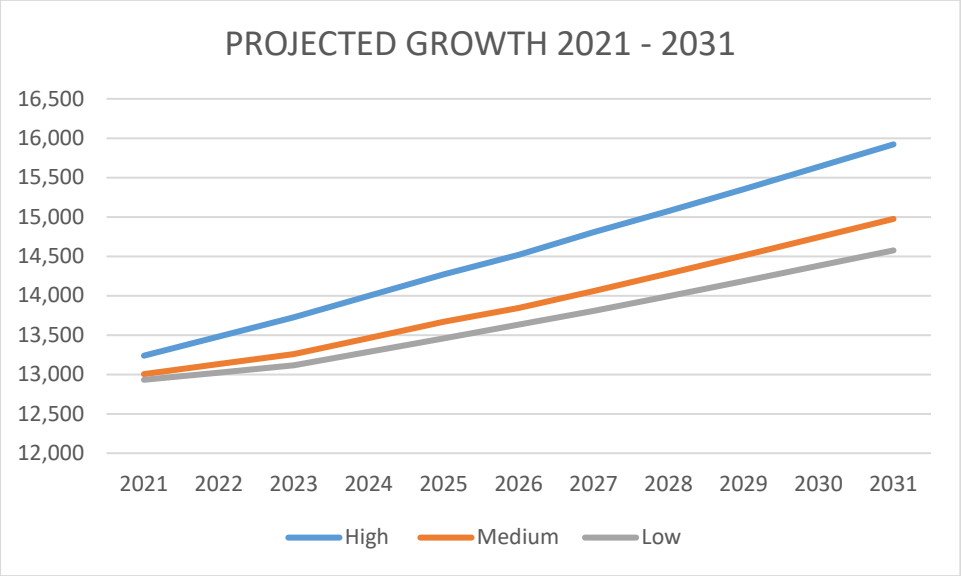
Council engaged with Infometrics to provide the projected population for the Ruapehu District out to 2053. Staff utilised this information in order to prepare projected population at SA2 levels out to 2031. Due to COVID, Infometrics have since provided three sets of possible projections all of which offer low, medium and high growth level scenarios. Utilising the second set of projections, the projected growth of the District has been prepared assuming a mixture of low, medium and high levels of growth across the District.

Under all three projected scenarios, the URP is set to steadily increase overall between 2021 and 2031

- Under the high growth scenario, annual increases range between 1.739% and 1.967%
- Under the medium growth scenario, there is an annual increase of between 0.969% and 1.592%
- Under the low growth scenario, there is an annual increase of between 0.700% and 1.361%

PROJECTED GROWTH: RUAPEHU DISTRICT URP 2021 - 2031											
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
High	13,238	13,483	13,727	13,997	14,272	14,520	14,806	15,077	15,354	15,635	15,922
Med	13,004	13,132	13,259	13,463	13,671	13,845	14,058	14,282	14,510	14,741	14,975
Low	12,932	13,024	13,115	13,285	13,458	13,631	13,808	13,996	14,187	14,380	14,575

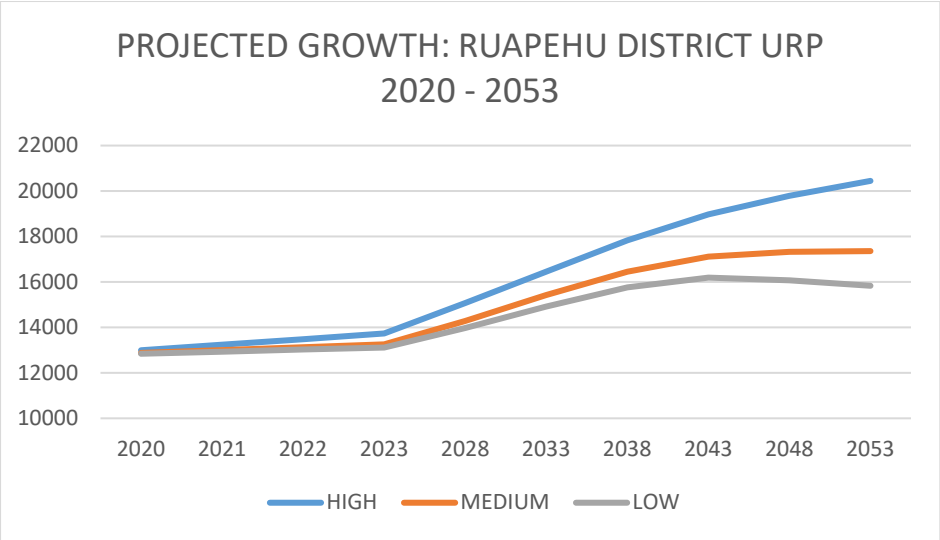
Projected Growth: Ruapehu District URP 2021 - 2031



Forecasting further ahead, the trend of slow but steady growth lessens and under the low growth scenario, small scale decline begins to feature from 2043 at a rate of -0.144% and from 2048 at a rate of 0.299%.

PROJECTED GROWTH: RUAPEHU DISTRICT URP 2020 - 2053										
	2020	2021	2022	2023	2028	2033	2038	2043	2048	2053
HIGH	12,994	13,238	13,483	13,727	15,077	16,458	17,827	18,975	19,783	20,445
MEDIUM	12,877	13,004	13,132	13,259	14,282	15,418	16,454	17,120	17,319	17,357
LOW	12,841	12,932	13,024	13,115	13,966	14,917	15,766	16,190	16,074	15,834

Projected Growth: Ruapehu District URP 2021 – 2053



% INCREASE BASED ON ABOVE ASSUMPTIONS (RDC 2020 - 2053)										
	19-20	20-21	21-22	22-23	23-28	28-33	33-38	38-43	43-48	48-53
HIGH	1.915	1.879	1.845	1.811	1.967	1.833	1.663	1.288	0.852	0.669
MEDIUM	0.998	0.988	0.978	0.969	1.543	1.592	1.343	0.810	0.233	0.043
LOW	0.715	0.710	0.705	0.700	1.298	1.361	1.139	0.538	-0.144	-0.299

USUALLY RESIDENT POPULATION: PROJECTED GROWTH BY SA2

As of November 2020, recommended growth levels to determine peak population have been revised to reflect the potential effects of COVID-19.

OVERVIEW OF SUGGESTED GROWTH LEVELS FOR URP:

SA2	RECOMMENDED GROWTH LEVEL
National Park	Medium
Ohakune	High
Otangiwai-Ohura	Low
Raetihi	Low
Tangiwai	Low
Taumarunui (Central, East + North)	Medium
Waiouru	Low
Ngapuke	Low

Recommended Growth Levels per SA2

COMPONENT 2: ESTIMATED PROJECTED POPULATION – HOLIDAY HOMES

The second component of Peak Population that is explored is that of Holiday Home Population. In order to monitor and record the holiday home environment within the District and to attempt to quantify the use of holiday homes, Council has undertaken five *Non-Resident Ratepayer* Surveys (NRR) since 2008.

Whilst this survey is an important source for understanding the holiday home environment, due to its nature and the low return rate, it should be noted that the results come with a very high level of uncertainty.

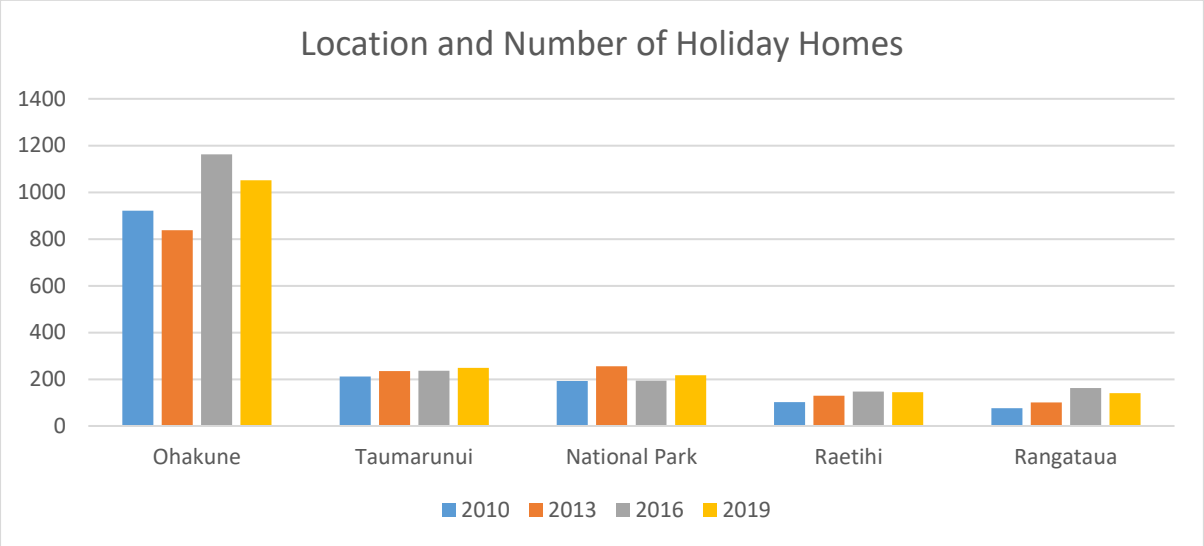
LOCATION AND NUMBER OF HOLIDAY HOMES

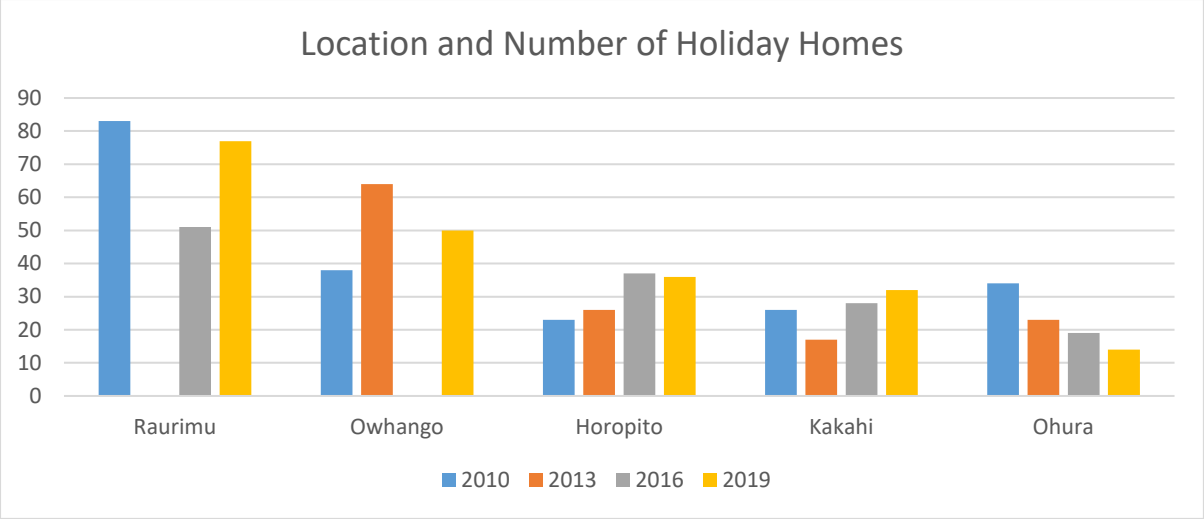
The table below reports the estimated number of holiday homes owned by non-resident rate payers in 2010, 2013, 2016 and 2019. It does not include rental homes owned by non-resident rate payers nor does it include holiday homes owned by residents living within the district. As stated above, this information is drawn directly from the NRR survey, 'not known' locations come from incomplete surveys that did not fill out their location.

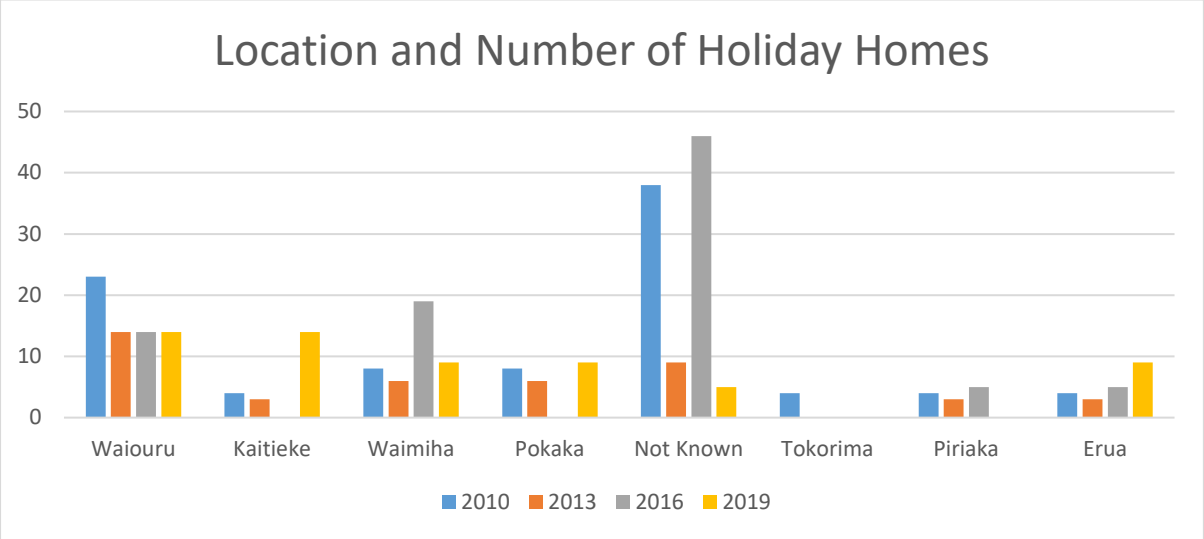
AREA	2010	2013	2016	2019
Ohakune	922	838	1162	1051
Taumarunui	212	235	236	249
National Park	193	255	194	217
Raetihi	102	130	148	145
Rangataua	76	101	162	140
Raurimu	83	-	51	77
Owhango	38	64	-	50
Horopito	23	26	37	36
Kakahi	26	17	28	32
Ohura	34	23	19	14
Waiouru	23	14	14	14
Kaitieke	4	3	-	14
Waimiha	8	6	19	9
Pokaka	8	6	-	9
Not Known	38	9	46	5
Tokorima	4	-	-	-
Piriaka	4	3	5	-
Erua	4	3	5	9
TOTAL	**1802**	**1733**	**2126**	**2071**
Return Rate	21.30%	27.90%	20.40%	22%

Location and Estimated Number of Holiday Homes by year, past and present.

Please note the variation in Y-axis increments when comparing the following graphs.







ESTIMATED DISTRIBUTION OF HOLIDAY HOMES (%)

Based on the information above, the table below shows the estimated distribution of holiday homes and the 9 year average which is used later in this document for projection purposes.

	2010	2013	2016	2019	9 Year Average
Ohakune	51.165%	48.355%	54.657%	50.748%	51.12%
Taumarunui	11.765%	13.560%	11.101%	12.023%	12.00%
National Park	10.710%	14.714%	9.125%	10.478%	11.14%
Raetihi	5.660%	7.501%	6.961%	7.001%	6.67%
Rangataua	4.218%	5.828%	7.620%	6.760%	5.99%
Raurimu	4.606%		2.399%	3.718%	3.46%
Owhango	2.109%	3.693%		2.414%	2.63%
Horopito	1.276%	1.500%	1.740%	1.738%	1.45%
Kakahi	1.443%	0.981%	1.317%	1.545%	1.21%
Ohura	1.887%	1.327%	0.894%	0.676%	1.08%

Waiouru	1.276%	0.808%	0.659%	0.676%	0.74%
Kaitieke	0.222%	0.173%		0.676%	0.24%
Waimiha	0.444%	0.346%	0.894%	0.435%	0.42%
Pokaka	0.444%	0.346%		0.435%	0.29%
Not Known	2.109%	0.519%	2.164%	0.241%	1.15%
Tokorima	0.222%				0.11%
Piriaka	0.222%	0.173%	0.235%		0.10%
Erua	0.222%	0.173%	0.235%	0.435%	0.16%

Estimated Distribution of Holiday Homes

HOLIDAY HOME OCCUPANCY

The NRR survey also gathers information to ascertain the average number of people that stay in holiday homes and the average number of holiday homes in use each day. As aforementioned, the quality of this data is low and we therefore believe that this estimate is on the low side

	2010	2013	2016	2019
Estimated average # of people per home per stay	4.4	4.4	4.7	4.6
Average # of Holiday Homes in use each day	(N.A)	(N.A)	28	27
Estimated total number of Holiday Homes	1802	1733	2126	2071

Table twenty: Holiday Home Occupancy

The above estimated figures suggest that during 2016, there was an average of 131 (4.7 x 28) people utilising holiday homes in the district each day and that during 2019, there was an average of 124 (4.6 x 27) people in the district utilising holiday homes each day.

Using the estimated number of holiday homes and the estimated number of people per home, the District's **absolute peak** holiday home population for 2016 was 9,992 people per day, and for 2019 was 9,526 people per day.

Acknowledging the percentage of holiday homes in each urban area, we can estimate that the **absolute peak holiday home** population possible in each urban area could be distributed as the table below suggests.

URBAN AREA	2013	2016	2019
Ohakune	3687.1	5461.3	4834.3
Taumarunui	1034.0	1109.2	1145.3
National Park	1122.0	911.8	998.1
Raetihi	572.0	695.6	667.0
Rangataua	444.4	761.4	644.0
Raurimu	0.0	239.7	354.2
Owhango	281.6	0.0	230.0
Horopito	114.4	173.9	165.6
Kakahi	74.8	131.6	147.2
Ohura	101.2	89.3	64.4

Waiouru	61.6	65.8	64.4
Kaitieke	13.2	0.0	64.4
Waimiha	26.4	89.3	41.4
Pokaka	26.4	0.0	41.4
Not Known	39.6	216.2	23.0
Tokorima	0.0	0.0	0.0
Piriaka	13.2	23.5	0.0
Erua	13.2	23.5	41.4
TOTAL	**7625**	**9992**	**9526**

Table twenty-one: Peak Holiday Home Population per Urban Area

HOLIDAY HOME – PROJECTED GROWTH BY AREA

As noted earlier, the NRR survey is an important source of information however due to the variance in responses and low level return rate, it comes with a very high level of uncertainty. Nevertheless, given the importance of holiday home visitor numbers in establishing an estimated peak population, it is necessary to use this information in order to estimate future holiday home visitor numbers as well as the projected absolute peak population.

Based on the survey responses between 2010 and 2019 the total number of holiday homes increased by 269, or approximately 27 homes per year, from 1,802 (in 2010) to 2,071 (in 2019). Over this same time period, the average number of people staying per home ranged from 4.4 – 4.7.

The following projections have been calculated assuming growth of 27 holiday homes per year at an estimated occupancy rate of 4.6 persons.

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Projected number of holiday homes	2125	2152	2179	2206	2233	2260	2287	2314	2341	2368	2395
Projected peak population	9775	9899	10025	10148	10272	10396	10520	10644	10769	10893	11017

Table twenty-two: Projected Holiday Home Number and Population

The 9 year average (percentage) of the distribution of holiday homes has been used to determine future holiday home projections because there were no obvious trends emerging from this set of data (due to its dubious nature). The 9 year average can be found on page 28 table 19.

PROJECTED HOLIDAY HOME POPULATION											
URBAN AREA	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Ohakune	4,997	5,060	5,124	5,188	5,251	5,314	5,378	5,441	5,505	5,569	5,632
Taumarunui	1,173	1,188	1,203	1,218	1,233	1,248	1,262	1,277	1,292	1,307	1,322
National Park	1,089	1,103	1,117	1,130	1,144	1,158	1,172	1,186	1,200	1,213	1,227
Raetihi	652	660	669	677	685	693	702	710	718	727	735
Rangataua	586	593	600	608	615	623	630	638	645	652	660
Raurimu	338	343	347	351	355	360	364	368	373	377	381
Owhango	257	260	264	267	270	273	277	280	283	286	290

Horopito	142	144	145	147	149	151	153	154	156	158	160
Kakahi	118	120	121	123	124	126	127	129	130	132	133
Ohura	106	107	108	110	111	112	114	115	116	118	119
Waiouru	72	73	74	75	76	77	78	79	80	81	82
Kaitieke	23	24	24	24	25	25	25	26	26	26	26
Waimiha	41	42	42	43	43	44	44	45	45	46	46
Pokaka	28	29	29	29	30	30	31	31	31	32	32
Not Known	112	114	115	117	118	120	121	122	124	125	127
Tokorima	11	11	11	11	11	11	12	12	12	12	12
Piriaka	10	10	10	10	10	10	11	11	11	11	11
Erua	16	16	16	16	16	17	17	17	17	17	18
TOTAL	9,771	9,895	10,019	10,144	10,268	10,392	10,516	10,640	10,765	10,889	11,013

Projected Holiday Home Population

In order to inform peak population each of these townships have been attributed to their respective SA2

COMPONENT 3: ESTIMATED PROJECTED POPULATION - COMMERCIAL ACCOMMODATION

The third component of Peak Population that is explored is that of the Commercial Accommodation Monitor Survey (CAM Stats) which provides information about short-term commercial accommodation activity in hotels, motels, backpackers and holiday parks (excluding Bed + Breakfast type arrangements – see Holiday Homes) at territorial authority level[16]. Unfortunately, the survey was discontinued in August 2019. There is however, still adequate information with which to model projections for the time being. The data for the months of September 2019 through to December 2019 has been conservatively modelled from the emerging trends of the same months of the previous five years.

It is important to note that the CAM Stat data is reliant on commercial accommodation operators willingly and honestly providing their information. Not all commercial accommodation providers in the District provided data to CAM Stats and not all operators provided data consistently. Anecdotal feedback from Council's Economic Development Manager is that approximately a dozen commercial accommodation providers never provided information to CAM Stats.

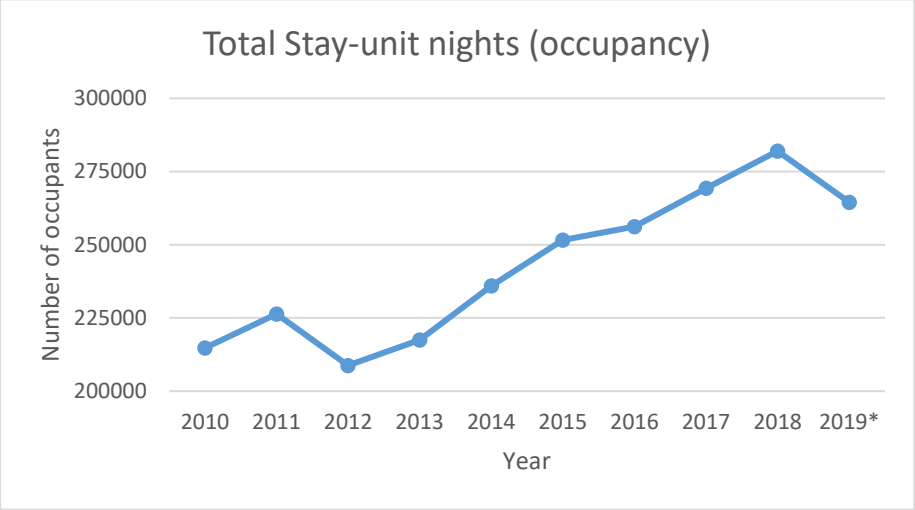
Over the past 10 years between 47 and 54 commercial accommodation providers have submitted data to CAM Stats. On average, there was a 0.294% increase in occupancy per year, a 2.46% increase in guest nights and a 2.8% increase in guest arrivals

	Average # of accom. units	Average Daily Capacity (stay units)	Average Occupancy Rate (%)	Total Stay unit nights (occupancy)	Average length of stay (days)	Average # Guests per stay-unit night
2010	50	2,503	23.5	214,754	1.76	1.77
2011	51	2,402	25.81	226,393	1.69	1.71
2012	51	2,476	23.07	208,789	1.62	1.79
2013	52	2,442	24.37	217,558	1.62	1.81
2014	52	2,426	26.63	236,036	1.67	1.79

[16] https://www.stats.govt.nz/information-releases/accommodation-survey-august-2019

2015	51	2,419	28.41	251,663	1.69	1.72
2016	51	2,305	30.27	256,223	1.70	1.72
2017	52	2,227	33.06	269,311	1.73	1.78
2018	52	2,195	35.2	282,007	1.73	1.75
***2019**[17]*	*51*	*2,219*	*32.57*	*264,485*	*1.73*	*1.80*

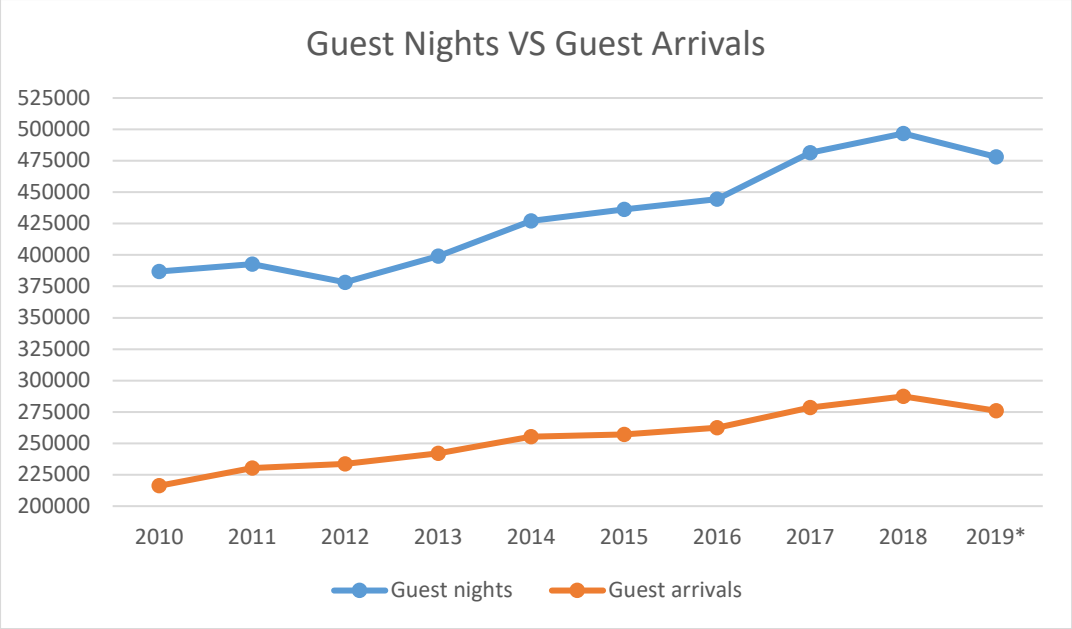
Commercial Accommodation Averages



		Percentage change in occupancy
2010	214,754	5.42%
2011	226,393	-7.78%
2012	208,789	4.20%
2013	217,558	8.49%
2014	236,036	6.62%
2015	251,663	1.81%
2016	256,223	5.11%
2017	269,311	4.71%
2018	282,007	-6.21%
2019*	*264,485*	
		Average increase per year 2.49%

CAM Percentage Change in Occupancy

[17] 2019 statistics are skewed and most likely very conservative. The last four months of the calendar year have been modelled from the same months of the previous 5 years trends due to the survey being discontinued in August 2019.



Percentage Change in Guest nights		
2010	386,869	1.49%
2011	392,636	-3.66%
2012	378,280	5.51%
2013	399,123	7.01%
2014	427,107	2.18%
2015	436,404	1.87%
2016	444,570	8.30%
2017	481,460	3.18%
2018	496,772	-3.74%
2019*	478,181	
		Average increase per year 2.46%

CAM Percentage Change in Guest Nights

Percentage Change in Guest arrivals		
2010	216,202	6.54%
2011	230,345	1.43%
2012	233,649	3.56%
2013	241,966	5.52%
2014	255,314	0.70%
2015	257,092	2.13%
2016	262,574	6.05%
2017	278,464	3.20%
2018	287,380	-3.93%
2019*	276,082	
		Average increase per year 2.8%

CAM Percentage Change in Guest Arrivals

COMMERCIAL ACCOMODATION – PROJECTED GROWTH BY SA2

The following table assumes that there are 60 commercial accommodation providers operating within the District distributed as follows:

NUMBER OF COMMERCIAL ACCCOMIDATION PROVIDERS							
National Park	Ngapuke	Ohakune	Otangiwai – Ohura	Raetihi	Tangiwai	Taumarunui	Waiouru
16	0	30	1	2	2	8	1

Number of Commercial Accommodation Providers

Another assumption made is that a commercial accommodation provider will be established in the Ngapuke SA2 over the next 10 years. If this is not the case, this allowance will most likely be absorbed by another SA2.

Projected commercial accommodation visitors have been prepared at low, medium and high growth levels. It is recommended that when preparing the peak population, the same growth levels are used as those for the URP projections.

NATIONAL PARK	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
High	873	873	873	873	873	912	912	912	912	953	953	953
Medium	770	770	770	770	770	793	793	793	793	817	817	817
Low	667	667	667	667	667	670	670	670	670	674	674	674

NGAPUKE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
High	0	0	0	0	0	8	8	8	8	8	8	8
Medium	0	0	0	0	0	4	4	4	4	4	4	4
Low	0	0	0	0	0	0	0	0	0	0	0	0

OHAKUNE	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
High	1637	1637	1637	1637	1637	1719	1719	1719	1719	1805	1805	1805
Medium	1444	1444	1444	1444	1444	1487	1487	1487	1487	1532	1532	1532
Low	1252	1252	1252	1252	1252	1265	1265	1265	1265	1277	1277	1277

OTANGIWAI - OHURA	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
High	55	55	55	55	55	55	55	55	55	55	55	55
Medium	48	48	48	48	48	48	48	48	48	48	48	48
Low	42	42	42	42	42	42	42	42	42	42	42	42

RAETIHI	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
High	109	109	109	109	109	109	109	109	109	109	109	109
Medium	96	96	96	96	96	96	96	96	96	96	96	96
Low	83	83	83	83	83	83	83	83	83	83	83	83

TANGIWAI	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
High	109	109	109	109	109	109	109	109	109	109	109	109
Medium	96	96	96	96	96	96	96	96	96	96	96	96
Low	83	83	83	83	83	83	83	83	83	83	83	83

TAUMARUNUI	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
High	436	436	436	436	436	449	449	449	449	463	463	463
Medium	385	385	385	385	385	385	385	385	385	385	385	385
Low	334	334	334	334	334	327	327	327	327	321	321	321

WAIOURU	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
High	55	55	55	55	55	55	55	55	55	55	55	55
Medium	48	48	48	48	48	48	48	47	47	47	47	47
Low	42	42	42	42	42	42	42	41	41	41	41	41

COMPONENT 4: ESTIMATED PROJECTED POPULATION - DAY VISITORS

The fourth and final component of Peak Population is Day Visitors. There is no solid data that can currently be relied upon to identify day visitors to the District and as such the assumption has been made that day visitors to the District will reflect commercial accommodation visitors. The same growth level is also to be used when preparing the peak population.

PEAK POPULATION

Peak population is a vital tool with which to plan for the absolute peak usage of services and infrastructure that Council could experience on any given day. Peak population comprises of four components; usually resident population, holiday home population, commercial accommodation population and day visitors.

NATIONAL PARK												
URP	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	1114	1135	1156	1177	1200	1224	1245	1269	1293	1316	1341	1365
Medium	1104	1115	1126	1137	1154	1172	1187	1205	1224	1244	1264	1284
Low	1101	1109	1116	1124	1139	1154	1169	1184	1200	1216	1233	1249
Holiday Homes	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Medium	1686	1708	1729	1751	1773	1795	1816	1838	1860	1881	1903	1925
CAM	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	873	873	873	873	873	912	912	912	912	953	953	953
Medium	770	770	770	770	770	793	793	793	793	817	817	817
Low	667	667	667	667	667	670	670	670	670	674	674	674
Day Visitors	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	873	873	873	873	873	912	912	912	912	953	953	953
Medium	770	770	770	770	770	793	793	793	793	817	817	817
Low	667	667	667	667	667	670	670	670	670	674	674	674
Total	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	4546	4589	4631	4674	4719	4843	4886	4932	4977	5104	5150	5196
Medium	4330	4363	4395	4428	4467	4553	4589	4629	4670	4759	4800	4842
Low	4121	4150	4180	4209	4246	4289	4325	4362	4400	4445	4483	4521

Peak Population: National Park

NGAPUKE												
URP	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	1333	1358	1383	1408	1436	1464	1489	1519	1546	1575	1604	1633
Medium	1321	1334	1347	1360	1381	1402	1420	1442	1465	1488	1512	1536
Low	1317	1326	1336	1345	1363	1380	1398	1416	1436	1455	1475	1495
Holiday Homes	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Medium	126	128	130	131	133	135	136	138	139	141	143	144
CAM	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	0	0	0	0	0	8	8	8	8	8	8	8
Medium	0	0	0	0	0	4	4	4	4	4	4	4
Low	0	0	0	0	0	0	0	0	0	0	0	0
Day Visitors	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	126	128	130	131	133	135	136	138	139	141	143	144
Medium	95	97	100	103	106	109	112	115	118	122	125	128
Low	71	73	75	77	79	82	84	86	89	91	94	96
Total	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	1586	1614	1642	1671	1702	1741	1770	1802	1833	1865	1897	1930
Medium	1542	1559	1577	1594	1620	1650	1672	1699	1727	1755	1784	1813
Low	1515	1528	1541	1554	1575	1597	1618	1640	1664	1687	1711	1736

Peak Population: Ngapuke

	OHAKUNE											
URP	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	1250	1273	1297	1320	1346	1373	1396	1424	1450	1477	1504	1531
Medium	1238	1250	1263	1275	1295	1315	1331	1352	1373	1395	1417	1440
Low	1235	1244	1252	1261	1277	1294	1311	1328	1346	1364	1383	1401
Holiday Homes	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Medium	4934	4997	5060	5124	5188	5251	5314	5378	5441	5505	5569	5632
CAM	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	1637	1637	1637	1637	1637	1719	1719	1719	1719	1805	1805	1805
Medium	1444	1444	1444	1444	1444	1487	1487	1487	1487	1532	1532	1532
Low	1252	1252	1252	1252	1252	1265	1265	1265	1265	1277	1277	1277
Day Visitors	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	1637	1637	1637	1637	1637	1719	1719	1719	1719	1805	1805	1805
Medium	1444	1444	1444	1444	1444	1487	1487	1487	1487	1532	1532	1532
Low	1252	1252	1252	1252	1252	1265	1265	1265	1265	1277	1277	1277
Total	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	9457	9544	9631	9718	9808	10061	10149	10239	10329	10591	10682	10773
Medium	9060	9135	9211	9287	9370	9540	9620	9704	9789	9964	10050	10136
Low	8672	8745	8817	8889	8969	9074	9154	9235	9316	9424	9506	9588

Peak Population: Ohakune

OTANGIWAI - OHURA												
URP	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	1083	1104	1124	1144	1167	1190	1211	1234	1257	1280	1303	1327
Medium	1074	1084	1095	1105	1122	1140	1154	1172	1191	1210	1229	1249
Low	1071	1078	1086	1093	1108	1122	1136	1151	1167	1183	1199	1215
Holiday Homes	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Medium	155	157	159	161	163	165	167	169	171	173	175	177
CAM	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	55	55	55	55	55	55	55	55	55	55	55	55
Medium	48	48	48	48	48	48	48	48	48	48	48	48
Low	42	42	42	42	42	42	42	42	42	42	42	42
Day Visitors	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	55	55	55	55	55	55	56	56	56	56	56	57
Medium	48	48	48	48	48	48	48	48	48	48	48	48
Low	42	42	42	42	42	42	41	41	41	41	41	42
Total	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	1349	1371	1393	1416	1440	1465	1489	1515	1539	1564	1590	1616
Medium	1325	1338	1350	1363	1382	1401	1418	1437	1458	1479	1500	1522
	1310	1320	1329	1339	1355	1371	1387	1404	1422	1439	1458	1477

Peak Population: Otangiwai-Ohura

	RAETIHI											
URP	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	1102	1122	1143	1164	1187	1210	1231	1255	1278	1302	1326	1350
Medium	1092	1103	1113	1124	1141	1159	1174	1192	1211	1230	1250	1270
Low	1089	1096	1104	1112	1126	1141	1156	1171	1187	1203	1219	1236
Holiday Homes	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Medium	644	652	660	669	677	685	693	702	710	718	727	735
CAM	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	109	109	109	109	109	109	109	109	109	109	109	109
Medium	96	96	96	96	96	96	96	96	96	96	96	96
Low	83	83	83	83	83	83	83	83	83	83	83	83
Day Visitors	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	109	109	109	109	109	111	111	111	111	111	111	113
Medium	83	83	83	83	83	83	83	83	83	83	83	83
Low	63	63	63	63	63	63	63	63	63	63	63	63
Total	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	1963	1992	2021	2050	2082	2115	2145	2177	2209	2240	2272	2307
Medium	1915	1934	1953	1972	1997	2023	2046	2073	2100	2127	2155	2184
Low	1878	1894	1910	1926	1949	1972	1995	2018	2043	2067	2092	2117

Peak Population: Raetihi

	TANGIWAI											
URP	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	1351	1377	1402	1427	1456	1484	1510	1540	1568	1597	1626	1656
Medium	1339	1352	1366	1379	1400	1422	1440	1462	1485	1509	1533	1557
Low	1335	1345	1354	1364	1382	1400	1418	1436	1456	1475	1495	1516
Holiday Homes	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Medium	761	771	781	791	801	810	820	830	840	850	859	869
CAM	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	109	109	109	109	109	109	109	109	109	109	109	109
Medium	96	96	96	96	96	96	96	96	96	96	96	96
Low	83	83	83	83	83	83	83	83	83	83	83	83
Day Visitors	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	109	109	109	109	109	109	110	110	110	110	110	110
Medium	96	96	96	96	96	96	96	96	96	96	96	96
Low	83	83	83	83	83	83	83	83	83	83	83	82
Total	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	2331	2366	2401	2436	2474	2513	2549	2588	2626	2665	2704	2744
Medium	2293	2316	2339	2362	2393	2424	2452	2484	2517	2551	2584	2619
Low	2263	2282	2301	2321	2348	2376	2403	2432	2461	2491	2520	2550

Peak Population: Tangiwai

TAUMARUNUI (CENTRAL, EAST AND NORTH - THREE SA2'S COMBINED)												
URP	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	4941	5034	5127	5220	5322	5427	5521	5630	5733	5838	5945	6054
Medium	4896	4945	4993	5042	5119	5198	5264	5346	5431	5517	5605	5694
Low	4883	4917	4952	4987	5051	5117	5183	5250	5322	5394	5468	5542
Holiday Homes	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Medium	1158	1173	1188	1203	1218	1233	1248	1262	1277	1292	1307	1322
CAM	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	436	436	436	436	436	449	449	449	449	463	463	463
Medium	385	385	385	385	385	385	385	385	385	385	385	385
Low	334	334	334	334	334	327	327	327	327	321	321	321
Day Visitors	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	436	436	436	436	436	449	449	449	449	463	463	463
Medium	385	385	385	385	385	385	385	385	385	385	385	385
Low	334	334	334	334	334	327	327	327	327	321	321	321
Total	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	6971	7079	7187	7294	7412	7558	7667	7790	7909	8056	8177	8301
Medium	6825	6888	6951	7014	7107	7201	7282	7378	7478	7579	7682	7786
Low	6709	6758	6808	6857	6937	7004	7085	7167	7254	7328	7416	7506

Peak Population: Taumarunui, Central East and North

WAIOURU												
URP	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	821	837	852	868	885	902	918	936	953	971	988	1007
Medium	814	822	830	838	851	864	875	889	903	917	932	947
Low	812	818	823	829	840	851	862	873	885	897	909	921
Holiday Homes	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Medium	71	72	73	74	75	76	77	78	79	80	81	82
CAM	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	55	55	55	55	55	55	55	55	55	55	55	55
Medium	48	48	48	48	48	48	48	47	47	47	47	47
Low	42	42	42	42	42	42	42	41	41	41	41	41
Day Visitors	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	55	55	55	55	55	55	55	55	55	55	55	55
Medium	48	48	48	48	48	48	48	47	47	47	47	47
Low	42	42	42	42	42	42	42	41	41	41	41	41
Total	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
High	1003	1019	1036	1052	1070	1088	1105	1124	1142	1160	1179	1198
Medium	969	978	987	996	1010	1024	1036	1048	1063	1078	1094	1110
Low	967	974	981	987	999	1011	1023	1032	1045	1058	1071	1084

Peak Population: Waiouru

It is recommended that the following growth levels be used to indicate the absolute peak population:

SA2	RECOMMENDED GROWTH LEVEL
National Park	Medium
Ohakune	High
Otangiwai-Ohura	Low
Raetihi	Low
Tangiwai	Low
Taumarunui (Central, East + North)	Medium
Waiouru	Low
Ngapuke	Low

The following table depicts the total projected Peak Population when taking into consideration each SA2's recommended growth level.

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
NATIONAL PARK												
Medium	4330	4363	4395	4428	4467	4553	4589	4629	4670	4759	4800	4842
NGAPUKE												
Low	1515	1528	1541	1554	1575	1597	1618	1640	1664	1687	1711	1736
OHAKUNE												
High	9457	9544	9631	9718	9808	10061	10149	10239	10329	10591	10682	10773
OTANGIWAI - OHURA												
Low	1310	1320	1329	1339	1355	1371	1387	1404	1422	1439	1458	1477
RAETIHI												
Low	1878	1894	1910	1926	1949	1972	1995	2018	2043	2067	2092	2117
TANGIWAI												
Low	2263	2282	2301	2321	2348	2376	2403	2432	2461	2491	2520	2550
TAUMARUNUI (CENTRAL, EAST AND NORTH - THREE SA2'S COMBINED)												
Medium	6825	6888	6951	7014	7107	7201	7282	7378	7478	7579	7682	7786

WAIOURU												
Low	967	974	981	987	999	1011	1023	1032	1045	1058	1071	1084
RUAPEHU DISTRICT												
Total Peak POP	28545	28792	29039	29287	29608	30142	30446	30773	31111	31672	32016	32364

Table thirty-eight: Projected Peak Population by SA2 at Recommended Growth Levels

3. INFRASTRUCTURE

Indicators of growth and expansion in the built environment include;

1. Resource Consents
2. Building Consents
3. Rateable Assessments

Forecasted Assumption(s):

1. *The assumption has been made that low quality asset condition assessments will lead to poor infrastructure capital decision making.*
   ***Level of Certainty**: Highly Likely*
   ***Potential Financial Consequence**: Moderate*
2. *The assumption has been made that, excepting water infrastructure, all other assets will deliver the required level of service over their documented useful life as reflected in the Revenue and Financing Policy.*
   ***Level of Certainty**: Likely*
   ***Potential Financial Consequence**: Moderate*
3. *Revaluation of fixed assets is done annually for property. It includes an assessment of the useful (economic) life of the asset. This is in accordance with the Council's accounting policies detailed under "Property, Plant and Equipment and Infrastructural Assets" which includes further detail of revaluation policies and the estimated useful life of various assets. The revaluations are based on the BERL inflation rates. The revaluation impact is broadly equivalent to the increase in the Local Government Cost Index.*
   Level of Certainty: Likely
   Potential Financial Consequence: Moderate
4. *Depreciation rates on planned asset acquisitions are based on an average percentage of their components and the estimated useful life of the various assets.*
   ***Level of Certainty**: Likely*
   ***Potential Financial Consequence:** Moderate*
5. *There is a risk that compromised access to and through SH4 could lead to economic impacts resulting from short term interruption and loss of economic opportunity.*
   ***Level of Certainty**: Unlikely*
   ***Potential Financial Consequence:** Low*
6. *The assumption has been made that the Capital work programme estimates and MBIE funding are not sufficient to complete all elements of proposed works and ratepayers will need to part fund this*
   ***Level of Certainty**: Likely*
   ***Potential Financial Consequence:** Significant*
7. *The assumption has been made that ongoing subdivisions in Ohakune will cause additional pressures on 3 waters infrastructure resulting in Council not being able to consent buildings.*
   ***Level of Certainty**: Likely*
   ***Potential Financial Consequence:** Significant*
8. *It has been assumed that all resource consents will be renewed but in many cases, with increasing environmental standards. The expected time to obtain resource consents is factored into project timelines and the increased standards.*
   ***Level of Certainty:** Likely*
   ***Potential Financial Consequence:** Significant*
9. *The assumption has been made that the number of rateable assessments will continue to experience small scale growth of approximately 0.16%*
   ***Level of Certainty:** Likely*
   ***Potential Financial Consequence:** Neutral*

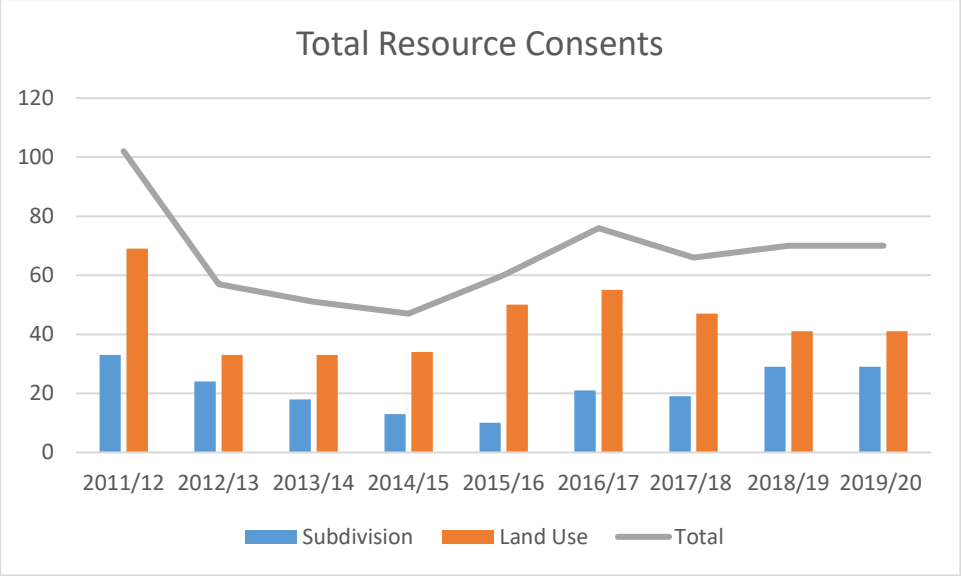
RESOURCE CONSENTS

In the past six months, a number of subdivisions have been progressed from granted consents to completion of conditions and the final process to issue of title. The year 2019/20 saw 54 development contributions paid, while during the current financial year (2020/21 to date), there have been 62 lots paid, indicating that owners are experiencing positive responses from potential and actual purchasers of these new lots.

This surge in urban residential subdivision activity is only occurring in Ohakune but does include a number of lifestyle blocks being developed all over the District including an increasing number of two – three lot subdivisions.

Year	Subdivision	Land Use
2011/12	33 (1 refused)	69
2012/13	24 (2 refused)	33
2013/14	18	33
2014/15	13	34
2015/16	10	50
2016/17	21	55
2017/18	19	47 (2 returned)
2018/19	29 (4 returned)	41 (4 returned)
2019/20	29 (1 returned; 1 withdrawn)	41 (1 returned)
2020/21* as at 18/01/21	*17**	*11**

2010 – 2020 Resource Consents

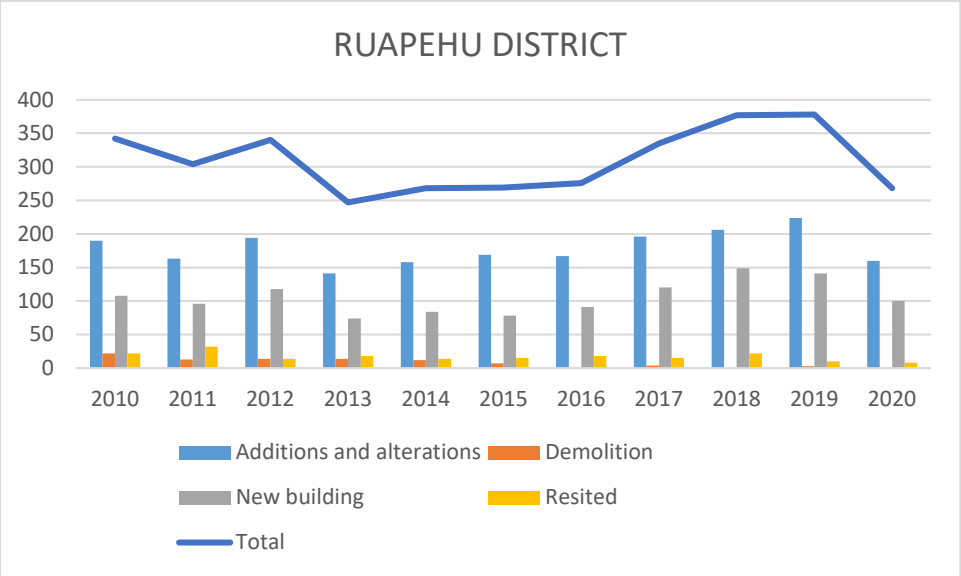


BUILDING CONSENTS

At a District level, the number of building consents issued has continued to rise since the 2012/13 decline. 2020 saw the first overall decline in building consents issued since 2012; this could be attributed to COVID-19 induced behaviour. Interestingly, Taumarunui was the only ward that saw an increase, albeit slight, in building consents issued in 2020.

RUAPEHU DISTRICT												
CONSENT TYPE	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Total**
Additions + alterations	190	163	194	141	158	169	167	196	206	224	160	1968
Demolition	22	13	14	14	12	7	0	4	0	3	0	89
New building	108	96	118	74	84	78	91	120	149	141	100	1159
Re-sited	22	32	14	18	14	15	18	15	22	10	8	188
Total	**342**	**304**	**340**	**247**	**268**	**269**	**276**	**335**	**377**	**378**	**268**	**3404**

Ruapehu District: Building Consents

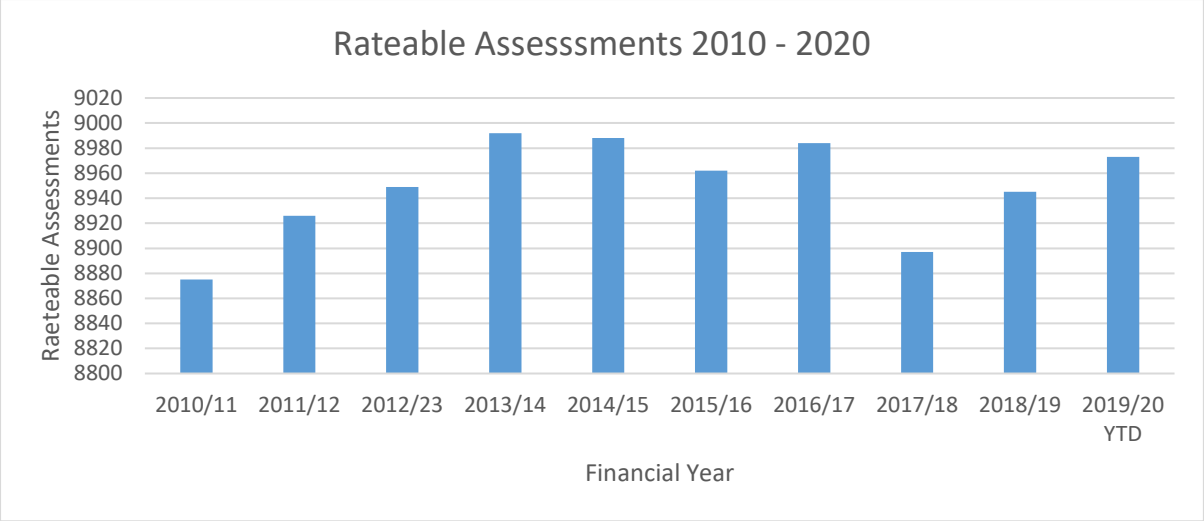


RATEABLE ASSESSMENTS

The number of rateable units is also an important measure of growth however it must be acknowledged that the number of rateable units fluctuates year-on-year for reasons such as subdivisions, part-sales, or amalgamations. Over the past 10 years, the number of rateable assessments has increased on average 0.123% (or 11 units per year). Building on this trend, confidently assuming small scale growth, the assumed rate of growth has been set at 0.16% (or 15 units per year).

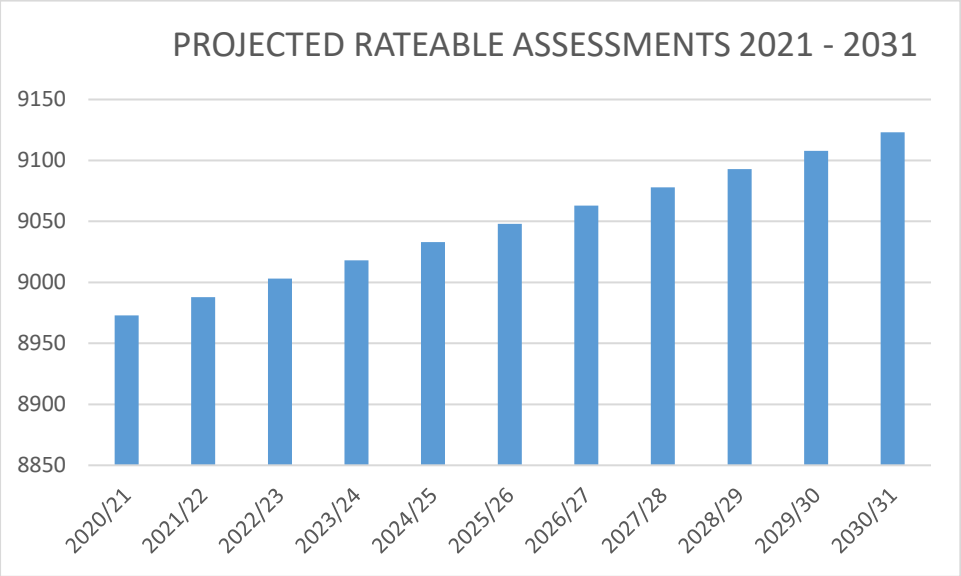
YEAR	RATEABLE ASSESSMENTS
2010/11	8875
2011/12	8926
2012/23	8949
2013/14	8992
2014/15	8988
2015/16	8962
2016/17	8984
2017/18	8897
2018/19	8945
2019/20 YTD	8973

Rateable Assessments



YEAR	PROJECTED RATEABLE ASSESSMENTS
2020/21	8973
2021/22	8988
2022/23	9003
2023/24	9018
2024/25	9033
2025/26	9048
2026/27	9063
2027/28	9078
2028/29	9093
2029/30	9108
2030/31	9123

A: Projected Rateable Assessments



4. ECONOMY

There are many measures with which to gauge economic trends and outputs of households, communities and countries. A small insight into the Ruapehu economy is explored below featuring GDP, filled jobs and number of business units all of which are compared to the country as a whole. Further information regarding Ruapehu's economy in response to COVID-19 can be provided by staff (as prepared by Horizon's Region Council) which references the following data sets; weekly retail, MSD benefits, overseas trade, job vacancies, jobs filled, job seekers, COVID income relief, property value, rent, and tourism.

The Herfindahl–Hirschman Index (HHI) measures the level of diversification of an economy, the higher the score the more concentrated a region or district's economic activity is within a few industries, meaning the more vulnerable it is to adverse effects, such as those arising from climatic conditions or commodity price fluctuations. The Ruapehu HHI score has continually decreased since 2000 (52.6) to where it sits today at 45.7 indicating that the Ruapehu economy continues to diversify.

Forecasted Assumption(s):

1. *The assumption has been made that International borders will remain closed, international tourist numbers remain nil into the near future. Local tourism operators rely solely on domestic tourism for the foreseeable future.*
   ***Level of Certainty**: Very Likely*
   ***Potential Financial Consequence**: Significant*
2. *The assumption has been made that pre-COVID, holiday home numbers were set to increase approx. 1.21% on average per year. Throughout COVID this is unlikely, however, this trend is expected to return with the recommencement of a fully functioning tourism economy.*
   ***Level of Certainty**: Likely*
   ***Potential Financial Consequence**: Moderate*

Both domestic and international tourism has grown rapidly since 2000 and as a result, tourism's contribution to the Ruapehu's GDP has increased from $28 Million in 2000 to $102 million in 2020 making it one of the largest contributors to economic growth.

According to Infometrics the top 10 industries contributing to the Ruapehu's GDP in 2020 were as follows:

Ruapehu GDP contribution by Industry		
Industry	**$million**	**Share of total**
Central Gov Admin, Defence & Safety	91	12.50%
Sheep, Beef Cattle & Grain Farming	78.8	10.80%
Property Operators & Real Estate Services	44.3	6.10%
Arts & Recreation Services	36.5	5.00%
Accommodation & Food Services	33	4.50%
Education & Training	29.9	4.10%
Pulp & Paper Product Manufacturing	27.6	3.80%
Heavy & Civil Engineering Construction	25.2	3.50%
Health Care & Social Assistance	22	3.00%
Electricity & Gas Supply	20.3	2.80%

A:GDP contribution by industry

NUMBER OF BUSINESS UNITS

The number of businesses in an area is an indicator of the health of the economy. For example, growth in the number of businesses in an area reflects increased entrepreneurial activity and economic activity as entrepreneurs are prepared to take risks and start new ventures.[18]

	Ruapehu District			New Zealand
Year	# of units	Change		Change
2000	1,872			
2001	1,851	-1.10%		-0.70%
2002	1,890	2.10%		1.10%
2003	1,899	0.50%		3.40%
2004	1,926	1.40%		8.30%
2005	1,989	3.30%		4.30%
2006	2,040	2.60%		3.60%
2007	2,037	-0.10%		2.20%
2008	2,028	-0.40%		2.10%
2009	1,968	-3.00%		0.70%
2010	1,896	-3.70%		-1.40%
2011	1,866	-1.60%		-0.10%
2012	1,827	-2.10%		-0.20%
2013	1,782	-2.50%		0.60%
2014	1,788	0.30%		3.50%
2015	1,812	1.30%		2.40%
2016	1,803	-0.50%		1.80%
2017	1,809	0.30%		2.50%
2018	1,803	-0.30%		0.90%
2019	1,806	0.20%		1.80%

[18] Infometrics, https://ecoprofile.infometrics.co.nz/Ruapehu%20District/Businesses/Growth

5. NATURAL ENVIRONMENT

NATURAL DISASTERS

Small natural disasters can be funded out of budgetary provisions. Council will require financial and other assistance from Central Government for large-scale events or disasters.

Forecasted Assumption(s):

1. *Small natural disasters can be funded out of budgetary provisions. Council will require financial and other assistance from Central Government for large-scale events or disasters.*
   ***Level of Certainty**: Likely*
   ***Potential Financial Consequence**: Significant*
2. *Seasonal projections show winter rainfall increasing by 7-16% in Taumarunui by 2090. It is unclear what this increase looks like out to 2031. There is not enough data to plan for increase/decrease in rainfall in other areas. This in itself is a risk.*
   ***Level of Certainty**: Neutral*
   ***Potential Financial Consequence**: Moderate*
3. *Temperatures are likely to be 0.7˚C to 1.1˚C warmer by 2040 effecting evapotranspiration of soil and dams as well as snow days.*
   ***Level of Certainty**: Neutral*
   ***Potential Financial Consequence**: Moderate*
4. *A reduction in the number of snow days experienced annually is projected; potentially effecting local economies reliant on snow seeking visitors.*
   ***Level of Certainty**: Likely*
   ***Potential Financial Consequence**: Moderate - Significant*

CLIMATE CHANGE

Guidance for territorial authorities on preparing for climate change was reviewed in June 2018.

The '*Climate Change Projections for New Zealand'* report[19] addresses expected changes in New Zealand's climate (temperature and many other climate variables) out to 2120, and draws heavily on climate model simulations from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report. Projections of climate change depend on future greenhouse gas emissions, which are uncertain. There are four main global emissions scenarios ranging from low to high greenhouse gas concentrations. This new set of four scenarios known as *representative concentration pathways* (RCPs), are used in this report. These pathways are identified by their approximate total **radiative forcing** at 2100 relative to 1750.

(a) RCP 2.6 = removal of some CO2 presently in our atmosphere (low emissions)
(b) RCP 4.5 and RCP 6.0 = stabilisation of current CO2 levels
(c) RCP 8.5 = high concentration of CO2 (high emissions)

Projected changes in rainfall show a marked seasonality and variability across regions. For summer it is likely that there will be drier conditions in the central North Island. ***(see MfE CCP)*** The temperature projections generally increase with time and with the strength of the radiative forcing.
Taumarunui was (one of 5 towns) specifically singled out in this report as being *very likely* to have increased precipitation under the highest **radiative forcing** (RCP 8.5) during winter by the end of the century. ***(see MfE CCP)***

[19] Ministry for the Environment 2018. Climate Change Projections for New Zealand: Atmosphere Projections Based on Simulations from the IPCC Fifth Assessment, 2nd Edition. Wellington: Ministry for the Environment.

Climate change projections for the Manawatu-Whanganui region were reviewed by the Ministry for the Environment in May 2018[20]. The following changes are projected for the Manawatu-Wanganui region.[21]

TEMPERATURE

Compared to 1995, temperatures are likely to be 0.7˚C to 1.1˚C warmer by 2040 and 0.7˚C to 3.1˚C warmer by 2090.

By the end of the century, the Region is projected to have from 7 to 47 extra days per year where maximum temperatures exceed 25˚C. The number of frosts could decrease by around 6 to 17 per year by 2090.

RAINFALL

The largest changes will be for particular seasons rather than annually.
Seasonal projections show winter rainfall increasing by 6 to 10 per cent in Whanganui and 7 to 16 per cent in Taumarunui by 2090.

According to the most recent projections, the Manawatu-Whanganui region is not expected to experience a significant change in the frequency of extreme rainy days as a result of climate change.

SNOWFALL

A reduction in the number of snow days experienced annually is projected throughout New Zealand, including the Central Plateau.

The duration of snow cover is also likely to decrease, particularly at lower elevations. Less winter snowfall and an earlier spring melt may cause marked changes in the annual cycle of river flow in the regions. Places that currently receive snow are likely to see increasing rainfall as snowlines rise to higher elevations due to rising temperatures.

It is possible snow amount could increase with rising temperatures in special circumstances; a warmer atmosphere can hold more moisture, and on a day where the temperatures are higher but still below freezing, there is the potential for increased heavy snowfalls. No analysis of snow extremes has been carried out at this point, however. Page 120 CC projections.

WIND

The frequency of extremely windy days in the Manawatu-Whanganui region is not likely to change significantly by 2090. There may be an increase in westerly wind flow during winter and north-easterly wind flow during summer.

STORMS

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

IMPACTS BY SEASON

	BY 2090, THE REGION COULD EXPECT[22]:
Spring	0.6°C to 2.7°C temperature rise 1 per cent less to 3 per cent more rainfall in Whanganui No change to 5 per cent more rainfall in Taumarunui

[20] https://www.mfe.govt.nz/climate-change/likely-impacts-of-climate-change/how-could-climate-change-affect-my-region/manawatu

[21] NOTE: Overview of regional projections shown as a range of values from a low emissions to a high emissions future. The projected changes are calculated for 2031–2050 (referred to as 2040) and 2081–2100 (2090) compared to the climate of 1986–2005 (1995).

[22] Projected changes are relative to 1995 levels. The values provided capture the range across all scenarios. They are based on scenario estimates and should not be taken as definitive

Summer	0.7°C to 3.3°C temperature rise No change to 3 per cent more rainfall in Whanganui 2 per cent more rainfall in Taumarunui across the range of scenarios
Autumn	0.7°C to 3.2°C temperature rise 5 per cent less to 2 per cent more rainfall in Whanganui and Taumarunui
Winter	0.7°C to 3.2°C temperature rise 6 to 11 per cent more rainfall in Whanganui 7 to 16 per cent more rainfall in Taumarunui

Climate Change Possible Impacts by Season

Note:
Likelihood estimates IPCC terminology (see Introduction chapter or Technical Summary) for indicating the assessed likelihood of an outcome or result:
Virtually certain: More than 99 per cent probability of occurrence
Extremely likely: More than 95 per cent
Probability very likely: More than 90 per cent
Probability likely: More than 66 per cent probability
More likely than not: More than 50 per cent probability
Very unlikely: Less than 10 per cent probability
Extremely unlikely: Less than 5 per cent probability.

6. FINANCIAL ASSUMPTIONS

Refer to Part 3 of the Long term Plan, Significant Finical Assumptions, for further information regarding significant financial assumptions.

6. FINANCIAL			
Rates Receivables (Debtors)	It has been assumed that rates receivable as a percentage of rates will remain at current levels. There is a risk that rates receivables are significantly higher than that forecast due to a number of reasons, such as the effect of COVID 19 and economic issues. This would impact on cash flow requirements, increasing borrowing for operational costs.	Neutral	Moderate
External Funding For Roads	The forecast financial statements are based on the assumption that Council will be able to claim 74% of all maintenance and renewal costs for district roads in line with currently known NZTA work categories and classifications. Forecast co-investment from Waka Kotahi NZTA may be reduced due to impact from COVID-19. Council's financial assistance rate will increase to 75% in 2021/22 for local roads and 100% for Special purpose roads, with local roads reducing to 74% thereafter. Should the outcome result in less roading expenditure items being covered by the subsidy, the work programme for roading could be impacted. Any decrease in funding would require modification to planned projects and work programmes and may result in delays to both. Where it is not possible to decrease funding, there is the potential to impact on borrowing and rates.	Likely	Significant
Vested Assets	The assumption has been made that no Vested Assets have been budgeted over the next ten years	Neutral	Low
Government subsidies	While it is expected that Council will receive some Government funding for Land Transport, Housing, Cycle Trails and Three Waters and possibly other capital projects over the next ten years, the lack of certainty around this means that (and the assumption has been made) no subsidies have been factored into the budgets	Low	Moderate

Inflation	The preparation of the budget has included inflation assumptions based on BERL forecasting for the Local Government Sector. There is a high level of uncertainty associated with these inflation assumptions. If the impact of inflation on Council's budgets turns out to be higher than forecast and Council does not wish to generate additional revenue by increasing rates, then either additional operational efficiencies or reduction in service levels or planned capital expenditure would need to be considered. Should the impact of inflation be lower than forecast, there will be a favourable impact on Council's operating and capital expenditure budgets.	Likely	Moderate
CAPEX Feasibility - Three Waters	There is a strong chance that additional funding support from Central Government will be available to fast track drinking water reform changes. However, this LTP can not include this possibility with key assumptions due to timing of any such announcements. As affordability has been removed from Local Government as a defence, RDC has forecast considerable debt impacts to Council as full compliance is an absolute non-negotiable now. The assumption has been made that practical delivery against the very ambitious LTP works forecast will face the challenges of supply chain constraints, and active monitoring will be required to minimise the risk of non compliance by due dates.	Likely	Significant
CAPEX Feasibility - Other Works	With regards to Land Transport, there is a well established supply chain, and committed funding. There is potential that some bridge work not covered by NZTA will require RDC to fund which it would do through debt. These are one off items in what is otherwise a very stable work program. A number of Township Revitalisation outcomes that are to be debt funded to account for inter-generational equity. These would go ahead in consultation with community regardless of external funding, but Council is very open to using proposed budgets as 'seed funding' with other partners to deliver further value than forecast. However, 3rd party investment can not be assumed in this LTP, and as such counts as 100% RDC investment. Practical delivery will have strong political and community support, and supply chain issues are somewhat lessened in this activity due to lower competition for resources from out of district or competing priorities. The assumption has been made that these the capital works costs will not vary significantly from those budgeted	Likely	Moderate
Interest rates	The interest rates used are based on an estimate of what will occur in the future combined with known rates that are currently fixed under current borrowings with the LGFA which Council joined in 2018. The assumption has been made that all borrowings will be renewed under similar terms and conditions except that interest rates applied to replacement and new borrowings annually will range from 1.7% to 3.4% in year ten of the LTP 2021-31. There is a high degree of uncertainty around borrowing costs due to the fluctuations of interest rates. Interest costs and debt repayment have been estimated in accordance with the Treasury Investment and Liability Management Policy.	Likely	Moderate - Significant

7. REFERENCES

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Ruapehu District Council:
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QUBE: Building Consents; Rating database;

Other:
Ministry of Education
Horizon's Regional Council

Water Supply

Asset Management Plan 2021-31

Part 3 – Water Supply Activity

Quality Information

Document	Water Supply Asset Management Plan 2021-31
Ref	
Date	June 2021
Prepared by	Stuart Watson, Acting Environmental Manager Environmental Services, Ruapehu District Council Anne-Marie Westcott, Ruapehu District Council Cushla Anich, Director, Morrison Low Consultants Veolia team
Peer review of 2018 AMP	GHD Consultants, September 2019
Reviewed by	Margaret Hawthorne, Group Manager Community Services, Ruapehu District Council
Approved by	Clive Manley, Chief Executive, Ruapehu District Council

Revision History

Version 1 (Draft for Audit) – February 2021

Prepared by:		Group Manager/Reviewed by:	Chief Executive/Approved	
Name	Anne-Marie Westcott Cushla Anich	Name	Name	Clive Manley
Signature		Signature	Signature	

Version for Consultation – March 2021

Prepared by:		Group Manager/Reviewed by:	Chief Executive/Approved	
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Version for Adoption – June 2021

Prepared by:		Group Manager/Reviewed by:	Chief Executive/Approved	
Name	Anne-Marie Westcott Cushla Anich	Name	Name	Clive Manley
Signature		Signature	Signature	

1 EXECUTIVE SUMMARY

1.1 INTRODUCTION

The Water Supply Asset Management Plan provides the logic and financial background to the long-term management and maintenance of Ruapehu District Council's water supply network.

The purpose of the water supply activity is to provide safe and secure drinking water to the communities in the Ruapehu District in an environmentally sustainable manner. A safe and secure water supply network is essential to run households and businesses, maintain public health, and provide for firefighting where practicable and designed as part of the water service.

Through the water supply activity, Council aims to:

- Provide well designed and maintained water infrastructure to secure the economic future of Ruapehu; and to ensure service continuity for domestic, commerce and industry in the District
- Maintain public health and provide for businesses and fire fighting in emergencies as an essential public good service
- Manage potential negative environmental effects associated with the water supply activity, which includes managing limits on drawing water from waterways respecting Te Mana o te Wai and environmental damage from leaking pipes.

There is a relationship between this Asset Management Plan with other Council planning documents. The levels of service provided through asset management have a connection with Council's Vision, Focus Areas, Outcomes and Key Result Areas. Council recognises, and is managing increasing stakeholder expectations, meeting legislative requirements such as the Health Act 1956 including the Health (Drinking Water Amendment) Act 2019, and localised areas of increased demand. The plan also links to Horizon Regional Council's One Plan and Council's 30 Year Infrastructure Strategy.

The water supply assets had a gross replacement cost of $72.1 million (as at 1 July 2020). The water supply network includes six water treatment plants, 17 water storage reservoirs, four pumping stations, 191km of water reticulation mains and associated hydrants, valves and 5,497 connections (rated properties supplied as at July 2020).

Council also purchases potable drinking water for the Waiouru township from the New Zealand Defence Force. The New Zealand Defence Force supplies the bulk water to Waiouru and Council distributes it to the end customers. Council also manages the water services for Whakapapa village on behalf of Department of Conservation since 2015 but does not own the assets. Department of Conservation have indicated they wish to take the operational and maintenance back inhouse. The handover is scheduled for 1 July 2021.

1.2 PROBLEM STATEMENTS

A workshop with key stakeholders in 2018 identified the District's key water supply issues and problems using investment logic mapping framework. The Problem Statements were revised as part of the 2021 AMP update to reflect the latest national, regional, and local influences, and summarised in Table 1.

Table 1: Revised Problem Statements

Problem Statement	Description
1. Changing legislation and regulations	The Government is implementing three waters reform including creating standalone Crown entity Taumata Arowai to regulate drinking water and Water Services Bill. This structural reform will have a significant impact on local government with three water service likely to be regionalised. There is also a suite of legislative and regulation changes to improve the current management of freshwater
2. Ability to meet Drinking Water Standards and timeline of reforms	Not all treatment plants are fully compliant with the Drinking Water Standards. The community and Government expect Council to provide safe drinking water that meets these standards as a minimum.

Problem Statement	Description
3. Community affordability	The water supply infrastructure needs to meet legislative requirements including drinking water standards, Water Safety Plans as well as resource consent conditions, and providing for current and future demand. These factors driver upgrades but with only a small rating base to spread the financial burden (based on district wide water rates). We are planning to undertake these upgrades regardless if Government funding is successful. It is unacceptable for Council not to comply with the Drinking Water Standards. This will mean that the debt projections will be unaffordable for our community. Council will be exploring alternative funding options to reduce this risk.

1.3 KEY ISSUES

The most challenging issue for the water supply activity is the new drinking water regulator and changes to legislation, treaty settlements and implementation of service deliver as larger water units to provide effect to Te Mana o te Wai, support for communities and the resources to deliver against the Government timeframes. The water reforms will be the most significant issue Council will need to consider with the 2021 Long Term Plan.

In addition to the three waters reforms, the key issues for the water supply activity are:

- Implications of the Government's proposed suite of legislative and regulation changes to improve the current management of freshwater, this will include water allocation reviews.
- Understanding climate change impacts
- Community affordability
- Network resilience versus economies of scale
- National Environmental Standard – drinking water catchments monitoring, land use and climate change impacts
- Ability to comply with the drinking water standards
- Gaining resource consents for Taumarunui and Owhango as currently on hold
- Ability of supplies to meet demands of visitor numbers with small rating base.

1.4 LEVELS OF SERVICE

Levels of service have been reviewed and modified combining the expectations and requirements of legislation, industry standards, users, stakeholders, and the Council. They cover:

- The safety of the water supply / water quality.
- Maintenance of the water supply reticulation network.
- Responsiveness to problems with the water supply.
- Customer satisfaction.
- Demand management.
- Environmental sustainability.

The levels of service for the water supply activity are:

Table 2: Service level summary for water supply activity

Council Outcomes	Key Attribute	LOS
Safe, Healthy Communities	Safety – water quality	Providing quality and safe drinking water to applicable community areas
	Safety - water pressure and flow	Safe water pressure and flow is supplied to consumers
Thriving Economy	Quality - reliability	To provide reliable water networks
	Responsiveness	To provide prompt responses for service to our customers
Thriving, Natural Economy	Sustainable - environmental performance	To promote the efficient and sustainable use of water
		The water supply service is operated in compliance with regulatory requirements

Our achievements for Long Term Plan and mandatory performance measures for 2018/19 and 2019/20 are:

- Overall for 2018/19, we did achieve the mandatory performance measures covering drinking water quality for bacteria compliance, real water loss, responsiveness to urgent and non-urgent faults, customer complaints for service quality and water pressure / flow issues, and full compliance with the regulatory requirements. We did not achieve the mandatory performance measure covering drinking water quality for protozoa compliance except for Raetihi. We did not achieve the mandatory performance measure for the average consumption of drinking water for normal demand per day per resident but did for peak demand per person.
- Overall for 2019/20, we did achieve the mandatory performance measures covering drinking water quality for bacteria compliance, real water loss, responsiveness to urgent and non-urgent faults, customer complaints for service quality and water pressure / flow issues, efficient water use, and full compliance with the regulatory requirements. We did not achieve the mandatory performance measure covering drinking water quality for protozoa compliance except for Raetihi and Taumarunui.

Council is continually working towards improving its water supply schemes and their ability to comply with DWSNZ. Ohakune, Ohura, National Park and Owhango Treatment Plants currently do comply with the Drinking Water Standards for Protozoan (i.e. cryptosporidium and giardia) compliance criteria. Raetihi Water Treatment Plant was upgraded in 2018 and is now fully compliant. Ohakune Treatment Plant is being upgraded in the next two years. External Government funding will help accelerate these capital programmes.

The Matapuna Water Treatment Plant (for Taumarunui) has achieved, for the first time, protozoal compliance for DWSNZ in 2019/20. There have been historical issues around water quality compliance and the provision of data by the minute, as is the requirement. This outcome has been a result of upgrades to SCADA monitoring that has been able to capture data when there is a loss of SCADA communications plus in-depth investigations and the provision of additional information to the Ministry of Health for any apparent non-compliance.

1.5 KEY RISKS

The critical risks identified in the Risk Action Plan (refer to Section 5) that have a significant, major or catastrophic impact for the water supply activity are:

- Failure of critical pipeline
- Contamination of source water, in reservoirs and reticulation
- Poor quality bulk water
- Natural hazard planning.
- Asset failure of major component in water storage and reticulation
- High leakage from system
- High usage by unmetered connections
- Unmetered use by consumers
  i) Unmetered leaky rural connection.
  ii) Failure to comply with DWSNZ
- Delivering Capital Works Programme with limited resources.

All water supplies deliver safe, treated water for bacterial compliance. Meeting the protozoal compliance criteria of the Drinking Water Standards is a challenge for Council and a focus of the upgrade works identified in this plan. In addition, there are transition arrangements with the Water Services Bill. Large suppliers (serving 500 or more) must have a drinking Water Safety Plan one year after the legislation commences (i.e. July 2022). Small suppliers (serving less than 500) have a five-year transition period. All suppliers must register by the end of the first year following commencement.

1.6 FINANCIAL SUMMARY

The total amount of expenditure for operations, maintenance and capital for the water supply activity over the next ten years is $96 million, as shown in the figure and table below. This shows that the total operational annual costs are about $4 million to $5 million and makes up about half of the total forecast at 53%.

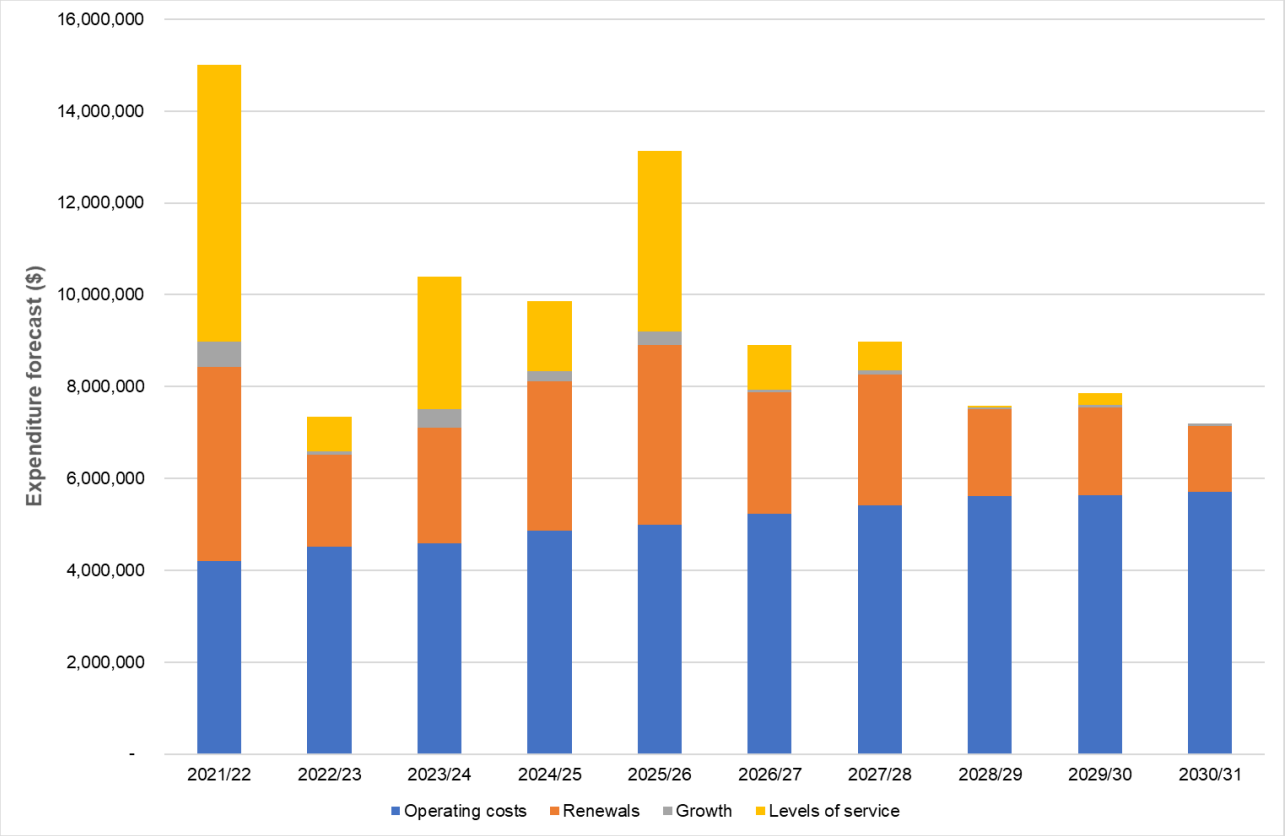


Figure 1: Summary of water supply ten year expenditure forecast

Source: Council final LTP budgets (as at June 2021)

Table 3: Summary of water supply ten year expenditure forecast

Water Expenditure	2021/22	2022/23	2023/24	10 yr Total
Opex	4,207,072	4,514,037	4,593,056	**50,776,710**
Renewals	4,212,561	2,004,234	2,516,983	**26,622,558**
Growth	560,307	72,583	391,972	**1,861,424**
Levels of Service	6,019,721	743,591	2,884,036	**16,962,497**
Total	**14,999,661**	**7,334,445**	**10,386,047**	**96,223,189**

The capital programme is based on the approval of the external Government Funding through the Three Waters Stimulus Grant to upgrade the remaining non-compliant plants to achieve protozoal compliance. The non-compliant plants are Ohura, National Park and Owhango.

Capex (renewals and new works) expenditure across the 10 year expenditure period is forecast at $45 million. Renewals makes up 59% of the ten year capex expenditure followed by levels of service at 37%.

The major water supply capital projects are mainly for treatment plant upgrades to meet compliance for Drinking Water Standards and include:

- National Park at $1.8 million
- Ohakune at $4.7 million
- Ohura at $1.6 million
- Owhango at $2.5 million.

1.7 IMPROVEMENT PROGRAMME

Key improvement programmes and associated projects have been developed through a review of the gaps identified during the development of this draft AMP and the issues identified. The main improvement objectives to be achieved in the next three years due to their priority and importance for the water supply activity include:

- Critical assets - Refining the categorisation of critical water assets at component level to support better decision making.
- Asset data - Improve the data collection and reporting for performance data required for mandatory reporting. Improve the integration between Veolia's VAM and Council's Ozone systems.
- Prepare for growth - Monitor the population growth Ohakune on regular basis so that core infrastructure investment is made at the right time and at the right location. Undertake hydraulic modelling of Ohakune township for water supply and wastewater services.
- Strengthening resilience - Improving the resilience of the network in relation to climate change impacts including exploring alternative water sources to increase security and future quantities.
- Quality management - Update Water Safety Plans to ensure their compliance with the new legislation (Water Services Bill).
- Regional Partnership - Continue with regional collaboration for 3 Waters Service Delivery in preparation for three waters reforms, seeking efficiencies to deliver the best outcomes for Ruapehu's community.
- Service Delivery – Complete a Section 17A review of the Three Waters Contract to ensure that the current delivery arrangements are the most efficient, effective and appropriate means. Update the contract.

2 INTRODUCTION

2.1 OVERVIEW

The purpose of the water supply activity is to provide safe and secure drinking water to the communities in the Ruapehu District (District) in an environmentally sustainable manner. A safe and secure water supply network is essential to run households and businesses, maintain public health, and provide for firefighting where practicable and designed as part of the water service, and sustain economic development. Council is committed to providing a water supply service that meets the needs of the community.

To achieve this purpose, Ruapehu District Council (Council) is responsible for the provision and management of six water supply schemes at National Park, Ohakune. Ohura, Owhango, Raetihi and Taumarunui. The water supply network includes six water treatment plants, 16 water storage reservoirs, four pumping stations and 191km of water reticulation mains. The peak population on any given day in the District is expected to increase from an estimate of 27,438 in 2020 to 30,614 in 2031 (based on low projection). The water assets had a gross replacement cost of $72.1 million (as at 1 July 2020).

Waiouru, Council owns and operates the water supply network outside the Army base and purchases the potable water from the New Zealand Defence Force (NZDF). Council has also managed the water services for Whakapapa Village on behalf of Department of Conservation (DOC) since 2015 (but does not own the assets). DOC have indicated they wish to take the operational and maintenance back inhouse. The handover is scheduled for 1 July 2021.

As well as providing safe drinking water that meets regulatory requirements such as the Health Act 1956 including the Health (Drinking Water) Amendment Act 2019, Council is committed to managing potential negative environmental effects associated with the water supply activity. This includes managing limits on drawing water from waterways and environmental damage from leaking pipes.

The most challenging issue for the water supply activity is the new drinking water regulator and changes to legislation, treaty settlements and implementation of service deliver as larger water units to provide effect to Te Mana o te Wai, support for communities and the resources to deliver against government timeframes.

The water reforms will be the most significant issue Council will need to consider with the 2021 Long Term Plan (LTP) (refer to Section 2.4 for further discussion). The Taumata Arowai Water Services Regulator Act has been passed and the complementary Water Services Bill is expected to be passed in mid-2021. The standalone Crown entity Taumata Arowai is being created to regulate drinking water. The Government's Three Waters Reform Programme is strongly encouraging councils to consider changes to their delivery methods with the preferred outcome being semi regional / regional / multi-regional or national suppliers.

2.2 PURPOSE OF THIS PLAN

The key objective of asset management (AM) is to provide a desired levels of service (LOS) in the most cost-effective manner while demonstrating responsible stewardship of resources for present and future customers. Asset Management Plans (AMP) are a significant component of the strategic planning and management of Council, with links to the LTP, 30 Year Infrastructure Strategy and service delivery plans including service contracts and Water Safety Plans (WSP).

The AMP underpins the LTP and consultative processes that have been put in place to engage the community. In addition, the AMP demonstrates to our stakeholders, including our customers, the effectiveness of our AM decision-making processes.

The AMP delivers a range of benefits to the community as well as to the provider of the services, the main ones being:

(a) Maintain, replace and develop assets over the long term to meet required delivery standards and foreseeable future needs at minimal cost.
(b) Continually improve AM practices and service delivery to the customers.
(c) Comply with Statutory Requirements.

This plan has been written to provide the information required for good AM planning as set out in:

(a) Council's legal obligations under the LGA 2002
(b) Good asset management planning requirements as set out in LGA 2002 Schedule 10
(c) Office of the Auditor General industry advice notes and reports
(d) International Infrastructure Management Manual (IIMM), published by the New Zealand Asset Management Support (NAMS).

The plan covers a period from 1 July 2021 to 30 June 2031, with a focus on the work programmes planned for the next three to five years. It reflects Council's focus on achieving an optimal balance between the key elements of AM, which are service levels, cost and risk. As it is a working document, the AMP also describes the areas where we believe our asset management processes, systems and data can be improved.

New Zealand Infrastructure Commission - Te Waihanga strategy and plans, National Policy Statement (NPS) for Freshwater Management 2020, Taumata Arowai Water Services Regulator Act and Horizons One Plan for resource management will influence planning decisions. Information in these documents and others has been used in the development of this Plan. Horizons Regional Council (HRC) is currently reviewing One Plan with potential implications for how Council operates with regard to land use changes, resource consents and implementation of freshwater legislation.

The Water Supply AMP has been reviewed by Council alongside AMPs for the other Council activities including land transport, wastewater and stormwater networks, as part of the 2021 LTP process. This review considers the overall impact of the proposed plans and their cost to the Ruapehu community. This enables priorities to be established considering the community's ability to pay, particularly with the impact of the economic recession due to the global pandemic event or additional funding being provided to stimulate the local economy. The process can result in some projects being deferred or reductions to ongoing programmes and/or may result in acceleration of other projects.

Council has provided input into a separate AMP covering the Whakapapa village water assets (owned by DOC). This will not be required in future once the management of the water assets is handed back.

2.3 ASSETS AT A GLANCE

Council is responsible for the provision and management of six water supply schemes at:

(a) National Park
(b) Ohakune
(c) Ohura
(d) Owhango
(e) Raetihi
(f) Taumarunui
(g) Waiouru (network only).

The water supply network is made up of a mix of assets:

(a) Headworks, surface water sources, intake weirs and pipelines to treatment plants.
(b) Treatment plant including raw water pumps, clarifier, filters, main pumps and chemical dosing pumps.
(c) Water storage including reservoirs and pipelines.
(d) A piped network including pipelines, valves, hydrants, water meters, service connections and pump stations.

A summary of water supply assets is presented in Table 4 by township (refer to Section 6.2 for detail). This shows that Taumarunui and Ohakune are the main reticulated townships.

Table 4: Summary of water supply assets

Township	Rated properties supplied	Water Treatment Plants	Reservoir storages	Water supply pump stations	Watermain length (km)	Hydrants	Valves
National Park	319	1	1	0	14.7	43	59
Ohakune	1,654	1	2	0	39.8	216	262
Ohura	169	1	1	0	9.0	27	45
Owhango	205	1	4	0	29.9	18	64
Raetihi	613	1	1	0	24.9	115	124
Taumarunui	2,445	1	8	4	69.9	387	471
Waiouru	92	0	0	0	2.6	15	13
Total	**5,497**	**6**	**17**	**4**	**190.8**	**821**	**1,038**

Source: Veolia (as at July 2020)

Customer / Council ownership

The water reticulation point of supply is defined in the Ruapehu District Water Supply Bylaw 2019, usually as at the toby or manifold on the boundary of each property. Council owns and maintains all water supply pipelines and other parts of the water supply system up to and including the toby/manifold. All pipes, plumbing, and fittings beyond the point of supply are owned by, and are entirely the responsibility of, the property owner.

2.4 STRATEGIC CONTEXT

2.4.1 Strategic overview

The strategic context of the strategic and planning processes for the water supply activity is conceptualised in Figure 2 and Part 1. It shows the relationship between legislative requirements and regional policies and standards driving local government planning processes. The AMP informs the 30 Year Infrastructure Strategy of the asset issues and provides the technical information and evidence for the long-term investment programmes. The AM Policy provides the broad framework for undertaking AM in a structured and consistent way.

It is influenced by a range of factors including:

- Global trends such as climate change, economic recession and economic stimulation packages
- National drivers and legislation changes such as the three water reforms, new water regulator Taumata Arowai, freshwater management and Zero Carbon
- External requirements such as Ministry of Health for Drinking Water Standards, Audit New Zealand and OAG capability guidance
- Internal requirements such as levels of service, community affordability and demographic changes.

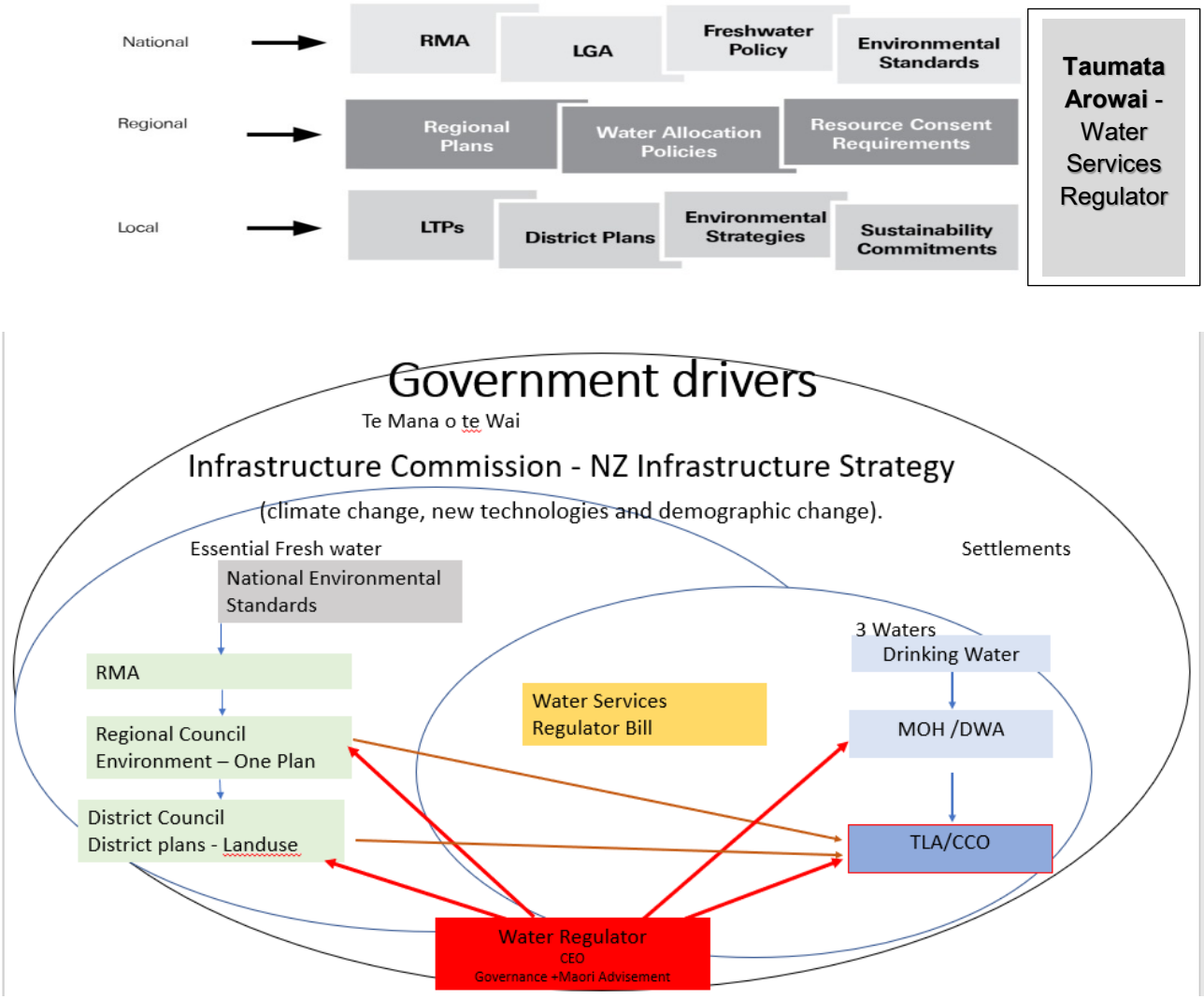


Figure 2: Key strategic planning framework

2.4.2 National context

This section sets out the strategic objectives at a national level that directs the water supply activity and this AMP. These key strategic documents are summarised in Table 7.

There are significant legislation and policy changes that will impact the water supply activity including the three waters reforms, freshwater management, Zero Carbon, Treaty Settlements, economic impact due to COVID-19, water reforms and changes to legislation are significant as it has signalled major structural changes to the service delivery model. This will be the most significant issue for Council to consider in the 2021 LTP process.

Three water reforms:
The New Zealand Government announced its packages of three waters reforms in 2019 in response to the Havelock North water contamination outbreak. Key features include a dedicated water regulator, Water Services Bill, extending regulatory coverage to all water suppliers (except individual households), strengthening the stewardship of wastewater and stormwater with Regional Councils remaining primary regulators, and transitional arrangements of up to five years.

The Taumata Arowai Water Services Regulator Act has been passed and the complementary Water Services Bill is expected to be passed in 2021. Taumata Arowai is being created to regulate drinking water. The objectives and general functions include:

- Protect and promote drinking water safety and related public health outcomes

- Effectively administer the drinking water regulatory system
- Build and maintain capability among drinking water suppliers and across the wider industry
- Give effect to Te Mana o te Wai, to the extent that Te Mana o te Wai applies to the functions and duties of Taumata Arowai
- Provide oversight of, and advice on, the regulation, management, and environmental performance of wastewater and storm water networks
- Promote public understanding of the environmental performance of wastewater and stormwater networks.

A Water Service Bill will provide the regulatory system that Taumata Arowai will administer.

The regime applies to all suppliers except domestic self-suppliers including private water supplies such as schools, maraes, farms and community halls. The policy intent is that the requirements for smaller supplies will be phased in over a period of five-years. There are over 200 private water supplies in the District (excluding individual households). This includes five private schemes (such as Pipiriki and Raurimu), 26 community halls, and 21 actively operating and 1 inactive marae in the District, most with unknown water supplies.

Freshwater management:
The Government is proposing a suite of legislative and regulation changes to improve the current management of freshwater. Environmental protection, Te Mana o te Wai, will have priority over water intakes for public drinking water purposes. The potential reduction in water intakes may impact our existing treatment plant capacity and management of the reticulation service.

Zero Carbon - The new Zero Carbon Act means Council will need consider opportunities for reducing the carbon emissions it generates.

Economic impact – The impact of the global pandemic event and flow on effects of the lockdown will have major changes to the national and local economies. It is expected to have smaller impact on Ruapehu District than others as its heavily rely on primary production as well as domestic tourism. The loss of international tourism should not be under-estimated for longer term impacts. Local government will play critical role in the recovery with the construction sector.

Council's response is to develop Recovery Programme including rethinking the shape of future tourism, assessing projects for immediate action and supporting others in the district with their application and employment strategies. Council has applied for $5.6 million from the Government's three waters stimulus grant. The primary spend will be focused on improvements to drinking water supply, wastewater treatment and then stormwater.

The Government funding once approved is for use outside of the Annual Plan budget 2019 to 2022. Funding will enable some projects to be brought forward delivering upgrades earlier and generating more employment. This will mainly impact on the demand for water supply infrastructure and the community's ability to pay in an economic recession. The proposed capital works are for increased water treatment capacity and storage, and water reticulation enhancement. Refer to Section 9.3 Funding Strategy for further details.

The predicted number of people employed with the water upgrade projects is 21 full time equivalent (FTE) based on the $5.6 million application. This is based on the ratio of every $2 million water upgrades invested generally employs 7.5 FTE from Council's experience.

Treaty Settlements – The Government is actively engaged in treaty settlement with Maori. However, the mechanism of delivering settlement and governance has been left to regional and local government to consider delivery, which are being progressed alongside other changes.

2.4.3 Regional context

Council collaborates in the Manawatu-Whangaui Region with the following initiatives in response to the legislative and policy changes:

- **Regional Three Waters Service Delivery Study** – The councils located in the Region undertook a collaborative study in 2018 to identify a preferred three waters management option. The study participants include Manawatu District Council, Palmerston North City Council, Tararua District Council, Horowhenua District Council, Whanganui District Council, Ruapehu District Council, Rangitikei District Council, and Horizons Regional Council. The study involved an asset stocktake, analysis of resources and funding, and engagement with Council local representatives.

  A regional agreement has been formed for a staged approach to increasing regional coordination to build a strong alliance and maximise benefits for the region's communities. Whanganui District Council may not participate in the next phase of work but may include councils from the Taranaki Region including New Plymouth District Council. This regional study will provide useful information into the Government reform irrelevant of the final structure to be implemented.

- **One Plan** - This is the single resource management planning document for the Horizons Region. It combines the Regional Policy Statement, Regional Plan and Coastal Plan. The One Plan addresses most of the National Policy Statement (NPS) for Freshwater Management 2014 (amended 2017, 2020) requirements. It identifies community values and numerical objectives and takes an integrated approach to improving water quality.

  The main requirement of the NPS for Freshwater Management 2020 that the One Plan does not address is catchment limits, which link instream outcomes with actions on land. Catchment by catchment approach to freshwater management is proposed. Proposed Plan Change 2 is focused on the One Plan's provisions that manage nutrient loss from existing intensive farming land uses (dairy farming, commercial vegetable growing, cropping, and intensive sheep and beef) in target water management sub-zones. The plan will also need align with Taumata Arowai Water Services Regulator Act and incorporate Te Mana o te Wai into the One Plan.

- **National Environmental Standard for Sources of Human Drinking Water**. Horizons Regional Council, Local Authorities and Drinking Water Assessors are currently working collaboratively to meet the NES. The have engaged technical experts with the objective to collate and document information on each water supply, make a discoverable single database, and develop an action plan identifying and mitigating against serious risks to the water supplies. Council will need to make provision for some of the upgrades required to demonstrate safe drinking water refer to Section 5.4, along with increased operational cost of monitoring and stakeholder engagement.

2.4.4 Local context

This AMP support's Council's Vision, Focus Areas and Outcomes. Council's Future Vision is to:

Council's Focus Areas, and Outcomes it desires, are inspired by and support the Vision. Council has stated its core priorities in the form of Community Wellbeing Outcomes. These Outcomes are Council's true north for planning and decision-making. Every project that Council undertakes links back to at least one of the wellbeing outcomes. These are a key way we measure success.

The specific ways that infrastructure contributes to the Vision, Mission and Community Outcomes are best thought about by noting the following Outcomes:

Council's strategic objectives for the water supply activity are:

- To operate and maintain the Water Supply assets efficiently to keep pace with changing demand
- To maintain public health by ensuring safe and secure drinking water
- Enhance the sustainability of environment, social, cultural and economic wellbeing of the communities.

Outcomes are the community's overall aspirations for the District's future. They drive all of Council's strategic and corporate goals and activities. Council carried out extensive community consultation in 2005 to develop community outcomes for the LTP 2012-22. This process identified desired Outcomes, from which a vision for the District was developed. Ongoing community engagement is outlined in Part 1, section 7 for 2021 LTP. Extensive consultation is undertaken as part of the LTP process including localised community meetings, iwi, youth engagement, and Facebook.

Council activities works and programmes are derived from the priorities that Council identified during the development of its Strategic Plans with its community. From the Outcomes, the management of the water supply activity was determined to be driven by the following themes:

(a) *Safe, Healthy Communities*

By providing and maintaining appropriate water infrastructural systems

Public safety though continuity of safe and reliable water supply systems.

Preparation, planning and timely responses protect people and property from natural hazards

(b) *Thriving Economy and Lifestyles*:

Supporting economic development by keeping pace with infrastructure demand

(c) Thriving Natural Environment:

By efficient operation and management of our water assets

Promoting iwi aspirations, community support and tourism, by care for our environment and the natural waterways to ensure environmental sustainability.

The linkages between the Community Outcomes and water objectives and where these are addressed in the AMP are summarised in Table 5.

Table 5: Strategic linkages

Community Outcomes	Outcomes	Water objectives	Addressed in AMP Sections
Strong Leadership and Advocacy	• Council advocates strongly for the provision of, access to affordable and effective health, welfare, law enforcement and education services. • Council is proactive, transparent and accountable.	Providing an affordable network that provides safe and secure water to meet the reasonable needs of the wider community. Encouraging community and stakeholder participation through informed changes or initiations for three waters service delivery. Actively participating in treaty settlement and co governance of waterways.	Levels of Service Community Consultation Lifecycle Management Water Safety Plans Stakeholder meetings
Safe, Healthy Communities	• Quality regulation, regulatory services and infrastructure. • Reduce the volume of waste to the landfill. • Core infrastructure endeavours to keep pace with changing demand • Excellent standards of safety and welfare are promoted and respected. • Preparation, planning and timely responses protect people and property from natural hazards.	Providing an affordable network that provides safe and secure water to meet the reasonable needs of the wider community. Supporting water conservation and catchment management education and initiatives Managing the network with a strong focus on safety, adaptation and resilience to avoid or mitigate significant hazards and increase the resilience of the network.	Growth and Demand Levels of Service Community Consultation Lifecycle Management
Vibrant and Diverse Living	• Traditions, values and history of all ethnic groups are respected. • Activities, facilities and opportunities for youth are provided and supported. • Excellence and achievement in sport, arts/cultural pursuits, community service and business is supported. • Events and festivals are encouraged and supported.	Water abstracted is treated so it is safe, secure and utilised efficiently within the community.	Levels of Service
Thriving Natural Environment	• Our environment is accessible, clean and safe and our water, soil and air meets required standards. • The promotion of our District includes focus on our natural rivers, bush and mountains, as well as the built heritage, agriculture and railways.	Water abstracted is treated so it is safe, secure and utilised efficiently within the community. Respect and enhance the mauri of the Rivers. Regenerate native biodiversity. Invest in infrastructure that serves to	Levels of Service Lifecycle Management

Community Outcomes	Outcomes	Water objectives	Addressed in AMP Sections
		protect, enhance, and preserve the environment.	

Table 6 shows the outcomes Council seeks to achieve, how progress towards achieving targets is monitored and the supporting practices and information that enable Council to plan and monitor activities. There is more detail on the KPIs in Section 3.

Table 6: Strategic linkages with levels of service

Community Outcome	LoS	KPIs	Performance	Supporting practices
Safe, Healthy Communities - Excellent standards of safety and welfare being promoted and respected	Quality drinking water	• *Drinking water quality* • *Continuity of supply*	• Perception • Compliance • Customer satisfaction	• WSSA • MoH Drinking Water Standards • Water Safety Plans • Flushing Programme • Backflow Prevention • Treatment Plant Operational Management • Reservoir/FAC Management • Compliance with Consent Conditions
Safe, Healthy Communities - Core infrastructure endeavours to keep pace with changing demand	1. Infrastructural stewardship	Pressure & flows	• Pipe breaks • Fire fighting pressure	• AMP/LTP • Risk Management • Emergency Action Plan • Pressure Management • Valve and hydrant replacement • Planned Capital programme • Lifecycle management
	2. Responsiveness	• Fair price • Continuous Supply • Customer Service	• Changes as per LTP • Service Restored • Customer Satisfaction	• Management of Operations and Maintenance Contract • Competitive Contract Tendering • Development Contribution Process • Benchmarking • Annual Customer Survey • Meter Installation, Testing and Renewal • Resource/Building Consent Management • Customer information/ Advice/Asset Database • AMP/LTP Public Consultation – LoS • Energy Efficiency
Thriving Natural Environment - Our environment is accessible, clean and safe and that our water, soil and air meets required standards	Environmental Sustainability	• Growth Planning • Water Supply Strategy • Infrastructure Strategy 2021	• Demand Management • Supply Management • Consent Compliance	• AMP/LTP • Water Supply Strategy • Sustainable Policies and Bylaws • Energy Efficiency Reviews • Water Source Investigations/ Complaints

Community Outcome	LoS	KPIs	Performance	Supporting practices
				• Loss Management System • Water Conservation Planning, Efficiency and Education • Capital Works Programme • Project Database/Evaluation

Community affordability:
Community affordability is a significant issue facing our District. Ruapehu District continues to experience higher levels of deprivation compared to other parts of the country.

To address the costly water infrastructure upgrades to meet legislative requirements and service levels, Council has been successful in gaining external Government funding. This is important for a rural district council with a small rating base. Refer to Section 9.3 Funding Strategy for further details.

Council wishes to make a step change in investment in core infrastructure, particularly for water supply and wastewater activities. The 2021 LTP signals that we cannot keep the capital investment and debt levels so it is affordable for our community. We must undertake these works in order to provide safe drinking water and public health to our community and the environment. Refer to Financial Strategy for further detail.

Council has undertaken the Ruapehu Liveability and Wellbeing Study to better understand community affordability at a local level. Council is working with community partners to provide data on local trends. Community partners include Waikato District Health Board, Whanganui District Health Board, Women's Refuge, Kokiri Trust, Ngāti Rangi, Taumarunui Sustainable Land, Management Group, the Taumarunui MSD branch, King Country REAP, St Johns, The Lines Company and Age Concern. There will also be community focus groups in the townships. The study framework covers housing, health, education, employment, environment, accessibility and social wellbeing areas. The study will help inform a District Wellbeing Strategy which will be used to assist Asset Management Planning, LTP and all other strategic plans where appropriate in the future.

Local Government Excellence programme:
The CouncilMARK programme is designed to improve the public's knowledge of the work councils are doing in their communities and to support individual councils to further improve the service and value they provide. It is administered by under the Local Government NZ (LGNZ) excellence programme.

Council received an inaugural rating of BB in 2017. This rating indicates that Council is performing well given the challenges of being a small organisation which services a geographically large district with challenging social demographics. Its management of infrastructure and community engagement are particular strengths. Of the four priority areas finance was identified as an area needing improvement. Since the review, Council's finance department has been implementing a rebuilding programme to improve and develop its capabilities which has included investing in new people, training and information technology.

2.4.5 Key planning documents

AMPs are a key component of the strategic planning and management of Council with strong links to other Council strategies and policies, external agency strategies and policies, and to legislation and other regulatory instruments (refer to Figure 2).

The key planning documents linked with the AMP are shown in Table 7. Additional standards are covered in Table 13 and Table 14.

Table 7: Key planning documents

Document	Summary	Frequency
National Context		
NPS for Freshwater Management 2014 (amended 2017, 2020)	The Government is proposing wide-ranging, staggered and long-term improvements to how freshwater is managed in New Zealand. The reforms would create a water management system that allows more transparent, better targeted and informed decisions on freshwater. Businesses and water users would have more certainty so they can plan and invest.	Ongoing
New Zealand Infrastructure Commission (Infracom) – Te Waihanga	National Infrastructure Plan 2010, 2011 and 2015, 2013, National Infrastructure report to Treasury has been replaced with Legislation on 25 September 2019 with this autonomous independent board. Infracom seeks to lift infrastructure planning and delivery to a more strategic level and by doing so, improve New Zealanders' long-term economic performance and social wellbeing. The 30 Year Infrastructure Strategy will assess the fitness for purpose of New Zealand's infrastructure system as a whole, determining how well it's working, identifying priorities, barriers to good outcomes and publishing a long-term capital intentions plan. The Treasury also provides AM guidance which needs to be considered.	Three yearly work programmes
Audit New Zealand, Office of the Auditor General Guidance Notes and findings	Stocktake of how physical assets that deliver services to the public are managed. Good planning, managing according to the plan and understanding of asset condition are integral to good management of public assets. Various guidance notes and findings from auditing the LTP process.	Three yearly
Non-Financial Performance Measures Rules 2013, under section 216B of LGA 2002	Department of Internal Affairs set out mandatory performance measures that all local authorities must use when reporting to communities. This provides consistent information about the levels of service locally and across the country for core services including three waters.	Ongoing
Regional Context		
The One Plan – Horizons Regional Council	This is the regional plan for resource management over the next 10 years and became operative in April 2013. The One Plan can be described as a 'one-stop-shop' regional planning document that defines how the natural and physical resources of the Region (including fresh air, clean water, productive land and natural ecosystems) will be cared for and managed by the Regional Council in partnership with territorial authorities and the community. The four keystone issues identified in the Plan are surface water quality degradation, increasing water demand, unsustainable hill country land use and threatened indigenous biological diversity. The guiding document for the One Plan is the RMA and national policies and regulations such as the NPS for Freshwater Management. The One Plan identifies water management as one of the key issues facing the Manawatu-Wanganui Region. The One Plan provides an environmental framework for the water activity. One Plan does not address is catchment limits as noted above and this is being addressed with Proposed Plan Change 2.	Being reviewed by chapter
Local Context		
District Plan	The District Plan is the guiding document, which directs how we change, develop and use our environment, as well as our obligations for protecting and safeguarding it for future generations. The District Plan is under review by chapter with focus on the housing development and industrial land zones.	Reviewed by chapter
Community Concept / town Plans	Towns and communities have been encouraged to produce their own vision for their community, including township revitalisation. These plans inform the individuality of the community and enable decisions to be considered that are mindful of that community across all other plan and strategic considerations.	As the Community presents these to Council
Bylaws, Standards and Polices	Provide specific guidance and management tools to deliver asset management strategies and tactics.	Ongoing
Annual Plan	A document that updates information reported on within the LTP including its objectives, intended activities, performance, income and expenditure. The AP shows how that year of the LTP will be funded and will provide detailed financial forecasts for the first three years, with summary forecasts provided for years 4 to 10.	Produced in the intervening years between LTP
Water Safety Plans	Plans covering the identification, assessment and control of public health risk associated with public and private community water supply systems. New national framework and guidance has been released. Current plans will need to transition into the new standard over time.	Ongoing – five yearly
Ruapehu Economic Development Strategy 2018-2028	This is a refresh of the 2014 Economic Development Strategy to better unlock potential opportunities. It also reflects the stronger role of Central Government in regional economic development. A document that gives direction and a framework for making decisions, undertaking actions and building change that drive economic outcomes.	Three yearly
Growth assumptions	A document that gives direction and a framework for making decisions, undertaking actions and building change that drive economic outcomes. Summarised in Part 3, Section 4of this AMP. This has been reviewed with the impact of COVID-19 particularly for tourist demand domestically and internationally.	Three yearly

Document	Summary	Frequency
Network studies	These studies provide the master plans for managing the Water Supply pressure zones now and in the future, identify issues and takes into account network capacity and performance. These are supported by hydraulic modelling.	As required
Condition assessments	Assess the condition and performance of water infrastructure assets to assist with the operation of the water supply system and inform AMPs.	Yearly rolling programme
Infrastructure Asset Valuations	Provides valuations of infrastructure assets using industry accepted methods of valuation as found in the NZ Infrastructure Asset Valuation and Depreciation Guidelines.	Yearly
Resource consents and compliance audit reports	Establish the limits for, and monitor compliance with, operations of water treatment intakes and discharges. Assets must be maintained and renewed to ensure ongoing compliance with consents and enable consent renewal.	Annual compliance reports
Industry context		
The development of the AMP	The International Standard ISO 55000, 2014, IIMM 2015 and Office of the Auditor General industry advice notes and reports.	As published
National Performance Reviews (NPR)	Water New Zealand's NPR is an annual benchmarking exercise of New Zealand's drinking water, wastewater and stormwater services. Participation is voluntary. Council has participated in the last five years.	Annually
AMPs	All other AMPs which provide information around Land Transport, Wastewater, Stormwater, Waste Management and Minimisation, Recreational and Community Property Assets, their issues and work plans. These are used to identify points of overlap and efficiency options.	Three Yearly
AMP Peer Review	GHD Desktop Review of the Water Supply Asset Management Plan in 2014 and 2019. These reviews were used to formulate improvements to this AMP.	Three yearly (as good practice)

2.5 KEY ISSUES

Key issues were identified for the 2021 AMP development through Council's knowledge and asset planning. The key issues Council is managing as part of the water supply activity are summarised in Table 8.

Table 8: Key water issue summary

Key Issues	Potential Impacts	Refer to AMP Section
Implications of the Government's Three Waters Reform	The most significant emerging issue is the Government's three waters reform programme. This will change how water services are delivered, potentially with aggregated water entities. We will keep a watching brief on the extent of the coverage of private water supplies and Council's role. Council's management response to the change in legislation has been to collaborate with the other councils in the Region to identify a preferred three waters management option. A regional agreement has been formed for a staged approach to increasing regional coordination to build a strong alliance. This AMP provides transparency on the current state of the District's water supply assets and identifies the required upgrades to assist in the regional discussions.	Section 2.4 Strategic Context and Section 3.3 Legislative Requirements
Implications of the Government's proposed suite of legislative and regulation changes to improve the current management of freshwater, this will include water allocation reviews.	This may mean that environmental protection will have priority over water intakes for public drinking water purposes. The potential reduction in water intakes may impact our existing treatment plant capacity. Regional Council is proposing a catchment by catchment approach to freshwater management with the One Plan review. Future assessments will look at catchment allocation methods. The townships are scattered through the District due to the topography so the options for improving the infrastructure such as plant consolidation may be limited. Attempting to capture water allocation for future growth requires significant justification to the Regional Council without this being signalled in the District Plan.	Section 2.4 Strategic Context, Section 3.3 Legislative Requirements and Section 6.3 Asset Performance Section 4 Managing Growth and Demand
Understanding climate change impacts	We are preparing for the impacts of climate change on the infrastructure assets as we are already experiencing impacts such as flooding. Ruapehu District is influenced by the Mountain and subject to intense weather events which may be short with a peak within two hours. Strengthening our infrastructure resilience is a key focus, particularly for our townships with more built infrastructure as Raetihi, Ohakune and Taumarunui (less impact for National Park village). Climate change may also impact the catchments used for drinking water with more intense storms predicted. This will likely be a focus for the new water regulator in relation to providing safe and secure drinking water.	Section 5 Managing Risk
Community affordability	The potential impacts of the legislative and policy changes with the three waters reforms and freshwater management requirements may not be affordable for our community. There are many schemes serving small resident populations with many requiring upgrades to be protozoa compliant with the Drinking Water Standards, such as Ohura. Coupled with water quality issues, the existing plants have adequate capacity for existing residents but cannot cope with the peak tourist demand in the future such as National Park village.	Section 3.3 Legislative Requirements, Section 6.3 Asset Performance and Section 9.3 Funding Strategy

Key Issues	Potential Impacts	Refer to AMP Section
Network resilience versus economies of scale	Having six treatment plants at significant distances from one another does not provide for economies of scale. There is potential that more private supplies will seek Council help in management. Joining plants may provide economies of scale but they reduce the resilience in having a second supply. In the future it is expected that ribbon development will see the township of Ohakune and Raetihi join with enough ratepayers to make it cost effective to develop a watermain between the townships. An investigation into alternative water sources, quality and quantity will also be considered.	Section 5 Managing Risk and Section 6 Programme Case
National Environmental Standard – drinking water catchments monitoring, land use and climate change impacts	Open source water supplies tend to be more influenced by land use and climate change effects. With more warm weather and stable river flows creating more natural biological growths (algae and diatoms) in the water. These generate both taste and odour in the water for open sources water, where groundwater tends to be free of biological influences. The understanding of land use influences, management and monitoring requirements under the National Environmental Standards demonstrated through the Water Supply Plans and assess by the new regulator will require additional resourcing. Other councils are now moving to having a mix of water source options to enable more resilience for the community. The new standards are driving compliance delivery to bores. However, there the groundwater interactions are not well understood in the Ruapehu area.	
Ability to comply with DWSNZ	Some of Council's treatment facilities currently do comply with the Drinking Water Standards for Protozoan (i.e. cryptosporidium and giardia) compliance criteria. Raetihi Water Treatment Plant was upgraded in 2018 and is now fully compliant. Ohakune Treatment Plant is being upgraded in next two years (as noted below). The remaining plants (ie Taumarunui, Ohura, National Park and Owhango) require upgrades as detailed in this plan and Council will continue to seek funding to provide safe drinking water for the residents and visitors.	Section 3.3 Legislative Requirements, Section 6.3 Asset Performance
Gaining resource consents for Taumarunui and Owhango as currently on hold	An application for a resource consent for the continued abstraction of water for the Taumarunui, and Owhango communities have been lodged with Horizons Regional Council. They are all on hold for various reasons (more information and catchment water allocation). All are operating under existing consents until the new consents are granted or declined.	Section 6.3.5 Consent Conditions
Ability of supplies to meet demands of visitor numbers with small rating base	There is pressure on the relatively small rating base in the Ruapehu District to provide infrastructure to meet the demands of high visitor numbers. National Park Village and Ohakune are impacted by peak tourist demand. Both treatment plants require significant upgrades to cope with this additional demand. Tourism growth will drive the demand for water beyond the capacity of the existing Ohakune Treatment Plant to supply water. There will be an increased demand for storage. Necessary upgrades to increase the capability of the plant will have cost impacts on the community. Council seeks Government funding to make the significant costs of upgrades to meet increased demand more affordable to the local community. Council has been successful in obtaining Government funding for the Ohakune Treatment Plant upgrade and raw water line to address water quality, resilience and capacity issues.	Section 4 Managing Growth and Demand and Section 6 Programme Case

A workshop with key stakeholders in 2018 identified the District's key water supply issues and problems using investment logic mapping framework. The Problem Statements were revised as part of the 2021 AMP update to reflect the latest national, regional, and local influences, as summarised below.

Table 9: Revised Problem Statements

Revised Problem Statements	Description	Evidence of the Problem
1. Changing legislation and regulations	The Government is implementing three waters reform including creating standalone Crown entity Taumata Arowai to regulate drinking water and Water Services Bill. This structural reform will have a significant impact on local government with three water service likely to be regionalised. There is also a suite of legislative and regulation changes to improve the current management of freshwater.	• Cabinet papers on standards or Acts: • Water Services Bill with five year transition period • Zero Carbon Act • Freshwater Standards • Natural and Built • Responsive civil service (CD) • Regional Council's One Plan review
2. Ability to meet Drinking Water Standards and timeline of reforms	Not all treatment plants are fully compliant with the Drinking Water Standards. The community and	2018/19 Annual Report on DIA mandatory performance measures for water quality (protozoan criteria)

Revised Problem Statements	Description	Evidence of the Problem
	Government expect Council to provide safe drinking water that meets these standards as a minimum.	
3 Community Affordability	The water supply infrastructure needs to meet legislative requirements including drinking water standards, Water Safety Plans as well as resource consent conditions, and providing for current and future demand. These factors driver upgrades but with only a small rating base to spread the financial burden (based on district wide water rates). We are planning to undertake these upgrades regardless if Government funding is successful. It is unacceptable for Council not to comply with the Drinking Water Standards. This will mean that the debt projections will be unaffordable for our community. Council will be exploring alternative funding options to reduce this risk.	• Water Safety Plans. • Freshwater Reforms holistic catchment • Low economies of scale, low incomes with low number of people in town sites causes high per unit costs • Extension to other communities

The Key Performance Indicators are used as trackers to indicate if the problem areas are being resolved, maintained or continue to deteriorate. DIA have set some benchmarks with are used to assess the key performance targets (refer to Section 3.6 Service Level Summary).

2.6 SUSTAINABILITY OUTCOMES

2.6.1 What is Sustainability?

A sustainable approach to operating practices is about considering the inter-relationships between economic, social, environmental and cultural well-being when making short and long term decisions. From an AM perspective, sustainability is vital as many assets have a long lifespan and the asset itself must be future proofed in order to meet the needs and expectations of future generations.

Local government functions are guided by the LGA 2002 and the RMA 1991. Both of these statutes require councils to address economic, environmental, social and cultural sustainability in decision making and activities.

The concept of sustainability is important for government organisations, whether they be central, regional or local, due to the responsibility to manage society's resources in a manner that is in the best interest of all.
For local government this means it is about planning and providing for the needs of individuals and communities, protecting ecosystems and their services and creating prosperity when delivering services, including reticulated water supplies. These various and sometime competing interests need to be weighed when making decisions about goals, objectives, priorities and investment.

A sustainable water supply system should operate within resource consent limits, not deplete or exhaust water resources or generate unacceptable waste or cause pollution. Sustainability is not limited to operation of the system. It can include, for example, extending the projected life of current water supplies by implementing consumer water conservation programmes, water metering and minimising system loss.

Sustainability is integrated into the planning and operational processes. For example, new technologies are used where they can be justified on cost/benefit grounds and water metering is to be extended to manage demand. Water treatment technologies can produce a significant amount of greenhouse emissions through power consumption. Climate change mitigation will be a driver of technology choice in the future of our water plants. Education around water conservation is provided on Council's website to reduce environmental impacts.

The One Plan Policy requires Council to demonstrate efficient use of water abstracted from the environment. Council is in the process of installing strategic meters and documenting water use by activities to demonstrate how its currently utilised. This will provide a benchmark assessment for sustainability into the future.

Council's Facilities Management Contractor Veolia operate under a Quality Management Plan for the delivery of three waters, operations and maintenance. They also have policies in quality; environment, governance, risk and compliance, work health and safety, learning and development which support sustainable outcomes.

2.6.2 Sustainability Frameworks

It is good practice for entities to have a sustainability framework to ensure performance is aligned with recognised standards to drive long term change, support sound decision making and for transparent reporting. Council's mayor has signed up to the United Nations' Sustainable Development Goals (developed by the 193 member states).

It is important to recognise that incorporating sustainability into planning and then into the provision of services is a long term process. At this point in time, the Sustainable Development Goals still need to be integrated into Council's decision-making frameworks. Council still needs to develop its own sustainability framework considering the Sustainability Development Goals (for example Goal 6: clean water and sanitation) and The Treasury Living Standards Framework. This considers the impact on intergenerational well-being across the four wellbeings.

2.7 POTENTIAL EFFECTS

There is recognition of the potential positive and negative effects resulting from the water supply activity which Council manages as outlined in Table 10.

Table 10: Summary of effects

Potential Positive Impact	Potential Negative Impact	Mitigation
Environmental		
Sustainable water use.	Environmental damage during construction of new works.	Environmental damage is mitigated through resource consent conditions which are specified into the contract document and monitored closely during the implementation of physical works.
	Reduction in water levels in waterways used as source for drinking water.	Council consults with the community including farmers and businesses on any proposed water level reduction.
	Environmental damage from leaking pipes.	Council's facilities maintenance contractor responds to leaks in minimal time to reduce any potential environmental damage.
	Impact on aquatic life from intake.	Intakes equipped with fish screens. New information and understandings around aquatic life may mean an upgrade of an existing screen.
	Discharge of water treatment plant backwash by-products into environment.	Management of discharge: to treatment facilities before entering the environment or to the wastewater system.
	Impact of increased waste products	Increase in chemical treatment at water supply treatment plants will increase the need to treat the waste products.
Economic		
Sufficient water available for commercial operation.	The cost of investment in infrastructure.	Council is committed to implementing cost-effective solutions as part of successful asset management. LoS have been set with consideration to community affordability and efficiencies are sought on an ongoing basis.
The availability of easily accessed water for firefighting purposes reduces the risk of fire damage within the community.	Some townships do not have adequate fire fighting capability. Significant costs and time to implement the upgrade and improvement projects.	Council is committed to improving the natural environment but acknowledges that it takes time to make significant improvements. Council investigates any deficiencies identified by the NZ Fire Service. Fire fighting capability is also taken into consideration with network modelling. The supply capability is known to the fire service and they have a fleet of rural firefighting equipment.
	Significant compliance costs for developers and businesses and individual households.	Council is transparent with its compliance costs with the development community as practicable.
Social		
Safe and continuous supply of water to contribute to the health and wellbeing of the community.	Disruption to individual property owners during new works construction.	Construction is undertaken in such a way as to minimise effects to property owners and to keep them fully informed of the proposed work.
Reduce the risk of property damage	Property damage resulting from mains failure or sustained leakage overtime.	The development of the AMP to plan for replacement and upgrades in a timely manner.

Potential Positive Impact	Potential Negative Impact	Mitigation
Sufficient, safe water available for recreational use by community.	Many properties still receive poor quality drinking water.	Water Safety Plan have been completed for Taumarunui Water Treatment Plant to meet the new requirements. These guide Council on mitigation and future improvements to improve the drinking water quality.
The public water supply reduces the risk of waterborne diseases spreading through the community.	The effect on public health should the water supply not meet water quality standards.	Council has a programme of upgrading water treatment systems to meet drinking water standards.
	Risk of events such as large earthquakes, volcanic eruptions and significant floods.	Council continues to develop its Emergency Response Plans, resilience improvements and managed mitigation.
Cultural		
Joint governance on decision making of waterways such as the Whangaehu catchment group for shared values related to water.	Reduction in water levels in waterways unacceptable to Iwi. The development of Te Mana O Te Wai as the leading principle of waterway management.	Council has regular communication with Iwi and closely monitors its abstraction from waterways. Education in the scarcity and importance of efficient water use and actions individuals can take.

2.8 PLAN STRUCTURE

The Water Supply AMP has been structured into three key parts to communicate the infrastructure requirements in the business case approach as shown in Table 11, as well as the traditional AMP sections recommended by the IIMM.

Table 11: Plan structure

Business Case	Description	AMP Sections
Strategic Case	This part outlines the key issues and problems that Council faces and the benefits to stakeholders and customers of addressing these.	• Introduction • Provision of Services • Managing Growth and Demand • Managing Risk
Programme Case	This part provides evidence to support the investment proposed, clearly linking the investment back to the key issues we are facing and Customer Levels of Service.	• Programme Case • AM Practices • Financial Summary • Appendices – references.
Detailed Case	Part 4 provides the detailed evidence to support the investment proposed. This is the traditional lifecycle management plans for the water supply schemes and by townships.	Part 4 contains the appendices covering: • Physical parameters for the schemes • Asset capacity / performance • Asset condition • Asset information by township • Risk register.

The plan structure has altered slightly since the 2018 AMP to improve the document flow with less sections and to align with the business case approach. The 2021 AMP is still consistent with the IIMM.

3 PROVISION OF SERVICES

3.1 INTRODUCTION

Council aims to provide safe and affordable water services to deliver the levels of service (LOS) in a sustainable manner over the long term. This section defines the LOS or the qualities of the service that the Council intends to deliver, and the measures used for monitoring. The adopted LOS supports the Council's strategic goals and is based on user expectations and statutory requirements as well as integration with national and regional strategies. Council's LTP is the primary document for determining and agreeing LOS and costs with the community and stakeholders.

3.2 CUSTOMERS AND KEY STAKEHOLDERS

Council recognises there is a wide range of customers and stakeholders with an interest in how the water supply activity is managed, including land owners, the resident community, visitors, specific interest groups within the community, District Health Boards and other regional and central government agencies. Table 12 lists the key customers and the main stakeholders involved in the water supply activity.

Table 12: Key customers and stakeholders

Customers	External Stakeholders	Internal Stakeholders	Co-Governance Partners
• Residential, industrial and commercial water supply service users • The community – citizens and ratepayers, businesses and industry, local Iwi • Visitors to the District • Manu Whenua	Government agencies, including: • Local Government NZ • Office of the Auditor General • Civil Defence and Emergency Management • Ministry for the Environment • Department of Conservation • New Zealand Transport Agency • Horizons Manawatu-Wanganui Regional Council • Iwi • Ruapehu District Maori Council • Ministry of Health • Department of Internal Affairs • New water regulator Taumata Arowai • Service Utilities Providers • Environmental groups • Consultants and contractors • Developers • Community Groups • Neighbouring District Councils • New Zealand Defence Force	• Mayor, Councillors and Management Team • Community Boards • Corporate, Finance and Planning Team • Transport, Wastewater and Stormwater Solid Waste, Activity Teams • Community Development Team • Recreation and Community Facilities Team • IT Team • Customers Services Team • Building and Regulation Team	• Treaty Settlements. • Current Iwi settlements are Te Awa Tupua (Whanganui River Claims), Ngāti Rangi and Ngāti Tūwharetoa. Maniapoto

3.3 LEGISLATIVE REQUIREMENTS

Statutory requirements have an impact on how Council operates to meet its stakeholder obligations. Key legislation affecting the water supply activity are summarised in Table 13.

Table 13: Main legislation influencing water supply activity

Legislation	Requirement
LGA 2002 Amendment Act 2010	The LGA 2002 is based on a sustainable, effective, responsible, responsive and accountable local government being fundamental to achieving the long term wellbeing of communities. The LGA 2002 outlines the responsibilities of local government and the decision-making process for activities undertaken on behalf of the community, primarily through the adoption of the Long-Term Plan (LTP). The LTP identifies all Council activities, including land transport (as a key issue) and prioritises projects for future development based on the expected outcomes of the community. A key purpose of the LGA is the role of local authorities in meeting the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses. AMPs are the main method of demonstrating Schedule 10 requirements. The legislation sets out a range of obligations, restrictions and powers, including requiring local authorities to assess their communities' needs for water, and wastewater and sanitary services, and placing an obligation on local authorities to provide water services to ensure continued public ownership of water services (Parts 7-9 and 11).
	The Water and Sanitary Services Assessment (WSSA) is a key input into planning. It was completed for the District in 2005 as required under Section 125 of the LGA 2002. The focus for the assessment was to determine the impact these services have on the public health of the community. The WSSA was updated in January 2020 to reflect the status of reticulated supplies, community halls and maraes in the district.
	Section 17A requires that Councils review the cost effectiveness of the way they deliver their services to ensure they meet the needs of communities. This service delivery review looks at the governance, funding and delivery of infrastructure, services or regulatory functions, and requires consideration of alternative delivery models including (but not limited to) in-house by council, by another local authority, by a council-controlled organisation, or by another person or agency. These reviews are an ongoing requirement and must be undertaken at least every six years. Council completed an in-house / outsourcing review in 2012 and the preferred option was to continue with outsourcing to Veolia. A Section 17A review of the water supply, wastewater and stormwater activities will be undertaken in 2020/21 to time with the contract review.
	The 30-year Infrastructure Strategy is a requirement of section 101B of the LGA. This strategy requires Council to take a long term look at the delivery of its services to assess where there are hidden investment gaps or affordability issues beyond the ten-year horizon. This strategy provides the strategic direction and context for the AMP. The AMP informs the Infrastructure Strategy of the asset issues and provides the technical information and evidence for the long-term investment programmes.
Health Act 1956 including the Health (Drinking Water) Amendment Act 2019	The Health Act focuses on improving, promoting, and protecting public health. The Drinking Water Amendment Act requires drinking-water suppliers to take all practicable steps to ensure they provide an adequate supply of drinking-water that complies with the New Zealand Drinking-Water Standards (DWSNZ). Suppliers must introduce and implement Water Safety Plans (WSP) for the water supply (if serving more than 500 people). It is a written document that helps identify and eliminate potential water contaminants which could cause water quality to deteriorate and become unsafe to drink. Water Safety Plans encourage the use of risk-management principles during treatment and distribution to reduce the risk of contamination. The existing WSP will transition from the existing MoH system to the new regulator system under the Water Services Bill. The key change is that the reasonableness provisions in the Health Act 1956 will not apply. Cost will not be a factor. The requirement to comply from the commencement date. Refer to Section 5.4 for details on Council's WSPs.
Health and Safety at Work Act 2015	The Health and Safety at Work Act 2015 (HSWA) is New Zealand's workplace health and safety law. The Act sets out the principles, duties and rights in relation to workplace health and safety. Under HSWA, a person conducting a business or undertaking (PCBU) must look after the health and safety of its workers and any other workers it influences or directs. The business or undertaking is also responsible for the health and safety of other people at risk from its work including customers, visitors, or the general public. This is called the 'primary duty of care'. Two regulations of particular importance are the (Hazardous Substances) Regulations 2017 and (Asbestos) Amendment Regulations 2017.
Building Act 2004	Sets out minimum standards for buildings and facilities and services. Requires Councils to produce Project Information Memoranda (PIMs) and building Warrants of Fitness.
Public Works Act 1981	Prescribes processes to enable the acquisition of land for the completion of construction works by Council.

Legislation	Requirement
Construction Contracts Act 2002	Sets out requirements for payment provisions for construction contracts and dispute resolution.
Local Government Official Information and Meetings Act 1987	Sets out requirements concerning disclosure of information.
Resource Management Act (RMA) 1991	The RMA is an established planning framework covering land designation processes and resource consents for activities that affect the environment. Horizons is responsible for monitoring compliance with the environmental provisions of this Act that relate to earthworks, sediment control, work within watercourses etc. This Act ensures compliance with Resource Consents issued for water taken from natural water resources.
	The National Policy Statement (NPS) for Freshwater Management 2020 directs local authorities how to carry out their responsibilities under the RMA for managing freshwater. Specifically, it requires regional councils to set objectives for the state of freshwater bodies in their regions and to set limits to meet these objectives. The Government is proposing a suite of legislative and regulation changes to improve the current management of freshwater. It is proposing amendments to the RMA, an updated NPS for Freshwater Management, an updated National Environmental Standard (NES) for Sources of Human Drinking Water, and new NES for Freshwater and Wastewater. This may mean that environmental protection will have priority over water intakes for public drinking water purposes. The potential reduction in water intakes may impact the existing treatment plant capacity.
Taumata Arowai Water Services Regulator Act (2020) and Water Services Bill	The Taumata Arowai Water Services Regulator Act has been passed and the complementary Water Services Bill is expected to be passed in mid-2021. The standalone Crown entity Taumata Arowai is being created to regulate drinking water. Taumata Arowai must ensure that its performance and delivery of its objectives, functions and duties are guided and informed by the following operating principles: • building and maintaining credibility and integrity, so that Taumata Arowai is trusted by consumers, drinking water suppliers, wastewater network operators, stormwater network operators, Māori and government • ensuring that Taumata Arowai has suitable expertise to build and maintain confidence in its capability as a regulator • developing sector capability, by promoting collaboration, education and training • partnering and engaging meaningfully with other people and organisations • partnering and engaging early and meaningfully with Māori, including to inform how Taumata Arowai can: (i) give effect to Te Mana o te Wai (ii) understand, support and enable the exercise of mātauranga Māori, tikanga Māori and kaitiakitanga. A Water Service Bill will provide the regulatory system that Taumata Arowai will administer.
Climate Change Response (Zero Carbon) Amendment Act	The Climate Change Response (Zero Carbon) Amendment Act includes a target of reducing methane emissions by 24 to 74% below 2017 levels by 2050, and an interim target of 10% by 2030. It also has a target of reducing net emissions of all other greenhouse gases to zero by 2050.
Civil Defence Emergency Management Act 2002 (CDEM)	Requires lifeline utilities (such as a water supply) to function at the fullest possible extent during and after an emergency and to have plans for such functioning. The CDEM Act 2002 requires that a risk management approach be taken when dealing with hazards. In considering the risks associated with a particular hazard, both the likelihood of the event and the consequence must be considered (refer to Section 6 Managing Risk).
Hazardous Substances and New Organisms Act 1996 (HSNO)	The purpose of the HSNO Act is to protect the environment and health and safety of people and communities by preventing or managing the adverse effects of hazardous substances and new organisms. The HSNO legislation takes a life-cycle approach to the management of hazardous substances, including their disposal, when such substances are no longer wanted and become waste. The disposal of waste hazardous substances is controlled through the Hazardous Substances (Disposal) Regulations 2001. These regulations provide for the treatment of the different classes of hazardous waste substances before disposal so that the substances are no longer hazardous.

Legislation	Requirement
Fire and Emergency New Zealand Act 2017	This act replaces the Fire Service Act 1975 and its purpose is to reform the law relating to fire services, provide for local advisory committees to influence and advise Fire and Emergency New Zealand (FENZ), improve support for volunteers and enable them to communicate directly with FENZ, and provide new offences and penalties to improve fire safety. The two relevant sections for the public water supplies are: • Section 73 - Duty to develop, consult on, recommend the approval of, and publish and notify code of practice for firefighting water supplies • Section 74 - Powers in relation to checks as to adequacy of firefighting water supplies.
Utilities Access Act 2010	The Utilities Access Act 2010 requires utility operators and corridor managers to comply with a national code of practice that regulates access to transport corridors. This impacts the water supply network as these assets are normally located in the road corridor. This is complimented by the NZTA Guidelines "Code of Practice for Temporary Traffic Management" and the "Local Road Supplement" are the recognised standards for maintenance and construction works on legal road.

3.4 STANDARDS AND GUIDELINES

The primary documents that guide service standards for the water supply activity are summarised in Table 14.

Table 14: Key water supply standards and guidelines

Standard / Guideline	Description
Drinking Water Standards for New Zealand (DWSNZ) 2005 (revised 2018)	The DWSNZ are applicable to networked drinking-water supplies, as defined in the Health Act 1956. A number of changes were made to the DWSNZ following the Government Inquiry into the Havelock North Drinking-Water Outbreak. The two themes of the DWSNZ are: • Maximum acceptable values (MAVs) or water quality standards, which define the quality specifications for all drinking-water • Compliance criteria which specify monitoring requirements and remedial actions to be followed when a transgression of a MAV occurs.
Water Supply Bylaw (2019)	The purpose of the bylaw is to allow Council to provide and manage the supply of water to its customers and/or to protect its water supply against damage, misuse and/or interference from any *unauthorised* persons. The bylaw covers fees and charges, offences and penalties, protection of water supply, and conditions of supply.
The Ruapehu Bylaw (2018)	The Ruapehu Bylaw consolidates three old bylaws: • Public Places Bylaw • Public Health and Safety Bylaw • Animal Control Bylaw. The new bylaw covers a diverse range of activities including seeking to protect from nuisance and promote public health and safety within the District.
Asset Management Policy (2020)	This policy gives guidance and direction on the development AMPs. The policy sets out eight objectives for AM planning and practices.
Boundary Backflow Prevention Policy 2019	Council is responsible for the management and prevention of backflow at the property boundary to protect the water supply network. To minimise the risk that the water supply becomes contaminated, Council's policy is that there is an appropriate level of backflow prevention provided on all water connections. Backflow prevention devices should be installed dependent on the hazard level
Water New Zealand Best Practice Guidelines and Technical Documents	Water New Zealand is a national not-for-profit sector organisation that provides best practice guidelines in the provision of water supply. The guidelines include (but are not limited to) modelling, standards for treatment plants and water loss calculations, guides for occupational health and safety and underground utilities-seismic assessment and design guidelines. They also coordinate national performance benchmarking on an annual basis. Council participates in the annual benchmarking to allow it to compare its performance with other small District Councils in its peer group.
Fire Fighting Standards (SNZ PAS 4509:2008)	This Code of Practice was developed to provide direction on what constitutes a sufficient supply of water for firefighting in urban fire districts.
Standards Association of New Zealand	The Standards Association of New Zealand provides a range of standards covering required or recommended practice and which may impact directly on assets or management of contracts, e.g. NZS4404 Code of Practice for Urban Subdivision provides a range of water standards. Council has produced Subdivisions Policy (2014) on the standards required for subdivisions to further clarify information.

3.5 ENGAGING CUSTOMERS AND STAKEHOLDERS

Community and key stakeholder engagement on developing levels of service for water services used the following main consultation initiatives:

- Resident satisfaction surveys (refer below)
- Consultation with community groups for Annual Plan and LTP
- Service request response levels (refer below)
- Joint governance catchment groups for shared values related to water including Whangaehu River Catchment project.
- Treaty settlement co-governance groups Te Awa Tupua (Wanganui River).

Ongoing community engagement is outlined in Part 1, section 7 for 2021 LTP. Extensive consultation is undertaken as part of the LTP process including localised community meetings, iwi, youth engagement, and Facebook. This covers levels of service as well as understanding local issues.

3.5.1 Customer satisfaction surveys

The National Research Bureau has been surveying Ruapehu residents periodically since 1999. The survey gives a snapshot of people's satisfaction with the water supply Ruapehu District survey results are compared with the performance of Local Authorities across New Zealand as well as a peer group.

Figure 3 shows that residents' satisfaction with the quality of the piped water supply since 2005. This shows that residents' satisfaction is 71% on average compared to 82% for the peer group and 89% nationally.

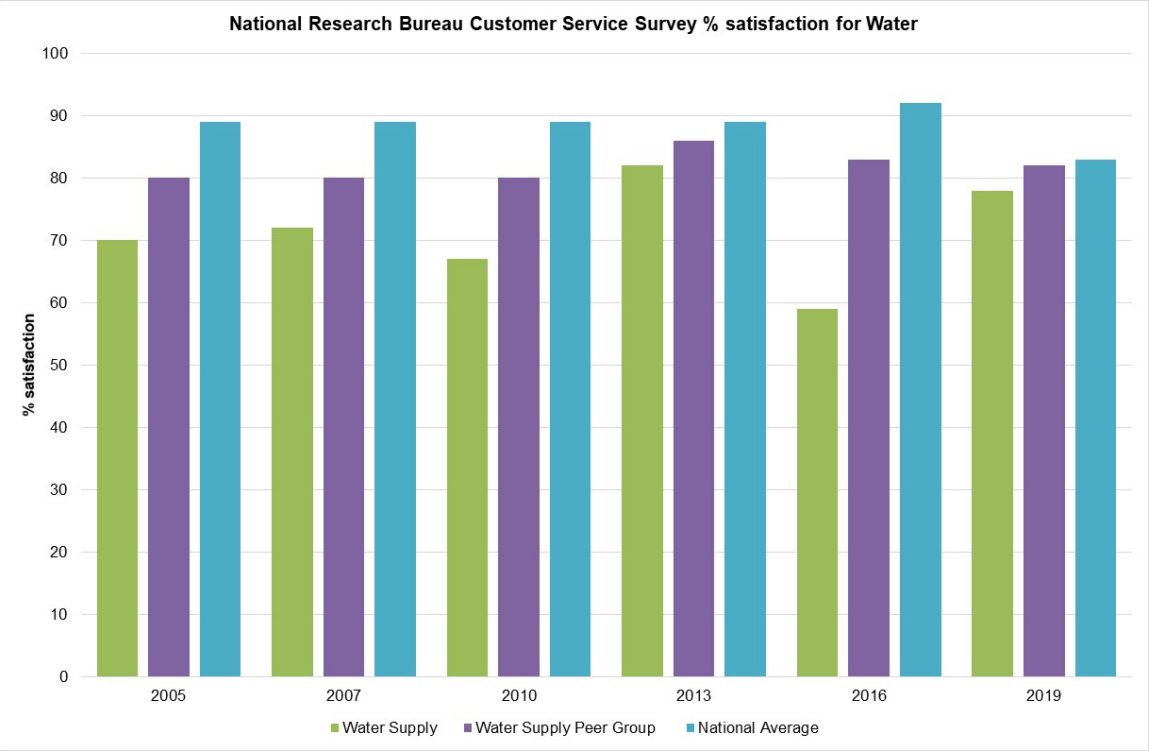


Figure 3: Water service customer satisfaction results

Source: National Research Bureau Customer Service Surveys

3.5.2 Customer service data

There are about 65 to 75 jobs per month for water service calls as shown in Figure 4. The water supply activity has on average accounted for about 80% of the total water services calls.

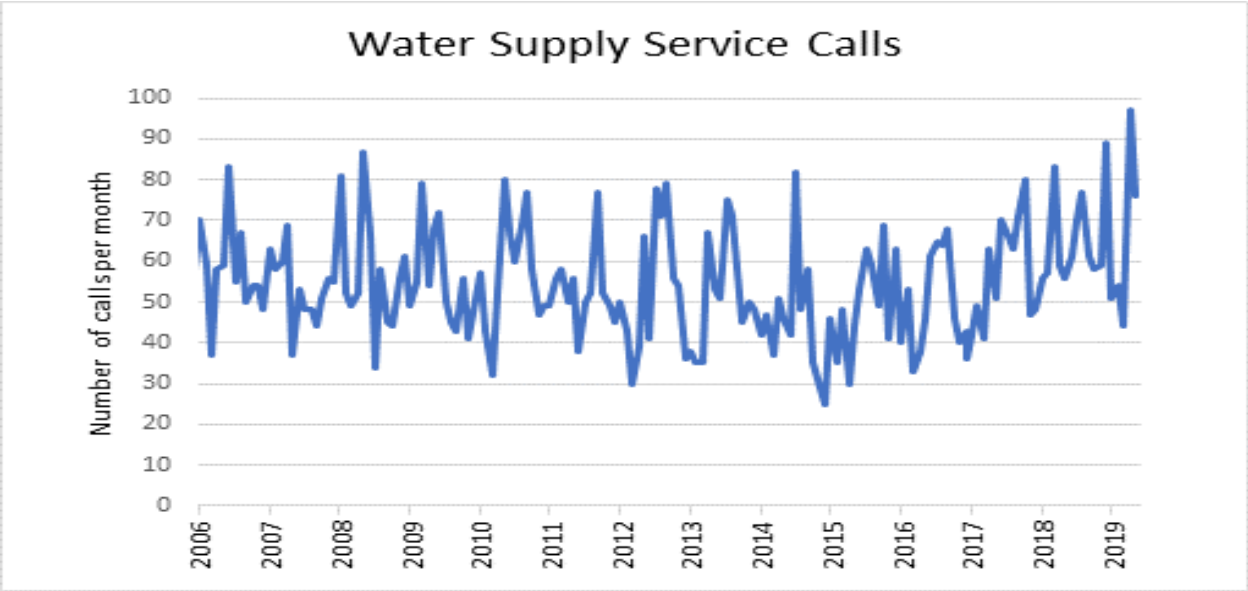


Figure 4 Number of water service call per month

Source: Council's RFS

3.5.3 Contractor surveys

The Facilities Management Contractor, Veolia, undertakes regular customer satisfaction. Customers are surveyed for their perception of the water service provided and their perception of the contractor's customer service and maintenance activities.

Figure 5 shows customer satisfaction with the quality of water, flow / pressure and the Contactor's timeliness to site since 2008. The survey results indicate that water supply satisfaction with the water quality was improving but has dropped back to 64% being satisfied. These surveys are reviewed and considered in the improvement plan and monthly contractor report discussions.

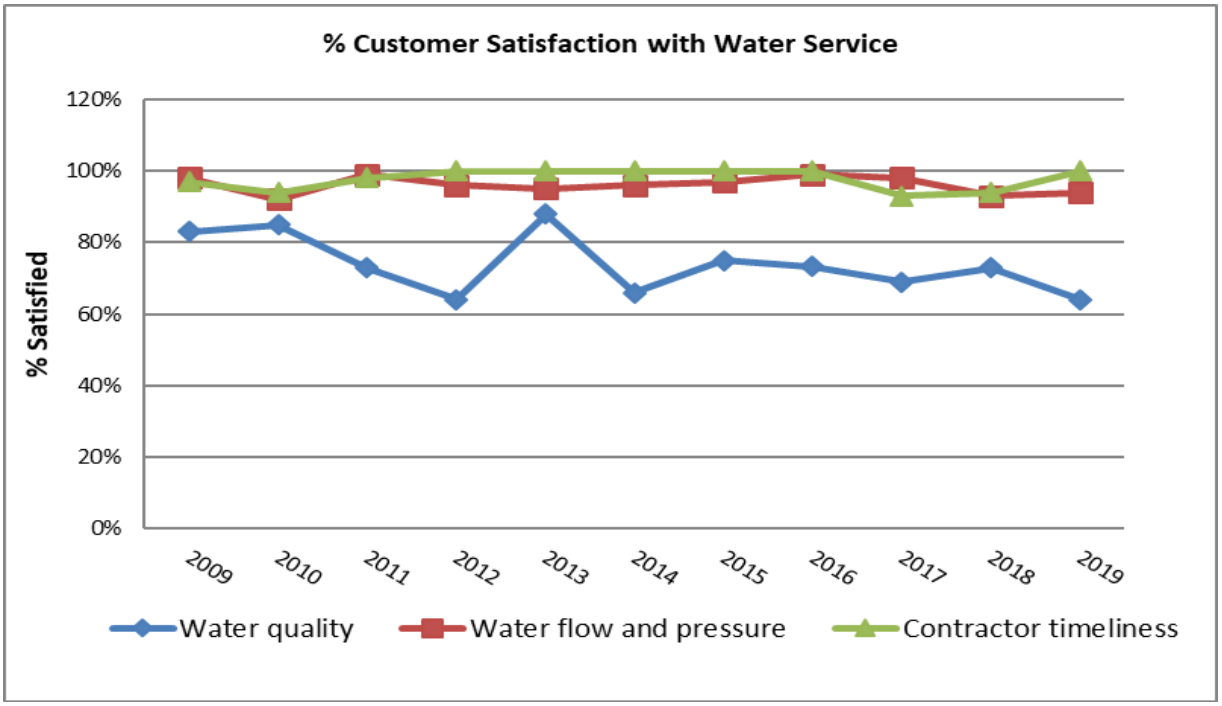


Figure 5: Veolia's customer satisfaction survey results

3.6 SERVICE LEVEL SUMMARY

LOS have been reviewed and modified combining the expectations and requirements of legislation, industry good practice, users, key stakeholders, and Council. Council reports against both the new standard and existing measures. All measures are reported on a District wide basis except compliance with the Drinking Water Standards which are by water supply scheme.

The LOS and performance measures for the water supply activity is summarised in Table 15. A full description of LOS targets, measures and metadata over the next ten years is included in Section 10.1 Appendix.

Table 15: Water supply service level summary

Community Outcomes	Key service attribute	LOS	How we will measure our performance	Performance measure type	Current Performance 2018/19	Current Performance 2019/20	Current Year 2020/21 Target	2021/22 Target (year 1)
Safe, Healthy Communities: • Quality regulation, regulatory services and infrastructure • Excellent standards of safety and welfare are promoted and respected	Safety - water quality	Providing quality and safe drinking water to applicable community areas	Extent to which Council's drinking water supplies comply with Part 4 (bacteria compliance criteria) of the Drinking Water Standard.					
			Ohura	Mandatory	Y	Y	100% compliance	100% compliance
			Taumarunui		Y	Y	100% compliance	100% compliance
			Owhango		Y	Y	100% compliance	100% compliance
			National Park		Y	Y	100% compliance	100% compliance
			Ohakune		Y	Y	100% compliance	100% compliance
			Raetihi		Y	Y	100% compliance	100% compliance
			Extent to which Council's drinking water supplies comply with Part 5 (protozoal compliance criteria) of the Drinking Water Standard.					
			Ohura	Mandatory	N	N	Not compliant	Not compliant *(see note 7 below)*
			Taumarunui		N	Y	100% compliance	100% compliance
			Owhango		N	N	Not compliant *(see notes below)*	Not compliant *(see note 7 below)*
			National Park		N	N	Not compliant *(see notes below)*	Not compliant *(see note 7 below)*
			Ohakune		N	N	Not compliant *(see notes below)*	100% compliance
			Raetihi		Y	Y	100% compliance	100% compliance

Community Outcomes	Key service attribute	LOS	How we will measure our performance	Performance measure type	Current Performance 2018/19	Current Performance 2019/20	Current Year 2020/21 Target	2021/22 Target (year 1)
	Safety - water pressure and flow	Safe water pressure and flow is supplied to consumers	The total number of complaints received by Council about any of the following (expressed per 1,000 connections to the networked reticulation systems):	Mandatory	Achieved (13.1 per 1,000 conns)	Achieved (21.5 per 1,000 conns)		
			Drinking water clarity		1.3	2	<15 per 1,000 connections	<15 per 1,000 connections
			Drinking water taste		1.3	0.2	<10 per 1,000 connections	<10 per 1,000 connections
			Drinking water odour		0.9	-	<5 per 1,000 connections	<5 per 1,000 connections
			Drinking water pressure or flow		6.5	11.6	<25 per 1,000 connections	<25 per 1,000 connections
			Continuity of supply		1.5	7.7	<5 per 1,000 connections	<5 per 1,000 connections
			Council response times		1.7	-	<25 per 1,000 connections	<25 per 1,000 connections
Thriving Economy: • Regulatory services and reliable infrastructure help the economy prosper	Quality - reliability	To provide reliable water networks	Number of reported watermain breaks per 100km of watermain per year	Technical	19.9		<30 per 100km	<30 per 100km
			Percentage of water supply assets in satisfactory condition (condition grades 1,2 or 3)	Technical	Achieved (4 towns graded at 2, and 3 towns graded at 3)		85%	85%
			The number of unplanned interruptions to the water supply system per 1,000 properties per year	Customer	6.9		<15/ 1,000 connections	<15/ 1,000 connections
			Days of treated water stored in reservoirs on average (with the exception of Owhango and Raetihi)	Technical	Achieved		>1 day	>1 day days
	Responsiveness	To provide prompt responses for service	Where Council attends a call-out in response to a fault or unplanned interruption to its networked reticulation system, the following **median response times** are measured:	Mandatory				
			Urgent call-outs:					
			(a) **Attendance** for urgent call-outs: from the time that the Council receives notification to the time that		19 minutes Achieved	27 minutes Achieved	Median response	Median response

Community Outcomes	Key service attribute	LOS	How we will measure our performance	Performance measure type	Current Performance 2018/19	Current Performance 2019/20	Current Year 2020/21 Target	2021/22 Target (year 1)
			service personnel reach the site (i.e. loss of water supply				times <2 hours	times <2 hours
			(b) Resolution of urgent call-outs: from the time that the Council receives notification to the time that service personnel confirm resolution of the fault or interruption site (i.e.. loss of water supply)		5.6 hours Achieved	5 hours and 36 mins – Achieved	Median response times < 6 hours	Median response times < 6 hours
			Non-Urgent call-outs:					
			(c) **Attendance** to non-urgent callouts from the time that the Council receives notification to the time that service personnel reach the site (i.e.. no loss of water supply)		5.8 hours Achieved	1 hour and 12 mins – Achieved	Median response times < 36 hours	Median response times < 36 hours
			(d) From the time that the Council receives notification to the time that service personnel confirm resolution of the fault or interruption (i.e. no loss of water supply)		19 hours Achieved	3 hours and 44 mins – Achieved	Median response times < 72 hours	Median response times < 72 hours
Thriving, Natural Environment: • Our environment is accessible, clean and safe and our water, soil and air meets required standards	Sustainable - Environmental performance	To promote the efficient and sustainable use of water	The percentage of real water loss from Council's networked reticulation system, using minimum night flow analysis	Mandatory	21% Achieved	12% Achieved (for Taumarunui urban area only)	<40% all supplies	<30% all supplies
			The average consumption of drinking water per day per resident within the territorial authority district	Mandatory	Not achieved Normal demand (using Usually Resident Population) = 637;	Achieved for normal demand - 448	< 600 litres per resident per day	< 500 litres per resident per day
					Achieved Peak demand (using Peak Population) = 252	Achieved for peak demand - 252	< 300 litres per person per day	< 300 litres per person per day

Community Outcomes	Key service attribute	LOS	How we will measure our performance	Performance measure type	Current Performance 2018/19	Current Performance 2019/20	Current Year 2020/21 Target	2021/22 Target (year 1)
		The water supply service is operated in compliance with regulatory requirements	Achieve high level of compliance of WTPs, measured by the number of:	Technical *(not mandatory but included as good practice)*				
			abatement notices; infringement notices; enforcement orders; prosecutions received by Council in relation those resource consents		0	0	0	0

Notes:

1. The number of connections is calculated from the number of customers charged in their rates for use of Council water services (calculated at 5,420 in July 2018 and 5,446 as at 1 July 2019).
2. There are occasions where there is more than one complaint per event. In such a situation, each complaint is counted separately, not each event or occurrence. The median time presented is based on calls that have been raised directly with Council and not Council's contractor Veolia.
3. An urgent call-out is one that leads to a complete loss of supply of drinking water due to a fault or unplanned interruption.
4. A non-urgent call-out is one where there is still a supply of drinking water.
5. Real water loss refers to volumes lost through leaks, bursts or overflows on mains, service reservoirs and services connections, up to the point of the customer meter.
6. Ohakune Water Treatment Plant upgrade started in 2019 and will take over two years. It is expected to be compliant in 2021/22.
7. Protozoal compliance will be achieved for the remaining non-compliant plants as follows, dependent on external Government Funding approved:
    - Ohura WTP – 2023/24 (based on upgrade completed June 2022 and then one year of complete monitoring records)
    - National Park WTP - 2023/24 (based on upgrade completed June 2022 and then one year of complete monitoring records)
    - Owhango WTP – 2024/25 (based on upgrade completed June 2023 and then one year of complete monitoring records).

Future LOS:
Council intends to move to using Infrastructure Leakage Index (ILI) as a water loss performance indicator. This is consistent with industry best practice.
It has been used for the water loss survey of Taumarunui to identify the leaky zones. Refer to Section 6.4 Asset Performance for the preliminary results.

3.7 SERVICE GAPS

Our achievements for LTP and mandatory performance measures for 2018/19 and 2019/20 are:

- Overall for 2018/19, we did achieve the mandatory performance measures covering drinking water quality for bacteria compliance, real water loss, responsiveness to urgent and non-urgent faults, customer complaints for service quality and water pressure / flow issues, and full compliance with the regulatory requirements. We did not achieve the mandatory performance measure covering drinking water quality for protozoa compliance except for Raetihi. We did not achieve the mandatory performance measure for the average consumption of drinking water for normal demand per day per resident but did for peak demand per person.
- Overall for 2019/20, we did achieve the mandatory performance measures covering drinking water quality for bacteria compliance, real water loss, responsiveness to urgent and non-urgent faults, customer complaints for service quality and water pressure / flow issues, efficient water use, and full compliance with the regulatory requirements. We did not achieve the mandatory performance measure covering drinking water quality for protozoa compliance except for Raetihi and Taumarunui.

Council is continually working towards improving its water supply schemes and their ability to comply with DWSNZ. Ohakune, Ohura, National Park and Owhango Treatment Plants currently do comply with the Drinking Water Standards for Protozoan (i.e. cryptosporidium and giardia) compliance criteria. Raetihi Water Treatment Plant was upgraded in 2018 and is now fully compliant. Ohakune Treatment Plant is being upgraded in the next two years. External Government funding will help accelerate these capital programmes.

The Matapuna Water Treatment Plant (for Taumarunui) has achieved, for the first time, protozoal compliance for DWSNZ in 2019/20. There have been historical issues around water quality compliance and the provision of data by the minute, as is the requirement. This outcome has been a result of upgrades to SCADA monitoring that has been able to capture data when there is a loss of SCADA communications plus in-depth investigations and the provision of additional information to the Ministry of Health for any apparent non-compliance.

Planned expenditure to close the service gaps over the next ten years are summarised in Section 6.11.

4 MANAGING GROWTH AND DEMAND

4.1 INTRODUCTION

With the change in District growth and peak populations comes an increase in water supply demand for consumption, and demand management initiatives. The impact of the seasonal peak demand on infrastructure is a challenge for the District. This section describes how Ruapehu District is developing and the approach Council will take to manage the effects of demand and growth for the water supply activity. This section also presents Council's response and recovery programme to manage the COVID-19 impact.

This section also discusses the significant growth occurring in Ohakune as well as the provision to provide suitable housing to support the influx of people into the District. The timing and investment in core infrastructure including water supply needs to be planned to support this growth and demand change.

4.2 DISTRICT GROWTH AND GLOBAL DISRUPTION

The two main drivers for Ruapehu District's growth are usually resident and peak population. The usually resident population is set to steadily increase overall between 2021 and 2031 under low, medium and high growth scenarios (refer to Part 2 for details). Peak population is the key tool to plan for core infrastructure including water supply (refer below).

The global pandemic event has disrupted the national and local economies with the national lockdown and closing of international borders. It is expected to have smaller impact on Ruapehu District than others as heavily rely on primary production and tourism. This will mainly impact on the demand for water supply infrastructure and the community's ability to pay in an economic recession. The Informetric assessment suggest that growth will be slower than initial predictions.

Council's response is to develop the Recovery Programme including rethinking the shape of future tourism. Ruapehu Economic Development Strategy 2018-2028 and Ruapehu Recovery Thought Leaders Group will provide strategic direction for the District's recovery. This will help rebuild tourist demand domestically and internationally (with trans-Tasman).

4.3 GROWTH AND DEMAND TRENDS

Growth in the District and peak demand can result in an increase in the demand for and consumption of water as discussed below.

4.3.1 Changes in Demographic Patterns

Peak population is the key tool to plan for core infrastructure including water supply. Peak population is used to plan for the absolute peak population the District might experience on any given day. It is calculated by combining usually resident population, holiday home visitor numbers, commercial accommodation visitor numbers and day visitor numbers.

Pre-COVID-19 projections saw small but steady increase in all components of peak population except net migration. Demographics are expected to remain similar and change proportionately alongside population growth, except for Ohakune. For water supply planning purposes, peak population needs to be considered at township level as it will differ throughout the District. The recommended growth projection scenarios to be used for AM purposes adopted for this plan are summarised in the following table.

Table 16: Growth projection scenario for peak population by township

Township	Growth projection scenario adopted for peak population
National Park	High growth
Ohakune	High growth
Otangiwai-Ohura	Low growth
Raetihi	Medium growth
Tangiwai	Medium growth
Taumarunui	Medium growth
Waiouru	Medium growth

Source: Council's 2021 LTP briefing paper Planning Assumptions, Infrastructure and Financial Strategies (as at 27 May 2020)

Ohakune is experiencing significant population growth (estimated internally at 30% in the 2021 LTP period) based on large number of resource and building consents received for new subdivisions. The main drivers for the rapid growth in Ohakune are:

- Popular cycleway track round the mountains creating all year round tourist demand
- Commercial growth such as new industry and Turoa gondola
- Affordable housing required for workers to meet the tourist demand and new industries (mainly short term rental accommodation)
- Continuing to be a popular holiday house destination.

Taumarunui is also experiencing growth but not as rapid as Ohakune. The main drivers for the rapid growth in Taumarunui are:

- Internal migration out of the large cities to the regions
- High demand for quality and affordable houses
- Centrally located town in the North Island for different industries including forestry and RAL
- Potential social housing development (refer to Section 4.4.2 below)
- New wet industry being established (new pet food factory).

Pipiriki is a village on the east bank of the Whanganui River, due west of the town of Raetihi. It is at the exit point of the Whanganui River National Park and is expected to become part of a holy pilgrim route in future years. There may be pressure on Council in future to provide public water services to meet day visitors. The supply of water to this village is in an investigation phase (with MBIE funding).

4.3.2 Water Supply Consumption

Water consumption at township level

The total average daily water supply consumption by township is shown in Figure 6. This shows that Taumarunui has the highest consumption, typically 2,600m³ per day, followed by Ohakune at 1,500m³ per day.

Ruapehu is a very popular place in the winter season especially in the ski season. The large influx of day and night visitors and non-resident holiday house owners causes the population to increase to many times greater than the usually resident population. These seasonal peaks have a large impact on demand for water services. Increasing the water services networks spread over a large land area to cater for peak demand is costly and potentially may be redundant infrastructural capacity in non-peak periods. Taumarunui and Ohakune townships are impacted the most by the peak demand as shown below.

Taumarunui and Ohakune townships are impacted the most by the total monthly average demand as shown in Figure 6. The graph of average daily demand by month shows that there has been a decrease in peak demand in Taumarunui since 2016. The remaining townships are relatively stable except for Ohakune Water Supply scheme where in 2017 there has been an increase in demand similar to that of 2013/14. The demand graph also shows that the Ohakune total monthly average peak demand is the closest to its consent limit 2,500m^3/day.

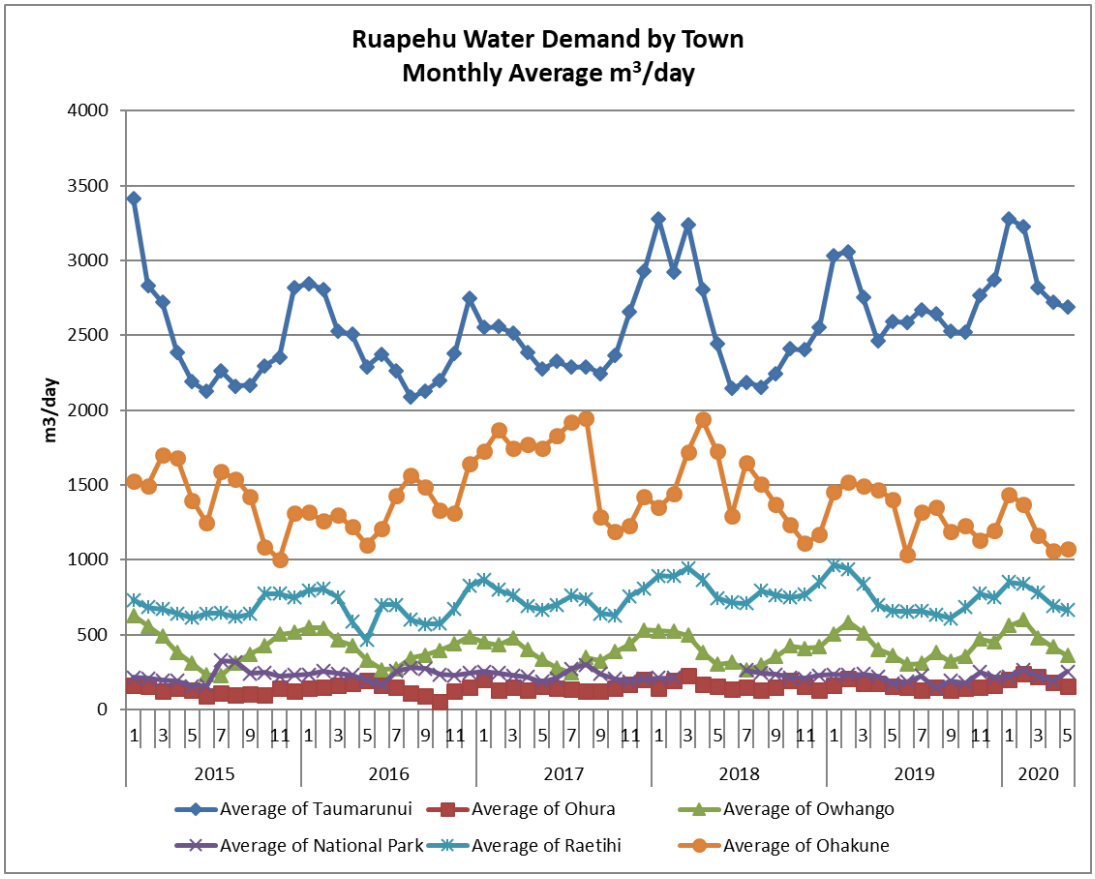


Figure 6: Average monthly water demand by township

Source: Veolia (as at October 2020)

The normal demand using usual residential population, consumption per connection in rural areas is just under 506 litres/household/day for (as reported in LGS2009/18 Information on Local Government Water Network Infrastructure). Water Industry performance benchmarking highlighted that there were differences.

Average water consumption

The average water consumption per resident District wide is considered high at 637 litres / person / day for 2018/19 (refer to Section 3.6). This is much higher than the median for the average daily with Water New Zealand National Performance Review (NPR) of 263 litres / person / day for 2018/19 (across all peer groups).

Council's average water consumption results are skewed by the large number of visitor numbers as the peak demand is 252 litres / person / day (using peak population) for 2018/19.

High water consumption is also due to mixed use of potable water and our limited ability to distinguish residential, commercial, industrial and rural use. The District has urban and rural connections particularly on the Waimarino region (inclusive of Ohakune, Raetihi and Rangataua). National Park Village is the only township without rural connections.

The water supply per capita consumption for each township is summarised in the following table. The split between rural and urban township demand has been estimated for Ohakune and Owhango as there are carrot washing consumers and many dairy farms connected respectively to these water supply schemes. The table shows total demand including rural and industrial users. Raetihi has businesses with high usage that are not metered, and some may have urinals that operate continuously. The Raetihi reticulation network has a high leakage rate with an active pipe replacement programme. The Ohakune water supply network has some rural connections that are not metered. These initiatives have been included in the future demand management plan discussed below.

Table 17: Water consumption by township

Township	Meters	Rural meters	Estimated Rural Use Annual Average m^3/yr	Historical Per Rated Connections	Historical Per Population
Taumarunui	154	10%	18,336	1100	634
Ohura	none			156	1,300
Owhango	108		7603.42	3,634	3,653
National Park	one	none	Not assessed	949	1,251
Ohakune	68	11%	6442*	936	1,600
Raetihi	3	None		1461	877
Waiouru	30	2	56		

*known use but actual values may be much higher

All water connections in Ohakune township will be metered in next 3 to 5 years. This is a condition of MBIE funding for the WTP upgrade. This will provide valuable information for a complete township and reduce the District's per capita consumption.

4.3.3 Consumer Types

Only large and rural water users are currently metered in the District, so consumer types have been assumed through land use. Historically, Council water customers were predominantly residential (estimated at 24%), commercial (estimated at 2%) and limited industries (estimated at 4%). The main heavy industries in the District include Taumarunui Hospital and vegetable washers, with no dairy factories. There are high number of reticulation lines outside the urban zone which are connected without consultation. These require investigation into the use type and appropriateness. It is expected that heavy industry demand will remain relatively low in the District in the future.

The water user types need further refinement / investigation and this is recognised as a future improvement action.

4.3.4 Capacity at Schemes

Ohakune and National Park Treatment Plants are nearing capacity. Ohakune is scheduled for upgrade in the next two years which will address Drinking Water Standards compliance issues as well as providing for additional capacity. Specific known capacity constraints are detailed in Section 6.4 Asset Performance.

4.4 MEETING GROWTH AND CHANGING DEMAND NEEDS

4.4.1 Demand Projections

Demand projections are being developed to better understand current demand and the quantification of the proposed future demand through the following planning initiatives:

- The assessment of demand versus design capacity is being undertaken as part of the Water Management Strategy
- Using the peak population forecasts at township level with any planned upgrades
- Undertaking modelling for Ohakune township for water supply and wastewater to understand and plan for the rapid population growth.

The availability of freshwater is limited. New Zealand has signed into a protocol of protecting our natural resources. Horizons Regional Council has signalled that we must show due diligence with our water utilisation.

The One Plan reinforces the need for demand management. Implementation of our demand management plan (refer below) is vital to demonstrate our commitment to freshwater resources.

The overarching aim for current residential demand is 250 litres / person / day maximum plus 150 litres / person / day for discretionary use (when water is available). It is expected that future demand will trend downwards with changing weather patterns (such as drought) restricting water use. There will be pressure in future to reduce this to 180 litres /person /day coupled with reuse options such as stormwater harvesting, rain tanks.

4.4.2 Economic stimulus

Council's Economic Development Strategy (2018), gives direction and a framework for making decisions, undertaking actions, and building change that will drive economic outcomes. This includes growing visitor numbers in summer and shoulder months to help with year round employment opportunities. Rebuilding domestic tourist demand is a key focus for Council as noted above (refer to Part 1).

As part of the Government's response to help offset the economic and social impacts of COVID-19, Council has been granted about $1.4 million for a small pilot build (Moore Street, Ohakune) as part of the Social and Affordable Housing project (subject to negotiation between Council and Crown Infrastructure Partners). This grant has been a catalyst for Council to reconsider the scope of its role in helping to address Ruapehu's growing housing issues. Currently this is limited to a small number of social housing units.

The rate of new housing provision will be determined by the available external capital and suitable land for reconfiguration. The housing provision may trigger services upgrades including water services. It is expected that there will be an agreement in place to share upgrade costs attributed to each new development. The Social and Affordable Housing project is still in the early stages, so any upgrade costs have not been allowed for in this AMP. The focus is on providing quality and affordable houses in Taumarunui as noted above.

4.4.3 Demand Management Plan

Managing Council's water supply demand is not only about managing increasing future needs and expectations but is also about changes in behaviours and philosophy. Through this multifaceted approach, we can reduce environmental impacts and reduce water wastage. Council's current water demand management programme is summarised in Table 18.

Table 18: Current water demand management programme

Programme	Description
Water leakage	Unaccounted for water is a significant issue that is impacting Council's operational expenditure. Council's current actions to address leakage and therefore reduce loss revenue include: • Metering of all high water use businesses. • Installation of water use meters for extraordinary users in National Park. • Metering of rural properties that are connected to the public water supply networks. • Leakage detection surveys in townships with significant leakage problems. • Metering of abstraction from water sources to monitor the actual demand and to meet resource consent conditions. • Ongoing condition assessments of the water supply assets through condition surveys and investigations into problematic materials where required with the appropriate solution. • Renewal of poor condition assets identified through condition surveys or routine maintenance activities.
Public education and awareness	Education and awareness encourage water use reduction and compliance behaviour. Council's web page provides public education and information on reducing water use.
Climate change planning	Our response to climate change includes building our knowledge based on latest thinking nationally and participating in forums where appropriate. We are developing our own adaptation approach to climate change in collaboration with Regional Council. Refer to Section 5.3 Climate Change and Resilience for further details.
Pricing	Water rates are structured to promote users to minimise water wastage by paying for the water they use where these are metered.

Programme	Description
Modelling	Undertake hydraulic modelling of water supply and wastewater for Ohakune township to understand and plan for the rapid population growth.

The future demand management planning includes the activities summarised above with the following additional initiatives:

- Metering of all rural properties in the Ohakune and Raetihi area and other parts of the district.
- Metering of all water connections in Ohakune township (condition of MBIE funding for WTP upgrade) in next 3 to 5 years
- Validate the metering of businesses in Taumarunui to ensure all high users are actually metered.
- Metering of high business users in Raetihi, particularly the buildings with urinals that are running continuously.
- Developing water models for better understanding of water demand and potential efficiencies.
- Further refining / investigating water user types.

4.4.4 Capital Development

Asset creation is the process driven by consumer growth or LOS. This involves the design and construction of new assets which increase the capacity or performance of the system. Asset creation is necessary to accommodate growth, changes in LOS or customer demand.

Council will continue to invest in water supply infrastructure with the main drivers being:

- To meet the demands of growth by supplying water to Council's customers through efficient utilisation of natural resources
- To manage risk, increase infrastructure resilience and plan for climate change
- To meet the LOS with respect to safe and effective supply of water in main townships where applicable
- To meet legislative compliance where possible.

The cost of upgrading the water supply infrastructure over the next three years is summarised in Section 6.11 Asset Creation.

4.5 CHANGES IN TECHNOLOGY AND DESIGN

New technology and design need to be considered in most AMPs. These are discussed in this section in relation to water supply, technology, and education. Technology may identify future cost savings, increased service, and water quality.

Council has embarked on upgrades in technology used in Council's mechanical and electrical plants, instrumentation, and treatment processes and their mode of operation historically has been fairly basic. The use of modern computer and electronic technology such as Programmable Logic Controllers (PLC) SCADA systems, remote control and telemetry are continuously researched and improved for efficiency gains, mainly with the upgrade or development of treatment plant. This will remain a focus of Council going forward.

Smart water meters and readers were investigated as the next level of innovation. However, the technology costs are not justifiable at this stage, particularly for a small district council. Council will periodically reassess this position, as economies of scale are likely to improve cost effectiveness.

Examples of water supply system technology and design improvements that Council is using or may consider include:

- Pipe thrusting systems which enable pipes to be laid without deep trenching and have made it easier for Councils to avoid cutting, digging and laying pipes, hitting existing services with costly reinstatement costs for renewals.
- Pipe relining systems which essentially result in a new PVC pipe installed within the wall of the old pipe.

- Computer modelling of pipelines to highlight upgrading requirements and achieve a consistent level of service across the District.
- Continuous data logging of pressure zones, to enable accurate calculation of the minimum night flows.
- Data logging of large customers to better understand their actual usage.
- Installation of pressure reducing valves in high pressure areas.
- Use of acoustic loggers for leak detection survey work.
- New pipe materials and fittings.

4.6 DEMAND ASSUMPTIONS

The key growth and demand assumptions are as follows:

- Projections have been based on Council's 2021 LTP briefing paper Planning Assumptions, Infrastructure and Financial Strategies (as at 27 May 2020)
- Impacts from COVID-19 will impact the District's economy
- Future water supply consent conditions will be more restrictive and may cost more to comply with, implement and monitor
- Food production and tourist demand will continue in the District
- Ohakune will continue to experience significant population growth.

5 MANAGING RISK

5.1 OVERVIEW

This section covers the risk management implemented by Council and how it applies to current and future water supply activities. Council's corporate risks are covered in Part 1 of the AMP and this section looks at activity specific risks.

The Ruapehu risk context has been developed from Council examining each of the elements that define the context for risk management applicable to the water supply activity. The activity has been examined and results summarised in Part 4, Schedule 1, Appendix H.

5.1.1 Risk Register

Risks associated with the water supply activity have been identified, described, classified, analysed, evaluated, rated and results are recorded in the Risk Register (Part 4, Schedule 2, Appendix H).

An input into this was a review of the highest risks and associated risk treatments in the 2018 AMP.

All risks have been examined for the treated risk. Not all untreated risks and risk controls have been examined. This area has been identified as an opportunity for improvement in the Improvement Plan.

The resulting risk matrix below shows seven risks identified as high treated risk, with no extreme risks.

Table 19: Risk matrix

Likelihood	Consequence				
	Insignificant (1)	Minor (2)	Significant (3)	Major (4)	Catastrophic (5)
Almost Certain (5)	**0**	0	0	0	0
Likely (4)	0	1	0	0	0
Possible (3)	0	4	6	0	0
Unlikely (2)	0	0	3	0	0
Rare (1)	0	0	0	0	0

Low Medium High Extreme

5.1.2 Risk Action Plan

Additional management options have been identified for specific risks rated as Medium, High or Extreme to treat the present risk. These are recorded in the Risk Action Plan (Part 4, Schedule 3, Appendix H).

The main risks are listed in order of severity as assigned in consultation with key Council officers.

Actions that are required to achieve the desired improvements are indicated along with how progress on these actions will be monitored and reported. Where applicable, action tasks will detail timeframes for achievement, and responsibility for these actions.

5.1.3 Critical Water Supply Activity Risks

The risks identified through these processes are a key input into identification and prioritisation of programmes and projects. The review as part of the development of the 2018 AMP identified the following highest risks:

(a) Failure of critical pipeline
(b) Contamination of source water, in reservoirs and reticulation
(c) Poor quality bulk water
(d) Natural Hazard Planning.
(e) Asset failure of major component in water storage and reticulation
(f) High leakage from system
(g) High usage by unmetered connections
(h) Unmetered use by consumers
(i) Unmetered leaky rural connection.

These risks are managed with the following existing controls:

(a) Condition monitoring, maintenance history analysis and targeted renewal programmes
(b) Response planning and regional lifelines planning
(c) SCADA monitoring for online water quality monitoring and alarming at all treatment facilities to alert the operator to network failure
(d) Water quality sampling programme
(e) Leak detection surveys, and metering of known high usage connections and rural connections.

It is recognised that further controls need to be developed including collecting raw samples, metering of all high users and all rural connections on a more consistent basis and more active leakage management. This has been identified as future improvement in the demand management plan.

A formal review of the 2018 Activity Risk Register has been identified as a future improvement to into the next AMP version.

A formal criticality assessment has commenced on the headworks, pipeline to treatment plant, treatment plant, water storage and trunk pipeline to township reticulation. The township reticulation and the main supply to Taumarunui Hospital are critical from an operational perspective. This is an ongoing project which has gained limited traction due to the diversion of resources planned to complete this work. The Hospital section has been assessed and currently different options (storage) are being considered instead of upgrading the booster pump station.

Although a formal criticality assessment has not been completed, the following assets have been identified as critical at each township, with a greater level of management applied to them:

(a) Headworks
(b) Pipeline to treatment plant
(c) Treatment plant
(d) Water storage
(e) Trunk pipeline to township reticulation
(f) Distribution in township for larger pipe sizes (ie larger than 200mm in diameter)
(g) Main supply to the Taumarunui Hospital.

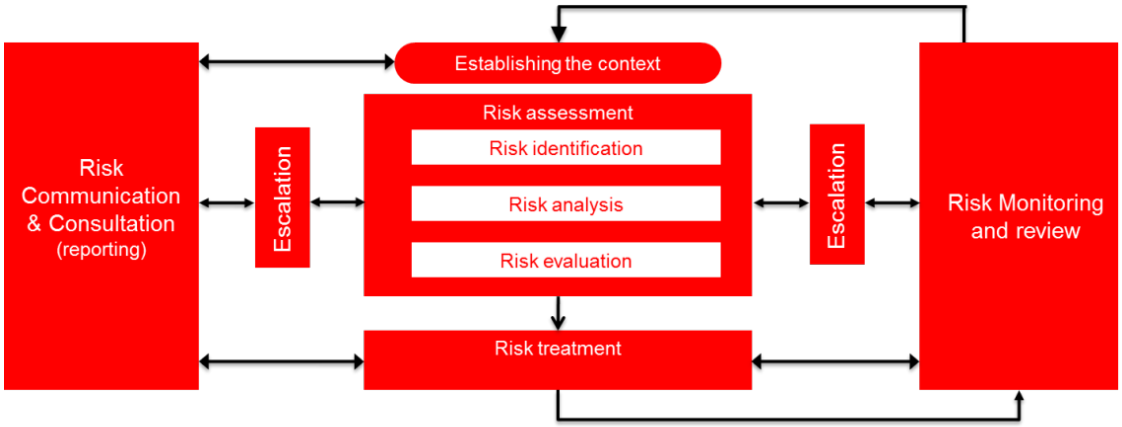
Ruapehu Risk Management System relies on input from its many contractors and service providers and this is appropriate for a small District Council. Further to Council's Risk management framework, Veolia is required to manage risk and produce their own risk management procedures to describe the responsibilities, authorities and processes across their international business. Their system uses slightly different descriptors to assess risk but overall the assessment method obtains similar outcomes. Their assessment method is utilised as part of their daily services to deliver their operations, maintenance and capital works programmes. It is utilised in the production of WSPs, method statements for new works or high-risk situations.

5.1.4 Veolia Risk Management Process

Veolia operates a standard risk management process to identify, control, act upon and review all risks arising in the operations and within the business in accordance with ISO 31000, PAS55, ISO14001, ISO22000, AS4801 and OHSAS 18001. The procedures are documented in PR-ANZ-13-444.

Risk Management is used to assist in infrastructure recommendations and is applied across the company. The framework has been developed under Australian and New Zealand AS/NZS 4360:2004 Risk Management Process. The key risk management processes through which risks are managed are outlined below.

VW-ANZ Risk Management Processes



Veolia Risk analysis:

i) Risk severity analysis is undertaken, with the risk severity assessed as the sum of consequences and likelihood. This is calculated based on the consequence impact rating and likelihood rating defined in the Veolia Risk as shown below.

Consequence	Likelihood					
		1	2	3	4	5
	5	6	7	8	9	10
	4	5	6	7	8	9
	3	4	5	6	7	8
	2	3	4	5	6	7
	1	2	3	4	5	6

ii) The Veolia Risk Analysis Matrix categorises each risk into one of four risk rating categories, as shown below. The risk rating category determines the response to the risk. Risks with a 'red' risk rating are considered totally unacceptable and risk reduction is required to be investigated immediately. Veolia's risk management framework is aimed at reducing residual risks to rating 5 or less (or until deemed a mitigated risk by the appropriate senior manager).

Risk Rating	Acceptance/Completion Approved by	Action Through	Reviewed and Accepted Within
2 – 5	Supervisor	Local Management (if Required)	2 Weeks (if required)
6	Function Manager	PIR System	1 Week
7	Senior Manager	PIR System	72 Hours
8 – 10	Managing Director	PIR System	24 Hours

iii) Risk analysis application:

Risk analysis is undertaken by Veolia where there are sources of potential harm or situations that have the potential to cause a negative impact. Examples of scenarios where a risk assessment will be triggered under VW-18 include:

(A) The preparation of method statements.
(B) Prior to significant changes to operating conditions/protocol.
(C) The development of ERP contingency plans.
(D) Capital works briefs and capital works handovers scenarios determined by function/senior management.

Council and their partner contractor's Emergency Response Planning:

i) LoS relating to emergency response planning are governed principally by the requirements of the CDEM Act 2002. This necessitates that lifeline utilities (entity providing water and wastewater infrastructure services to the community), has responsibilities to plan and co-ordinate to enable the continuation of its services in an emergency.
ii) In an emergency, Veolia has an Emergency Response Plan (ERP), modelled on the New Zealand Coordinated Incident Management System (CIMS). This meets the emergency preparedness and response requirements of ISO14001. Further refinement of Veolia emergency response and recovery within the District is provided through a Disaster Recovery Plan.
iii) This Disaster Recovery Plan and business continuity planning will need to be done at a township level for all disasters and has not been completed by Council.

5.2 MITIGATING RISKS

5.2.1 Extreme and high risks

The risk analysis matrix developed by Council has been described in Part 2 of this AMP. From the risk evaluation matrix completed as Appendix H the levels of risk are assessed into extreme, high, moderate and low. The risk treatment options are considered to reduce the causes, probability or impact of failure and are:

(a) Do nothing - accept the risk.
(b) Management strategies - implement enhanced strategies for demand management, contingency planning, quality processes, staff training, data analysis and reporting, reduce the target service standard, etc.
(c) Operational strategies - actions to reduce peak demand or stresses on the asset, operator training, documentation of operational procedures, etc.
(d) Maintenance strategies - modify the maintenance regime to make the asset more reliable or to extend its life.
(e) Asset renewal strategies - rehabilitate or replace assets to maintain service levels.
(f) Development strategies - investment to create a new asset or augment an existing asset:
(g) Asset Disposal/Rationalisation - divestment of assets surplus to needs because a service is determined to be a non-core activity or assets can be reconfigured to better meet business needs.

Further risk analysis is provided in Appendix H (Part 4).

5.2.2 High consequence events

The following table lists all the identified risks with a Significant to Catastrophic impact should it occur. Response planning has been undertaken for each of these risks.

Table 20: High Consequence Events

Core Value/ Strategic Outcome	LoS Failure Indicator	Asset Group	Caused By
Safety: To maintain public health	Drinking water supply compliance	Headworks	Major accident causing hazardous materials, spills and leaks Contamination of source water Poor quality bulk water Volcanic eruption
		Treatment Plant	Major accident causing hazardous materials, spills and leaks
		Water storage	Major accident causing hazardous materials, spills and leaks Asset failure of major component Contamination of water supply
		Reticulation	Asset failure of major component Contamination of water supply
Quality: To provide and maintain an appropriate level of infrastructure	Availability of water supply to the community	Headworks	Natural hazard/disaster (earthquake, tsunami, fire, storm, flooding, landslip) Damage to assets from sabotage/terrorism
		Treatment Plant	Natural hazard/disaster (earthquake, tsunami, fire, storm, flooding, landslip) Damage to assets from sabotage/terrorism
		Water storage	Failure of reservoir Natural hazard/disaster (earthquake, tsunami, fire, storm, flooding, landslip)

Core Value/ Strategic Outcome	LoS Failure Indicator	Asset Group	Caused By
			Damage to assets from sabotage/terrorism
		Reticulation	Failure of critical pipeline
Supporting Management Practices	Inefficient management of assets	All	Risk analysis and management is not comprehensive

5.3 CLIMATE CHANGE, RESILENCE AND ZERO CARBON

5.3.1 Changes in weather patterns

The climate is changing, and further changes will result from increasing amounts of greenhouse gases in the atmosphere. The major changes expected to be as a result of climate change are:

Affected Assets or Activities	Key Climate Influences	Possible Effects
Water supply infrastructure	Reduced rainfall, extreme rainfall events, and increased temperature.	Reduced security of supply (depending on water source). Contamination of water. Increased pressure on water use and more restrictions for longer periods of time.

Source: MfE released Climate Change Impacts on New Zealand by Regional Authority

The MfE table of climate change projections for the Manawatu-Whanganui region are by 2090, seasonally the region could expect:

Spring	0.6°C to 2.7°C temperature rise 1 per cent less to 3 per cent more rainfall in Whanganui No change to 5 per cent more rainfall in Taumaranui
Summer	0.7°C to 3.3°C temperature rise No change to 3 per cent more rainfall in Whanganui 2 per cent more rainfall in Taumaranui across the range of scenarios
Autumn	0.7°C to 3.2°C temperature rise 5 per cent less to 2 per cent more rainfall in Whanganui and Taumaranui
Winter	0.7°C to 3.2°C temperature rise 6 to 11 per cent more rainfall in Whanganui 7 to 16 per cent more rainfall in Taumaranui

*Projected changes are relative to 1995 levels. The values provided capture the range across all scenarios. They are based on scenario estimates and should not be taken as definitive.

Natural resources that could be affected by climate change and which will have an impact on water supply sources:

Natural Resource	Key Climate Influences	Impacts of Climate Change
Rivers	Rainfall	• River flows likely to, on average, increase in the west and decrease in the east of New Zealand. • More intense precipitation events would increase flooding (by 2070 this could range from no change, up to a fourfold increase in the frequency of heavy rainfall events). • Winter will see more rainfall in winter with less snow in the Alpine areas. • Less water for irrigation in northern and eastern areas. • Increased problems with water quality.
Water Quality	Temperature and rainfall	• Reduced rainfall and increased temperatures combine to increase the potential for erosion which could have significant impacts on the quality of surface water resources in northern and eastern New Zealand. • Lower stream flows in summer will raise water temperatures and aggravate water quality problems.

Natural Resource	Key Climate Influences	Impacts of Climate Change
Water Availability	Rainfall	• Water demand will be heightened during hot, dry summers. • Decreases in rainfall, which are most likely in the north and east of New Zealand, coupled with increased demand, would lead to decreased security of Water Supply. Increase the tension between competing water users.

5.3.2 Planning for climate change

At national level:
A National Climate Change Risk Assessment (August 2020) has recently been released by MfE. The setting of the framework for effective adaption is required by the Climate Change Response (Zero Carbon) Act. The risk assessment is a national overview of how New Zealand may be affected by climate change related hazards.

New Zealand's ten most significant climate change risks based on consequence and urgency were identified. This includes risk to potable water supplies (availability and quality) due to changes in rainfall, temperature, drought, extreme weather events and ongoing sea-level rise. At a local level, we need to understand what this means on our water supply activity.

At regional level:
HRC has provided the regional impact of climate change, see Part 1 and are partnering with district councils in community engagement.

They have developed a greenhouse gas footprint for the region and each territorial authority in the Region for 2018/19.

Ruapehu emitted gross 1,203,611 and net 191,684 tonnes of Carbon Dioxide Equivalent emissions in 2018/19. The population in 2019 was approximately 12,700 people, resulting in per capita gross emissions of 94.8 tonnes of Carbon Dioxide Equivalent per person. Agricultural emissions were the largest contributor to the inventory for Ruapehu, followed by transport as shown in Figure 7.

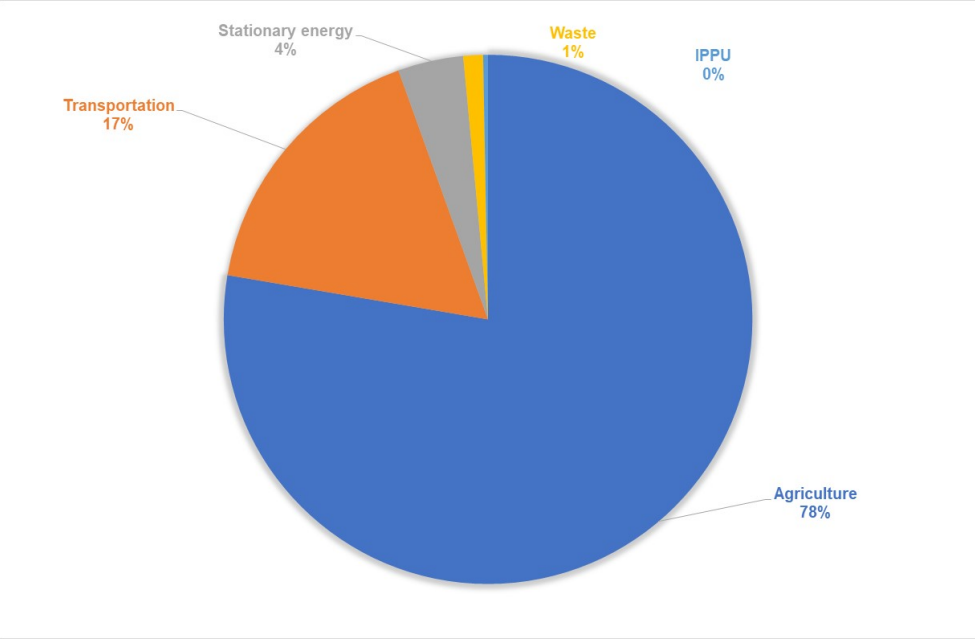


Figure 7: Ruapehu's greenhouse gas emission (gross) by sector for 2018/19

Source: HRC Ruapehu Community Carbon Footprint 2019 (AECOM August 2020)

The stationary energy sector covers the consumption of electricity and natural gas. The Industrial Processes and Product Use (IPPU) sector covers emissions associated with the consumption of greenhouse gas for refrigerants, foam blowing, fire extinguishers, aerosols, metered dose inhalers and Sulphur Hexafluoride for electrical insulation and equipment production.

Ruapehu contributed to 14% of the Horizons Region's total gross emissions for the 2018/19 reporting year. Ruapehu had the fourth highest emissions in the region, predominantly due to particularly large agricultural emissions. With a small population and high gross emissions, Ruapehu has extremely high per capita gross emissions (over nine times higher than Palmerston North).

The greenhouse inventory provides information for decision-making and action by Council, our stakeholders and the wider community. Sector-level data allows the council to target and work with those sectors which contribute the most emissions to the footprint.

At local and activity levels:
These likely climate change impacts on Ruapehu's water supply network will need to be considered with any long-term planning.

Increasing extreme weather patterns with storms of increasing intensity and frequency will also increase the challenges of making potable water from highly turbid waters. Chlorination at all WTPs provides for *E.coli* protection and ensures network disinfection residual. Inversely increasing dry periods (droughts) are reducing the recharge zones in the river so they have less flow which can extend for longer periods of time. This drives demand from connections, both legal and illegal, across the District.

Climate change may also impact the catchments used for drinking water with more intense storms predicted. This will likely be a focus for the new water regulator in relation to providing safe and secure drinking water. The potential reduction in water intakes may impact our existing treatment plant production and management of the reticulation service.

5.3.3 Building resilience and adaptation

Council's overall approach to resilience and adaptation to manage the risks where vulnerabilities and hazards are identified. Investment is identified when required to reduce the risks and vulnerabilities of infrastructure such as the strengthening of the existing assets. Preventing adverse effects of climate change and natural hazards through careful planning of future development areas is significantly more cost effective than trying to retrofit / mitigate later.

Resilience is important for all water operators and is essential for remote communities like Ruapehu. Infrastructure resilience is tested further in Ruapehu as it is influenced by the Mountain and subject to intense weather events. It is also exposed to a variety of natural hazards including earthquakes and volcanic eruptions.

Climate change directly impacts the water supply activity. Council has undertaken the following measures to improve the resilience of the activity in disruption events:

- Building our knowledge based on latest thinking nationally and participating in forums where appropriate
- Specify more resilient design and materials for replacement programmes
- Enhanced collaboration with Veolia to have robust communication protocols and procedures for keeping the network resilient
- Many of our water treatment plants have back up generators to ensure service continuity during power outages
- Provide treated water storage in reservoirs (at 3 days which is above the national average of 1.4 days as assessed in Water New Zealand's National Performance Review 2018/19)
- Strengthening our infrastructure resilience in our townships with more built infrastructure such as Raetihi, Ohakune and Taumarunui.

Council's future actions in response to climate change to improve the resilience for the activity are:

- Explore alternative / supplementary water sources to increase security and future quantities of supply (may need to be brought forward)
- Linking reticulation networks where possible (Ohakune and Raetihi Treatment Plants)
- Efficiency assessment of water use from the catchment to the consumer
- Alternative water non-potable water source uses such as rain or stormwater harvested for gardens.
- Partnering, participating in catchment planning initiatives such as land use improvements, riparian management
- Communications and behaviour change are achieved by providing information that impowers users. Council can improve messaging that discusses: Water scarcity, personal water usage and options available to the person including:
    - Publishing river water levels
    - Education on water conservation, appliance usage labelling and water saving options
    - Water demand management, house and non-household users, smart meters feeding into water models
    - Support building regulations on water design in new building
- Continue leakage assessment and improvement plans
- Policy of ensuring new development has stormwater attenuation on site.

5.3.4 Zero Carbon

The Zero Carbon Act and recent Council direction mean that Council will be considering opportunities for reducing the carbon emissions it generates. Preliminary opportunities identified include:

- We will continue to seek new technology and opportunities to reduce our carbon footprint where appropriate for our District size, learning from other water utilities in New Zealand and internationally
- Improve the efficiency of pumps as this will reduce power consumption costs as well as prolonging the asset component lives.
- Continue to measure carbon footprint as part of the Climate Change Regional Group.
- PLC plant replacement programme provides an opportunity to assess equipment efficiency, resilience and carbon footprint.

5.4 WATER SAFETY PLANS

5.4.1 WSP Overview

The Healthy (Drinking Water) Amendment Act 2019 requires all drinking water suppliers to demonstrate that they are providing safe water. WSPs (known previously as Public Health Risk Management Plans) are a compliance tool used as a key element of a drinking water supplier's quality assurance. These plans promote a risk management culture to the drinking water industry for New Zealand communities. Council completed a review of its WSPs following the Havelock North incident. This review informed the update of the activity risk register for the development of the 2018 AMP but the detailed improvement report was not available for this AMP.

WSPs have a holistic view from the catchment to the consumer considering predicted changes in demand for water services, current state of the water supply assets, identified risks and regulatory requirements.

There are transition arrangements with the Water Services Bill. Large suppliers (serving 500 or more) must have a drinking Water Safety Plan one year after the legislation commences (i.e. July 2022). Small suppliers (serving less than 500) have a five-year transition period. All suppliers must register by the end of the first year following commencement.

Suppliers must prepare and implement a drinking Water Safety Plan and continuously review it. Taumata Arowai has a responsibility to review plans according to their scale, complexity and risk profile. They will not be approved as under the current framework. Suppliers will also need a source water risk management plan.

Regional councils must contribute to the plan and share information about risks. Taumata Arowai will review the Water Safety Plans and monitor compliance. Implementation of the plan will be considered during audits.

Taumarunui Water Supply WSP was approved under the old MoH framework. The plan is being re drafted with the new framework for submission to the Drinking Water Assessor (DWA).

The Water Services Bill also proposes new arrangements relating to sources of drinking water. The key measures for this approach include:

- Drinking water suppliers must have a source water risk management plan
- Local authorities must contribute to source water risk management plans by sharing information about risks and undertaking actions to address them on behalf of a drinking water supplier
- Drinking water suppliers must monitor source water quality for abstraction, and regional councils must assess the effectiveness of regulatory and non-regulatory interventions relating to source water every 3 years
- A new provision in the Resource Management Act 1991 to require consent authorities to have regard to risks, or potential risks, to source water when considering applications for resource consents.
- Regional Councils undertakes environmental monitoring across the region which also occur in catchments with water supplies.

5.4.2 WSP Status

WSPs have been developed and implemented for all townships. The plans identified actions to reduce risks and these are discussed further in the Lifecycle Management Plan Section.

Meeting the protozoal compliance criteria of the DWSNZ is a challenge for Council and a focus for the upgrade works in this plan (refer to Section 6.11 Asset Creation Plan).

The current status of the WSPs is summarised in Table 21. The Taumarunui WSP is being prepared in accordance the Ministry of Health's new requirements. National Park, Ohura and Owhango WSPs are on hold until the first plan (Taumarunui WSP) has been approved by the DWA.

Table 21: WSP status

Township	Supply Owner	WSP Status at Aug 2020 (Note 1)	RDC Current version	RDC Date for Review	Comment
National Park	RDC	Draft Plan prepared (Rev 1 Dec 2019)	Feb 2013	2017	On hold (see Note 1)
Ohakune	RDC	Plan (2017) Approved under old DWSNZ framework	June 2017	2022	
Ohura	RDC	Draft Plan prepared (Rev 1 June 2020)	Approved April 2013	2018	On hold (see Note 1)
Owhango	RDC	Draft Plan prepared (Rev 2 May 2020)	July 2014	2018	On hold (see Note 1)
Raetihi	RDC	Plan (June 2019) Approved under old DWSNZ framework	June 2019	2023	
Taumarunui	RDC	Plan (Rev 5 June 2019) Approved under old DWSNZ Framework	July 2019	2024	Plan currently being redrafted in accordance with the new Water Safety Plan Framework (May 2019), for submission to DWA

Township	Supply Owner	WSP Status at Aug 2020 (Note 1)	RDC Current version	RDC Date for Review	Comment
Waiouru	Government	NA	NA	NA	WTP not owned by RDC.

Source: Veolia (as at September 2020)

Note 1 – Draft Plans have been prepared in accordance with NZ Drinking Water Safety Plan Framework (May 2019). Draft Plans currently on hold pending approval of updated Taumarunui WSP (May 2019 Framework).

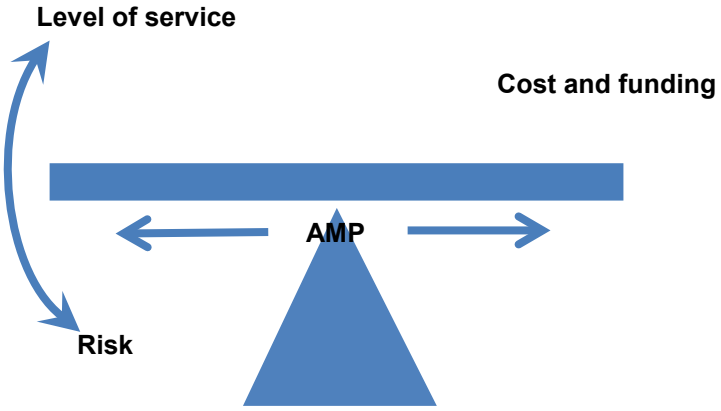
Note that the New Zealand Defence Force are responsible for developing the WSP for Waiouru.

Veolia also strengthened their processes after the 2018 Raetihi contamination. It has also been addressed with the recent upgrade of the Raetihi WTP. There is new technology installed for the treatment of Raetihi town water supply to ensure compliance and meeting DWSNZ.

6 PROGRAMME CASE

6.1 INTRODUCTION

The objective of lifecycle management is the management of assets from conception to disposal whilst meeting levels of service, minimising risk and whole of life costs. Council delivers water services to deliver the LOS defined in Table 15 in the most cost effective way over the life of the asset. Council's AM approach is the appropriate balance between LOS, risk and cost as shown below.



Council's lifecycle management strategy is to maximise the useful and economic lives of its assets in order to reduce the cost of the water supply service to the community. The primary factors considered in managing the District's assets to maximise their service lives are:

- The consequential risks of an asset failing
- The extent, duration and frequency of interruption to the water supply due to repair or replacement of an asset.

6.2 ASSET INFORMATION SUMMARY

6.2.1 Asset summary

Council provides water supply services to approximately 5,497 rateable properties in the District via the following Council-owned water supply systems:

(a) National Park
(b) Ohakune
(c) Ohura
(d) Owhango
(e) Raetihi
(f) Taumarunui
(g) Waiouru (network only).

With the exception of Waiouru, each of these water supply systems comprises intake and treatment assets and an integrated series of water mains, valves, hydrants, reservoirs, water pump stations and water connections. Waiouru water supply assets owned by Council consist of network assets only, with treated water being purchased from the New Zealand Defence Force (Waiouru Military Camp). A summary of these water supply systems is provided in Table 22.

District-wide overview information on Council water supply systems and assets is provided in this section, with township specific water supply system information provided in Part 4, Appendix B and C.

Additional detailed information on each individual asset with respect to type, location, size, material, installation year, etc. is stored in Council's GIS and AssetFinda (asset management system).

Table 22: Summary of water supply systems

Township	Rated properties supplied	Water supply sources	Water treatment plants	Reservoir storages	Approximate Reservoir storage volume (m^3)	Water supply pump stations	Watermain length (km)	Hydrants	Valves
National Park	319	1	1	1	500	0	14.7	43	59
Ohakune	1,654	1	1	2	3,000	0	39.8	216	262
Ohura	169	1	1	1	225	0	9.0	27	45
Owhango	205	1	1	4	345	0	29.9	18	64
Raetihi	613	1	1	1	900	0	24.9	115	124
Taumarunui	2,445	1	1	8	9,052	4	69.9	387	471
Waiouru	92	0	0	0	0	0	2.6	15	13
Total	**5,497**	**6**	**6**	**17**	**14,022**	**4**	**190.8**	**821**	**1038**

Source: AssetFinda (as at July 2019)

(1) Ruapehu District Council purchases water treated by the New Zealand Defence Force (Waiouru Military Camp).

The water assets had a gross replacement cost of $72.1 million (as at 1 July 2020). The value of the network by the major asset classes are summarised in Section 9.5 with the full valuation in Appendix E, Part 4.

The rateable properties connected as recorded in the financial system is different to the number of connections recorded in Council's GIS. These two datasets need to be reconciled prior to the next valuation.

6.2.2 Private supplies

There are several small towns in the District that are currently unserviced with a public water supply system, including those in Table 23. As these townships grow, pressure will likely grow for a Council reticulated water supply system. Council must balance the ability of the District to fund such a reticulated scheme with the social good, supply security and public health benefits which arise from a public reticulated scheme. Further information on private supplies can be found in the Sanitary Survey 2020.

Table 23: Unserviced small towns

Township	Water Service Status	Comments
Horopito	None	Ongoing development of Horopito occurring
Raurimu	Private water supply scheme	
Kakahi	Private water supply scheme	
Ongarue	None	
Pipiriki	Private water supply scheme	Operated by DOC / Maori Trust Investigation underway for providing public water supply and wastewater services
Piriaka	Private water supply scheme	
Rangataua	None	

6.2.3 Headworks and treatment

Intake:
Source water for each of the Council water supplies is derived from surface water sources. Abstraction from these water sources is consented under resource consents issued by HRC. Water sources consist of a variety of protected and unprotected catchments. Abstraction of water is via both pumped systems and gravity intake systems. Gravity intakes consist of weirs or similar abstraction means while pumped systems consist of civil intake galleries and mechanical and electrical pump and switchboard componentry. A summary of Council's water supply intakes is provided in Table 24.

Table 24: Water supply intake summary

Township	Source	Source Code	Consented Abstraction (m^3/day)	Consent No	Abstraction Method
National Park	Mangahuia Stream	S00101	500	6888	Gravity
Ohakune	Serpentine Stream	S00033	2,500	101266	Gravity
Ohura	Mangaparare Stream	S00380	360	101866	Pumped/Gravity
Owhango	Deep Creek	S00102	1,500	101514	Gravity
Raetihi	Makotuku River	S00034	1,685 / 820	2001009610.01	Gravity
Taumarunui	Whanganui River	S00042	7,000	7196	Pumped/Gravity

Ohakune Raw Water Intake

Raetihi WTP Intake Weir

Matapuna Intake

Figure 8: Water intake examples

Water treatment plants:

Raw water is treated by six individual water treatment facilities with varying degrees of assets and treatment capability. These facilities vary from coarse screening/settling and chlorination only (Owhango) to full conventional treatment consisting of coagulation, clarification, filtration, chlorination and pH correction (Taumarunui and Raetihi). Water treatment facilities consist of civil (buildings, filters, tanks, pipework), mechanical (pumps, meters) and electrical (switchboards, controls, instrumentation) assets. All water treatment facilities are connected via SCADA enabling real time monitoring and alarming and providing remote operational management capabilities. A summary of Council WTPs is shown in Table 25.

Table 25: Water treatment plant summary

Township	Plant Code	Plant Components
National Park	TP00171	Filtration + UV Disinfection +Chlorination
Ohakune	TP00054	Coagulation + filtration + pH correction + UV disinfection + chlorination
Ohura	TP00622	Coagulation + clarification + filtration + pH correction + chlorination + treated water pumping
Owhango	TP00172	Coarse screening + chlorination
Raetihi	TP00055	Coagulation + clarification + filtration + pH correction + UV disinfection + chlorination
Taumarunui	TP00067	Coagulation + clarification + filtration + pH correction + UV Disinfection + chlorination + treated water pumping

Matapuna WTP UV units

National Park UV unit

Raetihi WTP UV units

Figure 9: Water treatment plant examples

6.2.4 Storage and pump stations

Treated water storage:
Treated water for the District is stored in 17 storage reservoirs, with a total capacity of approximately 14,022m^3 as summarised below. The treated water storage reservoirs range in size from 25m^3 (nominal) reservoirs serving small elevated areas within Taumarunui to 4,600m^3 (nominal) reservoirs (Matapuna reservoir). Storage reservoirs include concrete, timber with internal lining along with plastic reservoirs.

Table 26: Treated water storage

Township	Reservoir Size m^3 (approx.)	Max Monthly Average daily demand (m^3/d)	Days storage at Max Monthly Average daily demand	Peak daily consumption (m^3 / day)
National Park	500	243	2.1	360
Ohakune	3,000	1,499	2.0	1,917
Ohura	225	209	1.1	370
Owhango	345	582	0.6	703
Raetihi	900	967	0.9	1,143
Taumarunui	9,052	3,292	2.7	4,964
Waiouru	0	NA	NA	NA
Total	**14,022**			

Source: Veolia (October 2020)


Matapuna Concrete Reservoir


Ohakune Timber Reservoir


Sunshine Road Reservoir

Figure 10 Treated water reservoir examples

Water pump stations:
There are six water pump stations owned by Council that provide for the transfer of treated water to elevated points within the distribution network. The Ohura and Taumarunui water supplies have treated water pumps as part of the WTP assets. Taumarunui has four network (reticulation) pump stations which either transfer water to elevated reservoirs within the supply system or boost pressures in the elevated network regions. These pump stations consist of mechanical assets (pumps), electrical assets (switchboards and controls) and civil assets (buildings).


Sunshine Road Booster WPS, Taumarunui (for future dosing if required)


Te Peka Booster WPS, Taumarunui


Manunui Booster WPS, Taumarunui

Figure 11: Water pump station examples

6.2.5 Network

Council's water supply system consists of seven Ministry of Health registered Water Supply zones: National Park, Ohakune, Ohura, Owhango, Raetihi, Taumarunui and Waiouru. Treated water is distributed to customers within the District via a reticulation network of pipes of various sizes and materials.

Provision of water supply to consumers is predominantly unmetered, with only large consumers metered. For unmetered consumers, the toby (gate valve) is defined as the point of supply and indicates the end of the public water supply system and the transition to the individual customer private pipework. For metered consumers, the meter represents the end of the public water supply system and the transition to the individual customer private pipework. Plans of each of the distribution networks for Council's water supply systems are contained in Appendix B, Part 4.

6.2.6 Watermains

Pipelines:
Water is distributed to customers via 191km of water supply pipelines of various sizes and materials. The watermains represent over 71% of the water supply system assets by value. Consolidated details of these watermains are provided in Table 27 and Figure 12.

Most of the District's water supply network is 100mm diameter or less (69.8%); and mPVC/uPVC and AC/ACS materials are the most common (85.1%). Most of the network (62.4%) was constructed after 1980, with a further 29.8% constructed during the 1960/69 period. An active watermain renewal programme has resulted in the renewal of approximately 10.8 km, or 6.2% of the watermains by length since 2010. These renewals have taken place primarily in Ohakune, Ohura, Raetihi and Taumarunui.

Table 27: Summary of watermain assets

Length of Council Water Supply Network by Diameter, Material and Date Laid								
Diameter (mm)	Length (km)	%	Material	Length (km)	%	Date Laid	Length (km)	%
Less than	49.0	25.7%	AC/ACS	62.1	32.5%	Pre 1950	1.0	0.5%
63-100mm	84.2	44.1%	mPVC/uPV	100.2	52.5%	1950-59	6.7	3.5%
125-150mm	28.6	15.0%	HDPE/MDP	19.8	10.4%	1960-69	56.8	29.8%
200-300mm	26.5	13.9%	CI/DICL/CLS/Steel	4.4	2.3%	1970-79	7.3	3.8%
300mm and above	2.5	1.3%	GALV	3.7	2.0%	1980-89	51.8	27.2%
Unknown	0.04	0.0%	ALK	0.6	0.3%	1990-99	31.4	16.4%
			Unknown	0.03	0.0%	2000-09	19.8	10.4%
						2010 to 2019	16.0	8.4%
Total	**190.8**	**100%**	**Total**	**190.8**	**100%**	**Total**	**190.8**	**100%**

Source: Veolia (August 2020)

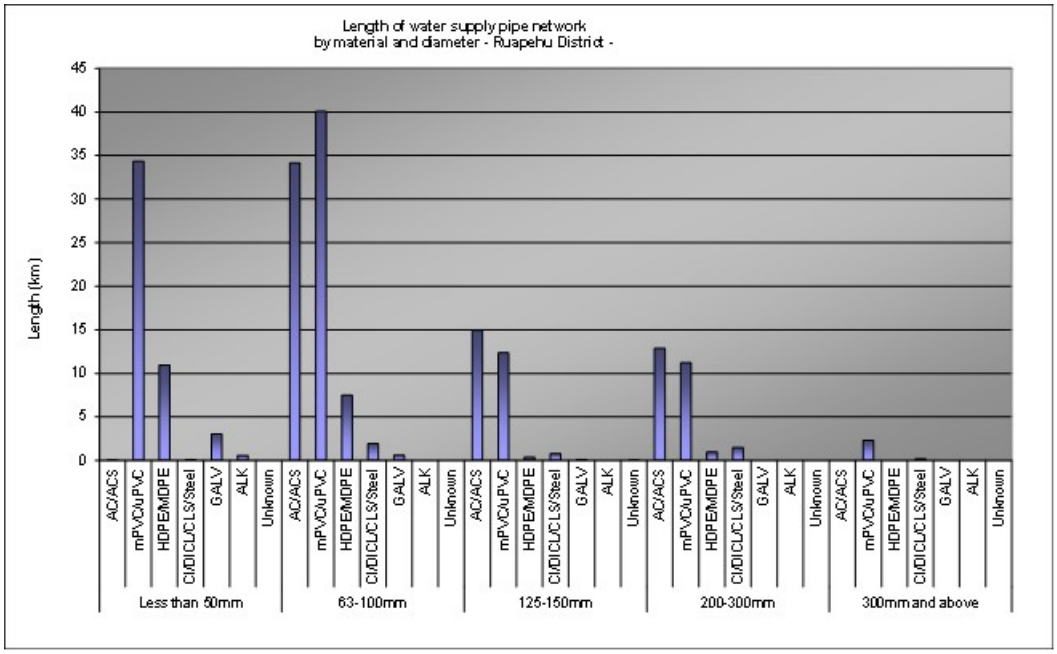


Figure 12: Summary of watermain assets

Source: Veolia (September 2020)

Hydrants:
The 821 hydrants within the water supply system are provided for fire fighting and operational flushing. Hydrants are also (under strictly controlled and monitored conditions) permitted to be used for water supply purposes for roading and associated works.

Valves:
The 1,038 valves within the water supply system consist of sluice valves and peet valves and provide for the controlled shutdown and isolations of areas of the water supply network.

6.3 ASSET CRITICALITY

The criticality of the asset is an indicator of the consequence of asset failure with respect to how its failure will impact overall operational performance, operator and customer safety, and the environment.

Council officers, along with engineers and operators from the Facilities Management Contractor, are aware of the critical assets within the water supply system. These include items such as raw water pipelines, trunk mains and control equipment.

The criticality of assets is assessed using the criteria in the following table. Critical asset identification is currently used in decision making with renewals, condition assessments and operational activities. Refining the categorisation of critical water assets at component level to support better decision making has been identified as an improvement action. The categorisation of critical above ground water assets at component level has been completed as part of the condition assessments but not recorded in Council's AssetFinda. This needs to be updated in AssetFinda and will take time to complete (and identified as an improvement action).

Table 28: Asset criticality assessment criteria

Criticality index	Criticality	Criteria
1	Non-critical	Failure will not have an adverse impact on safety, performance or the environment, e.g., sample valve.
2	Low criticality	Failure would have an adverse impact, but protection, such as redundancy protects against it, eg, pumps in duty-standby.
3	Critical	Failure will have an adverse impact on safety, performance or the environment, eg, pump with no standby.

6.4 ASSET PERFORMANCE

This section details the performance of the water supply network in relation to the quality of water delivered to customers as well as firefighting capability, meeting compliance requirements, and leakage.

6.4.1 By asset class

The overall performance of the water supply assets is summarised in Table 29. Specific information on asset capacity/performance for each of the individual water supply systems is provided in Appendix C, Part 4.

Table 29: Asset performance summary by asset class

Asset	Asset Performance Grading	Comment/Substantiation
Headworks and Treatment		
Intake	3	Current abstraction permits are held for all water intakes (or for expired consent are legally operated under S124 of the RMA). Significant improvement has been made to the abstraction limit non-compliances. New abstraction meters were installed at Owhango and National Park in 2018 and Matapuna (Taumarunui) in 2019. Improvements to raw water quality monitoring • The addition of the on-line hydrocarbon detection system to the Raetihi water intake pipe has improved raw water quality monitoring. • The raw water turbidity meter at the Taumarunui intake was replaced and is in excellent condition and rock media was added around the intake pipe to provide continuity of asset protection. However: • Fixed screens which may become obscured and siltation occurs occasionally at some sites. The accumulation of silt upstream of the Ohakune Intake is believed to contribute to the raw water high turbidity experienced during heavy rainfall. • Vehicle access for maintenance purposes is limited to some intake sites.
Water Treatment Plant	3	All WTPs (excluding Raetihi) are unable to fully comply with criteria in the DWSNZ. Many WTPs do not provide treatment for the removal/deactivation of protozoa. Installation of UV disinfection at Taumarunui, National Park, Ohakune and Raetihi have been designed to provide additional log credits to enable compliance with NZDWS. All WTPs other than Matapuna (Taumarunui) are ungraded. However: • All treatment plants have online instrumentation and are connected to SCADA providing real time monitoring and alarming and remote operational management. • Chlorination at all WTP provides for E.coli protection and ensures a network disinfection residual. Council are making use of the Government provided funding for upgrades at Ohakune and previously funded upgrades to National Park, Taumarunui and Raetihi have been completed. • Chemical storage at the Matapuna, WTP is HSNO compliant and has received appropriate certification.
Pump Station/Storage		
Treated water storage	3	24 hours or greater of treated water storage at maximum monthly average daily demand is provided for all water supplies other than Owhango.

Asset	Asset Performance Grading	Comment/Substantiation
Water pump stations	4	Some water pump stations are not connected to SCADA do not provide advance notification of failure. Network pump stations at Sunshine Road and Te Peka have no installed standby pumps and hence restricted redundancy in the event of failure. There is a critical spare held for these two small sites. Manunui Pump Station is currently being upgraded to include a standby pump. However: Historical outages have been rare with service interruptions in the supply of water
Network		
Watermains	3	The network provides overall good performance with low instances of mains breaks. Supply pressures typically meet or exceed the Public Health Grading of Community Drinking Water Supplies (2003) recommended 200 kPa minimum pressure. Flows typically exceed minimum requirements at the customer point of supply. Rolling watermain renewal programme targets mains where condition is poor. However: Backflow prevention protection management and enforcement is currently limited but has been slowly improving. In 2018, backflow prevention devices were installed at all RDC owned WWPS at Taumarunui. Council currently has a programme of replacing gate valves at the property boundary with a backflow prevention device assembly.

Source: Veolia (September 2020)

Performance grading scale: 1 = very good; 2 = good 3= moderate 4= poor 5 = very poor

Primary deficiencies with respect to asset capacity/performance for Council's water supply systems are in relation to:

- Drinking water standards compliance
- Capacity of Ohakune Water Treatment Plant to satisfy water demand
- Structural pipe failure of 375 main.

Drinking water standard compliance:

With the exception of Matapuna WTP, all water treatment facilities for the District are ungraded. All treatment facilities, except Raetihi, are unable to comply fully with the DWSNZ.

- Automation, control and monitoring upgrades undertaken by Council during 2008-11 have resulted in all water treatment sites having online monitoring and being connected to SCADA. There remains connectivity issues which has resulted in data losses at times across networks which require additional SCADA improvements.
- The primary deficiencies are in meeting protozoan compliance. The water treatment facilities (Owhango) has no practical means of protozoan removal/inactivation. A further two facilities (National Park and Ohakune) have inadequate means of protozoan removal/inactivation under high raw water turbidity loading conditions. In 2016 UV disinfection was installed at Taumarunui WTP and in 2018 UV disinfection was installed at Raetihi WTP. This provides the additional log credits required to achieve compliance. During the 2018/19 period, the Raetihi WTP achieved protozoal compliance.
- The Taumarunui WTP failed the protozoan compliance in 2018/19 because turbidity levels at times were too high, some process measurements exceeded limits and record keeping was inaccurate.
- Ohakune Water Treatment Plant upgrade started in 2019 and will take over two years. It is expected to be compliant in 2021/22.

- The Ohura WTP has insufficient treatment to achieve the required protozoan risk category log credits for full compliance with the drinking water standards. Council has applied for Government Funding under the Three Waters Stimulus Grant to upgrade the three non -compliant plants (Ohura, National Park and Owhango). Refer to Section 3.6 for detail on expected timings.

Abstraction (resource consent) compliance:
All water sources are currently consented to enable raw water abstraction. Council has lodged resource consents with HRC for Owhango and Taumarunui. Council has undertaken significant improvements improving control of abstraction at Owhango and Raetihi and replaced the raw water meter at Owhango and National Park in 2018 and Taumarunui in 2019 resulting in improved accuracy in respect to compliance with daily abstraction volume limits.

Backflow:
Backflow prevention devices are used to protect the public water supply system from contamination. Backflow prevention compliance is also an area of significant concern in relation to public health and water quality. Backflow containment devices at the property boundary are not stringently enforced for high and medium hazard risk properties. This creates the potential for contamination of the water supply from backflow. Council has a register of installed backflow prevention devices for some commercial units and recognises the need for ongoing improvement in backflow prevention. During 2018 Council installed backflow prevention devices at all Council owned Wastewater Pump Stations at Taumarunui and the Taumarunui Public swimming pool.

Although there are backflow devices provided at some high-risk locations, Council currently does not have a proactive backflow programme. The development of a more robust backflow prevention installation and proactive inspection programme has been identified as an improvement project. Residential customers are being upgraded over timer or receive an accuflow on connection which includes a backflow check. Backflow devices are being installed for larger and high risk connections with the Taumarunui main street upgrade as appropriate.

Leakage:
Leakage within the Raetihi water supply pipe network is believed to have been improved through targeted renewal of problematic watermains. Water loss surveys were completed in Ohakune and Raetihi in 2019 using a night usage survey. Night time flow monitoring was undertaken at Taumarunui in 2019 as part of the Taumarunui Water Supply Network Modelling project. Areas of high usage were identified and targeted for further investigation.

The ILI results are:
- Taumarunui District Metered Area (largest part of town):
  - ILI of 1.2
  - indicates further loss reduction may be uneconomic unless there are shortages, careful analysis needed to identify cost-effective improvement
- Mahoe Settlement District Metered Area (small settlement):
  - ILI of 5.7
  - indicates being poor leakage record, tolerable only if water is plentiful and cheap
  - water loss is significant and further investigation is required
- SH4 Piriaka District Metered Area (small settlement):
  - ILI of 81.5
  - indicates being very inefficient use of resources, leakage reduction programmes imperative and high priority
  - water loss is significant and further investigation is required.

Figure 13 shows the watermain breaks and provides an indication of the performance of watermain assets over time. This is a reflection of aging pipes reaching the end of their life and failing, but also of improved data collection from the contractor over time. This shows that the network performance is still within an acceptable industry level (less than 30 breaks per 100km) and is monitored with the technical performance measure. Customer service data analysis found that the number of major breaks has been reducing but the number of minor leaks has increased.

Council intends to move to using Infrastructure Leakage Index (ILI) as a water loss performance indicator. This will help prioritise zones for leakage management and aligned to industry best practice.

A proactive leakage management programme appropriate for Council's water networks has been developed and is now being implemented.

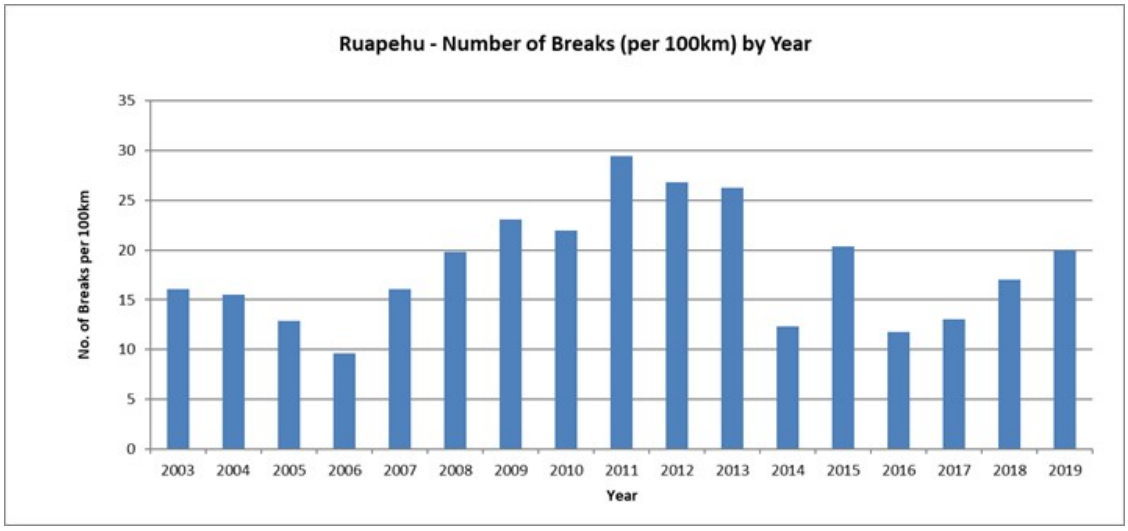


Figure 13: Watermain breaks 2003 to 2019

Source: Veolia (as at September 2020)

Peak demand:
Water Supply for Waimarino presented one of the biggest challenges for Water Supply in the previous 2018-28 AMP period. Demand and growth in the peak population in these areas compounds the problem. Peak population, which is the total of the 'per day population' from URP, holiday homes, day visitors and night visitors is predicted to increase. This presents both water supply quantity and quality challenges which require significant investment. Council have implemented a number of measures to address these challenges including the completion of the Raetihi Water Treatment Plant Upgrade in 2018 and initiating the planning and design of the Ohakune Water Treatment Plant capacity upgrade in 2020.

6.4.2 By township

Overall performance grades by township are provided in Table 30. Specific information on asset capacity / performance with respect to individual schemes is provided in Appendix C, Part 4.

Current asset capacity / performance is similar to that reported in the 2018 AMP, with a reduction in performance at Ohakune, primarily due to the performance issues associated with the Ohakune WTP. Council have implemented a capacity upgrade at the Ohakune WTP, to address the performance issues.

Table 30: Water supply system performance summary

Water Supply System	Asset Capacity/Performance Grading
National Park	2
Ohakune	3
Ohura	3
Owhango	3
Raetihi	3
Taumarunui	3
Waiouru	2

Source: Veolia (August 2020)

Performance grading scale: 1 = very good; 2 = good 3= moderate 4= poor 5 = very poor

6.4.3 Consent conditions

The water supply schemes in the District extract from streams and have specific consent conditions which can affect the water availability for the township. These conditions include extraction limits such the daily maximum volume allowed, the maximum volume in litres per second, and the minimum stream flow requirements. In addition, consideration needs to be given for strengthening resilience such as alternative supplies in periods of stream flooding or in natural hazard events such as ash falls. This may trigger new consents.

The resource consents limit for each scheme is summarised below and this shows that Ohakune and Raetihi water supply schemes are close to their consent limits. There is increasing pressure on the water supply catchments from competing uses. Councils are required to justify their abstraction volumes and show efficient and effective use of the water. A comparison of average daily water consumption with the resource consent daily limit is provided in Table 31.

Table 31: Daily water consumption

Township	Average Daily Water Consumption (m^3/day)	Resource Consent Daily Limit (m^3/day)
Ohura	206	360
Taumarunui	3,117	7,000
Owhango	620	1,500
National Park Village	276	500
Ohakune	1,708	2,500
Raetihi	872	1,685 (restricted to **820** during low flows)

The current status of the consents for providing water supply are summarised in Table 32. This shows that there are five consents currently lodged with HRC. It is likely that future water consent conditions will be more restrictive and may cost more to comply with, implement and monitor.

Table 32: Water take consent status

Township WTP	Receiving Environment	Expiry Date	Status	Notes
National Park	Mangahuia Stream	12/12/2026	Current	This consent will not expire until 2026.
Ohakune	Serpentine Stream	11/09/2025	Current	This consent will not expire until 2025.
Ohura	Mangaparare Stream	14/11/2021	Current	New application being developed for this resource consent.
Owhango	Deep Creek	20/3/2016	Lodged (operating under current consent)	New application lodged with Horizons Regional Council 18 December 2015. A Water loss report requested by Horizons and provided by Veolia in October 2019. Draft revised conditions and section 92 response prepared to be lodged but have been awaiting decision on Raetihi consent.
Raetihi	Makotuku River	1 July 2039	Current (for consent granted on 11 May 2020)	Was lodged with HRC 30 January 2015. Revised and resubmitted 23 June 2017. Consent granted 11 May 2020.
Taumarunui	Whanganui River	20/06/17	Lodged (operating under current consent)	New application lodged with HRC 20 March 2017. Council has responded to a section 92 request for further information from Horizons. Abstraction continues under the old consent until the lodged consent is processed. Further engagement with iwi maybe required by RDC.

Water for Waiouru Township is procured by Council from the NZDF. They are responsible for obtaining resource consent.

The technical, political and community engagement means that these consents require significant consultation pre-lodgement and again once they are notified.

The Horizons Regional Council "One Plan" has set common catchment expiry dates which enables the whole of catchment to be assessed together. This enables the whole receiving environment to be looked at holistically. It also enables communities to look at their environmental desires against the affordability costs. Council has invested heavily with inclusive engagement with iwi using the "wai process" to understand the state of the plants, the state of the environment, treatment plant and options against the River values of environmental and recreation in the One Plan, adding a third dimension being cultural values.

It is considered that the Wai Group engagement process for the Raetihi township resource consent and the Taumarunui Water Supply Working party formed to assess Taumarunui and Owhango water consents, and the general community meetings are consistent with the NPS Freshwater Management 2020.

6.4.4 Firefighting

The water supply activity also provides firefighting capability to assist public safety where the water supply was design to deliver this volume of water. For those unable to deliver firefighting flows they have been declared as rural fire areas and the fire brigade has resource differently for these towns such as Ohura and Owhango. With any public water supply network, there are pockets known to not be fully meeting the Firefighting Code. A study is planned to confirm these areas and assess the firefighting capability of the large townships (refer to Section 8.1 Improvement Programme).

6.4.5 Water conservation measures

Water is a lifeforce from the mountains to the sea, nourishing lifeforms: aquatic insects, birds, stock, plants and humans along its journey. The use of this water must be respected "Te Mana o te Wai" especially when the water becomes scarce. Water conservation measures are put in place for townships in response to lower water volumes in the rivers. As the river volumes decrease from dry weather, resource consent conditions come into effect to ensure water is used efficiently. Water restrictions are used to reduce urban consumer demand and may ban activities that are not essential uses during extreme conditions. The restriction levels are communicated on Council's website when required.

Whanganui River and Makotuku River levels recorded marginally above minimum flow levels under the current resource consent conditions in December 2017. Water restrictions are notified to the northern communities (Owhango, Taumarunui and National Park) and southern communities (Ohakune and Raetihi) by Council when the river flows at set locations approach the minimum flow thresholds.

Water restrictions are a function of resource consent conditions to maintain the health of the river and does not imply that Council is depleting the river. For example, Council abstraction volume of 7,000m^3/d for Taumarunui creates a decrease in the river level of 2mm during low flows. Council needs to undertake more education of water conservation, empowering users and impacts on the environment. Te Mana o te Wai and The One Plan place emphasis on water abstraction consent holders demonstrating their need and efficient water use. Restrictions in use are subject to river flows and during low flows only essential users are able to utilise water. Non-essential users will be required to have their own alternative source of water during low flows.

Horizons have yet to reassess the water allocation model to be used on the Whanganui River, which may subject communities to more restrictions.

6.5 ASSET CONDITION

6.5.1 By asset class

The overall condition of the water supply assets is summarised in the following table. This shows that most asset classes are in good grade 3 (or average) or better. Specific information on asset condition for each of the individual water supply systems is provided in Appendix D, Part 4.

Table 33: Asset condition summary by asset class

	Asset Condition Grading	Comment/Substantiation
Headworks and Treatment		
Intake	3	Intakes are generally in average condition.
Water Treatment Plant	2	The overall condition of the majority of the WTP assets is good. Many mechanical and electrical assets are in good condition, having been installed or upgraded as part of WTP upgrades at National Park (2009), Ohakune (2008, 2010 & 2018), Ohura (2010, 2019), Owhango (2010) and Raetihi WTPs (2010 & 2018). Many mechanical and electrical components of the Matapuna WTP are also in good condition as a result of an upgrade in 2005. WTP SCADA components are in good condition due to SCADA being predominantly installed as part of the 2008 – 2018 WTP upgrades. However: Civil assets (eg, clarifiers, filters, tanks, buildings) are older and a number of these are exhibiting evidence of corrosion/deterioration. Taumarunui, Raetihi and Ohura chemical tanks have been renewed between 2010-2019.
Pump Station/Storage		
Treated Water Storage	2	Treated water storage asset condition varies between good and very good. A new reservoir was installed at Ohakune during 2009 and the roof and internal liner for the existing reservoir replaced during 2010. The roof of the Owhango reservoir was replaced during 2009. The Ohura treated water reservoir roof was rehabilitated and the storage was provided with an internal liner during 2011. The National Park treated water reservoir roof was replaced, with an additional roof liner to further prevent any possible contamination 2012. The internal liner and associated pipework and valves were replaced in 2018. Much of the componentry of the Matapuna reservoir was replaced in 2005, with the structure in good condition. However: The Raetihi concrete treated water storage reservoir shows some sign of leakage, but is in generally good condition. The roof shows some sign of corrosion.
Water Pump Stations	3	No major condition issues and an overall average condition. However: Deterioration is evident at Manunui WPS.

	Asset Condition Grading	Comment/Substantiation
Network		
Watermains	3	Network condition varies between good and poor. Water reticulation networks installed during the 1980s in PVC material (National Park and Owhango) are in good condition. AC material mains, typically installed in the 1960s or earlier, are approaching the end of their useful life and their condition subsequently is deteriorating. There have been improvements from the 2012 AMP, specifically from: Currently, 45% of the Ohakune reticulation network is of AC main material and 50% of the Ohakune reticulation network was installed in the 1960s. This is an improvement on the 2011 AMP and reflects targeted capital expenditure by Council. The raw watermain is scheduled for replacement together with the reservoir. Currently, 53% of the Raetihi reticulation network is of AC material main and 54% of the Raetihi reticulation was installed in the 1960s. This is an improvement on the 2011 AMP and reflects targeted capital expenditure by Council. The raw watermain is nearing the end of its useful life. The condition of the 375mm diameter uPVC trunk main in Hakiaha Street, Taumarunui is poor due to design faults. During 2018 and 2019, there have been several major network repairs on the trunk main due to the advanced degradation of the pipe. Planning / design of the replacement trunk main is in progress. This pipe is also found in the Golf Road and while not subject to the same heavy traffic load is showing increases in failure at weak points. (joins with other pipes and bends). Continued assessment for this pipe is important.
Hydrants	2	No major condition issues
Valves	2	No major condition issues

Source: Veolia (August 2020)

Condition grading scale: 1 = very good; 2 = good 3= moderate 4= poor 5 = very poor

Primary key deteriorating assets for the District water supply systems are the AC watermains in Ohakune, Ohura, Raetihi, Taumarunui and Waiouru. Currently 54.5km of AC watermain was installed in the 1960s or earlier (7.7km of AC watermain having been replaced since the 2011 AMP). This AC water main is progressively deteriorating. Council RFS records indicate specific AC mains indicating high failure frequencies. Council's useful life information indicates an overall average expected useful life for AC material water mains of 65 years. Significant expenditure will therefore be required in both this and the following AMP to provide for the required renewals of AC material watermains.

Taumarunui 375 watermain installed along the main street (State Highway 4) and in the Golf Road area. There has been a historical developing trend of failure with this main in the heavy and high volume traffic areas, which was discussed with Councillors during the development of the last AMP. The trend did result in decreased LOS but the repair cost was significantly lower then the whole of life replacement cost. The decision has been to keep a watching brief on deterioration. Since that decision the deterioration rate accelerated creating more LOS losses and NZTA signalled they wished to rebuild sections of the main street in an accelerated work programme. Council has undertaken special consultation to move this pipe replacement forward in the infrastructure pipe replacement programme.

Raetihi exhibits significant continual night time consumption. This is shown by SCADA instantaneous and cumulative demand information. Investigations revealed significant leakage from the watermains, 53.4% of which is AC material. This AMP provides for investment to continue the replacement of the Raetihi AC pipe network.

6.5.2 By township

Overall asset condition grades by township are provided in Table 34. Specific information on asset condition with respect to individual schemes is provided in Appendix D, Part 4.

Table 34: Asset condition grade by townships

Water supply system	Condition grading
National Park	2
Ohakune	2
Ohura	3
Owhango	3
Raetihi	2
Taumarunui	3
Waiouru	2

Source: Veolia (August 2020)

Condtion grading scale: 1 = very good; 2 = good 3= moderate 4= poor 5 = very poor

6.6 ONGOING ASSESSMENTS

Asset condition and performance monitoring is undertaken to identify under-performing assets and those about to fail. Ongoing asset capacity / performance assessment and asset condition assessment is undertaken by Council on a rolling basis (refer to table below).

Table 35: Rolling asset performance and condition assessment schedule

Year	Water supply systems
1	Raetihi and Waiouru
2	Taumarunui
3	National Park
4	Ohura
5	Owhango
6	Ohakune

The formal asset condition monitoring utilises asset capacity/performance information and asset condition information collected during routine system operation and maintenance. This includes:

- Physical condition inspection assessments.
- Request for service numbers.
- Customer interruptions – outages.
- Customer satisfaction.
- Asset failure work order records.

6.7 LIFECYCLE MANAGEMENT DECISION MAKING

Council categorises lifecycle management activities into broad categories as shown in the following table. The decision-making process for the determination between maintenance, renewals and creation is shown in Figure 14. This tree is used by the contractor in their daily operation activities. This is the ideal and currently Council is only able to categorise operations and capital in the existing financial system. This is the future aspirations of our financial system upgrade and identified as a future improvement.

Table 36: Lifecycle management activities

Expenditure Category	Related AMP Lifecycle Management Plan	Activity Category	Description
Operations	Routine Maintenance Plan	Operations	Operations incorporates all expenditure necessary for day to day operation and also includes for asset management planning activities.
		Maintenance	Maintenance incorporates all expenditure necessary to ensure ongoing operability of the asset, but which does not extend the overall asset life. Includes planned maintenance (preventative and corrective) and unplanned maintenance (breakdown).
Capital	Renewals/Replacement Plan	Renewals	Renewals incorporates all expenditure necessary to overhaul/rehabilitate an asset where this expenditure extends the overall asset life or completely renew/replace the overall asset.
	Creation/Acquisition/ Augmentation Plan	Growth	Growth incorporates all expenditure to add infrastructure/infrastructure capacity in order to expand services (provide service to future customers).
		Levels of service	LoS incorporates all expenditure to improve performance/achieve (existing customer) LoS.

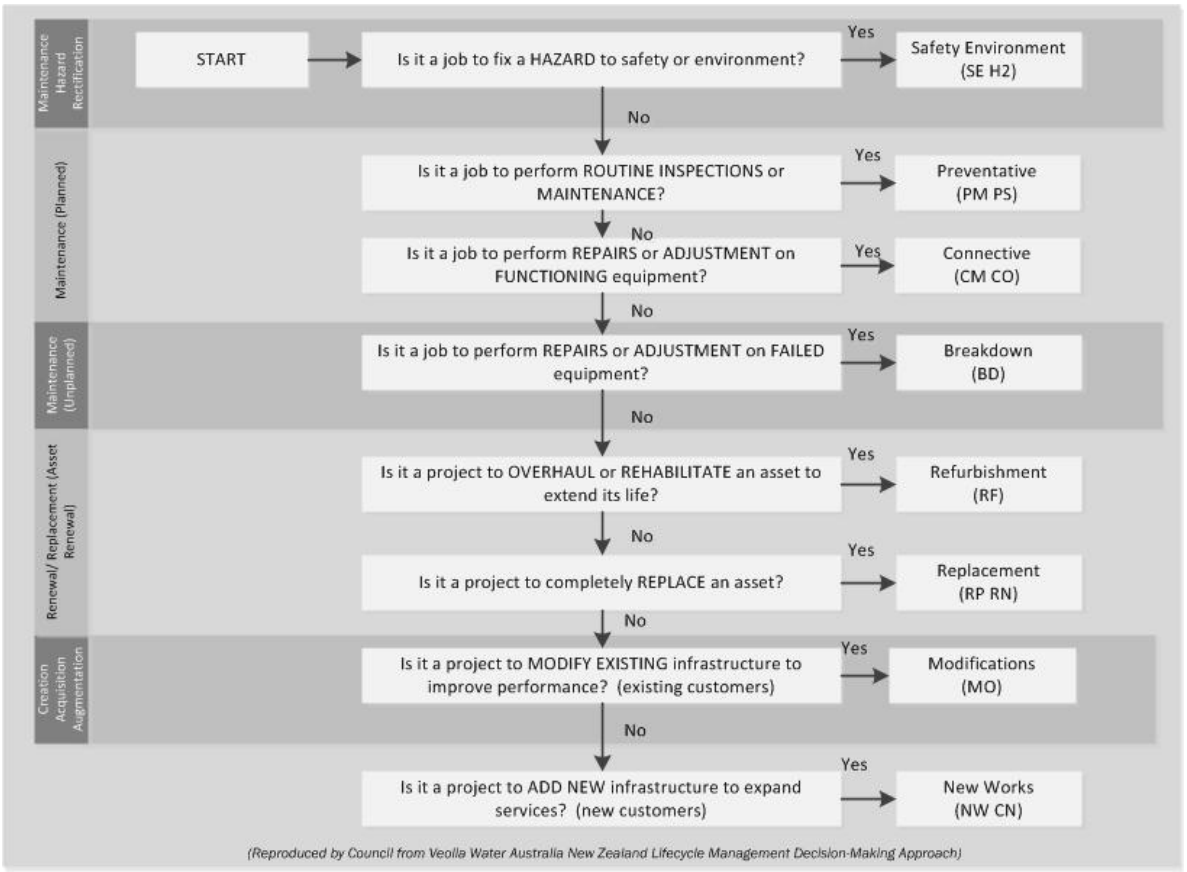


Figure 14: Asset maintenance, renewals and creation decision making

6.8 SERVICE DELIVERY ARRANGEMENTS

Council maintains ownership and responsibility for managing the water supply assets and undertaking the necessary planning and works to meet LOS. Council has engaged a Facilities Management Contractor (Veolia) to undertake day to day operation and maintenance works and, in a partnering arrangement, assists Council with asset renewals, upgrades and improvements and long term asset management planning activities.

Planned maintenance is scheduled by Veolia within its CMMS according to contract specified requirements and Veolia established maintenance schedules. Planned maintenance schedules are driven by factors such as legislative requirements and historical failure frequencies (preventative maintenance) and SCADA trends (corrective maintenance).

Unplanned maintenance relating to the water supply networks within the District is typically generated by customer notification to the Council customer service centre. The work request is entered into the Council RFS system and forwarded to the facilities management contractor for action within the KPI timeframes existing under the Facilities Management Contract.

KPIs within the Facilities Management Contract between Council and Veolia ensure that the contractor's work meets the LOS requirements and is undertaken according to relevant standards and specifications.

The current contract has been in place for approximately 25 years and is generally seen as successful arrangement for a small district council in a remote community. A rollover rather than developing a new contract is preferred, based upon the fact that Central Government may be establishing water entities which will take over these services in the next few years. This rollover will be subject to the conditions of contract being achieved and Section 17A review provided by an independent auditor.

A S17A review is underway with the focus on the service requirements (or obligations) of both Council and Veolia.

Council wishes to accelerate the water supply capital programme to improve drinking water compliance. This acceleration requires a step change in programme delivery. External specialist consultants will also be used to deliver a proposed larger capital programme, particularly the upfront planning and bedding in programme management disciplines. Our discussions with potential suppliers have indicated that there is sufficient market capacity to respond to our current and future delivery programme.

6.9 OPERATIONS AND MAINTENANCE PLAN

Asset operations and maintenance tasks relate to the day to day running and upkeep of assets and their associated costs.

The objective of the operation and maintenance activities is to maintain and operate the system such that the performance and reliability targets within the water supply LOS are met. Council keeps the water supply facilities suitable, accessible, safe and well maintained by carrying out planned and reactive maintenance. A breakdown of Council's operation and maintenance activities is included in the following table.

Council aims to optimise its maintenance activities to minimise the total maintenance cost. The optimal maintenance mix is a balance of planned and reactive maintenance. Maintenance includes minor repairs that cannot be capitalised, consistent with Council's capitalisation process.

Table 37: Operation and maintenance activities

Activity	Description	Specific items
Operations	Work conducted for the operation of the Water Supply systems to ensure optimal performance and quality control to meet regulatory and level of service requirements. Includes for Council's corporate overhead	Council labour, corporate systems and overhead costs providing for the following services required to deliver efficient and effective water services to the District: • Operations services. • Customer service and billing.

Activity	Description	Specific items
	costs, day to day operational costs and long term planning and asset management costs.	• Operations (facilities management contractor). • Operator labour for WTP operation and reticulation operation. • Chemicals. • Water quality analysis for DWSNZ compliance. • Facilities management contractor depot, vehicle and overhead costs. • Insurance. • Electric power to operate the WTPs and water pump stations. • Supply (purchase) from New Zealand Defence Force of treated water (or supply to Council's Waiouru customers (Waiouru only). • Consultants/testing/software/other services.
Hazard Management *(Safety or environmental)*	Work undertaken by the Facilities Management Contractor to fix a hazard which is affecting safety or the environment.	Replacement of valve box lids, hydrant box lids, meter box lids.
Preventive Maintenance *(Planned)*	Periodically scheduled inspections and maintenance scheduled by the Facilities Management Contractor according to established maintenance schedules within the contractor's CMMS.	Facilities management contractor costs associated with undertaking ongoing planned maintenance items including: • Inspections of WTPs. • Water pump station routine inspections. • Six monthly inspections of raw water mains and intakes. • Hydrant and valve marking. • Electrical planned maintenance on WTP and WPS. • Reservoir inspection and cleaning (where required). • Hydrant flushing (where required).
Corrective Maintenance *(Planned)*	Planned maintenance, typically identified from preventative maintenance tasks, scheduled by the Facilities Management Contractor, to return an asset to its required LoS.	Facilities management contractor costs associated with: • Pump repair of WTP and WPS pumps.
Breakdowns Maintenance *(Unplanned)*	Reactive maintenance, typically as a result of RFS call to Council's call centre, required to be undertaken by the Facilities Management Contractor to return a failed asset to its required LoS.	Facilities management contractor costs associated with undertaking reactive maintenance items including: • Repair of burst main/leaking mains. • Repair/replacement of broken laterals/leaking laterals. • Repair/replacement of broken valves and hydrants. • Watermain flushing and response to dirty water complaints.

6.10 ASSET RENEWAL PLAN

Asset renewals do not increase the asset's design capacity but restore, rehabilitate, replace or renew existing assets to their original capacity.

Council's strategy with respect to asset renewal is that they will rehabilitate or replace assets when justified by the factors in the following table with focus on critical assets.

Table 38: Asset renewal factors

Factor	Description
Risk	The risk of failure and associated financial and social impact justifies action (eg, probable extent of damage, safety risk, community disruption).
Asset performance	Renewal of an asset when it fails to meet the required level of service. Non-performing assets are identified by the monitoring of asset reliability, efficiency and quality during routine inspections and operational activity and through performance and condition assessments. Indicators of non-performing assets include repeated and/or premature asset failure, inefficient energy consumption, and inappropriate or obsolete components.
Economics	When it is no longer economic to continue repairing the asset (ie, the annual cost of repairs exceeds the annualised cost of renewal).

Factor	Description
Efficiency	New technology and management practices relating to increased efficiencies and savings will be actively researched, evaluated and where practical, implemented.

Renewals are prioritised and programmed in accordance with the following criteria, or in urgent cases undertaken immediately:

- Public safety risk
- Criticality of asset to operation
- Criticality of asset to achievement of service standards and outcomes
- Financial risk of deferring work
- Intensity of usage
- Environmental risk
- Political preference.

Renewal identification process:
The renewals programme is predicted from the assets nearing the end of their useful life. This is then validated against the actual pipeline condition / performance etc before it is actually renewed. Veolia's memo 2018 has provided information around useful lives in assessing Council programme. Council evaluated its end of useful life ages and found it was very conservative around its pipe lives. This was independently reviewed, and Council have subsequently adopted the useful lives as summarised in the following table.

The comparison between useful lives is summarised in the following table including justification where there are differences. The revised useful lives are used in the asset valuation. It is intended that the useful lives are peer reviewed again to ensure meeting industry good practice.

Table 39: Useful life

Watermain material	Council Revised Useful Life (years)	New Zealand Water Supply Authority "Average Useful Life (years)	NZ Infrastructure Asset Valuation and Depreciation Guidelines Typical Useful Life (years)	Justification
ACS	55	75	50 to 150	Alignment with North Island Average Useful Life (2015) data
mPVC/UPVC	100	100		Increase in useful life based on alignment with industry recommended minimum life expectancy
HDPE/MDPE	100	100		
CI	85	80		NA
CLS/Steel	100	110		
ALK	50	60		

Source: Veolia Review (2018)

Comparison with annual depreciation, historical and forecast expenditure at major asset class level is shown below. This shows that historical expenditure has been much less than annual depreciation for all asset classes. Reflective of Council underspend was the limited deterioration of the asset against the theoretical useful life. The ten year renewal forecast of $2.6 million on average will address this.

Table 40: Renewal expenditure versus annual depreciation comparison

Asset class	Annual depreciation (2020)	2017/18 Actual renewals	2018/19 Actual renewals	2019/20 Actual renewals	Ten year renewal forecast (average per year)
Headworks & Treatment	528,535	1,117,000	211,000	612,000	847,169

Asset class	Annual depreciation (2020)	2017/18 Actual renewals	2018/19 Actual renewals	2019/20 Actual renewals	Ten year renewal forecast (average per year)
Pump Station / Storage	135,190	58,000	35,000	52,000	10,460
Network	658,095	71,000	380,000	435,000	1,804,626
TOTAL	**1,321,819**	**1,246,000**	**626,000**	**1,099,000**	**2,662.255**

Key renewal projects:
Key water renewal projects for the District are indicated in Table 41. These exclude rolling renewal programmes.

Table 41: Key water supply renewal projects

Township	Renewal project	Justification
National Park	National Park Water Above Ground Assets: Renewals	Structured scheduled replacement programme for the National Park water treatment plant (average $37k per annum over ten years)
Ohakune	Ohakune Water Above Ground Assets: Renewals	Structured scheduled replacement programme for the Ohakune water treatment plant (average $99k per annum over ten years)
Ohura	Ohura Water Above Ground Assets: Renewals	Structured scheduled replacement programme for the Ohura water treatment plant (average $40k per annum over ten years)
Owhango	Owhango Water Above Ground Assets: Renewals	Structured scheduled replacement programme for the Owhango water treatment plant (average $25k per annum over ten years)
Raetihi	Raetihi Settling Ponds: Asset renewal	Renewal (replacement and refurbishment) of assets. Excluded on the basis of settling ponds no longer being required following the installation of a new WTP. (Estimated at $70k in total).
Taumarunui	Taumarunui Water Above Ground Assets: Renewals	Structured scheduled replacement programme for the Taumarunui water treatment plant (average $611k per annum over ten years)
	Hakiaha St Watermain Replacement	Taumarunui water network renewal, estimated at $2.6 million in total.

6.11 ASSET CREATION PLAN

Asset creation is the process driven by consumer growth or LOS. This involves the design and construction of new assets which increase the capacity or performance of the system. Asset creation is necessary to accommodate growth, changes in LOS or customer demand.

Council will continue to invest in water supply infrastructure with the main drivers being:

- To meet the demands of growth by supplying water to Council's customers through efficient utilisation of natural resources
- To meet the LOS with respect to safe and effective supply of water in main townships where applicable
- To strengthen resilience and prepare for climate change impacts
- To meet legislative compliance where possible.

Council growth and LOS activity categories are shown in Table 42.

Table 42: Asset creation sub-activities

Creation Plan Activity Category	Creation Plan Sub-Activity Category	Description
Growth	Headworks and treatment	Growth expenditure on headworks and treatment assets.
	Pump station/storage	Growth expenditure on pump station/storage assets.

Creation Plan Activity Category	Creation Plan Sub-Activity Category	Description
	Network	Growth expenditure on network (pipework) assets.
	Vested assets	Accounting related category for vested assets from new developments.
LoS	Compliance	Replacement, upgrading or installation of new assets to achieve compliance with statutory obligations including those related to DWSNZ compliance, resource consent compliance and Health and Safety compliance.
	Customer	Replacement, upgrading or installation expenditure to achieve (existing) customer Levels of Service. Also includes expenditure to improve asset operability and reliability so as to ensure LoS are achieved.
	Service extensions	Expenditure on new assets to provide water servicing to existing ratepayers who do not receive reticulated services.
	System information	Expenditure on activities acquiring system information to enable informed investment decisions and support asset operations and the provision of water services.

Key asset creation projects for the District are indicated in Table 43.

Table 43: Key asset creation projects

Township	Work and Expenditure Item	Justification
National Park	National Park WTP: Resource Consent	Resource Consent Renewal Costs (estimated $108k in total)
	Compliance improvements	Compliance improvements including new reservoir and plant upgrade (estimated at $1.8 million in total)
Ohakune	Compliance improvements	Compliance improvements including new reservoir and plant upgrade (estimated at $4.7 million in total)
	Ohakune Intake	Raw water delivery pipework (estimated at $2.2 million in total)
	Ohakune Water Network: Growth Extension	Extension of the water network for growth, Ruapehu Road area (estimated at $126k in total).
	Ohakune WTP: Resource Consent	Resource Consent Renewal Costs (estimated $366k in total)
Ohura	Compliance improvements	Compliance improvements including new reservoir and plant upgrade (estimated at $1.6 million in total)
	Ohura WTP: Resource Consent	Resource Consent Renewal Costs (estimated $108k in total)
Owhango	Owhango Water Networks: Fire Supply Upgrade	Upgrade of reticulation network to facilitate fire supply requirements (estimated at $180k in total).
	Compliance improvements	Compliance improvements including plant upgrade (estimated at $2.5 million in total)
	Owhango WTP Reservoir: Storage	Construct new WTP reservoir to provide 24 hours of storage and additional treated water storage during high turbidity events. (Estimated at $875k in total).
Raetihi	Raetihi new water source assessment	Assessment study (estimated at $645k in total).
	Raetihi Reservoir: Additional Reservoir and refurbishment of existing reservoir	Install additional reservoir and refurbishment of existing reservoir. Estimated at $700k in total.
	Raetihi Water Networks: Fire Supply Upgrade	Upgrade of reticulation network to facilitate fire supply requirements. Estimated at $90k in total.
Taumarunui	Taumarunui WTP: Resource Consent	Resource Consent Renewal Costs (estimated $100k in total)

6.12 ASSET DISPOSAL PLAN

Asset disposal occurs when an asset is no longer required or becomes uneconomical to maintain or rehabilitate. Asset disposal involves activities associated with disposal of decommissioned water assets, including their sale, demolition or relocation.

Assets may become surplus to requirements for reasons such as:

- Under-utilisation.
- Obsolescence.
- Provision exceeds required LOS.
- Asset no longer provides the service or fulfils the purpose for which it was intended.
- Uneconomic to upgrade or operate.
- Policy change.
- Service provided by other means.

There are no water supply assets of significant value that have been identified for decommission.

The Ohura Water Supply System provides water to a declining population and increasing maintenance costs have made the continuing operation of the Ohura WTP increasingly difficult to afford. A binding referendum on the plants closure was undertaken and the community voted to continue to operate the plant. The Waikato District Health Board was in favour of keeping the public water supply system rather than individual tanks which were likely to have less maintenance. With the pending three water reforms, the Ohura Water Supply System will likely remain as public assets.

For assets such as watermains, where asset renewal involves installation of a new asset, the existing asset is typically decommissioned and abandoned in place. There is a small sum reconciled each year against the financial system.

7 ASSET MANAGEMENT PRACTICES

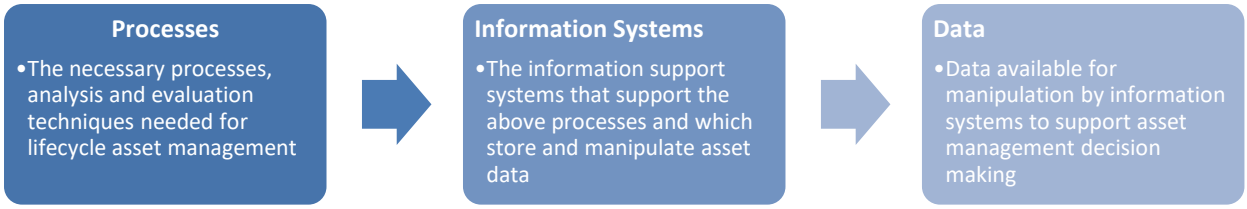
7.1 OVERVIEW

Council is committed to continue with good practice AM as a sustainable standard for its water supply activity. A key feature in Council's AM framework is to continue to improve practices, processes and tools. This is essential to ensure the asset system and services are effectively managed.

Through the initiatives presented in this section, Council is committed to appropriate AM practices. This practice is being developed in keeping with the NAMS practice as presented in their suite of AM publications including the IIMM. Council is committed to delivering the most appropriate levels of service balanced with affordability and good industry practice.

7.2 AM PRACTICES

This section discusses the status of Council's current AM practices and identifies practices Council wishes to use. The key AM practices can be grouped into the following three broad areas.



7.2.1 Current Practices

As part of Council's continuous improvement, independent reviews of the AMPs are undertaken periodically. GHD Consultants completed a desktop review in 2014 to assess the 2012 AMP.

The 2018 Water Supply, Wastewater and Stormwater AMPs were peer review by GHD Consultants in 2019. The peer review identified key improvements that needed to be addressed as part of the preparations for the 2021 LTP. The key improvements have been addressed through the update of this AMP. The improvement tasks and where this is addressed in this AMP are summarised in Section 10.2 Appendix.

7.2.2 AM Capability

Providing adequate capability and capacity is a challenge for Ruapehu District Council as a remote community. The approach taken to ensure adequate resources for managing the critical water supply activity is a mixture of in house resources, long term service provider Veolia and external specialists as required.

7.3 DATA

Data quality is important for end users so that they can have confidence in making an analysis using that data. Ongoing data collection and validation, in terms of the physical attribute accuracy and spatial data, are part of Council's ongoing improvement programme. The inventory completeness of water asset classes is shown in the following table.

Table 44: Water inventory completeness and accuracy

Asset Class	Inventory (%)	Data Completeness		Inventory Data Accuracy		
	Measure	Age	Condition	Measure	Age	Condition
Headworks and Treatment						
Water intakes	100%	100%	100%	Reliable	Mostly reliable	Reliable
Water treatment plants	100%	100%	100%	Reliable	Mostly reliable	Reliable
Storage and pump stations						
Treated water reservoirs	100%	100%	100%	Reliable	Mostly reliable	Reliable
Pump stations	100%	100%	100%	Reliable	Mostly reliable	Reliable
Network						
Watermains	100%	100%	98.8%	Reliable	Mostly reliable	Reliable
Hydrants	100%	100%	99.8%	Reliable	Mostly reliable	Reliable
Valves	100%	100%	99.0%	Reliable	Mostly reliable	Reliable

Source: AssetFinda (as at June 2019)

7.4 PROCESSES

The key AM processes are summarised in Table 45.

Through the auditing process, Council became aware that performance measures have not been reported on consistently for the three waters activities. The inconsistent reporting was also identified within the audit of the 2019/20 Annual Report by Audit NZ. There is a need to review the end to end process to ensure data is collected properly, that analysis is accurately undertaken and reported, and the internal business process is streamlined, determine what systems are used to record and report on, and what level of system integration is required.

Council commissioned an independent review of the service request process which provides the underlying data for this performance measure. The recommendations from this review are currently being implemented and identified as an improvement project until bedded in as business as usual process.

Table 45: Asset management processes

AM Process Area	Purpose	Status/enhancements
Asset data collection (including condition)	Asset data including inventory measure, material type and condition is collected to ensure the asset inventory is complete and accurate for AM decision making.	Asset registers were developed for the above ground assets using asset inventory information from the RDC asset database, cross referenced against the Facilities Management Contractors systems (VAMs), process and instrumentation diagrams P&IDs (where applicable) and validated as part of asset inspections. Veolia also visually verify pipes in the field and provide feedback on any inaccurate data to Council who updates both AssetFinda and the GIS information. This data is then used for future analysis of asset deterioration, reliability and operations and maintenance characteristics across different plants and networks. Used in forwards works programme. All Council assets have been assessed above ground and representative samples below ground on three occasions 2003, 2008, and then as a rolling programme township by township.

AM Process Area	Purpose	Status/enhancements
Asset valuations	Asset valuations are coordinated by Council Finance Department.	Asset valuations are completed every year with the last asset valuation being completed in 2020. Data cleansing needs to be undertaken in relation to buildings for a consistent approach. Currently some buildings used for water supply purposes only in this activity as well as community property activity.
Risk management framework	Enterprise wide approach to ensure a comprehensive review of all potential risks across the whole Council.	Council new risk manager has indicated a review of the risk framework. Council uses its own system described in Part 1 for corporate risks but used Veolia for the operation and maintenance items.
Mandatory performance data and reporting	Providing data and reporting to meet the requirements of the Department of Internal Affairs mandatory performance measures for three waters. Reports are generally a summary of performance against conditions and spreadsheet data	DWSNZ monitors water quality through Drinking Water Online (DWO) database and a series of spreadsheets provided to the Drinking Water Assessors. These spreadsheets may be brought into DWO in the future. Implement any improvements identified by Audit NZ. We are currently reviewing our process for collecting and reporting our performance data, including the end to end job management process as noted above.
Compliance and quality management requirements	Requirements for meeting the DWSNZ and resource consent compliance reporting for HRC.	Horizons abstraction flow data is automatic telemeter via SCADA for sites as Horizons specified times. In the future this information should also be available to the public to provide feedback of their actions to conserve water.
Standard Operating Procedures	Water SOPs provide guidance on the requirements for the management and monitoring of the water assets, in particular treatment plants and pump stations.	RDC's Facilities Management Contractor (Veolia) operate and maintain the water assets under there SOPs in accordance with their ISO 9001 certified Quality Management System. Moving WSP SOP into council is a work in progress and Council has purchased Pro-maps to make process across council uniform.

7.5 SYSTEMS

Information systems are essential for storing and analysing asset information to make good asset management decisions. The main asset management information systems are summarised in Table 46.

Table 46: Asset management systems

Data Collection (and Software)	Use	Details	Status / enhancements
GIS (Intramaps and MapInfo)	Storage and analysis	MapInfo GIS is used to store inventory information for all water and wastewater below ground assets. Information is displayed graphically on a geospatially accurate map and available to RDC users and VPN link to Veolia. Staff via Intramaps).	Council will explore the opportunities of linking GIS mapping and Infornet in the future. Consideration needs to be given to intellectual property and data access along with the future for 3 waters integrated system.
AssetFinda VAMS	Storage and analysis	AssetFinda (previously called BizeAsset) is used to track assets. data, costing and valuation data used by Council. VAMS is Veolia Asset Management System.	There is an opportunity to improve the data capture into a single system which will require Council to analyse data. Improve the integration between Veolia's VAM and Council's Ozone systems for reporting on mandatory performance measures.
Ozone model called Request for Service (RFS)	Storage and analysis	Customer Request for Service (RFS) System used to record requests, request to contract and record completion of the request.	Council will add a model to RFS which will store Health and Safety data.

Data Collection (and Software)	Use	Details	Status / enhancements
Ozone Processing	Financial Package	Ozone is used to produce specialised accounting and financial management reports, and help derive expert financial decisions.	Council is working on the implementation of IBIS for financial planning, reporting and billing with Ozone remaining as the process model. The existing financial system is unable to provide data at suitable work programme levels for decision making. It can only categorize between operations and capital. Any system enhancement needs to also provide this breakdown.
Fleetmatrix	Tracking, Storage and Analysis	Provides a view of the RFS its allocation to staff member and response times. In addition, this software collects the type of job, materials to repair and pipe assessment information. This information goes into VAMS.	Specific personal can within Council view Fleetmatrix to assess where the contracts are and the status of the RFS. Enhancement will be to roll this out to Customer Service staff.
Paper processes	Filing on property file	The application and receipting of request for connections, as-builts, etc, are stored on the property file.	Council is moving into Digital WorkSpaces storage of files.
SCADA (link provided by Veolia) Software licensed to Council	Control, storage and analysis	SCADA allows monitoring and control of WPSs, WWPSs and reservoir assets. The backup digital storage of SCADA information is owned by Council but held in the Veolia Computer Stack.	None identified at this stage.
Monthly Report	View and analysis	Each month a summary of the contract operations and maintenance works, capital works is provided. Along with a spreadsheet of results and compliance with consent conditions.	This report is provided by electronic transfer through a shared drive and logged into DWS.
As built documents	Data collection	Reconciled against RFS and Monthly reports. Provided by Veolia or via external surveyors. CCTV, CD, Drawings, Intramaps, Verbal.	DWS will be used to capture and store this information. CD and drawing are still a work in progress.
Consent information collated in spreadsheets and folders (previously CSVue)	Storage and Control	Stores the resource consent data and provide for compliance monitoring with Horizons Resource Consents. Also holds consent compliance and abstraction reports. Veolia provides consent compliance information to Council for issue to HRC.	Review the need for a dedicated consent system for holding consent compliance information.
Veolia Extract	Storage and Control	Allows Veolia and Council to share information in a controlled manner. Veolia provides a link to store working and completed works between the parties, reducing risk of multiple copies being developed.	None identified at this stage.
InfoWorks Analysis Being implemented	InfoWorks Analysis	InfoWorks WS and InfoWorks CS are used for hydraulic modelling, capacity assessment, planning and scenario evaluation with respect to the Water Supply and wastewater collection networks.	Complete the implementation.
InfoNet – to be implemented		Display information geographically from Veolia	Still to be implemented

Data Collection (and Software)	Use	Details	Status / enhancements
Quantate	Storage and Analysis	Provides a database of corporate and operational for legislative compliance.	None identified at this stage.
Promapp	Process Capture	Promapps is used to create, navigate, share and change business processes, enabling quality assurance and risk management and business continuity.	This continues to be a work in progress

8 PLAN IMPROVEMENT AND MONITORING

8.1 THREE YEAR IMPROVEMENT PROGRAMME

Key improvement programmes and associated projects have been developed through a review of the gaps identified during the development of this draft AMP and the issues identified. The three year improvement programme plus ongoing improvements is summarised in Table 47.

The main improvement objectives to be achieved in the next three years due to their priority and importance for the water supply activity include:

- Critical assets - Refining the categorisation of critical water assets at component level to support better decision making.
- Asset data - Improve the data collection and reporting for performance data required for mandatory reporting. Improve the integration between Veolia's VAM and Council's Ozone systems.
- Prepare for growth - Monitor the population growth Ohakune on regular basis so that core infrastructure investment is made at the right time and at the right location. Undertake hydraulic modelling of Ohakune township for water supply and wastewater services.
- Strengthening resilience - Improving the resilience of the network in relation to climate change impacts including exploring alternative water sources to increase security and future quantities.
- Quality management - Update Water Safety Plans to ensure their compliance with the new legislation (Water Services Bill).
- Regional Partnership - Continue with regional collaboration for 3 Waters Service Delivery in preparation for three waters reforms, seeking efficiencies to deliver the best outcomes for Ruapehu's community.
- Service Delivery – Complete a Section 17A review of the Three Waters Contract to ensure that the current delivery arrangements are the most efficient, effective and appropriate means. Update the contract.

Table 47: Three year improvement programme activities

No.	AM Improvement Area	Project no	Action	Responsibility	Priority (High / Medium / Low)	Status	Indicative Timeframe			
							2020/21	2021/22	2022/23	2023/24
1	AM Policy and Strategy	1.1	Improve Council's water supply catchment protection with stakeholders including Impact of Land Use and legislation changes.	Environmental Manager	High	Underway	Need to align with HRC and Freshwater Programme			
			i) Source Protection Management with HRC. Identify risks zones for: • Taumarunui • Raetihi • Ohakune • National Park • Ohura • Owhango	Environmental Manager	High	Underway	Taumarunui, Raetihi, Ohakune completed			
			ii) Approach landowners in the immediate impact zone as primary engagement. Partner with HRC.	Environmental Manager	Medium	To start				
		1.2	Regional Partnership: Continue with collaborative 3 Waters Service Delivery in preparation for three waters reforms.	Environmental Manager	High	Ongoing	GHD second report			
		1.3	One Plan changes as presented by Regional Council.	Environmental Manager	Medium	Ongoing	Plan Change 2 Land use			
2	Levels of Service and Performance Management	2.1	Establish Iwi Liaison/co-governance partners treaty settlement delivery as they reach settlement.	Leadership Team	High	Ongoing	Tawa Tupua Ngati Rangi	Maniapoto	Uenuku	
		2.2	Undertake Water New Zealand Benchmarking Performance.	Environmental Manager	Medium	Ongoing				
		2.3	Undertake customer satisfaction surveys.	Environmental Manager	Medium	In progress				
		2.4	Measure the carbon footprint of water services, and target and work with those sectors which contribute the most emissions to the footprint. Progress to date - The greenhouse gas footprint for the region and each territorial authority in the Region for 2018/19 has been completed as an initial baseline.	Environmental Manager	Medium	In progress	Regional Strategy established. Stakeholder engagement	Target sectors		
3	Forecasting Demand	3.1	Undertake the future demand management planning actions including: i) Metering of all rural properties in the Ohakune and Raetihi area and other parts of the district.							

No.	AM Improvement Area	Project no	Action	Responsibility	Priority (High / Medium / Low)	Status	Indicative Timeframe			
							2020/21	2021/22	2022/23	2023/24
				Environmental Manager	High	Deferred		Smart meter alignment with other districts enhance procurement		
			ii) Validate the metering of businesses in Taumarunui to ensure all high users are actually metered.	Environmental Manager	High	To start				
			iii) Metering of high business users in Raetihi, particularly the buildings with urinals that are running continuously	Environmental Manager	High	Limited progress			Restart	
			iv) Metering and backflow prevention for the Taumarunui main street along the shop side in conjunction with veranda poles and fibre delivery.	Environmental Manager	High	To start	Planning	Implement		
			v) Implement metering of all water connections in Ohakune township (in next 3 to 5 years).	Environmental Manager	High	To start				
		3.2	Development of water supply demand management roadmap.	Environmental Manager	High	To start	Feasibility Pipiriki water supply	Implement		
		3.3	Further refine / investigate water user types to understand demand better.	Environmental Manager	Medium	To start				
		3.4	Monitor the population growth Ohakune on regular basis so that core infrastructure investment (including water supply) is made at the right time and at the right location.	Risk and Project Controls Manager, Environmental Manager	High	To start				
		3.5	Undertake hydraulic modelling of water supply and wastewater for Ohakune township to understand and plan for the rapid population growth.	Environmental Manager	High	Underway				
4	Asset Register Data	4.1	Audit of AssetFinda categories and system delivery.	Environmental Manager	Medium	To start				
		4.2	Investigate options to improve the meter end to end process from registration, read, bill.	Environmental Manager / Veolia	Medium	To start				
		4.3	Improve the data collection and reporting for performance data required for mandatory reporting. Improve the integration between Veolia's VAM and Council's Ozone systems.	Environmental Manager, IT Manager	High	To start				

No.	AM Improvement Area	Project no	Action	Responsibility	Priority (High / Medium / Low)	Status	Indicative Timeframe			
							2020/21	2021/22	2022/23	2023/24
5	Asset Performance and Condition	5.1	Implement the proactive leakage management programme for Council's water networks. Taumarunui water model and water loss analysis completed. Further two sub zones are to be investigated. Assess the Infrastructure Leakage Index (ILI) with future leakage management analysis.	Environmental Manager	High	Underway	Taumarunui sub zones	Raetihi Ohakune Owhango	Ohura, Waiouru	Repeat cycle
		5.2	Water models completed and potential firefighting capability issues identified. Undertake model calibration and further model refinement for better assessment of firefighting capability for the large townships.	Environmental Manager	Medium	Underway				
		5.3	Development a proactive backflow prevention installation and inspection programme. Progress to date - Boundary Backflow Prevention Policy developed in 2019.	Environmental Manager	Medium	Limited progress	Now a building legislation requirement			
		5.4	Undertake cyclical asset condition assessment programme.	Environmental Manager	High	Ongoing				
6	Decision Making	6.1	Undertake Quarterly Reporting (CEO report to Council).	Environmental Manager	Medium	Deferred	Using CEO report – Finance system upgrade			
		6.2	Integrate the UN Sustainable Development Goals into Council's decision-making frameworks including water services.	Environmental Manager	Medium	To start				
7	Managing Risk	7.1	Review the 2018 Water Supply Activity Risk Register in collaboration with Veolia.	Environmental Manager	High	To start				
		7.2	Refine the categorisation of critical below ground water assets at component level to support better decision making. The categorisation of critical above ground water assets was completed as part of the condition assessments.	Environmental Manager	High	To start				
		7.3	Undertake actions to improve the resilience of the network in relation to climate change impacts. This includes: • Explore alternative / supplementary water sources to increase security and future quantities of supply (may need to be brought forward) • Linking reticulation networks were possible (Ohakune and Raetihi Treatment Plants) • Partnering, participating in catchment planning initiatives such as land use improvements, riparian management.	Environmental Manager	High	To start				
		7.4	Update Water Safety Plans to ensure their compliance with the new legislation (Water Services Bill).	Environmental Manager	Very high	Underway	Taumarunui Review			

No.	AM Improvement Area	Project no	Action	Responsibility	Priority (High / Medium / Low)	Status	Indicative Timeframe			
							2020/21	2021/22	2022/23	2023/24
8	Operational Planning	8.1	Implement education initiatives on water conservation to reflect Te Mana o te Wai, adaptation and resilience, real time water use, appliance uses, and building designs.	Environmental Manager	Medium	To start				
		8.2	Undertake efficiency audits (PLC, carbon, water use).	Environmental Manager	Medium	To start				
		8.3	Review emergency response information and continuity plan.	Environmental Manager	High	Underway	Continuity Plan	Township recovery		
		8.4	Undertake resource consent planning for timely renewals.	Environmental Manager	High	Started	Lodged resource consents Taumarunu, Owhango	Ohura		
9	Capital Works Planning	9.1	Undertake upgrades of water treatment plants to meet DWSNZ for protozoal compliance (Ohura, National Park and Owhango).	Environmental Manager	High	Started	Ohakune	Ohura and National Park	Ohura and National Park	Owhango
		9.2	Review of capital works plan to ensure adequate resources and processes to delivery against plan.	Environmental Manager	High	Ongoing				
		9.3	Review generator future requirements and installation programme to ensure resilience for the townships.	Environmental Manager	Medium	Ongoing	Owhango	Raetihi Ohakune	National Park	
10	Financial Planning	10.1	Complete the data cleansing of buildings prior to the next valuation for a consistent approach across Council.	Environmental Manager	Medium	To start				
		10.2	Reconcile the two datasets for water connections prior to the next valuation. The rateable properties connected as recorded in the financial system is different to the number of connections recorded in Council's GIS.	Environmental Manager	Medium	To start				
		10.3	Set up cashflow reporting for water services to ensure costs and revenue are managed efficiently, particularly with the potential increased capital programme and external Government funding.	Environmental Manager	Medium	Trialling				
		10.4	Review the existing project management process to ensure fit for purpose for Council's capital works programmes, covers risk adequately and meets industry good practice.	Risk and Projects Controls Officer	Medium	To start				
		10.5	Undertake strategic financial planning review to ensure investment decisions made are affordable for the District's community, and does not burden future generations.	Finance Team and Strategic Planning	High	To start				Review

No.	AM Improvement Area	Project no	Action	Responsibility	Priority (High / Medium / Low)	Status	Indicative Timeframe			
							2020/21	2021/22	2022/23	2023/24
11	Asset Management Leadership and Teams	11.1	Undertake Asset Management Team Meetings and reporting to ensure LTP and strategic alignment.	Policy Manager	Medium	Underway	Alignment with LTP			
		11.2	Set up Teams Page (or similar such as an application) for topical conversations across teams and with Veolia including new legislation requirements and WSP implications.	Policy Manager	Medium	Underway	Alignment with LTP			
		11.3	Undertake regular utilities work programme alignment meetings.	Land Transport Team Leader	High	Ongoing				
		11.4	Undertake Audit Risk and Project Assessment.	Risk and Projects Controls Officer	Low	To start			Review alignment	
12	Asset Management Plans	12.1	Gain formal Council adoption of the plan by June 2021.	Environmental Manager	High	Underway				
		12.2	Undertake debrief of the 2021 AMP process.	Environmental Manager	Medium	To start				
13	Management Systems	13.1	Investigate options to improve asset system, GIS including uniformed three waters metadata considering the three water reforms.	Environmental Manager	Low	To start				
		13.2	Develop business process maps using Promap for AMP system.	Environmental Manager	Low	To start				
		13.3	Implement the categorisation of critical water assets at component level in Council's AssetFinda.	GIS Officer	Medium	To start				
14	Asset Management Information Systems	14.1	Investigate merging systems between Veolia and Council.	Environmental Manager	Low	To start				
		14.2	Explore giving Council's customer service access to Veolia for RFS real time processing.	Environmental Manager	Medium	To start				
		14.3	Set up the financial system so can categorise at suitable work programme levels for decision making (operations, maintenance (including planned versus reactive maintenance), renewals and capital).	Finance Team	Medium	To start				

No.	AM Improvement Area	Project no	Action	Responsibility	Priority (High / Medium / Low)	Status	Indicative Timeframe			
							2020/21	2021/22	2022/23	2023/24
15	Service Delivery Mechanisms	15.1	Update the SLA with NZDF for the provision of public water supply to Waiouru. Progress to date - Several meetings completed to agree on the basis of service.	Environmental Manager	Medium	Underway				
		15.2	Undertake a Section 17A review of the water supply, wastewater and stormwater activities in 2020/21 to time for contract review.	Environmental Manager	High	Started				
		15.3	Undertake the review of Three Waters O & M Contract.	Environmental Manager	High	Underway	Review works	Contract decision		
16	Audit and Improvement	16.1	Undertake external peer review of 2021 AMP prior to the 2024 LTP.	Environmental Manager (external consultants)	Medium	To start				
		16.2	Review OAG reports of 2021 TLP to inform the 2024 AMPs.	Environmental Manager	Medium	To start		Items to implement		
		16.3	Undertake a peer review of the 2018 useful life memo to ensure meeting industry good practice.	Environmental Manager	Medium	To start	Incorporated into AMP			

8.2 IMPROVEMENT MONITORING

The AMP is a living document and needs to be kept current and relevant. It is recognised that priorities will change which makes review activities even more important to ensure this plan is a live document. The following review activities will be undertaken:

Table 48: Improvement monitoring activities

Frequency	Review Task	Action	KPI	Report Name	Audience
Three yearly	AMP Development	Formal adoption of the plan by Council	100% Achievement	Council AMP Report	Council and Audit New Zealand
Annually	AMP Review (internal)	Revise plan annually to incorporate new knowledge from the AM improvement programme	100% Achievement	Internal Report	Environmental Management
Three Yearly	AMP Peer Review	The plan will be formally reviewed three yearly to assess adequacy and effectiveness.	100% Achievement	External Consultant Report	Environmental Management, LTP team, and Audit New Zealand
Annually	Monitoring and Reporting	The KPIs identified in this table will be monitored and reported on annually through Business Plans.	100% Achievement	Business Plan Report	Environmental Management and LTP team
Annual	Implementation of the Improvement Programme	Tracking the progress of implementing the improvement programme annually particularly of projects in the short term improvement programme.	100% Achievement	Annual Reports	Environmental Management and LTP team

9 FINANCIAL SUMMARY

9.1 INTRODUCTION

This section summarises the financial requirements in order to achieve the defined levels of service and provide for future demand needs. The financial forecasts within this section are for the 10 year forecast period from 2021/22 to 2030/31 (subject to adoption of the LTP by Council). All amendments will be provided in Part 4, Appendix A which will be updated with the Exceptions Annual Plan each year.

Summary financial forecasts are provided in graphical format and provide a breakdown of overall water expenditure by expenditure category and by township. Summary financial forecasts also provide a breakdown of expenditure category by expenditure sub-categories using valuation numbers for 1 July 2020.

Detailed financial tables are also provided which indicate by township the forecast expenditure within each category and subcategory for each year in the 10 year forecast period. Detailed tables linking individual projects with associated financials are shown in Part 4, Appendix F.

9.2 FINANCIAL PROJECTIONS

The total amount of expenditure for operations, maintenance and capital for the water supply activity over the next ten years is $96 million, as shown in the figure and table below. This shows that the total operational annual costs are about $4 million to $5 million and makes up about half of the total forecast at 53%. The chart is only showing for the next 10 years; refer to Part 4, Appendix G for 30 year forecasts.

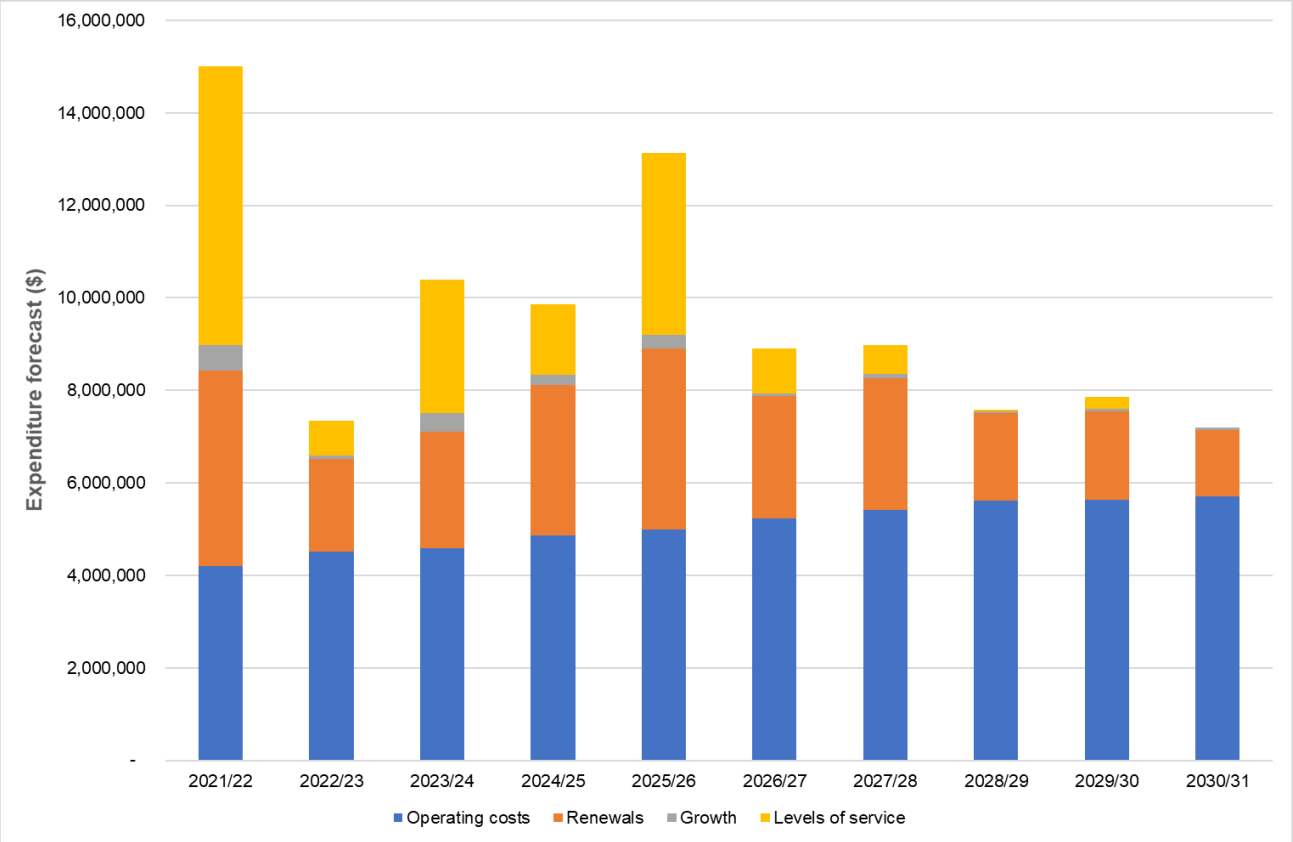


Figure 15: Summary of water supply ten year expenditure forecast

Source: Council's final LTP budgets (as at June 2021)

Table 49: Summary of water supply ten year expenditure forecast

Water Expenditure	2021/22	2022/23	2023/24	10 yr Total
Opex	4,207,072	4,514,037	4,593,056	**50,776,710**
Renewals	4,212,561	2,004,234	2,516,983	**26,622,558**
Growth	560,307	72,583	391,972	**1,861,424**
Levels of Service	6,019,721	743,591	2,884,036	**16,962,497**
Total	**14,999,661**	**7,334,445**	**10,386,047**	**96,223,189**

Capex (renewals and new works) expenditure across the 10 year expenditure period is forecast at $45 million. Renewals makes up 59% of the ten year capex expenditure followed by levels of service at 37%.

Operational expenditure consists of direct (such as staff and contractor costs) and indirect costs (such as overheads, depreciation and finance costs). Other expenses (contractor and utility costs) make up 44% of the ten year opex expenditure followed by depreciation at 30%.

Detailed analysis by capital driver was undertaken by Veolia with developing this AMP. This was based on draft financial forecasts as at September 2020 that have now been revised as part of the LTP process and capital prioritisation across all activities. They are provided for completeness in Appendix 10.3.

9.3 FUNDING STRATEGY

The water supply activity will be funded in accordance with the financial policies of Council as indicated below.

Table 50: Funding strategy for water supply activity

Programme	Funding mechanism
Operational	Targeted water rates and billing of metered water connections, fees and charges
Renewal	Provided through rates
LOS	Loan funded and external Government funding
Growth	Loan funding, development contributions, and external Government funding

Council has been successful in gaining external Government funding for upgrading water services infrastructure. This is important for a rural district council with a small rating base. Recent external funding includes:

- Raetihi Water Treatment Plant upgrade in 2018 - $1.5 million grant from Ministry of Health funding programme from (with $2.5 million overall project cost)
- Ohakune Water Treatment Plant upgrade, reservoir and raw water line, starting in 2019 (over two years) – About $4.9 million from MBIE through the Tourist Infrastructure Fund. A condition for the funding is for Council to implement a water meter programme for the Ohakune township within 3 to 5 years.
- Increased water treatment capacity and storage, and water reticulation enhancement - About $5.6 million for Three Water Stimulus Grant from DIA and Crown Infrastructure Partners (awaiting formal approval).
- Provision of public services for Pipiriki - The scope of the study is to investigate improving the capacity of the water and wastewater infrastructure. MBIE approved funding for a feasibility study for the settlement of Pipiriki.

There is high level of uncertainty with successfully gaining the full amount from the Government's three waters stimulus grant applied for upgrading water standards and wastewater assets across the District. We are planning to undertake these upgrades regardless if Government funding is successful. It is unacceptable for Council not to comply with the Drinking Water Standards. This will mean that the debt projections will be unaffordable for our community. Council will be exploring alternative funding options to reduce this risk.

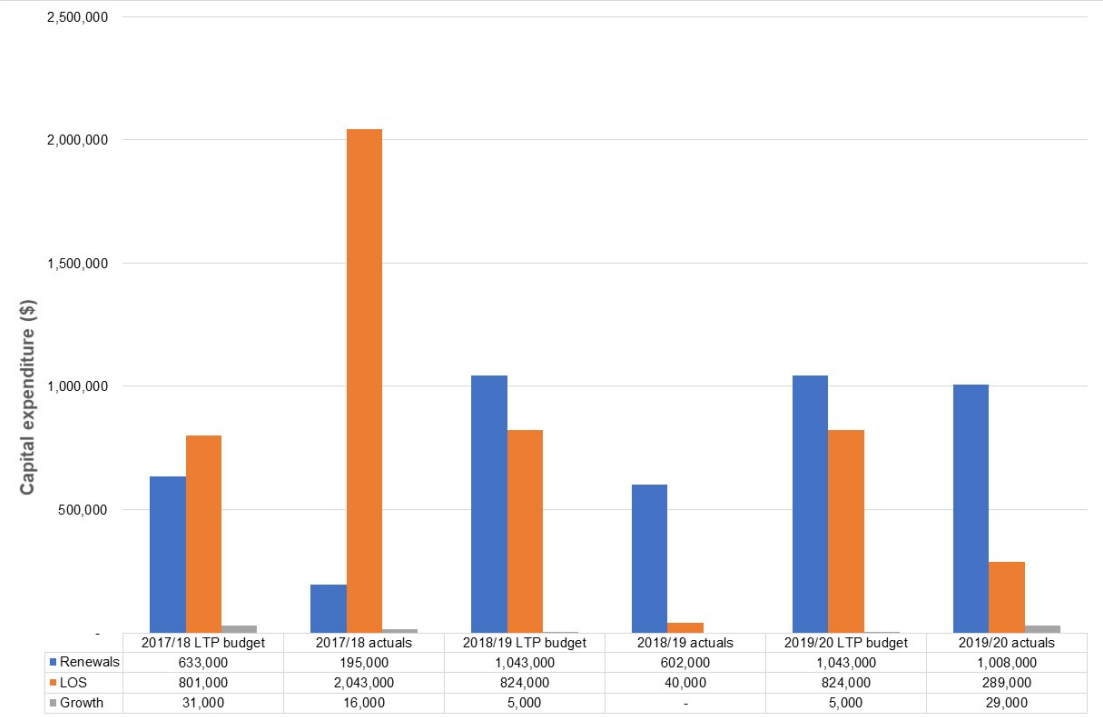
Council wishes to make a step change in investment in core infrastructure, particularly for water supply and wastewater activities. The 2021 LTP signals that we cannot keep the capital investment and debt levels so it is affordable for our community. We must undertake these works in order to provide safe drinking water and public health to our community and the environment.

9.4 FINANCIAL PERFORMANCE

The actual achievements against the LTP budgets for the water supply capital programme for 2017/18, 2018/19 and 2019/20 are presented in Figure 16. This shows that was over achievement of the capital programme in 2017/18, mainly due to the upgrade of the Raetihi Water Treatment Plant. The overall cost of the project was over $2.5 million, including a grant of around $1.5 million under a funding programme from Ministry of Health to help small, low social economic communities to improve their drinking water quality and safety.

Capital delivery improved in 2019/20 for the water supply activity at 71% of the budgets. Failures to deliver capital programme has mainly been due to the time to get projects procured and approved to start. This is being addressed with a Section 17A review (requirement under the Local Government Act), update of the Contract with our service provider Veolia and to set up a streamlined process for procuring capital projects (refer to Section 6.8 Service Delivery Arrangements).

Council wishes to accelerate the water supply capital programme to improve drinking water compliance. This acceleration requires a step change in programme delivery. External specialist consultants will also be used to deliver a proposed larger capital programme, particularly the upfront planning and bedding in programme management disciplines. Our discussions with potential suppliers have indicated that there is sufficient market capacity to respond to our current and future delivery programme.



	2017/18 LTP budget	2017/18 actuals	2018/19 LTP budget	2018/19 actuals	2019/20 LTP budget	2019/20 actuals
Renewals	633,000	195,000	1,043,000	602,000	1,043,000	1,008,000
LOS	801,000	2,043,000	824,000	40,000	824,000	289,000
Growth	31,000	16,000	5,000	-	5,000	29,000

Figure 16: Capital expenditure performance

Source: Council's Annual Reports

9.5 ASSET VALUATION

Replacement cost, depreciated replacement cost and annual depreciation figures from Council's 2020 asset valuation are shown below. This is based on Council's asset lives and current equivalent asset replacement, calculated as per the asset data in Section 6. A percentage breakdown of replacement cost by asset class is shown below. A full breakdown of replacement cost, depreciated replacement cost and annual depreciation for each of Council's water schemes is contained within Part 4, Appendix E.

Table 51: Asset valuation by township

Water Asset Group	Replacement Cost ($)	Depreciated Replacement Cost ($)	Accumulated Depreciation ($)	Annual Depreciation ($)
Headworks and Treatment	11,796,334	6,271,351	5,524,983	528,535
Pump Station / Storage	8,896,513	2,774,287	6,122,226	135,190
Network	51,413,393	26,223,292	25,190,101	658,095
Total	**72,106,240**	**35,268,930**	**36,837,310**	**1,321,819**

Source: Veolia (as at 1 July 2020)

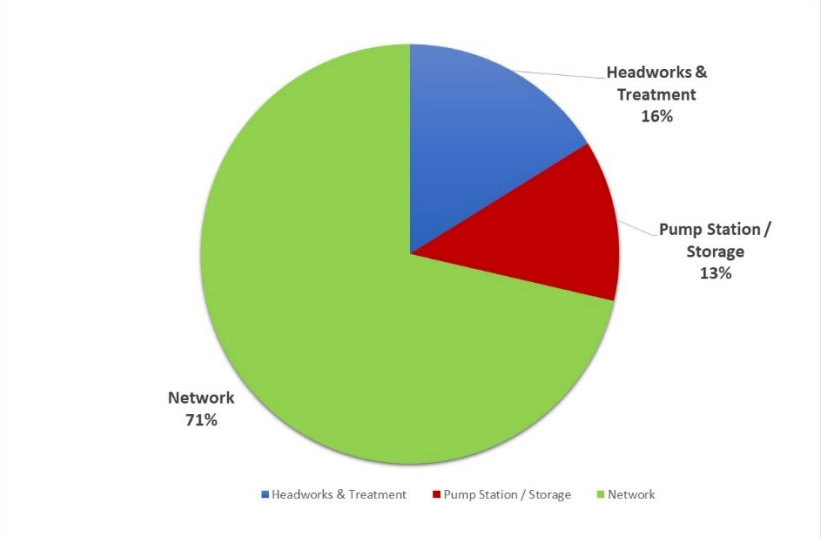


Figure 17: Valuation breakdown by major asset class

Asset valuations are undertaken on an annual basis including reviewing useful lives and updating unit rates. Currently the water supply asset dataset recorded in AssetFinda includes some buildings. It is common practice to value all Council buildings together and not to value buildings in the infrastructure activity. The asset inventory needs to be cleansed so that there is a consistent approach. This may include consolidating all buildings (including buildings in the infrastructure activity) in the community property activity. A discussion still needs to be agreed internally.

9.6 FINANCIAL ASSUMPTIONS

The Lifecycle Management Plan (Section 6), which is prepared on the basis of the LoS (Section 3) and Future Demand Data (Section 4) provides the basis for the financial forecasts.

General information relating to the financial forecasts is:

- All expenditure is stated in dollar values as at June 2021 with no allowance made for inflation over the 10 year planning period.
- All expenditure values exclude Goods and Service Tax (GST).

Key assumptions with respect to these financial forecasts are:

- The rate of growth for the District occurs as predicted by the growth projections in Section 4 and in Part 1

- Useful lives for water assets reflect actual condition deterioration, for which improved knowledge and confidence will be determined by ongoing condition assessment as shown in Section 6.
- Based on existing legislation and service levels
- Council will continue to own and manage the Ohura Water Supply System
- Water services remain as Ruapehu District Council assets and management
- Climate change predictions as forecast remain accurate
- Financial funding will be made available to deliver on AMP requirement or other funding source will be available.

9.6.1 Confidence Levels

The assessed confidence of data inputs into the financial forecasts is shown below. Confidence grades are assessed in accordance with the New Zealand Infrastructure Asset Grading Guidelines – Water Assets (1999). Confidence levels provide a measure of confidence in relation to the accuracy of information.

Table 52: Confidence levels

Data input	Very uncertain	Uncertain	Reliable	Highly reliable	Comments
Future demand					Detailed growth analysis completed provides a sound basis for forecasts. Demand forecasts contain inherent uncertainty, especially with respect to long term progression and timing of development. The forecast will be impacted by the global pandemic. It is expected to have smaller impact on Ruapehu District than others as heavily rely on primary production and tourism.
Asset inventory (diameter, material.)					Reliable data obtained from reasonably well defined information within AssetFinda information management system. Refer to Section 7.2 for details.
Asset age					Some asset age information available within AssetFinda.
Asset condition/remaining useful life					Information will improve with the ongoing rolling condition assessment as per Section 6.
Unit replacement costs					Unit rate costs based upon contract unit rates within Facilities Management Contract and based upon actual project cost rates.
Depreciation					Depreciation based upon 2020 Valuation undertaken by Veolia (refer to Part 4).
Maintenance Plan works and costs					Information determined from Ruapehu District Council costs and Facilities Management Contract costs.
Renewal Plan works and costs					Developed based upon performance and condition information from Section 6 and Part 4.
Creation Plan works and costs					Developed based upon performance and condition information from Section 6 and Part 4.

Confidence of data inputs within this AMP will be improved as part of the ongoing improvement programme detailed in Section 8.1.

10 APPENDICES

10.1 FULL LOS TABLE

Community Outcomes	Key service attribute	LOS	How we will measure our performance	Performance measure type	Current Performance 2018/19	Current Performance 2019/20	Current Year 2020/21 Target	2021/22 Target (year 1)	2022/23 Target (year 2)	2023/24 Target (year 3)	2024/25 to 2030/31 Target (years 4 to 10)
Safe, Healthy Communities: • Quality regulation, regulatory services and infrastructure • Excellent standards of safety and welfare are promoted and respected	Safety - water quality	Providing quality and safe drinking water to applicable community areas	Extent to which Council's drinking water supplies comply with Part 4 (bacteria compliance criteria) of the Drinking Water Standard.								
			Ohura	Mandatory	Y	Y	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance
			Taumarunui		Y	Y	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance
			Owhango		Y	Y	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance
			National Park		Y	Y	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance
			Ohakune		Y	Y	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance
			Raetihi		Y	Y	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance
			Extent to which Council's drinking water supplies comply with Part 5 (protozoal compliance criteria) of the Drinking Water Standard.								
			Ohura	Mandatory	N	N	Not compliant	Not compliant *(see notes below)*	Not compliant *(see notes below)*	100% compliance	100% compliance
			Taumarunui		N	Y	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance
			Owhango		N	N	Not compliant *(see notes below)*	Not compliant *(see notes below)*	Not compliant *(see notes below)*	Not compliant *(see notes below)*	100% compliance
			National Park		N	N	Not compliant *(see notes below)*	Not compliant *(see notes below)*	Not compliant *(see notes below)*	100% compliance	100% compliance
			Ohakune		N	N	Not compliant *(see notes below)*	100% compliance	100% compliance	100% compliance	100% compliance
			Raetihi		Y	Y	100% compliance	100% compliance	100% compliance	100% compliance	100% compliance
	Safety - water pressure and flow	Safe water pressure and flow is supplied to consumers	The total number of complaints received by Council about any of the following (expressed per 1,000 connections to the networked reticulation systems):		Achieved	Achieved (21.5 per 1,000 conns)					
			Drinking water clarity	Mandatory	1.3	2	<15 per 1,000 connections	<15 per 1,000 connections	<15 per 1,000 connections	<15 per 1,000 connections	<15 per 1,000 connections
			Drinking water taste		1.3	0.2	<10 per 1,000 connections	<10 per 1,000 connections	<10 per 1,000 connections	<10 per 1,000 connections	<10 per 1,000 connections
			Drinking water odour		0.9	-	<5 per 1,000 connections	<5 per 1,000 connections	<5 per 1,000 connections	<5 per 1,000 connections	<5 per 1,000 connections
			Drinking water pressure or flow		6.5	11.6	<25 per 1,000 connections	<25 per 1,000 connections	<25 per 1,000 connections	<25 per 1,000 connections	<25 per 1,000 connections
			Continuity of supply		1.5	7.7	<5 per 1,000 connections	<5 per 1,000 connections	<5 per 1,000 connections	<5 per 1,000 connections	<5 per 1,000 connections
			Council response times		1.7	-	<25 per 1,000 connections	<25 per 1,000 connections	<25 per 1,000 connections	<25 per 1,000 connections	<25 per 1,000 connections
Thriving Economy: • Regulatory services and reliable infrastructure help the economy prosper	Quality - reliability	To provide reliable water networks	Number of reported watermain breaks per 100km of watermain per year	Technical	19.9		<30 per 100km	<30 per 100km	<30 per 100km	<30 per 100km	<30 per 100km
			Percentage of water supply assets in satisfactory condition (condition grades 1,2 or 3)	Technical	Achieved (4 towns graded at 2, and 3 towns graded at 3)		85%	85%	85%	85%	85%
			The number of unplanned interruptions to the water supply system per 1,000 properties per year	Customer	6.9		<15/ 1,000 connections	<15/ 1,000 connections	<15/ 1,000 connections	<15/ 1,000 connections	<15/ 1,000 connections
			Days of treated water stored in reservoirs on average (with the exception of Owhango and Raetihi)	Technical	Achieved		>1 day	>1 day	>1 day	>1 day	>1 day

Community Outcomes	Key service attribute	LOS	How we will measure our performance	Performance measure type	Current Performance 2018/19	Current Performance 2019/20	Current Year 2020/21 Target	2021/22 Target (year 1)	2022/23 Target (year 2)	2023/24 Target (year 3)	2024/25 to 2030/31 Target (years 4 to 10)
	Responsiveness	To provide prompt responses for service	Where Council attends a call-out in response to a fault or unplanned interruption to its networked reticulation system, the following **median response times** are measured:	Mandatory							
			Urgent call-outs:								
			(e) **Attendance** for urgent call-outs: from the time that the Council receives notification to the time that service personnel reach the site (i.e. loss of water supply		19 minutes Achieved	27 minutes Achieved	Median response times <2 hours	Median response times <2 hours	Median response times <2 hours	Median response times <2 hours	Median response times <2 hours
			(f) Resolution of urgent call-outs: from the time that the Council receives notification to the time that service personnel confirm resolution of the fault or interruption site (i.e.. loss of water supply)		5.6 hours Achieved	5 hours and 36 mins – Achieved	Median response times < 6 hours	Median response times < 6 hours	Median response times < 6 hours	Median response times < 6 hours	Median response times < 6 hours
			Non-Urgent call-outs:								
			(g) **Attendance** to non-urgent callouts from the time that the Council receives notification to the time that service personnel reach the site (i.e.. no loss of water supply)		5.8 hours Achieved	1 hour and 12 mins – Achieved	Median response times < 36 hours	Median response times < 36 hours	Median response times < 36 hours	Median response times < 36 hours	Median response times < 36 hours
			(h) From the time that the Council receives notification to the time that service personnel confirm resolution of the fault or interruption (i.e. no loss of water supply)		19 hours Achieved	3 hours and 44 mins – Achieved	Median response times < 72 hours	Median response times < 72 hours	Median response times < 72 hours	Median response times < 72 hours	Median response times < 72 hours
Thriving, Natural Environment: • Our environment is accessible, clean and safe and our water, soil and air meets required standards	Sustainable - Environmental performance	To promote the efficient and sustainable use of water	The percentage of real water loss from Council's networked reticulation system, using minimum night flow analysis	Mandatory	21% Achieved	12% Achieved (for Taumarunui urban area only)	<40% all supplies	<30% all supplies	<40% all supplies	<30% all supplies	<40% all supplies
			The average consumption of drinking water per day per resident within the territorial authority district	Mandatory	Not achieved Normal demand (using Usually Resident Population) = 637;	Achieved for normal demand -448	< 600 litres per resident per day	< 500 litres per resident per day	< 600 litres per resident per day	< 500 litres per resident per day	< 600 litres per resident per day
					Achieved Peak demand (using Peak Population) = 252	Achieved for peak demand - 252	< 300 litres per person per day	< 300 litres per person per day	< 300 litres per person per day	< 300 litres per person per day	< 300 litres per person per day
		The water supply service is operated in compliance with regulatory requirements	Achieve high level of compliance of WTPs, measured by the number of:	Technical *(not mandatory but included as good practice)*							
			abatement notices; infringement notices; enforcement orders; prosecutions received by Council in relation those resource consents		0	0	0	0	0	0	0

Notes:

1. The number of connections is calculated from the number of customers charged in their rates for use of Council water services (calculated at 5,420 in July 2018).
2. There are occasions where there is more than one complaint per event. In such a situation, each complaint is counted separately, not each event or occurrence. The median time presented is based on calls that have been raised directly with Council and not Council's contractor Veolia.
3. An urgent call-out is one that leads to a complete loss of supply of drinking water due to a fault or unplanned interruption.
4. A non-urgent call-out is one where there is still a supply of drinking water.
5. Real water loss refers to volumes lost through leaks, bursts or overflows on mains, service reservoirs and services connections, up to the point of the customer meter.
6. Ohakune Water Treatment Plant upgrade started in 2019 and will take over two years. It is expected to be compliant in 2021/22 (need one year of complete monitoring records once plant is commissioned).
7. Protozoal compliance will be achieved for the remaining non-compliant plants as follows, dependent on external Government Funding approved:
    - Ohura WTP – 2023/24 (based on upgrade completed June 2022 and then one year of complete monitoring records)
    - National Park WTP - 2023/24 (based on upgrade completed June 2022 and then one year of complete monitoring records)
    - Owhango WTP – 2024/25 (based on upgrade completed June 2023 and then one year of complete monitoring records).

10.2 WATER SUPPLY IMPROVEMENT TASKS

Water supply actions (from 2019 GHD peer review)	Task completed	AMP section
Develop a detailed prioritised roadmap of improvements for 3 to 5 years, based on review and prioritisation of all the suggested improvements shown in this table.	Improvement programme fully developed including other improvements identified as part of the 2012 AMP development.	8.1 (Part 3)
Building on the objectives and problem statements already known, develop a programme business case to align and show line of sight from objectives and services requirements, to problems, to benefits, to solution options, to decisions on works, programmes and investment.	The 2021 AMP has been structured in the business case approach while still retaining the traditional AMP sections to be consistent with IIMM.	2.8 (Part 3)
Provide breakdown of O&M costs and align to objectives. Provide O&M budgets for the period of the AMP with the annual expenditure budget tabulated and divided into reactive, planned and routine categories as appropriate.	Detailed operational budgets developed by Veolia categorised as recommended. An improvement action to categorise Council's financial system has been identified. This will need to fit with other corporate projects and priorities.	7.2 and 8.1 (Part 3) Appendix F (Part 4)
Explain the spikes and lows of financial forecasts.	The actual achievements against the LTP budgets for the water supply capital programme for 2017/18 and 2018/19 have been summarised at a high level including variance explanations.	9.4 (Part 3)
Develop or include a register of all deferred works.	Any deferred capital projects have been summarised including the consequences in terms of LOS and asset risks. *Veolia to set up prior to finalising the AMP.*	Appendix F (Part 4)
Explain the weaknesses of the Asset Systems, the information gaps and how they are being addressed.	Gaps in systems, data and processes have been identified.	7.2 (Part 3)
Explain any cross-infrastructure work planning and decision-making undertaken by RDC.	This applies to the stormwater activity the most as direct link with land transport activity. At high level, this is covered in Part 1 and 30 Year Infrastructure Strategy. Growth planning for Ohakune and Taumarunui requires core infrastructure at the right time and at the right place to support housing provision.	Part 1 Section 4
Provide discussion on the likely impacts to RDC of the NZ Water Reform on this activity.	This has been identified as key issue for the water activity.	2.4, 2.5, 3.3 (Part 3)
Consider discussion and learnings for this activity and linkage to water supply from both Havelock North and Raetihi contaminations.	The learnings from the Havelock North and Raetihi contaminations have been addressed as part of Ministry of Health's new requirements for WSPs. Veolia also strengthened their processes after the Raetihi contamination.	5.4

Water Supply

Asset Management Plan 2021-31

Part 4 - Appendices

Part 4 - Appendices

Appendix A – Summary of 2021 Long Term Plan Process

This is reflective of the decisions Council has made after the workshops on the Asset Management Planning, Council Policy and Strategies. The body of the AMP contains the material at 1 March 2021, before all Council workshops had been completed..

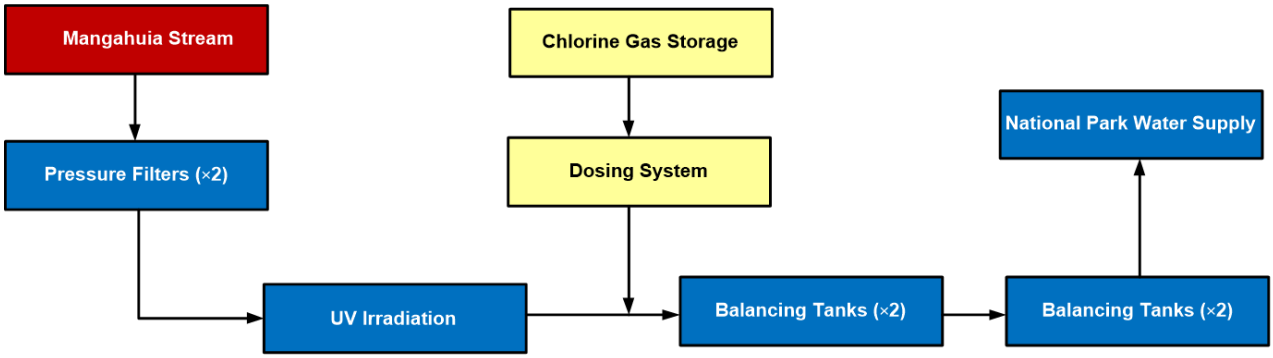
The LTP sets out what Ruapehu District Council is going to do and how it's going to pay for this in meeting the purpose of the Local Government Act 2002.

The AMPs are developed with prudency in mind, but must follow best practice and current ideas on the life of assets. Council finds that in practice the life of assets is very hard to predict, and has spent some effort collecting and analysing its data on infrastructure. This future cost components is a mix of uncertainty around renewal types, timeframes and appropriate technologies and, therefore, a healthy tension between estimated cost and actual current budgets and deliverables. The budgets in the AMP have been developed on the basis of using today's technologies. We know from experience in this fast moving world that changes occur, new technologies are developed and better and smarter ways of doing things are developed. The result is today's forecast budgets, while both prudent and representing the best available information when developed, can sometimes be reduced.

Appendix B – Physical Parameters: Water Supply Schemes

B.1 National Park

B.1.1 Overview



(a) The National Park water supply system provides potable water to 319 connected rated properties within the National Park community. A schematic of the National Park water supply is shown above, together with photographs of selected assets within the National Park water supply system.

B.1.2 Headworks and Treatment

(a) Source: Water for the National Park Township is extracted from the Mangahuia Stream, located within the Tongariro National Park off SH47, and adjacent to the Mangahuia Stream bridge. The assets for the water supply source include an intake structure, isolation valve, scour valves, air valve and pipework.

(b) Treatment: Water treatment is undertaken at the National Park Water Treatment Plant which was commissioned in 1987. Treatment consists of rapid sand filtration, UV disinfection and chlorination. Two 22m^3 balancing tanks control the operation of the WTP and provide water for filter backwash.

(c) The principal treatment assets comprise rapid sand filters, UV disinfection, chlorine dosing equipment, online pressure, pH, turbidity and chlorine monitoring equipment, SCADA, balancing tanks, pipework, valves and the WTP building.

(d) Backwash water is fed to a settling pond where supernatant returns to land and an adjacent drain.

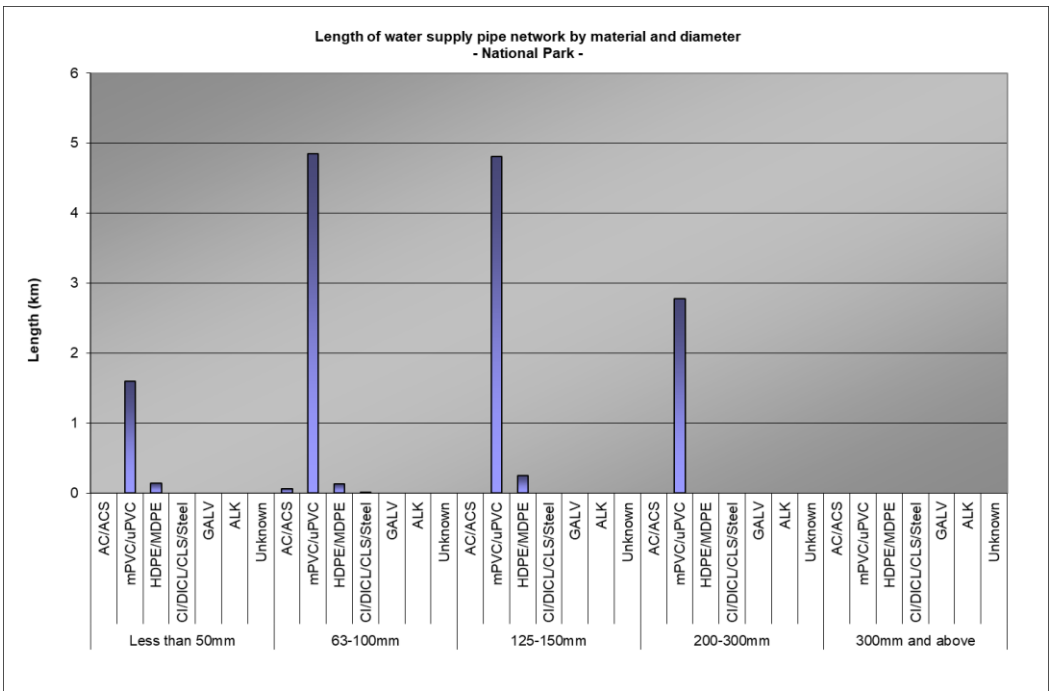
B.1.3 Pump Station and Storage

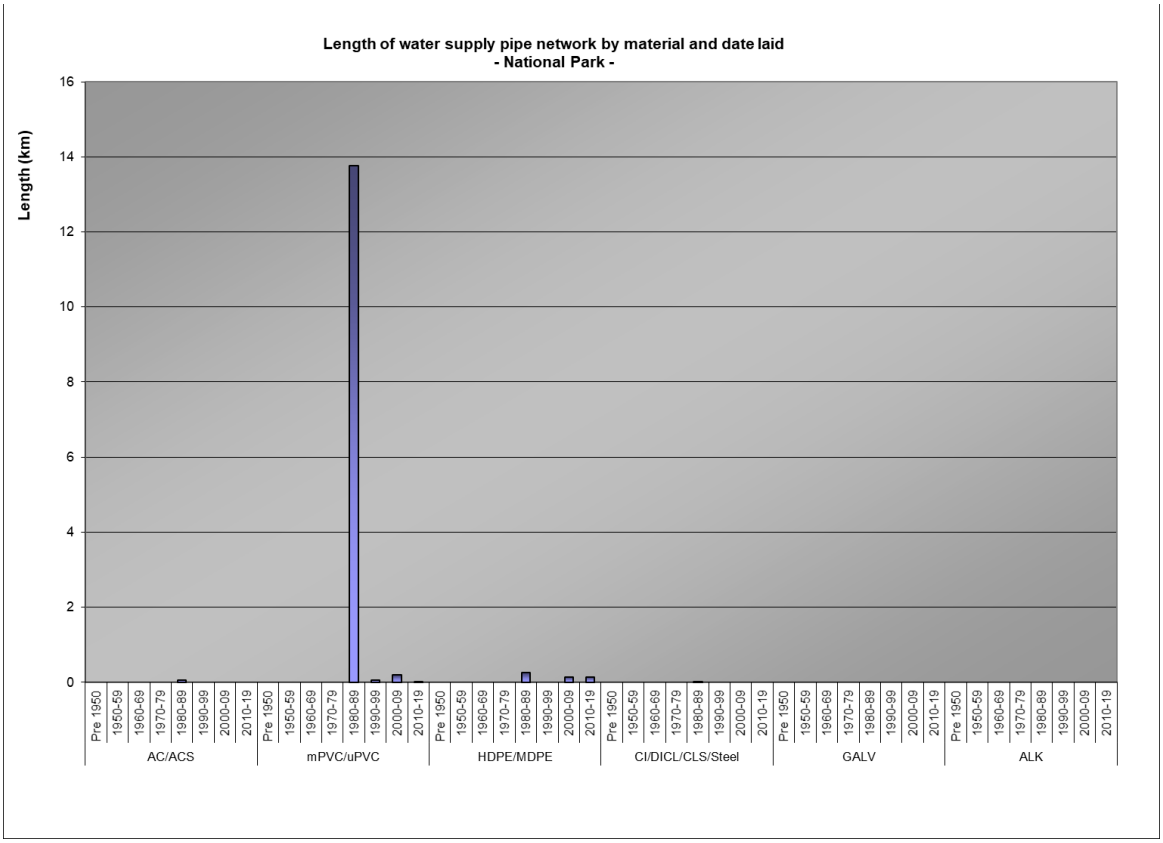
(a) Storage reservoir: Potable water storage is provided via a 500m^3 timber tank storage reservoir located between the WTP and the National Park Township. The reservoir comprises an internal liner, associated flow meters, monitoring and control instrumentation, chambers, pipework and valves.

B.1.4 Network

(a) Water mains: The National Park reticulation network comprises an integrated series of water mains, valves, hydrants and connections as summarised within Table 32 (AMP Part 3). A reticulation network map for the 14.7km of water main within the National Park water supply network is provided above.

(b) The graphs provide a graphical composition of the National Park water supply reticulation network with respect to pipe diameter/material, and pipe material/date laid. The pipelines within the water reticulation network are predominantly 150mm diameter (34.5% by network length) and 100mm diameter (34.5% by network length). The pipe materials used most within National Park are mPVC/uPVC with 95.8% of the water supply network. The decade when the majority of the water supply network infrastructure was installed was 1980 to 1989 (inclusive) totalling 14.1km, or 96.1% of the network.



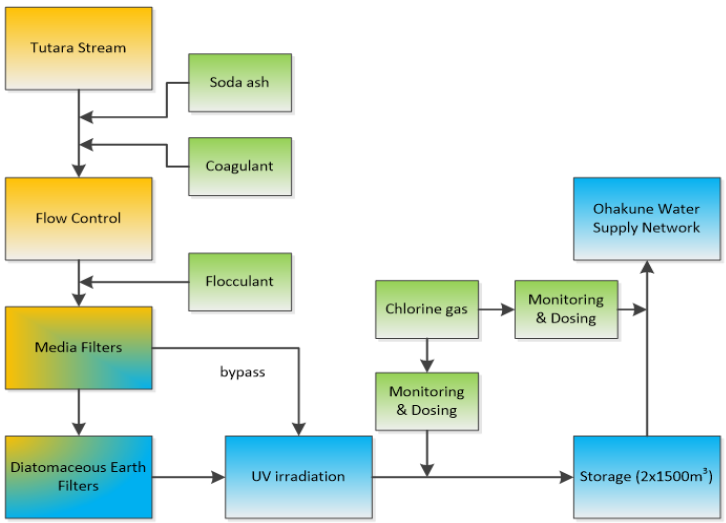


(c) Hydrants: Fire fighting water is provided via 43 hydrants within the National Park water supply network.

(d) Valves: 59 valves dispersed across the National Park water supply network provide for isolation of the network.

B.2 Ohakune

B.2.1 The Ohakune water supply system provides potable water to 1,654 connected properties within the Ohakune community. A schematic of the Ohakune water supply is shown below, together with photographs of selected assets within the Ohakune water supply system.





B.2.2 Headworks and Treatment

(a) Source: Water for the Ohakune Township is extracted from the Tutara (Serpentine) Stream, a tributary of the Mangawhero River, located within the Tongariro National Park. The assets for the water supply source include an intake structure, intake scour penstock, scour valves, air valves and pipework.

(b) Treatment: Water treatment is undertaken at the Ohakune Water Treatment Plant which was commissioned in 1992. Treatment consists of pH correction, coagulation, filtration, UV disinfection and chlorination. Diatomaceous earth filtration existing at the water treatment plant is currently bypassed. In July 2018, there were a number of additional upgrades completed to improve the overall performance including an upgrade of the chemical dosing facilities. In September 2019, cartridge filters were installed to improve water quality. Currently, Council are implementing a WTP capacity upgrade to 2500m3/day.

(c) The principal treatment assets comprise raw water pumps (non-utilised), streaming current monitor and polymer dosing equipment, filters, UV disinfection unit, chlorine dosing equipment, online pH, turbidity and chlorine monitoring equipment, SCADA, pipework, valves and the WTP building.

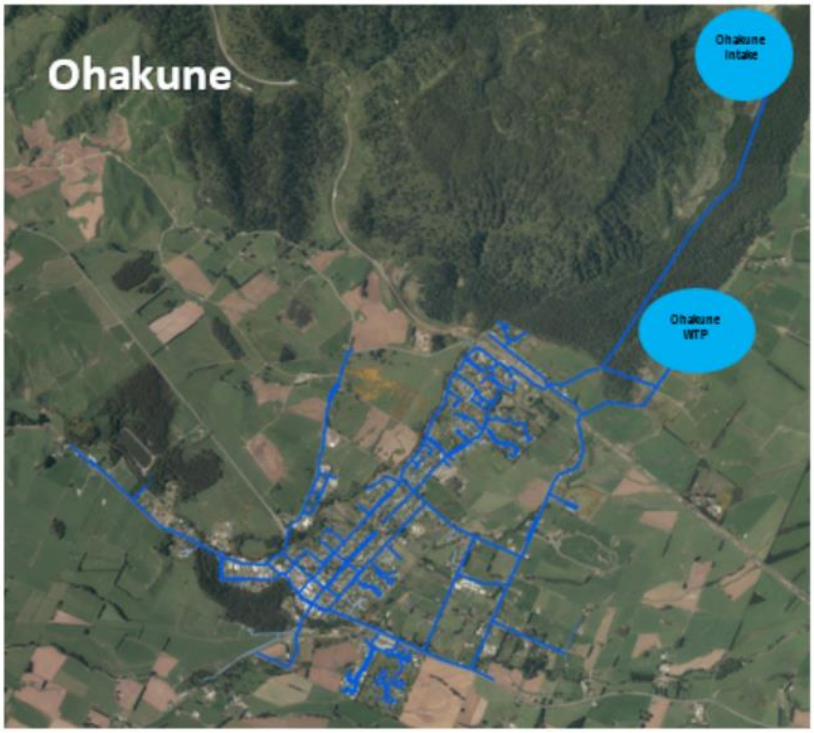
(d) Backwash water is fed to a settling tank where supernatant returns to the adjacent stream.

B.2.3 Pump Station and Storage

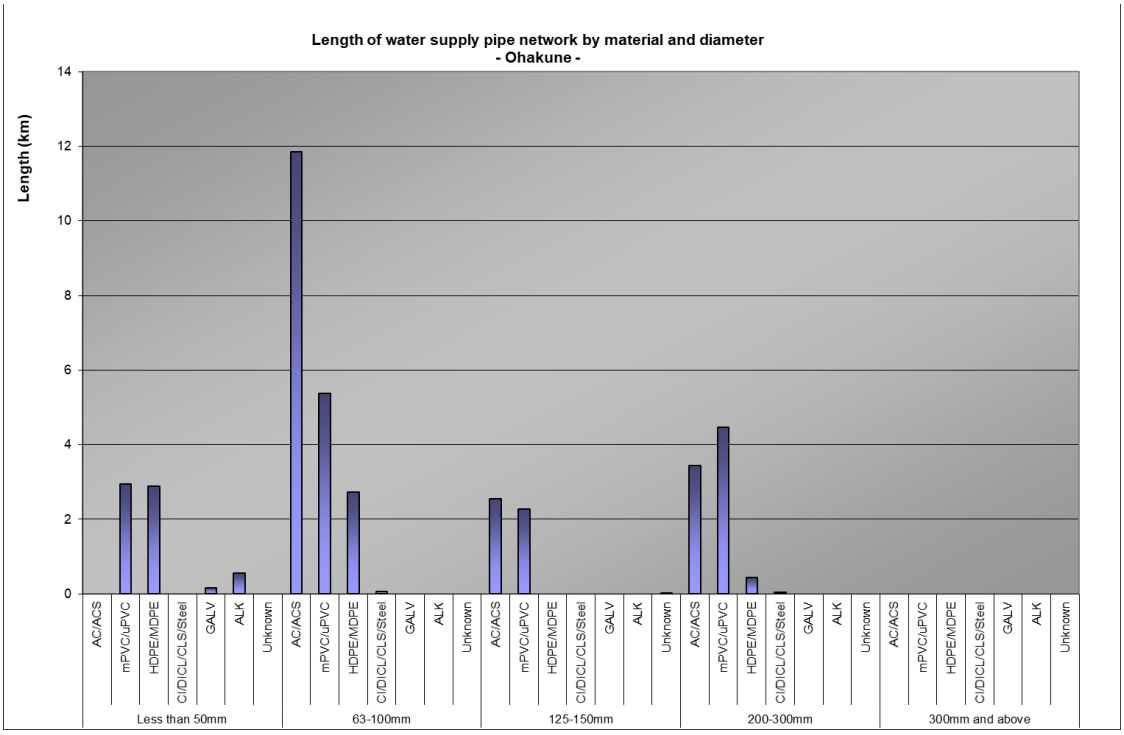
(a) Storage Reservoir: Potable water storage is provided via two 1,500m^3 timber tank storage reservoir located adjacent to the WTP. The reservoirs comprise timber walls and roof, an internal liner and have associated flow meters, pipework and valves.

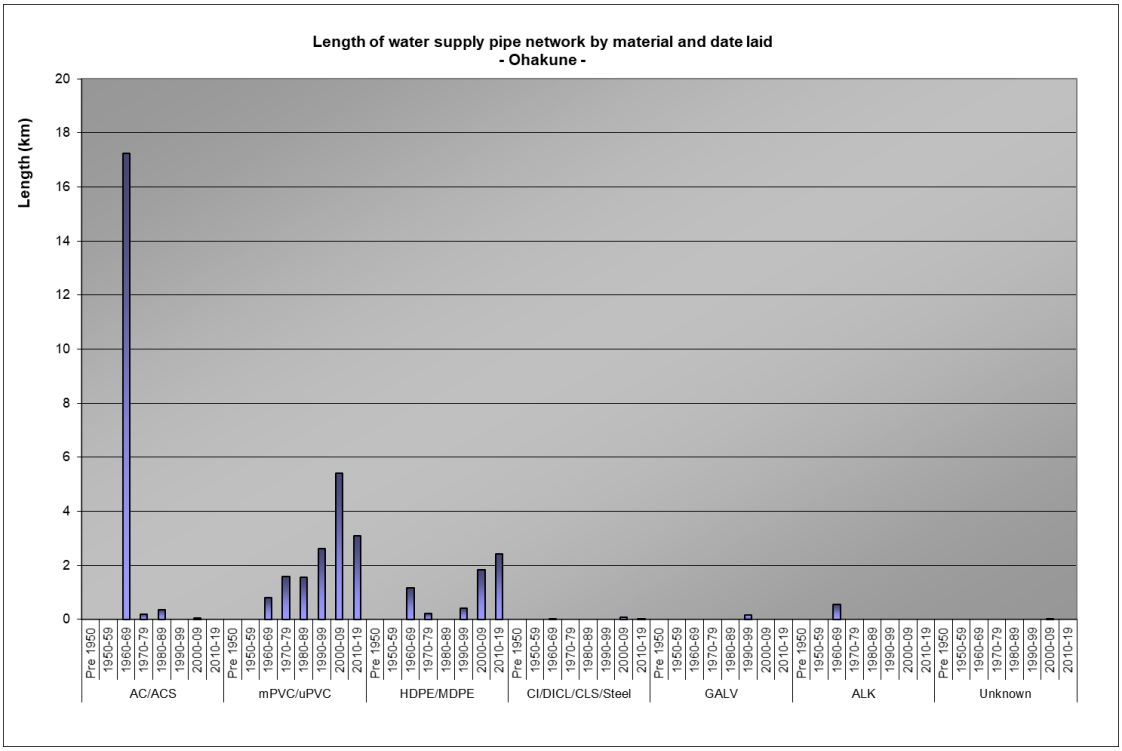
B.2.4 Network

(a) Water mains: The Ohakune reticulation network comprises an integrated series of water mains, valves, hydrants and connections as summarised in Table 32 (AMP Part 3). A reticulation network map for the 39.8 km of water main within the Ohakune water supply network is shown below.



(b) The graphs provide a graphical composition of the Ohakune water supply reticulation network with respect to pipe diameter/material, and pipe material/date laid. The pipelines within the water reticulation network are predominantly 63mm-100mm diameter (50.3% by network length) and 200mm-300mm diameter (21.0 % by network length). The pipe materials used most within Ohakune are AC/ACS with 44.8 % of the water supply network. The majority of the water supply network infrastructure was installed from 1960 to 1969 (inclusive) totalling 19.8km, or 49.7% of the network.

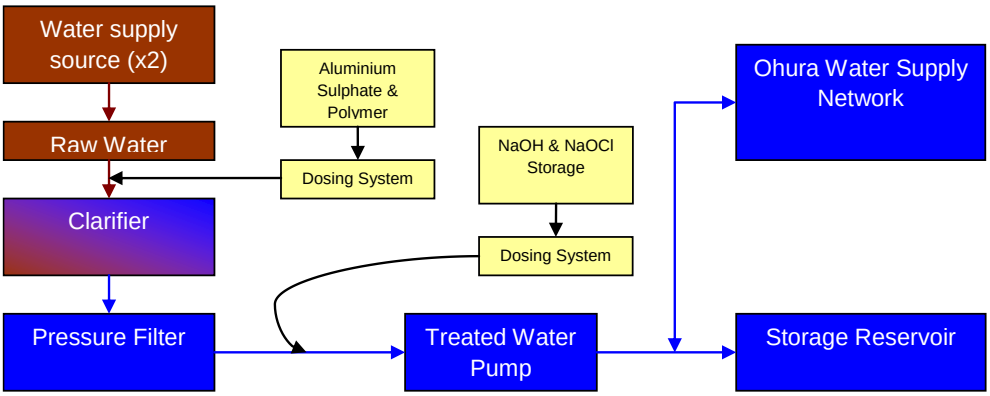




(c) Hydrants: Fire fighting water is provided via 216 hydrants within the Ohakune water supply network.

(d) Valves: 262 valves dispersed across the Ohakune water supply network provide for isolation of the network.

B.3 Ohura



B.3.1 The Ohura water supply system provides potable water to 169 connected properties within the Ohura community. A schematic of the Ohura water supply is shown above, together with photographs of selected assets within the Ohura water supply system.

Mangaparare Stream intake (left), Ohura WTP (middle), reservoir (right)

B.3.2 Headworks and Treatment

(a) Source: Water for the Ohura Township is extracted from the Mangaparare Stream immediately upstream of the Taranui Street culvert or from an artificial tributary on Hihi Street. Abstraction from the Hihi Street artificial tributary is undertaken only when the Mangaparare Stream is in flood with high turbidity. The assets for both water supply sources include two intake structures, isolation valves and pipework for the abstraction pumps located at the Ohura Water Treatment Plant (WTP).

(b) Treatment: Water treatment is undertaken at the Ohura Water Treatment Plant. Treatment consists of coagulation, clarification, filtration, pH correction and chlorination.

(c) The principal treatment assets comprise raw water abstraction pumps, polymer dosing equipment, clarifier, filter, pH correction and chlorine dosing equipment, treated water pumps, on-line pH, turbidity and chlorine monitoring equipment, SCADA, pipework, valves and the WTP building.

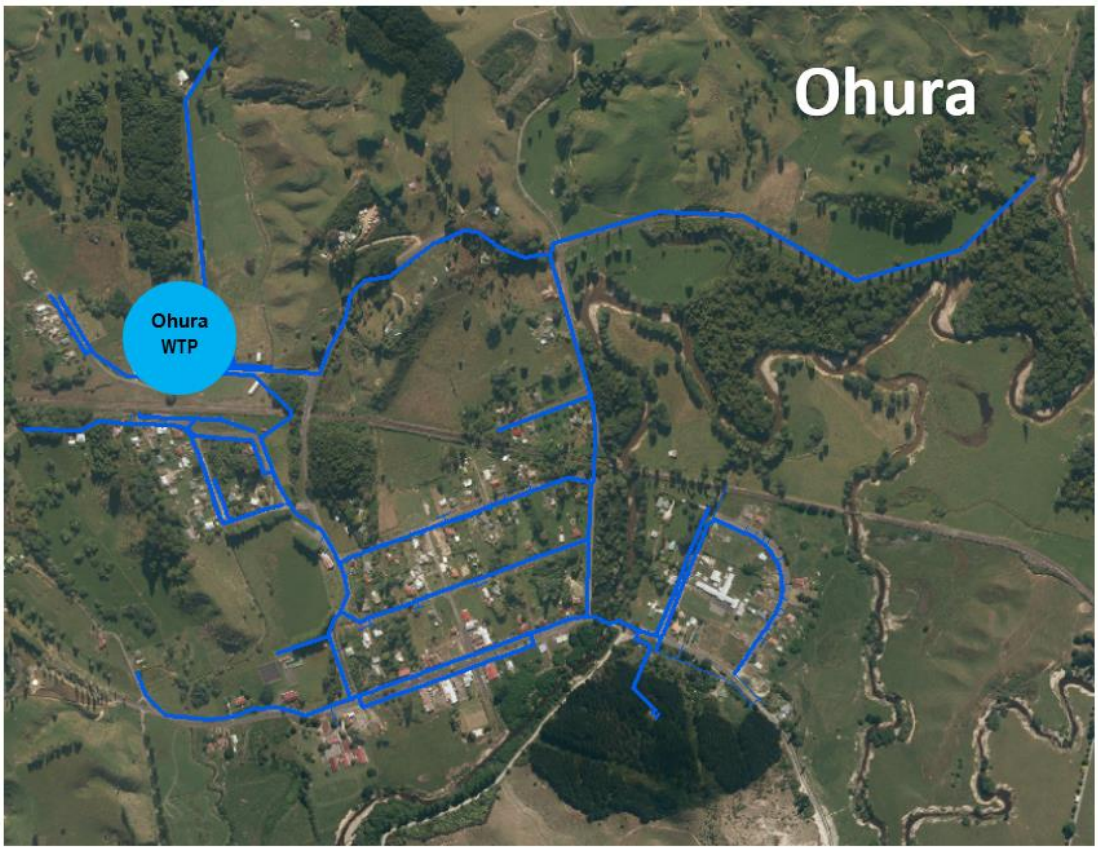
(d) Backwash water is fed to a settling pond where supernatant returns to the adjacent stream.

B.3.3 Pump Station and Storage

(a) Storage reservoir: Potable water storage is provided via a 225m^3 below ground lined reservoir with galvanised iron roof. Water from the WTP is pumped to the reservoir. The reservoir comprises concrete wall, galvanised iron roof, internal tank and roof liner and has associated flow level monitoring equipment, pipework and valves.

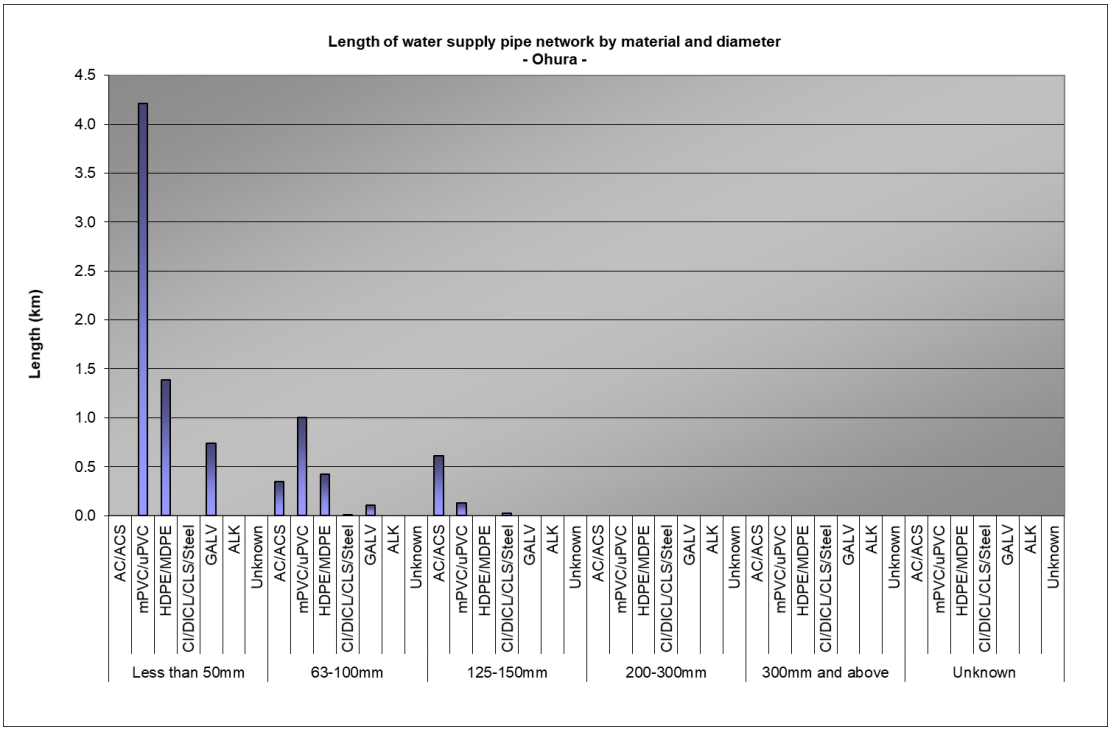
B.3.4 Network

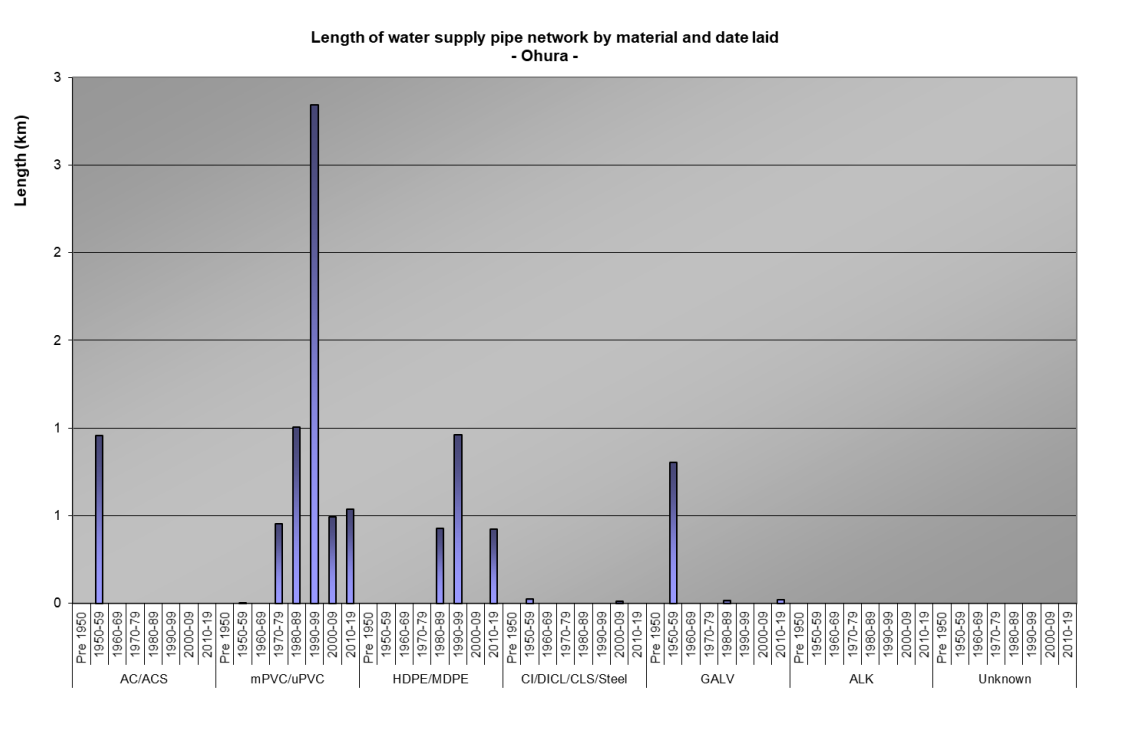
(a) Water mains: The Ohura reticulation network comprises an integrated series of water mains, valves, hydrants and connections as summarised within Table 32 (AMP Part 3). A reticulation network map for the 9.0 km of water main within the Ohura water supply network is shown below.



(b) The graphs provide a graphical composition of the Ohura water supply reticulation network with respect to pipe diameter/material, and pipe material/date laid. The pipelines within the water reticulation network are predominantly <=50mm diameter (70.5% by network length). The pipe materials used most

within Ohura are mPVC/uPVC with 59.4% of the water supply network. The majority of the water supply network infrastructure was installed from 1990 to 1999 (inclusive) totalling 3.8km, or 42.3% of the network.



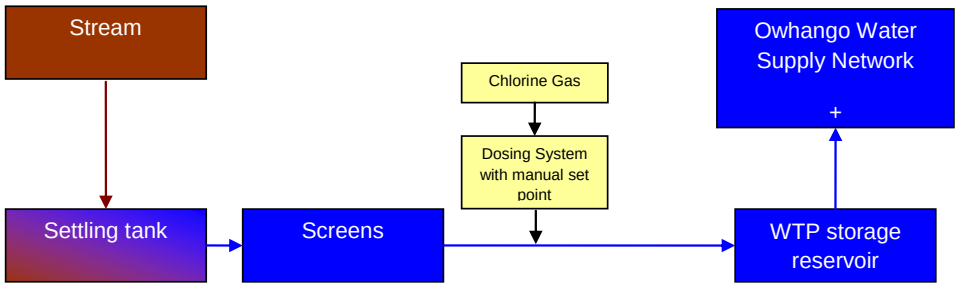


(c) Hydrants: Fire fighting water is available via 27 hydrants within the Ohura water supply network. These hydrants are however predominantly supplied off 50mm diameter water mains.

(d) Valves: 45 valves dispersed across the Ohura water supply network provide for isolation of the network.

B.4 Owhango

B.4.1 The Owhango water supply system provides potable water to 205 connected properties within the Owhango community. A schematic of the Owhango water supply is shown below, together with photographs of selected assets within the Owhango water supply system.



Water source swing bridge (left), WTP building (middle), WTP timber tank reservoir (right)

B.4.2 Headworks and Treatment

(a) Source: Water for the Owhango community is extracted from a tributary of the Whakapapa River within the Tongariro Forest. The assets for the water supply source include a swing bridge, intake structure, isolation valves and pipework.

(b) Treatment: Water treatment is undertaken at the Owhango Water Treatment Plant which was installed in 1983. Treatment consists of coarse screening and chlorination.

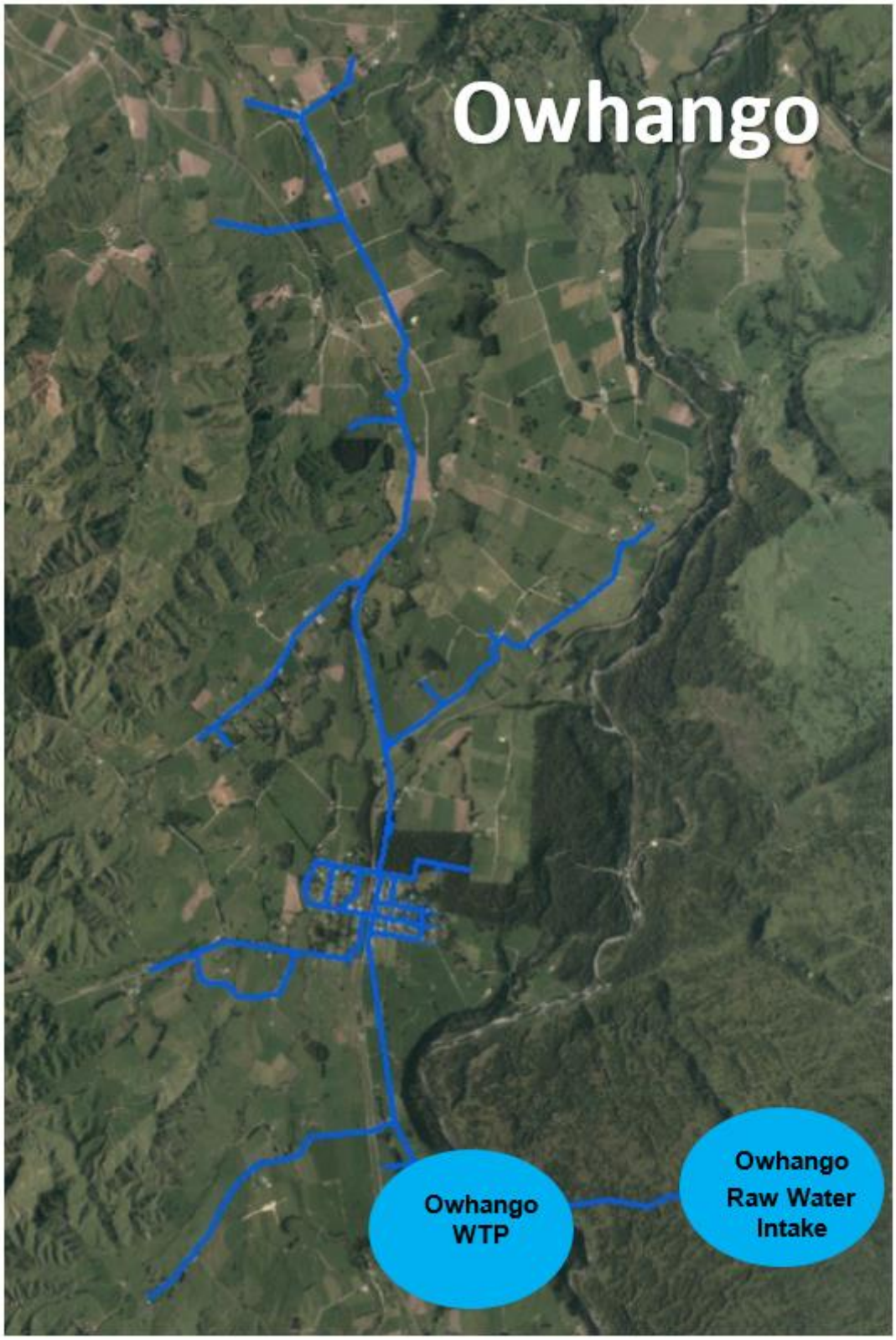
(c) The principal treatment assets comprise coarse screens, chlorine dosing equipment, online pH, turbidity and chlorine monitoring equipment, sampling pump, switchboard, SCADA, pipework, valves and the WTP building.

B.4.3 Pump Station and Storage

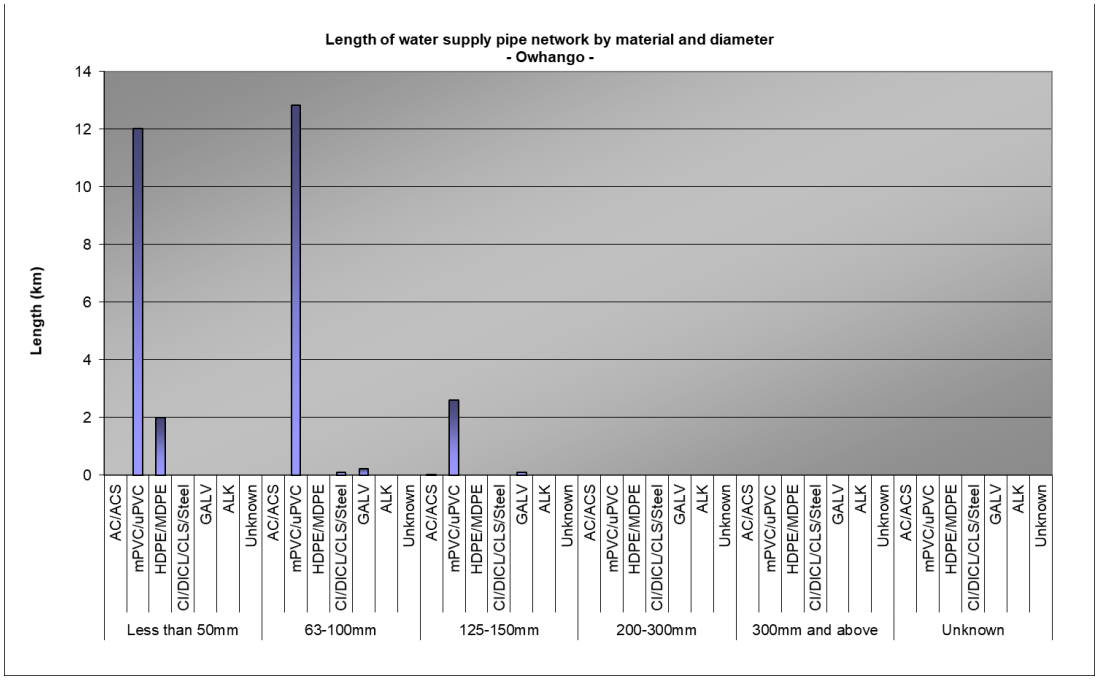
(a) Storage reservoir: Potable water storage is provided via a 270m^3 timbertank storage reservoir located adjacent to the WTP. Additional storage from two concrete reservoirs (Owhango Northern) of total volume 48m^3 and one concrete reservoir (Otapouri Road) of total volume of 25 m^3 exists within the network. Assets for these reservoirs include one timbertank reservoir, three concrete reservoirs, flow meter, chambers, pipework, valves and monitoring and control instrumentation.

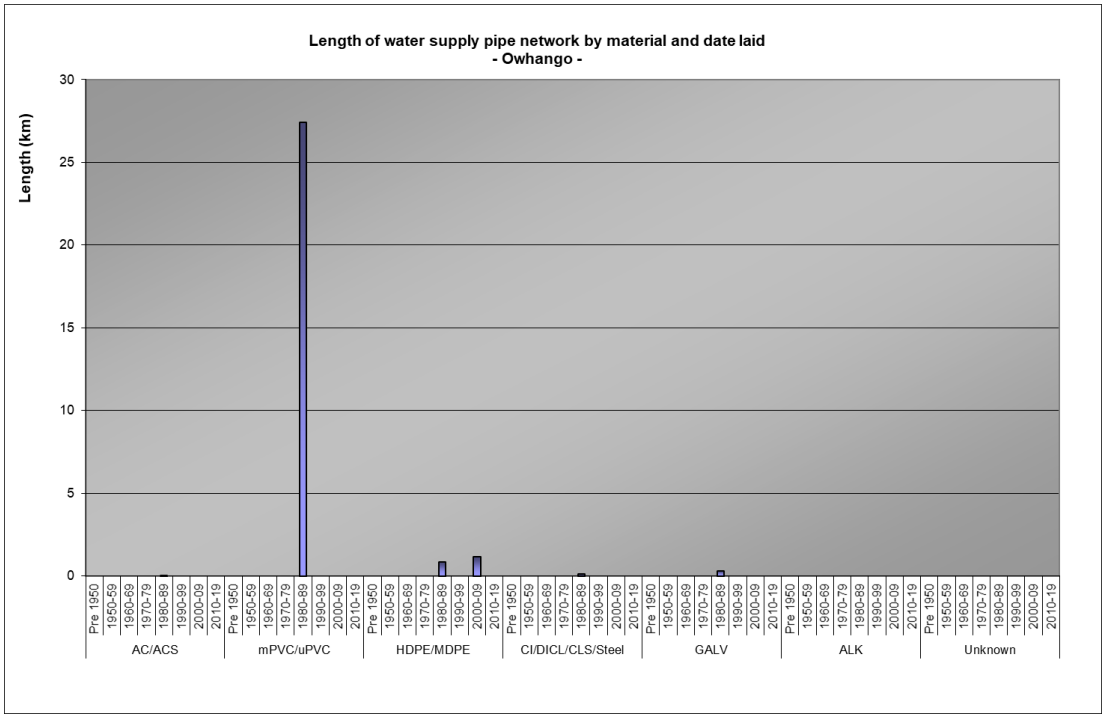
B.4.3 Network

(a) Water mains: The Owhango reticulation network comprises an integrated series of water mains, valves, hydrants and connections as summarised within Table 32 (AMP Part 3). A reticulation network map for the 29.9km of water main within the Owhango water supply network is provided below.



(b) The graphs provide a graphical composition of the Owhango water supply reticulation network with respect to pipe diameter/ material, and pipe material/date laid. The pipelines within the water reticulation network are predominantly 100mm diameter or below (90.9% by network length). The pipe materials used most within Owhango are mPVC/uPVC with 91.8% of the water supply network. The decade when the majority of the water supply network infrastructure was installed was 1980 to 1989 (inclusive) totalling 28.7km, or 96.1% of the network.



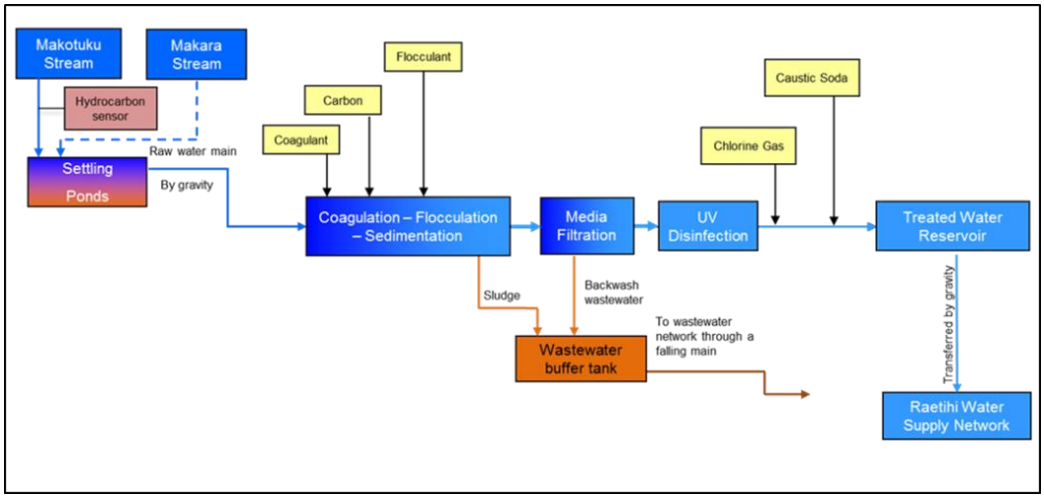


(c) Hydrants: Fire fighting water is available via 18 hydrants within the Owhango water supply network.

(d) Valves: 64 valves dispersed across the Owhango water supply network provide for isolation of the network.

B.5 Raetihi

B.5.1 The Raetihi water supply system provides potable water to 613 connected rated properties within the Raetihi community. A schematic of the Raetihi water supply is provided below, together with photographs of selected assets within the Raetihi water supply system.



Water source (left), Filters (middle), and UV Disinfection (right)

B.5.2 Headworks and Treatment

(a) Source: Water for the Raetihi community is extracted from the Makotuku Stream upstream of the SH49 Bridge on the road to Ohakune. The assets for the water supply source include a reinforced concrete weir, intake structure and pipework. A hydrocarbon sensor will trigger a shutdown of the pipeworks before treatment.

(b) Treatment: Water treatment is undertaken at the Raetihi Water Treatment Plant. Treatment consists initially of high level settling by a settling pond located in the general vicinity of the intake. The water treatment plant was upgraded in 2018 to provide: coagulation, flocculation, sedimentation and filtration, UV disinfection, activated carbon dosing, pH correction and chlorination. A number of customers receive raw water (unchlorinated) direct off the raw water pipeline.

(c) The principal treatment assets comprise of settling ponds, abstraction flow meter, surge vessel, sedimentation tank, filtration, carbon treatment, Caustic soda, UV disinfection and chlorine dosing equipment, online pH, turbidity and chlorine monitoring equipment, switchboard, SCADA, pipework, valves and the WTP building.

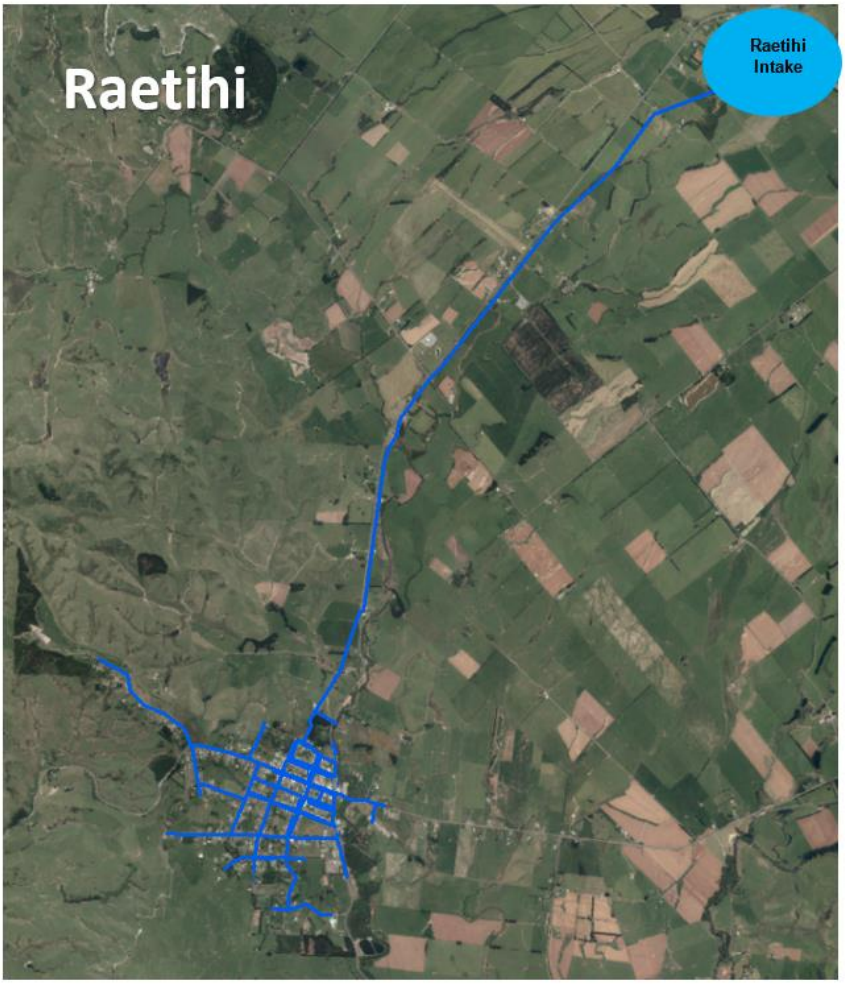
(d) A buffer tank is added for wastewater disposal to the town collection system.

B.5.3 Pump Station and Storage

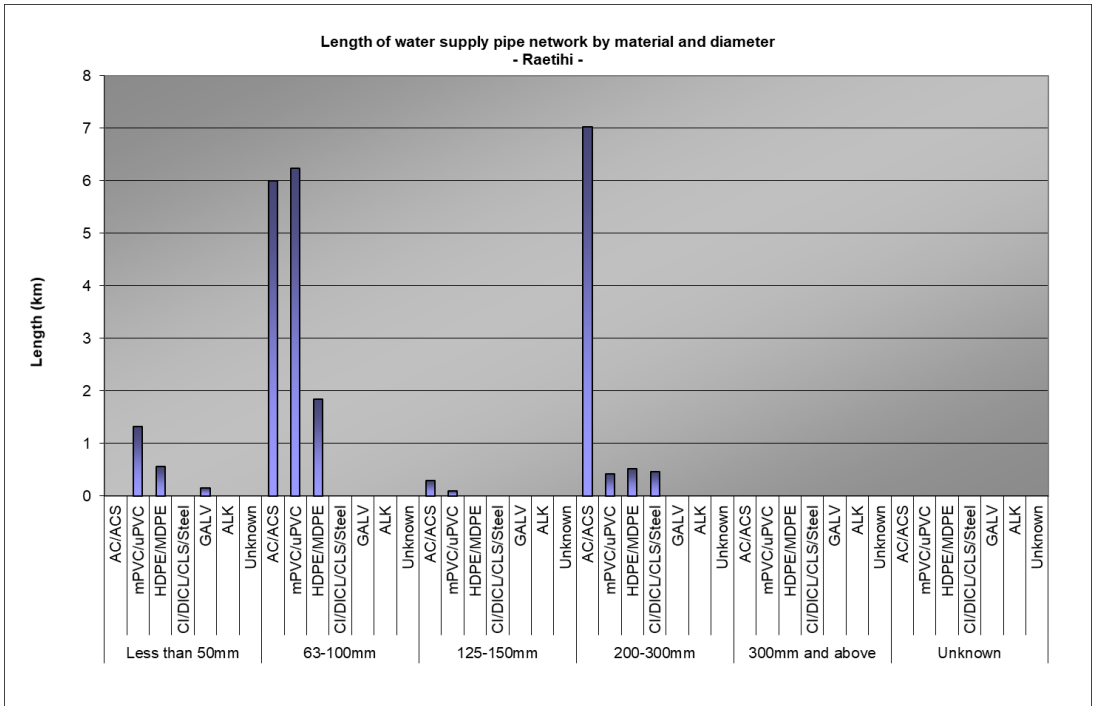
(a) Storage reservoir: Potable water storage is provided via a 900m^3 concrete storage reservoir located adjacent to the WTP. Assets for this reservoir includes one concrete reservoir, flow meter, chambers, pipework, valves and monitoring and control instrumentation. A new treated water feed line was added in 2017 along with a new valve for a second reservoir.

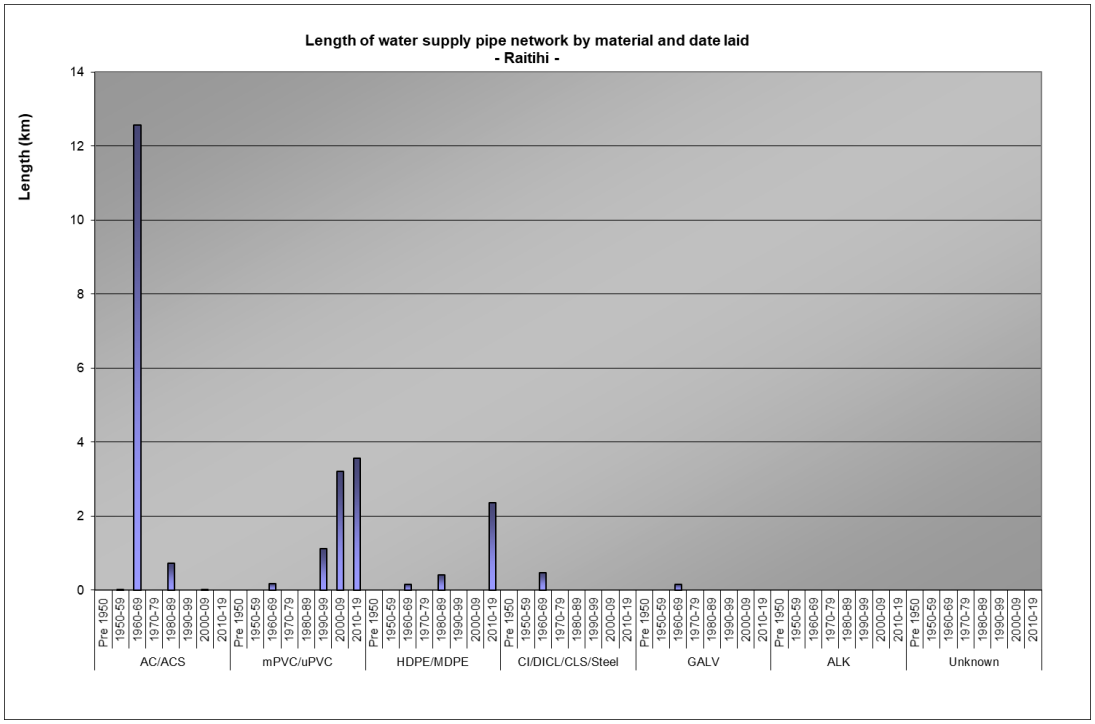
B.5.4 Network

(a) Water mains: The Raetihi reticulation network comprises an integrated series of water mains, valves, hydrants and connections as summarised in Table 32 (AMP Part 3). A reticulation network map for the 24.9 km of water main within the Raetihi water supply network is shown below.



(b) The graphs provide a graphical composition of the Raetihi water supply reticulation network with respect to pipe diameter/material, and pipe material/ date laid. The pipelines within the water reticulation network are predominantly 63mm-100mm diameter (56.5% by network length) and 200mm-300mm diameter (33.8% by network length). The pipe materials used most within Raetihi are AC/ACS with 53.4% of the water supply network. The majority of the water supply network infrastructure was installed from 1960 to 1969 (inclusive) totalling 13.5km, or 54.1% of the network.





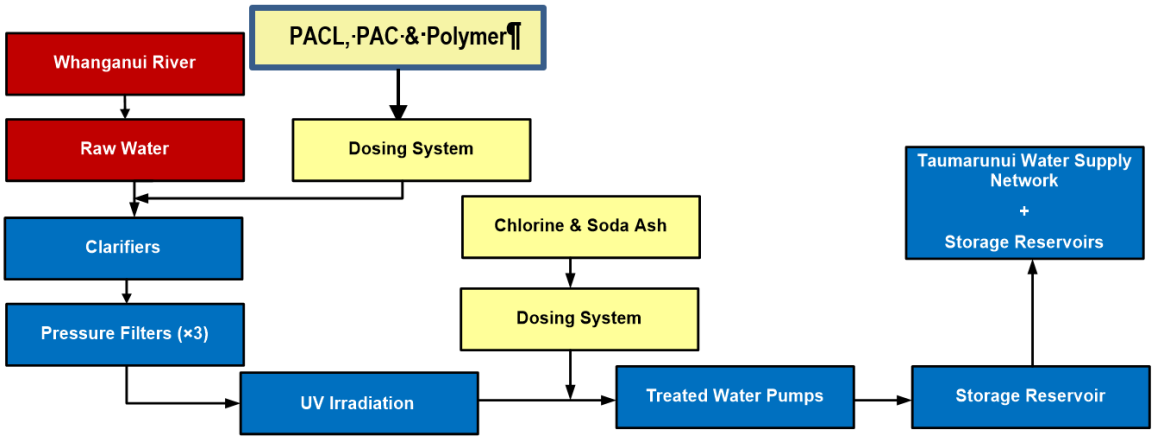
(c) Hydrants: Fire fighting water is available via 115 hydrants within the Raetihi water supply network.
(d) Valves: 124 valves dispersed across the Raetihi water supply network provide for isolation of the network.

B.6 Taumarunui

B.6.1 The Taumarunui water supply system provides potable water to 2,445 connected rated properties within the Taumarunui community. A schematic of the Taumarunui water supply is provided below. Photographs of selected assets within the Taumarunui water supply system are provided below.

Water intake (left), Taumarunui WTP (middle), UV disinfection units (right)

B.6.2 Headworks and Treatment



(a) Source: Water for the Taumarunui community is extracted from the Whanganui River via raw water pumps. The assets for the water supply source include an intake structure, two raw water pumps, two trash pumps, chambers, screens, a screen wash assembly, isolation valves, actuated valves, pipework, switchboard and controls.

(b) Treatment: Water treatment is undertaken at the Matapuna Water Treatment Plant. Treatment consists of coagulation, clarification, filtration, UV disinfection, chlorination, pH correction and treated water pumping. Fluoridation was ceased during 2011 at the request of the Taumarunui community and resolution of the Council. Powder Activated Carbon dosing was installed in 2012 to address taste and odour complaints.

(c) The principal treatment assets comprise polymer dosing equipment, clarifiers, filters, blowers, UV disinfection unit, tanks, pH correction and chlorine dosing equipment, treated water pumps, online pH, turbidity and chlorine monitoring equipment, switchboards, SCADA and control equipment, pipework, valves and the WTP building.

B.6.3 Pump Station and Storage

(a) Storage reservoir: Potable water storage for water treated at the Matapuna WTP is provided via the Matapuna Reservoir, a 4,600 m^3 concrete storage reservoir located on top of the hill adjacent to the WTP.

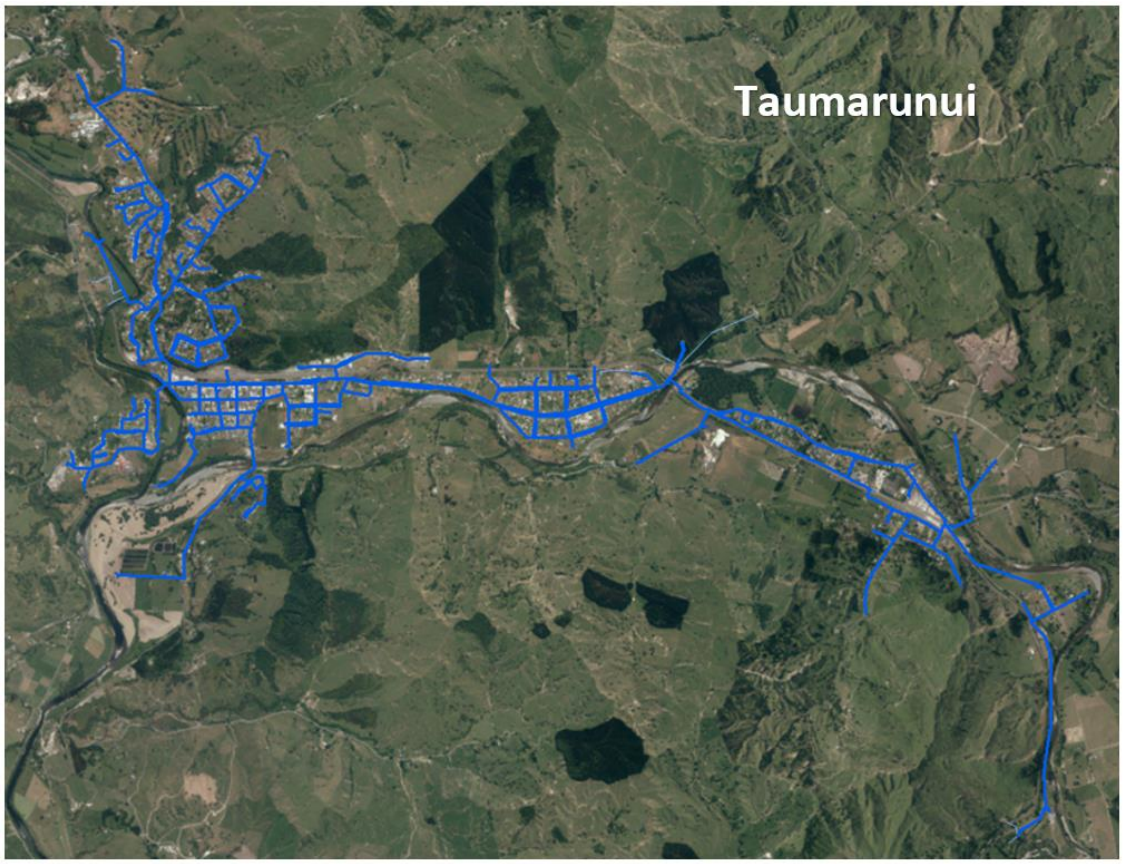
(b) A further 4,452m3 of storage capacity exists within the Taumarunui reticulation network and is provided by a further seven reservoirs [Rangaroa Reservoirs (2), Manunui Reservoir (1), Sunshine Road Lower Reservoir (1), Sunshine Road Upper Reservoirs (2) and Te Peka Reservoir (1)]. Storage reservoir assets include concrete reservoirs (7), plastic reservoir (1), flow meter, chambers, pipework, valves and monitoring and control instrumentation.

(c) Water pump stations: Treated water is transferred to the upper regions of the Taumarunui reticulation network via four water pump stations located at Manunui, Sunshine Road, Te Peka and Hospital Hill.

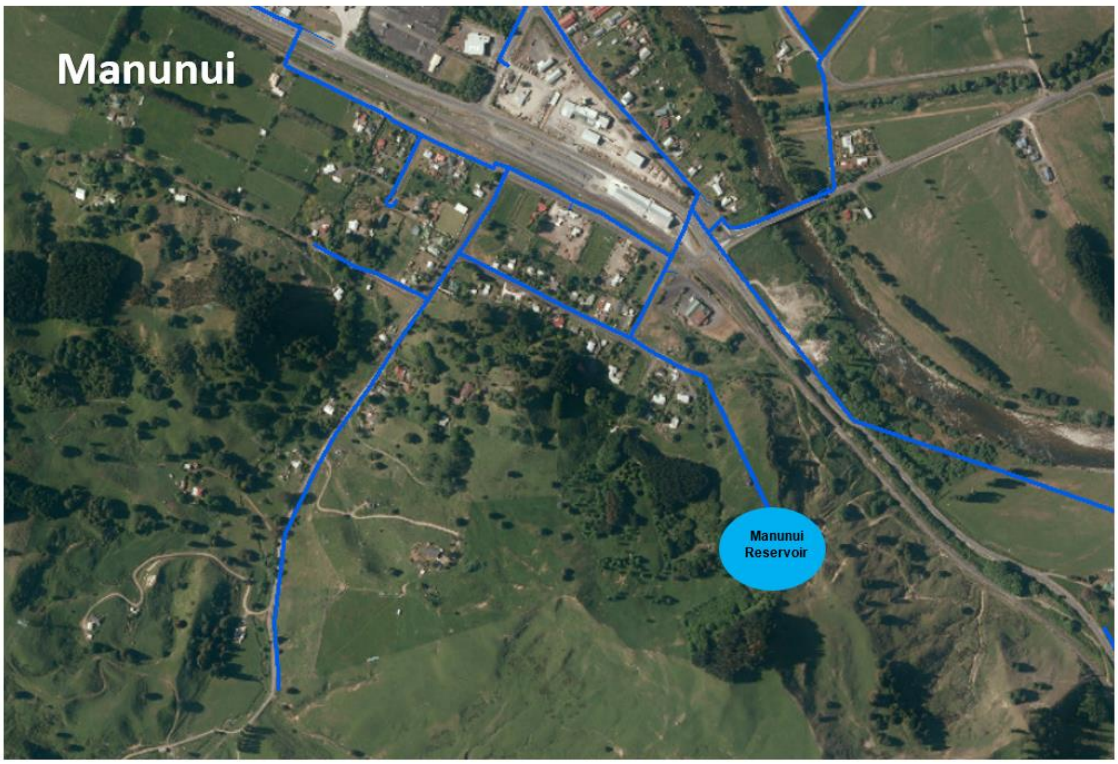
Assets for these water pump stations include pumps, valves, pipework, switchboards and controls and buildings.

B.6.3 Network

(a) Water mains: The Taumarunui reticulation network comprises an integrated series of water mains, valves, hydrants and connections as summarised within Table 32 (AMP Part 3). A reticulation network map for the 69.9km of water main within the Taumarunui and Manunui water supply network is shown below.



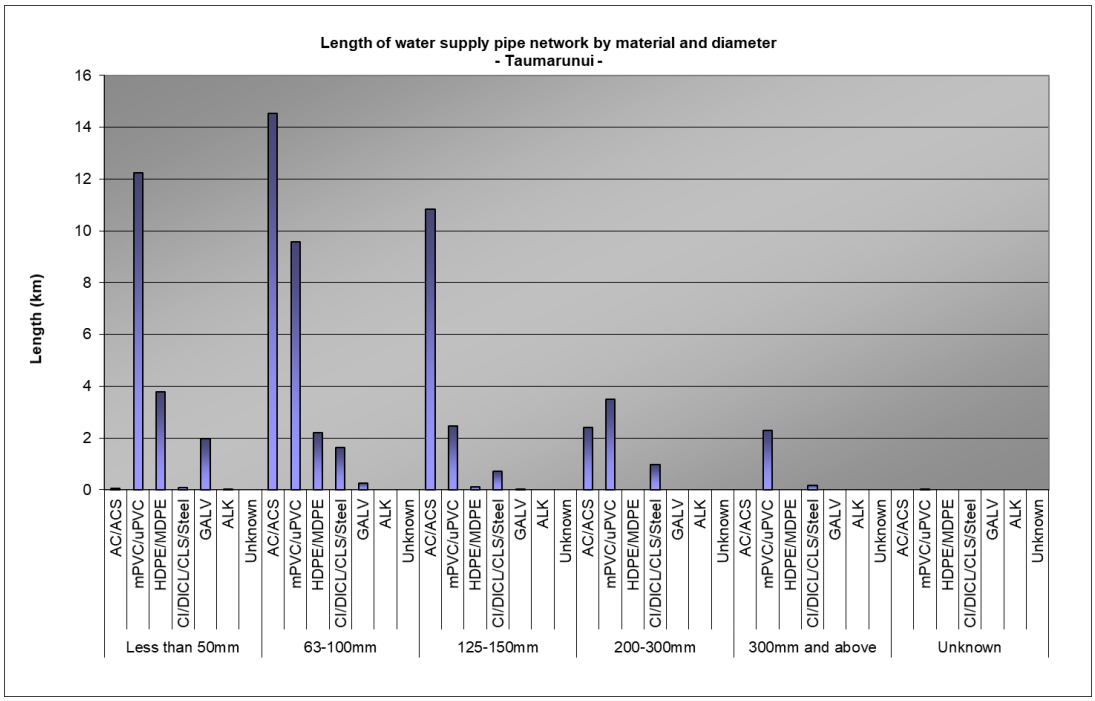
Taumarunui water reticulation network

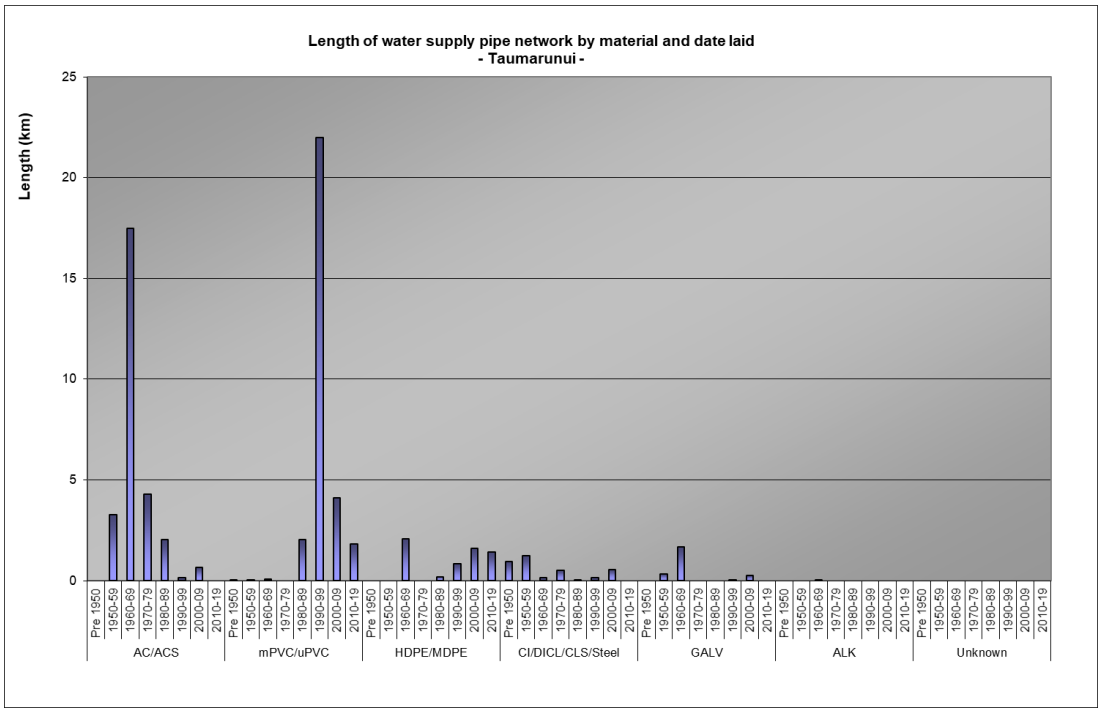


Manunui Water reticulation network

(e) The graphs provide a graphical composition of the Taumarunui water supply reticulation network with respect to pipe diameter/ material, and pipe material/ date laid. The pipelines within the water

reticulation network are predominantly 63-100mm diameter (40.4 % by network length) and <=50mm diameter (26.0 % by network length). The pipe materials used most within Taumarunui are mPVC/uPVC and AC/ACS at 43.0 % and 39.9 % of the water supply network respectively. The majority of the water supply network infrastructure was installed from 1990 to 1999 (inclusive) totalling 23.1km and 1960 to 1969 (inclusive) totalling 21.4km.





(c) Hydrants: Fire fighting water is available via 387 hydrants within the Taumarunui water supply network.

(d) Valves: 471 valves dispersed across the Taumarunui water supply network provide for isolation of the network.

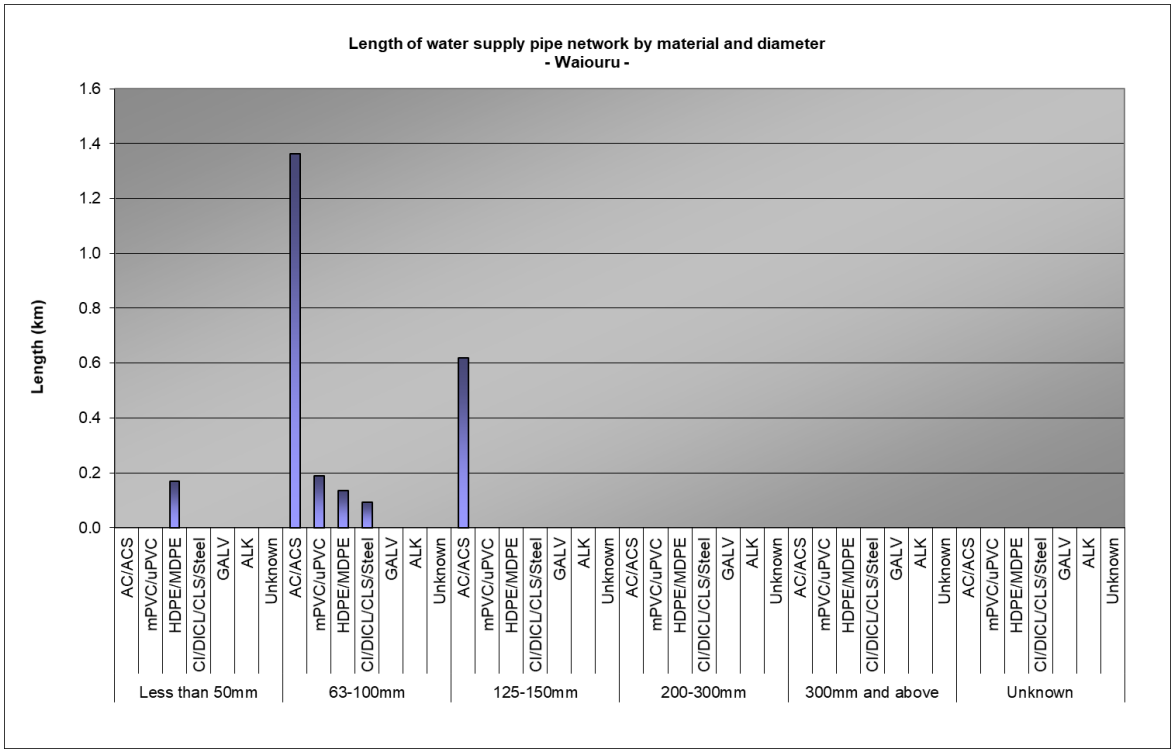
B.7 Waiouru

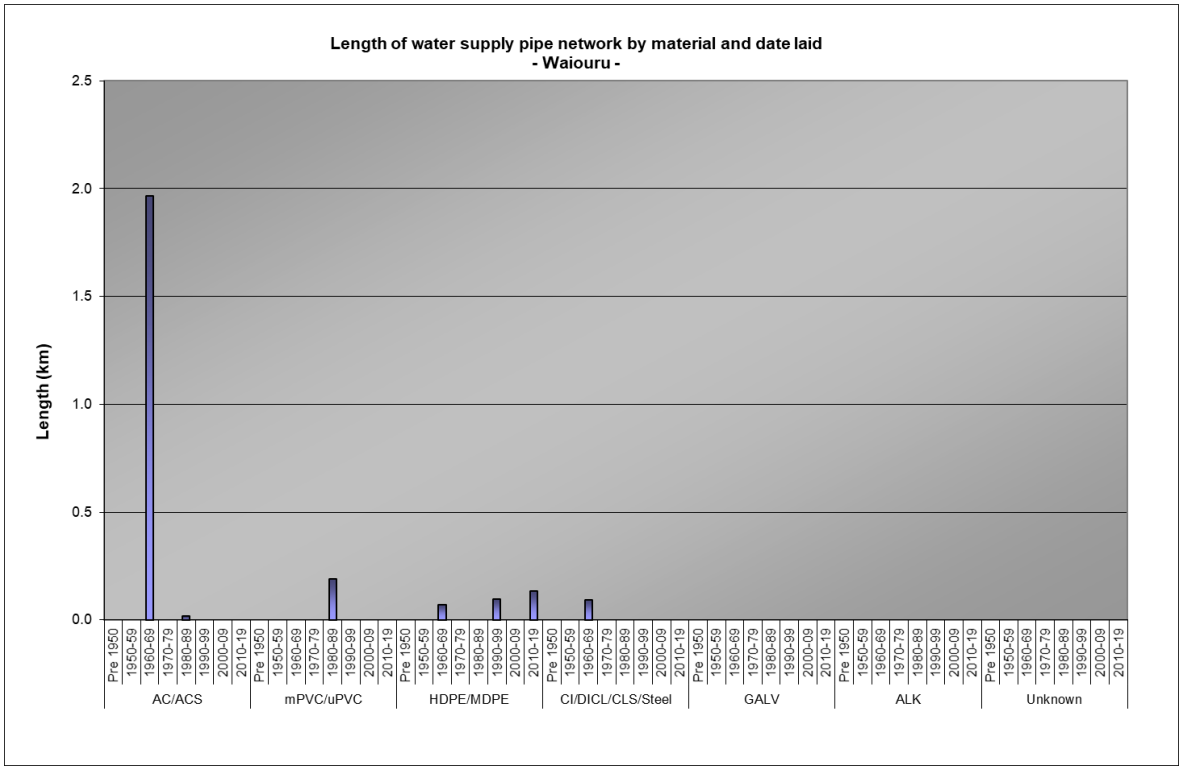
B.7.1 The Waiouru water supply system provides potable water to 92 connected rated properties within the Waiouru community.

B.7.2 Network

(a) Water mains: The Waiouru reticulation network comprises an integrated series of water mains, valves, hydrants and connections as summarised within Table 32 (AMP Part 3). A reticulation network map for the 2.6km of water main within the Waiouru water supply network is shown below.

(b) The graphs provide a graphical composition of the Waiouru water supply reticulation network with respect to pipe diameter/material, and pipe material/date laid. The pipelines within the water reticulation network are predominantly 63mm-100mm diameter (69.3% by network length). The pipe materials used most within Waiouru are AC/ACS with 77.2 % of the water supply network. The majority of the water supply network infrastructure was installed from 1960 to 1969 (inclusive) totalling 2.1km, or 83.0 % of the network.





(c) Hydrants: Fire fighting water is available via 15 hydrants within the Waiouru water supply network.

(d) Valves: 13 valves dispersed across the Waiouru water supply network provide for isolation of the network.

Appendix C – Physical Parameters: Asset Capacity/ Performance

C.1 National Park

	Asset Capacity/ Performance Grading	Comment/Substantiation
Headworks and Treatment		
Intake	3	• Abstraction of up to 500m3/day is consented under Resource Consent (Water Permit) No. 6888 at a maximum abstraction rate not to exceed 43.2m3/hr or 12 l/s. This resource consent applies until 12 December 2026. The 2018/19 maximum monthly average daily demand was approximately 243m3/day. • The slotted intake and raw water pipeline are prone to blockage requiring backflushing due to sediment entry at the intake. However, an online pressure sensor has been installed to enable monitoring and provide advanced warning of progressive sedimentation of the raw water pipeline, and facility has been added at the WTP building for undertaking of the backflushing. • There is no vehicular access to the intake.
Water Treatment Plant	3	• Online instrumentation and SCADA enables real time monitoring and remote control. • Chlorination provides for E coli protection and ensures a network disinfection residual. • UV dsinfection has been installed as part of a plant upgrade. • A new abstraction flow meter was installed at the WTP in 2018 due to intermittent reliability issues. However: • Raw water is not dosed with coagulant prior to filtration, seriously limiting the filter performance The treatment does not provide protozoal compliance under DWSNZ. At the time of writing this AMP, investigations are underway to provide a proposal to bring the plant up to DWSNZ standard. • The treatment plant is currently ungraded.
Pump Station/Storage		
Treated Water Storage	1	• The 500m^3 treated water storage reservoir provides greater than 24 hours of treated water storage at maximum monthly average daily demand. • The reservoir liner and associated pipework and valves were replaced in 2018 due to a leak at the reservoir.
Network		
Water Mains	4	• Typical pressures within the reticulation are between 490 kPa and 550 kPa, well above the Public Health Grading of Community Drinking Water Supplies (2003) recommended 200 kPa minimum pressure However: • Overall watermain failure rates appear to be poor compared with those of Australian water authorities. • The PVC reticulation is of a non-standard pipe thereby requiring special fittings and causing difficulties during mains breaks. • The distribution network is currently ungraded. • Backflow prevention protection is not actively enforced or managed.
Hydrants	1	• No major performance issues
Valves	2	• No major performance issues
General		• MoH approved a Water Safety Plan for the National Park Water Supply in 2013. A new Water Safety Plan is currently being prepared.

C.2 Ohakune

	Asset Capacity/ Performance Grading	Comment/Substantiation
Headworks and Treatment		
Intake	3	• Abstraction of up to 2,500m³/day is consented under Resource Consent (Water Permit) No 101266. This resource consent applies until 11 September 2025. The maximum monthly average daily demand during 2018/19 was approximately 1499 m³/day. During 2018/19 the daily abstraction limit compliance was 100%. • The intake lies within the Tongariro National Park. Raw water is considered of log credit 3 protozoal risk category. • While it is known that sections of the raw water pipeline are only Class B (rated to 6 bar), there has been no significant performance problems reported. However: • It is believed that organic matter and an accumulation of silt in front of and upstream of the intake weir could comprise a significant portion of raw water high turbidity during periods of heavy rainfall. • Access to the intake includes a section of moderate terrain which can only be traversed by ATV, motorcycle or foot, thereby limiting maintenance access.
Water Treatment Plant	3	• Online instrumentation and SCADA enables real time monitoring and remote control. • Chlorination provides for E.Coli protection and ensures a network disinfection residual • A Trojan UV irradiation unit installed during 2010 provides protozoal protection. • Certification received for increased chlorine gas storage in 2015. • An upgrade of the chemical dosing/storage facilities and pH correction system was completed in July 2018. • Filter media replacement completed in 2019 to improve filtered water turbidity. • RDC are currently implementing a capacity upgrade of the WTP from 1600m3/day to 2500m3/day. However: • During peak days, the water demand increases to 2,200 m3/day, exceeding the WTP's current capacity, resulting in non-compliant water being produced. • A boil water notice was issued in July 2019 due to the limited treatment capability, resulting from high water demand and highly turbid raw water. • The treatment plant is currently ungraded.
Pump Station/Storage		
Treated Water Storage	2	• 2 x 1,500m³ storage reservoirs provides greater than 24 hours of treated water storage at maximum monthly average daily demand.
Network		
Water Mains	3	• The network provides overall good performance with low instances of mains breaks. • Typical pressures within the reticulation are between 500 kPa to 600 kPa, well above the Public Health Grading of Community Drinking Water Supplies (2003) recommended 200 kPa minimum pressure. Maximum pressures have been reduced through the installation of PRVs. • Strategic water meters installed in Ohakune Township in 2017 to assist in determining illegal connections or leakage. • Night usage survey completed in 2019 at Ohakune to determine locations of possible water leaks. Survey initiated due to high demand trends during off peak periods. High usage areas have been targeted for further investigation. However: • The distribution network is currently ungraded. • Backflow prevention protection is not actively enforced or managed.
Hydrants	2	• No major performance issues.
Valves	2	• No major performance issues.
General		• A MoH approved WSP exists for the Ohakune water supply system. A new Plan is currently being prepared.

C.3 Ohura

	Asset Capacity/ Performance Grading	Comment/Substantiation
Headworks and Treatment		
Intake	3	• Abstraction of up to 360m³/day is consented under Resource Consent (Water Permit) No 101866. This resource consent applies until 14 November 2021. The maximum monthly average daily demand during 2018/19 was approximately 209m³/day. During 2018/19 daily abstraction limit compliance was 100%. • The reliability of the two intakes is less than adequate and quantity is not guaranteed under drought conditions. • The catchment is unprotected and raw water is considered of log credit 5 protozoal risk category.
Water Treatment Plant	3	• Online instrumentation and SCADA enables real time monitoring and remote control. Improvements were made to the data communication link in 2018 to improve the reliability of the SCADA system. • Chlorination provides for E coli protection and ensures a network disinfection residual. • Performance of chemical dosing, clarification, and filtration processes are considered adequate at the required flow rates and for most raw water quality. • A settling pond has been installed to settle out sludge from the clarifier and sediment from the filter backwash prior to consented discharge of the supernatant to the nearby roadside drain. • An upgrade of the chemical storage facility was completed in 2019 including the installation of a safety shower and eyewash. However: • The treatment plant is currently ungraded. • The poor condition of the WTP building compromises the building's performance in regards to being weather and vermin-proof. • The WTP is located on low lying land and has been flooded in the past major flood event damaging equipment. All small events do not reach the equipment which was raised off the ground during previous upgrade works.
Pump Station/Storage		
Treated Water Storage	2	• 225m³ storage reservoir provides 24 hours of treated water storage at maximum monthly average daily demand. • SCADA installed during 2010 provides real time information on the treated water storage level while a reservoir liner installed during 2011 protects against possible recontamination. However: • The common inlet and outlet pipe does not provide for good circulation of stored water.
Network		
Water Mains	4	• The network is aging and suffers from failures. The failure rate is considered poor when compared with Australian water authorities. • A high percentage of hydrant reticulation is supplied from 50mm diameter mains which are insufficient to provide satisfactory fire fighting flows. • The distribution network is currently ungraded. • Backflow prevention protection is not actively enforced or managed. However: • Typical pressures within the reticulation are between 550 kPa to 600 kPa, well above the Public Health Grading of Community Drinking Water Supplies (2003) recommended 200 kPa minimum pressure.
Hydrants	4	• The majority of hydrants do not meet minimum fire fighting water (FFW) requirements due to these hydrants being supplied off of 50mm diameter mains.
Valves	2	• No major performance issues.
General		• A MoH approved PHRMP exists for the Ohura Water Supply system. An updated Water Safety Plan is currently being prepared.

C.4 Owhango

	Asset Capacity/ Performance Grading	Comment/Substantiation
Headworks and Treatment		
Intake	3	• Abstraction of up to 1,500m³/day is consented under Resource Consent (Water Permit) No 101514. This resource consent expired in March 2016. A new consent has been lodged so the old consent remains active until the new consent has been granted or declined. Abstraction management installed during 2011 enables reduction of the volume of water abstracted. The maximum monthly average daily demand during 2018/19 was approximately 582m³/day. During 2018/19 the daily abstraction limit compliance was 100%. • Raw water is considered of log credit 3 protozoal risk category. • Vehicular intake access does not exist and requires travel by quad bike.
Water Treatment Plant	2	• Online instrumentation and SCADA enables real time monitoring and remote control. • Chlorination provides for E.coli protection and ensures a network disinfection residual. • A new abstraction flow meter was installed at the WTP in 2018 due to intermittent reliability issues. • A permanent generator was installed at the WTP in 2019, due to the regular power outages at the site. However: • There is no filtration. Turbidity leaving the water treatment plant can exceed 20 NTU. • There is no means of protozoal protection. • WTP is not capable of providing good quality water under high rainfall conditions when turbidity levels are high. • The bulk treatment is currently ungraded.
Pump Station/Storage		
Treated Water Storage	4	• The 270m³ storage reservoir is undersized and does not provide 24 hours of treated water storage at maximum monthly average daily demand. • The Northern Reservoirs (2 x 25m3) and Otapouri Road Reservoirs (1 x 25m3) have no system in place to monitor the reservoir level.
Network		
Water Mains	2	• The network provides overall good performance with low instances of mains breaks. • Typical pressures within the reticulation are between 300 kPa to 350 kPa, compliant with the Public Health Grading of Community Drinking Water Supplies (2003) recommended 200 kPa minimum pressure. However: • The distribution network is currently ungraded. • Backflow prevention protection is not actively enforced or managed.
Hydrants	3	• No major performance issues. However: • The 2018 condition assessment identified that some hydrants were found full of soil with no real impact on functionality, apart from one hydrant where the connection with the hydrant riser might be significantly affected.
Valves	2	• Valve performance is adequate. • Overall valve coverage is satisfactory, providing a high degree of operational functionalitiy.
General		• At the time of writing this AMP, an updated Water Safety Plan was being prepared.

C.5 Raetihi

	Asset Capacity /Performance Grading	Comment/Substantiation
Headworks and Treatment		
Intake	3	• Abstraction of up to 1,685m³/day (20L/sec) is consented under Resource Consent (Water Permit) No 102068 when flow exceeds 115L/sec in the Makotuku River. Abstraction is however limited to 820m³/day (10 L/sec) under low flow conditions when flows are less than 115L/sec in the Makotuku River. This resource consent expired in 2015 and an application for a new consent was lodged and accepted by Horizons Regional Council, which means the old consent remains active until a new consent is granted or declined. The maximum monthly average daily demand during 2018/19 was 967 m³/day. The summer period of 2019 was particularly dry resulting in a number of non-compliances of the restricted abstraction consent limit. Council maintained communications with the Regional Council during this period and subsequently applied for a higher flow rate (12 L/sec) during the restricted flow periods. • The intake structure grating is aligned parallel to the flow of the stream and is self-cleaning. It is also fine enough to prevent the majority of debris from entering the raw water pipeline • Resource Consent issues surrounding the abstraction limitation have been addressed through the addition of a modulating valve controlled by settling pond water level. • The catchment is unprotected with livestock accessing the source water and raw water is considered of log credit 5 protozoal risk category. • The addition of the on-line hydrocarbon detection system to the water intake pipe has improved raw water quality monitoring
Raw Water Settling Ponds	4	• The settling ponds are incapable of satisfactorily handling the levels of sediment within the raw water. The poor performance of the settling ponds often results in water with high turbidity levels reaching the Raetihi WTP.
Water Treatment Plant	1	• The Water Treatment Plant was upgraded in 2018 and has been consistently producing water complying with DWSNZ. During 2018/19, the plant was compliant for bacterial and protozoal standards. • The WTP is remotely monitored and controllable through the SCADA interface. However: • Some customers receive unchlorinated water due to their supply direct of the raw water pipeline.
Pump Station/Storage		
Treated Water Storage	3	• 900m³ storage reservoir provides approximately 22.3 hours of treated water storage at maximum monthly average daily demand during the 2018/19 period.
Network		
Water mains	4	• Water mains are satisfactorily sized to accommodate the abstraction and reticulation of water to the Raetihi township However: • There is a high level of suspected leakage within the reticulation network. A water loss survey was completed at Raetihi in 2019 and areas of high night time usage were identified and targeted for further investigation.
Hydrants	2	• Hydrant performance is regarded as good and provides the required coverage across the Raetihi township • The majority of hydrant boxes are typically clean and well marked with the hydrants located in an accessible area.
Valves	2	• As part of the 2014 Condition Assessment, Operators noted a number of the valves that were inspected appeared to be recently installed and in excellent condition. • No leakage was observed during the inspection.
General		• A MoH approved WSP exists for the Raetihi water supply system. A new water safety plan is currently being prepared.

C.6 Taumarunui

	Asset Capacity/ Performance Grading	Comment/Substantiation
Headworks and Treatment		
Intake	3	• Abstraction of up to 7,000m³/day is consented under Resource Consent (Water Permit) No 7196. This resource consent expired in 2017. A new consent has been lodged so the old consent remains active until the new one is granted or declined. The maximum monthly average daily demand during 2018/19 was approximately 3,292m³/day. Full compliance was achieved with the daily abstraction limit. • The intake and water availability is satisfactory under normal operating conditions. • The raw water turbidity meter has been replaced and is in excellent condition. • The intake gallery had further rock media added around the intake pipe to provide continuity of asset protection. Building works make the area safer after erosion around the building was experienced after heavy rain. • The automatic intake screen wash is fully operational and can be controlled from SCADA. However: • Penstocks are known not to completely seal when closed. • A number of spray nozzles which form the automatic screen wash were blocked at the time of 2015 Condition Assessment inspection. • There is a need to manually remove algal growth from the screens when the automatic spray nozzles are unable to effectively remove this material • Vermin in the Matapuna Intake Building have been observed
Water Treatment Plant	2	• Matapuna WTP provides a very good quality of treated water under normal operating conditions. The treated water quality has been awarded an "A" grading by the Ministry of Health (MOH). • Performance of the chemical dosing, clarification, and filtration processes are considered adequate at required flow rates and most qualities of raw water. • Chemical storage at the Matapuna WTP is HSNO compliant and has received appropriate certification. • Continual on-line monitoring is provided of the flows entering the WTP, during the treatment process and following completion of the final stage of filtration. • Continual on-line monitoring is provided of water turbidity throughout the treatment process and also of the FAC and pH prior to being pumped to the Matapuna reservoir. • Coagulation, clarification and filtration provide turbidity of < 0.3 NTU under all but extreme raw water conditions. • The plant changed from using Alum as a coagulant to Poly Aluminium Chloride (PACL) in 2015 to improve plant performance due to variable nature of the raw water pH. • Installation of UV disinfection was completed in 2016. • Launders, run to waste at the clarifier and a skirt to prevent short-curcuiting in the wetwall were also completed in 2017. • An operating manual has been developed for the Matapuna Water Treatment Plant. • Matapuna WTP had the raw water flow meter replaced in 2018 due to intermittent reliability issues with the existing meter. • The compressor and air line at the WTP was upgraded in 2018. This compressor is a critical piece of equipment as it supplies all of the air-actuated valves at the WTP. • The raw water flow meter was replaced in 2019 due to intermittent reliability issues. However: • The raw water quality is highly variable and the plant is often shut down after severe weather events in order to avoid the excessively high turbid waters. • There is minimal security against vandalism and sabotage of the Matapuna WTP. The lack of security could have major impacts on the water supply. At the time of writing this AMP, Council are upgrading the security measures at the site.

	Asset Capacity/ Performance Grading	Comment/Substantiation
		• The Matapuna WTP clear well is situated underneath the clarifiers and the clarifier cones are well submerged into the filtered water. If the clarifiers or the sludge drains are leaking there is no way to find out except for finding elevated turbidity in the reticulation network. • Pipework used to convey treatment chemicals is not colour coded which makes it difficult to identify and trace the transfer of each chemical throughout the plant.
Pump Station/Storage		
Treated Water Storage	2	• 9,050m^3 of treated water storage within the Taumarunui water supply system provide greater than 24 hours of treated water storage at maximum monthly average daily demand. However: • Vehicle access tracks for Matapuna, Manunui and Lower Sunshine Reservoirs require renewal of metal aggregate to enable safe vehicle access to the reservoir. • The seal between the reservoir roof and lid need sealing to prevent roof run off entering at Sunshine lower and upper and Te Peka Reservoir's. Lid seals have since been replaced. • The Manunui reservoir wooden valve chamber cover is inadequate and provides poor cover for the valve chamber. • At Rangaroa a safety cage around the access ladder can improve overall performance. • The level control valves at the Rangaroa reservoirs are in poor condition and do not operate reliably. Both valves need to be replaced, and investigations are currently underway regarding valve replacement.
Water Pump Stations	4	• Installation of telemetry at Hospital Hill and Te Peka WPS for monitoring & alarming is complete. • Manunui WPS is currently being upgraded to include duty / standby pumps. • Sunshine Road and Te Peka WPS do not have standby pumps. There is therefore no redundancy in the event of failure. A pump has been purchased and placed in critical spairs to service these low volume sites. • The upgrade of the Sunshine Road and Te Peka WPS electrical switchboards was completed in 2018.
Network		
Water Mains	2	• Overall water main failure rates appear to be consistent with those of Australian water authorities. • Customers receive "continuous" pressure of above 200-300 kPa, even in times of high demand. • Customers receive an "c" graded water supply ("marginally satisfactory, moderately low level of risk") in relation to water quality from a public health perspective. • Water quality complaints numbers over the 2018/19 period is 9.5 complaints per annum per 1000 connections, being greater than the median of 6.9 indicated within Australian water utilities performance reporting for the 2018/19 period. It is noted that over 50% of complaints related to taste / odour at Taumarunui.
Hydrants	2	• Structured inspections of 35 fire hydrants indicate 97.1% of the fire hydrants to be of performance 1 or 2 with an average performance of 2 (Good). • A few of the hydrants inspected were found submerged in ground water as a result of being located in a low lying area in the street. This not only creates a minor operational issue, but also will accelerate asset degradation. • Hydrant markings are generally good with road markings, blue reflectors, hydrant posts, and hydrant box painting making the hydrants easy to locate.
Valves	2	• Structured inspections of 43 stop valves indicate 100% of stop valves to be of performance 1,2 or 3 with an average performance of 2 (Good).

	Asset Capacity/ Performance Grading	Comment/Substantiation
		• Stop valve operation/functionality is typically sound, enabling levels of service in relation to mains shut downs to be met. • Overall stop valve coverage is good, providing a satisfactory degree of operational flexibility and providing for isolating of sections of the water network without the requirement for shutdown of substantial customer areas. • Road marking of stop valves is acceptable. Repainting of the markings would however further improve the ability for operators to easily locate the valves.
General		• MoH approved a WSP for the Taumarunui water supply in 2013 a review. An updated Water Safety Plan is currently being prepared.

C.7 Waiouru

	Asset Capacity/ Performance Grading	Comment/Substantiation
Network		
Water mains	2	• Pressures throughout the reticulation are very good and comply with requirements. • The RDC GIS shows good coverage of both network valves and fire hydrants for the area of Waiouru under RDC jurisdiction.
Hydrants	2	• Hydrant marking is generally good with road markings, reflectors, hydrant posts and hydrant box painting making the hydrants easy to locate. • The majority of hydrant boxes are typically clean and the hydrants located in an accessible area. • Hydrant distribution and coverage is good and provide the required coverage across the Waiouru township.
Valves	2	• Operators report the performance of the valves in terms of their operation and functional ability to isolate the network as satisfactory. • Ruapehu District Council's GIS reveals a satisfactory distribution of valves to enable acceptable network operation, provided these valves can be located by operators when they are required. • Marking of the valves is typically acceptable. Repainting of the markings would however further improve the ability for operators to easily locate the valves.
General		• At the time of writing this AMP, a draft Water Safety Plan was being prepared.

Appendix D – Asset Condition

D.1 National Park

	Asset condition grading	Comment/substantiation
Headworks and treatment		
Intake	2	• The integrity of the intake structures, valves and pipework are good. • The raw water turbidity meter is modern and in very good condition.
Water treatment plant	2	• The condition of the majority of the WTP components is good, having been installed or upgraded as part of WTP improvement works. • The original WTP was installed in 1986 (filters, pipework, civil structures). • The external chlorine storage building was installed in 2006. • The switchboard was replaced in 2007. • Online monitoring and SCADA was installed in 2009. • Actuated valves and critical pipework was replaced in 2010 and 2011. • Replacement of following assets was completed in 2015/16 as below: o Air scouring facility for the backwash system. o Valving and pipework to allow run-to-waste from the filters. o Flow meter and throttling valve on the backwash line. o DWSNZ compliant UV unit. o Flow transmitter in the outlet line of the storage reservoir and connection to SCADA that will also monitor backwash flow. o Backwash holding tank. o Additional turbidity monitor and adjust configuration to provide individual filtered water turbidity monitoring. • A new abstraction flow meter was installed at the WTP in 2018. However • The integrity of the steel sections of pipework within the plant is poor. In particular the first tee, where raw water enters the WTP, is heavily corroded under the raw water pressure transmitter tapping band. • Sections of the National Park main WTP building are in need of repair.
Pump station/storage		
Treated water storage	2	• A new roof, working platform, ladder and railings were installed in 2013 and are in very good condition. • The tank liner and much of the reservoir pipework and valving were replaced in 2018. • Timbertank is in good condition and the circumferential wire ropes are well tensioned.
Network		
Water mains	3	• The network is in overall good condition having been installed in the 1980's. • There is a low mains break frequency rate, with requests for service typically relating to the water connections as opposed to the water mains themselves.
Hydrants	2	• No major condition issues
Valves	2	• The 2018 Condition Assessment noted that approx. 75% of the valves are in good condition.

D.2 Ohakune

	Asset condition grading	Comment/substantiation
Headworks and treatment		
Intake	3	• The intake scour penstock and actuation device is in average-poor condition with significant surface rusting. This is an essential tool for intake maintenance. Penstock opened in November 2019, without any issues. • A new intake sceen was fabricated and installed in 2016 to satisfy the resource consent conditions.
Water treatment plant	2	• The condition of the majority of the WTP components is good, having been installed or upgraded as part of WTP improvement works. • The original WTP was installed in 1992 (depth filters, [bypassed] DE filters, pipework, civil structures). • The depth filter actuated valves were replaced during 2008. • Chlorine dosing and monitoring equipment and SCADA was installed in 2008. • A UV disinfection unit and polymer streaming current monitor was installed in 2010. • WTP filters were refurbished in 2015, and filter media replacement completed 2019. • Upgrade of chemical dosing system completed in 2018. • Cartridge filters installed in 2019, to further improve treated water quality. However: • Media filter bodies have extensive surface corrosion. • The condition of sections of steel pipework is poor (eg pipe connections to filters).
Pump station/storage		
Treated water storage	2	• The original tank was installed in 1992. • The second 1,500m^3 timber tank storage reservoir was installed in 2009. • The internal lining and roof of the original 1,500m^3 timber tank storage reservoir were replaced in 2010. • Two or three circumferential cables on Tank 1 require re-tensioning • Access to reservoir roof openings is via a ladder with enclosed cage, howeve no working platform installed at opening.
Network		

Water mains	3	• The network is aging with 50% of the water mains installed in the 1960's.
		• AC mains (almost all over which were installed within the 1960s) comprise 45% of the Ohakune water reticulation network.
		However:
		• An ongoing replacement programme seeks to improve the overall condition, namely:
		  • Goldfinch Street water main (approximately 490m) was replaced in 2012.
		  • Goldfinch Street bridge crossing, approximately 50m of steel pipe was laid in 2012/2013
		  • Tawhero Street water main (approximately 460m) was replaced in 2012. A further 720m upgraded to 150mm in 2016/17.
		  • Miro Street water main (approximately 80m) was replaced in 2012/2013.
		  • Old Station Road water main (approximately 350m) was replaced in 2013/2014.
		  • Pressure reducing valve was added to Miro Street-Burns street
		  • Miro St AC watermain (approximately 670m PVC) was replaced in 2015/16, together with 440m of MDPE rider main
		  • Conway Street AC watermain (approximately 110m PVC) was replaced in 2015/16
		  • Egmont St 310m of AC watermain replaced with PVC in 2016/17.

	Asset condition grading	Comment/substantiation
		• Miro St AC watermain (approximately 370m PVC) was replaced in 2016/17, together with 350m of MDPE rider main.
Hydrants	2	• No major condition issues. • Hydrants were replaced as part of watermain replacement works.
Valves	2	• No major condition issues. • Valves were replaced as part of watermain replacement works.

D.3 Ohura

	Asset condition grading	Comment/substantiation
Headworks and treatment		
Intake	2	• The pontoon for the primary intake was overhauled during 2011. However: • The weir structure for the secondary intake is in poor condition having been severely damaged in recent years and requires replacement. • Raw water pump, motor and base are in need of repainting.
Water treatment plant	3	• The overall condition of the WTP is average. The existing components are aged, having components installed as part of the 2010 CAPS funded upgrade works. • The original WTP civil structures were installed in 1959 and the clarifier in 1970. • The water treatment plant switchboard was replaced in 2010. • Online monitoring and SCADA was installed in 2010. • Actuated filter valves were installed in 2010, replacing the previously manually operated valves. • New treated water pumps, a new backwash pump and air compressor and new hypochlorite and caustic soda dosing pumps were installed in 2010. • The chemical storage facility was upgraded in 2019, including the installation of an emergency eye wash and safety shower. However: • The water treatment plant buildings are in poor condition. • Surface corrosion of the clarifier is visible with substantial degradation of the steel work evident in areas. • Filter body needs repainting to prevent more serious corrosion.
Pump station/storage		
Treated water storage	2	• An internal reservoir and roof liner and full overhaul of the reservoir roof was undertaken in 2011.
Network		
Water mains	4	• 20% of the network was installed in the 1950s. This component of the network is constructed of AC and GALV materials and is nearing the end of its useful life. • Overall water main failure rates are very poor when compared with those of Australian water authorities.
Hydrants	2	• No major condition issues.
Valves	2	• No major condition issues.

D.4 Owhango

	Asset condition grading	Comment/substantiation
Headworks and treatment		
Intake	3	• No significant intake condition issues.

	Asset condition grading	Comment/substantiation
Water treatment plant	2	• The condition of the majority of the WTP components is good, having been installed or upgraded as part of WTP improvement works. • The original WTP was installed in 1983. • The switchboard was replaced in 2010. • Online monitoring and SCADA was installed in 2010. • A replacement abstraction flow meter was installed at the WTP in 2018. • New chlorine dosing facilities were installed in 2011. • A new permanent generator was installed in 2019.
Pump station/storage		
Treated water storage	2	• The WTP treated water storage timber roof was replaced in 2009. However: • The 2018 condition assessment identified some superficial surface cracking with the northern reservoirs. • Circumferential cables at the Owhango WTP reservoir showing minor signs of corrosion but are well tensioned
Network		
Water mains	3	• The network is in overall moderate condition having been installed in the 1980's. • The overall water main failure rate appears to be consistent with those of Australian water authorities
Hydrants	3	• The majority of hydrants inspected are operationally sound, however many show minor-moderate signs of corrosion/deterioration
Valves	3	• No major condition issues

D.5 Raetihi

	Asset condition grading	Comment/substantiation
Headworks and treatment		
Intake	3	• No major condition issues.
Settling Ponds	2	• The integrity of the components is satisfactory. The grit chamber and the settling pond banks all appear to be sound. • The lack of a cover over the de-gravelling chamber poses a fall safety hazard.
Water treatment plant	1	• A major upgrade of the WTP was completed in 2018 and all of the equipment is in very good condition. However: • The treatment plant reservoir access track is steep. Ongoing track maintenance is required to ensure safe access during wet weather.
Pump station/storage		
Treated water storage	3	• The concrete treated water storage reservoir is ageing, having been installed in 1916. • Structural integrity of the reservoir is satisfactory. There is however minor leaks evident on the exterior walls of the reservoir.
Network		
Water mains	4	• 53% of the water mains are of AC material with the mains being installed in wastewater grade AC main instead of pressure grade AC main. • Historically, water consumption within the Raetihi area did not follow a daily diurnal variation apparent in other reticulation networks. Consumption at 12:00 midday was approximately identical to consumption at 12:00 midnight. This provided anecdotal evidence for widespread leakage and poor water main condition throughout the Raetihi water reticulation. A pressure reducing valve was installed and this reduced leakage markedly. • A water loss survey was completed in 2019 and areas of high night time usage was identified and targeted for further investigation.

	Asset condition grading	Comment/substantiation
		• Two major watermain upgrades wer completed in 2019/20. These were Seddon Street (400m) and Balance Street (450m) including valve and hydrant replacement.
Hydrants	2	• A number of hydrants inspected as part of the 2014 Condition Assessment were noted to be in excellent condition, appearing to have been recently replaced or installed. • Repair and replacement rates for hydrants within Raetihi are low. The low level of leakage is also an indication of hydrants being in satisfactory condition. • The average age of hydrants within the Raetihi reticulation network is approx. 50 years. • There is a valve and hydrant replacement programme undeway
Valves	2	• Many of the valves inspected were noted to be in excellent condition. • As part of the 2014 Condition Assessment, Operators noted a number of the valves that were inspected were either damaged or had damaged valve boxes and lids. • The average age of the valves is approx. 50 years.

D.6 Taumarunui

	Asset condition grading	Comment/substantiation
Headworks and treatment		
Intake	2	• The integrity of the intake civil structures and controls are good with the integrity of the valves and pipework being moderate. • The intake switchboard is in very good condition. • The raw water turbidity meter has been replaced and is in excellent condition. • Intake penstocks were refurbished during 2010 to provide a watertight seal, enabling operation of automated intake screen wash.
Water treatment plant	3	• The overall condition of the WTP assets is moderate. • The initial assets of the WTP were installed in 1958 and have been progressively renewed and added to over the years (major upgrades in 1998 and 2005). • The integrity of valves and pipework is moderate. • The high lift treated water pumps are in moderate condition with some leakage evident and areas of surface corrosion present. The motor bearings were replaced due to concerns of imminent failure of such a critical asset. • New dosing pumps were installed at the Matapuna WTP in 2011 to replace the existing obsolete pumps and are in good condition. • The main plant switchboard is in very good condition. • The raw water flow meter was replaced in 2019. However: • Sections of the Matapuna WTP building structure are in poor condition. • A number of sections of pipework show signs corrosion on external surfaces. • Corroded external surfaces should be repainted to prevent further damage. • Corroded / missing nuts are evident on the clarifier / clear well pipe flanges.
Pump station/storage		
Treated water storage	3	• Matapuna Reservoir- A new roof, working platform and railings were installed during 2008 and are believed to be in very good condition. • Manunui Reservoir -The integrity of the reservoir civil structure is satisfactory. There is evidence of minor – moderate cracking around the reservoir perimeter however there does not appear to be obvious signs of weeping. The integrity of the monitoring controls and valves / pipework is good.

	Asset condition grading	Comment/substantiation
		• Rangaroa Reservoir 1 and 2 - Reservoir 1 structure appears sound with no visual signs of cracking or leakage. Most valves are in good working condition. Level control valves are in need of replacement. New level sensor has been installed. • Rangaroa Reservoir No2 structure appears sound but there are noticeable signs of weeping. • Sunshine Reservoirs - visual indications suggest the integrity of the reservoir civil structure and monitoring controls is good with the integrity of the valves and pipework being moderate. • Te Peka Reservoir- The integrity of the reservoir civil structure is considered moderate. There is evidence significant cracking around the reservoir perimeter. The integrity of the isolation valves appears satisfactory.
Water pump stations	3	• There are no reliability issues with the pump stations. However • Switchboard components at Hospital Hill WPS need to be re-assessed • The switch boards at Sunshine and Te Peka have been replaced.
Network		
Water mains	3	• Approx. 40% of the network was installed prior to 1970. This component of the network is constructed primarily of AC material and is nearing the end of its useful life. • Theoretical condition assessment based upon remaining useful life indicates an average condition of 3. • Overall water main failure rates appear to be consistent with those of Australian water authorities. • Ward Street watermain (740m) was replaced in 2018. • Hikurangi Terrace ridermain (85m) was replaced in 2018. • Hospital Hill watermain was replaced in 2019 However • During 2018 and 2019 there have been several major network repairs undertaken on the Hakiaha Street trunk main due to advanced degradation of the 375mm PVC main and design / planning of the replacement trunk main is in progress.
Hydrants	3	• A number of hydrants inspected as part of the 2015 Condition Assessment were noted to be in excellent condition, appearing to have been recently replaced or installed. • The majority of hydrants inspected are operationally sound however many show minor-moderate signs of corrosion/deterioration. • Hydrant replacement numbers are reasonably low, providing support that the hydrants are in a satisfactory condition.
Valves	3	• Structured inspections of 43 stop valves indicate 88.4% of stop valves to be of condition 1,2 or 3 with an average condition of 2 (Good). • Stop valve replacement numbers are reasonably low, providing support of satisfactory condition.

D.7 Waiouru

	Asset condition grading	Comment/substantiation
Network		
Water mains	3	• Operators report no ongoing areas of failure with the water mains. The predominant main material is however AC (76.8%) and has an average age of 47 years.
Hydrants	2	• Low levels of repair/replacement are reported by NZFS who operate and test the hydrants. • Some hydrants inspected as part of the 2014 Condition Assessment inspections were noted by operators as appearing to have been recently installed and in very good condition. • The average age of hydrants within the Waiouru reticulation network is approx.45 years.
Stop Valves	2	• Operators report the condition of the valves within the reticulation to be acceptable. Inspections of located valves as part of the 2014 Condition Assessment concur with the operator reported condition. • The average age of the valves is approx. 45 years.

Part 4 - Appendices

Appendix E – Asset Valuation Breakdown by Township at 1 July 2020

RUAPEHU DISTRICT COUNCIL WATER, WASTEWATER & STORMWATER VALUATION 2020

- VALUATION SUMMARY - Water (DEPRECIABLE ASSETS)

Catchment	Asset Type	Gross Replacement Cost @ 01/07/2020	Depreciated Replacement Cost @ 01/07/2020	Accumulated Depreciation Cost @ 01/07/2020	Annual Depreciation
National Park	Headworks & Treatment	636,543	345,360	291,183	33,647
	Pump Station / Storage	298,972	200,720	98,252	10,899
	Network	4,544,681	3,000,986	1,543,695	48,253
	Total	**5,480,195**	**3,547,065**	**1,933,130**	**92,798**
Ohakune	Headworks & Treatment	1,870,314	1,192,367	677,947	93,964
	Pump Station / Storage	755,361	525,668	229,693	13,288
	Network	11,869,482	5,595,113	6,274,369	154,657
	Total	**14,495,156**	**7,313,147**	**7,182,009**	**261,909**
Ohura	Headworks & Treatment	596,923	244,200	352,723	29,100
	Pump Station / Storage	160,605	52,721	107,884	5,549
	Network	1,603,992	865,096	738,896	19,012
	Total	**2,361,519**	**1,162,017**	**1,199,502**	**53,661**
Pipiriki	Headworks & Treatment				
	Pump Station / Storage				
	Network	485	162	323	32
	Total	**485**	**162**	**323**	**32**
Owhango	Headworks & Treatment	472,624	223,032	249,593	23,925
	Pump Station / Storage	124,181	45,185	78,996	2,813
	Network	3,462,739	2,116,238	1,346,501	38,545
	Total	**4,059,544**	**2,384,455**	**1,675,089**	**65,283**
Raetihi	Headworks & Treatment	2,908,917	2,227,426	681,491	145,550
	Pump Station / Storage	893,562	32,646	860,916	9,581
	Network	6,835,038	3,493,197	3,341,841	94,685
	Total	**10,637,518**	**5,753,270**	**4,884,249**	**249,816**
Taumarunui	Headworks & Treatment	5,310,044	2,038,889	3,271,155	202,310
	Pump Station / Storage	6,663,832	1,917,347	4,746,486	93,060
	Network	22,430,598	10,970,432	11,460,166	292,230
	Total	**34,404,474**	**14,926,668**	**19,477,806**	**587,600**
Waiouru	Headworks & Treatment	968	77	891	39
	Pump Station / Storage	0	0	0	0
	Network	666,379	182,069	484,310	10,680
	Total	**667,347**	**182,146**	**485,201**	**10,719**
TOTAL WS (Depreciable only)	Headworks & Treatment	11,796,334	6,271,351	5,524,983	528,535
	Pump Station / Storage	8,896,513	2,774,287	6,122,226	135,190
	Network	51,413,393	26,223,292	25,190,101	658,095
	Total	**72,106,240**	**35,268,930**	**36,837,310**	**1,321,819**

Appendix F – Financial Tables

The table below contains the budget maintenance, renewal and capital expenditure for the next 10 years (2021/22 – 2030/31) prior to any changes as noted in Appendix A.
Figures in Appendix F are not inflated.

F.1 National Park

CAPITAL VALUES

NATIONAL PARK WATER		2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031
Description (Name)	**Scope**	$ 10,000.00	$ 218,094.73	$ 38,094.73	$ 902,449.57	$ 902,449.57	$ 43,473.77	$ 43,812.12	$ 43,812.12	$ 43,812.12	$ 28,160.01
National Park Water Above Ground Assets: Renewals	Structured scheduled replacement programme for the National Park water treatment plant	$ 10,000.00	$ 38,094.73	$ 38,094.73	$ 38,649.57	$ 38,649.57	$ 43,473.77	$ 43,812.12	$ 43,812.12	$ 43,812.12	$ 28,160.01
National Park WTP: Resource Consent	Resource Consent Renewal Costs	$ -	$ -	$ -	$ 53,800.00	$ 53,800.00	$ -	$ -	$ -	$ -	$ -
National Park WTP: New Reservoir	Construct new WTP reservoir to provide 24 hours of storage for additional growth .	$ -	$ 52,580.00	$ -	$ 236,610.00	$ 236,610.00	$ -	$ -	$ -	$ -	$ -
National Park WTP - Plant Upgrade	Upgrade of Clarification, Filtration, Waste Sludge Processing and UV Disinfection	$ -	$ 127,420.00	$ -	$ 573,390.00	$ 573,390.00	$ -	$ -	$ -	$ -	$ -

OPERATIONAL VALUES

National Park - Water	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
All Other Maintenance Lump Sum	143,415	143,415	143,415	143,415	143,415	143,415	143,415	143,415	143,415	143,415
All Other Maintenance Dayworks	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000
Overheads	-	-	-	-	-	-	-	-	-	-
Supply & Disposal	-	-	-	-	-	-	-	-	-	-
Power	2,523	2,523	2,523	2,523	2,523	2,523	2,523	2,523	2,523	2,523
Insurance	5,495	5,495	5,495	5,495	5,495	5,495	5,495	5,495	5,495	5,495
Other (incl consultants)	30,587	30,587	30,587	30,587	30,587	30,587	30,587	30,587	30,587	30,587
Grand Total	**196,020**	**196,020**	**196,020**	**196,020**	**196,020**	**196,020**	**196,020**	**196,020**	**196,020**	**196,020**

F.2 Ohakune

CAPITAL VALUES

OHAKUNE WATER		2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031
Description (Name)	**Scope**	$ 4,890,588.32	$ 817,677.51	$ 2,598,649.46	$ 1,198,775.46	$ 2,094,478.68	$ 143,181.75	$ 145,059.88	$ 150,045.50	$ 150,081.41	$ 102,231.91
Ohakune Intake: Asset Renewal	Renewal (replacement and refurbishment) of assets.	$ 7,000.00	$ 7,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Ohakune WTP: Asset renewal	Renewal (replacement and refurbishment) of assets.	$ 20,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Ohakune Water Networks: Water Main Replacement	Structured scheduled replacement programme for the Ohakune water reticulation mains (includes associated valve, hydrant, etc asset renewals)	$ 298,983.30	$ 689,492.10	$ 988,475.40	$ 988,475.40	$ 988,475.40	$ -	$ -	$ -	$ -	$ -
Ohakune Water Above Ground Assets: Renewals	Structured scheduled replacement programme for the Ohakune water treatment plant	$ 51,616.82	$ 55,359.41	$ 100,300.06	$ 100,300.06	$ 116,003.28	$ 116,136.75	$ 118,014.88	$ 123,000.50	$ 123,036.41	$ 84,201.91
Ohakune Water Network: Growth Extension	Extension of the water network for growth	$ -	$ -	$ -	$ -	$ -	$ 27,045.00	$ 27,045.00	$ 27,045.00	$ 27,045.00	$ 18,030.00
Ohakune WTP: Resource Consent	Resource Consent Renewal Costs	$ -	$ 65,826.00	$ 299,874.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Ohakune Intake: Raw Water Delivery Pipework	Investigate options for reducing the water hammer/surge within sections of the raw water main by better controlling the opening and closing of the WTP inlet. Critical line replacement of the raw water main needs to be investigated and replacement cost for the future (Additional $1M for removal of existing pipeline)	$ -	$ -	$ 1,210,000.00	$ -	$ 990,000.00	$ -	$ -	$ -	$ -	$ -
Ohakune WTP Reservoirs	Construct new WTP reservoir to provide 24 hours of storage for additional growth .	$ 1,000,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Ohakune WTP- Plant Upgrade	Installation of new clarification, coagulation, flocculation, clarification, filtration, UV Disinfection, pH correction, chlorination MCC/PLC Upgrade, Building and Waste Disposal	$ 1,512,988.20	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Ohakune WTP -Plant Upgrade	Revised scope / capacity upgrade of Process Units	$ 2,000,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Ohakune WTP - Standby (backup) SCADA	Install server and SCADA software	$ -	$ -	$ -	$ 110,000.00	$ -	$ -	$ -	$ -	$ -	$ -

OPERATIONAL VALUES

Ohakune - Water	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
All Other Maintenance Lump Sum	225,608	225,608	225,608	225,608	225,608	225,608	225,608	225,608	225,608	225,608
All Other Maintenance Dayworks	81,532	81,532	81,532	81,532	81,532	81,532	81,532	81,532	81,532	81,532
Overheads	-	-	-	-	-	-	-	-	-	-
Supply & Disposal	-	-	-	-	-	-	-	-	-	-
Power	11,930	11,930	11,930	11,930	11,930	11,930	11,930	11,930	11,930	11,930
Insurance	15,160	15,160	15,160	15,160	15,160	15,160	15,160	15,160	15,160	15,160
Other (incl consultants)	47,675	47,675	47,675	47,675	47,675	47,675	47,675	47,675	47,675	47,675
Grand Total	**381,905**	**381,905**	**381,905**	**381,905**	**381,905**	**381,905**	**381,905**	**381,905**	**381,905**	**381,905**

F.3 Ohura

CAPITAL VALUES

OHURA WATER		2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031
Description (Name)	**Scope**	$ 1,294,200.00	$ 492,836.31	$ 59,836.31	$ 59,836.31	$ 61,851.83	$ 61,851.83	$ 61,851.83	$ 61,851.83	$ 71,197.35	$ 42,280.42
Ohura Intake: Asset renewal	Repair the secondary intake to make suitable for future use.	$ 9,600.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Ohura Water Networks: Water Main Replacement	Structured scheduled replacement programme for the Ohura water reticulation mains (includes associated valve, hydrant, etc asset renewals)	$ -	$ 15,385.16	$ 15,385.16	$ 15,385.16	$ 15,385.16	$ 15,385.16	$ 15,385.16	$ 15,385.16	$ 15,385.16	$ 15,385.16
Ohura Water Above Ground Assets: Renewals	Structured scheduled replacement programme for the Ohura water treatment plant	$ -	$ 44,451.15	$ 44,451.15	$ 44,451.15	$ 46,466.67	$ 46,466.67	$ 46,466.67	$ 46,466.67	$ 55,812.19	$ 26,895.26
Ohura WTP: Resource Consent	Resource Consent Renewal Costs	$ 53,800.00	$ 53,800.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Ohura WTP - PLC Upgrade	PLC system upgrade with local access to PLC	$ 10,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Ohura WTP - Plant Upgrade	Upgrade of Clarification, Filtration, Waste Sludge Processing and and UV Disinfection	$ 954,436.70	$ 296,463.30	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Ohura WTP - Additional Reservoir	Installation of additional reservoir	$ 266,363.30	$ 82,736.70	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

OPERATIONAL VALUES

Ohura - Water	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
All Other Maintenance Lump Sum	120,928	120,928	120,928	120,928	120,928	120,928	120,928	120,928	120,928	120,928
All Other Maintenance Dayworks	-	-	-	-	-	-	-	-	-	-
Overheads	-	-	-	-	-	-	-	-	-	-
Supply & Disposal	-	-	-	-	-	-	-	-	-	-
Power	6,444	6,444	6,444	6,444	6,444	6,444	6,444	6,444	6,444	6,444
Insurance	3,157	3,157	3,157	3,157	3,157	3,157	3,157	3,157	3,157	3,157
Other (incl consultants)	12,141	12,141	12,141	12,141	12,141	12,141	12,141	12,141	12,141	12,141
Grand Total	**142,670**	**142,670**	**142,670**	**142,670**	**142,670**	**142,670**	**142,670**	**142,670**	**142,670**	**142,670**

F.4 Owhango

CAPITAL VALUES

OWHANGO WATER		2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031
Description (Name)	**Scope**	$ 91,688.24	$ 24,104.78	$ 466,700.54	$ 437,505.54	$ 2,731,428.88	$ 991,897.55	$ 63,297.55	$ 63,297.55	$ 188,866.22	$ 14,745.73
Owhango Intake: Asset renewal	Renewal (replacement and refurbishment) of assets.	$ 5,645.00	$ -	$ -	$ 50,805.00	$ 56,450.00	$ -	$ -	$ -	$ -	$ -
Owhango WTP: Asset renewal	Renewal (replacement and refurbishment) of assets.	$ 17,915.40	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Owhango WTP Reservoir: Storage	Construct new WTP reservoir to provide 24 hours of storage and additional treated water storage during high turbidity events.	$ -	$ -	$ 87,490.00	$ -	$ 587,057.90	$ 200,352.10	$ -	$ -	$ -	$ -
Owhango WTP Reservoir: Asset renewal	Renewal (replacement and refurbishment) of assets.	$ -	$ -	$ -	$ -	$ 6,500.00	$ -	$ -	$ -	$ -	$ -
Owhango Northern Reservoirs: Asset renewal	Renewal (replacement and refurbishment) of assets.	$ 20,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Owhango Water Above Ground Assets: Renewals	Structured scheduled replacement programme for the Owhango water treatment plant	$ 23,127.84	$ 24,104.78	$ 26,700.54	$ 26,700.54	$ 27,078.88	$ 27,297.55	$ 27,297.55	$ 27,297.55	$ 27,516.22	$ 14,745.73
Owhango Water Networks: Fire Supply Upgrade	Upgrade of reticulation network to facilitate fire supply requirements	$ -	$ -	$ -	$ 36,000.00	$ 36,000.00	$ 36,000.00	$ 36,000.00	$ 36,000.00	$ -	$ -
Owhango WTP: Resource Consent	Resource Consent Renewal Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 161,350.00	$ -
Owhango WTP - Raw Water Line	Replacement of raw water line	$ -	$ -	$ -	$ 324,000.00	$ 324,000.00	$ -	$ -	$ -	$ -	$ -
Owhango Water -Reservoirs	Level monitoring of all tanks in the network	$ -	$ -	$ -	$ -	$ -	$ 150,000.00	$ -	$ -	$ -	$ -
Owhango WTP - PLC Upgrade	PLC system upgrade with local access to PLC	$ 10,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Owhango WTP - Plant Upgrade	Upgrade of Chemical Treatment, Clarification, Filtration, Waste Sludge Processing and and UV Disinfection	$ -	$ -	$ 252,510.00	$ -	$ 1,694,342.10	$ 578,247.90	$ -	$ -	$ -	$ -
Owhango WTP Datalogger	Install local data logger	$ 15,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Owhango Water Intake - Bridge Repairs	Bridge repairs (2x bridges that require repairs)	$ -	$ -	$ 100,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -

OPERATIONAL VALUES

Owhango - Water	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
All Other Maintenance Lump Sum	69,892	69,892	69,892	69,892	69,892	69,892	69,892	69,892	69,892	69,892
All Other Maintenance Dayworks	19,244	19,244	19,244	19,244	19,244	19,244	19,244	19,244	19,244	19,244
Overheads	-	-	-	-	-	-	-	-	-	-
Supply & Disposal	-	-	-	-	-	-	-	-	-	-
Power	4,240	4,240	4,240	4,240	4,240	4,240	4,240	4,240	4,240	4,240
Insurance	5,086	5,086	5,086	5,086	5,086	5,086	5,086	5,086	5,086	5,086
Other (incl consultants)	8,407	8,407	8,407	8,407	8,407	8,407	8,407	8,407	8,407	8,407
Grand Total	**106,869**	**106,869**	**106,869**	**106,869**	**106,869**	**106,869**	**106,869**	**106,869**	**106,869**	**106,869**

F.5 Raetihi

CAPITAL VALUES

RAETIHI WATER		2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031
Description (Name)	**Scope**	$ 798,625.60	$ 110,801.00	$ 71,612.00	$ 545,305.60	$ 1,012,064.80	$ 1,000,611.20	$ 1,623,422.20	$ -	$ -	$ -
Raetihi Intake: Asset renewal	Renewal (replacement and refurbishment) of assets.	$ -	$ 9,100.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Raetihi Settling Ponds: Asset renewal	Renewal (replacement and refurbishment) of assets.	$ -	$ -	$ -	$ -	$ 70,000.00	$ -	$ -	$ -	$ -	$ -
Raetihi Reservoir: Additional Reservoir	Install additional reservoir	$ 647,500.00	$ 52,500.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Raetihi Water Networks: Water Main Replacement	Structured scheduled replacement programme for the Raetihi water reticulation mains (includes associated valve, hydrant, etc asset renewals)	$ 101,125.60	$ 26,612.00	$ 26,612.00	$ 500,305.60	$ 942,064.80	$ 1,000,611.20	$ 1,000,611.20	$ -	$ -	$ -
Raetihi Water Networks: Fire Supply Upgrade	Upgrade of reticulation network to facilitate fire supply requirements	$ -	$ -	$ 45,000.00	$ 45,000.00	$ -	$ -	$ -	$ -	$ -	$ -
Raetihi New Water source assessment	investigate for potential new raw water source	$ -	$ 22,589.00	$ -	$ -	$ -	$ -	$ 622,811.00	$ -	$ -	$ -
Raetihi WTP Reservoir Outlet Flowmeter	Replace mechanical flowmeter with magflo	$ 50,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

OPERATIONAL VALUES

Raetihi - Water	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
All Other Maintenance Lump Sum	138,809	138,809	138,809	138,809	138,809	138,809	138,809	138,809	138,809	138,809
All Other Maintenance Dayworks	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Overheads	-	-	-	-	-	-	-	-	-	-
Supply & Disposal	-	-	-	-	-	-	-	-	-	-
Power	10,358	10,358	10,358	10,358	10,358	10,358	10,358	10,358	10,358	10,358
Insurance	14,280	14,280	14,280	14,280	14,280	14,280	14,280	14,280	14,280	14,280
Other (incl consultants)	11,676	11,676	11,676	11,676	11,676	11,676	11,676	11,676	11,676	11,676
Grand Total	**225,123**	**225,123**	**225,123**	**225,123**	**225,123**	**225,123**	**225,123**	**225,123**	**225,123**	**225,123**

F.6 Taumarunui

CAPITAL VALUES

TAUMARUNUI WATER		2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031
Description (Name)	**Scope**	$ 3,587,327.55	$ 1,037,814.30	$ 1,122,143.70	$ 1,301,752.61	$ 1,213,811.63	$ 1,295,046.61	$ 1,499,756.07	$ 1,521,298.15	$ 1,634,383.69	$ 1,171,082.35
Taumarunui Water Networks: Manunui Reservoir: Asset Renewal	Renewal (replacement and refurbishment) of assets.	$ -	$ -	$ 16,100.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Taumarunui Water Networks: Rangaroa Reservoir 1: Asset Renewal	Renewal (replacement and refurbishment) of assets.	$ 6,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Taumarunui Water Networks: Te Peka Booster WPS: Asset Renewal	Renewal (replacement and refurbishment) of assets.	$ 3,000.60	$ -	$ -	$ -	$ -	$ 3,000.60	$ -	$ -	$ -	$ -
Taumarunui Water Networks: Te Peka Booster WPS: Critical Spares	Purchase and store within inventory the Critical Spares required.	$ 2,700.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Taumarunui Water Networks: Water Main Replacement	Structured scheduled replacement programme for the Taumarunui water reticulation mains (includes associated valve, hydrant, etc asset renewals)	$ -	$ 579,816.56	$ 604,378.68	$ 604,696.01	$ 686,003.85	$ 762,447.24	$ 684,574.68	$ 628,538.16	$ 639,814.79	$ 639,497.45
Taumarunui Water Networks: Golf Road Watermain	Replacement of Golf Road Watermain	$ 497,400.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Taumarunui Water Above Ground Assets: Renewals	Structured scheduled replacement programme for the Taumarunui water treatment plant and Taumarunui above ground assets.	$ 439,626.95	$ 457,997.73	$ 501,665.02	$ 517,056.60	$ 527,807.78	$ 529,598.77	$ 815,181.39	$ 892,759.98	$ 894,568.90	$ 531,584.90
Taumarunui WTP: Resource Consent	Resource consent renewal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000.00	$ -
Taumarunui (Matapuna) WTP: Critical Spares	Critical spares - Pump1	$ 26,900.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Taumarunui (Matapuna WTP) - SCADA Modifications for UV Monitoring	Modify software and hardware to allow correct UV dosage to be recorded	$ 15,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Taumarunui (Matapuna WTP) - Taste & Odour Improvements (PAC)	Install PAC system to address taste and odour issues	$ -	$ -	$ -	$ 70,000.00	$ -	$ -	$ -	$ -	$ -	$ -
Standby (backup) SCADA for Matapuna	Install server and SCADA software	$ -	$ -	$ -	$ 110,000.00	$ -	$ -	$ -	$ -	$ -	$ -
Taumarunui Water Network - Hakiaha Watermain Replacement	Replacement of existing watermain in Hakiaha Street comprising new 450 dia pipe in road reserve on north side of railway line and new 150 dia watermain in Hakiaha St	$ 2,596,700.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Part 4 - Appendices

OPERATIONAL VALUES

Taumarunui - Water	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
All Other Maintenance Lump Sum	430,473	430,473	430,473	430,473	430,473	430,473	430,473	430,473	430,473	430,473
All Other Maintenance Dayworks	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
Overheads	-	-	-	-	-	-	-	-	-	-
Supply & Disposal	-	-	-	-	-	-	-	-	-	-
Power	104,040	104,040	104,040	104,040	104,040	104,040	104,040	104,040	104,040	104,040
Insurance	50,765	50,765	50,765	50,765	50,765	50,765	50,765	50,765	50,765	50,765
Other (incl consultants)	65,506	65,506	65,506	65,506	65,506	65,506	65,506	65,506	65,506	65,506
Grand Total	**800,784**	**800,784**	**800,784**	**800,784**	**800,784**	**800,784**	**800,784**	**800,784**	**800,784**	**800,784**

F.7 Waiouru

CAPITAL VALUES

WAIOURU WATER		2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031
Description (Name)	**Scope**	$ -	$ 2,000.00	$ -	$ -	$ -	$ 101,998.50	$ 101,998.50	$ 101,998.50	$ 101,998.50	$ 101,998.50
Waiouru Water Networks: Water Main Replacement	Structured scheduled replacement programme for the Waiouru water reticulation mains (includes associated valve, hydrant, etc asset renewals)	$ -	$ -	$ -	$ -	$ -	$ 101,998.50	$ 101,998.50	$ 101,998.50	$ 101,998.50	$ 101,998.50
Waiouru Water Above Ground Assets: Renewals	Structured scheduled replacement programme for the Waiouru above ground assets (includes bulk meters)	$ -	$ 2,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

OPERATIONAL VALUES

Waiouru - Water	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
All Other Maintenance Lump Sum	21,300	21,300	21,300	21,300	21,300	21,300	21,300	21,300	21,300	21,300
All Other Maintenance Dayworks	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500
Overheads	-	-	-	-	-	-	-	-	-	-
Supply & Disposal	-	-	-	-	-	-	-	-	-	-
Power	-	-	-	-	-	-	-	-	-	-
Insurance	366	366	366	366	366	366	366	366	366	366
Other (incl consultants)	50,735	50,735	50,735	50,735	50,735	50,735	50,735	50,735	50,735	50,735
Grand Total	**80,901**	**80,901**	**80,901**	**80,901**	**80,901**	**80,901**	**80,901**	**80,901**	**80,901**	**80,901**

F.8 District Wide

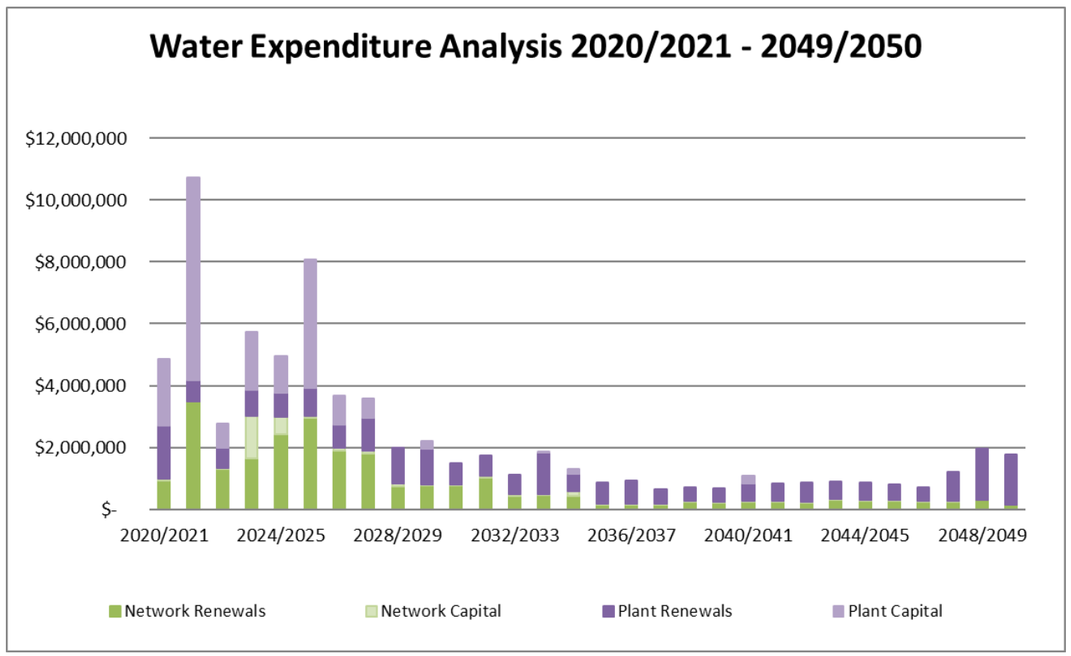
CAPITAL VALUES

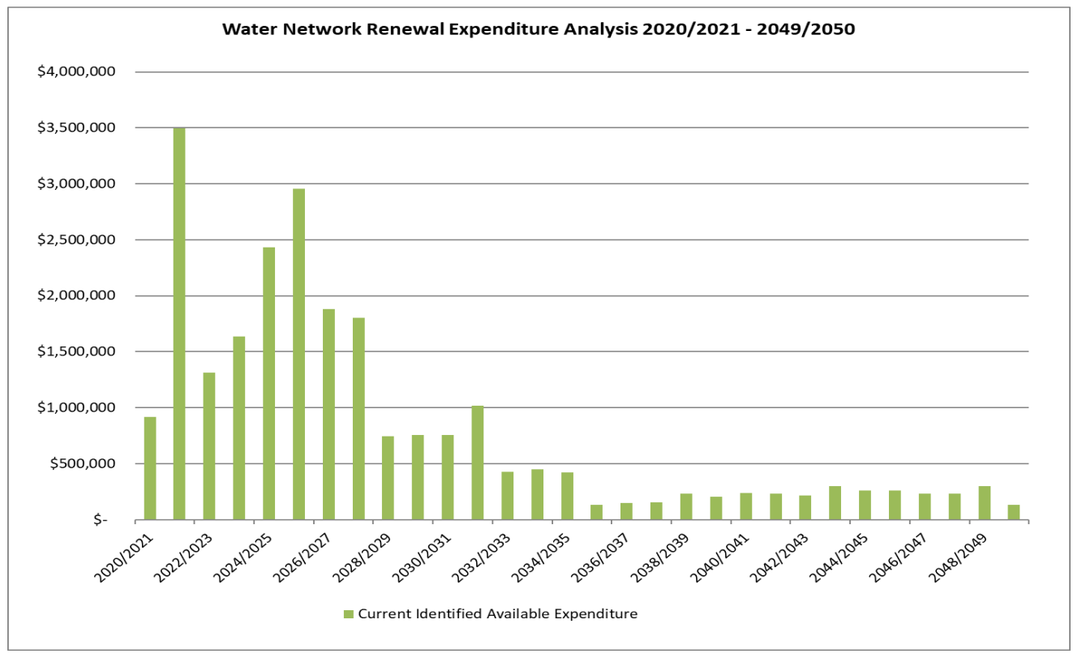
DISTRICT WIDE PROJECTS - WATER		2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031
Description (Name)	**Scope**	$ 120,160.00	$ 117,079.20	$ 1,435,954.20	$ 556,704.20	$ 117,079.20	$ 26,919.20	$ 26,919.20	$ 26,919.20	$ 26,919.20	$ 26,919.20
District Wide Water network Capacity Upgrades	District Wide program for additional capacity for water distribution networks	$ -	$ 26,919.20	$ 26,919.20	$ 26,919.20	$ 26,919.20	$ 26,919.20	$ 26,919.20	$ 26,919.20	$ 26,919.20	$ 26,919.20
District Wide Water - WTP Security	Security Alarms/Access switches at all WTP 's	$ 30,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
District Wide Water - Water Meter Installation	Installation of meters in township	$ -	$ -	$ 1,318,875.00	$ 439,625.00	$ -	$ -	$ -	$ -	$ -	$ -
District Water Networks: Backflow Prevention	Identify high risk properties for backflow and install backflow prevention devices where applicable	$ 35,340.00	$ 35,340.00	$ 35,340.00	$ 35,340.00	$ 35,340.00	$ -	$ -	$ -	$ -	$ -
District Wide Water Networks: Valve & Hydrant Replacement	Replacement of failed valves and hydrants (reactive renewals)	$ 54,820.00	$ 54,820.00	$ 54,820.00	$ 54,820.00	$ 54,820.00	$ -	$ -	$ -	$ -	$ -

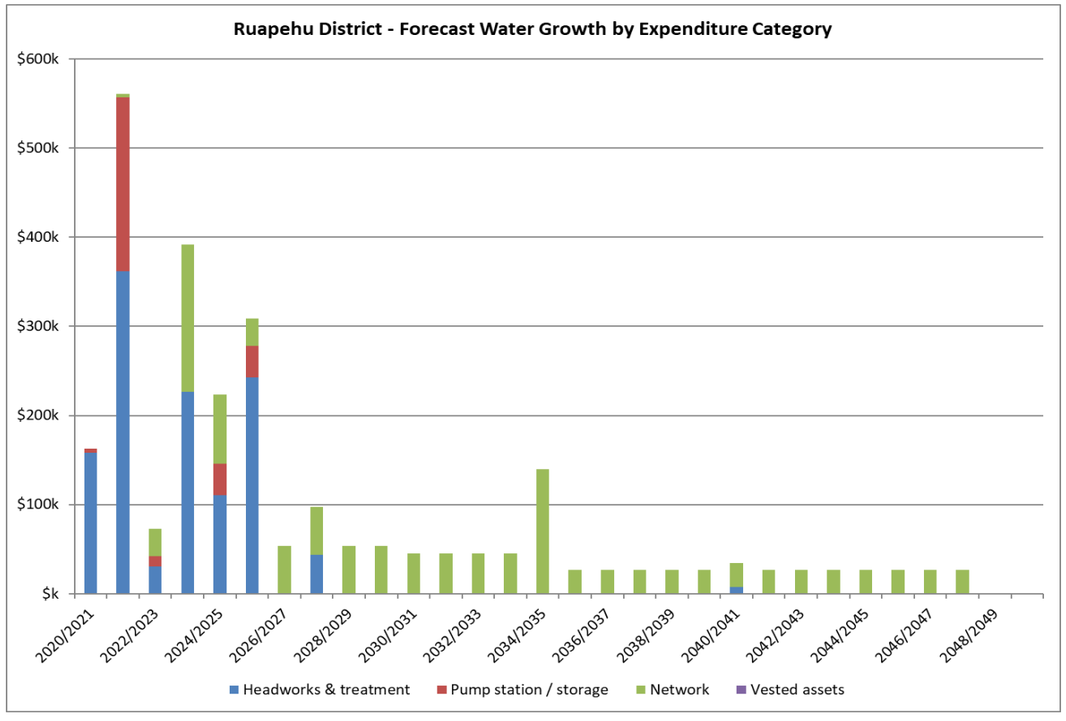
OPERATIONAL VALUES

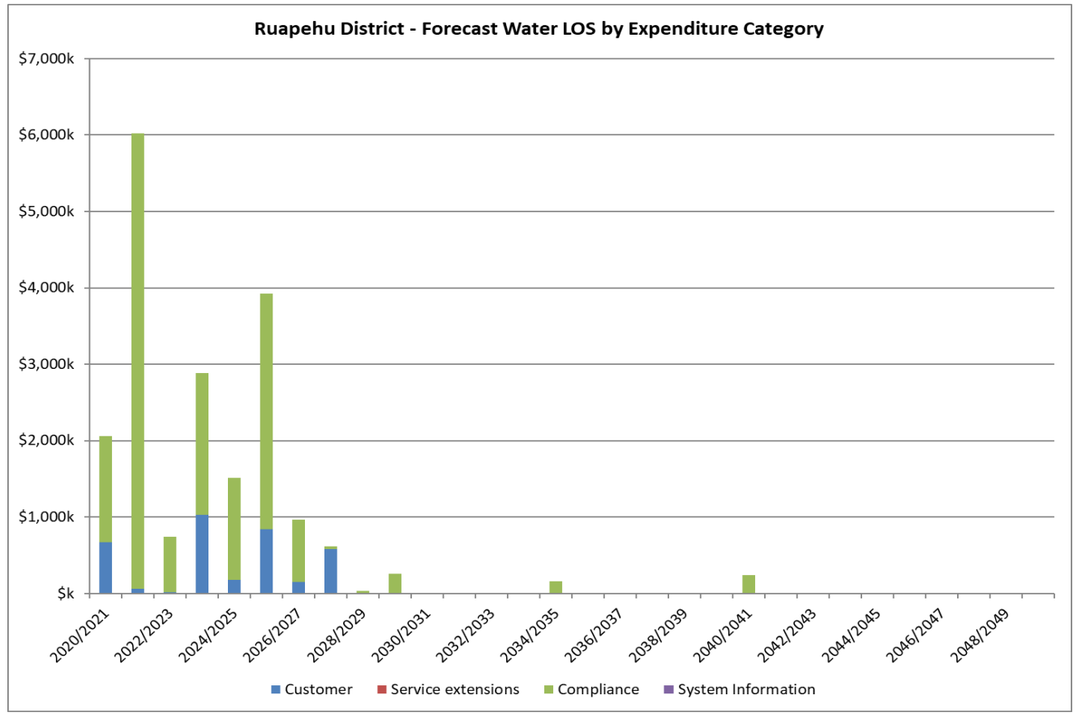
District Wide Projects - Water	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
All Other Maintenance Lump Sum	-	-	-	-	-	-	-	-	-	-
All Other Maintenance Dayworks	-	-	-	-	-	-	-	-	-	-
Overheads	432,593	432,593	432,593	432,593	432,593	432,593	432,593	432,593	432,593	432,593
Supply & Disposal	-	-	-	-	-	-	-	-	-	-
Power	-	-	-	-	-	-	-	-	-	-
Insurance	-	-	-	-	-	-	-	-	-	-
Other (incl consultants)	200,202	200,202	200,202	200,202	200,202	200,202	200,202	200,202	200,202	200,202
Grand Total	**632,795**	**632,795**	**632,795**	**632,795**	**632,795**	**632,795**	**632,795**	**632,795**	**632,795**	**632,795**

Appendix G – Financial Charts – 30 years









Appendix H - Risk Register – Water Supply

Schedule 1 – Water Supply Activity Risk Management External Context Review – PESTLE Analysis

The following trends or issues provide the external context for the management of risks for the Water Supply activity, and their anticipated impacts. This table has been updated since the previous version of Appendix 4 in AMP Version dated 10 March 2015. This informs the Risk Register (Schedule 2). Risks with no impact identified were not included in the Register.

Category	Trends, Issues or Factors	What is the Trend, Issue or Factor?	What are the anticipated impacts on RDC Water Supply Activity?			
			Levels of Service	Growth and Demand	Revenue and Funding	Regulatory or Stakeholder Requirements or Constraints
Political and Policy	Potential change of Political Party in power	A change in Political leadership for the country may result in a change of direction in the management of water services.	There may be new measures according to Government directives.	No impact identified	Prioritisation of funding or a need for increased funding to enable the District to meet changing directives.	Uncertainty in response to change in directives.
Political and Policy	National infrastructure Plan (NIP) 2011	The NIP 2011, and subsequent update report released in 2013, were produced to reduce uncertainty, look at opportunities and challenges ahead and identify priority areas for infrastructure over a 20 year timeframe. There are now mandatory Non-financial Performance Measures against which all public Water Supplies in New Zealand will be measured. The mandatory non-financial measures effectively become Ruapehu's new performance measures which will create some challenges for small rural townships. This introduces some different measures for Council.	Effect on bacteria and protozoa compliance. Leak detection measurement is new for RDC and is primarily a measure suited to big towns rather than small rural places. Night flows with rural draw off do not work.	No impact identified	Prioritisation of funding will be required to meet changing levels of service. Leak detection measures will be expensive to deliver.	May result in non-compliance with Ministry of Health.
Political and Policy	National Policy Statement for Freshwater Management (2014)	The Government is proposing wide-ranging, staggered and long-term improvements to how fresh water is managed in New Zealand. The reforms would create a water management system that allows more transparent, better targeted and informed decisions on fresh water. Businesses and water users would have more certainty so they can plan and invest.	Implication of use of water meters to calculate flow and privately owned backyard tanks for garden use.	Demand and use needs to be justified.	Prioritisation of funding will be required to put systems in place, to gain the necessary information to better manage water as a resource. Meter charges would be introduced.	Stakeholders need to be transparent about their water use. Resource Consent may not be achieved if RDC cannot justify demand.
Political and Policy	Regionalisation: Single regional authority	There is the potential that in the longer term local government bodies may request or be legislated to amalgamate or reorganise. This is not currently under investigation.	Reorganisation or amalgamation would require significant rework of levels of service across the different Districts.	Additional growth and demand factors would become apparent under a reorganisation or amalgamation.	Prioritisation of funding would be required within a reorganisation or amalgamation of local authorities which could affect the funding allocated to the RDC Water Supply assets.	Stakeholder requirements would be affected with differing priorities and understanding.
Political and Policy	Government commissioned studies	In addition to the need to investigate a long term water source, Government have commissioned a study through the Ministry of Business Innovation to double productivity by 2025. Water is likely to be a key driver for this increase in productivity. Horizons Regional Council will need to develop a Water Management Plan to ensure water is not over allocated in this area. Ruapehu District Council has a role in the planning of changing land use, land use impacts, storage options and water allocation with its community, including the opportunity.	No impact currently anticipated.	Demand may increase with the pressure to increase productivity. Water storage opportunities may increase.	Water storage will need to be funded.	Stakeholder requirements would be affected with differing priorities.
Economy	Infrastructure delivery capacity	The infrastructure industry in New Zealand is stretched with a general shortage of experienced technical personnel.	Loss of skilled labour.	No impact anticipated	No impact anticipated	Limited contractor interest in provincial tenders and risk of uncompetitive prices. RDC has worked to mitigate this risk and ensure stability by awarding the Water contract to a large company for a longer term.
Economy	Oil prices	Volatility in global crude oil prices affecting pipe manufacture and transport prices. The global crude oil price has collapsed to under US$50 per barrel due to oversupply. The World Bank is forecasting a long-term recovery with prices potentially not returning to 2014 levels until after 2020.	No impact anticipated	No impact anticipated	May translate into an increase in the price of pipes, a transport component of the Consumer Price Index (CPI). This will be addressed by annual rate adjustments.	No impact anticipated

Category	Trends, Issues or Factors	What is the Trend, Issue or Factor?	What are the anticipated impacts on RDC Water Supply Activity?			
			Levels of Service	Growth and Demand	Revenue and Funding	Regulatory or Stakeholder Requirements or Constraints
Economy	Ministry of Health Funding criteria	The Ruapehu District faces economic issues associated with an aging reticulation system and a low population to afford the necessary maintenance and upgrade. Current considerations include: • The cost of investment in infrastructure. • Significant costs and time to implement the upgrade and improvement projects. • Significant compliance costs for developers and businesses and individual households. No facilities comply with national drinking water standards. Protozoan (i.e. cryptosporidium and giardia) compliance is deficient. The Ministry of Health funding criteria changes continues to move the opportunity away from small towns to apply for the subsidy. Where the town has cheap houses and therefore relatively low income there is an increasing trend for more holiday home owners. However, they drive the deprivation index too high, which results in the town not qualifying for the subsidy according to the formula used by the Ministry of Health to assess funding eligibility.	Inability to comply with National Drinking Water Standards.	Makes the Ruapehu District a less attractive place to establish family or business.	Lack of external funding to maintain infrastructure.	No impact anticipated.
Economy	Rising Insurance premiums	In the advent of Natural Disasters, Insurance companies continue to raise premium and become risk adverse making the future of rebuild cost uncertain.	No impact anticipated.	Attractiveness as an investment town potentially reduced.	Increased revenue may be sought through increased rates.	Becomes increasingly difficult to pay.
Economy	Tourism Trends	Tourism is an important contributor to the Ruapehu economy. Key trends are: • Overall annual visitor numbers to the district are increasing. • There are peaks in visitor numbers in both winter and summer. • Winter visitor numbers are declining, while summer visitor numbers are increasing. • The number of holiday homes in the district is increasing, reflecting Ruapehu as a domestic holiday destination. • Government initiative Tourism 2025 is active within the district. • National cycle trails are driving recreational cyclist numbers (237km of rural roads in the district are included in the National Cycleway network). Also, following trends are perceived (but not yet quantified): • Increasing numbers of motor homes. • Increasing numbers of Te Araroa / Freedom walkers. • Increasing numbers of recreational road users (e.g. adventure bikers).	Pressure to maintain Levels of Service to the Peak Population.	Demand will increase with increasing peak population. `	Additional funding required to maintain a system adequate to cope with Peak Population numbers. • Limited opportunities for RDC to capture funding from tourism: • Holiday homes trend is sustaining rates base in the district despite declining normally resident population.	No impact anticipated
Legal / Regulatory	Health and Safety Reform Bill / Health and Safety at Work Act	The new Act will impose: • A primary duty on a Person Conducting a Business or Undertaking (PCBU), to ensure the health and safety of the PCBU's workers and other people associated with the work carried out by the PCBU. • A positive due diligence duty on Officers of PCBUs (i.e., those in governance roles) to ensure the PCBU complies with its health and safety duties. • Duties on workers and other people in workplaces. • Duties which provide for better levels of participation by workers in matters of health and safety.	No impact anticipated	No impact anticipated	Increasing cost of doing business.	Increased liability for Council and staff. Council is supporting contractors to upskill with respect to H&S management where necessary. Increased monitoring requirements in order to demonstrate compliance.

Category	Trends, Issues or Factors	What is the Trend, Issue or Factor?	What are the anticipated impacts on RDC Water Supply Activity?			
			Levels of Service	Growth and Demand	Revenue and Funding	Regulatory or Stakeholder Requirements or Constraints
Legal/ Regulatory	Drinking Water Standards for NZ (DWSNZ)	DWSNZ provide requirements for water safety by specifying the: maximum amounts of substances, organisms, contaminants or residues that may be present in drinking water. There are criteria for demonstrating compliance with Standards and remedial action is to be taken in the event of non-compliance with the different aspects of the Standards.	Bacteria and Protozoa compliance will be reported on annually for each community by the Ministry of Health. Ruapehu has not previously set targets for or reported on compliance with protozoan water standard in the LTP or annual reports. It is however, public information and is included in the AMP. Supplies do not currently meet the standard.	Growth of asset base to enable RDC to input systems to meet compliance standards.	Prioritising funding to ensure upgrades to ensure compliance are met.	Upgrade to protozoa compliance may be necessary but unaffordable.
Legal / Regulatory	Increasing environmental standards: • Horizons One Plan	Horizons One Plan is a regional plan for resource management over the next 10 years and became operative in April 2013. It defines how the natural and physical resources of the Region (including fresh air, clean water, productive land and natural ecosystems) will be cared for and managed by the Regional Council in partnership with Territorial Authorities and the community. The guiding document for the One Plan is the Regional Management Act (RMA), with the National Policy Statement for Freshwater Management (NPSFM) falling under this. A key issue for RDC is the requirement to justify water demand in order to obtain consents for the Water Supply activity and to manage water supply activity within minimum flow restrictions.	More restrictions may need to be imposed on users during periods when rivers are at low flow levels in order for Council abstraction to remain at levels acceptable within the One Plan.	Demand and use needs to be justified.	Prioritisation of funding will be required to put systems in place to gain the necessary information to better manage water as a resource.	Stakeholders need to be transparent about their water use. Resource Consent may not be achieved if RDC cannot justify demand.
Legal / Regulatory	Co-Management with Iwi	Recent treaty settlements have increased Iwi expectations re co-management of land under the RMA and Settlement Agreements.	No impact anticipated.	No impact anticipated	Increased costs of doing business.	Increasing interaction and time required to obtain consent for works and potential for stakeholder conflicts.
Social	Changing demographics – Usually Resident Population	The usually resident population is declining across the district. This is predicted to continue over the next ten years. The usually resident population is also aging. In small towns such as Ohura an aging reticulation system in need of replacement and a declining population has meant decisions need to be made about the future of the Ohura Water Supply.	Loss of Council owned and operated reticulation networks and possibly a move to using tank water in smaller townships.	The decline in the usually resident population means that less water will be required on an 'as usual' basis, however the water supply system will need to be maintained at a level sufficient to supply peak populations.	Potential decline in rate paying base. More ratepayers not paying water supply rates as they move to tanks.	In towns such as Ohura stakeholders need to make decisions around the future of the water supply. Ministry of Health restriction on leaving the scheme.
Social	Changing demographics – Holiday Homes	The number of holiday homes in the district has been increasing over the last few years. Key growth areas for holiday homes and subdivision activity are: • Ohakune • Rangataua • National Park • Horopito No significant new residential and subdivisional activity is forecast for the district over the next 12 years (annual growth is forecast at 1.3% over this period).	Increasing community expectation regarding levels of service.	Minor growth in asset base to meet Peak Population requirements. Holiday homes occupancy contributes to seasonal peaks in water use due to high avg occupants per home (4.4) compared to normally resident households (2.5).	The increase in holiday homes in the district has been sustaining the District's rates base despite the gradual decline in the usually resident population. However, the forecast growth in rateable assessments for the district is low (~5% over the next ten years).	No impact anticipated
Social	Community expectations	The community's expectations are increasing regarding to: • Sustainable systems. • Water quantity control through meters • Water quality increase with less chemical use • Water quantity and quality in the environmental and surrounding land use. • Any water line should have Fire protection capacity. • Disruption to individual property owners during new works construction .	Increasing expectations may result in a gap between service level delivered and service level expected.	No impact expected	Closing these gaps may challenge affordability	Developing systems to meet the communities increasing expectations may not be sustainable.

Category	Trends, Issues or Factors	What is the Trend, Issue or Factor?	What are the anticipated impacts on RDC Water Supply Activity?			
			Levels of Service	Growth and Demand	Revenue and Funding	Regulatory or Stakeholder Requirements or Constraints
Environmental	Climate Change	Climate change is expected to impact the frequency and severity of weather-related hazards (rainfall patterns, storm intensity and frequency, drought): • Increase in overall rainfall, with increase in rainfall intensity • Number and strength of ex-tropical cyclones reaching NZ also likely to increase • Decrease in winter temperatures and snowfall. Places which currently receive snowfall likely to see shift to rainfall or sleet.	Potential of decreasing water available in time of drought or floods. More backflow prevention required.	Demand for more storage.	Affordability of storage costs.	Demand for water is sealed from external influences to ensure supply remains.
Environmental	Security of Supply	Both the Raetihi and Ohakune raw water lines are nearing the end of their useful lives and will require replacement. The future of the Waimarino Supply needs to be explored and a sustainable source secured.	Change in water supply sourcing may occur.	Alter available water.	Prioritisation of funding and an increase in rates will be necessary to meet the cost of a new supply or replacement of the existing supply.	Water source types.
External Infrastructure	Security of Supply	The NZ Defence Force owns and operates the Waiouru Water Treatment Plant. RDC purchases water from them to supply the township of Waiouru.	RDC has no certainty that supply will be maintained and compliance standards met.	If NZ Defence Force systems fail RDC may not be able to meet demand for Waiouru.	RDC may be required to support the NZ Defence Force to maintain supply. If the system fails RDC may need to fund an alternative water source for Waiouru.	Uncertainty of supply.

Schedule 2 – Water Supply Activity Risk Register

The risk register provided in the following tables for the current and future Water Supply activities of Ruapehu District Council have been developed in consultation with key staff.

Risk Id	Description of the Risk	Risk Context and Details	Untreated Risk (Stopping what we do now, what would the risk level be if we did nothing to prevent or minimise it?)			Existing Treatments/Controls (What we are doing now to avoid the risk or reduce its effect)	Effectiveness	Treated Risk (Considering what we do now, what is the current actual risk level we face?)			Risk Manager (Who has the responsibility and ability to follow through)	Treatment/ Management Options (What can we possibly do to further reduce the risk level or provide assurance that current practices remain effective?)
			Consequence	Likelihood	Risk level			Consequence	Likelihood	Risk level		
Water Supply AMP Risks												
WS01	Inefficient management of water assets	Inefficient management of water assets Caused by: • No management plan • Lack of documented and understood strategies and procedures • Inadequate analysis of condition or performance • Inadequate operations and maintenance cost tracking • Inadequate capital works forecasts • Inadequate works prioritisation techniques • Inadequate risk management Consequences: • Doubts about value for money • Significant asset or service failure occurs			#N/A	• AM planning • AM monitoring • Annual Audit NZ audits • Three yearly AM practices reviews • Annual Plan submissions • Risk assessment reviews • Water Safety Plans		2	3	M	Environmental Manager	• Leakage detection modelling of network • Asset Finder fully utilised
Water Supply AMP Risks - Head Works												
WS02	Limited water extraction for a community	Limited or no extraction of potable water through head works to a community Caused by: • Reached resource consent abstraction limit • Natural hazard/disaster (earthquake, fire, storm, flooding, landslip) • Damage from sabotage/terrorism • Asset failure of major component • Inadequate bulk water supply to meet demand Consequences: • Illnesses • Reduced firefighting capability			#N/A	• Monitoring of actual daily demand • Plan for future sources • Emergency response plans and capability • Regional Lifelines Plan • Facility security • Response plans • Condition monitoring • Maintenance history analysis • Targeted renewal programmes • Demand management initiatives • Staged restrictions • Preventative maintenance of infrastructure •Pipeline pressure monitoring - National Park - Raetihi		2	3	M	Environmental Manager	• Plan for future sources • Review facility security • Investigate relevance of pressure transducers on other raw water supply lines.

Risk Id	Description of the Risk	Risk Context and Details	Untreated Risk (Stopping what we do now, what would the risk level be if we did nothing to prevent or minimise it?)			Existing Treatments/Controls (What we are doing now to avoid the risk or reduce its effect)	Effectiveness	Treated Risk (Considering what we do now, what is the current actual risk level we face?)			Risk Manager (Who has the responsibility and ability to follow through)	Treatment/ Management Options (What can we possibly do to further reduce the risk level or provide assurance that current practices remain effective?)
			Consequence	Likelihood	Risk level			Consequence	Likelihood	Risk level		
WS03	Contaminated head works water affecting supply to a community	Contaminated or poor quality raw water having an adverse effect on a community Caused by: • Major accident, spills and leaks above or in the head works causing infiltration of hazardous materials • Asset failure of major component in head works • Contamination of source water • Poor quality bulk water • Volcanic eruption Consequences: • Complaints • Illnesses • Emergency response, recovery and welfare • Need to find alternative sources of water • Additional costs • Non-compliance with drinking water standards			#N/A	• Minimal alarming • Condition monitoring • Maintenance history analysis • Targeted renewal programmes • Response plans • Emergency response plans and capability • Regional Lifelines Plan • Preventative maintenance		3	3	H	Environmental Manager	• Raw water monitoring • Improved SCADA • More bulk storage
Water Supply AMP Risks - Treatment Plants												
WS04	Limited water treatment for a community	Limited or no treatment of potable water for a community Caused by: • Natural hazard/disaster (earthquake, fire, storm, flooding, landslip) • Damage from sabotage/terrorism • Asset failure of major component in treatment plant Consequences: • Illnesses • Reduced firefighting capability			#N/A	• Emergency response plans and capability • Regional Lifelines Plan • Facility security • Response plans • Condition monitoring • Maintenance history analysis • Targeted renewal programmes		3	2	M	Environmental Manager	• Review facility security

Risk Id	Description of the Risk	Risk Context and Details	Untreated Risk (Stopping what we do now, what would the risk level be if we did nothing to prevent or minimise it?)			Existing Treatments/Controls (What we are doing now to avoid the risk or reduce its effect)	Effectiveness	Treated Risk (Considering what we do now, what is the current actual risk level we face?)			Risk Manager (Who has the responsibility and ability to follow through)	Treatment/ Management Options (What can we possibly do to further reduce the risk level or provide assurance that current practices remain effective?)
			Consequence	Likelihood	Risk level			Consequence	Likelihood	Risk level		
WS05	Contaminated treated water affecting supply to a community	Contaminated or poor quality treated water having an adverse effect on a community Caused by: • Major accident, spills and leaks in the treatment plant causing infiltration of hazardous materials • Asset failure of major component in treatment plant • Volcanic eruption Consequences: • Complaints • Illnesses • Emergency response, recovery and welfare • Need to find alternative sources of water • Additional costs • Non-compliance with drinking water standards			#N/A	• Condition monitoring • Maintenance history analysis • Targeted renewal programmes • Response plans • Emergency response plans and capability • Regional Lifelines Plan •Preventative maintenance plan Inspection, cleaning and monitoring plant and storage		3	2	M	Environmental Manager	•Network model •Upgrade to protozoa compliance where affordable and sustainable
Water Supply AMP Risks - Water Storage												
WS06	Limited water storage for a community	Limited water storage for a community Caused by: • Failure of reservoir • Inadequate design storage capacity to meet demand • Natural hazard/disaster (earthquake, fire, storm, flooding, landslip) • Damage from sabotage/terrorism Consequences: • Rationing • Reduced firefighting capability			#N/A	• Emergency funds • Emergency response plans and capability • Regional Lifelines Plan • Facility security • Response plans • Condition monitoring • Maintenance history analysis • Targeted renewal programmes • System configuration design • Reservoir performance monitoring • Demand analysis • Demand management initiatives • Staged restrictions		3	2	M	Environmental Manager	• Hydraulic modelling • Review facility security • More reservoirs • individual tanks

Risk Id	Description of the Risk	Risk Context and Details	Untreated Risk (Stopping what we do now, what would the risk level be if we did nothing to prevent or minimise it?)			Existing Treatments/Controls (What we are doing now to avoid the risk or reduce its effect)	Effectiveness	Treated Risk (Considering what we do now, what is the current actual risk level we face?)			Risk Manager (Who has the responsibility and ability to follow through)	Treatment/ Management Options (What can we possibly do to further reduce the risk level or provide assurance that current practices remain effective?)
			Consequence	Likelihood	Risk level			Consequence	Likelihood	Risk level		
WS07	Contaminated stored water affecting supply to a community	Contaminated or poor quality stored water having an adverse effect on a community Caused by: • Major accident, spills and leaks at the reservoir causing infiltration of hazardous materials • Contamination from natural sources • Contamination from sabotage/terrorism • Volcanic eruption Consequences: • Complaints • Illnesses • Emergency response, recovery and welfare • Need to find alternative sources of water • Additional costs • Non-compliance with drinking water standards			#N/A	• Condition monitoring • Maintenance history analysis • Targeted renewal programmes • Response plans • Emergency response plans and capability • Regional Lifelines Plan • Secure reservoirs • Periodic inspections, cleansing and monitoring • Water quality monitoring		3	3	H	Environmental Manager	• Hatches on reservoirs • Rolling programme for all against level of risk
Water Supply AMP Risks - Reticulation												
WS08	Failure of a critical water reticulation pipeline	Failure of a water reticulation pipeline that has an adverse effect on a large number of users • Third party damage (e.g. by another utility operator) • Failure of water pumping station • Natural hazard/disaster (earthquake, fire, storm, flooding, landslip) • Damage from sabotage/terrorism Consequences: • Failure to maintain targeted water pressure • Rationing • Reduced firefighting capability • Loss of water supply			#N/A	• Road Opening Notice system • Standard conditions for corridor access for utilities • Condition monitoring • Maintenance history analysis • Targeted renewal programmes • Response plans		3	3	H	Environmental Manager	• Hydraulic modelling • Pressure monitoring • Leak detection • Meter rural connections and extraordinary users

Risk Id	Description of the Risk	Risk Context and Details	Untreated Risk (Stopping what we do now, what would the risk level be if we did nothing to prevent or minimise it?)			Existing Treatments/Controls (What we are doing now to avoid the risk or reduce its effect)	Effectiveness	Treated Risk (Considering what we do now, what is the current actual risk level we face?)			Risk Manager (Who has the responsibility and ability to follow through)	Treatment/ Management Options (What can we possibly do to further reduce the risk level or provide assurance that current practices remain effective?)
			Consequence	Likelihood	Risk level			Consequence	Likelihood	Risk level		
WS09	Failure of a non-critical water reticulation pipeline	Failure of a water reticulation pipeline that has an adverse effect on a small number of users Caused by: • Third party damage (e.g. by another utility operator) • Failure of water pumping station • Natural hazard/disaster (earthquake, fire, storm, flooding, landslip) • Damage from sabotage/terrorism Consequences: • Failure to maintain targeted water pressure • Rationing • Reduced firefighting capability • Loss of water supply			#N/A	• Road Opening Notice system • Standard conditions for corridor access for utilities • Condition monitoring • Maintenance history analysis • Targeted renewal programmes • Response plans		2	3	M	Environmental Manager	• Hydraulic modelling • Pressure monitoring • Leak detection • Monitor water use by catchment
WS10	Failure of water reticulation to critical users	Failure of a water reticulation pipeline that has an adverse effect on critical users Caused by: • Third party damage (e.g. by another utility operator) • Failure of water pumping station • Natural hazard/disaster (earthquake, fire, storm, flooding, landslip) • Damage from sabotage/terrorism Consequences: • Failure to maintain targeted water pressure • Rationing • Reduced firefighting capability • Loss of water supply			#N/A	• Alternative supply arrangements • Road Opening Notice system • Standard conditions for corridor access for utilities • Condition monitoring • Maintenance history analysis • Targeted renewal programmes • Response plans		3	3	H	Environmental Manager	• Database of critical users • Hydraulic modelling • Pressure monitoring

Part 4 - Appendices

Risk Id	Description of the Risk	Risk Context and Details	Untreated Risk (Stopping what we do now, what would the risk level be if we did nothing to prevent or minimise it?)			Existing Treatments/Controls (What we are doing now to avoid the risk or reduce its effect)	Effectiveness	Treated Risk (Considering what we do now, what is the current actual risk level we face?)			Risk Manager (Who has the responsibility and ability to follow through)	Treatment/ Management Options (What can we possibly do to further reduce the risk level or provide assurance that current practices remain effective?)
			Consequence	Likelihood	Risk level			Consequence	Likelihood	Risk level		
WS11	Contaminated reticulated water affecting supply to a community	Contaminated or poor quality reticulated water having an adverse effect on a community Caused by: • Asset failure of major component in the reticulation • Cross contamination from wastewater system through poor work practices • Major accident, spills and leaks causing infiltration of hazardous materials into the reticulation system • Contamination of water supply from backflow • Contamination of water supply from other sources • Volcanic eruption Consequences: • Complaints • Illnesses • Emergency response, recovery and welfare • Need to find alternative sources of water • Additional costs • Non-compliance with drinking water standards			#N/A	• Condition monitoring • Maintenance history analysis • Targeted renewal programmes • Water quality sampling programme • Compliance with building standards • Response plans • Emergency response plans and capability • Regional Lifelines Plan • Sampling of reticulation water pressure survey by fire service.		3	3	H	Environmental Manager	• Register of backflow preventers • Meters on pipe outside urban environment
WS12	High water wastage	Water being lost from the reticulation system instead of being delivered to users Caused by: • High leakage • Old or poorly performing reticulation assets Consequences: • Wastage • Poor value for money • Potential lack of capacity			#N/A	• Customer complaints and associated maintenance response • Condition monitoring • Leak detection surveys • Metering of many high users • Condition monitoring • Maintenance history analysis • Targeted renewal programmes • Response planning • Network redundancy options		2	4	H	Environmental Manager	• More active leakage control • Metering of all high users
WS13	Excessive use of water	Users use excessive quantities of water Caused by: • High usage by unmetered connections • Unmetered, leaky rural connections • Connections that are not properly recorded in the Water Billing system Consequences: • Loss of potential income • Potential lack of capacity			#N/A	• Leak detection surveys • Metering of known high usage connections • Metering of rural connections • Data audit • Night usage		3	3	H	Environmental Manager	• Metering of all high users • Metering of all rural connections • Progressive data improvement programmes • Leak monitoring

Risk Id	Description of the Risk	Risk Context and Details	Untreated Risk (Stopping what we do now, what would the risk level be if we did nothing to prevent or minimise it?)			Existing Treatments/Controls (What we are doing now to avoid the risk or reduce its effect)	Effectiveness	Treated Risk (Considering what we do now, what is the current actual risk level we face?)			Risk Manager (Who has the responsibility and ability to follow through)	Treatment/ Management Options (What can we possibly do to further reduce the risk level or provide assurance that current practices remain effective?)
			Consequence	Likelihood	Risk level			Consequence	Likelihood	Risk level		
WS14	Inadequate reticulation capacity	The reticulation system does not have the capacity to meet peak demand Caused by: • Incorrect demand forecast • Demand escalates due to ineffective demand management strategies • Poor understanding of community aspirations Consequences: • Failure to maintain targeted water pressure • Rationing • Reduced firefighting capability • Loss of water supply			#N/A	• Review of actual demand and trends • Detailed future growth analysis • Routine consumption monitoring and trend analysis, feedback into demand forecasting and demand management/capital upgrade programmes • LoS based on legislative requirements, industry practice and understanding of community expectations through annual plan process and community meetings for specific local issues • Development contributions		2	3	M	Environmental Manager	• Demand analysis (including documented assumptions and sensitivity analysis) • Water model • LoS affordability/ sustainability

Schedule 3 – Water Supply Activity Risk Action Plan

Risk Id	Description of the Risk	Source of the Risk	Treated risk level	Treatment/Management Options Available *(What can we possibly do to further reduce the risk level or provide assurance that current practices remain effective?)*	Risk Manager *(Who has the responsibility and ability to follow through)*	Risk Appetite *(How much do we want to reduce this risk?)*	Treatment/Management Action(s) Selected *(Defined actions to be programmed and resourced under the direction of the Risk Manager)*	Monitoring /Reporting *(Who will monitor the action and receive progress reports)*	Timeframe *(Define programme for action completion)*	Costs/ Resources *(Allocate $ amounts and staff time required for action)*	Future risk level *(The risk score that could be achieved if selected treatments are actioned)*
WS03	Contaminated head works water affecting supply to a community	Head Works	**H**	• Raw water monitoring • Improved SCADA • Quality monitoring	Environmental Manager	Routine	• Monitor of catchment raw water during a high risk of volcanic activity eruption • Raw water monitoring to define protozoa compliance as rolling programme	Veolia	ongoing	$20K	**H**
WS07	Contaminated stored water affecting supply to a community	Water Storage	**H**	• Reservoir Catchment hatch security • Rolling programme for all against level of risk	Environmental Manager	Routine	• Rolling programme for all against level of risk	Veolia	ongoing	$5K	**M**
WS08	Failure of a critical water reticulation pipeline	Reticulation	**H**	• Hydraulic modelling • Pressure monitoring • Leak detection • Meter rural connections and extraordinary users	Environmental Manager	Routine	• Leak detection • Meter rural connections and extraordinary users				**H**
WS10	Failure of water reticulation to critical users	Reticulation	**H**	• Database of critical users • Hydraulic modelling • Pressure monitoring	Environmental Manager	Routine					**H**
WS11	Contaminated reticulated water affecting supply to a community	Reticulation	**H**	• Register of backflow preventers • Meters on pipe outside urban environment	Environmental Manager	Routine	• Implement Backflow prevention as a rolling programme				**H**
WS12	High water wastage	Reticulation	**H**	• More active leakage control • Metering of all high users	Environmental Manager	Routine	• Leakage monitoring and control • Metering of all high users				**H**
WS13	Excessive use of water	Reticulation	**H**	• Metering of all high users • Metering of all rural connections • Progressive data improvement programmes • Leak monitoring	Environmental Manager	Routine	• Metering of all high users • Metering of all rural connections • Progressive data improvement programmes • Leak monitoring				**H**

Schedule 4 – Veolia Water Supply Activity Risk Register

Community Outcome	Core Value	Strategic Outcome	LOS Failure Indicator	Asset Group	Caused By	Consequence					Likelihood	Risk	Controls	
						Corporate Image	Safety & Health	Environmental	Community Effect / Loss of Service	Loss of Revenue/ Extraction Costs			Existing	To Develop
						15%	25%	20%	25%	15%				
CO 10 - Core facilities, services and infrastructure planning and provision keep pace with development. CO 22 - An environment which has an excellent quality of water, soil and air. CO 23 - River catchment areas and waterways are protected from erosion and pollution.	Quality	To provide and maintain an appropriate level of infrastructure.	Availiabilty of water supply to the community	Head works	Reached resource consent abstraction limit	2	1	3	3	2	C	M	Monitoring of actual daily demand	Plan for future sources
					Natural hazard/disaster (earthquake, tsunami, fire, storm, flooding, landslip)	3	3	3	4	3	D	M	Emergency funds, emergency response plans and capability; Regional Lifelines Plan	
					Damage to assets from sabotage/terrorism	2	3	2	3	2	D	M	Response plans	
					Asset failure of major component	2	2	2	3	2	C	M	Response plans, condition monitoring, maintenance history analysis and targeted renewal programmes	
					Inadequate bulk water supply to meet demand	2	1	1	4	4	C	M	Demand management initiatives and staged restrictions	Plan for future sources
				Treatment Plant	Natural hazard/disaster (earthquake, tsunami, fire, storm, flooding, landslip)	3	3	3	4	3	D	M	Emergency funds, emergency response plans and capability; Regional Lifelines Plan	
					Damage to assets from sabotage/terrorism	2	3	2	3	2	D	M	Response plans and review of facilty security	
					Asset failure of major component	2	2	2	3	2	C	M	Response plans, condition monitoring, maintenance history analysis and targeted renewal programmes	
				Water storage	Failure of reservoir	2	2	2	4	3	D	M	Response plans, condition monitoring, maintenance history analysis and targeted renewal programmes	
					Inadequate storage to meet demand	2	2	1	3	2	C	M	System configuration design, reservoir performance monitoring, demand analysis , demand management initiatives, staged restrictions	Hydraulic model
					Natural hazard/disaster (earthquake, tsunami, fire, storm, flooding, landslip)	3	3	3	4	3	D	M	Emergency funds, emergency response plans and capability; Regional Lifelines Plan	
					Damage to assets from sabotage/terrorism	2	3	2	3	2	D	M	Response plans and review of facilty security	
				Reticulation	Asset failure through third party damage	2	2	1	1	1	B	M	Road Opening Notice system, standard conditions for working on the road	
					Failure of critical pipeline	2	2	2	4	2	C	H	Response plans, condition monitoring, maintenance history analysis and targeted renewal programmes	
					Failure of non-critical pipeline	2	2	2	3	2	C	M	Response plans, condition monitoring, maintenance history analysis and targeted renewal programmes	
					Failure of water pumping station	1	1	1	2	2	C	L	Response plans, condition monitoring, maintenance history analysis and targeted renewal programmes	
					Loss of supply to critical users	2	3	1	2	2	C	M	Alternative supply arrangements, condition monitoring, maintenance history analysis, targeted renewal programmes, response planning	Database of critical users
CO 10 - Core facilities, services and infrastructure planning and provision keep pace with development. CO 22 - An environment which has an excellent quality of water, soil and air. CO 23 - River catchment areas and waterways are protected from erosion and pollution.	Safety	To maintain public health.	Drinking water supply compliance	Head works	Major accident causing hazardous materials, spills and leaks	2	3	3	4	3	D	M	Response plans	
					Asset failure of major component	2	2	2	3	2	C	M	Response plans, condition monitoring, maintenance history analysis and targeted renewal programmes	
					Contamination of source water	2	3	3	4	3	C	H	Minimal alarming; no raw water monitoring	New SCADA system including quality monitoirng; collect raw water samples
					Poor quality bulk water	2	3	1	4	3	C	H	Minimal alarming; no raw water monitoring; response plans	New SCADA system including quality monitoirng; collect raw water samples
					Volcanic eruption	2	3	2	4	3	C	H	Emergency response plans and capability; Regional Lifelines Plan	
				Treatment Plant	Major accident causing hazardous materials, spills and leaks	2	3	3	4	3	D	M	Response plans	
					Asset failure of major component	2	2	2	3	2	C	M	Response plans, condition monitoring, maintenance history analysis and targeted renewal programmes	
					Volcanic eruption	1	2	2	2	2	C	M	Emergency response plans and capability; Regional Lifelines Plan	
				Water storage	Major accident causing hazardous materials, spills and leaks	2	2	2	2	1	D	L	Response plans	
					Asset failure of major component	2	3	2	3	2	C	H	Response plans, condition monitoring, maintenance history analysis and targeted renewal programmes	
					Contamination in reservoirs	2	3	1	4	3	C	H	Secure reservoirs, periodic inspections, cleansing and monitoring	
					Volcanic eruption	2	3	2	4	3	C	H	Emergency response plans and capability; Regional Lifelines Plan	
				Reticulation	Major accident causing hazardous materials, spills and leaks	2	3	3	4	3	D	M	Response plans	
					Asset failure of major component	2	2	2	4	3	C	H	Response plans, condition monitoring, maintenance history analysis and targeted renewal programmes	
					Contamination of water supply	2	4	1	4	3	C	H	Water quality sampling programme	
					Failure to maintain target water pressure	2	1	1	2	1	C	L	System configuration design and customer complaints monitoring	Hydraulic model and pressure monitoring
					Contamination in network from backflow	2	3	1	2	1	C	M	Response plans, customer complaints, building contol compliance	Backflow preventer register
CO 10 - Core facilities, services and infrastructure planning and provision keep pace with development. CO 22 - An environment which has an excellent quality of water, soil and air. CO 23 - River catchment areas and waterways are protected from erosion and pollution. CO 32- A community that respects and promotes understanding of the environmental values of Tangata Whenua.	Sustainability	Enhance the sustainability of social, environment, cultural and economic well beings of our communities.	Inefficient management of assets	Reticulation	High leakage from system	2	1	2	2	2	B	H	Customer compliants and maitenance response, condition monitoring, leak detection surveys, targeted renewals and metering of high users	More active leakage control and metering of all high users
					High usage by unmetered connections	2	1	1	2	2	B	H	Leak detection surveys,and metering of known high usage connections	Metering of all large users
					Old, poor performing assets	2	1	2	1	2	C	M	Condition monitoring, maintenance history analysis, targeted renewal programmes, response planning, network redundancy options	
					Unmetered, leaky rural connections	2	1	2	2	2	B	H	Leak detection surveys,and metering of rural connections	Metering of all rural connections
					Incorrect demand forecast	2	1	3	3	2	C	M	Review of actual demand and trends; detailed future growth analysis	Demand analysis includes documented assumptions and sensitivity analysis
					Demand escalates due to ineffective demand management initatives	2	1	3	3	2	C	M	Routine consumption monitoring and trend analysis, feedback into demand forecasting and demand management/capital upgrade programmes; detailed growth analysis	
					Connections not recorded properly in water billing system	1	1	1	2	2	C	L	Data audit and progressive data improvement programmes	
					Do not understand community aspirations	2	1	3	3	2	C	M	LOS based on legislative requirements, industry practice andunderstanding of community expectations through annual plan process and community meetings for specifc local issues	
	Supporting Management Practices		Inefficient management of assets, significant asset or service failure occurs with no management plan	All	Inadequate certainty that the levels of service provide optimum benefit for the cost	2	1	3	2	2	C	M	AM Planning and monitoring	
					Lack of documented and understood strategies and procedures	2	1	2	1	2	C	M	Annual Audit NZ audits; three yearly AM practices reviews	
					Inadequate analysis of condition, performance, operations and maintenance cost tracking, and capital works forecasts	2	1	2	2	2	C	M	AM Planning, monitoring, 3 yearly AM practices reviews	
					Inadequate works prioritisation techniques	2	1	2	2	2	C	M	AM Planning processes and AP submissions	
					Risk analysis and management is not comprehensive	2	3	3	2	3	D	M	Risk assessment review processes	