



# Infrastructure Strategy 2018–2048





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## PROLOGUE

Long term planning for infrastructure is not new to the Taranua District Council; we had prepared comprehensive asset management plans for each of our asset groups<sup>1</sup> in 2011/12. These asset management plans have been extensively updated and are the foundation documents for the Council's draft 2018–2028 Long Term Plan.

This strategy brings together, into one document, key outputs from the Transportation, Water, Wastewater and Stormwater Asset Management Plans.

It has been prepared to meet the requirements of Section 101b of the Local Government Act 2002 and it provides the Council and community with an integrated picture of the key infrastructure service issues they are likely to face over the next thirty years.

The resulting Strategy addresses:

- the scenario Council considers is the most likely in terms of growth, legislation and regulations, asset performance and renewals,
- how Council is planning to deal with these issues and the main options for dealing with those issues,
- whether Council can continue to deliver the stated levels of service in an affordable and sustainable way, and
- the indicative estimates and timing of the cost of managing infrastructure assets under this scenario.

This is the second infrastructure strategy prepared by Taranua District Council. Coupled with better understanding of the data that underpins the asset management plans, Council sees this 30-year strategy as a demonstration of sound stewardship of the Council-Community owned assets and future finances.

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<sup>1</sup> Transportation (roading and footpaths), water, wastewater, stormwater, community facilities (parks, reserves, and buildings) and solid waste.





# INTRODUCTION

The provision and management of infrastructure is a core function of Council, accounting for the largest portion of its annual operating and capital expenditure. Infrastructure provided by the Council protects public health by providing clean drinking water and treating and disposing of wastewater appropriately. It enables goods and people to move around the district, contributing to the economy and facilitating social interaction. It ensures that homes and businesses are protected from the effects of flooding, and it is at the heart of the recovery following a natural disaster.

Planning and delivering infrastructure is a balance between providing for growth in demand and the levels of service the community desires, and affordability for ratepayers. Infrastructural assets have long lives that extend well beyond the 30 years of this strategy. Once in place, these assets incur operating, maintenance and renewal costs that communities are committed to fund for many years to come. Planning for future infrastructure needs to be considered with a long-term view in mind.

Planning brings with it uncertainty. Assumptions are made about demand and the service standards future generations will want and are willing to pay for. The regulatory environment is also changing and Council needs to build and replace existing assets with new assets that will deliver on increasing health, safety, and environmental standards in the future.

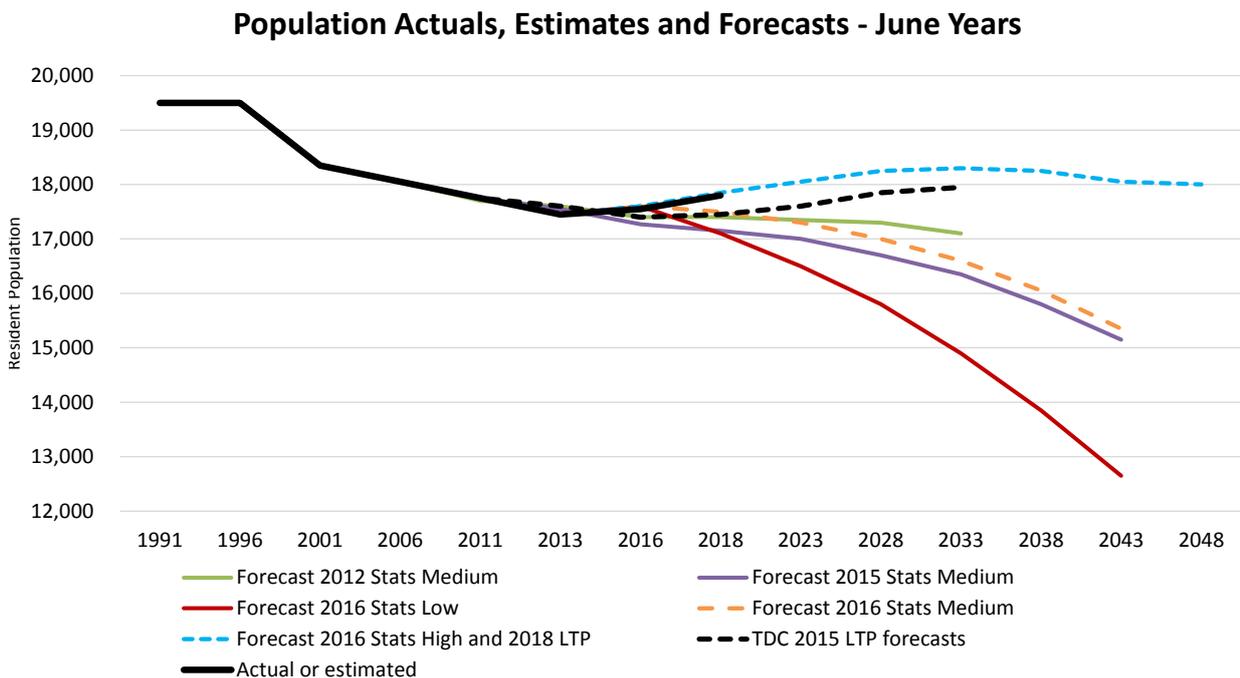
The purpose of the infrastructure strategy is to:

- a) identify significant infrastructure issues for the local authority over the period covered by the strategy; and
- b) identify the principal options for managing those issues and the implications of those options.<sup>2</sup>

The strategy focuses on understanding the medium to long-term infrastructure needs, which in turn informs the 10-year Long Term Plan decision-making process of Council.

Figure 1: Population Growth Scenarios

<sup>2</sup> Local Government Act, Section 103B (2)(b)





## 2

# TARARUA DISTRICT AT A GLANCE

Tararua District is situated on the southeast coast of the North Island, bound to the west by the Tararua Range. It covers an area of 4,360km<sup>2</sup> and has an estimated resident population<sup>3</sup> of 17,850.

The four main towns of Dannevirke, Woodville, Pahiatua, and Eketahuna are service centres for the agricultural sector. In addition they service other categories of economic activity, such as industry and tourism (mostly domestic from passing traffic).

The primary industry in Tararua is agriculture with over a third of the district's workers employed in this sector. Tararua has a wealth of resources, the greatest being the farmland that grows top quality stock, producing wool, meat, and dairy products of a particularly high standard.

A small number of larger industries include meat processing, dairy processing and steel fabrication, and smaller scale industries including clothing. Agriculture, retail trade, manufacturing, farm servicing, health and education services make up the bulk of employment. Cottage industries and home occupations are common. Tourism currently makes a small contribution to the district's economy.

## 2.1 Our Infrastructure

The Council manages activities and assets on behalf of the ratepayers of the Tararua District to a value in excess of \$1,160 million. The assets are part of the district's physical infrastructure and are essential to the delivery of services to meet the community's needs and for the Tararua District Council to achieve the levels of service outlined in the Long Term Plan.

A broad range of infrastructure networks support the Tararua District. Transportation networks stretch across the district, linking people, places and businesses with each other and other parts of New Zealand. Our piped networks on the other hand, are confined to the towns. They enable residents and businesses to connect to water, wastewater, and stormwater schemes.

A number of different borough councils established the assets of Council prior to the merger and establishment of Tararua District Council in 1989. As a result, levels of service vary across the district, particularly for piped networks. Council has been prudent in its investment and funding provisions for the future replacement of this ageing infrastructure.

In an environment of low population growth, Council has made a steady investment in its infrastructure over time with a focus on addressing condition and performance issues, and establishing appropriate and affordable levels of service.

<sup>3</sup> Statistics New Zealand Estimate June 2017

## 2.2 Demographic Context

Preparing 30-year forecasts of core network infrastructure requires forecasting of population and households to 2048. However, detailed forecasts based on the 2013 census are now well out of date, and population trends have significantly changed since 2013/14. The new census was conducted in early March 2018, but results will not be available until after the adoption of the 2018–2028 Long Term Plan. District and area unit population forecasts published by Statistics NZ go out to 2043, but are based on the 2013 census data. Household forecasts published by Statistics NZ currently go out to 2038. The accuracy of such long term forecasts is likely to be low, with the result being driven by government policy and legislation, international farm product prices, and the relative attractiveness of other areas and countries for employment. Society, government policies, technology, transport, communication, etc will likely be very different.

### 2.2.1 Population to 2048

The population of the Tararua District declined over the 12 years to 2014 at around 0.5% a year. Since 2013/14 there has been a major change in international migration trends resulting in record levels of net inward international migration for Tararua.

Currently, Tararua is seeing continued strong retail trade sales and improved farm returns for beef, sheep, and dairy. Forestry prices are also strong.

Council has determined that the most likely scenario (mls) in terms of population and household change is one of modest growth for the next 10–15 years before an ageing population results in stability then decline. This is the current high series scenario from Statistics NZ. Annual estimates for 2016 and 2017 from Statistics NZ match this scenario.

The population forecast over the next 30 years to 2048 is driven by a number of assumptions:

- A continuation in the medium term of lower outward net migration as less residents leave to seek employment in Australia and more people choose to live in the Tararua.
- Strong commodity prices result in increased disposable incomes in the rural sector flowing through to increased retail and servicing profitability.
- Improved infrastructure (including water, wastewater, and broadband fibre) and recreational facilities.
- Greater focus on regional development by government.
- Employment growth in manufacturing and retail business builds on the positive initiatives currently underway, and more promotion by the Council.

Table 1: Population Forecast to 2048

Usually resident Population Forecasts as at 30 June						
Year	Actual	Census base	2016 Update 2013 base Medium Series Stats NZ forecasts	2016 Update 2013 base High Series Stats NZ forecasts	TDC 2015 LTP	2018 LTP draft Assumptions
1991	19,500					
1996	19,500					
2001	18,350					
2006	18,050					
2011	17,750					
2013	17,450					
2016 e			17,600	17,600	17,400	17,600
2018 f			17,500	17,850	17,450	17,850
2023 f			17,300	18,050	17,600	18,050
2028 f			17,000	18,250	17,850	18,250
2033 f			16,600	18,300	17,950	18,300
2038 f			16,050	18,250		18,250
2043 f			15,350	18,050		18,050
2048 f						18,000

<sup>4</sup> Detailed assumptions and forecasts are contained within Part A of the Tararua District Council Asset Management.



- Increasing demand for affordable rural lifestyles.
- Increasing demand for low-cost housing within commuting distance to Hastings and Palmerston North.

It should be noted that in 2012 Council did forecast a decline to 2013 followed by a modest recovery. The actual 2013 census result was a bigger decline. Current trends indicate that the forecast recovery driven by less outward migration is occurring much sooner than expected and at more positive levels. Modest growth is now being confirmed in Statistics NZ population estimates for 2015 and 2016, with stronger growth in 2017. For these and other reasons outlined above, using the Statistics NZ high series is defensible.

The Council is forecasting that rural incomes will continue to be sound on the back of the current higher food commodity prices. This should result in higher disposable incomes for many residents in the next few years. Changes can happen quickly and can be generated by events outside the Taranaki area or influence (such as a major earthquake in Wellington). These impacts are normally seen through the net migration figures. New jobs and/or a greater interest in relocating to Taranaki for lifestyle reasons will result in the population growing faster over the next 10 years. The current forecasts show population declining slightly from 2033.

## 2.2.2 Population forecast – by area

The Statistics NZ 2016 update high growth forecasts (based on the 2013 Census) show an increase in urban populations over the next 10 years, followed by modest declines. In the rural areas the forecasts show modest but steady growth, mainly in lifestyle type developments. Council is not forecasting increased population on commercial farming properties as the number of these are declining (farm sizes are increasing). Individual township population forecasts and outcomes will likely change over time, but Council is not expecting any urban area to have a future population higher than that achieved in the past 20 years.

Table 2: 30-Year Forecasts for Major Urban Area and Combined Rural Areas

June Year	Dannevirke	Woodville	Pahiatua	Eketahuna	4 Towns	Rural North	Rural South	Rural Total	Taranaki Total	Urban 4 towns %	Rural %
1996	5,690	1,610	2,770	650	10,720	4,460	4,330	8,790	19,510	55%	45%
2001	5,530	1,520	2,680	590	10,320	4,040	3,960	8,000	18,320	56%	44%
2006	5,660	1,430	2,630	470	10,190	4,080	3,810	7,890	18,080	56%	44%
2013	5,210	1,440	2,490	460	9,600	4,060	3,790	7,850	17,450	55%	45%
2018	5,310	1,460	2,550	450	9,770	4,220	3,880	8,100	17,870	55%	45%
2023	5,330	1,480	2,560	440	9,810	4,350	3,950	8,300	18,110	54%	46%
2028	5,330	1,490	2,560	440	9,820	4,480	4,000	8,480	18,300	53%	47%
2033	5,290	1,490	2,560	440	9,780	4,570	4,030	8,600	18,380	53%	47%
2038	5,190	1,470	2,550	430	9,640	4,660	4,040	8,700	18,340	52%	48%
2043	5,050	1,440	2,530	430	9,450	4,700	4,030	8,730	18,180	51%	49%

## 2.2.3 Population Forecasts – by Household

Total households are forecast to increase modestly from 2018 to 2028, then increase slowly driven by declining occupancy rates. Recent population growth since 2014, with very few new houses built, has resulted in household occupancy increasing and the number of unoccupied dwellings declining. At some point if population continues to increase there will be an increase in new house building. The pattern of a steady decline in the number of people per household is forecast by Stats NZ to continue. This is a long-term trend across most of New Zealand, however the 2018 census may signal a change to this trend. The 2013 census recorded a 1% increase in occupied dwellings and a 15% increase in unoccupied dwellings compared to 2006. Overall, there was a 2% increase in total dwellings.

Table 3: Statistics New Zealand High Growth Forecasts 2013 Census Base

Households – SNZ Forecasts based on High series 2015 update forecasts adjusted for 2016 update high series population forecasts and SNZ occupancy rates					
Year	2013 Census base Occupied Dwellings	Unoccupied dwellings TDC forecasts from 2013 census base	Occupancy rate	Total Households	Implied new Dwellings
2006	7,100	496	2.5	7,596	
2013 base	7,200	534	2.4	7,734	138
2018 forecast	7,438	400	2.4	7,838	100
2023	7,738	300	2.3	8,038	200
2028	7,935	300	2.3	8,235	200
2033	7,957	375	2.3	8,332	100
2038	8,150	350	2.2	8,500	170
2043	8,205	400	2.2	8,605	100
2048	8,182	500	2.2	8,680	75

Total household numbers, including unoccupied dwellings, are forecast to have a modest increase despite the relatively stable population. Forecasts are driven by the household occupancy rate falling from 2.4 residents per house in 2013 (2.5 in 2006) to 2.3 residents in 2031, and 2.2 residents in 2046. Eketahuna and Pahiatua are forecast to have the smallest increase, with Dannevirke, Woodville and the rural areas having a modest increase.

Table 4: 30-Year Forecasts for Total Households Major Urban Area and Combined Rural Areas

Number of Households, Forecasts based on 2013 census data 2015 update household data and occupancy rate forecast for Taranua.							
	2013	2018	2028	2048	% Change 2018 to 2048	% of District Households 2018	% of District Households 2048
Dannevirke	2,227	2,269	2,317	2,273	-	31%	28%
Woodville	636	635	637	645	2%	9%	8%
Pahiatua	1,040	1,073	1,094	1,136	6%	14%	14%
Eketahuna	227	230	230	230	-	3%	3%
Balance rural Area	3,071	3,240	3,533	3,783	20%	44%	48%
Taranua District	7,200	7,438	7,799	8,182	10%		



## 2.3 Strategic Context

The Infrastructure Strategy is informed by the asset management plans, which are the Council's tactical plans for delivery on the Outcomes of Council through management and investment in infrastructure. Whereas the Financial Strategy sets out the funding options and constraints, the asset management plans identify the demand for infrastructure and renewal requirements. Through integrated development of the infrastructure and financial strategies, trade-offs and key strategies are developed, which inform the Council's Long Term Plan.

The relationship between these documents is shown in Figure 2.

Figure 2: Relationship between key planning documents



While the relationship is shown as hierarchical, planning information flows both ways. Knowledge of Council's current services and the assets that support them helps inform the future Vision. In turn the asset management planning process is informed by the Vision; the services likely to be needed in the future.

In January 2012, the Council adopted its first asset management policy. The adoption of an asset management policy ensures that the Council takes a consistent approach to asset management planning, that the asset management plans reflect the strategic direction of Council, and provide a sound basis for developing the Infrastructure Strategy and Long Term Plan.

### 2.3.1 Council's Vision and Strategy

The Vision for the 2018–2028 Long Term Plan is the vision the Council first developed with the community for the 2012 Long Term Plan:

*"A growing and prosperous district providing a wide range of employment opportunities that is underpinned by highly efficient, capable and affordable infrastructure."*

The Vision is underpinned by six Council Outcomes:

- **Efficient Infrastructure** Highly efficient, fit for purpose and affordable rural and urban infrastructure.

- **Prosperous Economy** A strong, growing, prosperous local economy that attracts, welcomes and retains businesses and residents.

A district with a clear identity that promotes its lifestyle.

- **Collaborative Council** A council seen as a leader in community partnerships and collaboration to ensure services are delivered in the most effective and affordable way.
- **Great Lifestyle** Recreation facilities, heritage and public amenities that support an outstanding lifestyle.
- **Sustainable Environment** The district has a natural environment that is protected, preserved, and enhanced for present and future generations.

The Infrastructure Strategy is consistent with the draft 2018 Long Term Plan – to continue the current focus on core network infrastructure, economic development and financial prudence. Council expects to complete the current round of Water and Wastewater upgrades during the period of the 2018–2028 Long Term Plan. The focus on economic development and promotion will continue to drive an increase in wealth for existing residents, and to increase the long-term population to improve the viability of the district.

### 2.3.2 Financial Strategy

The Financial Strategy provides a financial framework for making decisions and outlines how Council intends to manage its finances prudently. Council's 2018–2028 Long Term Plan financial strategy is about funding necessary infrastructure upgrades and developments while keeping our services affordable and sustainable.

While the Infrastructure Strategy provides details of the level and timing of investment needed to operate, replace, renew and upgrade existing facilities, the Financial Strategy outlines the required rating and debt levels to fund these investments. Together they outline how the Council intends to balance investment in assets and services with affordability.

Any major changes to the direction of the financial strategy of Council would require a review of this Infrastructure Strategy and vice versa.

### 2.3.3 Asset Management Plans

The key documents underpinning the Infrastructure Strategy are the asset management plans. The delivery of many of the public services essential to our community relies upon them. They represent a significant investment by the community, built up over the last 100 years and more. Asset management plans are the tool for combining management, financial, engineering and technical practices to ensure that the level of service required by customers is provided at the lowest long-term cost to the community. This requires taking a life cycle approach to asset planning.

Asset data drives the requirement for depreciation funding and has a major impact on rating levels. Poor data can lead to:

- insufficient depreciation reserves and possible rating shocks from unplanned renewals of networks,
- rates funding being too high if assets on average are in better condition than thought and renewal cycles are longer than planned.

The objectives of the Council's asset management plans are:

1. To provide for a consistent approach to asset management planning within the Council and to ensure the plans reflect the strategic direction of the Council.
2. To demonstrate to the community that the Council recognises the critical importance of managing the district's assets in an effective and sustainable manner in order to deliver appropriate levels of service to current and future generations.
3. To confirm a coordinated process for each significant asset area that reflects Council's strategic direction, and links their contribution to the Council Outcomes with specific levels of service, performance levels and desired improvement priorities and strategies.

Principles of Council asset management planning:

- The Council will develop affordable and financially sustainable asset management plans that are to industry standard appropriate for the scale of assets and associated risks being managed.
- Asset management plans will reflect the strategy and priorities of the Council and will be used to drive the day to day management of assets and the associated services.
- The Council will manage the infrastructure assets in a planned, systemic and sustainable manner.

Many of the asset planning activities undertaken by Council are applied to all infrastructure assets. For this reason, Tararua District Council has developed asset management plans in two parts. A single Part A document provides an overview of asset management planning at Tararua District Council. A Part B document for each asset group describes the assets and how the Part A principles are applied to the management of the assets.

Council has recently reviewed the 2015 asset management plans as the first step in preparing its 2018–2028 Long Term Plan. As the Vision for the 2018–2028 Long Term Plan is no different to the 2012 and 2015 Vision, the asset management plan review focused on levels of service and asset performance, identifying any known significant issues for the delivery of the activity/assets now and in the future. This work has led to the identification of the current and future asset requirements and the financial forecast for capital (renewals and new capital projects) and operational expenditure for each asset group.

### 2.3.4 Tararua Alliance

An alliance service delivery model with Downer NZ has been adopted for asset management of Council infrastructure. This partnership is called the Tararua Alliance and provides asset management, and operational and maintenance services in collaboration with Council staff. The Tararua Alliance has been established to maximise efficiency of service delivery. At present, water and wastewater treatment services remain with Council, but transition to the Tararua Alliance is being considered.

The Tararua Alliance applies an asset management approach to managing infrastructure assets, ensuring the latest practices and techniques are in place to deliver the agreed level of service for the least life cycle cost. These include: advanced data management, optimised decision-making, efficient maintenance operations, effective asset renewal strategies, risk management through the identification of critical assets, and adoption of the business case approach to investment.

## 2.4 Most likely scenario (MLS)

The basis of this strategy is built on a series of assumptions and forecasts that translate into major drivers of demand for expenditure. Section 2.2 outlines the demographic context under which the Council forecasts it will be operating.

Council has developed a detailed forecast of assumptions that impact across all Council activities. These detailed assumptions are included in the Draft Long Term Plan 2018–2028 and are summarised in the 'Long Term Plan Significant Forecasting Assumptions and Risks', pages 288–315. More detailed forecasts of issues that impact directly on the infrastructure activities have been developed through the asset management plan process. Where relevant, these assumptions are summarised in Section 6 of this strategy.



### 3

## SIGNIFICANT INFRA- STRUCTURE ISSUES

Unlike many other councils in New Zealand, Taranua District Council does not forecast growth to be an infrastructure issue in the next thirty years. The existing urban areas have considerable capacity to cater to stronger population growth. The majority of existing roads, arterial pipes, and treatment plants were designed for a larger urban population that peaked in the early 1990s. The forecast population, while growing, is still below those levels. With a slowly increasing population (estimated since 2013/14) and continuing increases forecast, decline is not considered to be an issue either. This is a major improvement on the situation faced over the last 20 years, and has given confidence to Council that infrastructure investments can remain affordable to fund and maintain.

Overall, the Council's assets are in good condition. Assets are ageing, but Council is making regular and ongoing investments in preventative maintenance and has increased renewals. Council has done substantial work in improving the accuracy of data that drives the asset management plans. This work will continue over the next few years. This will ensure that Council has confidence that these assets are able to continue to deliver the agreed levels of service for the least lifecycle cost without increasing the risk of failure. With the current financial strategy, including renewal and operating budgets, the maintenance, operation and renewal of assets are unlikely to be significant issues for Council over the next 30 years.

On a network basis, Council has not identified any significant gaps between the levels of service people expect from core infrastructure and the levels of service Council is able to deliver, now and over the next thirty years. This does assume continued external funding for Roading, at least at the current levels, to continue for the long term. Where levels of service gaps exist currently, projects and changes in management techniques have already been identified or are underway to address these, as detailed in the asset management plans.

The biggest significant infrastructure issue facing our community is maintaining affordability while upgrading ageing infrastructure. The population of the district is dispersed and there is a large roading network to maintain.

There are multiple small towns each with their own wastewater and water schemes. These networks are in the process of being upgraded to meet increased environmental and health standards, and to improve the resilience of the infrastructure for the future.

The quality of life, health, and economy of the Taranua District is reliant on infrastructure. The impact of infrastructure failure through natural disasters can result in loss of service or access, social and business disruption, and costly repairs. Within the region there are a number of existing and potential natural hazards including flooding, land instability, storms, coastal inundation, and earthquakes. We are already seeing weather related events increasing in frequency and intensity due to climate change. This is forecast to continue to increase. It will be a challenge for the Council to invest in the resilience of its infrastructure while still maintaining affordability.

Council is facing increased demand on part of the roading network due to land use changes over the last 30 years, such as increasing heavy trucks on the road network as a result of forestry harvesting which is decreasing level of service and/or increasing the cost of service.

The Manawatu Gorge road closure could result in major changes to the inter-regional roading linkages over the next 5–10 years. This presents opportunities as well as risks, with council only having an advocacy and lobbying role in the final decision of a replacement State Highway route. Potentially the district could see a much improved and quicker connection with Palmerston North City and Manawatu District, resulting in more demand for local housing and services.

## INFRASTRUCTURE STRATEGY

A number of options for managing forecast infrastructure issues were developed as preparation for this strategy. Council programme summaries detail these issues and options. The Council has developed its strategic response to identified infrastructure issues within the constraints of affordability and the Financial Strategy.

The Infrastructure Strategy takes its priorities from the Council Vision and key high level strategies. These are:

- Continued investment in core infrastructure; and
- Promoting and facilitating economic development; and
- Continued financial viability through sustainable growth and investment
- Increasing demand from modest population growth will be offset by reductions in leakages achieved by the Reticulation Water Leakage Strategy project.

In order to meet the above, Council has a continued focus on ensuring that infrastructure delivers the agreed levels of service to the community in the most cost effective manner. The focus for the next thirty years will be on assessing options for service delivery and "thinking smart":

- Prudent operation and maintenance of existing infrastructure assets, as outlined in Council's asset management plans. Renewals have been increased in this Long Term Plan for Water and Wastewater to address declining condition ratings.
- Investment in innovative and cost effective infrastructure solutions to replace ageing assets and enhance the overall network performance.
- Undertaking regular condition and performance monitoring of assets in order to renew and replace assets in a timely manner and ensure no loss of service.
- Assessing the future need of major assets and considering the most efficient and effective options to deliver long term service levels (optimisation of assets).
- Honouring our commitment to the Manawatu River Accord by striving to continually improve the quality of our district's waterways through innovation in operation and design of our wastewater treatment plants and stormwater networks.
- Improving resilience by building redundancy or spare capacity into systems, relocating infrastructure that is at significant risk of hazards, strengthening existing infrastructure (e.g. seismic strengthening) to withstand hazards or building assets which are less vulnerable to hazards.
- Investment in new infrastructure that provides enhanced levels of service, and meets or exceeds environmental and health standards, at a scale and complexity that matches our small urban towns. This may mean increased expenditure up front in order to reduce whole of life costs, and avoiding copying designs from large urban networks. Balancing this with ensuring sufficient capacity is maintained in networks to support economic and social development of communities.
- Considering alternative options that deliver the least cost whole of life solutions. This includes minimising the number of treatment plants and Resource Management Act discharge and other consents.
- Council is increasingly focusing on smart procurement processes, and generating efficiencies through collaborative buying of goods and services with other councils.

5

# INFRASTRUCTURE INVESTMENT SUMMARY

The provision of fit for purpose, affordable infrastructure is key to delivering on the Council's Vision. Many of the infrastructure renewal projects of Council are small, have relatively little impact on the delivery of agreed levels of service, and are therefore "business as usual" for Council.

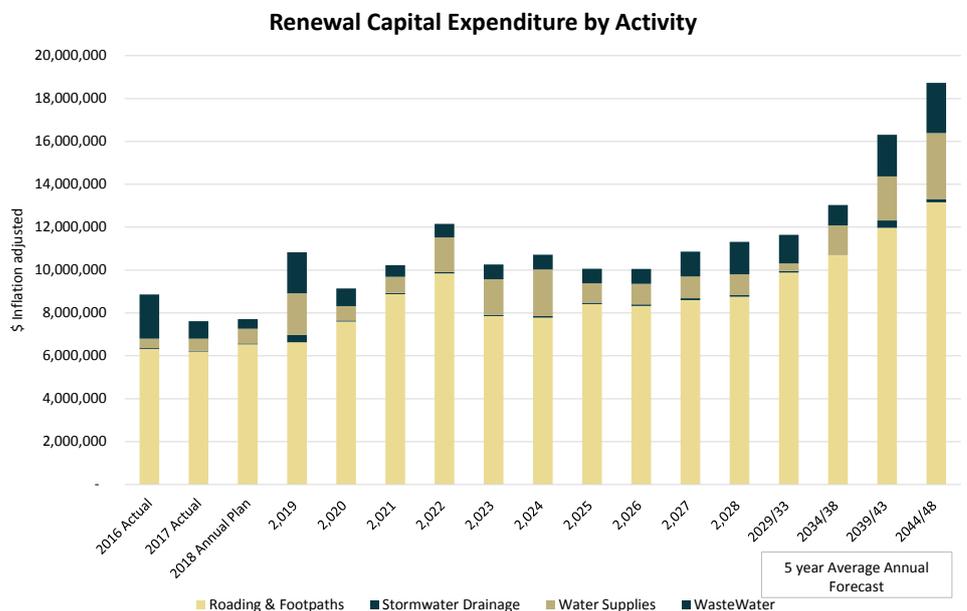
The charts below show annual data for the first 10 years, then in five year blocks after that out to 30 years (2048). The five year blocks shown are the simple annual average of the costs over each period. Figure 3 provides a summary of the forecast annual capital expenditure under the most likely scenario (mls) for the four infrastructure groups covered by this policy. Figure 4 shows the capital expenditure over the next 30 years for the MLS.

The investment in capital projects is only part of the picture. The capital investments Council has made in the past, and will continue to make in the future, commit Council and its community to a long-term stream of annual costs to maintain, operate, renew and replace these assets. Figure 3 shows that the Council's operating expenditure on infrastructure assets is forecast to steadily rise over the 30-year period as a result of the operating impact of investments and inflation. Transportation makes up most of the expenditure, consistent with the historical expenditure pattern of this Council, however, expenditure on the three waters is increasing proportionally as Council upgrades the urban piped networks.

Table 5: Historic Renewals – Transport and Three Waters

Activity	2011/12	2012/13	2014/15	2015/16	2016/17
Roading	5,980	5,393	6,219	6,002	6,138
Footpaths	37	113	7	323	67
Water Supply	155	575	194	432	572
Wastewater	57	417	571	2,064	815
Stormwater	84	144	-	42	28
Total	6,313	6,642	6,991	8,863	7,620

Figure 3: Annual Renewal Capital Expenditure by Activity



Figures 3 to 6 show that operating expenditure will account for most of the annual costs, with renewals making up most of the capital expenditure, and investment in level of service being relatively minor by comparison, particularly after year five.

Figure 4: Annual Capital Expenditure – Transport and the Three Waters

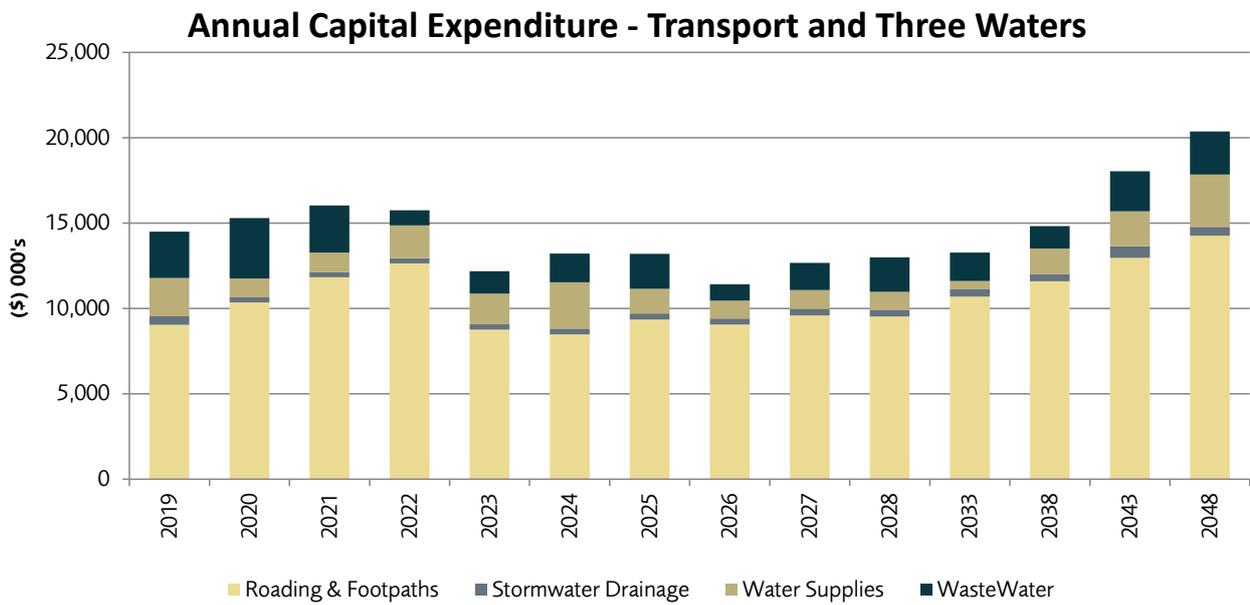


Figure 5: Annual Operating Expenditure – Transport and the Three Waters

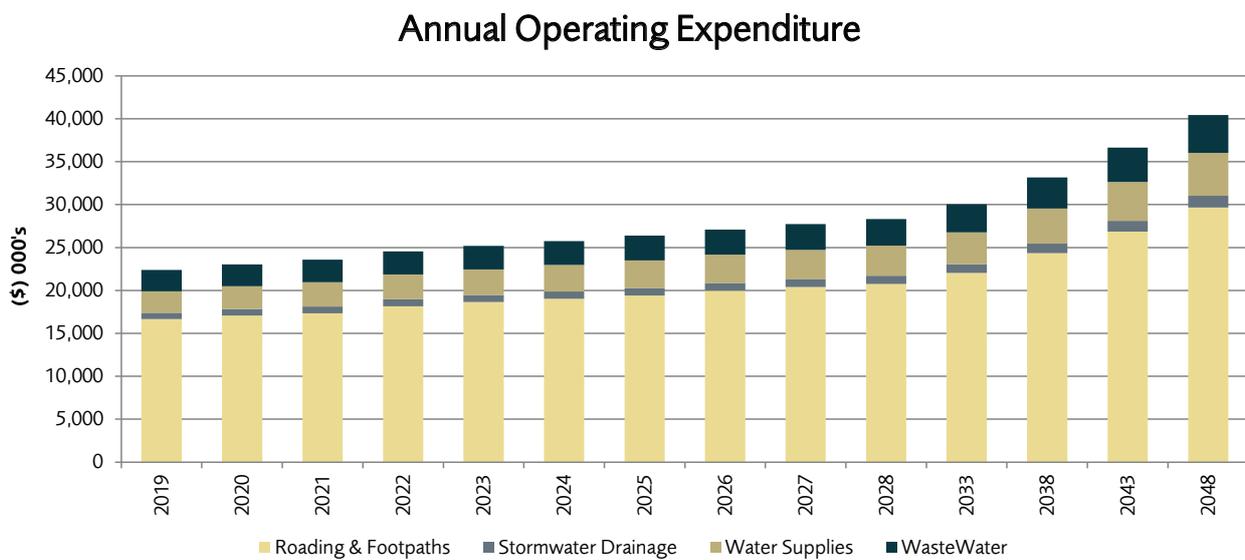
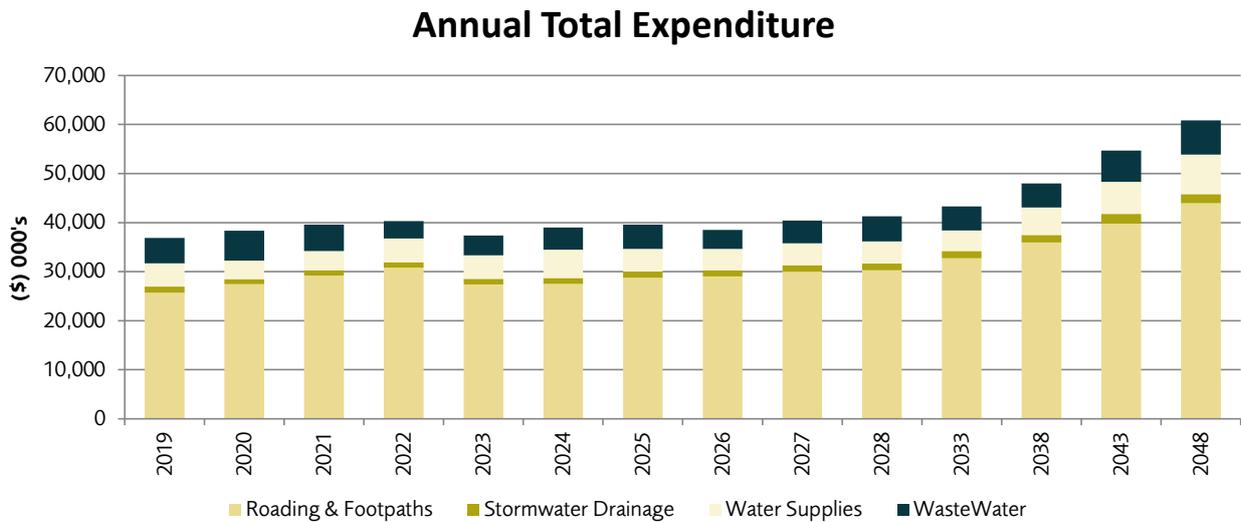




Figure 6: Total Annual Spend – Transport and the Three Waters



## 5.1 Sustainability of Asset Funding

Currently, our assets are generally in a good condition. The roading network has a good rating for smoothness and low volumes of traffic on most of the network, although the bridges are ageing and will require renewal over the next 50 years. Water networks are in good condition, but renewals have been increased for this Long Term Plan reflecting better knowledge of issues in the networks. Extensive renewals will be required within the next 30 years in Dannevirke, Pahiatua and Woodville, in particular. Stormwater networks are relatively basic and do not yet need a high level of investment. Wastewater networks are in reasonable condition and have been the focus of cctv camera inspections. This has allowed Council to gain a good understanding of asset condition and performance of the reticulation. Greater emphasis is being placed on performance and compliance issues including the amount of inflow and infiltration.

The strategy is to renew the assets before maintenance costs rise, resulting in the effective use of scheme funds (optimised decision-making). The required level of renewal will vary, depending on:

- the age profile of the asset;
- the condition profile of the asset;
- the ongoing maintenance demand;
- the performance of the asset.

Council is part way through a process of improving its asset management plans and has recently shifted to a new asset management information system. This is part of a shift to a more proactive management approach that will directly link condition assessments to asset lives and funding required. The new system is being progressively implemented and will be fully in place for the 2021 Long Term Plan process.

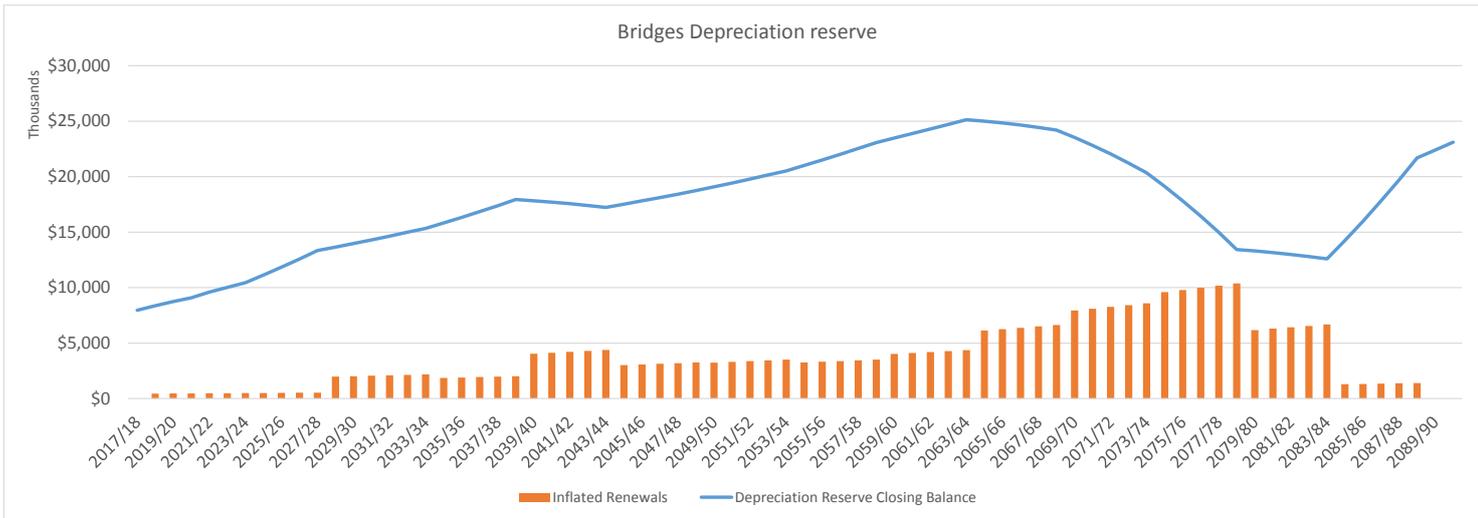
### 5.1.1 Financial Provisions

Council has built depreciation reserves over time to fund the long term renewals of assets. These depreciation funds have an overall substantial positive balance (2018/19 opening balance \$23.8 million). This balance is forecast to reach \$16.3 million at the end of the 10 year period (June 2028). This is a significant reduction in forecast reserve balances compared to the 2015 Infrastructure Strategy. This reflects the significantly increased renewals that are forecast in the 10 year period. The work on improving data quality that Council has done, and is continuing to do, has highlighted condition issues with wastewater and water reticulation networks. The data registers are now more accurate with additional assets identified across the infrastructure networks.

As part of ongoing work to ensure sustainable management of the networks, Council is undertaking modelling of each of the asset networks, including componentisation (identifying each of the assets that make up a network) and optimisation (what will be replaced and when). This gives Council a long term analysis of whether the depreciation reserve is sufficient to fund each network on a sustainable basis. Below are the first outputs of

this work, which give some comfort to Council on the level of depreciation funded. The bridge renewal period goes out 70 years, which covers the main renewal period for all Council bridges. Further work on analysing the life of asset components, such as the structure, bridge decking, rails etc could result in the overall renewal funding requirements being lower on average each year. Bridge structures are likely to have a much longer asset life given sound maintenance programmes.

Figure 7: Bridge Depreciation



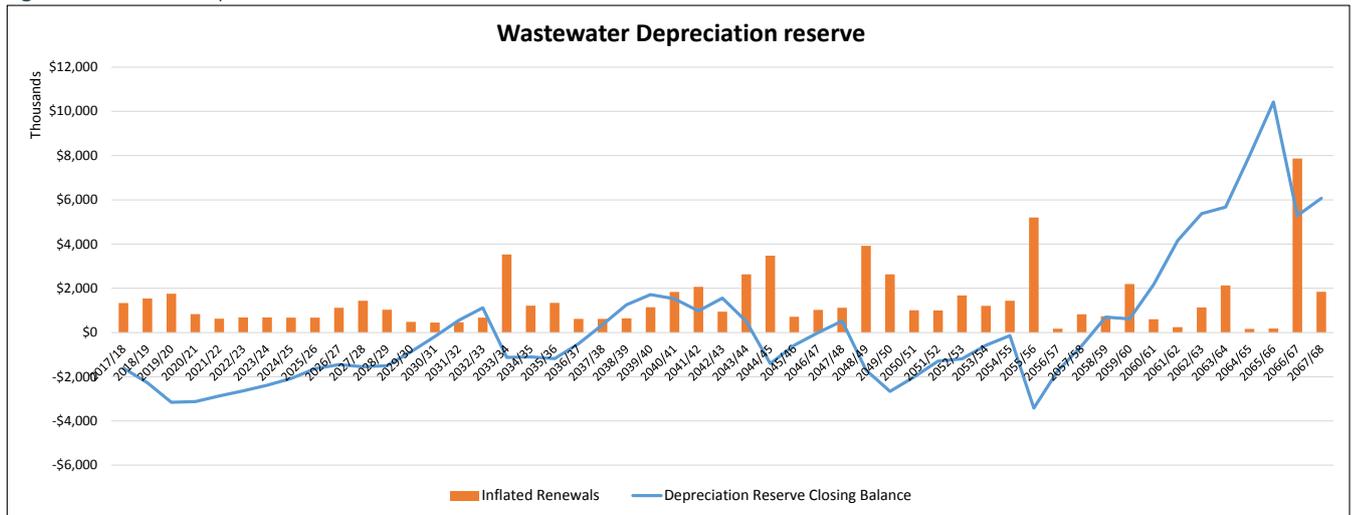
For wastewater the extensive renewals of reticulation and treatment plant assets sees that depreciation reserve remain in deficit of up to \$3 million in the next 10 years. Following this the balance fluctuates around zero before growing significantly from 2060 onwards.

Council uses positive cash balances to internally borrow for infrastructure upgrades. Council has no intention of changing its policy of fully funding depreciation, but does use smoothing techniques and does intend to use optimisation techniques that may result in not funding or part funding some renewals.

In the event of natural disasters or new legal requirements to increase standards Council can access these reserve funds to fund the renewal of assets. Council is also able to access borrowings to supplement depreciation reserves, if required.



Figure 8: Wastewater Deprecation



## 5.2 Maintaining or Improving Public Health and Environmental Outcomes

Council has two main focus areas for maintaining or improving public health. The first is based around the upgrade of public urban water supplies to improve the quality and resilience of these networks. This involves meeting the mandatory Drinking Water Standards. The second is to upgrade the treatment and disposal of urban wastewater to improve the health of our river systems. As such, the latter is more focused on environmental outcomes.

Council has already completed a number of these projects in the last few years. The major projects remaining are:

### Environmental Outcomes

- Wastewater infiltration strategy implementation.
- Wetland developments Pongaroa, Woodville, and Pahiatua.
- Dannevirke disposal of treated effluent to land.
- Eketahuna treatment pipeline to Pahiatua.
- Ormondville treatment plant upgrade.

### Maintaining or Improving Public Health

- Dannevirke water treatment upgrade.
- Norsewood water supply upgrade – pipeline from Dannevirke.
- Reticulation water leakage strategy.
- Stormwater network upgrades ongoing.

Details on these projects are set out in Section 5.4 on significant capital expenditure decisions.

## 5.3 Disposal of Assets and Deferral of Expenditure

Council has no intention to dispose of assets covered by this strategy, or to defer expenditure on assets. There are no significant disposal issues for assets at the end of their useful lives.

Pipe assets may be relined (sewer), replaced, or left in situ (if no longer required) as opposed to being removed. Pipes are typically located in the roading corridor, and their removal necessitates reinstatement work that causes disruption to the community and costs that exceed the benefit of pipe removal. Exceptions are where the location is needed for a new asset or a change in the design of the roading assets necessitates the pipe removal. Council has a strategy over time to replace pipe assets at the end of their life in locations whereby trenches can be “shared” for multiple assets and disruption to the roading corridor is minimised. Council has no intentions to remove any roading assets; these assets are typically rehabilitated in their current location.

## 5.4 Significant Capital Expenditure Decisions

In preparing an Infrastructure Strategy, in accordance with the Local Government Act 2002 Amendment Act 2014, Council is required to:

*Identify the significant decisions about capital expenditure that local authority expects it will be required to make – (Section 101B (4) (b) (i))*

In determining what decisions are significant, in the context of this strategy; reference has been made to Council's Significance and Engagement Policy.

Generally a significant infrastructure decision, in the context of this Strategy, will have two or more of the following characteristics:

- Has a substantial tangible impact on the whole district based on changes to services levels or the manner in which revenue is to be obtained.
- Has a significant multi-year change in the levels of service at an activity level.
- The decision represents a new strategic direction for Council.
- A decision or proposal on a matter where the majority of a community expresses considerable interest or the community is deeply divided.

Council has identified a number of significant capital expenditure decisions as part of the 2018–2028 Long Term Plan process. A number of the projects are part of an existing programme of network upgrades (Water and Wastewater) that has been underway since 2012.

Significant capital expenditure decisions identified are:

1. Upgrade of Route 52 (Weber to Central Hawkes Bay District Council boundary).
2. Roading seal extensions.
3. Upgrade of water supplies – ongoing programme to meet the mandatory standards set by the New Zealand Drinking Water Standards 2005:
  - Dannevirke water treatment plant.
  - Dannevirke to Norsewood pipeline.
  - Reticulation water leakage strategy.
4. Upgrade of wastewater treatment plants. This programme is ongoing and also addresses ongoing operational efficiency and affordability of the treatment solutions:
  - Pipeline from Eketahuna to Pahiatua (reduce whole of life consent and treatment costs).
  - Wastewater infiltration strategy implementation.
  - Dannevirke wastewater discharge disposal to land.
  - Pahiatua wetland and consent.
  - Pongaroa wetland and consent.
  - Woodville wetland.
  - Ormondville treatment plant upgrade.
5. Stormwater district-wide upgrades.
6. Pahiatua town centre upgrade.
7. Wastewater lateral ownership.
8. Utility network extensions.

Table 6 provides an overview of the significant capital expenditure decisions the Council will make as part of its 2018–2028 Long Term Plan regarding transportation and the three waters. The table outlines the options the Council has considered. In some cases, these are for projects which have previously been consulted on, but assumptions have changed and alternative options exist for the community.

Where Council has a preferred option, this is indicated and the cost of that option included within the financial summary. In some cases, the infrastructure decision is some way off, and further investigations are required before Council can determine its final preferred option. In these cases, a business case will be prepared, and the preferred option consulted on as part of an Annual Plan or Long Term Plan. The financial summary for these projects includes a best guess estimate for the project, made by the appropriate Asset Manager, based on the information at hand.



Table 6: Significant Capital Expenditure Decisions

Asset/ Network	Issue / Risk	Practical Options
Dannevirke water supply	The Dannevirke 130,000m <sup>3</sup> impounded water supply was commissioned in 2013. A Dannevirke treatment upgrade was completed in 2016. Although potable, the Ministry of Health attached an (E) grade to the supply. This is due to the supply not meeting the standards around protozoa (cryptosporidium). To meet the mandatory standards Council must add further barriers to possible health risks that may occur.	<ol style="list-style-type: none"> <li>1. Upgrade treatment plant sooner.</li> <li>2. Upgrade treatment plant in Year 3.</li> <li>3. Defer treatment plant upgrade until Year 6.</li> </ol> <p>Objective: Ensure Dannevirke water treatment plant can meet the required log credits from the Ministry of Health compliance standards so the Dannevirke drinking water meets the mandatory New Zealand Drinking Water Standards.</p> <p>Council's preferred option is Option 2.</p>
Norsewood water supply	The Council supply supplements house roof fed water tanks, and is a bore supply with a high manganese and iron content. A small treatment plant feeds into storage tanks. This network design cannot comply with the mandatory New Zealand Drinking Water Standards as the roof fed water is not treated so could be contaminated from animal droppings. Relying on the Council supply would require another resource consent and additional bores, as well as an upgrade to the treatment plant.	<ol style="list-style-type: none"> <li>1. Status quo – not considered an option as does not meet mandatory New Zealand Drinking Water Standards.</li> <li>2. Upgrade bore, treatment plant and disconnect all tank water.</li> <li>3. Development of a water pipeline from Dannevirke to Norsewood (20km) fed to a new storage reservoir. Disconnect all tank water.</li> </ol> <p>Council's preferred option is Option 3.</p>
Reticulation water leakage strategy	<p>The reticulation networks have substantial water leakage that results in Council having to source and treat more water than is necessary to meet demand. With the higher standards of treatment, and increasing pressure for environmental reasons, this is potentially costing the community significantly. Council needs to implement an appropriate programme to quantify water losses from each system, and then identify programmes for reducing water losses.</p> <p>Development of network pressure zones and installation of isolation valves is required in order to measure flows and determine the levels of water loss, and where the loss is occurring (Council mains or on private properties).</p>	<ol style="list-style-type: none"> <li>1. Status quo – Continue to accept significant losses of treated water.</li> <li>2. Implement investigative and zone meter programme.</li> </ol> <p>Council's preferred option is Option 2.</p>



Implications / Decision (Cost and Timing)	Purpose of Increase / Decrease Expenditure				
	Renewal	LOS Increase	Growth	Public Health	Natural Hazard
<p>Project budgeted for Year 3. Bringing the project forward would require other projects to be delayed due to limited staff resources. The priority is seen as wastewater consent renewals and upgrade projects, as well as other water supply upgrades. There is low risk to the community from the current supply.</p> <p>Consultation as part of 2018/19 Draft Long Term Plan.</p> <p>Financial provision of \$800,000 in Year 3 of Long Term Plan (2018/19) based on an upgrade to the existing treatment plant.</p> <p>Note: once decision has been made, there is a long lead in time for this project due to engineering designs, consents for building and managing the storage.</p>		✓		✓	
<p>Option 3 – the community will have a scheme that is compliant with the New Zealand Drinking Water Standards, which will further reduce any health risk implication to Tararua District Council for delivery of potable water to the household. Will remove requirement to renew water take consents, as well as renewals for treatment plant and bores.</p> <p>Requires detailed business case to be completed in Year 2 to prove lower whole of life costs. Project cost is \$945,000 in Long Term Plan starting Year 3 (2020/21) and completion in Year 7.</p>		✓		✓	
<p>Project cost is \$850,000 starting in Year 1 and continuing for four years. This will allow Council to accurately measure water loss and target renewals to address major leaks. Council has a mandatory responsibility under the Local Government Act 2002 to report the level of water loss across the public drinking water supply networks.</p> <p>There are environmental benefits from using less water, as well as reducing operating costs. This will also improve network resilience.</p>	✓	✓			



Asset/ Network	Issue / Risk	Practical Options
<p>Wastewater plant upgrades – wetlands</p> <p>Pipeline Eketahuna to Pahiatua</p>	<p>Environmental standards for wastewater disposal have increased and, as a signatory to the Manawatu River Accord, Tararua District Council is committed to improving the environmental outcomes from the discharge of treated wastewater.</p> <p>A programme of upgrades began in 2012, assisted through funding from the Ministry for the Environment.</p> <p>A number of schemes require resource consent renewals for discharge consents. The conditions attached to these consents have been rapidly increasing in terms of monitoring, treatment quality and cost.</p> <p>The overall programme consists of a number of specific projects, including pond lining, treatment upgrades, wetland developments and land disposal irrigation systems.</p> <p>There is a risk that the programme will not be finished on time or achieve the environmental standard required for new consents, and that quality standards continue to increase imposing escalating costs on urban properties.</p>	<p>Components of the upgrades contain a number of options. Council wishes to achieve the following with each treatment plant upgrade:</p> <ul style="list-style-type: none"> <li>• Pipeline from Eketahuna to Pahiatua to eliminate one discharge resource consent and significant treatment upgrade requirements. This will reduce whole of life costs including discharge consent renewals every 15 years. Eketahuna discharge volumes are a small percentage of Pahiatua flows. Alternative option is to continue with Eketahuna treatment plant upgrades and discharge consent process.</li> <li>• Effluent results and wetland developments meet or exceed likely consent requirements.</li> <li>• Treatment processes are sustainable – environment and financial.</li> <li>• Treatment plants are resilient.</li> <li>• Surplus capacity is built in to cope with changes in inflow during extreme events.</li> </ul>
<p>Land disposal of treated wastewater</p>	<p>Council is planning to dispose of treated wastewater to land as part of its commitment to cleaning up our rivers. The discharge budgeted for is Dannevirke.</p> <p>Investigations to date have not found any suitable land near to the Dannevirke treatment plant due to climate, soil types, current land usage, and industry restrictions on grazing treated land.</p>	<ol style="list-style-type: none"> <li>1. Abandon plans for land irrigation and continue to improve the quality of effluent entering waterways through treatment plant upgrades.</li> <li>2. Continue with plans to develop land irrigation to irrigate land. Consider Council alternative locations such as the Council-owned aerodrome and the Dannevirke Golf Club.</li> </ol> <p>Council's preferred option is Option 2. Council is committed to the River Accord and removal of waste is a key objective for the signatories, including local iwi.</p>



Implications / Decision (Cost and Timing)	Purpose of Increase / Decrease Expenditure				
	Renewal	LOS Increase	Growth	Public Health	Natural Hazard
<p>Pipeline Eketahuna to Pahiatua – budget \$3.5 million Years 1–3. Consulted on in 2018 Long Term Plan and subject to final business case outcomes.</p> <p>Wetland developments are planned for Pahiatua, Pongaroa (treatment plant and wetland), Ormondville (treatment plant and wetland) and Woodville. These wetlands will provide additional filtration and meet a number of iwi preferences that will help to meet discharge consent requirements as set by Horizons Regional Council.</p> <p>Pahiatua wetland – \$275,000 Year 1</p> <p>Pongaroa treatment plant, wetland – \$275,000 Years 2–4.</p> <p>Ormondville (treatment plant, wetland) – \$560,000 Years 5–10.</p> <p>Woodville wetland – \$135,000 Year 3.</p>	✓	✓		✓	✓
<p>Council has included this project in the 2018 Long Term Plan with increased funding in Years 6 and 7 of \$1.5 million in anticipation of a site being found.</p> <p>Funding includes pumping and reticulation costs.</p>		✓		✓	



Asset/ Network	Issue / Risk	Practical Options
Stormwater Upgrades	<p>Climate change research indicates that there will be an increase in the quantity and severity of weather events that we currently experience.</p> <p>Council has taken the approach of budgeting for a series of smaller upgrades to make incremental improvements, rather than a few large and expensive upgrades. This is at \$150,000 a year over the 10 years, \$1.5 million in total. These projects will be those giving the best outcomes from the model with a focus on reducing the risk of flooding of residential houses. This level of funding is lower than planned for in the 2015 Long Term Plan, and will not be sufficient to address amenity or aesthetic flooding issues. Significant stormwater upgrades including piping of open drains or installing new pipelines would be very limited with the proposed level of funding. Until Council has completed network modelling, and considered the likely outcomes of investments, Council is reluctant to invest in any large scale upgrade projects.</p>	<ol style="list-style-type: none"><li>1. No stormwater infrastructure upgrades and accept the risk that flooding will increase over time.</li><li>2. Moderate increase in capital budgets of \$150,000 per year focused on reducing the risk of flooding to residential properties while optimising existing systems. Investigate and develop further options to provide robust justification for future capital projects.</li><li>3. Undertake the capital programme that was set out in previous Council Long Term Plans. The model indicates that there are low benefits to these projects:<ul style="list-style-type: none"><li>• Dannevirke Mangapurupuru diversion.</li><li>• Dannevirke Allardice Street diversion from High Street.</li><li>• Pahiatua diversion prior to town system.</li><li>• Pahiatua pipe Huxley Street drain.</li></ul></li></ol> <p>Council's preferred option is Option 2.</p>
Wastewater Infiltration Strategy Implementation	<p>Council is aware that there is considerable inflow of stormwater into the wastewater reticulation system during heavy rainfall events. Volumes of wastewater at treatment plants increase significantly at these times. This is caused by overflowing stormwater systems, coupled with pipe leaks and possibly illegal connections. The increased wet weather flows causes higher operating costs, and the need for larger treatment ponds and pipes. Smoke detection is the most effective process to identify leaking pipes.</p>	<ol style="list-style-type: none"><li>1. Do nothing – treated volumes continue to be higher during heavy rain. This will result in significant investment costs in infrastructure to meet consent conditions.</li><li>2. Aggressive programme of infiltration detection (smoke) and repair over Years 2 and 3.</li></ol> <p>Council's preferred option is Option 2.</p>



Implications / Decision (Cost and Timing)	Purpose of Increase / Decrease Expenditure				
	Renewal	LOS Increase	Growth	Public Health	Natural Hazard
<p>The community will need to consider the effect and increased risk of flooding as a result of these events, against the costs of trying to solve these issues. These projects will be those giving the best outcomes from the model with a focus on reducing the risk of flooding of residential houses. This level of funding will not be sufficient to address amenity or aesthetic flooding issues. Significant stormwater upgrades including piping of open drains or installing new pipelines would be very limited with the proposed level of funding.</p> <p>\$150,000 a year over 10 years, increasing to \$200,000 a year for years 11–30. Further modelling will prioritise Council investment over time.</p> <p>The estimated cost of the large diversion and piping projects that were signalled as part of the 2015 Long Term Plan (Option 3) has increased from \$3.2 million to \$20 million as a result of modelling work.</p>			✓		✓
<p>Council is undertaking a number of wastewater treatment upgrades. The design of these upgrades include wastewater flows based on population and industry. Reducing the amount of infiltration by detecting and repairing leaks will reduce the capital cost of the upgrades by reducing volumes to be treated. The costs of this project are based on the costs of carrying out smoke detection operations for a year, plus an estimate of the number of leaks that will require repair.</p> <p>Total costs are \$900,000 in Year 2 and \$270,000 in Year 3.</p>	✓				✓



Asset/ Network	Issue / Risk	Practical Options
Route 52 Upgrade - Rooding	<p>Council has committed to investing in improving Route 52 due to the current level of service, vulnerability to weather events, and increasing demand from tourism and forestry vehicles. Currently the northern part of Route 52 is not meeting levels of service, and is taking a significant part of the maintenance budget to keep open.</p> <p>Upgrading will focus on improving resilience and motorist safety on the northern section of Route 52 (Central Hawkes Bay boundary to Weber junction – 24km), to maximise accessibility through less frequent road closures and ensure the road is constructed to a standard in keeping with its function and use.</p> <p>This expenditure is currently flagged across the 2018–2021 period, but is dependent on the development of a business case and approved NZ Transport Agency funding.</p>	<ol style="list-style-type: none"> <li>1. Do nothing – road will continue to deteriorate and will struggle to provide satisfactory access.</li> <li>2. Gradual improvements using minor safety funding over 10 years. This will not increase Council debt but will take all of the minor safety improvement funding over the 10 years.</li> <li>3. Major boost in funding in short term, with funding from NZ Transport Agency for 66% and Council 34%. Funded through debt.</li> <li>4. Upgrade more of Route 52 through to Pongaroa (24kms). This would increase the cost by \$10 million. Council considers this as unaffordable given current funding models</li> </ol> <p>Council's preferred option is Option 3.</p>
Seal Extensions	<p>Taranaki District has a large roading network, often in remote rural areas with low traffic volumes. Of the 1,958km of road network, 772.5km is unsealed gravel. Historically, Council slowly extended the sealed road network based on safety and traffic volume. The cost of this seal extension is high, and used to be subsidised by central government. For over a decade this subsidy funding has been unavailable as national funding priorities were redirected towards motorways and state highways. Without subsidy funding Council has viewed the seal extensions as unaffordable. Each kilometre of seal extension costs around \$200,000 on average.</p>	<ol style="list-style-type: none"> <li>1. Status quo – no funding.</li> <li>2. Fund \$200,000 every two years.</li> <li>3. Require co-funding from property owners to enable seal extensions.</li> </ol> <p>Council's preferred option is Option 2.</p> <p>This option ensures that only unsealed road locations with safety issues and/or other strategic priorities are chosen for sealing. Council will be required to renew these additional assets.</p>
Pahiatua Main Street Upgrade	<p>There is an opportunity to upgrade the Pahiatua town centre including footpaths, parking and underground services. This could lead to improved driver and pedestrian safety, improved services, less surface flooding, enhanced aesthetics and encouragement for visitors to stop and shop.</p> <p>Outcomes may be compromised if state highway assets are not upgraded as part of the project.</p>	<ol style="list-style-type: none"> <li>1. Defer or cancel project.</li> <li>2. Undertake project as planned and use renewal budgets to replace roading kerb and channel, and underground water, wastewater and stormwater assets.</li> </ol> <p>Council's preferred option is Option 2.</p> <p>This option ensures that ageing pipes are renewed when footpaths are dug up.</p> <p>Council has set the upgrade budget and is working with the Pahiatua community to finalise a design that fits within the budget.</p>



Implications / Decision (Cost and Timing)	Purpose of Increase / Decrease Expenditure				
	Renewal	LOS Increase	Growth	Public Health	Natural Hazard
<p>Upgrading this 24km section of Route 52 is estimated as a \$10 million project. Council would fund its share (\$3.4 million) through loans. Funding from NZ Transport Agency is subject to a convincing business case and is not guaranteed. The business case is programmed for Year 1, with upgrades in years 2, 3 and 4.</p> <p>Doing nothing to improve the resilience of the road will mean that large maintenance 'patch' jobs will continue. This consumes large sums every year and does not address the underlying issues. Each storm event results in more dropouts and slumping of the road. Increasing forestry logging trucks will make the situation worse over the next 10 years.</p> <p>Extending the upgrade to Pongaroa places significant funding issues on Council debt levels, but may be possible in the future given additional NZ Transport Agency or government funding assistance.</p>	✓	✓		✓	
<p>Funding a kilometre of seal extension every two years will add \$1 million to Council debt over the first 10 years.</p> <p>Funding is budgeted to start in Year 1.</p> <p>The Council now wishes to progress seal extensions in a modest way. Chip sealing of unsealed roads improves amenity and travel time, and can result in both safety, economic and environmental (reduces dust) benefits.</p>			✓	✓	
<p>Council has budgeted \$2.9 million in Years 1 and 2 to undertake the project. The project has been budgeted for since the 2012 Long Term Plan, and there has been extensive consultation with the local community. Over the last six years Council has upgraded Dannevirke, Woodville and most recently Eketahuna main streets. This project will see the final part of the upgrade programme for the mainstreets in the major towns. Council has also budgeted \$2.5 million for the renewal of underground services that will be carried out as part of this project. These renewal are funded through depreciation reserves and will not impact on the rates required.</p>	✓	✓		✓	



Asset/ Network	Issue / Risk	Practical Options
Wastewater laterals ownership	<p>Laterals are the pipes that carry waste water from homes and businesses to Council's main infrastructure pipes. The responsibility for maintenance of these laterals currently rests with the property owners from the building, across the footpath and road to the mains. The estimated cost to replace a lateral should it be required is estimated between \$2,000 - \$20,000 and varies significantly due to location and depth.</p> <p>Laterals across the district are aging and Council anticipates maintenance and renewals requirements will increase significantly over the coming decades. This is likely to place financial pressure on a significant number of ratepayers, particularly those on fixed incomes.</p>	<ol style="list-style-type: none"><li>1. Status quo – leave liability with property owners.</li><li>2. Carry out a business case to investigate taking over ownership of all wastewater laterals, including renewals and maintenance, up to property boundaries.</li><li>3. Take over ownership immediately.</li></ol> <p>Council's preferred option is Option 2.</p>
Extending Utility Networks	<p>For over 20 years to 2013/14 the population of the district fell, resulting in low property prices and a good supply of rental housing. In the last few years the population has been increasing, with new residents coming into the district. In the year to June 2017 Statistics NZ estimated population growth of 1.4% for the district. Currently property prices are rising and there is a shortage of rental housing, however there are still very few houses being built. Our main towns have some sections available, but there has been no expansion of the urban boundaries for some years.</p>	<ol style="list-style-type: none"><li>1. Do nothing – react to growth demands as they occur (reactive)</li><li>2. Plan to extend three waters networks in the four major towns to meet forecast growth with small extensions of around 10 sections a year.</li></ol> <p>Council's preferred option is Option 2.</p> <p>This option allows Council to budget for greenfield residential demand if it occurs. If demand is not evident at the time, then Council would not carry out an annual extension.</p>



Implications / Decision (Cost and Timing)	Purpose of Increase / Decrease Expenditure				
	Renewal	LOS Increase	Growth	Public Health	Natural Hazard
<p>Council plans to research the implications of assuming maintenance and ownership of laterals from the property boundary to the mains, thereby reducing potential future costs to owners. The additional assets to be added to Council networks is expected to be substantial (\$ millions) and the impact on depreciation and rates significant.</p> <p>Responsibility for laterals on private property will continue to rest with the owner at this stage.</p> <p>Council will consult with the community as research into wastewater laterals is undertaken, including advising the likely impact on rates.</p> <p>Council final decision likely as part of 2021 Long Term Plan process.</p>	✓	✓		✓	✓
<p>Council wants to ensure it is not holding back new houses/ businesses, to support construction businesses, and to encourage population growth in the district. Up until now Council has responded to connection requests, where possible and affordable, to ad-hoc requests from property owners on the edge of the network. These occasional and sporadic extensions are not always in the most efficient location for managing demand in an ageing and in some cases, poorly performing network</p> <p>From Year 2 onwards \$250,000 a year. There is an increase in rates funding from 10 new sections a year. Funding is budgeted to cease in Year 20 as household growth stabilises.</p>	✓	✓		✓	

## ASSET LIFECYCLE MANAGEMENT

This section of the Strategy provides more detail on each of the four infrastructure asset groups covered by this strategy, including key issues, level of service and demand assumptions, plans to renew and upgrade existing assets, including to maintain or improve public health and environmental standards and to improve asset resilience.

### 6.1 Significant Assets

The Local Government Act requires Council to include the assumptions of the local authority about the life cycle of significant infrastructure assets – (Section (4)(c)(i)).

Council identifies those assets critical to the delivery of level of service, as part of its asset management planning process. These assets are listed within each of the asset management plans. These constitute Council's significant assets in the context of this strategy.

In some cases these are individual assets, e.g. a wastewater treatment plant. In other cases they are a network or collection of assets that are managed collectively to deliver the agreed level of service. They are not significant to Council because of their dollar value, but because of the tangible impact they have on delivery of levels of service.

#### 6.1.1 Lifecycle Management Practices

Council ensures that asset management practices are applied in a consistent way. These practices are detailed in Part A of the Tararua District Council Asset Management Plan. The current practices relevant to this strategy are as follows:

#### 6.1.2 Condition and Performance Processes

The assessment of asset condition is an essential part of asset management planning. Asset condition assessments are undertaken to determine:

- where the asset is in its life cycle;
- the remaining effective life of an asset;
- the rate of deterioration of the asset;
- when asset rehabilitation or replacement will be required;
- financial cash flow projections;
- the risk of failure;
- the frequency of inspection required to manage risk of failure.

The data collected is used to support core asset management activities, such as risk management, predictive modelling, planned maintenance and rehabilitation, asset valuation, and budget forecasting.

Assets are assigned a grade from 0–5. The general meanings of the grades are as follows:

**Table 7:** Asset Grades

Grade	Condition	General Meaning
0	Non-existent	Asset absent or no longer exists <i>No work required</i>
1	Excellent	Sound physical condition
2	Good	Acceptable physical condition; minimal short term failure risk but potential for deterioration  <i>Only minor work required (if any)</i>
3	Average	Significant deterioration evident; failure unlikely in near future but further deterioration likely  <i>Work required but asset is still serviceable</i>
4	Poor	Failure likely in short term  <i>Substantial work required in short term, asset barely serviceable</i>
5	Very Poor	Failed or failure imminent/ safety risk  <i>Major work or replacement required urgently</i>

Formal assessment of road assets is an ongoing process.

Historically, formal condition assessment was not undertaken for pipe networks. Council purchased a CCTV camera in 2012 and initiated a programme of formal grading of pipes using the New Zealand Water and Wastes Association grading system. To date, wastewater pipes within the Dannevirke and Eketahuna networks have been inspected, as well as wastewater and stormwater pipes at other locations where an issue has arisen.

Condition assessment primarily relates to the physical state of an asset, whereas the performance of the asset is closely aligned to the level of service provided to customers. For example, wastewater pipes may be under performing due to a build up of fat, even though the pipe itself is in perfect condition. Alternatively it may be operating satisfactorily even though the pipe condition is poor.

Performance grading is a relatively new concept for Council. Performance assessment has been largely limited to bridges and some treatment plants and network pipes. Assets are assigned

a performance grade from 0–5. The general meanings of the grades are shown in Table 8.

Performance information is maintained through investigations undertaken in response to customer requests for service/ complaints and routine maintenance audits. For example, water quality testing, hydrant flow and static pressure testing, and traffic counts. There is opportunity for further development of the process for capturing performance data.

**Table 8:** Performance Grading

Grade	Performance	General Meaning
1	Excellent	Meets user needs in every way  <i>No work required</i>
2	Good	Largely meets user needs  <i>Only minor modification required (if any)</i>
3	Average	Meets most of the user needs, but there are levels of service gaps  <i>Some modification needed</i>
4	Poor	Meets very little of the user needs  <i>Substantial modification work required in short term</i>
5	Very Poor	No longer an appropriate asset to meet current levels of service  <i>Replacement required</i>

### 6.1.3 Maintenance Strategy

The short-term maintenance strategy is intended to retain current levels of service with respect to asset condition and functionality whilst minimising costs. In the longer-term maintenance activity will be modified as necessary to reflect:

- the age of assets relative to expected economic life cycle;
- the risk of failure of critical assets;
- changes in the desired level of service;
- the nature and timing of asset upgrading/development works.



### 6.1.4 Renewal Tactics

The general renewal strategy is to rehabilitate or replace assets when justified by:

- Asset performance.
- Renewal of an asset where it fails to meet the required level of service.

Non-performing assets are identified by the monitoring of asset reliability, capacity and efficiency during planned maintenance inspections and operational activity. Indicators of non-performing assets include:

- Repeated asset failure.
- Repeated reticulation leaks.
- Ineffective and/or uneconomic operation.
- Inefficient energy consumption.
- Economics – when it is no longer economic to continue repairing the asset (i.e. the annual cost of repairs exceeds the annualised cost of its renewal).
- Risk – risk of failure and associated environmental, public health, financial and social impact justifies proactive action.

Council will proactively renew water, stormwater and wastewater pipes in conjunction with other infrastructure projects in the roading corridor, to reduce the cost of trenching and reinstatement and minimise social and business disruption, providing the asset has been identified as being near the end of its physical life and/or not performing to the required standard.

Council will also take the opportunity when renewing assets to achieve increased environmental standards, public health and provide greater asset resilience, where this can be achieved as an augmentation to the asset renewal programme.

Renewal budgets are forecast by asset managers based on life and condition/performance. RAMM (road assessment and maintenance management) is used to generate renewal forecasts for road assets.

### 6.1.5 Data Sources

The component data entered in Assetic (Council's utilities and property asset management software) is the data source for the valuation of three waters assets.

RAMM is the data source for Roading assets.

The confidence in the asset data used as a basis for the financial forecasts has been assessed using the grading system from the International Infrastructure Management Manual International Edition, 2011, as reproduced below.

**Table 9:** Data Accuracy Grading System

Confidence Grade	Description	Accuracy
1	Accurate	100%
2	Minor Inaccuracies	± 5%
3	50% estimated	± 20%
4	Significant data estimation	± 30%
5	All data estimated	± 40%

The confidence gradings for asset data are included in Appendix B.

### 6.1.6 Asset Lives

Assumptions about asset lives are contained in the property, plant and equipment section of the 'Statement of Accounting Policies' in the Long Term Plan. Whereas the table shows a range of values, in reality each asset and asset component within the asset database has a theoretical useful life. The assigned value is based on the asset type, the materials it is constructed from, the size of the asset (particularly pipes), the use of the asset (particularly bridges, roads and pipes) and the environment in which the asset is located.

Assigned useful lives are based on industry guidelines and the knowledge of the asset manager. They are reviewed annually.

## 6.2 Water Supplies

Council aims to provide a reliable, compliant and cost-effective supply of safe, potable water in reticulated communities.

### 6.2.1 Overview of Water Assets

Ongoing treatment plant upgrades and improvements have improved the water quality and reduced risk in many of our schemes with several more projects currently being both planned and delivered. Significant investment in water storage and resilience improvements have been made within the past few years in Dannevirke and will continue into the near future in Woodville and Pahiatua. This reduces Council's risk of water shortages and outages due to seasonal water source restrictions.

The residential water schemes of the district are outlined in Table 10.

**Table 10:** Taranua District Council Water Supplies

Water Supply Networks as at 30 June 2017	Reticulation		Treatment		
	Length of Pipe	Number of Metered Connections	Number of Unmetered Connections	Average Daily Flow	Storage Capacity
Dannevirke	92.0km	315	2467	3875m <sup>3</sup>	25 days
Pahiatua	35.5km	60	1154	1149m <sup>3</sup>	2 days
Woodville	36.7km	191	654	1000m <sup>3</sup>	3.5 days
Eketahuna	21.2km	26	291	419m <sup>3</sup>	2 days
Norsewood	4.5km	74	72	80m <sup>3</sup>	2 days
Akitio	2.0km	53	56		4.5 days
Pongaroa	5.5km	-	63	50m <sup>3</sup>	2 days
<b>Total</b>	<b>197.4km</b>	<b>594</b>	<b>4757</b>		

Water Supply Networks as at June 2017	Asset Register as at June 2017		
	Gross Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Reticulation	63,377,082	34,281,613	529,596
Treatment Plants and Storage	14,280,399	9,222,404	454,976
<b>Total</b>	<b>77,657,481</b>	<b>43,504,017</b>	<b>984,572</b>



All schemes consist of three main categories of assets:

**The water intakes:** Water sources in the Tararua are a mix of bores and open watercourses (streams/rivers). Where the source is a bore, assets consist of the bore and pump, and pump shed. Where the source is an open watercourse, assets are typically an intake structure of some kind with telemetry to control the intake volume. Water intakes are subject to resource consent conditions.

**Water treatment and storage:** Water moves to the treatment and storage facilities through a pipe network controlled by valves either through gravity or via pumping. Treatment facilities vary from scheme to scheme, but typically consist of a filtering process and a chlorination process. The process may also include physical disinfection – uv. Water is stored both as untreated and treated water.

**Water reticulation:** Treated water is delivered to the consumer through a network of pipes. The flow of water is controlled through a series of valves and may include some pumping. Water is accessed via individual property connections to mains and sub-mains, and through hydrants. Council is able to monitor water flows and usage through meters located throughout the network and at extraordinary user connections.

## 6.2.2 Key Issues

The key issues that have been identified for Council's water supplies include:

- Improve the quality and continuity of water supplies.
- Provide greater water storage capacity to improve scheme resilience and meet fire supply storage requirements.
- Reduce water loss and manage water demand to meet reasonable use provisions in the One Plan.
- Improve the collection of data associated with water sources/intakes, storage and pumping and treatment plants.
- Better understand system deficiencies through hydraulic analysis.
- Identify critical assets and programme routine maintenance activities to reduce the risk of failure and improve resilience of the network.
- Understand risks to water quality safety, reliability, and resilience including backflow, and the impact of extraordinary users on system performance.
- Ensure the networks meet New Zealand Fire Service Firefighting standards.
- Reduce the extent of customers impacted by planned or unplanned shutdowns through installation of additional isolation valves.

- Understand asset life cycle performance as a driver for continued investment in the renewal water supply infrastructure.

## 6.2.3 Level of Service Assumptions

- The future costs of providing desired levels of service and funding are based on the current Drinking Water Standards. No significant changes to the standards will occur during the period of the plan.
- Government subsidies will not be available for further network upgrades.
- Levels of service will be progressively increased in those schemes where the current level of service falls below the agreed targets in the Long Term Plan. All other level of service will remain unchanged.

None of the above assumptions are rated as having a high degree of uncertainty. While the New Zealand Drinking Water Standards are unlikely to change, monitoring systems and frequency is likely to impact on operating costs as a result of the Havelock North water inquiry.

Council intends to deliver the following levels of service to communities connected to a Council owned residential water scheme. These are no different to the levels of service that are currently being delivered:

- Council provides a reliable water supply.
- Council provides water at a consistent volume.
- Water looks and tastes good.
- Interruptions to supply are minimised.
- Water provided is safe to drink.
- Council is responsive to issues relating to water supplies.
- Wastage of water is minimised.

In order to achieve the above service standards, Council intends to:

- Progressively increase the safety of water supplied to communities through continuation of the programme of water supply and treatment upgrades. Approved water safety plans for each scheme will be in place in full compliance with the Health (Drinking Water) Amendment Act 2007.
- Ensure that all towns are provided with a specified minimum flow rate at a nominated pressure that is sufficient to meet residential and firefighting needs. This may be achieved by providing and managing storage, and upgrading system deficiencies to remove constraints to flow.
- Implement an appropriate programme to quantify water losses from each system, and then identify programmes for reducing water losses.
- Ensure that extraordinary usage is managed to minimise detrimental effects on water quality and quantity.

- Maintain and renew assets in accordance with good asset management practice
- Identify and implement a programme to improve network resilience with development of network pressure zones and installation of isolation valves.

## 6.2.4 Demand Assumptions

- Council will continue to supply reticulated water to the six towns that currently have a residential water scheme.
- Future demand for water will be similar to current trends.
- Conditions of existing resource consents held by Council will not be altered significantly.
- There will be no large extensions to the water network needed to meet growth during the 30-year period .
- No new large wet industries will connect to Council water supplies – it is forecast that no new large wet industries will enter the district, and that if they did, they would source their own water, in the same way as existing wet industries – Fonterra, Tui Breweries, Oringi, etc.
- Growth in connections will be limited to infill developments and small subdivisions.
- The existing reticulation and supplies will have sufficient surplus capacity to meet forecast demand, throughout the year, once storage issues have been addressed.
- Users will continue to be responsible for the management and funding of their connection to the Council main.

None of the above assumptions are rated as having a high degree of uncertainty.



## 6.2.5 Asset Condition

The condition of water assets is now being assessed by physical inspection where assets are easy to access, such as treatment plants and pumps, and hydrants. Where assets are below ground, such as pipes and valves, inspection is part of physical renewal work, asset failures and when addressing asset performance issues. Figure 9 provides an overview of the condition of assets within each scheme using the 1–5 condition grading system outlined in Section 6.1.2. Condition assessment in this chart is reliant solely on asset age and material type alone, and confidence in this data is considered low. Condition rating processes have improved and confidence in the data will increase over the next few years.

Figure 9: Condition of Water Scheme Reticulation

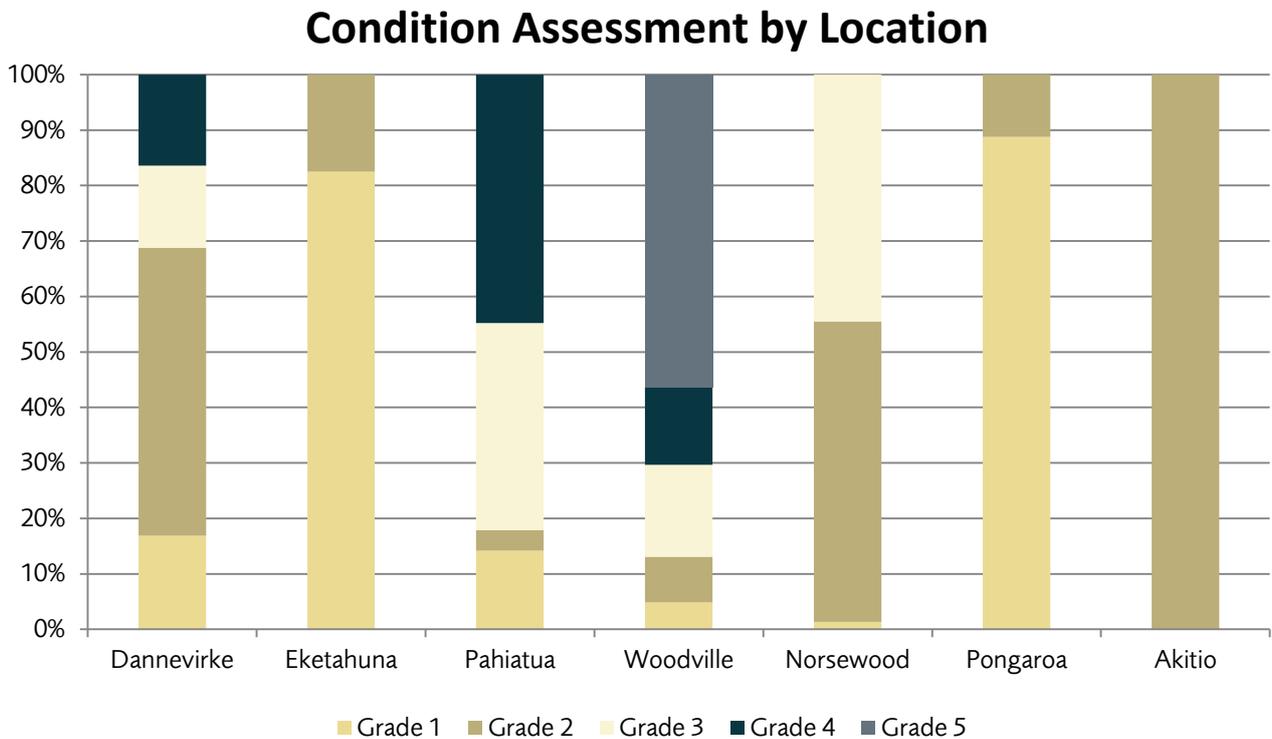
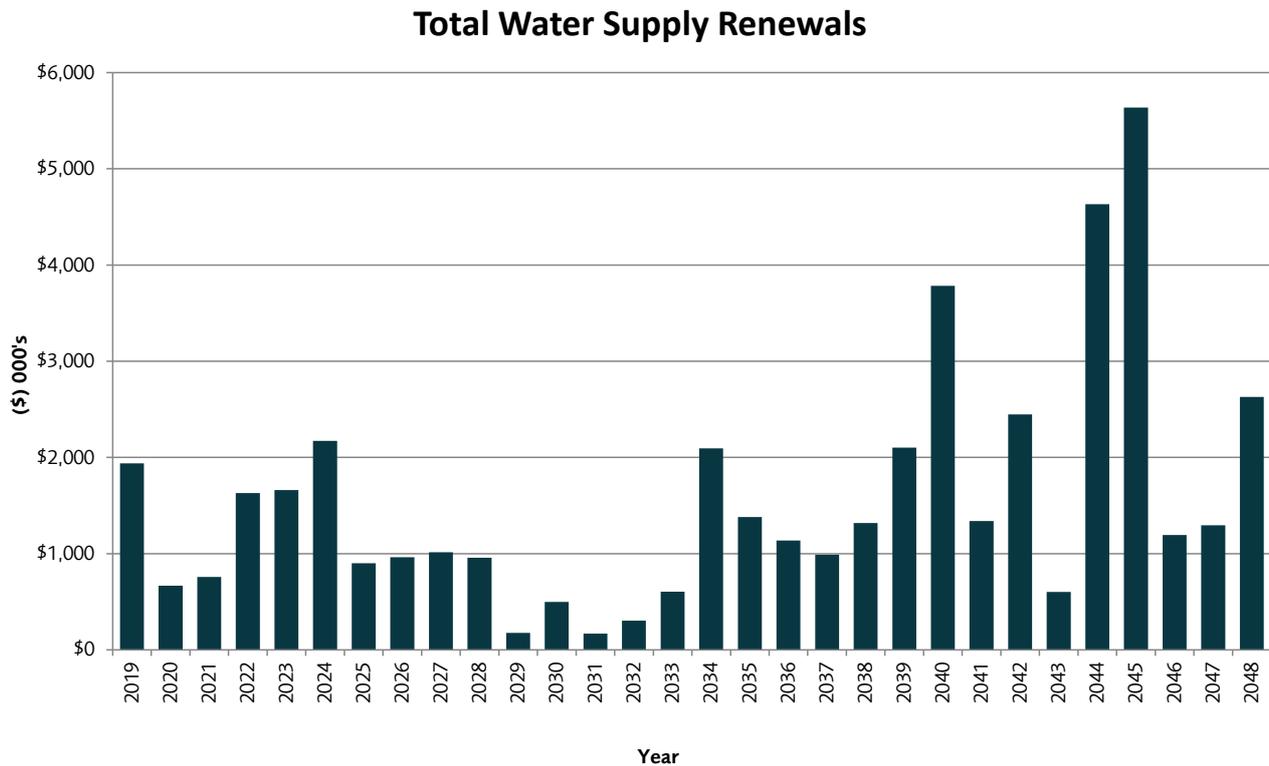


Figure 10 shows the renewal forecast for pipe schemes based on Assetic data. The installation date is the major factor contributing to the peaks shown in the graph, and it is likely that these renewals will occur over a longer timeframe.

Figure 10: Total Water Supply Renewals 2018-2048



For water assets, the condition grading of the schemes is largely based on age and type of material. Data quantity and quality for reticulation assets is being progressively improved to inform better renewal decision-making and is now considered to be average across the network with some schemes being better than others. The poor condition rating for Woodville is largely driven by a lack of accurate age information of assets in the database. Currently there are few issues with failing water pipes in Woodville. As more accurate condition rating data is added the proportion of Woodville water assets rated as grade 5 is expected to reduce. Recent improvements to treatment facilities means that many schemes have treatment assets in very good to excellent condition.

The water data set is now in a new software programme (Assetic). This gives Tararua District Council greater ability to forecast the timing of renewals based on condition, age and performance, and the relative importance of these.

The data improvement project is ongoing to improve this confidence statement. Data for intake/sources, storage, pump stations and treatment are held at very high level only. The focus going forward will be on data collection for non-reticulation assets, and improving the population of attribute data associated with piped networks.

The quality standards and monitoring of water sources, storage and usage is set through legislation, national regulations, or Regional Council consents. Council has little control on these minimum standards.



Table 11: Due dates for Regulatory Consents and Plans

Water network	Resource Consent Expiry	Water Safety Plans (Revisions Due)	Catchment Risk Assessments
Dannevirke	expires July 2026	August 2018	due September 2018
Pahiatua river source	expires January 2022	1 January 2022	currently being prepared
Pahiatua Bore	expires 2029		
Eketahuna	expires November 2019	1 January 2021	due November 2021
Woodville	expires May 2021	January 2022	due January 2022
Norsewood	None	1 January 2021	currently being prepared
Akitio	None		currently being prepared
Pongaroa			due February 2020

As a result of recent water contaminations, it is likely that some of these standards will be increased. The timing of resource consents, Water Safety Plans and Catchment Risk Assessments for Drinking Water Supplies therefore have a direct impact on operating costs and upgrade projects.

Council has no expectation as to the outcomes of consent renewals for water takes. As such no upgrade projects linked to these consent renewals have been budgeted for. There is a risk that standards will increase and the water takes will be reduced, forcing Council to seek alternative water supplies (bores, dams).

### 6.2.6 Significant Decisions relating to Water Supply

Council has made significant progress on upgrading urban water networks, including the source, storage and treatment of water. Mandatory water quality standards are a big driver of these investments. Although potable, the Ministry of Health attached an (E) grade to the majority of Council's supplies. This is largely due to the open water sources Council uses to abstract water and the low levels of treatment in place. To obtain a higher grade would involve adding further barriers to possible health risks that may occur, if not detected and correctly treated. The Health (Drinking Water) Amendment Act (2007) requires all water suppliers to take practicable steps to meet the 2005 Drinking Water Standards by various dates – depending on the size of the community supplied. Council is part way through a programme to address health risks and at the same time to address level of service issues such as taste and odour.

The following are the significant decisions relating to Water Supplies:

#### **Norsewood Water**

This network design cannot comply with the mandatory New Zealand Drinking Water Standards as the roof fed water is not treated so could be contaminated from animal droppings. Relying on the Council supply would require another resource consent and additional bores, as well as an upgrade to the treatment plant. Council is intending to build a pipeline from Dannevirke for treated water to be supplied to Norsewood. Requires detailed business case to be completed in Year 2 to prove lower whole of life costs. Project cost \$945,000 in the Long Term Plan starting Year 3 (2020/21) and completion in Year 7.

#### **Dannevirke Treatment Plant Upgrade**

To meet the mandatory standards Council must add further barriers to possible health risks that may occur. This will ensure the Dannevirke water treatment plant can meet the required log credits from the Ministry of Health compliance standards so the Dannevirke drinking water meets the mandatory New Zealand Drinking Water Standards. Financial provision of \$800,000 in Year 3 of the Long Term Plan (2018/19) based on an upgrade to the existing treatment plant.

#### **Reticulation water leakage strategy**

Council needs to implement an appropriate programme to quantify water losses from each system, and then identify programmes for reducing water losses. Project cost is \$850,000 starting in year 1 and continuing for four years. This will allow Council to accurately measure water loss

and target renewals to address major leaks. Council has a mandatory responsibility under the Local Government Act 2002 to report the level of water loss across the public drinking water supply networks.

### **Network Utility Extensions**

Council is proposing to budget for a very modest extension of 10 sections annually of the utility networks (Water, Wastewater, and Stormwater) in Dannevirke, Pahiatua and Woodville to have more land available for developers and existing residential sections. This is to ensure Council is not holding back new houses/businesses, to support construction businesses, and to encourage population growth in the district. Up until now Council has responded to connection requests, where possible and affordable, to ad-hoc requests from property owners on the edge of the network. These occasional and sporadic extensions are not always in the most efficient location for managing demand.

The Water part of this overall budget is \$70,000 a year starting in Year 2 and continuing until Year 20.



## 6.3 Wastewater Schemes

Council aims to provide compliant network systems for the urban areas with a reliable wastewater system that protects people's health and our environment.

### 6.3.1 Overview of Wastewater Assets

The residential wastewater schemes of the district are outlined in Table 12.

All schemes consist of three main categories of assets:

**Wastewater reticulation:** Untreated wastewater is discharged by the consumer through a network of pipes. The flow of wastewater is controlled through a series of valves and may include some pumping. Wastewater makes its way from the property connection into mains and sub-mains, and through to the treatment plant. Council is able to monitor wastewater flows through meters located throughout the network and at the treatment plant.

**Wastewater treatment:** Wastewater moves into the wastewater treatment plant through a screen which removes solid particles. The wastewater then moves through a series of ponds, where biological processes occur to reduce the level of nutrients. It is in these ponds that particulate matter that has not broken down settles to the bottom of the pond. The wastewater then moves through a treatment plant. Treatment facilities vary from scheme to scheme, but typically consist of a filtering process and a chemical treatment process. The process may also include physical disinfection (uv).

**Treated wastewater discharges:** Treated wastewater is discharged into open water courses under the provisions of a resource consent. The consent conditions vary from scheme to scheme but include conditions for water quality – nutrient levels and volume. Discharges structures have been developed and located to facilitate as much mixing with the receiving environment as is possible.

Table 12: Tararua District Council Wastewater Schemes

Location of Network	Property Connections	Pipe length (km)	Pump stations number	Treatment Plant
Dannevirke	2,437	38.5	6	3 ponds 9.2 ha
Pahiatua	1,134	19.2	3	3 ponds 4.1 ha
Woodville	690	15.5	-	2 ponds 2.9 ha
Eketahuna	227	8.5	1	2 ponds 0.4 ha
Norsewood	66	3.5	2	2 ponds 0.06 ha
Pongaroa	67	3.7	2	2 ponds 0.32 ha
Ormondville	38	3.1	3	2 ponds 0.22 ha
<b>Total Plant &amp; Networks</b>	<b>4,659</b>	<b>92.0</b>	<b>17</b>	<b>16 ponds</b>

Wastewater Networks as at June 2017	Asset Register as at June 2017		
	Gross Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Reticulation	37,899,034	16,220,000	420,450
Treatment Plants and Storage	20,029,628	16,057,603	425,113
<b>Total</b>	<b>57,928,662</b>	<b>32,277,603</b>	<b>845,563</b>

### 6.3.2 Key Issues

The key issues that have been identified for Council's wastewater schemes include:

- Discharge effluent quality – to meet the requirements of the Manawatu River Leader's Accord Action Plan, particularly with regard to higher nutrient discharge standards.
- Resource consents have expired and are in the renewal process. Some are due to expire and will be required to go through the consenting process.
- Affordability – more demanding treatment requirements will over time impact on communities' ability to pay for wastewater,
- Infiltration into wastewater pipes leading to greater volumes of wastewater arriving at the plants for treatment than is necessary.
- Continued investment in the renewal of pipes and other wastewater supply infrastructure.
- Network failure – Maintaining the quality and continuity of sewerage systems, which are particularly susceptible to severe damage in seismic events and inundation in high rainfall events.

### 6.3.3 Level of Service Assumptions

- Existing and new resource consent requirements will necessitate upgrades of the seven schemes.
- The future costs of providing desired levels of service and funding are based on the provisions of the current One Plan. No significant changes to this plan will occur during the period of the strategy.
- Society will continue to have an increasing focus on environmental protection (waterways).
- Levels of service will be progressively increased in those schemes where the current level of service falls below the agreed targets in the Long Term Plan. All other level of service will remain unchanged.

None of the above assumptions are rated as having a high degree of uncertainty.

Council intends to deliver the following levels of service to communities connected to a Council-owned residential wastewater scheme (these are no different to the levels of service that are currently being delivered):

- A reliable wastewater service.
- Risks to public health and our natural environment are minimised.
- Council responds quickly to customer complaints.
- Council services meet customer expectations.

In order to achieve the above service standards, Council intends to increase the following levels of service:

#### Discharge Water Quality

Council will progressively increase the cleanliness and safety of water in the streams and rivers into which treated wastewater is discharged through continuing the programme of wastewater treatment upgrades it began in 2012. Council intends for all schemes to have a resource consent in place (Eketahuna will be discharged through the Pahiatua discharge consent) and be operating in accordance with or exceeding consent conditions within three years. Schemes that have expiring consents have budgets allocated for both the consent renewal and upgrade projects.

#### A reliable wastewater scheme

It is Council's intention to continue its CCTV programme to identify pipe failures and pipe blockages and prioritise the renewal and servicing of these pipes.

#### Infiltration

Council will continue, and expand, its programme to address infiltration and reduce the volume of water entering the wastewater network from leaking pipes and stormwater connections. This has been identified as a separate project with additional funding called the Infiltration and Inflow Strategy Implementation, and is focused on Years 2 and 3 of the Long Term Plan. This will lead to increased resilience of the wastewater scheme during heavy rainfall events and a reduction in the volume of wastewater entering the treatment plants.

Council does not intend to decrease any levels of service.



Figure 11: Condition of Wastewater Schemes

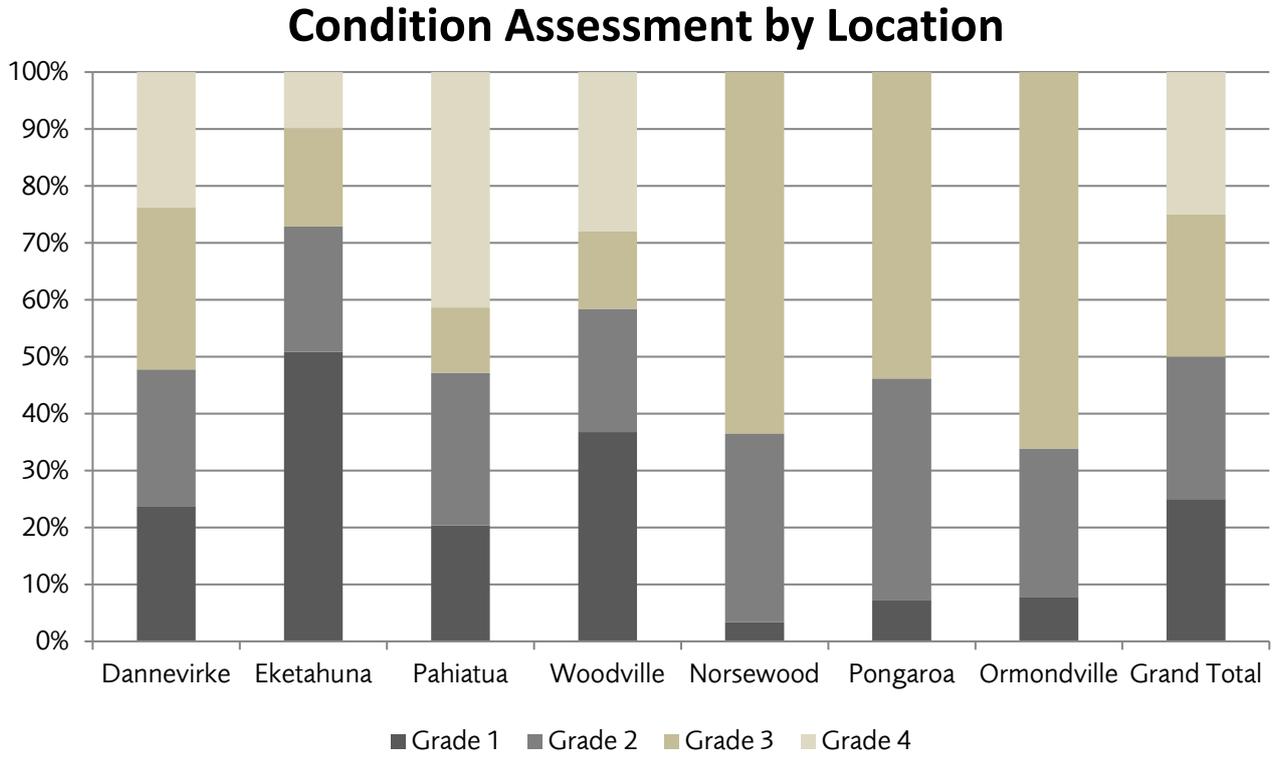
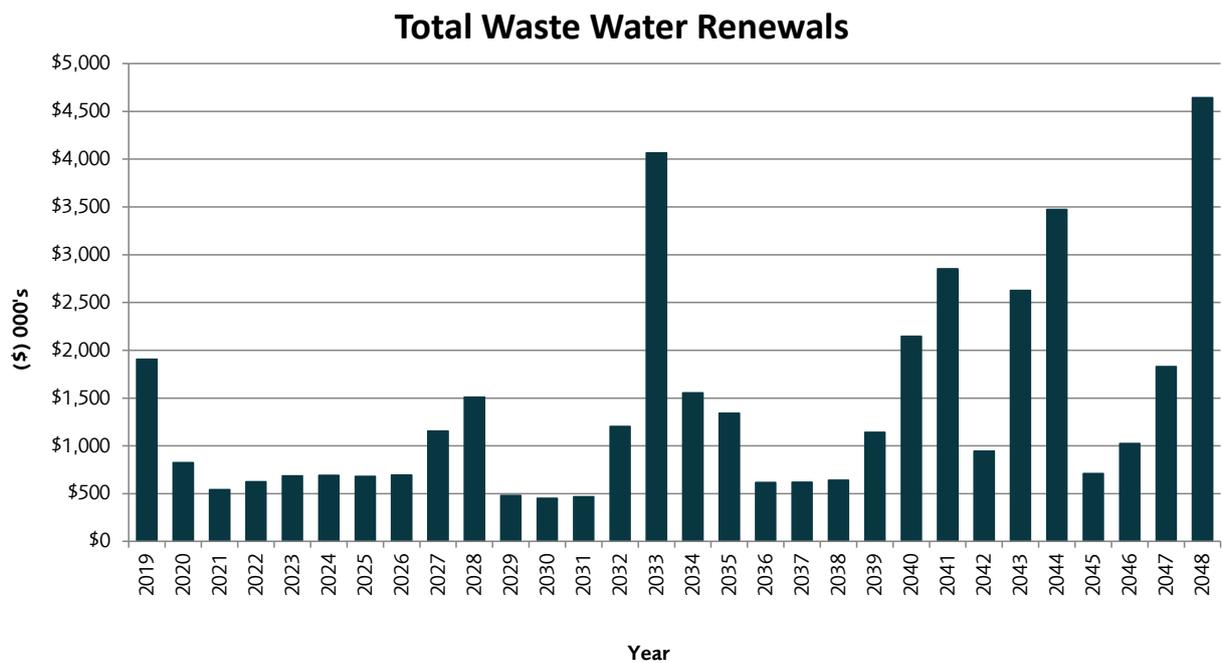


Figure 12: Total Wastewater Renewals 2018-2048



### 6.3.4 Demand Assumptions

- Council will continue to supply reticulated wastewater schemes to the seven towns that currently have a residential wastewater scheme.
- Over the next thirty years, the populations of the Tararua urban towns are forecast to increase modestly but remain below the level they were in the 1990's when the schemes were last extended. There will be no large extensions to the wastewater network needed to meet growth during the 30-year period.
- Conditions of existing resource consents held by Council are likely to raise the quality standards required. Council's existing treatment plants will be able to comply with these increased conditions through identified upgrades and the provision of wetlands. However, the cost per user of maintaining current systems to meet increased environmental requirements will increase.
- No new wet industries will enter the district and, if they do, they will make some provision for wastewater treatment on-site.
- Growth in connections will be limited to infill developments and small subdivisions.
- Changes to Council policy on trade waste charges will not impact on demand.
- The existing reticulation and treatment plants will have sufficient surplus capacity to meet forecast demand and discharge consent conditions, throughout the year, once infiltration issues have been addressed.
- Users will continue to be responsible for the management and funding of their connection to the Council main.

The only assumption rated as having a high degree of uncertainty is the resource consent conditions. It is possible that new quality standards imposed by the Regional Council and/or national legislation would result in new treatment plants or land based discharges being required. This would result in a new programme of investment upgrades that could test the affordability limits for properties connected to the networks.

### 6.3.5 Asset Condition

The condition of wastewater assets is assessed by physical inspection – where assets are easy to access, such as treatment plants, ponds and pumps, and through the use of the cctv camera where assets are below ground such as pipes. Inspection occurs as part of physical renewal work, asset failures and when addressing performance issues. Figure 11 provides an overview of the condition of assets within each scheme using the 1–5 condition grading system outlined in section 6.1.2.

For wastewater assets, the condition grading of the schemes is largely based on age and type of material. The cctv camera has allowed Council to gain a good understanding of asset condition and performance of the reticulation. This data is now being used to programme pipe renewals. When Council has a complete data set, this information will be used to reassess the overall condition of each scheme and forecast the timing of renewals.



## Renewal Profile

Figure 12 (previous page) shows the renewal forecast for wastewater schemes based on Assetic data. The large peak in 2033 represents the replacement of the microfiltration plant at Dannevirke. In reality this plant will not be replaced in totality. Further work on the asset data is needed to componentise assets to get better definition of renewal needs.

The wastewater data set is now in Assetic, a programme that gives Council greater ability to forecast the timing of renewals based on condition, age and performance, and the relative importance of these.

Council renewals also include the resource consents for wastewater discharge. The following is the current situation with these consents:

- Dannevirke (expires December 2027).
- Pahiatua (expired June 2005) – new application lodged.
- Eketahuna (expired Oct 2005) – new application lodged.
- Norsewood (June 2018) – new application to be lodged early 2018.
- Woodville (expired March 2011) – application lodged.
- Pongaroa (expires April 2019).
- Ormondville (expires July 2026).

Council is planning on the consent being renewed for 15 years once each consent process is completed.

Council has assumed that each renewal will require an upgrade as consent conditions increase the quality standard required to be met. There is a risk that the consents will be granted for less time, with some other consents in the region recently granted for 10 years. This would increase depreciation expense.

### 6.3.6 Significant Decisions Relating to Wastewater

Council has been working on the upgrade to our urban wastewater networks, driven by compliance with resource consent conditions set by Horizons Regional Council. Meeting our obligations to our partners under the Manawatu River Accord is central to the investment programme. A number of schemes require resource consent renewals for discharge consents.

Council has assumed that schemes subject to consent renewals will not require additional major upgrades to meet the conditions of new consent, other than those already identified or allowed for. The impact of nitrogen in many waterways has become more pronounced in recent years due to the cumulative effects of urban discharges and rural farming activities. Treatment systems may need to be modified to limit nitrogen levels in discharges. Wetlands are now being promoted as one way of mitigating iwi concerns with regard to the effects of discharges on mauri.

Consenting processes are becoming very time consuming and expensive, with consents often being granted for relatively short terms (less than 10 years). The difficulties and costs associated with consenting processes means that innovative approaches are becoming more attractive such as inter-connection of wastewater schemes. These approaches may enable focussed investment by achieving economies of scale at one or more centralised locations which will reduce the number of consents required and may lead to significant water quality improvements.

Resource Consents for Eketahuna and Pahiatua have been to hearings and Council is awaiting the panel's decision. Consents are now granted under the One Plan which sets the standards for discharges to water and air within the jurisdiction of Horizons Regional Council. Council has assumed that new consents issued will have a life of 15 years. There is considerable risk that consents will have a shorter life than this.

Capital budgets have been set in anticipation of upgrades being required where new consents are being granted.

The decision: "utility network extension" is covered under Water Schemes. The wastewater share of this project is \$100,000 a year starting in year 2 and ceasing in year 20.

### Eketahuna to Pahiatua Pipeline

Council is currently part way through the process of renewing the discharge consent for the Eketahuna wastewater network. The process is resulting in the need for costly upgrades for the small number of properties connected (< 200). Constructing a pipeline from Eketahuna to Pahiatua will eliminate the need for this discharge resource consent and significant treatment upgrade requirements. This will reduce whole of life costs, including discharge consent renewals every 15 years. Eketahuna discharge volumes are a small percentage of Pahiatua flows. The alternative option is to continue with Eketahuna treatment plant upgrades and discharge consent process. Council has budgeted \$3.5 million in Years 1–3. This project will be consulted on in the 2018 Long Term Plan and subject to final business case outcomes.

### Wetland and Treatment Plant Upgrades

A number of networks are now budgeted to have wetlands constructed as part of the treatment and discharge process upgrades (Pahiatua, Ormondville, Pongaroa, and Woodville). Council has little to no choice on whether to carry out upgrades. As part of renewing discharge consents, each discharge must meet the conditions set by Horizons through the One Plan rules. Wetland developments are planned for Pahiatua, Pongaroa (treatment plant and wetland), Ormondville (treatment plant and wetland), and Woodville. These wetlands will provide additional filtration and meet a number of iwi preferences that will help to meet discharge consent requirements as set by Horizons Regional Council. Total budgeted cost is \$1.25 million over 10 years.

## Land Irrigation

Council is planning to dispose of treated wastewater to land as part of its commitment to cleaning up our rivers. The discharge budgeted for in the next 10 years is for the Dannevirke discharge. Investigations to date have not found any suitable land near to the Dannevirke treatment plant due to climate, soil types, current land usage, and industry restrictions on grazing treated land. A budget of \$1.5 million has been included in the 10 year plan.

## Wastewater Laterals Ownership

The responsibility for maintenance of these laterals currently rests with the property owners from the building, across the footpath and road to the mains. The estimated cost to replace a lateral, should it be required, is estimated between \$2,000–\$20,000 and varies significantly due to location and depth. Laterals across the district are ageing, and Council anticipates maintenance and renewal requirements will increase significantly over the coming decades. This is likely to place financial pressure on a significant number of ratepayers, particularly those on fixed incomes. This policy decision will be progressed as a staged process. Before making a final decision, Council will develop a business case to assess ownership, responsibilities, and financial impacts on the Council.

## 6.4 Stormwater

Council aims to provide protection of the community's assets from flooding by providing systems that enable stormwater to dissipate as quickly as practicable.

### 6.4.1 Overview of Stormwater Assets

The urban stormwater schemes of the district are outlined in Table 13.

Table 13: Taranaki District Council Stormwater Schemes

Asset Type	Gross Replacement Cost (\$)	Depreciated Replacement Cost (\$)
Culverts and Pipes	16,257,957	10,013,166
Inlet / outlet structures	107,878	78,266
Manholes	1,254,246	882,532
Open Channels	452,644	232,358
<b>Grand Total</b>	<b>18,072,725</b>	<b>11,206,322</b>

The network assets consist of:

- 33.2km of pipes;
- 27.9km of open channels; and
- 314 manholes and 14 inlet/outlet structures.

Also part of the system but managed under Council's Transportation Activity Management Plan:

- Approximately 886 sumps made of steel reinforced concrete with metal grates.
- Approximately 225km of kerb and channel draining to the stormwater networks.

### 6.4.2 Key Issues

The key issues that have been identified for Council's stormwater schemes include:

- Localised surface flooding during heavy rainfall events.
- High volumes of water entering the townships from surrounding rural areas.
- The high cost of maintaining open water courses.
- Potential public health and safety issues associated with open drains in urban areas.
- Lack of understanding of hydraulic performance of the system. Further modelling is required to understand where the networks need to be upgraded to meet service standards.
- Inconsistent standards for the design of parts of Council's stormwater networks.



Figure 13: Condition of Stormwater Schemes

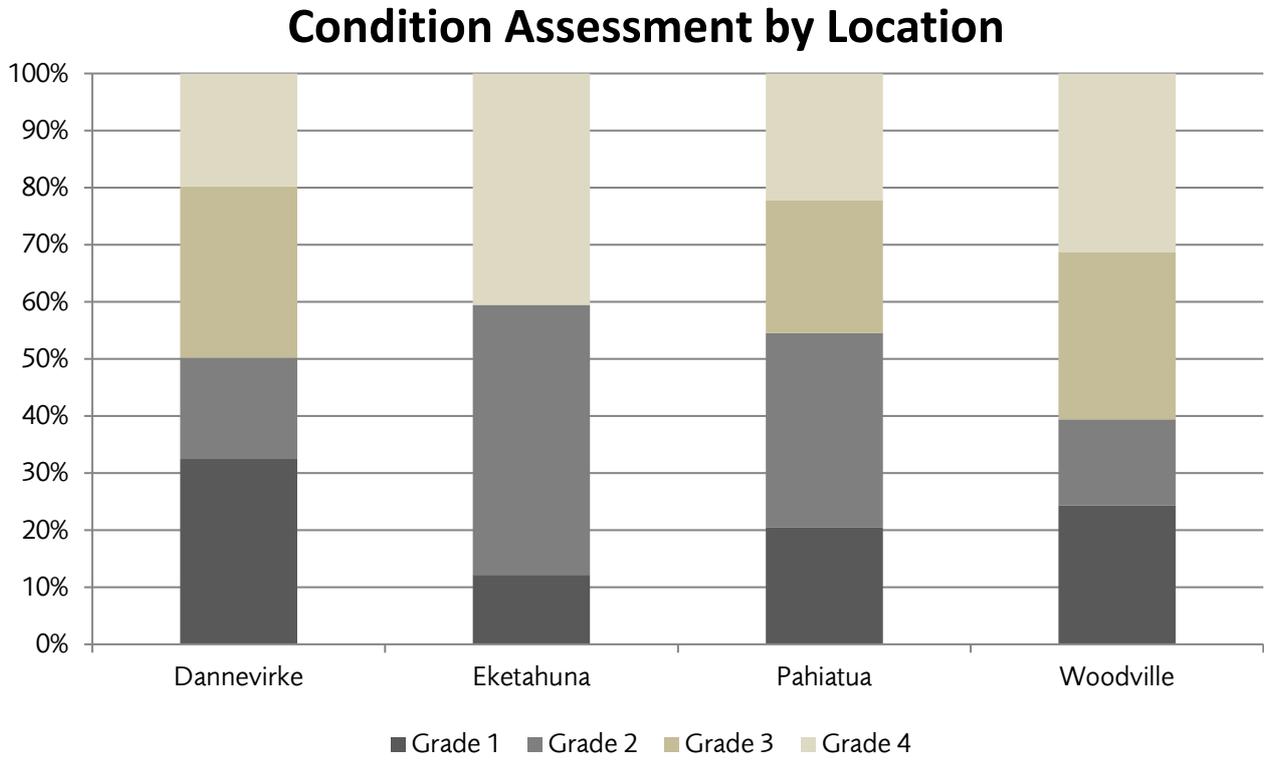
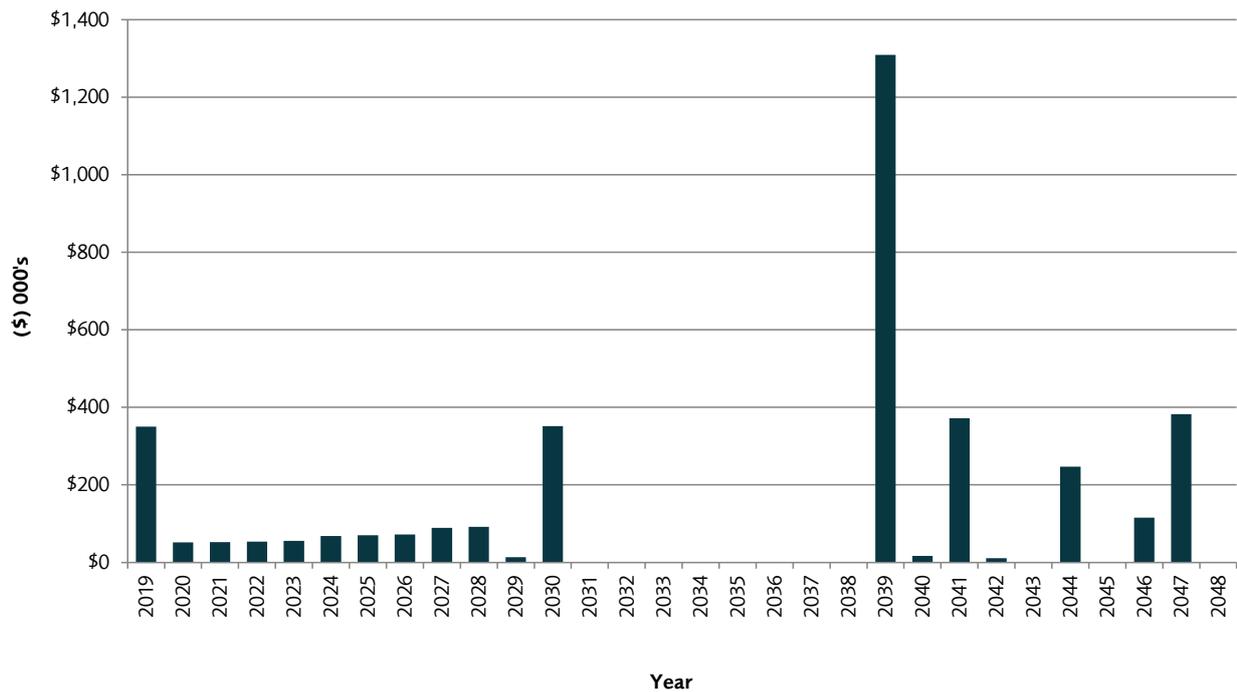


Figure 14: Total Stormwater Renewals 2018-2048



- The potential impact of changing demands due to climate change.
- Ability to fund investments in flood protection.

In 2016, the Council started a project to create a digital stormwater model of the network. This allows Council to model the anticipated outcomes from investment in stormwater infrastructure taking into consideration changing weather patterns. This will help ensure we make the right decisions that produce the most benefit for the community and provide value for money solutions.

Research indicates that there will be an increase in the quantity and severity of weather events that we currently experience. Storms of increased intensity could result in flood of habitable floor levels over time. The community will need to consider the effect and increased risk of flooding as a result of these events, against the costs of trying to solve these issues. Discharge quality of stormwater is becoming an increasingly challenging activity for small Council's with indications that more emphasis will be put on the quality of stormwater discharges, thus detracting from potential funding for flood protection projects.

### 6.4.3 Level of Service Assumptions

- The future costs of providing desired levels of service and funding are based on the current One Plan. No significant changes to this plan will occur during the period of the strategy.
- Levels of service will be progressively increased in those schemes where the current level of service falls below the agreed targets in the Long Term Plan. All other levels of service will remain unchanged.

None of the above assumptions are rated as having a high degree of uncertainty. There is some uncertainty as to whether Horizons will impose discharge consents on urban stormwater schemes in the future. This would impact on the operating costs of the schemes by potentially requiring treatment/filtration of discharges.

Council intends to deliver the following levels of service to communities connected to an urban stormwater scheme. These now reflect that Council does not protect all property from ponding with some commercial property and some residential outbuildings impacted after heavy rain:

- Affordable protection for urban community assets, commercial properties and habitable dwellings from flood events.
- A reliable stormwater network.
- Council ensures quality and efficiency of the stormwater network.

In order to achieve the above service standards, Council intends to increase the following levels of service:

#### **Surface flooding and resilience of schemes**

Council intends to reduce the incidence of surface flooding events and incidences of residential and business inundation by stormwater during heavy rainfall. Modelling techniques will be used to assess stormwater distribution throughout the townships, identifying the areas with stormwater issues that can be addressed by modest upgrades. Council's response to this information will be a series of targeted upgrade projects within the development budgets available (\$1.5 million over the first 10 years). Council expects that investment will increase in Years 11–30.

Council does not intend to decrease any levels of service.

### 6.4.4 Demand Assumptions

- Council will continue to manage stormwater in the four towns that currently have an urban stormwater scheme.
- Annual stormwater volumes will remain constant over the next 30 years for the four networks.
- Eliminating infiltration into the sewerage reticulation may, in turn, create a greater stormwater discharge into the network.
- Any new stormwater diversion projects would create new point discharges that would require resource consent from the Regional Council.
- The current levels of service achieved will continue (design return events).
- Ensuring the waterways are clear at all times from rubbish, debris and weed growth so the system runs at full capacity with no obstruction during heavy rainfall.
- There will be increased incidences of heavy stormwater events due to climate change.
- No new major legislation on stormwater will be enacted.
- Growth in connections will be limited to infill developments and small subdivisions.
- Users will continue to be responsible for the management and funding of their connection to the stormwater outlet in the Council kerb and channel.

None of the above assumptions are rated as having a high degree of uncertainty.

### 6.4.5 Asset Condition

The condition of stormwater assets is assessed by physical inspection where assets are easy to access, such as sumps, grates, and through the use of the CCTV camera where assets are below ground such as pipes. Inspection also occurs as part of physical renewal work, asset failures and when addressing performance issues. Figure 13 provides an overview of the condition of assets within each scheme using the 1–5 condition grading system outlined in Section 6.1.2.

For stormwater assets, the condition grading of the schemes is largely based on age and type of material. The CCTV camera has allowed Council to gain a good understanding of pipe condition



and performance. This data is now being used to programme pipe renewals. When Council has a complete data set, this information will be used to reassess the over-all condition of each scheme and forecast the timing of renewals.

Figure 14 provides an overview of the current renewal profile for stormwater assets based on Assetic data. The large peak in 2039 is as a result of assumed installation date, rather than known condition. The data will be reviewed as part of Council's asset management improvement programme.

### 6.4.6 Significant Decisions Relating to Stormwater

#### Upgrade Programme

Council has for many years planned on some large projects in Dannevirke and Pahiatua to upgrade the stormwater network. The new model indicates that the benefits from these large investments are limited, and that Council would need to invest many more millions of dollars in order to remove the existing ponding issues. This would have a significant impact on urban rates. Currently there are no issues with stormwater entering houses, but ponding does occur in backyards, streets and some commercial areas.

Council has taken the approach of budgeting for a series of smaller upgrades to make incremental improvements, rather than a few large and expensive upgrades. This is at \$150,000 a year over the 10 years, \$1.5 million in total. These projects will be those giving the best outcomes from the model with a focus on reducing the risk of flooding of residential houses. This level of funding will not be sufficient to address amenity or aesthetic flooding issues. Significant stormwater upgrades including piping of open drains or installing new pipelines would be very limited with the proposed level of funding.

Investment on these upgrades will continue from Year 11 to Year 30 at a slightly higher level. This ongoing investment reflects the expected increasing impacts from climate change, as well as the number of ponding issues currently known.

## 6.5 Transportation

Council aims to provide a safe and efficient Roothing network that meets the short and long term needs of the district and is operated and enhanced in a sustainable manner at the lowest overall whole of life cost.

### 6.5.1 Overview of Transportation Assets

The transportation assets of the district consist of:

- 1,185.5km of sealed roads
- 772.5km of unsealed roads
- 111.4kms of footpaths
- 10,556 road signs
- 391 bridges
- 112 large culverts
- 109km of culverts
- 18.6km retaining walls
- 1,542 surface water channels
- 1,165 streetlights

The values of the transportation assets are detailed in Table 14.

Table 14: Tararua District Council Transportation Assets 30 June 2017 – Valuation

	Gross Replacement Cost (\$)	Depreciated Replacement Cost (\$)
Sealed road surface	26,974,113	14,796,124
Sealed pavement layers	273,536,092	203,869,135
Formation	316,413,125	316,413,125
Unsealed pavement layers	38,973,330	33,349,140
Footpaths	43,166,588	37,171,886
Bridges and large culverts	157,627,594	71,141,399
Retaining walls	45,173,739	22,586,870
Drainage	44,525,598	24,998,833
Surface water channel	43,222,568	21,615,999
Markings and RRPM's	186,066	186,066
Railings	623,643	292,346
Street lights:	1,641,362	925,248
Road traffic facilities signs	2,842,503	1,437,598
<b>Total</b>	<b>995,092,387</b>	<b>748,969,834</b>

Annual depreciation - \$8,727,444

The roading network within Tararua District has grown from the amalgamation of various counties/boroughs, such as Dannevirke, Woodville, Pahiatua, Eketahuna, Akitio, and Weber.

All counties/boroughs had various forms of road management within very differing ground/road conditions. Areas towards the coastal region had very unstable country, whereas, areas to the south had many roads built on river gravels.

Records show prior to various amalgamations many roads were sealed particularly within the Woodville area. Pavements were not fully reconstructed but road surfaces broomed and sealed. This occurred through the early seventies/eighties. Over the following years reseals and pavement rehabilitation have been undertaken on the sealed surfaces.

The majority of the network is classified as Access or Low Volume with average traffic volumes less than 200 vehicles per day.

The "arterial" and "primary collector" roads in the network play a pivotal role in connecting the region to its neighbours and ensuring traffic flows effectively through the region. These include the two bypass roads for the Manawatu Gorge: Saddle Road and Pahiatua Track.

Also taken into consideration for criticality is the number of available access points to a community. Tararua beach communities may only have one way in or out and so, although classified low, they are highly critical to that community.

The Weber-Route 52-Pahiatua-Pongaroa-Alfredton Road loop provides the main route into a large section of the district.

### 6.5.2 Key Issues

Tararua District Council's road network is the fourth largest of any local authority in New Zealand, with one of the fewest number of ratepayers per kilometre of road. The depreciated replacement value of Council's roads and associated assets is approximately \$746 million. This is the most costly of the Council's major activities and, due to the low population base, the Tararua District Council is heavily reliant upon subsidies received from the NZ Transport Agency.

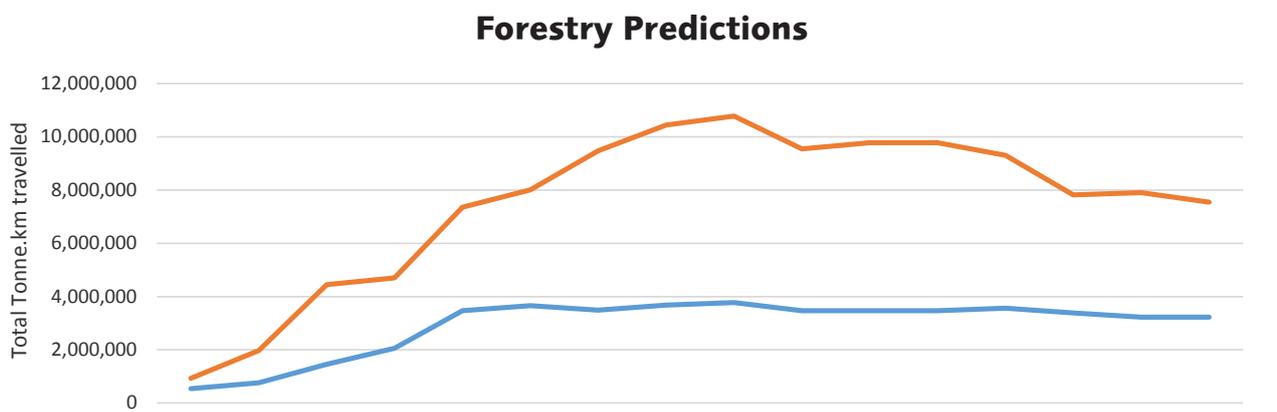
The challenges facing the Rooding network are not related to traffic growth. Across the network there is considerable spare capacity to cater for additional traffic flows. The key issues are:

- Our road network is vulnerable to significant environmental events resulting in decreased accessibility and high intervention costs.
- Increasing heavy vehicle demand changes due to forestry is resulting in decreasing levels of service and increasing reactive interventions.
- Our ageing infrastructure has very limited historic data/information resulting in difficulties in making effective and efficient investment decisions.
- Inconsistent road form and an unpredictable road reserve is resulting in a high risk of serious crash to motorists.
- Renewing the large number of bridges (or components of) in the future.
- The unknown future of the Manawatu Gorge road, or its alternative route, and the impact this will have on the local road network.
- Affordability due to the low number of ratepayers per kilometre of road (one of the lowest in the country).

### 6.5.3 Forestry Impact

Approximately 22,000 hectares of pine forest in Tararua is expected to be harvested over the next 15 years, peaking in five to ten years time. In 2017, just under 1 million tonne-kilometres (accounting for logs only) are expected across the district's roading network as a result of forest harvesting. This is predicted to increase by a magnitude of two next year, by five within the next three years, and by ten within the next five to ten years, with an average of 8 million tonne-kilometres per annum (accounting for logs only). Figure 15 shows the forecast increases in forestry tonnages transported on the roading network. These figures are based on discussions with commercial forest owners and aerial maps of existing plantation forests. The blue line is forecast forestry tonnes/km travelled for Route 52, while the green line is for the overall district.

Figure 15: Forestry Predictions





Government legislation is allowing heavier, longer, wider and higher vehicles to increase freight efficiencies within the constraints imposed by the local roading network.

The increased volume of trucks on the district's roads is causing increased deterioration and concerns for Council regarding decreased levels of service or increased cost to maintain roads to their existing level of service.

Route 52 and Weber Road, between Dannevirke and the large forestry blocks near the eastern coast, will experience much of this heavy traffic growth. The road is popular for locals travelling to the beachside settlements of Akitio and Herbertville and can also be subjected to an increased tourism travel. The roads are narrow and windy in areas and have deteriorated significantly over the past five years, predominantly due to increased heavy vehicle movements.

The proposed Council investment in Route 52 is specifically targeted at the immediate need to upgrade the road from Weber to the northern boundary to meet this increasing demand and meet required levels of service.

### 6.5.4 Level of Service Assumptions

Roading are funded through a partnership with central government through the NZ Transport Agency. Historically most standards were set by the Council within broad NZ Transport Agency guidelines. This year a new system is in place that sets national standards (One Network Road Classification) for each type of road. Figure 15 shows the movement in road classifications within the Tararua District Council network. This may impact on the affordability of maintaining existing levels of service.

Other assumptions include:

- Investment will be increased on those roads where the current level of service falls below the agreed targets in the Long Term Plan. All other levels of service will remain unchanged.
- Council will continue to address safety issues on the network as they are identified.

None of the above assumptions are rated as having a high degree of uncertainty.

Council have adopted the ONRC customer levels of service outcomes, developed by industry through the Road Efficiency Group (REG). These has been established for each road classification and Council have set targets for travel time reliability, resilience, safety, amenity, and accessibility outcomes.

Comparison against initial targets set by REG and against peer group council's suggest Tararua is currently delivering mid-range service levels overall. Improvements are required in safety and resilience. Council intends to deliver the following levels of service to the community:

- Ensure roads are safe for all road users.
- Council ensures quality of roads and safety of users.

- Requests from the public are responded to in a timely manner.

### 6.5.5 Demand Assumptions

- There will be no significant increase in the size of the network.
- Traffic volumes will remain low.
- Mature forests will be harvested and transported to ports by road.
- Mobility scooters on footpaths will increase as our population ages.
- Some roads will be subjected to more heavy vehicles, for intense periods of time, as a result of forestry harvesting.
- Users will continue to be responsible for the management and funding of their vehicle crossing.

None of the above assumptions are rated as having a high degree of uncertainty.

### 6.5.6 Asset Condition

#### Pavement Condition

The ONRC uses roughness to define carriageway customer and technical levels of service and these have been used as a base to create a "very good" through to "very poor" condition rating for each ONRC road classification. Roughness on the sealed road network is generally good with 74% of the network in the "very good" or "good" state.

Three percent of the network is shown in the "poor" category, which is considered to be outside the ONRC tolerances.

Figure 16: Pavement Condition

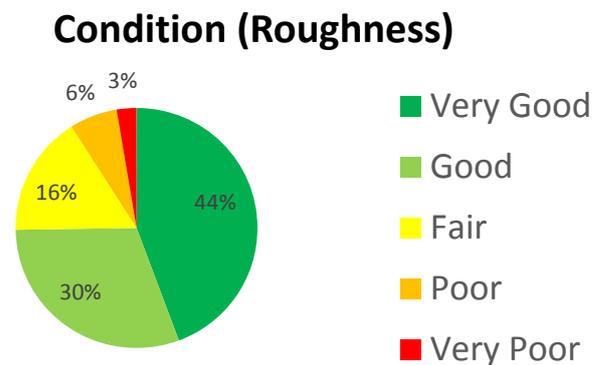
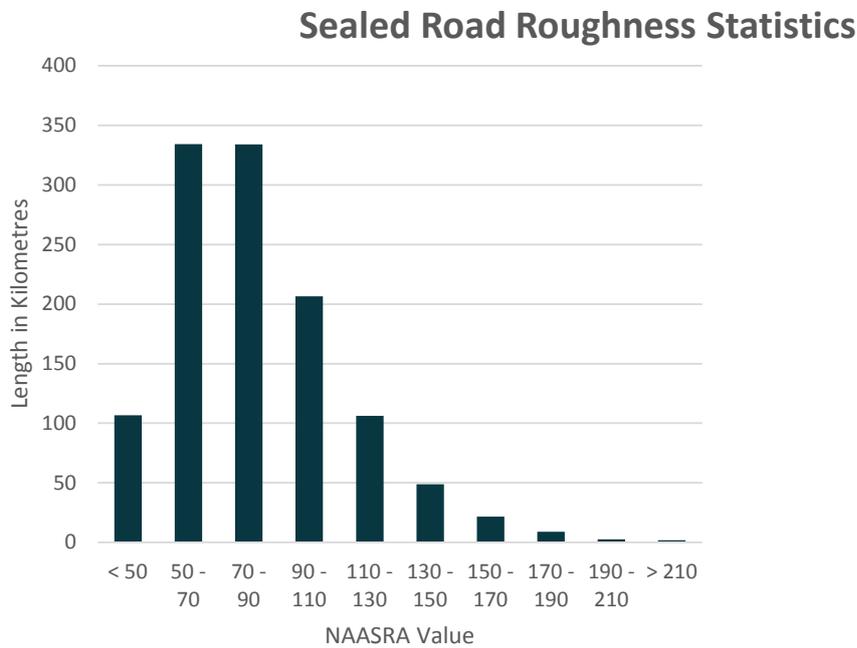


Figure 16 shows asset condition using the roughness readings. These readings are only taken on sealed roads.

Unsealed road roughness is a much more difficult task to deal with. A roughness level of 130 is generally considered to be the point at which road pavements should be considered for renewal. Of the 1,322km surveyed, 19% of the roads have a roughness count of less than 50, whereas only 2% are greater than 130. Rehabilitation work is based more on observed condition than roughness.

The chart below shows that the Urban Primary and Secondary Collector, and Rural Arterial roads have higher proportions of roughness in the "fair" to "very poor" range. However, in the overall length of the network these categories are not large. So even though they might have a higher percentage in those poorer conditions, they represent only a very small portion of the total network.

Figure 17: Surface Roughness Statistics





## Option Development for Renewals

Our approach to option development is to consider the total expenditure of renewals and maintenance based on varying levels of renewal activity investment, to maintain the current level of service for the carriageway assets. We have derived multiple scenarios to consider varying levels of rehabilitation and resurfacing investment and the outcome this has on the total expenditure for the carriageway network.

Three scenarios were modelled with increasing and decreasing renewal investment from the current level to determine where the optimal total expenditure on the carriageway pavement and what effect it might have on condition.

The chart (below) shows that an increased budget would improve the condition of the network but not by a huge margin. When decreasing the budget however the effect is different – the current good condition of the asset is consumed and then the deterioration rate ramps up. The current budget scenario evens out in the Medium condition, within level of service, without consuming the asset or requiring additional funding and so seems funded at around the correct level for pavement and surfacing.

Figure 18: Road Surface Condition Rating by Proportion of Rural and Urban Road Categories

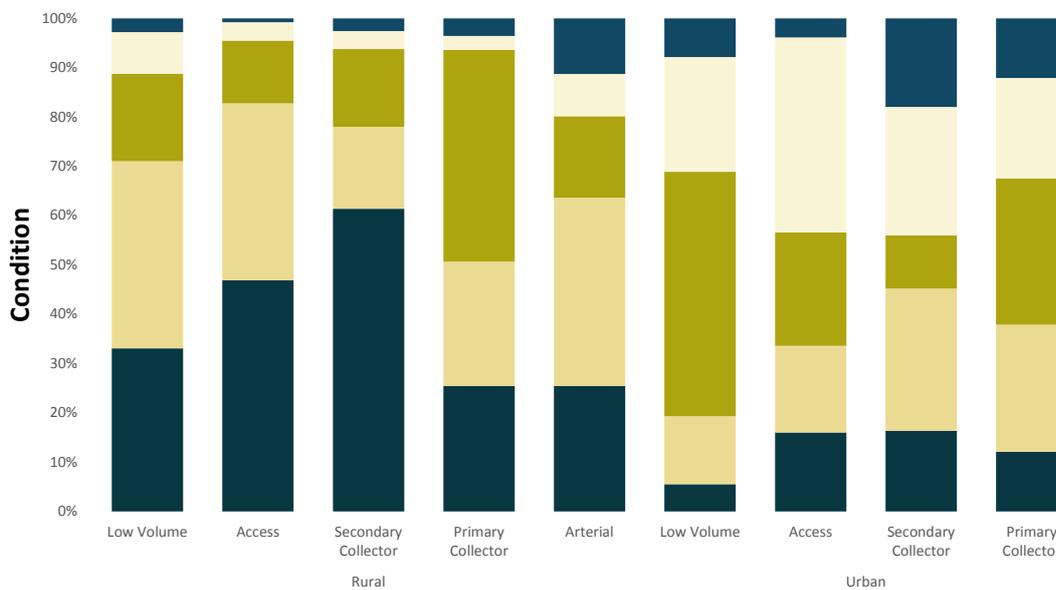
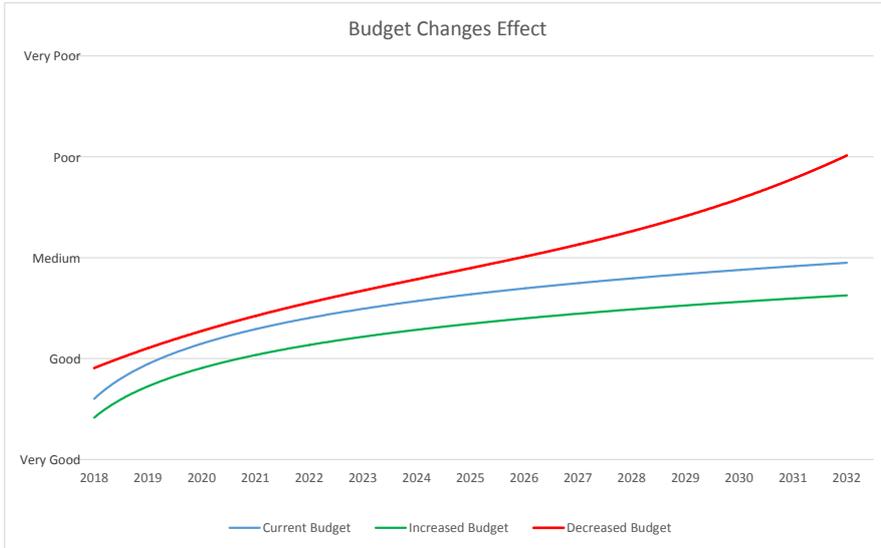


Figure 19: Budget Changes Effect



Council is aware that parts of some significant assets are ageing and will need renewal over the next 30 years. These form the basis of the renewal budget forecasts contained in this Strategy and the 2018–2028 Long Term Plan.

The assumptions underpinning these renewal profiles are:

1. That Council will manage out any peaks and troughs and maintain the average sealing quantity as per the last 20 years.
2. Since the establishment of the Taranua Alliance in 2014/15 there has been a conscious effort to extend the lives of pavement surfaces and reduce the annual resurfacing lengths through improved proactive maintenance practices. Over the past three years, Council has resurfaced an average of 66km per year, compared with an annual average of 105km over the ten years previously.

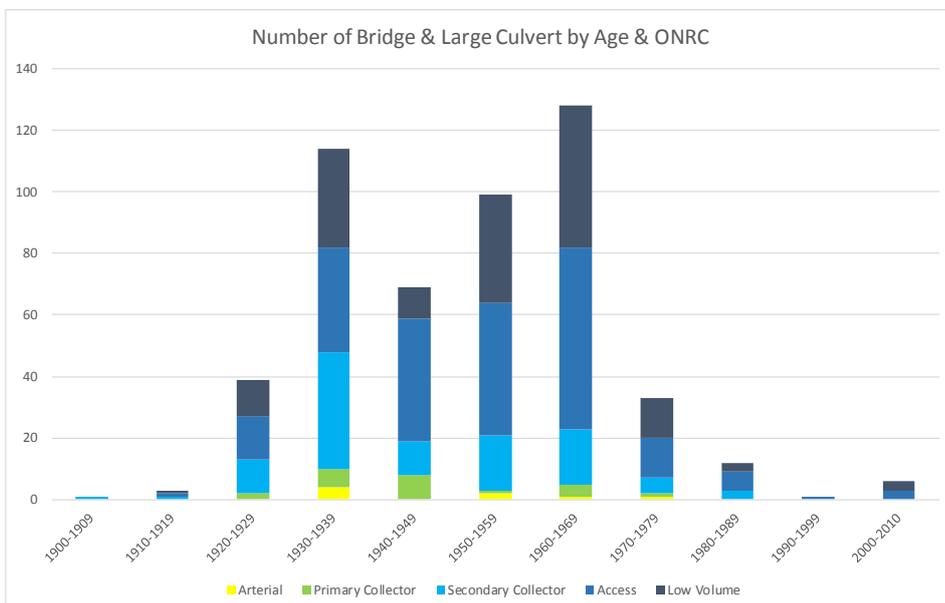
3. Inflation at 0% for the first three years (NZ Transport Agency three year work programme guidance) followed by inflation as per the assumptions using BERL transport inflators.

**Bridge Asset Condition**

Annual inspections are carried out on all bridges, large culverts, and underpasses using the NZ Transport Agency 'Bridge and Other Structures Inspection Policy' (NZTA 56:2009) as a basis for inspection policy, and using the Transit New Zealand 'Bridge Inspection and Maintenance Manual Revised Edition – 2001' (manual number: SP/M/016) for inspection and recording procedures.

A formal condition-grading programme has also been developed. This rating assesses the major components of the bridge, assisting with forecasting remaining useful life. As time

Figure 20: Bridge Asset Condition





progresses the inspections will give a pattern to develop further maintenance needs or ultimately signal bridge renewals.

The bridge and large culvert asset stock is in good condition with a very high proportion of the assets in "good" or "excellent" condition. Load carrying and seismic capacity information is currently minimal with an improvement in place to remedy this.

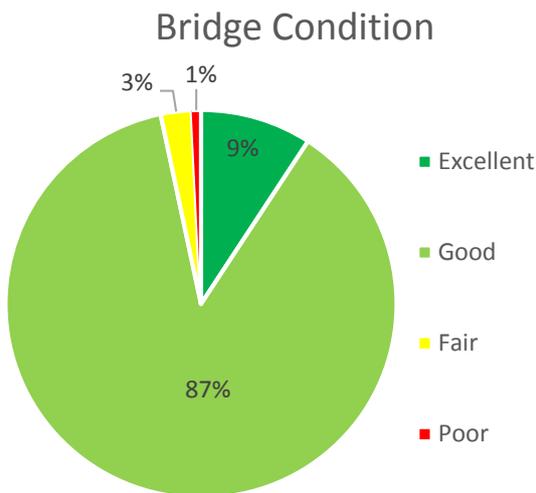
Currently there is no formal inspection process in place for retaining walls, with assets replaced reactively on failure. Routine inspections will be implemented in the future as we advance our asset management practices and process with regards to retaining walls, which has recently started with a validation of the retaining wall asset inventory and identification of previously missing assets.

An overall intention of this rating system will be to form guidance for bridge lifespans, which have the potential to increase.

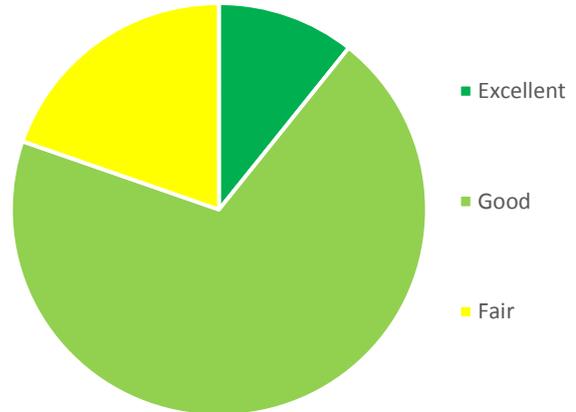
Figure 21 provides an overview of the condition of bridge and large culvert assets within each scheme using the 1–5 condition grading system outlined in Section 6.1.2.

As New Zealand is a relatively young nation, the history on bridge life cycles is unknown, hence the current practise of giving a bridge an average life expectancy of 100 years. As many of these assets have yet to be renewed there is often no proven age that they will need to be replaced. Renewal ages are based on industry accepted good practice and are conservative. Current renewals do not point to any issues with this approach (i.e. asset failures have not increased in recent years).

Figure 21: Condition of Bridges and Large Culverts Within Network



### Large Culvert Condition



Replacement forecasting of bridges is currently carried out at a full structure level, with a typical expected useful life of 100 years and a replacement cost based on full like-for-like replacement applied to each. Condition grading (1–5) is carried out for each major component which, combined, provides an indication of the remaining useful life adjustment for the structure in its entirety.

Using the current typical expected life of 100 years, it is expected that 128 bridges will require replacement over the next 30 years at an estimated cost of \$38.47 million.

If the remaining useful life for all bridges is increased by ten years, to a typical life cycle of 110 years, it is expected that 73 bridges will require replacement over the next 30 years at an estimated cost of \$20.82 million.

If the remaining useful life for all bridges is increased by twenty years, to a typical life cycle of 120 years, it is expected that 31 bridges will require replacement over the next 30 years at an estimated cost of \$8.02 million.

If the remaining useful life for all bridges is increased by thirty years, to a typical life cycle of 130 years, it is expected that three bridges will require replacement over the next 30 years at an estimated cost of \$500,000.

In time, it is planned that structures will be componentised to a more detailed level.

Expected and remaining useful life assumptions, condition assessment, and optimised replacement cost estimation will be applied to all bridges, to improve the accuracy of, and confidence in, bridge renewal forecasts. It is expected that, on average, the bridge substructure components have a greater life than the 100–110 year useful life typically applied.

Through proactive inspection, monitoring, maintenance and renewal of the bridge superstructure components (deck, surface, rails, etc.), we plan to extend the useful life of the high-cost bridge components, possibly maintaining the substructure (or at least components of) in perpetuity, although further analysis is required.

Optimisation of bridge renewals is also required to determine whether, if a full structure requires renewal, whether a like-for-like replacement is appropriate or if there is a lesser cost alternative (such as replacing with a large culvert). Alternatively, an improved level of service may be required due to demand changes (i.e. increased traffic requiring two lanes rather than one, pedestrian and/or cyclist demand requiring additional area, increased heavy vehicle demand requiring additional strength capacity, etc) which would increase the replacement cost of the structure.

### 6.5.7 Significant Decisions Relating to Transportation

#### Town Centre Upgrades - Pahiatua Town Centre Upgrade

Council will complete its town centre upgrade projects, with Pahiatua due in Year 1.

Council is working closely on the design and scope with the local Pahiatua community and businesses. NZ Transport Agency is also involved as the owner of the state highway road(s) passing through Pahiatua.

The upgrade has three main objectives. The first is to provide an attractive town centre environment for residents that increases local pride. Secondly to increase local business by attracting out of town travellers to stop and shop. Thirdly to renew and upgrade infrastructure (water, stormwater, wastewater, communications) where required while the road and footpaths are being dug up.

The Pahiatua town centre upgrade construction is scheduled to start in 2018/19 at a total cost of \$2.65 million. Council has budgeted for three waters renewals under the separate Group budgets. Overall there is another \$2.3 million for this renewal work.

### Route 52 Upgrade

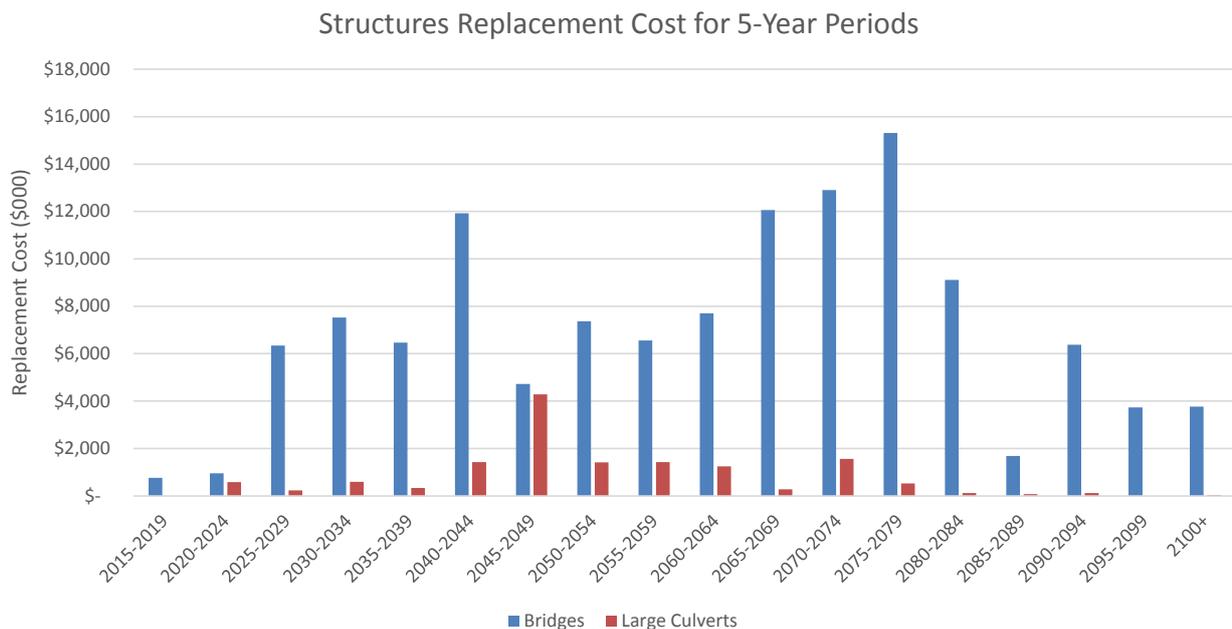
Council is proposing to upgrade Route 52, from the Weber intersection to the northern district boundary, at a cost of \$10 million over the next four years. NZ Transport Agency funding of \$6.6 million to fund the majority of the project has been budgeted for.

The objectives of the upgrade are:

1. Meet the ONRC standards for this important link road including safety and access,
2. Provide resilience to the roading network,
3. Provide a road that is fit for purpose to meet the increasing traffic demand by heavy vehicles that are using the road for forestry harvesting.

A detailed business case is required in Year 1 to justify the need for additional investment before NZ Transport Agency will approve their share of the funding. Council is assuming that NZ Transport Agency will approve the funding at the standard maintenance and renewal proportion of 66%. Council would reconsider the affordability of the project if NZ Transport Agency funding was declined.

Figure 22: Bridge Renewals



# A

## APPENDIX A – ASSUMPTIONS

The Council has made a number of assumptions in preparing the 10-year Long Term Plan. The assumptions ensure that all estimates and forecasts are made on the same basis across all Council activities. These assumptions have been used for the infrastructure strategy.

These assumptions are outlined below. They are described in more detail, including mitigation measures in the Draft Long Term Plan 2015–2025.

### 1. Population Growth or Decline

#### Assumption

Population growth - Council has projected that over the 10 years, the district population will increase slightly by 2% with the total population in June 2028 at 18,250 compared to 17,850 forecast in June 2018 (based on Statistics NZ High scenario forecasts 2016 update – 2013 Census base).

Households (including unoccupied) are forecast to increase by 5% over the 10 years, with the total 8,200 households in June 2028 compared to 7,800 forecast in June 2018 (based on Statistics NZ High scenario forecasts 2015 update 2013 Census base). These forecast growth rates are consistent with the assumptions made for the 2015 LTP.

#### Risk

Population and household growth is significantly different (growth or decline) to that assumed, or population / businesses in a particular locality may change significantly. This could result from:

- Significant changes to migration from international or national laws and trends
- Lower or higher birth and death rates
- Major trend changes in the occupancy rate of households
- Major changes in the economic returns for farming.

#### Level of Uncertainty

Low to medium.

#### Impact

Low to medium

## 2. Demographics

### Assumption

That the median age of District residents will increase significantly over the long term leading to changes in the way Council delivers services. The number of residents aged 65+ increased by 17% from 2006 to 2013. Older people now make up 17% of the resident population (March 2013 census). This is forecast to increase to 26% of the population in 2028.

This is an expected increase of 1,340 people aged 65+ over the 10 years, against a total population forecast increase of 400 people.

The expected population growth can be attributed to families moving into the district as signaled by school roles in the District having shown recent modest increases.

The median age is forecast to increase from 42.3 in 2018 to 44.6 years in 2028.

### Risk

The main risks are that population will continue to age significantly faster than forecast, and / or Council services do not sufficiently meet the needs of older people. The increase in older people has happened at a faster rate than forecast over the last census period, although that was during a period of population decline. If the migration flows again turn into a strong outflow to Australia then this trend will continue.

Affordability will increasingly become an issue for ratepayers and threaten the ability of Council to fund the forecast levels of service.

### Level of Uncertainty

Low - The long-term trend to an older population is reasonable certain. The actual outcomes are highly dependent on the migration trends. Higher inward net migration tends to slow down the ageing population trend.

### Impact

Low.

## 3. Natural Disasters

### Assumption

Natural disasters – Council will be prepared to respond to any natural hazards including floods, droughts, storms, earthquakes and volcanic activity that occur during the life of this long-term plan. It is assumed that natural disasters will not be catastrophic in scale such as experienced by Christchurch and more recently Kaikoura.

It is assumed that Council will be able to obtain cover as required from private insurance companies.

### Risk

Natural disaster can cause significant damage to infrastructure and disruption of service. An increasing number of natural disasters including earthquakes, floods and volcanic events have occurred in New Zealand in the last decade. Insurance is becoming increasingly difficult to obtain at an affordable level.

Council may not be adequately prepared or resourced to respond to a major natural disaster, or to a succession of natural disasters. The current risk partnership with government where the government covers 60% of costs to Water and Wastewater network assets from natural disasters (leaving Council to cover 40% through external insurance cover or self-insurance) may not continue. LGNZ is currently working on options with government. Any reduction in government cover from 60% will result in increased insurance costs or higher risks.

The % government contribution to emergency Roading repairs through NZTA is set by the FAR plus 20% (86%) once damage costs are above 10% of the normal annual maintenance budget. The minimum subsidy level for roading repairs is 66%. A large event (flood or earthquake) will likely cause a large backlog of road repairs that would disrupt the normal maintenance programme for a period of time.

### Level of Uncertainty

Low.

### Impact

High.



## 4. Infrastructural Capacity

### Assumption

That forecast population, household and business growth could be catered for by current and planned capacity of assets.

### Risk

A major surge in household and/or industrial growth in a number of urban centers would place pressure on three waters infrastructure in those networks. This is unlikely and there is considerable existing capacity (both in infrastructure and housing) in the urban areas.

### Level of Uncertainty

Low – a much higher growth rate would be required before capacity issues arose due to the level of surplus capacity currently in the networks.

### Impact

Low.

## 5. Climate Change

### Assumption

Council has adjusted financial projections to reflect the estimated impact of inflation. Council has used the Local Government Cost Index (LGCI) forecasts of price level changes to calculate a weighted average inflation rate for each year of the plan. Appendix one contains the BERL inflation adjusters (commissioned by the Society of Local Government Managers) used in producing this plan. These forecasts were issued in September 2017.

### Risk

That actual inflation will be significantly different from the assumed inflation. Council is exposed to cost increases based on international oil prices (pipes, bitumen, and fuel). Council has no control on these prices and these are often volatile due to shifts in exchange rates and international oil prices.

### Level of Uncertainty

Medium.

### Impact

Medium.

## 6. Inflation

### Assumption

Council has adjusted financial projections to reflect the estimated impact of inflation. Council has used the Local Government Cost Index (LGCI) forecasts of price level changes to calculate a weighted average inflation rate for each year of the plan. Appendix one contains the BERL inflation adjusters (commissioned by the Society of Local Government Managers) used in producing this plan. These forecasts were issued in September 2017.

### Risk

That actual inflation will be significantly different from the assumed inflation. Council is exposed to cost increases based on international oil prices (pipes, bitumen, and fuel). Council has no control on these prices and these are often volatile due to shifts in exchange rates and international oil prices.

### Level of Uncertainty

Medium.

### Impact

Medium.

## 7. Asset Lives

### Assumption

Useful lives of assets are as recorded in asset management plans or based upon professional advice. Refer to Accounting Policies for Depreciation Rates. The overall costs of renewals and operating costs for the three waters and Roading is shown in the Infrastructure Strategy.

### Risk

Assets wear out earlier or later than estimated.

### Level of Uncertainty

Years 1–3 low; Years 4–10 medium; years 11–30 (as shown in Infrastructure Strategy) medium.

### Impact

Medium.

## 8. Revaluation of Infrastructure and Property Assets

### Assumption

Assets are valued as stated in the accounting policy. The following assumptions have been applied to projected asset revaluations:

- the revaluations will reflect the changes predicted by BERL;
- depreciation impact of inflation will be in the year following revaluation.

### Risk

That the BERL Forecasts will be materially incorrect, leading to misstatements, in particular forecast asset values that will result in changes to the depreciation charged and hence the rates levied.

### Level of Uncertainty

Medium.

### Impact

Medium.

## 9. Contracts

### Assumption

There will be no significant variations in terms of price from the re-tendering of operation and maintenance contracts and renewal of service level agreements, other than those variations recognised in this plan.

### Risk

There is a significant variation in cost and/or terms from re-tendering contracts and renewal of service level agreements. Refer to the inflation assumption for more detail on cost impacts.

### Level of Uncertainty

Low.

### Impact

Medium.

## 10. Sources of Funds for the Replacement of Significant Assets

### Assumption

That the depreciation reserves will adequately fund the renewals of assets over the 10 year period and the longer term (to 2048). Additional details are set out in the Revenue and Finance Policy, Financial Strategy and Infrastructure Strategy.

### Risk

That there will be a shortfall in funds available to replace assets.

### Level of Uncertainty

Medium.

### Impact

Medium.

## 11. NZTA funding

### Assumption

NZ Transport Agency requirements and specifications for the performance of subsidised work will not alter to the extent that they impact adversely on operating costs. As a result of the FAR review in 2014 and a recalculation of the formula in 2017 Council is forecasting that the current subsidy level of 64% (2017/18 for maintenance and renewal costs within the approved NZTA Rooding Programme) will increase to 66% in 2018/19. The 66% level of subsidy is assumed to continue after that for the long term, although is only certain for the 2018-21 work programme.

The new One Network Road Classification process being implemented by NZTA in 2018/19 will support the current levels of service delivered by TDC. It is assumed that the 66% FAR will apply to the current total road maintenance budget.

### Risk

Changes in the subsidy rate and variation in criteria for inclusion in the subsidised works programme may occur for future NZTA approved three year work programmes. The new national level of service framework (ONRC) is being implemented for 2018 onwards. This may reduce the roading programme eligible for subsidy (the FAR may be applied to a reduced approved roading programme budget). New emergency works criteria may reduce the level of subsidy to repair flood damages (this depends on the size of the event).



## Level of Uncertainty

Low

## Impact

Medium.

# 12. Subsidies for Water and Wastewater Upgrades

## Assumption

Health and Environment subsidies will not be available for wastewater network improvement projects that are additional to those already approved under the MfE River Clean-up Fund. Water Supply subsidies from the Ministry of Health Drinking Water Subsidy Scheme are assumed to close in 2016/17. Subsidies have been secured for some current projects that are yet to be built. Details of individual upgrade projects and the funding sources are set out in the Statement of Capital Expenditure.

## Risk

There is no risk to the Long Term Plan forecasts as any variation to this assumption will be financially positive to Council.

## Level of Uncertainty

Medium.

## Impact

Low.

# 13. Wind Farm Impact and Forestry Harvest Impacts

## Assumption

Development of wind farms (if they proceed) will not have significant impact of Council renewals expenditure for the roading network.

Harvesting of forests in the North East of the District will create road maintenance impacts that can be managed within the budgeted Rooding budget.

## Risk

Wind Farms will result in significant cost to Council in upgrades and renewals or their timing for the roading network.

Forestry harvests that grow significantly over the 10 years cause major damage to some arterial roads resulting in costly renewals.

## Level of Uncertainty

Low.

## Impact

Low.

# 14. Legislative changes

## Assumption

Legislative changes are expected to have a minor effect on Council's finances and/or levels of service, but no change to the current governance arrangements. It is assumed existing shared services and collaboration will continue.

The Council is assumed to retain the current boundaries and it is assumed that there will be no forced amalgamations.

The One Plan will not result in farm profitability being significantly reduced (impacts from 2017 Environment Court decision).

The forecasts assume:

- No additional expenditure above that budgeted to assess all commercial and some multi-unit multi-story residential buildings (earthquake prone building regulations),
- additional costs to meet more stringent resource consent requirements for water and wastewater consent renewals,
- that the Council will continue to deliver infrastructural services within the existing legislative framework,
- that legislated minimum levels of service / standards (such as drinking water quality) will not be changed.

## Risk

Further legislative changes could increase the levels of service and / or number of activities Council is required to deliver. Likely areas are regulatory and compliance areas including RMA processes and freshwater standards. Recent changes to the RMA 1991 has increased levels of service required by Council but the exact costs remain uncertain.

Rooding, Water Supply, Wastewater and Stormwater are also the subjects of ongoing reviews that could impact on the way these services are delivered. Local Government New Zealand is leading a review of possible efficiencies in the three waters activities.

The government has stated that forced amalgamations will not occur. This may change over time. Any group in the community can now initiate a review of Council boundaries. Over time, if amalgamations proceed in other regions, it is likely

that the issue of amalgamation with one or more neighbors will arise and be the subject of a Local Government Commission review.

The 2017 legal ruling on the implementation of the One Plan could result in some forms of intensive farming becoming unprofitable in Tararua, and a general reduction in farming income. This would have a major impact on the district economy, and the ability to pay rates over time.

### Level of Uncertainty

Medium.

### Impact

Medium/high.

## 15. Resource Consent Renewals

### Assumption

Conditions of existing resource consents held by Council will not be altered significantly from that budgeted. Any resource consents due for renewal during the 10-year period will be renewed accordingly. Resource consents issued for new/upgraded infrastructure will not contain significantly different conditions/standards to those anticipated in the project.

### Risk

Conditions of resource consents are altered significantly resulting in major investments to meet conditions. The length of consent renewals could be reduced to 10 years or less. This would result in the need to budget for many more renewal processes.

Council in some cases is unable to renew existing resource consents upon expiry. Council may be forced to consider alternative systems such as piping wastewater to another treatment plant.

### Level of Uncertainty

High.

### Impact

Medium.

## 16. Interest Rates

### Assumption

Council has budgeted for this long-term plan that interest on loans raised will be 5.5% in year one and average 5.8% over 10 years. It is assumed that return on investments made by Council will be 4.5% year 1 and average 4.8% over 10 years.

### Risk

Prevailing interest rates will differ significantly from those estimated.

### Level of Uncertainty

Medium.

### Impact

Low.

## 17. Access to External Funding

### Assumption

Council will be able to borrow at the required level.

### Risk

Inability to fund services or capital investment if Council is not able to borrow. Risk is seen as low as Council have access to the LGFA funding market. While it is likely Council will be able to secure loans, it cannot be guaranteed.

### Level of Uncertainty

Low.

### Impact

High.

B

## APPENDIX B – DATA CONFIDENCE

From Valuation Reports 2017/18:

**Table 15:** Data Reliability

Asset Category	Confidence	Comments
Formation	B - Reliable	Assumed extra widths.
Sealed Pavement Surface	A - Highly Reliable	No assumptions made.
Sealed Pavement Structure	B - Reliable	Assumed depths, pavement ages and extra widths
Unsealed Top Course and Pavement Structure	B - Reliable	Assumed depths and pavement dates
Drainage	B - Reliable	Assumed construction dates.
Footpaths	B - Reliable	Assumed construction dates.
Surface Water Channels	B - Reliable	Assumed construction dates.
Signs	B - Reliable	Assumed construction dates.
Street Lights	B - Reliable	Assumed construction dates.
Retaining Walls	B - Reliable	Assumed construction dates.
Railings	B - Reliable	Assumed construction dates.
Bridges and Major Culverts	B - Reliable	Assumed construction dates for major culverts
Pipeline Assets	B - C*	

\* While pipeline quantities are well documented (rating A), there is little condition data and hence remaining lives have a low confidence rating (B-C).

- A – Highly reliable      Data based on sound records, procedure, investigations and analysis, documented properly and recognized as the best method of assessment.
- B – Reliable                Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example the data are old, some documentation is missing, and reliance is placed on unconfirmed reports or some extrapolation.
- C – Uncertain              Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated 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.

# Roading

(From Asset Management Plan)

**Table 16:** Data Confidence and Completeness

Asset Type	Asset Inventory			Asset Condition			Asset Value		
	2015	2017	2020	2015	2017	2020	2015	2017	2020
Sealed Pavements	●	●	●	●	●	●	●	●	●
Unsealed Pavements	●	●	●	●	●	●	●	●	●
Drainage	●	●	●	●	●	●	●	●	●
Structures	●	●	●	●	●	●	●	●	●
Traffic Services	●	●	●	●	●	●	●	●	●
Footpaths & Cycle paths	●	●	●	●	●	●	●	●	●

low confidence ● medium confidence ● high confidence ●

*Note that environmental is not included as it is predominantly activity based, rather than specific assets.*

**Table 17:** Data Accuracy Grading System

Grade	Description	Accuracy
1	Accurate	100%
2	Minor Inaccuracies	+/- 5%
3	50% estimated	+/- 20%
4	Significant data estimated	+/- 30%
5	All data estimated	+/- 40%



# C

## APPENDIX C – SIGNIFICANCE AND ENGAGEMENT POLICY

This policy provides that in determining the degree of significance of any issues, proposals, assets, decisions, or activities, Council will assess and consider a set of criteria and measures.

Table 18: Criteria for determining significance (reproduced from Council Significance and Engagement Policy)

Criteria	Measure
1. The degree to which the issue/decision affects the district	Has a substantial tangible impact on the whole district based on changes to services levels or the manner in which revenue is to be obtained.
2. The degree to which the issue/decision affects the level of service of a significant activity	A significant multi-year change in the levels of service at an activity level.
3. The impact on the ability of future Councils to reverse the decision, where financial or legislative agreements permit	Future Councils will be committed to long-term (>5 year) contract costs (>5% of Council operational costs), without the ability to periodically consider viable alternatives.
4. The degree to which the issue/decision has a new financial impact on Council or the rating levels of its communities	Impact on rates is not within the Financial Strategy limit (LGCI plus or minus 2% in one year).
5. The degree to which a decision or action would require a change in an underlying strategic policy	The decision represents a new strategic direction for Council.
6. The level of district interest in the decision	A decision or proposal on a matter where the majority of a community expresses considerable interest or the community is deeply divided.

The significance and engagement policy states that, in general, if an issue exceeds at least two of the above criteria, the matter is more likely to be considered significant. In determining whether a decision about capital expenditure is significant or not, criteria 1, 2, 5 and 6 are considered to be the most relevant.

D

## APPENDIX D – ASSET LIVES

Table 19: Asset Lives

Asset Category	Useful Life	Depreciation Rate
<b>Operational &amp; Restricted Assets</b>		
Buildings	9-100	(1.0%–11%)
Computer equipment	2-4.5	(22%–50%)
Furniture and fittings	2–45	(2.2%–50%)
Fibre cabling and conduits	20-30	(3%–5%)
Library collections	1–10	(10%–100%)
Motor vehicles	5–20	(10%–20%)
Plant and equipment	2–33	(3%–50%)
Swimming pools	15–50	(2%–6.7%)
<b>Infrastructural Assets</b>		
<b>Roading</b>		
Top surface (seal)	12–18	(5.6%–8.3%)
Top Surface (Unsealed)	1	(100%)
Pavement (seal base course)	30–90	(1.1%–3.33%)
Pavement (unsealed base course)	Not depreciated	
Sub-base (Rural)	Not depreciated	
Sub-base (Urban)	40	(2.5%)
Formation	Not depreciated	
Culverts	50–100	(1%–2%)
Kerbing	25–100	(1%–4%)
Footpaths	10–100	(1%–10%)
Signs	12	(8.3%)
Streetlights	20-60	(5%–1.7%)
Bridges	50–140	(0.7%–2%)
Retaining Walls	90	1.1%
Railings	30-50	(2% - 3.3%)
<b>Wastewater Network</b>		
Pipes & Manholes	50–120	(1.5%–1.8%)
Treatment Ponds	55-60	1.5%– 1.8%)
Pumps	10-40	(2.5% -10%)
Flow Monitoring Equipment	20	(5%)



Asset Category	Useful Life	Depreciation Rate
Stormwater		
Pipes	50-140	(0.7%-2%)
Manholes	90-140	(0.7%-1.1%)
Water Network		
Monitoring equipment (hardware)	5-30	(3.3%-20%)
Pipes, hydrants, valves	40-150	(0.7%-2.5%)
Treatment plants	10-100	(1%-10%)
Pumps	15-25	(4%-6.7%)
Tanks	40-200	(0.5%-2.5%)
Waste Management	2-17	(5.9%-50%)
Items under construction	Non depreciable	