



Infrastructure Strategy 2015-2045



Infrastructure Strategy

Infrastructure Strategy

TABLE OF CONTENTS

1.0	TIMARU DISTRICT	5	6.0	FINANCIAL ESTIMATES	44
1.1	Background	5			
2.0	THIS INFRASTRUCTURE STRATEGY	8		LIST OF TABLES	
2.1	Strategy Layout	8		Table 2.1: Strategy Layout	8
2.2	Core Infrastructure	8		Table 2.2: Timaru District Infrastructure Assets	8
2.3	Emerging Issues	11		Table 2.3: Significant Assumptions	16
2.4	Assumptions	16			
3.0	LINKAGE WITH OTHER DOCUMENTS	25		LIST OF FIGURES	
4.0	THIRTY YEAR STRATEGY	26		Figure 1: Timaru District's Economic Diversity	5
4.1	Applying the Vision, Community Outcomes and Strategic Priorities	26		Figure 2: Timaru District Map	6
4.2	The Organisation's Priorities	27		Figure 3: Vision for Timaru District	7
4.3	Asset Management Strategy	27		Figure 4: Projected Population 2013-2063 by Projection Scenario	11
4.4	Delivery of Services	27		Figure 5: Projected Number of Households 2013-2063 by Projection Variant	11
4.5	Addressing Resilience and Long Term Sustainability	28		Figure 6: Infrastructure Strategy Linkage with other Documents	25
4.6	Significant Decisions Required	29		Figure 7: Projected Capital Expenditure - Infrastructure Assets	44
5.0	SIGNIFICANT INFRASTRUCTURE ISSUES	30		Figure 8: Projected Operational Expenditure - Infrastructure Assets	45
5.1	Water Supply	31		Figure 9: Projected Capital Expenditure - Water	46
5.2	Sewer	35		Figure 10: Projected Capital Expenditure - Sewerage	47
5.3	Stormwater	36		Figure 11: Projected Capital Expenditure - Stormwater	48
5.4	Roads and Footpaths	38		Figure 12: Projected Capital Expenditure - Roads and Footpaths	49



Infrastructure Strategy

1.0 TIMARU DISTRICT

1.1 Background

Geography & Climate

Timaru District covers 2,737 square kilometres of South Canterbury. Two rivers naturally define its northern and southern boundaries, the Rangitata and Pareora, with the district stretching along the gentle curve of the South Canterbury coastline. Timaru District is the third largest district by population and sixth largest by area in the Canterbury region. It has a population density of 16.3 persons per square kilometre. The district has a temperate climate, with Timaru getting an annual average of 1,826 hours of sunshine and 573mm of rain. The district includes a variety of geographical environments ranging from densely populated low lying urban areas to remote sparsely populated mountain areas.

Demographics

In 2013, the Council engaged the services of Natalie Jackson Demographics Limited to complete the Timaru District Council Population and Household Projections 2013-2063 report. The report was completed in 2014 and was broadly based on and in line with statistics gathered in the 2013 Census. Some of the key (medium prediction) findings were as follows:

- The base population of the district in 2013 was 45,400
- Of the base population 22,100 are male and 23,300 are female
- Projected levels of migration are relatively constant and will remain stable
- Population will increase to 76% increase in 2033 then level off (48,853)
- Proportion of elderly in the population is predicted to steadily increase with the 65+ demographic at 20.1% in 2013 increasing to 31% in 2033
- The number of households will increase from 18,660 to 21,105 in 2033
- The median income for those aged 15 years and over is \$26,900 with 22.9% of those earning more than \$50,000

Economy

The Timaru economy is strongly influenced by its agricultural heritage. Agriculture is diverse, including dairy, sheep and deer farming and land suitable for all kinds of cropping. Significant manufacturing operations are located in the district, including Fonterra's Clandeboye dairy factory, McCain's food processing plant, DB Mainland Breweries, NZ Light Leathers, Alliance Group Smithfield plant, Silver Fern Farms Pareora plant and Barkers Fruit Processors. The district is centrally located for distribution and PrimePort provides a gateway for exports and imports.

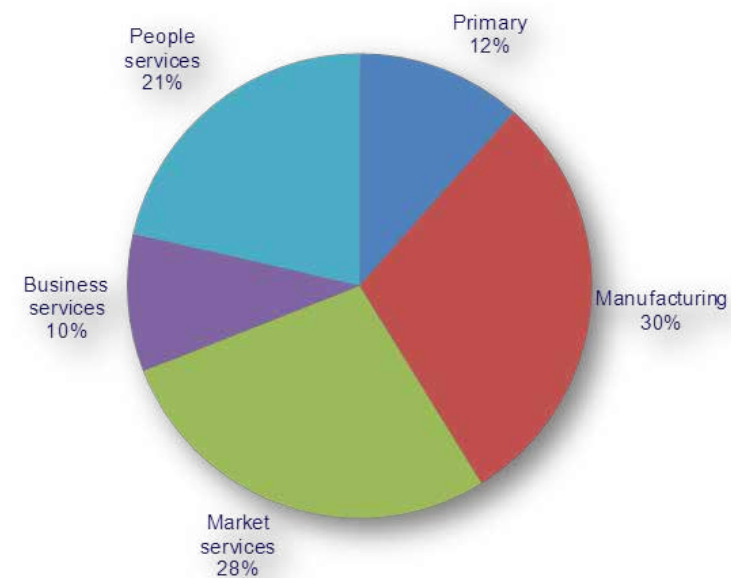
Employment in the district is strong, with the majority of people employed in food product manufacturing. Retail trade, health care and social assistance, agriculture, forestry and fishing and construction industries are also key employment sectors.

The number of businesses in the district has increased in the last few years. In 2013, there were approximately 5,328 businesses operating in the district, up from 5,262 in February of 2006 (an increase of 4.7%). The Agriculture, Forestry and Fishing industry sector accounts for nearly 25% of these businesses.

Visitors are a significant contributor to the district's economy, with the district providing a gateway to the central South Island.

The diversity of the local economy is shown in Figure 1. *(Figures quoted in the above section are solely from Statistics New Zealand 2013 Census information)*

Figure 1: Timaru District's Economic Diversity



(Source: BERL)

Infrastructure Strategy

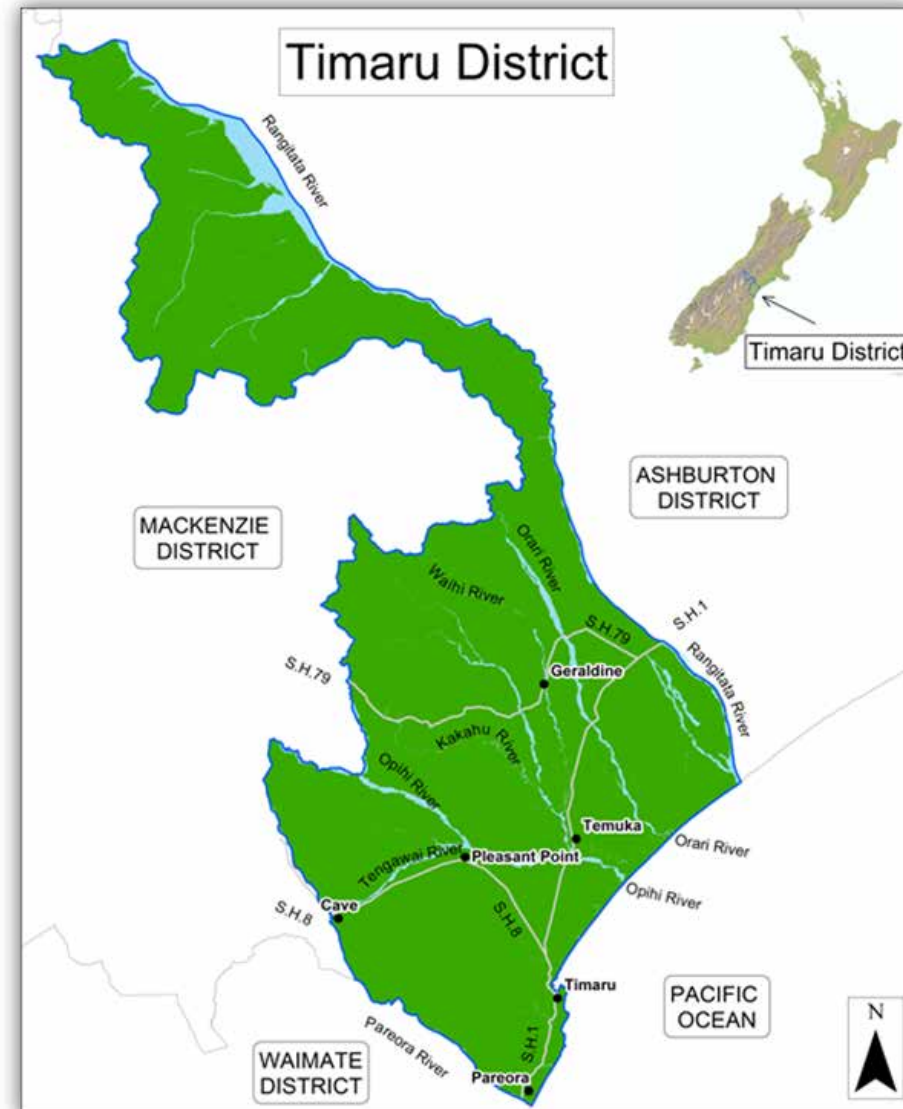
Our Communities

Timaru is the largest community, housing nearly two thirds of the total population of the district (27,038). The next largest community is Temuka (4,050), followed by Geraldine (2,301) and Pleasant Point (1,278). Our communities are well serviced with education, health and recreational services along with a vast range of clubs and organisations. The South Canterbury District Health Board is a major health provider, with the Aoraki Polytechnic providing tertiary educational services throughout the South Island.

Our Environment

The diverse landscapes of the Timaru District include rolling downlands, tussock land, coastal plains and wetlands, forest remnants, river gorges and rugged mountain ranges. The coastal plains to the north and downlands to the south are highly modified for intensive cropping, meat, wool and dairy production. Pasture and exotic woodlots dominate the modified hills and downs from Peel Forest to Cave, with occasional shrub and forest remnants. Limestone outcrops and volcanic sediment add to the diversity of the landforms. The district is also defined by a number of waterways, including the Orari, Opihi, Rangitata, Waihi and Pareora Rivers. The Rangitata and Pareora physically define the district and all waterways are highly valued by the community for their recreational, social, natural amenity and economic values. The district has a number of outstanding natural features and landscapes, as well as areas of significant native vegetation habitats of native fauna. There are also numerous important heritage sites, buildings and places. Figure 2 shows a map of the district.

Figure 2: Timaru District Map



Infrastructure Strategy

The Vision

The Timaru District Council's Long Term Plan includes the Council's strategic framework. This encompasses a Vision, Community Outcomes and Strategic Priorities. The Community Outcomes and Strategic Priorities are created based on the Vision. The Council has established a vision of *Economy-Lifestyle-Identity-Leadership* to help progress the Timaru District into the future. It aims to achieve a fine balance between continuously improving Timaru District communities, listening and responding to community needs and expectations and complying with a host of government legislation. The Vision must also factor in the requirements of future proofing infrastructure, building in resilience and planning to enable work programmes to be realistic, attainable and affordable.

The Council intends to balance all these factors whilst maintaining affordable business as usual services. The vision is explained in Figure 3.

Figure 3: Vision for Timaru District

Vision	Explanation
Lifestyle	We live in a pretty special place. We want to keep it that way. We want to make it even better for ourselves, our children, their children.
Economy	Our economy is essential to our future. We need it to grow innovatively and sustainably.
Identity	We want to forge and strengthen a reputation and identity that makes us the envy of other places.
Leadership	We want a district where we build on our strengths, minimize our weaknesses, challenge our threats and grasp our opportunities. This takes leadership.

Infrastructure Strategy

2.0 THIS INFRASTRUCTURE STRATEGY

This is Timaru District Council's first Infrastructure Strategy (IS). It has been prepared from Council's 2015 suite of Activity Management Plans and the Long Term Plan of which it forms part.

The issues discussed reflect the current legislative environment and the communities' priorities across the district/city.

The financial forecasts are estimates and the reliability of the forecasts decreases beyond ten years and towards the thirty year planning horizon.

2.1 Strategy Layout

The Strategy document sections and corresponding LGA Act sections are tabled below:

Table 2.1: Strategy Layout

Strategy Section	LGA 2002 as amended (Section 101B)
1 Identifies the district and provides context	2 (a)
2 Identifies the core infrastructure included in this strategy	2(a) and 6
Discuss the significant infrastructure issues and the associated assumptions	2(a) & (b)
3 Illustrate the linkage between strategic documents	2
4 Documents the strategic statements that will guide decision-making for the next 30 years	2(b)
5 Identifies the response options for the significant issues and documents benefits, cost, when and funding source	2(b); 3(a) to (e) & 4(a)
6 Identifies the costs associated with the actions proposed	4(a) to (c)

2.2 Core Infrastructure

The Local Government Act 2002 Section 101B – *Infrastructure Strategy* states:

1) *A local authority must prepare and adopt, as part of its long term plan, an infrastructure strategy for a period of at least 30 consecutive financial years*

and

6) *In this section, infrastructure assets includes*

a) existing or proposed assets to be used to provide services by or on behalf of the local authority in relation to the following groups of activities:

- i. water supply;*
- ii. sewerage and the treatment and disposal of sewage;*
- iii. stormwater drainage;*
- iv. flood protection and control works;*
- v. the provision of roads and footpaths; and*

b) any other assets that the local authority, in its discretion, wishes to include in the strategy.

2.2.1 Core Infrastructure Assets

The core Timaru District Infrastructure Assets for the IS are tabled below:

Table 2.2: Timaru District Infrastructure Assets

Asset	Description	Replacement Value	% of total
Water	Water extraction, treatment and distribution	\$72.22M	12%
Sewerage	Wastewater collection, treatment and discharge	\$84.11M	14%
Stormwater	Stormwater collection and discharge	\$34.72M	6%
Land Transport	Roads (arterial, collectors, local; curbs and gutters), bridges, footpaths	\$413.49M	68%
TOTAL		\$604.54M	100%

2.2.2 Other Activities

This Infrastructure Strategy is focused on core infrastructural assets – namely the Roads and Footpaths, Sewer, Stormwater and Water Supply activities. Consideration was given to extending it to other activities. However, due to the limited timeframes available for the preparation of the 2015 IS, these may be incorporated as part of the next Infrastructure Strategy development for the 2018- 2028 Long Term Plan.

2.2.3 Infrastructure Performance

In general, the Land Transport Networks and the Three Waters Networks function as expected and provide a consumer Level of Service commensurate with community expectations. Each network is made up of a number of groups of components each of which contributes to the overall customer experience.

Infrastructure Strategy

The performance of each network is measured and monitored to ensure that levels of service as specified in Activity Management Plans and contract specifications are being met.

A number of networks public performance measures are included in the Long Term Plan and each Annual Plan. These performance measures are assessed and reported to Council after 6, 9 and 12 months of each financial year, with the Annual Report of the year and performance measures being subject to audit.

The performance of each network is detailed as follows:

Land Transport

Road User Surveys

The Timaru District Council conducts Road Users Surveys biannually, through an independent consultant, Key Research Ltd. The survey obtains the perceptions of a broad range of road users across the District, which is used to identify the transport levels of service customer performance. From the survey, this allows the Council to determine the areas for possible improvements.

Condition Assessment

It is critical that Timaru District Council has clear knowledge of the condition of its assets and how they are performing. Condition data has been captured over a number of years, which has enabled the Timaru District Council to understand future expenditure patterns and management decisions regarding maintenance, replacement, and renewals.

The development and continued use of condition assessment data will allow preparation of verifiable predictive decay curves for particular asset types and hence permit prediction of remaining life. Consideration will still be required to allow for economic influences in the adopted life for the asset type. Asset condition is measured both by physical inspections (bridges, footpaths, unsealed roads, street furniture) and measuring defects – road carriageways pavements.

Road Roughness

Road roughness, as defined in terms of NAASRA (National Association of Australian State Roading Authority) counts is an indicator of road condition and performance. These counts

are measured by either a standard response meter or laser profilimeter being averages every 100m for rural roads and 25m for urban roads.

- A count of <70 is the standard requirement for new construction and rehabilitation of sealed roads.
- A count of >150 is regarded as a "rough pavement" and depending on traffic volumes a smoothing treatment may be appropriate.

Traffic Counts

Timaru District Council Land Transport Unit has 10 traffic counters that are utilised to perform 7-day average daily traffic counts on the District roads. The count sites are determined by Council staff using RAMM. The frequency of traffic counts is generally based on road hierarchy although traffic counts on all roads should be a maximum of five yearly intervals. The traffic counter setup, installation, and retrieval and data download is performed by a contractor. The traffic count data is stored in RAMM.

Road Crash Statistics

The CAS database has been used to record details of road crashes since 1980. The system records all crashes whether fatal, injury, or non-injury, and is an important tool in the analysis of road, intersection, and road user groups safety. All road crashes have a standard crash report prepared by Police that records details about the driver, occupants, vehicle, crash factors, and crash events. A copy of the crash report is provided by Police to Council for information, and report is sent to NZTA for entering in the CAS database.

Bridge Weight Restrictions

Bridges with posted weight restrictions are advertised and inspected annually. Our goal is to have no weight restricted bridges.

Travel Time surveys

Travel time is measured annually on specified routed through Timaru. These routes are North/South and East/West transferring the Timaru Urban area's/ Travel time trends measure asset performance.

Customer Complaints

Records are tracked through customer request database.

Water Supply

TDC owns and operates six urban water schemes, four rural water schemes and two stockwater supplies. The twelve schemes serve 13,723 urban residential properties, 1,473 urban non-residential properties, 1,031 rural properties, and 211 properties within schemes for stockwater use only. Council aims to continue to operate the assets and deliver safe and sustainable water supply services.

Plant and reticulation capacities in all schemes are sufficient to meet current demand and levels of service. Asset performance issues have mainly been associated with declining condition of the pipe network. Leak detection and reduction is an ongoing demand management strategy. Renewals have been identified to mitigate risk of asset failure due to ageing/poor condition.

Bacterial/protozoal compliance is an issue in some drinking water supplies. Water Safety Plans prepared for the drinking water supplies have identified improvements necessary to meet DWSNZ. Upgrading of treatment plants/facilities and increasing storage and pipe capacities are major planned works that will enhance asset performance to meet DWSNZ.

The demographic profile of the District is projected to significantly change in the next 30 years, with growth in the number of households as population ages. This factor will be monitored and hydraulic modelling of the schemes will continue to be utilised to determine impact of demand changes to the capacity and performance of the assets. Strategies will be developed around ensuring assets will perform sustainably to ensure security of water supply services in the District.

Sewer

Sewer systems are provided for households, industries and all other facilities in the urban areas of Timaru, Temuka, Geraldine and Pleasant Point. These systems are linked via pipelines to the main wastewater treatment plant and ocean outfall in Timaru. A small collection scheme also serves the Arowhenua community which feeds into Temuka for

Infrastructure Strategy

treatment. Approximately 80% of the total district resident population are serviced.

Timaru's District Wide Sewer Strategy implemented in the last 10 years resulted in district-wide upgrading of existing facilities, construction of additional facilities, and improvements in treatment and disposal processes highlighted by the separation of domestic and industrial wastewater flows and treatments. Significant performance outcomes include:

- a) Wastewater from the inland towns of Geraldine, Pleasant Point and Temuka are no longer discharged to the rivers. Wastewater is piped via the inland towns pipeline to the maturation pond at the Timaru Wastewater Treatment Plant and discharged through the ocean outfall in Timaru.
- b) Separation of Timaru industrial wastewater stream from the domestic wastewater stream for separate treatment
- c) Due to the construction of a separate facility for domestic wastewater treatment, there is now more plant capacity for industrial wastewater treatment in support of future industrial growth
- d) On-site primary treatment of wastewater by industry to comply with tradewaste discharge limits set by TDC

Stormwater

TDC manages the operation of stormwater schemes for communities in Timaru, Temuka, Geraldine, Pleasant Point, Winchester, Cave and Milford-Ohapi. There are no significant stormwater services in other rural areas, although some drainage is managed by Environment Canterbury and partially funded by TDC. Schemes range from piped to open channel stormwater systems. Stormwater collected from schemes is disposed to soakpits, surface water bodies (e.g. rivers, ocean) and drains depending on the locality.

Stormwater schemes in residential areas are designed to cope with a 1 in 5 year return rainfall event (i.e. the event has a 20% chance of occurring in any one year). Stormwater schemes in industrial and commercial zones are designed to cope with a 1 in 10 year return rainfall event (i.e. the event has a 10% chance of occurring in any one year). Where rainfall exceeds design standards, escape routes or secondary flow paths are designed for a 1 in 50 year return rainfall event (i.e. the event has a 2% chance of occurring in any one year). Excess

stormwater will flow overland along these flow paths (e.g. roads and gullies). These are designed to mitigate potential damage to structures. Runoffs from a rainfall event greater than 5-year return period will be beyond the capacity of the District's existing piped or open channel systems and some temporary surface flooding may occur.

Environmental standards for stormwater discharges have increased and will impact directly on asset performance. The Proposed Canterbury LWRP requires treatment and attenuation of stormwater prior to disposal to waterways and the ocean. These requirements will shape the renewals and/or development of stormwater assets within the period of the Infrastructure Strategy. The resource consents that TDC will obtain from 2018 will require improvement of stormwater discharges to meet quality standards by 2025.

Demographic changes, land use change and lifestyle changes will be monitored to assess impact on existing asset capacity and address requirements to enable sustained performance in the long term.

2.2.4 Risks to Asset Performance

Each of the networks is subject to a number of Performance Risks. Some risks are common and some are network specific.

1. Legislative Changes
2. Climate Change
3. Availability of Resources
4. Physical events such as Tsunami, Earthquake, Windstorm, Rainstorm and Snowstorms
5. Ageing Assets

In addition each network may be the subject of specific risks, as follows:

Land Transport

Risks are detailed in the land transport activity management plan. Other than the risks identified above the key risks are:

- Use beyond design parameters, e.g. HPMVs, significant increases in traffic volumes, overweight vehicles, that results in damage or premature deterioration of asset
- Hazards that may cause public harm
- Reduced external funding that may reduce renewal and operational programmes

- Failure to meet customer expectations or growth demands

3 Waters

Council's water supply, sewer and stormwater services are funded from rates and increasing cost of services is a financial risk on Council's ability to continue to operate and maintain the assets and deliver the required levels of service.

The increasing cost of complying with legislated requirements (e.g., environmental quality improvement, drinking water standards, etc) pose a risk of potentially being unaffordable to ratepayers, and may lead to reduced levels of service.

There are also financial risks associated with the changing demographics of the District, i.e., with new demand for expanding infrastructure to serve more areas, and with the existing areas served by an ageing infrastructure. The cost to build, operate, maintain and renew the infrastructure increases while the community is getting older, with more people on fixed incomes, and fewer with less income per household.

Another financial risk relates to the potential departure of high use industrial consumers. A large proportion of the cost to deliver water services is fixed, which will be incurred regardless of the total volume of water supplied or wastewater treated. Therefore if a high use industrial consumer were to depart Timaru District, these fixed costs could result in higher annual charges to consumers.

In wastewater services, Council requires businesses to treat tradewaste onsite. The risk of non-compliance with trade waste discharge agreements by businesses has financial implications to Council and the community as it could ultimately require more investment in industrial wastewater treatment for the District to comply with legislation.

Infrastructure Strategy

2.3 Emerging Issues

The task of building, operating and maintaining these infrastructure assets in an affordable manner is becoming increasingly difficult in view of:

2.3.1 Demographic Changes

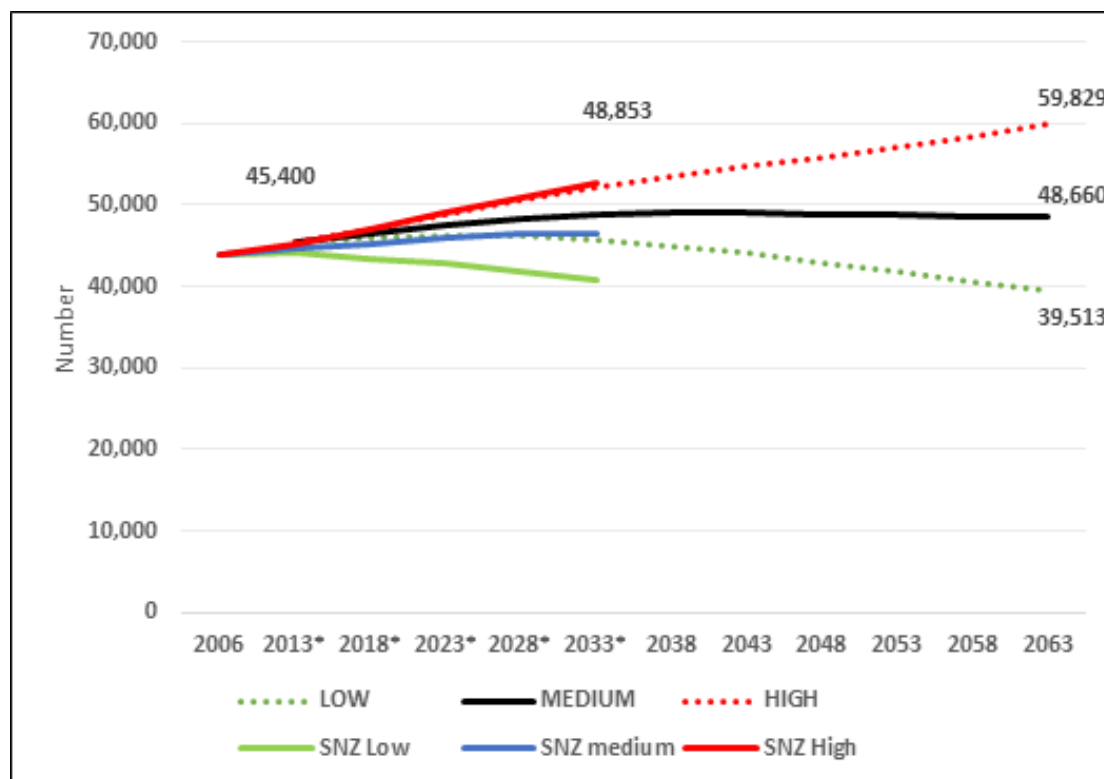
For the 2015-25 Long Term Plan, the Council commissioned revised population and household projections from Professor Natalie Jackson from Waikato University. These are based on the most recent Estimated Resident Population (ERP) data based on the 2013 census released in August 2014.

Key points from the projections (*under the recommended medium scenario*) are:

- Timaru District population is projected to increase to around 48,853 (+7.6 per cent) in 2033, peaking around 2038 at 49,041 persons and declining very slightly over the remaining projection period to 48,660 in 2063.
- Virtually all growth in future years will be in age groups 65+, with the proportion of 65+ increasing from 20.1% in 2013 to 31% in 2033.
- Timaru District will see the population shifting from natural increase (more than deaths) to natural decline from 2023
- Trends indicate the impact of structural ageing, with the shift to zero natural increase projected for 32 of NZ's TAs by 2031
- Total household/dwelling numbers increase from 18,660 in 2013 to 21,105 in 2033 (+13.1 per cent), peaking in 2043 at 21,451 households, then declining slightly to 21,355 by 2063 (+14.4 per cent over 2013).
- Family- and one-person households account for both the majority of household types (69 and 28 per cent respectively in 2013) and the majority of change
- The increase in family households is for primarily couples without children (i.e. couples who do not yet have children, couples who do not/will not have children, couples whose children have left home).
- One-person households will increase, reflecting the structural ageing of the population
- The above household changes will drive demand for certain types of dwellings

The following graphs summarise the population and household projections:

Figure 4: Projected Population of the Timaru District 2013-2063 and Comparison with Statistics New Zealand Projections 2006-2031, by Projection Scenario



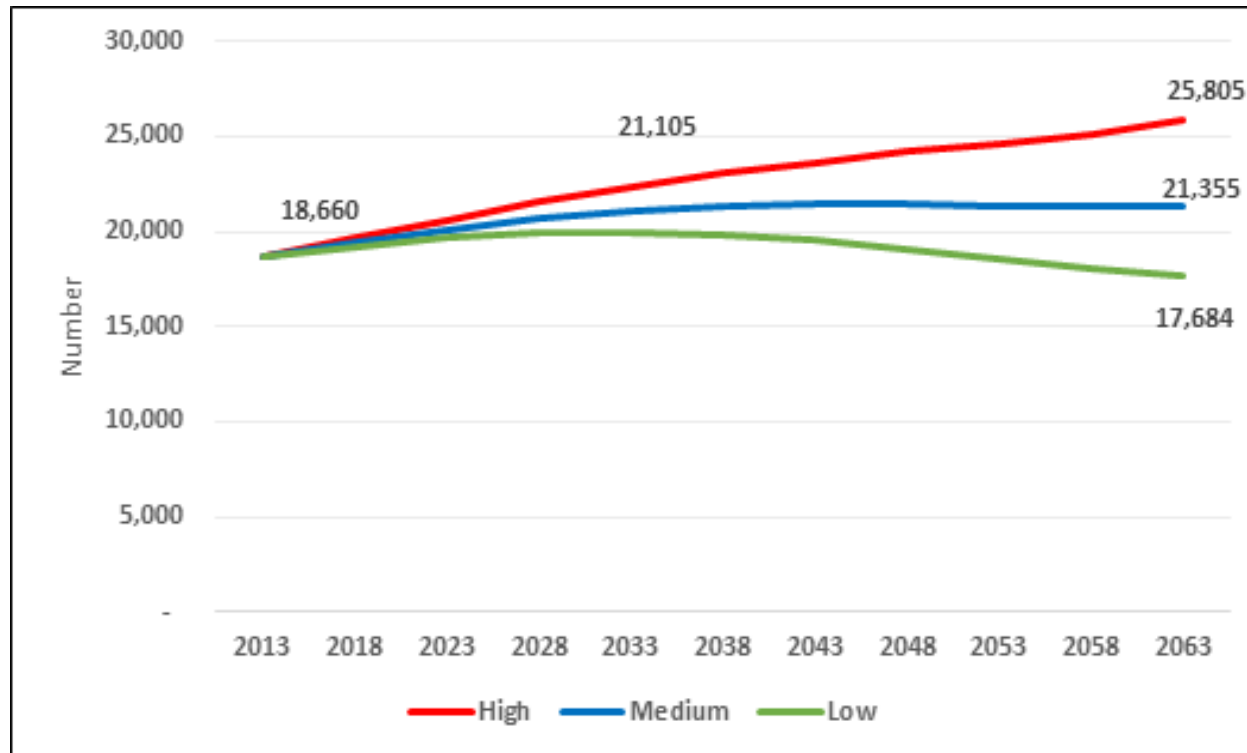
¹ Household means "One person usually living alone, or two or more people usually living together and sharing facilities (e.g. eating facilities, cooking facilities, bathroom and toilet facilities, a living area), in a private dwelling

² Jackson, N.O. (2014). Timaru District Council – Population and Household projections 2013-2063. Report Commissioned by Timaru District Council. August 2014. . Natalie Jackson Demographics Ltd as a sub-contract to the National Institute of Demographic and Economic Analysis (NIDEA), University of Waikato.

³ The ERP represents the final revision of census night counts and includes adjustments for births, deaths and migration occurring between census night and 30 June 2013, adjustments for people temporarily overseas on census night and census night undercount. Projections are not forecasts but indicate what the future population size and structure might be if the underlying assumptions on births, deaths and migration prevail.

Infrastructure Strategy

Figure 5: Projected Number of Households in the Timaru District 2013-2063, by Projection Variant



2.3.2 New Technologies

Technological advancements are an on-going improvement that TDC aims to utilise in the roading and water utilities infrastructure assets.

For transport services, new technologies are developing rapidly, particularly in information management, logistics, and safety. Other technological advances include the development of alternatives to fossil fuels and other materials used for the roading network, which could provide new options for mitigating the negative environmental impacts, as well as increasing efficiency, safety, and convenience. As technology improves, new methods of funding transport infrastructure are added, such as the tolling systems.

Technology has also improved machinery and equipment used in the roading network, which could assist the District to improve in safety, time, design, monitoring and others. Some of these areas that are influenced by technology are:

- Improvement in road designs and safety;
- Improvement in bridge safety and capabilities;
- Improvement in vision for road and pedestrian facilities; and others;
- Increase in electronic commerce, home shopping, distance learning;
- Improvement in the efficiency of motor vehicles; and
- Improvement in interaction between different modes of transportation for freight, and even the community.

For water services, advanced technologies relating to high performance pipe materials, more effective and environmentally sustainable water treatment processes, non-destructive pipe condition assessments, and greater integration of Information and Communication Technology (ICT) tools in business processes are some of the technological improvements that can bring about significant efficiency gains in the operation of water assets and delivery of water supply, sewer and stormwater services.

Timaru District's road and water utilities infrastructure assets are aging and TDC is utilising technology advancements to analyse data that is collected to ensure assets perform as originally designed. Data analysis is the focus for TDC to predict asset failure, obtain condition data to assist prediction of failure, and utilise the data collected to help Council meet

Infrastructure Strategy

its sustainability objectives.

New technologies are also utilised at the time of asset renewal progressively upgrading the infrastructure. Council use a whole of life Cost Benefit Analysis (CBA) in considering new technology. This provides the stakeholders with a coordinated approach that will deliver the greatest impact while balancing the cost implications and affordability.

2.3.3 Changing Government Priorities and Legislative Environment

The National Infrastructure Plan, March 2011, states that:

There are two key outcomes the government would like to drive through its infrastructure strategy:

- *Better Use of Existing Infrastructure*
- *Better Allocation of New Investment*

The Government's focus on growth and the economy as detailed in the Business Growth Agenda is a key influence on investment prioritisation.

The Government's focus is moving on from water quality as this has been addressed through the Health Act (Drinking Water) Amendment Act 2007 and the Drinking Water Standards for New Zealand and the focus is now changing to water quantity and the sensible, sustainable management thereof.

Environmental Compliance and progress is reflected through national policy statements and promulgated through regional and district plans.

2.3.4 Climate Change

The predicted effects of climate change on the ability of the Timaru District Council to maintain or improve current levels of service are significant. Predicted effects which may affect levels of service include changes in rainfall levels, droughts, increased frequency of extreme weather events and rising sea levels. For these reasons the Council is including information related to climate change predictions in its decision making, particularly in relation to infrastructure planning.

Water Supply

The effects of climate change may include factors such as increased frequency of droughts, which diminish the

availability of source water and has associated water take restrictions; increased frequency of high intensity rainfalls, which impact on raw water quality increasing the need for more complex treatments; and causing more frequent river 'freshes' and subsequent forced changes in water usage as a consequence.

The risks associated with climate change relate to the availability and quality of source water and the increasing frequency of drought, resulting in the probability of severe restrictions being imposed increasing above the 5% chance of occurring in any one year. More frequent and intense rainfall can also affect the quality of raw water making it more difficult to treat to drinking water standards.

Sewer

The effects of climate change on the sewer activity may include factors such as increased inflow from intense rainfall events, which may cause sustainability issues. These events may result in levels of service failure if the network is not able to deal with a 1 in 5 year (residential) and 1 in 10 year (commercial/industrial) return period rainfall events.

The rate of inflow and infiltration (I & I) of rainwater into the wastewater network is a key factor in future wastewater demands. Most urban systems across New Zealand experience I & I with stormwater making up 20% to 40% of wastewater volumes.

The longer dry spells and higher temperatures may lead to a decrease in I & I into the wastewater system. However higher intensity rainfall events can increase inflow into the sewer as flooding around gully traps and manholes can occur.

Incidents involving overflow from the sewer network due to high levels of I & I make it more likely that breaches of resource consents will occur.

Stormwater

The effects of climate change on the district's stormwater networks are not quantifiable with complete accuracy. What is known is the district's urban stormwater networks are designed to meet a 1 in 5-year return rainfall event (i.e. a 20% chance of occurring in any one year) in residential areas and a 1 in 10 year return rainfall event (i.e. a 10% chance of occurring in any one year) in industrial and commercial areas.

Climate change predictions are for potential increases in high intensity rainfall for the district. Existing stormwater systems may not meet their intended level of service under such conditions. To counter this, the Council is implementing alternative low impact design retention methods (e.g. swales and retention dams) to manage stormwater runoff in a more sustainable manner.

Stormwater catchment analysis will be carried out and stormwater control strategies will be developed from which secondary flow paths can be established to try and mitigate the risks to the networks and subsequent levels of service posed by climate change.

Land Transport

The effects of climate change on the districts roading network are known in terms of the predicted changes in weather patterns. The predicted increases in extreme weather events involving significant rainfall may lead to increased levels of surface water leading to subsequent ponding problems and blockages to drains for stormwater run-off.

The predicted increase in extreme rainfall events may cause scouring to occur at the edges of roads and also cause significant damage through scouring to the abutments of bridges in the district. Weather events which consist of rainfall over extended periods can cause landslips, which can affect the roading network in particular areas within the district

Coastal Erosion

The district does not have significant roading or water treatment infrastructure subject to the immediate threat of coastal erosion, but it does have low lying recreation areas which are subject to it, for example the Otupua Wetlands and associated paths and bridges. The issue can be summarised as follows:

- Coastal erosion is occurring along the entirety of the South Canterbury Coastline with the exception of Caroline Bay, which is accreting.
- Erosion has been worsening in recent times as beach shingle is depleted, particularly in severe North Easterly swells.
- Most at risk from current levels of erosion are coastal walkways, the Rail Corridor for the East Coast main trunk

Infrastructure Strategy

railway line, Otipua Beach and the Otipua Wetlands as mentioned above.

Looking to the next 25 to 50 years, more significant assets in terms of infrastructure may be affected by coastal erosion. If sea levels rise as predicted together with more frequent extreme weather events, the rate of erosion will increase. This could potentially affect the following:

- Washdyke Lagoon – if the seaward side of the lagoon were to be completely eroded it would expose a main sewer line to the risk of damage from the effects of coastal erosion.
- Ashbury Park and surrounding low lying areas
- Waimataitai Beach – walkways and Rail Corridor
- Rangitata Fishing Huts on the South side of the Rangitata River mouth.

The TDC Wastewater Treatment Plant and Oxidation Ponds have been built outside the coastal erosion zone, as defined by Environment Canterbury. It is anticipated that the plant and ponds may be at risk but not within the 100 year timeframe.

2.3.5 Infrastructure Resilience and Long Term Sustainability

Customers have a high expectation of continuing functionality and service delivery. Resilience is based on a design philosophy which acknowledges that failure will occur.

Resilience requires early detection and recovery, but not necessarily through re-establishing the failed system. We have to consider managing and mitigating the risks to, and the resilience of, our infrastructure assets not only from natural disasters but also from the impact of development. Weakness in asset condition monitoring is also a major risk to asset performance.

To be resilient and sustainable, planning needs to look ahead and respond to both anticipated and unexpected changes. Canterbury faces disruption from acute events, such as floods, earthquakes or serious crashes; the design of infrastructure and provision of alternative routes can help alleviate these risks.

More gradual and predictable threats provide even greater challenges in the long-term. Changes in demand will occur due to population growth, demographic and economic changes. Other changes need to be anticipated and planned

for, such as climate change.

The current heavy reliance on non-renewable fuels and its contributions to climate change emissions is a sustainability issue. At a regional level, the infrastructure and services provided will make relatively little difference to these issues. More substantial progress requires national and international responses, including strong policy responses and the introduction of new technology.

The integration of infrastructure and services with land use planning also contributes to long term sustainability as it can reduce costs and enhance accessibility, amenity and safety. More accurate physical condition assessment of assets can improve targeting of renewals and increase resilience of the infrastructure networks.

2.3.6 Ageing infrastructure

The infrastructure is ageing and the district is approaching an important period to ensure that its infrastructure assets continue to meet the needs of the community in the future. TDC has adopted a 'failure mode' philosophy for renewals to pro-actively renew assets within the most appropriate time period.

TDC's renewal strategy is intended to provide for the progressive replacement of individual assets that have reached the end of their useful life. The rate of asset renewal is intended to maintain the overall condition of the asset system at a standard, which reflects its age profile, and ensures that the community's investment in the District's 3-Waters and Land Transport infrastructure is maintained.

In the 3-Waters services, the level of expenditure on cyclic replacement of assets varies from year to year, reflecting:

- The age profile of the system (Asset life)
- The condition profile of the system
- Criticality of the asset
- The ongoing maintenance demand
- Customer service issues
- Leakage reduction
- The differing economic lives of individual assets comprising the overall asset system
- Trend of materials that cause issues

In Land Transport, a significant amount of the infrastructure was constructed between 50 and 80 years ago during "pioneer" or "boom" times that provided access to land, industry, rail and ports. When installed there was significant optimism of continued growth and infrastructure was often designed to accommodate these future demands. An example of this was the 1965 Timaru Transportation study predicting population growth in Timaru urban area to increase from 27,000 to over 40,000 by the year 2000. Today in 2014 the population of Timaru is 43,929.

This optimism had benefits with infrastructure having the capacity to meet future demands reducing the need for further investment. The economic downturn in the 1980's and 1990's resulted in very little investment. As a consequence the community have had the benefit of the past but a significant proportion of the assets are reaching the end of their useful life. This is most evident in the district's bridge stock where many will need replacing in 10 to 20 years time. Provision must be made for this "wave" of expenditure required.

Much of the transport infrastructure installed is nearing the end of its useful life and significant renewal programme is required. This is monitored by the following:

- Deterioration modelling (dTIMS)
- Effective and timely maintenance
- Lifecycle assets strategy and plan implemented.
- Renewals programmed and completed in effective and timely manner.
- Costs recorded and intervention actions based on whole of life costs.
- Condition monitoring

Affordability and funding determine the rate of renewal. Deferred renewals may affect level of service and increase maintenance costs.

2.3.7 Land Use Change

The use of land in the Timaru District has changed substantially in the last 15 years. Significant growth in demand for infrastructure services is expected to occur in the following parts of the District:

- Washdyke as main industrial growth area
- Timaru CBD and (potentially) the Show Grounds for

Infrastructure Strategy

- commercial use
- Residential growth continuing in Gleniti areas as well as Old North Road area

At Washdyke, in 2011-14, Council rezoned 120 hectares of land from Rural to Industrial. This rezoning will result in developments that will require extensive new infrastructure, particularly roads, piped networks and electricity distribution systems. Council has determined that this newly zoned land will have infrastructure provided by developers at the time of development.

Rural land intensification has also occurred throughout the District with resultant impacts on infrastructure, particularly roads and bridges. In more recent times heavy trucks have been approved at a 50 tonne gross vehicle mass. The additional vehicle movements have resulted in extra costs in order to meet specified community levels of service.

Land use change impacts on water services are also significant. The increasing number of life style blocks on the fringes of the District's urban areas has increased demand for extension of water supply services to these properties. Intensification of dairy farming and/or conversion of dry stock farms to dairy operations also have an associated higher requirement for treated water. As residential development continues, the extent of impervious areas grows and creates more demand for stormwater infrastructure services.

Revisions of the District Plan are expected to provide for the expected demand comfortably with progressive extensions to commercial, industrial and residential areas. The number of households will increase as persons per household decreases, mainly due to the increase in over 65's. Housing costs should be expected to remain at an affordable level, with demand reflecting the change in age distribution.

2.3.8 Funding

Capital and operational funding of the Land Transport and 3 Waters networks is complex and made up of a number of streams.

Existing funding sources are as follows:

Land Transport

- Rates via land values

- NZ Transport Agency Financial Assistance
- Loans
- User charges
- Private parties
- Depreciation funds

3 Waters

- Rates via land values based on community of interest for stormwater
- Rates via uniform annual charges for water and sewer
- Rates via land area
- Rates via water volumes (rural)
- Subsidies for approved sewer schemes
- Loans
- User charges
- Private parties
- Depreciation funds

For details on how these activities are funded, refer to the Council's Revenue and Financing Policy that can be found in the Long Term Plan. This policy outlines the proportion of funding that will come from each source. Financial Contributions are charged under the current Financial Contributions policy in the District Plan. Currently, the Council does not use Development Contributions as provided for in the Local Government Act.

Rating for these activities differs according to where the property is located, the land value of the property and the services received.

Funding for Land Transport from government through NZTA is reducing. This is occurring through a number of changes as follows:

GPS - funding allocations are being held to 2009 levels effectively providing no allowance for cost escalation.

FAR - the NZTA FAR review has implemented a flat rate for all activities and the outcome for Timaru is a reduced FAR over the next 5 years from 55% average to 51%.

Funding category changes – a reduction in NZTA funding categories has resulted in reduced funding overall and the need for business cases to be prepared to support national priorities and contestability issues.

One Network Road Classification (ONRC) – this is a national road hierarchy system and NZTA have indicated that funding will be based on the Level of Service (LoS) set for each road classification that may not be the current LoS.

Infrastructure Strategy

2.4 Assumptions

The Assumptions in this Infrastructure Strategy follow the Long Term Plan General and Financial Assumptions which reflect the issues that may impact on Council activities in the next 30 years. These assumptions underpinned Council's determination of the most likely scenarios for management of its Land Transport and 3 Waters infrastructure assets, and the significant decisions on capital expenditure over the period of the strategy.

Table 2.3: Significant Assumptions

Significant Assumptions	Risk	Consequence	Mitigation
Macro-Level Assumptions			
<p>Legislative demands on Council</p> <p>Government legislation relating to some activities that Councils are involved in will change over the period of the Infrastructure Strategy.</p> <p><i>Comment:</i> In the next three years, legislative impacts are expected in the following areas of Council Operations - Resource Management, Environmental Health, Local Government Planning and Reporting, Water Supply, Building and Transport. Some legislative changes have been signalled by government, but are not yet through the parliamentary cycle.</p>	<p>The impact of government legislation is more or less than expected.</p> <p>New legislation is introduced that alters the nature and scope of one or more of Council activities.</p>	<p>Unrealised impacts of legislation may create greater impacts on Council operations, including operating budgets, workloads, time and resource availability. These may lead to additional costs for the resident or ratepayer.</p>	<p>Council will regularly monitor existing and potential legislative change across its activities as it moves through the parliamentary cycle.</p> <p>The Council will submit on legislation where appropriate to encourage reduced or improved impacts on Council operations and value for money for ratepayers.</p> <p>Where legislation requires review of Council processes or staffing, the Council will seek to achieve the most efficient and cost effective way forward.</p> <p>Where legislation requires Council to provide additional services or increased levels of service, this may require cost recovery through increases to rates or user fees.</p>
<p>Currency and oil price fluctuations</p> <p>Currency fluctuations are not forecast to cause significant variability in Council costs.</p> <p>Exchange rates are forecast to remain unchanged from current rates.</p> <p>Oil prices will continue to fluctuate due to international influences and exchange rate movement.</p>	<p>Exchange rates fluctuate more than expected.</p> <p>Oil price fluctuations are greater than expected.</p>	<p>Variability of prices from international suppliers could cause variability in Council costs. This may impact on the ability of Council to complete programmed work within budget.</p>	<p>Council purchases goods predominantly from New Zealand suppliers with contracts in New Zealand dollars.</p> <p>Currency exchange rates and oil prices will be continually monitored. Work programmes may need adjustment depending on the scale of any changes.</p>

Infrastructure Strategy

Significant Assumptions	Risk	Consequence	Mitigation
<p>Inflation</p> <p>The Infrastructure Strategy is prepared on the inflation rates assumed in the table below for periods beyond 2015/16 which is based on Local Government Cost Index (LGCI) prepared by Berl Economics.</p> <ul style="list-style-type: none"> ■ 2016/17 2.45% ■ 2017/18 2.53% ■ 2018/19 2.61% ■ 2019/20 2.75% ■ 2020/21 2.90% ■ 2021/22 3.04% ■ 2022/23 3.19% ■ 2023/24 3.36% ■ 2024/25 3.53% 	<p>The rate of inflation differs from that assumed.</p>	<p>A significant change in inflation will result in changed revenue and expenditure. This could be significant and may adversely affect the ability of the Council to set rates at a level that is affordable to the community.</p>	<p>The Council will review its budget annually through the LTP/Annual Plan process and may adjust work programmes/budgets when necessary.</p>
<p>Climate Change</p> <p>Climate change will impact on the Council's operations and will require an appropriate response to adapt and prepare for potential impacts.</p> <p><i>Comment:</i> Climate change effects on Timaru District may include an increase in temperature, stronger winds, sea level rise, longer dry periods and more intense rainfall events.</p>	<p>The effects of climate changes are more or less severe than expected.</p>	<p>Unrealised effects of climate change are likely to create additional costs to mitigate their impacts, such as improving protection of critical infrastructure.</p> <p>More severe weather events resulting from climate change may increase damage to infrastructure and place pressure on Council finances.</p>	<p>Council activities will build appropriate mitigation responses into infrastructure development.</p> <p>The Council will continue to monitor climate change science and the response of central government and adapt its response where required.</p>

Infrastructure Strategy

Significant Assumptions	Risk	Consequence	Mitigation
District Level Assumptions			
<p>Population Change</p> <p>The District's population is projected to increase 48,853 (+7.6%) by 2033, peaking in 2038 at 49,091 and declining slightly over the remaining period to 48,660 in 2063. This represents the medium scenario. The population is expected to increase to 48,293 (+6.4%) by 2028 which includes the 2015 Infrastructure Strategy period.</p> <p><i>Comment:</i> Population projections do not represent forecasts, but indicate what the future size and structure will be if the underlying assumptions regarding births, deaths and migration prevail. Projections use the 2013 Census-based Estimated Resident Population as a base and were prepared by Natalie Jackson Demographics Limited and Waikato University.</p>	<p>Population change across the District occurs at a higher or lower rate than expected.</p>	<p>A significant and consistent decline in population may adversely affect the ability of the Council to set rates at a level that is affordable to the community.</p> <p>A significant and consistent rise in population may adversely affect the ability of Council to deliver some services to existing service levels.</p>	<p>Council will continue to monitor population change in the District. Generally, small increases in population can be managed within the existing level of service. Declines in population will not necessarily reflect lower number of ratepayers as the number of people per household is declining.</p> <p>Where growth requires additional infrastructure (e.g., subdivisions), Council can require financial contributions for this work.</p> <p>Costs over this amount may result in additional Council expenditure which is likely to be funded out of debt.</p>
<p>Household Change</p> <p>The District's households are projected to grow to 21,105 in 2033 (+13.1%), peaking in 2043 at 21,451 households, and declining slightly to 21,355 by 2063. This represents the medium scenario. Households are expected to increase to 20,680 (+10.8%) by 2028 which includes the 2015 Infrastructure Strategy period.</p>	<p>Household change across the District occurs at a higher or lower rate than expected.</p>	<p>A slower rate of household growth may mean some activities have overinvested in infrastructure (i.e., have too much capacity too soon).</p>	<p>Council will continue to monitor household change in the District. Existing infrastructure is being managed to address specific growth factors associated with an activity (e.g., traffic demand) which may be generated from an increase in households.</p> <p>Where growth requires additional infrastructure (e.g., subdivisions), Council can require financial contributions for this work.</p>

Infrastructure Strategy

Significant Assumptions	Risk	Consequence	Mitigation
<p>Demographic Changes</p> <p>The District's population is expected to age significantly into the future.</p> <p><i>Comment:</i> The most notable change is a projected ageing population with an anticipated 31% (or over 15,000 people) of the Timaru District population above the age of 65 by 2033 (2013 Census: 20.5% or 9,003 people). Population increase is expected to be mainly in age groups above 65. All other age groups are expected to decline. Gender-wise, the population will see a slowly increasing proportion of female to male over time. Ethnically, the population is expected to remain largely NZ European/New Zealander with a slowly increasing Maori population. This represents the medium scenario. Projections do not represent forecasts, but indicate what the future size and structure will be if the underlying assumptions regarding births, deaths and migration prevail. Projections use the 2013 Census-based Estimated Resident Population as a base and were prepared by Natalie Jackson Demographics Limited and Waikato University.</p>	<p>Demographic changes across the District occur at a higher or lower rate than expected</p>	<p>Changes to projected demographics may place pressure on some Council services due to increased demand over time, leading to provision of a lower level of service.</p>	<p>Forecast demographic changes for a rapidly ageing population have been projected for Western world economies for a number of years. Due to the makeup of the Timaru District population, it will feel these potential effects more acutely.</p>
<p>Service Levels</p> <p>Levels of service do not significantly change.</p> <p><i>Comment:</i> Where there are increased community expectations or demand or a need to vary level of service across the District, there may be changes to levels of service. Government legislation may also impose significant new service levels on the Council.</p>	<p>Significantly enhanced service levels are demanded by the community or imposed by the government on local authorities in one or more area of activity.</p>	<p>Increased or improved service levels inevitably require additional cost and/or resources to provide them.</p>	<p>The Council regularly monitors existing service provision within its operation on a day to day basis and through activity management planning.</p> <p>Minor changes may be made to service levels where budget, contracts and resources allow. These will generally occur within existing budgets.</p> <p>Major changes in service levels will be confirmed with the community via consultation. These will generally require increase to fees or rates, depending on how the service involved is funded.</p>

Infrastructure Strategy

Significant Assumptions	Risk	Consequence	Mitigation
<p>Demand</p> <p>Actual demand will be within projected levels.</p>	<p>Changes in demand are significantly higher or lower than expected.</p>	<p>Significant and consistent variation from projected levels may adversely affect TDC's ability to meet levels of service at an affordable cost.</p>	<p>Council will continue to monitor growth and development changes and adapt or redirect activity provision to meet needs within reasonable costs.</p>
<p>Strategic Assets</p> <p>Council will remain involved in all activities involving strategic assets and continue to own and control all strategic assets.</p>	<p>Changes in control or ownership of strategic assets are required.</p>	<p>Changes in control or ownership of strategic assets will likely affect the level of service provided to the community.</p>	<p>Changes in control or ownership of strategic assets must occur as part of an LTP development or amendment, with a full Special Consultative Procedure process required.</p>
<p>Useful Life of Significant Assets</p> <p>It is assumed that asset information is reliable and reflects the condition and performance of the assets. It is assumed that no significant assets will fail before the end of their useful lives as determined by the depreciation rates included in the accounting policies.</p>	<p>Significant assets fail sooner or later than estimated.</p>	<p>A significant change in the useful life of a major asset may have significant financial repercussions.</p>	<p>Asset life is based on the estimates of engineers and valuers. These are regularly reviewed through asset monitoring and testing. In the event of assets wearing out earlier than anticipated, capital projects could be brought forward. This may affect borrowing and depreciation expenses. Negative impacts are likely to be at least partially offset by some assets lasting longer than estimated. Mitigation may also involve reprioritisation of the capital expenditure program.</p>
<p>Joint Venture or Shared Service Arrangements/Council Controlled Organisations (CCOs)</p> <p>Existing joint venture or shared service arrangements or Council Controlled Organisations (CCOs) are expected to remain over the life of this Infrastructure Strategy.</p>	<p>New arrangements are proposed due to circumstances beyond the Council's control or existing arrangements are no longer tenable.</p>	<p>Additional costs may be created as the result of the failure of an existing arrangement.</p>	<p>Joint venture or shared service arrangements or CCO creation are undertaken following analysis of the potential benefits and costs and any proposed changes are subject to robust analysis.</p> <p>Where government legislation is involved, this will be monitored for any impacts on joint venture arrangements.</p> <p>In addition, the Local Government Act 2002 Amendment Act 2014 introduced a requirement for Councils to review all such arrangements every six years. A programme of review and associated process will be developed to meet these requirements.</p>

Infrastructure Strategy

Significant Assumptions	Risk	Consequence	Mitigation
<p>Availability of Contractors and Materials Contractors and materials will be available to undertake the work required to agreed standards, deadlines and cost.</p>	<p>Projects could be delayed if there is a shortage of contractors or materials, or contractors will not deliver to agreed standards, costs and timeframes.</p>	<p>Might increase cost and/or delay projects.</p>	<p>Spread projects a much as possible. Continue to engage with contractors. Ensure robust contracts are in place. Look at alternative resources such as concrete roads.</p>
<p>Funding Sources Funding sources (including external funding sources) do not change over the life of this Infrastructure Strategy. <i>Comment:</i> Funding sources are specified in the Revenue and Financing Policy and Financial Strategy. This applies to user fees, charges and external funding towards projects and assets. It is assumed that the policy of not collecting Development Contributions will continue.</p>	<p>Projected revenue from user charges financial assistance is not achieved. Levels and sources of funding differ from those forecast.</p>	<p>Revenues could reduce without the ability to reduce expenditure proportionately. In this event, the account would run in deficit, with charges reviewed for the next financial year. Project and asset funding could result in projects being revised or alternative funding sources used.</p>	<p>Levels of revenue from user charges have been set at realistic levels in accordance with the ratios outlined in the Revenue and Financing Policy. There is a concentration of risk associated with a small number of industrial consumers for some revenue streams (e.g., extraordinary water charges and trade waste charges). Regular liaison is maintained with these consumers. Funding for projects and assets is considered before the commencement of each project or asset. A significant impact from changes in funding or funding sources may result in a revised capital work programmes, or changes in the level of user fees and charges, borrowing or rating requirements.</p>
<p>Credit Availability Credit can be obtained from financial markets on competitive terms and conditions.</p>	<p>Required credit cannot be obtained from financial institutions.</p>	<p>Funding would need to be obtained from alternative sources or work programmes adjusted.</p>	<p>Prudent debt levels are maintained to mitigate risk for financial institutions. Relationships are maintained with various financial institutions and Council regularly monitors credit markets.</p>
<p>Costs Costs will remain stable over the period of the Infrastructure Strategy (refer also to Inflation assumption). <i>Comment:</i> Maintenance expenditure has been based on historical trends.</p>	<p>Costs are higher or lower than anticipated.</p>	<p>Variability of prices, such as for oil, could cause variability in costs.</p>	<p>The Council and management will review its budget annually through the LTP/Annual Planning process and may adjust work programmes/budgets where necessary.</p>

Infrastructure Strategy

Significant Assumptions	Risk	Consequence	Mitigation
<p>Asset Depreciation Rates</p> <p>Asset depreciation rates will not change as shown in the Accounting Policies.</p>	<p>Further work on planned capital works may alter the depreciation expense.</p>	<p>Increased depreciation costs would result from assets that have shorter useful lives.</p>	<p>Asset life is based on the estimates of engineers and valuers. These are regularly reviewed through asset monitoring and testing. Negative impacts are likely to be at least partially offset by some assets lasting longer than estimated.</p>
<p>Revaluation of Significant Assets</p> <p>The Council have adopted deemed cost as its approach to revaluation</p> <p><i>Comment:</i> This has been applied from 1 July 2005 for most assets. Investment properties and forest assets will be revalued annually in terms of their respective accounting policies</p>	<p>Minimal risks as asset revaluations will not occur in the future for property, plant and equipment.</p>		<p>Revaluation affects the carrying value of fixed and infrastructural assets and the depreciation charge in the years subsequent to the revaluation. Annual revaluations are undertaken for investment properties and forestry assets.</p>
<p>Rating Base</p> <p>The number of rating units will not change significantly over the period of the Infrastructure Strategy.</p>	<p>Rating units could grow at an increased rate or could contract.</p>	<p>An increase in the overall rating base could result in a decrease in rates for rating units as the total rates are spread across a larger base. If the rating base was to reduce, there could be an increase in rates.</p>	<p>The rating base is reviewed annually when determining the rates for the year.</p>
<p>Resource Consents</p> <p>Resource consents will be obtained with acceptable conditions, and expiring resource consents will be renewed with similar conditions during the period of the Infrastructure Strategy.</p> <p><i>Comment:</i> Resource consents due for renewal can be found within the relevant Activity Management Plan for individual activities. There are no major resource consent renewals during the period of the Infrastructure Strategy</p>	<p>Resource consent is not obtained or renewed, or conditions imposed are unacceptable.</p>	<p>The non-granting or non-renewal of a major resource consent for a Council activity would have significant impacts on costs and the ability to provide that activity. A major non-renewal may mean an entirely new approach to the activity would be required. Non-granting of resource consent may delay project benefits.</p>	<p>Appropriate planning for resource consent applications/renewals should ensure that they are obtained.</p> <p>Monitoring of compliance with existing resource consent conditions will provide a record of compliance for future processes.</p> <p>The renewal of consents is dependent upon the legislative and environmental standards and expectations that exist at that time.</p>
<p>Natural Hazards/Local Natural Disaster</p> <p>There are no significant local disasters during the term of this Infrastructure Activity.</p> <p><i>Comment:</i> The District is at risk from natural hazards such as flooding, earthquakes, storms, tsunami and wildfire. These events can strike without warning.</p>	<p>Natural disasters occur that have a significant impact on the District and Council services.</p>	<p>A disaster event can potentially cause significant unbudgeted costs, beyond the capacity of the Council to cope.</p>	<p>Council is a member of the Local Authority Protection Programme Disaster Fund Trust (LAPP) and has a variety of insurance cover which would cover some emergency works.</p> <p>Council also has a Disaster Relief Fund for the replacement of infrastructural assets excluding roading in the event of a natural disaster.</p> <p>Central government has role in disaster recovery after a natural disaster.</p>

Infrastructure Strategy

Significant Assumptions	Risk	Consequence	Mitigation
Council Political Structure There will be no changes to the Council political structure.	Changes in the Council political structure are made.	Changes in the political structure could either be minor or major depending on the nature of the changes. For example, an amalgamation will have a significant impact on the delivery of Council services.	Any changes in political structure will occur through either representation review processes or formal processes driven either by the community, Council or central government.
Sector-Specific Assumptions			
<i>Land Transport</i>			
NZ Transport Agency Financial Assistance There will be no further changes to the financial assistance approach for transport funding administered by the New Zealand Transport Agency (NZTA), including funding criteria and NZTA funding. Comment: Financial assistance rates are currently between 53% and 63% depending on the nature of the project.	Changes in NZTA subsidy rates or to criteria for roading and footpath projects have a positive or negative effect on Council's transport budget.	Funding would need to be obtained from alternative sources or work programmes adjusted. Levels of service may need to be adjusted. If sufficient funding is not available, it may mean that projects are delayed or scrapped.	The Council and management will review the budget annually through the LTP/Annual Plan process and may adjust work programmes/ budget where necessary. NZTA Financial Assistance Rates have been set at 55% for 2015/16, 54% for 2016/17 and 53% for 2017/18. It will continue to reduce 1% annually to a final rate of 51%. These rates apply to all work.
Maintenance of State Highways State highways to continue being maintained by NZTA.	Traffic pattern changes.	Greater costs to Council.	Rates increase.
<i>Water Supply</i>			
Water availability Water availability is unchanged and not significantly adversely affected by climate change or other factors.	Effects of climate change or other factors are more severe than expected.	Severe effects of climate change may create additional costs to improve protection/repair damage to critical infrastructure.	Monitoring of water sources and availability.
Water quality Source water quality does not decrease due to climate change or change in land use.	Effects of climate change and land use change are more severe than expected.	The severe effects of climate and/or land use changes may create additional costs to meet the requirements of Drinking Water Standards New Zealand.	Monitoring of sources.
Fire Fighting Requirement Fire Fighting Code of Practice (FF COP) SNZ PAS 4509:2008 remains voluntary.	FF COP becomes mandatory resulting in significant reticulation upgrades.	Increased infrastructure costs.	Consideration of progressive upgrades to meet FF COP requirements when renewals are programmed. Monitoring of legislative changes.
<i>Sewer Services</i>			

Infrastructure Strategy

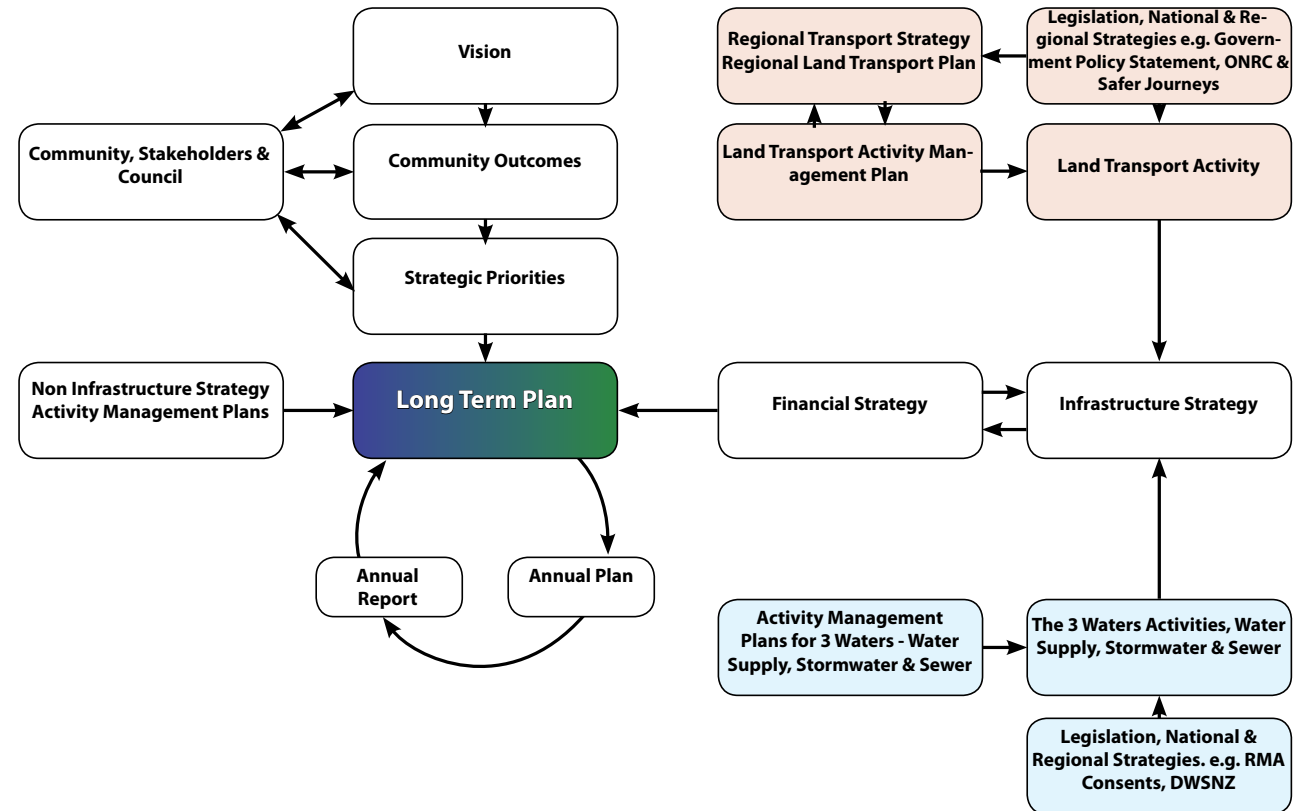
Significant Assumptions	Risk	Consequence	Mitigation
Compliance by Industry Industries comply with tradewaste discharge agreements.	Industries unable to comply with tradewaste discharge agreements.	Non-compliance may result in increased monitoring and compliance costs and ultimately industrial wastewater treatment upgrades.	Regular liaison with industry and close monitoring of industry compliance for early detection of issues.
<i>Stormwater Services</i>			
Stormwater Discharge Quality The deadline for meeting the environmental quality standards by 2025 is flexible.	No extension to the deadline.	Significant cost will be needed to implement stormwater treatment and comply with statutory environmental quality standards.	Regular liaison with ECan. Monitoring of legislative changes. Participation in catchment group recommendation to LWRP Chapter 14.

Infrastructure Strategy

3.0 LINKAGE WITH OTHER DOCUMENTS

In simple terms the Infrastructure Strategy (IS) feeds into the Corporate Planning Cycle as a foundation document. The IS and Financial Strategy must be closely integrated. The IS only covers the Land Transport and Three Waters Activities. The Activities are in turn informed by their particular Activity Management Plans, as well as other documents, strategies and legislation as shown in Figure 6 below.

Figure 6: Infrastructure Strategy Linkage with other Documents




Infrastructure Strategy

4.0 THIRTY YEAR STRATEGY


In its role as Local Authority Timaru District Council will comply with the relevant New Zealand legislation, while working towards the Vision, Community Outcomes and Strategic Priorities. These were developed as part of the long term planning process.

4.1 Applying the Vision, Community Outcomes and Strategic Priorities to Infrastructure Planning

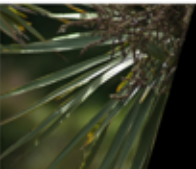
The Vision




Lifestyle
Fantastic, sustainable lifestyle second to none - We live in a pretty special place. We want to keep it that way. We want to make it even better for ourselves, our children, their children.



Economy
Thriving and innovative economy where opportunities abound - Our economy is essential to our future. We need it to grow innovatively and sustainably.



Identity
Strong and enviable reputation and identity - We want to forge and strengthen a reputation and identity that other districts may aspire to.



Leadership
Inspiring, people-focused leadership - We want a district where we build on our strengths, minimise our weaknesses, challenge our threats and grasp our opportunities. This takes leadership.

In terms of the Infrastructure Strategy, the Lifestyle and Economy related portions of the Vision are the most relevant.

The Community Outcomes

Community Outcomes are derived from the Vision and represent the outcomes that the Council aims to achieve in order to promote the social, economic, environmental and cultural wellbeing of the District in the present and in the future. The Community Outcomes are as follows:

- High quality infrastructure to meet community and business needs
- Smart, diversified economic success and growth supported and enabled
- Communities are safe, vibrant and growing
- People enjoying a high quality of life
- A strong identity forged and promoted
- A valued, healthy and accessible environment

The first three in this list are strongly related to infrastructure and the management, maintenance and development of it for the future. The last three in the list can be more loosely related to infrastructure.

The Strategic Priorities

The Strategic Priorities are derived from the Community Outcomes and more clearly state areas of focus in order to contribute towards the Community Outcomes. They can all apply to infrastructure, which is explained more clearly below in paragraphs 4.1.1 to 4.1.4. The Strategic Priorities are as follows:

- Investing in Community
- Promote Integrated, Highly Liveable Communities
- Support Areas of Economic and District Strength
- Ensure Critical Infrastructure Meets Future Needs

4.1.1 Investing in Community - Council will Lead, Advocate and Promote on behalf of the Community for the Community

The Council is an important player in the Timaru District, particularly in terms of dealing with issues around the delivery of infrastructure. It provides quality leadership supported by the best possible quality information from suitably qualified

Infrastructure Strategy

individuals within, and external to the organisation. This foundation provides a platform for the Council to advocate on behalf of the community at National level and also to promote the benefits of living in the Timaru District. The investment in quality leadership, advocacy and promotion leads to the development of strong partnerships to ensure the most effective solutions to infrastructure issues are achieved for the betterment of the wider Timaru District.

4.1.2 Promote Integrated, Highly Liveable Communities - Council will Promote and Plan for Integrated Communities Now and Into the Future

The Council has a critical role in planning for our District's future. It will promote integrated planning to meet future infrastructure challenges and ensure the wise investment of resources. Successful planning for the future will ensure integrated, attractive and safe communities, which in turn will ensure a vibrant and resilient District going forward. Smart thinking and planning will involve taking all relevant information into account, consultation with our communities and ensuring that our decision making is in line with current legislative guidelines for local government.

4.1.3 Support Areas of Economic and District Strength - Council will Support Economic Growth

The long and short term planning for infrastructure needs, and projected needs for the future, provides security for local businesses for now and the future. The product of this is the provision of a foundation for planning for growth within the business sector as it relates to infrastructure. Therefore business confidence in the Council's infrastructure planning is a key factor in the Council's Strategic Priority to promote economic growth within the District.

4.1.4 Ensure Critical Infrastructure Meets Future Needs - Council will Deliver Resilient and Future Proof Infrastructure

One of the Council's core roles is in the provision of infrastructure, both below and above ground that enables communities to survive and prosper. Infrastructure connects our communities together and is critical to our social, economic, cultural and environmental wellbeing. Ensuring our infrastructure is resilient, as is reasonably practicable to

achieve within the framework of legislation, is also critical. By continuously planning and acting to meet future needs through maintenance and development of infrastructure, the Council will provide a solid foundation for the Timaru District's future.

4.2 The Organisation's Priorities

At high level, Council's priorities are:

- Replacing ageing infrastructure
- Maintaining level of service
- Managing the impacts of growth and land use change
- Compliance with legislative requirements
- Providing long term affordable services

4.3 Asset Management Strategy

In providing services to residents and visitors through the use of infrastructural assets, Council's management strategy is to be a prudent and knowledgeable asset manager that makes investment decisions based on asset age, condition, performance, deterioration and maintenance factors. Increasing legislated standards are acknowledged and actioned in all asset renewal projects.

Council utilizes a holistic life cycle approach to asset management that addresses not only infrastructure assets, but also the supporting resources, business processes, data and enabling technologies that are critical to sustainably delivering agreed levels of service. This holistic approach to life cycle asset management enables critical asset data, particularly condition and performance tracking, to be effectively managed and leveraged at a practical day-to-day business level. With this approach, Council aims to achieve optimum performance and full asset potential.

The rate of asset renewal is intended to maintain the overall condition of the asset system at a standard, which reflects its age profile, and ensures that the Community's investment in the District's infrastructure is maintained. The level of expenditure on cyclic asset replacement varies from year to year, reflecting:

- The age profile of the system (Asset life)
- The condition profile of the system
- Criticality of the Asset

- The ongoing maintenance demand
- Customer service issues
- Leakage and Inflow Infiltration reduction (for 3 waters)
- Trending for materials that fail ahead of time.

Deciding the timing of capital and maintenance expenditures will be based on Council's understanding of the current condition and capacity of the assets, as well as future capacity and reliability requirements. Council will also consider the cost and risk associated with implementing or deferring upgrades or improvements. Council's strategy will be to:

- Prioritize capital and renewal projects within the next ten year period based on the strategic objectives of the Timaru District's Long Term Plan and a holistic risk based condition assessment
- Forecast capital renewal, replacement and upgrade costs over the following 20 year period
- Forecast the funding requirements based on estimates of costs and asset valuations

4.4 Delivery of Services

In terms of Section 10 (Purpose of local government) of the Local Government Act 2014, there is a clear requirement to meet the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses.

The Act defines good-quality, in relation to local infrastructure, local public services, and performance of regulatory functions, as infrastructure, services, and performance that are

- a) efficient; and
- b) effective; and
- c) appropriate to present and anticipated future circumstances

In order to deliver services that are efficient, effective and appropriate, Timaru District Council has adopted a philosophy of using a mix of in house resources and consultants/contractors to carry out its work programme.

Core work is carried out by a wide range of professionals, and support staff employed by the Timaru District Council. Such staff carry out a base load of work and consultants are hired

Infrastructure Strategy

to carry out specialised work and also when the volume of work is greater than the internal capacity. The cost of hiring staff versus utilising consultants is evaluated on a job by job basis.

Water and Wastewater treatment operations are carried out by TDC staff. The reason for this approach is that Council wishes to be risk averse where public health and environmental matters are a priority. The consequence of failure to comply with Drinking Water treatment standards or resource consent requirements are so important to the TDC organisation it has been determined that close and direct control is required and therefore these tasks are carried out in house.

As for service delivery, whether for maintenance or construction work TDC has determined that contractors will be utilised. The Timaru area is well resourced with contractors with many national companies having bases in the District. The engagement of contractors is by negotiation, quotation or tender. Evaluation and assessment of quotations and tenders is via lowest price, weighted attributes or Price Quality methods as specified by New Zealand Transport Agency.

The TDC has a procurement strategy that contains guidelines as well as a flow chart which is used to inform asset managers on how to procure external resources to carry out work.

The Local Government Act 2002 Amendment Act 2014 contains a new Section, S17A which requires Council to carry out a review of the Delivery of Services. The prescribed scope of such review is wide ranging and will be carried out progressively for the Land Transport and the 3 Waters Activities.

The first activity requiring review is Land Transport. Since mid 2013 TDC has been involved in a Mid/South Canterbury Roading Collaboration initiative that has been reviewing governance, activity management, and service delivery options for the land transport activity of the Ashburton, Mackenzie, Timaru and Waimate Districts. The collaboration is now underpinned by a Memorandum of Understanding which sets out the objectives and actions for the short and medium term. The immediate outputs are that there will be greater collaboration at a technical level, two road resurfacing contracts from July 2015 and a common contract specification for the road maintenance activity from October 2015. The collaborative work meets the intent of and complies

with Section 17A of the Local Government Act. This work will be written up and therefore compliance with this legislative requirement will be achieved.

Subsequently the delivery of Water, Sewer and Stormwater activities will be reviewed, likely before the development of the second infrastructure strategy 2018-2048.

4.5 Addressing Resilience and Long Term Sustainability

Both physical and system resilience are crucial. This means:

- Design and construction standards (where cost effective) that ensure infrastructure is able to withstand natural hazards and long term changes in circumstances such as those resulting from climate change.
- Organisations and networks of organisations with the ability to identify hazards must share information, assess vulnerabilities, and plan for and respond to emergencies.
- Acknowledging the value of adaptability and redundancy in the network to improve business confidence.
- Identifying and managing cross-sectoral dependencies, such as power supply for communications infrastructure. Engineering Lifelines groups have already undertaken work in this area (NIP 2011)

In order to improve resilience Council approach will be to:

- Investigate options for alternative service provision and system redundancy
- Identify critical assets and ensure mitigation methods are developed
- Better integration of resiliency criteria in infrastructure design
- Improve accuracy of asset condition data for better targeting of renewals
- Strengthen integration of infrastructure services planning with land use planning
- Obtain insurance where this is deemed to be the most cost effective approach
- Plan for Resilience - Network Resilience Maintenance, Monitoring and Prioritised Improvement Plan in place and actionable.
- Do Proactive Maintenance - number of events where

journeys are lost due to loss of road function through proactive maintenance taking place

- Plan for Alternative Routes – a plan is in place that details an alternative route(s) available for vulnerable routes is robust in case of road closure
- Have an Emergency Response Plan - an Emergency Procedures and Response Plan (EPRP) is in place and actionable

Infrastructure Strategy

4.6 Significant Decisions Required

Taking a long term view to the management of infrastructural assets, Timaru District Council needs to make key decisions in a timely manner. In addressing Community desires and priorities the following key decisions have been identified.

Key Decision	Indicative Timeframe
<p><i>Level of Service for fire fighting capacity provided by the water reticulation</i></p> <p>Whether to progressively upgrade the water reticulation network at the time of pipe renewal to meet the NZ Code of Practice for Fire Fighting requirement at schools, hospitals, aged care facilities and industrial sites in addition to that currently provided for residential fire fighting.</p>	2015
<p><i>Downlands water treatment</i></p> <p>Confirmation of upgraded water treatment process to fully comply with NZ Drinking Water Standards, including additional storage facilities (raw water and treated water), at locations to be determined.</p>	2015
<p><i>Timaru (Pareora) source</i></p> <p>Determine whether the Pareora source is to be retained or a viable alternative source is to be developed. If the Pareora source is retained, the Pareora pipeline renewal programme will be implemented.</p>	2015
<p><i>Timaru water treatment</i></p> <p>The treatment process at the Timaru (Claremont) Treatment Plant is to be upgraded to fully comply with DWSNZ 3-log treatment or to meet an improved 4-log treatment level of service.</p>	2020
<p><i>Stormwater treatment concepts</i></p> <p>Adoption of the strategy and concepts for treatment and flow mitigation to be implemented for stormwater (including roading) in order to meet resource consent conditions and environmental standards.</p>	2018
<p><i>Bridges: 2-laning and strengthening</i></p> <p>Adoption of a policy on future bridge renewal standards that may increase bridge capacity from 44 tonne mass to up to 65 tonne that will allow use by High Productivity Motor Vehicles (HPMV's).</p> <p>Adoption of policy to increase level of service of bridges on roads that are primary or secondary collector to widen these bridges from single lane to two lanes to allow wider vehicles.</p>	2015
<p><i>Port southern access</i></p> <p>Decision on the timing and commitment for the construction of a new over bridge from North Street to the port over the South Island main trunk railway line.</p>	2016
<p><i>Affordability</i></p> <p>Consideration of policy on funding road activities eligible for but not financially assisted by above NZ Transport Agency and extend of such funding to maintain current level of service</p>	2015

Infrastructure Strategy

5.0 SIGNIFICANT INFRASTRUCTURE ISSUES

The Local Government Act 2002 Section 101B – Infrastructure Strategy states:

(2) 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.

In developing this 30 Year Strategy Council considered its long term service goals and strategic priorities and identified the anticipated significant infrastructure issues over the 30 years, and considered each significant action and the benefits of the action. The significant infrastructure issues faced by Timaru District Council with the benefits and costs are tabled below. It should be noted that the Operation Cost estimates are additional costs over existing (2014/15) operation costs. The amounts are for the years indicated and are not cumulative over the years that follow.

Infrastructure Strategy

5.1 Water Supply

Goal: To support and underpin the health, wellbeing and financial prosperity of the community by providing a lawful, reliable, sustainable and cost effective supply of water to meet the needs of the consumer.

Issue	Most Likely Scenario	Cost		Timeframe	Growth	LoS	Renewal	Benefit	Principal Alternative Option(s)
		Capital (Million)	Operation (Thousand)						
Ageing Infrastructure <i>(IS 2015/WS1)</i>	Reticulation, plant and facilities renewals (all schemes)	\$87.44 over 30 years	\$0	Annually			✓	Sustained level of service	Defer renewal and increase maintenance costs, with higher risk of loss of water and service disruption
Assumption and Strategic Fit: The renewal programme assumes a like-for-like replacement which will be refined based on asset condition and performance. All projects are strategic investments in the District's critical assets, supporting growth and promoting liveable communities.									
Meeting DWSNZ <i>(IS 2015/WS2)</i>	Timaru treatment plant and intakes renewals/ upgrade	\$17.35	\$0	Treatment plant: 2025/30 2035/40 Intakes: 2015/16, 2021/22 to 2024/25		✓	✓	Full compliance with DWSNZ (3 log)	Renew at lesser cost and not meet full compliance Upgrade to 4 log treatment for higher LoS (\$20 million indicative cost)
Assumption and Strategic Fit : Water source quality will not deteriorate. Project is a strategic investment, supports present and future critical infrastructure needs of the District and promotes a liveable Timaru community.									
Meeting DWSNZ <i>(IS 2015/WS3)</i>	Te Moana network supplied from Geraldine Scheme, including network capacity upgrade	\$3.49	From 2016/17: + \$72 2017/18: +\$112 From 2018/19: + \$154 pa	2015/16 to 2017/18	✓	✓		Additional water available that meets drinking water standards	Retain existing sources with subsequent water treatment to meet compliance with DWSNZ on a delayed timeline, at \$3.5 million with no additional capacity.
Assumption and Strategic Fit: The Geraldine Area Wide Water Supply Strategy will remain feasible. Project is a strategic investment for present and future infrastructure needs and promotes a liveable community.									

Infrastructure Strategy

Issue	Most Likely Scenario	Cost		Timeframe	Growth	LoS	Renewal	Benefit	Principal Alternative Option(s)
		Capital (Million)	Operation (Thousand)						
Meeting DWSNZ (IS 2015/WS4)	Downlands Tengawai treatment plant, raw water and treated water storage and Waitohi treatment plant	\$14.7 (TDC share \$12.10)	From 2022/23 to 2030/31: + \$117 pa From 2031/32: + \$172 pa	Raw storage: 2019/20 Treated storage: 2020/21 Treatment plant: 2020/21/22 2030/35	✓	✓		Full compliance with DWSNZ, plus additional capacity	Point of use treatment and no growth. A cost evaluation has determined that point of use treatment is more cost effective only if the number of connections is less than 100.
	<p>Assumption and Strategic Fit:</p> <p>Storage will be sufficient to supplement the source and meet demand during dry periods. Project is a strategic investment, supports present and future critical infrastructure needs of the District and promotes a liveable Timaru community.</p>								
Security of Supply (IS 2015/WS5)	Pareora pipe renewal	\$20.9	\$0	2015/16 2017/18 2020/21 2022/23			✓	Sustained water quantity	Abandon Pareora source and find an alternative source. Until a viable alternative source is found, no costings can be determined.
	<p>Assumption and Strategic Fit:</p> <p>At this time it is assumed Council will retain the Pareora source. Renewal work of parts of the Pareora pipeline will start within the immediate three years of the Infrastructure Strategy. Project is a strategic investment supporting present and future critical infrastructure needs of the District</p>								
Security of Supply (IS 2015/WS6a) Changing demand (IS 2015/WS6b)	Alternative Washdyke supply main at different location to existing	\$3.0	\$0	2026/30		✓		Provide greater resilience to Washdyke area	Status quo with reliance on existing structures and greater risk of disruption.
	Reticulation upgrade in conjunction with alternative main installation to provide additional capacity	\$1.5	\$0	2026/30	✓			Additional capacity to Washdyke	Limited potential for wet industry growth
<p>Assumption and Strategic Fit:</p> <p>Demand will be at the projected level. Project is a strategic investment, promotes liveable community, and supports economic growth and infrastructure service needs at Washdyke area.</p>									

Infrastructure Strategy

Issue	Most Likely Scenario	Cost		Timeframe	Growth	LoS	Renewal	Benefit	Principal Alternative Option(s)
		Capital (Million)	Operation (Thousand)						
Security of Supply (IS 2015/WS7)	Pleasant Point headworks, treatment, storage and pumping	\$1.48	From 2017/18: + \$2 pa	2015/16/17 and ongoing to 2044/45		✓		Maintaining supply during treatment outages Ability to allow direct on line connections Fire fighting water availability	Status quo
	<p>Assumption and Strategic Fit:</p> <p>Storage will enable a supply of water to be maintained while treatment maintenance is occurring and supply increased peak flows for fire fighting. Project is a strategic investment, supports present and future critical infrastructure needs of the District and promotes a liveable Timaru community.</p>								
Security of Supply (IS 2015/WS8)	Downlands - Tengawai trunk main and intake upgrade	\$11.90 (TDC share \$9.75)	From 2018/19: to 2030/31: - \$33 pa See WS4	2015/16 2017/18		✓		Additional capacity Reduced disruption of supply	To defer renewal or upgrade (no growth and increased operations/maintenance costs)
	<p>Assumption and Strategic Fit:</p> <p>Consent for water extraction at Tengawai River allows 100 L/s. Project is a strategic investment supporting present and future infrastructure needs.</p>								
Security of Supply (IS 2015/WS9)	Temuka reservoir and source upgrade	\$2.58	From 2019/20: + \$20 pa	2017/18/19 and ongoing to 2044/45	✓		✓	Maintaining supply during treatment and trunk main outages. Improved firefighting capacity	Status quo
	<p>Assumption and Strategic Fit:</p> <p>Storage will enable a supply of water to be maintained while treatment maintenance is occurring and supply increased peak flows for fire fighting. Project is a strategic investment, supports present and future critical infrastructure needs of the District and promotes a liveable community.</p>								

Infrastructure Strategy

Issue	Most Likely Scenario	Cost		Timeframe	Growth	LoS	Renewal	Benefit	Principal Alternative Option(s)
		Capital (Million)	Operation (Thousand)						
Improving the level of service for fire fighting at schools, hospitals, aged care facilities and industrial sites <i>(IS 2015/WS10)</i>	Urban mains upgrades at the time of renewals for providing fire fighting capacity at existing and likely future sites at 50 L/s, in addition to 25 L/s currently provided for residential fire fighting	\$5.0	\$0	In conjunction with mains renewals 2026/45		✓		Meeting the NZ Code of Practice for Fire Fighting (COP FF) at key facilities	Maintain existing capacity when reticulation is renewed and individual facilities provide onsite fire fighting requirements (no additional TDC cost). Proactively upgrade reticulation to meet 50 L/s capacity before renewals are due (accelerated timeline). Upgrade reticulation to meet all NZ COP FF capacity requirements over entire networks (significant additional cost not determined).
<p>Assumption and Strategic Fit: The firefighting COP will not become mandatory. Project is a strategic investment supporting present and future needs. District Plan review will actively control location of development.</p>									

Infrastructure Strategy

5.2 Sewer

Goals:

- To ensure the health of the community where urban housing exists, thereby eliminating the need for individuals

to provide their own wastewater system (which carries much higher health risks)

- To provide a cost effective trade waste disposal system for commercial and some industrial users, thereby eliminating

the need for individuals to provide their own wastewater system

- To provide acceptable collection, treatment and disposal systems for the use of communities

Issue	Most Likely Scenario	Cost		Timeframe	Growth	LoS	Renewal	Benefit	Principal Alternative Option(s)
		Capital (Million)	Operation (Thousand)						
Ageing infrastructure (IS 2015/SEW1)	Reticulation, plant, and facilities renewals	\$577 over 30 years	\$0	Annually			✓	Sustained level of service	Renew at lesser cost and non-compliance
	Assumption and Strategic Fit: The renewal programme will be refined based on asset condition and performance. All projects are strategic investments in District's critical assets for present and future needs, supporting economic growth and promoting liveable communities.								
Ageing infrastructure (IS 2015/SEW2)	Wastewater treatment plant renewals	\$16.5 (industrial) \$5.0 (domestic)	\$0	2035/40 5-yearly from 2025/30			✓	Compliance with discharge consents	No alternative
	Assumption and Strategic Fit: Assets will sustainably deliver the required level of service within their estimated economic lifetime. Renewal of the plants is a strategic investment on critical assets, supports future needs and promotes liveability of communities in the District. RMA does not change significantly.								
Increasing standards and expectations (IS 2015/SEW3)	Geraldine siphon upgrade	\$0.61	\$0	2018/19	✓	✓		Less surcharge upstream and additional capacity	Status quo
	Assumption and Strategic Fit: Inflow and infiltration are manageable/reduced. Growth in the area will be at projected level. Project is a strategic investment promoting a liveable community and supports present and future needs.								
Increasing standards and expectations (IS 2015/SEW4)	Glenwood Storage	\$0.90	\$0	2025/30	✓			Mitigate surcharge downstream	Upgrade downstream reticulation
	The development in Gleniti Res 6 will occur within the projected period. The project is a strategic investment in a critical asset, supports a liveable community.								
Changing land use (IS 2015/SEW5)	Extension of services within areas currently zoned residential	\$4.0 (covers sewer and stormwater)	\$0	Over 30 years	✓			Planned and coordinated service network, with costs recovered from developers over time	All extension of services are implemented by developers which may constrain development or provide inefficient networks.
	Assumption and Strategic Fit: Demand will be at the projected level. Project is a strategic investment, supports present and future needs.								

Infrastructure Strategy

5.3 Stormwater

Goal: To provide for the collection and disposal of stormwater to acceptable environmental standards

Issue	Most Likely Scenario	Cost		Timeframe	Growth	LoS	Renewal	Benefit	Principal Alternative Option(s)
		Capital (Million)	Operation (Thousand)						
Ageing infrastructure <i>(IS 2015/ST1)</i>	Reticulation, plant, and facilities renewals all schemes	\$8.34 over 30 years	\$0	Annually			✓	Sustained level of service	Renew at lesser cost and non-compliance
Assumption and Strategic Fit: The renewal programme will be refined based on asset condition and performance. All projects are strategic investments in District's critical assets for present and future needs, supporting economic growth and promoting liveable communities.									
Increasing standards and expectations <i>(IS 2015/ST2)</i>	Stormwater Management Plans, resource consents, modelling and surveying, technical parameter assessments	\$0.98 (indicative due to uncertainty in resource consent costs)	From 2015/16: to 2017/18: \$195	2015/16/17/18/19/20 Modelling: 2020/21 then 5-yearly		✓		Compliance with Proposed Canterbury Land and Water Regional Plan (LWRP)	No alternative (compliance with legislative requirements)
Assumption and Strategic Fit: Resource consents are granted by 2018. The activities are critical steps in to enable determination of appropriate stormwater infrastructure and services that meet legislated requirements and deliver the required levels of service within the period of the Infrastructure Strategy.									
Increasing standards and expectations <i>(IS 2015/ST3)</i>	Capital upgrades (stormwater quality and quantity improvements) <i>(Also see Road Drainage in Section 5.4)</i>	\$4 to \$10 over 30 years (indicative range due to uncertainty in resource consent requirements)	From 2018/19: + \$20 pa From 2020/21: + 40 pa From 2022/23: + \$60 pa From 2024/25: + 90 pa	Annually	✓	✓		Compliance with Proposed Canterbury LWRP; minimised reticulation upgrades; reduced environmental impact	On-site private treatment and flow mitigation for all stormwater, with potential risk of consent non-compliance.
Assumption and Strategic Fit: The timeframe for the required improvements can be extended beyond 2025. The District Plan will be strengthened to ensure on-site mitigation measures are identified and implemented by developers. The projects are strategic investments in critical assets, promote liveable communities and support present and future needs.									

Infrastructure Strategy

Issue	Most Likely Scenario	Cost		Timeframe	Growth	LoS	Renewal	Benefit	Principal Alternative Option(s)
		Capital (Million)	Operation (Thousand)						
Changing land use <i>(IS 2015/ST4)</i>	Upgrade of No. 1 Drain for catchment stormwater treatment and disposal	\$0.20	<i>Included in Issue ST3 above</i>	2015/16	✓			Facilitate industrial growth at Washdyke (greenfields)	Property owners and roading provide individual treatment and flow mitigation
	Assumption and Strategic Fit: Approval is obtained from ECan to upgrade the No.1 Drain. The project is a critical investment, supports economic growth and promotes a liveable community.								
Changing land use <i>(IS 2015/ST5)</i>	Extension of services within areas currently zoned residential	<i>See Sewer Issue SEW5</i>	\$0	Over 30 years	✓			Planned and coordinated service network, with costs recovered from developers over time	All extension of services are implemented by developers which may constrain development or provide inefficient networks.
	Assumption and Strategic Fit: Demand will be at the projected level. Project is a strategic investment, supports present and future needs.								

Infrastructure Strategy

5.4 Roads and Footpaths

Goal: To provide a safe, affordable, sustainable land transport system that fully meets the environmental, economic and social needs of the district.

Issue	Most Likely Scenario	Cost		Timeframe	Growth	LoS	Renewal	Benefit	Principal Alternative Option(s)
		Capital (Million)	Operation (Thousand)						
Ageing infrastructure (IS 2015/RF1)	<i>Renewals</i>								
	■ Pavements, kerb and channels, footpaths	\$240.0 (TDC share \$117.6)	\$0 for all scenarios	Based on remaining useful life			✓	Timely renewal intervention in accordance with good asset management practice to ensure long term maintenance costs are minimised, LoS is maintained and renewal costs optimised	Extend useful life of assets through increased maintenance and lower level service
	<i>Renewals – Bridges</i>								
	■ General	\$18.0 (TDC share \$8.82)		Annually			✓		
	■ Forrest Creek	\$2.0 (TDC share \$0.98)		2015-19					
■ Temuka-Waitohi	\$3.0 (TDC share \$1.47)		2040/45						
<i>Renewals – CBD Infrastructure</i>									
	■ Carpark, Arcade, Piazza	\$3.0		2035/40			✓		
Assumption and Strategic Fit: Lifecycle Management Strategy, dTims modelling, bridge inventory data, outstanding works programmes.									

Infrastructure Strategy

Issue	Most Likely Scenario	Cost		Timeframe	Growth	LoS	Renewal	Benefit	Principal Alternative Option(s)
		Capital (Million)	Operation (Thousand)						
Increasing standards and expectations (IS 2015/RF2)	Pavements <ul style="list-style-type: none"> Seal extension (2km yearly) 	\$12.0	\$0 for all scenarios except Drainage	Annually		✓		Dust Suppressant	Do nothing
	Footpaths <ul style="list-style-type: none"> New Footpaths Footpath upgrades – mobility scooters 	\$3.3		Annually		✓		Provides infrastructure for active transport modes to facilitate and encourage greater use of such transport modes as outlined in the TDC Active Transport Strategy	Maintain current LoS and not implement Active Transport Strategy
	Bridges <ul style="list-style-type: none"> New bridge – Blandswood Road (currently a ford) 	\$0.3		2030/35		✓			
	<ul style="list-style-type: none"> New bridge – Rangitata Gorge Road (currently a ford) 	\$0.2		2019/20		✓		Improve safety and efficiency of road network	Designated routes with some additional travel distance but provide some access to properties
	Drainage <ul style="list-style-type: none"> Road run-off treatment facilities, e.g., rain gardens 	\$9.0	Included in Stormwater Issue ST3	Annually		✓		Improve quality of stormwater discharge to waterways complying with regional land and water plan	Onsite disposal of road runoff Reduce kerb outlets through strengthened District plan requirements.
Assumption and Strategic Fit: Timaru Active Transport Strategy, Canterbury Regional Land & Water Plan.									

Infrastructure Strategy

Issue	Most Likely Scenario	Cost		Timeframe	Growth	LoS	Renewal	Benefit	Principal Alternative Option(s)
		Capital (Million)	Operation (Thousand)						
Changing land use (IS 2015/RF3)	<i>Seal Widening</i>	\$10.3	\$0 for all scenarios except Car Parking	2017/18/19		✓		Wider road carriageway reducing maintenance costs from seal edgebreak and improves safety and efficiency for heavy vehicles	Maintain status quo that will result in increased maintenance costs.
	■ Rangitata Island Road	(TDC share \$5.04)		2019/20					
	■ Arowhenua Road	Currently \$300k pa		2018/19/20					
	■ Earl Road			2017/18/19					
	■ Brenton Road			Annually					
	■ Rural Roads								
	<i>Road Upgrades</i>	\$9.4						Providing urban roads to meet proposed land development that meets required LoS, network efficiency and safety Meet road standards required in District Plan	Maintain current rural road LoS that increases maintenance costs and reduces road safety
	■ Washdyke Industrial Area West	(TDC share \$4.6)		2015-21	✓				
	■ Washdyke Industrial Area East			2015-19					
	■ Temuka Residential Expansion			2017-23					
■ Upgrade Old North Rd – Blair to Gould			2025/30						
■ Upgrade Jellicoe – north side (480 m)			2025/30						
■ Upgrade Mahoneys Hill/Blair Roads			2030/35						
■ Rail Crossing Upgrades			6 yearly						
<i>Traffic Signals</i>		\$1.0					Improves efficiency of intersections maintaining current LoS as traffic growth continues	Maintain current intersection arrangement and accept reduced LoS with increasing traffic delays	
■ New Traffic Signals at Wai-iti/Otipua Intersection			2024/25	✓	✓				
■ New Traffic Signals at Waimataitai/Evans Street (NZTA cost share)			2022/23						

Infrastructure Strategy

Issue	Most Likely Scenario	Cost		Timeframe	Growth	LoS	Renewal	Benefit	Principal Alternative Option(s)
		Capital (Million)	Operation (Thousand)						
Changing land use (IS 2015/RF3) Continued	Car Parking <ul style="list-style-type: none"> New Car Park – Timaru CBD South 	\$0.8	Revenue will offset operating cost	2018/19	✓	✓		Provide additional off street parking facilities	Greater use of on street parking, reliance on private parking more efficient use of current parking facilities
	New Roads <ul style="list-style-type: none"> New Link Road and Rail Crossing to Replace Seadown Crossing in Washdyke 	\$1.5 (TDC Share \$0.73)		2020/21	✓			Provide efficient and effective road network servicing industrial zoned land as per Washdyke plan change	Do nothing & use existing roads as access
	Bridges <ul style="list-style-type: none"> Port Southern Access 	\$5.0 (TDC share \$2.45)		2018/19	✓			Improve freight transport efficiency allowing alternative routes for longer vehicles	Maintain current levels of service
	<ul style="list-style-type: none"> Bridge Strengthening for HPMVs 	\$6.0 (TDC share \$2.94)		Annually	✓				Restricted designated routes for HPMVs, with potentially longer travel times
Assumption and Strategic Fit: Timaru Transportation Strategy, Government transport strategy, Washdyke Plan change, Timaru Growth scenarios.									

Infrastructure Strategy

Issue	Most Likely Scenario	Cost		Timeframe	Growth	LoS	Renewal	Benefit	Principal Alternative Option(s)
		Capital (Million)	Operation (Thousand)						
Resilience and Long Term Sustainability <i>(IS 2015/RF4)</i>	<i>Drainage</i> ■ Washdyke Flat Road/ Kellands Hill Flood Protection	\$0.6 (TDC share \$0.29)	\$0 for all scenarios except <i>Street Lights</i>	2023/24		✓		Improved resilience with less likelihood of road closures and providing more reliable access to Timaru	Status quo with occasional road closures of 2 days per annum
	<i>Street Lights</i> ■ Replace with LED Lanterns	\$1.5 (TDC share \$0.73)	Savings not yet quantifiable	2016-20		✓	✓	Reduced energy and maintenance costs	Replace with LED at time of failure
	<i>Intersections</i> ■ Rural Roundabout Coach/Geraldine Winchester/Tiplady Roads	\$0.8 (TDC share \$0.39)		2020/21		✓		Improved road safety less fatalities and injuries	Status quo and use of more signage
	■ General Safety Upgrades	\$21.0 (TDC share \$10.29)		Annually					
	<i>Road Upgrades</i> ■ Milford Clandeboye Road	\$3.0 (TDC share \$1.47)		2024-25		✓		Alternative route crossing Clandeboye Dairy factory	Restricted alternative access
Assumption and Strategic Fit: Forward works programme, Safer Journeys, Bridge management strategy, Clandeboye access roads strategy.									

Infrastructure Strategy

Issue	Most Likely Scenario	Cost		Timeframe	Growth	LoS	Renewal	Benefit	Principal Alternative Option(s)
		Capital (Million)	Operation (Thousand)						
Affordability (IS 2015/RF5)	Road Improvements <ul style="list-style-type: none"> Additional local share funding reduction in government financial assistance for road upgrades, safety improvements, new drainage works and bridge replacements 	\$21.0 (TDC share)	\$0	Annually	✓	✓	✓	Implementation of planned road improvement projects. Safety Improvements \$79k per annum. Bridge replacements \$102k per annum. New drainage works \$276k per annum. New signs \$41k per annum. Seal widening \$153k per annum.	Reduction in road improvement and renewal programme
Assumption and Strategic Fit: GPS and NZTA funding criteria.									

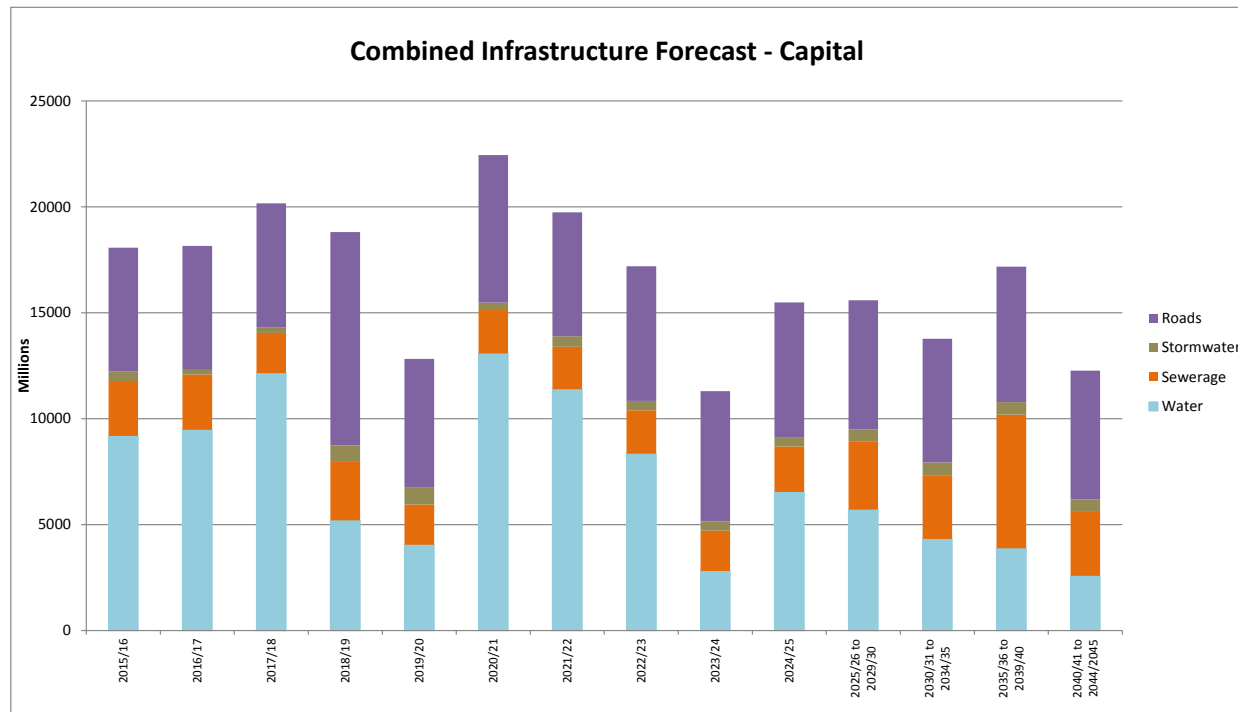
Infrastructure Strategy

6.0 FINANCIAL ESTIMATES

6.1 Total Expenditure

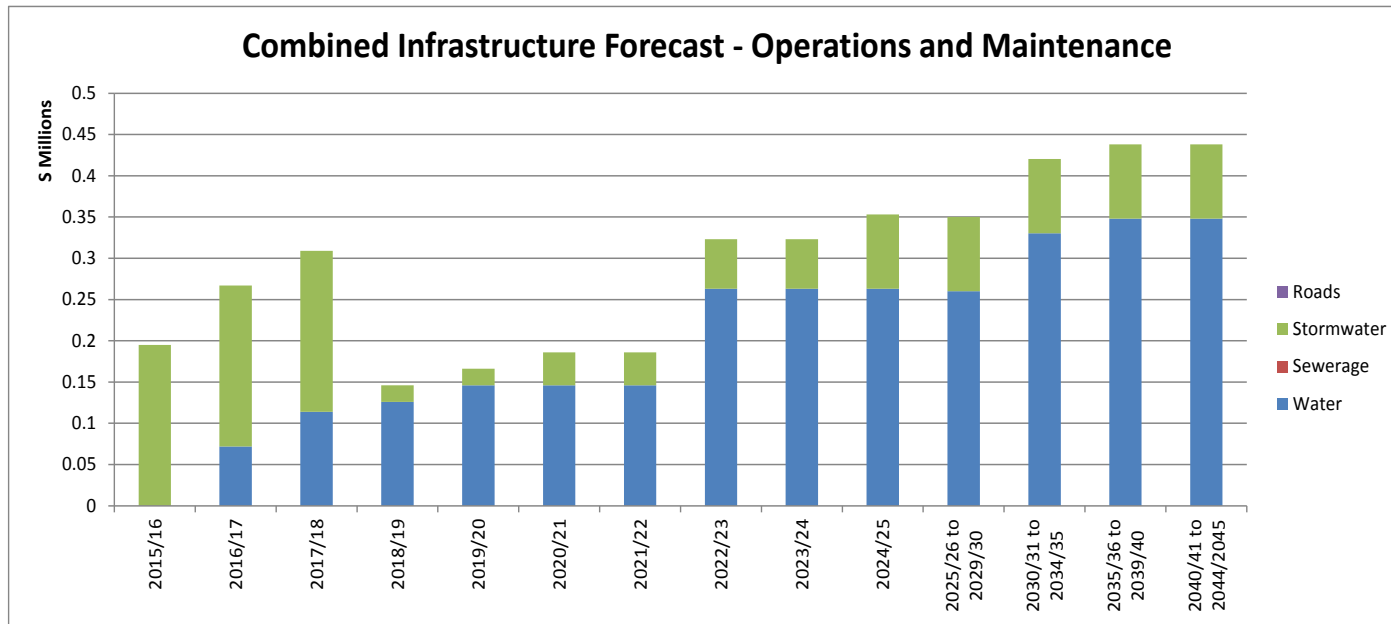
The projected capital expenditure associated with the significant infrastructure assets are graphically represented below:

Figure 7: Projected Capital Expenditure- Infrastructure Assets



Infrastructure Strategy

Figure 8: Projected Operational Expenditure –Infrastructure Assets

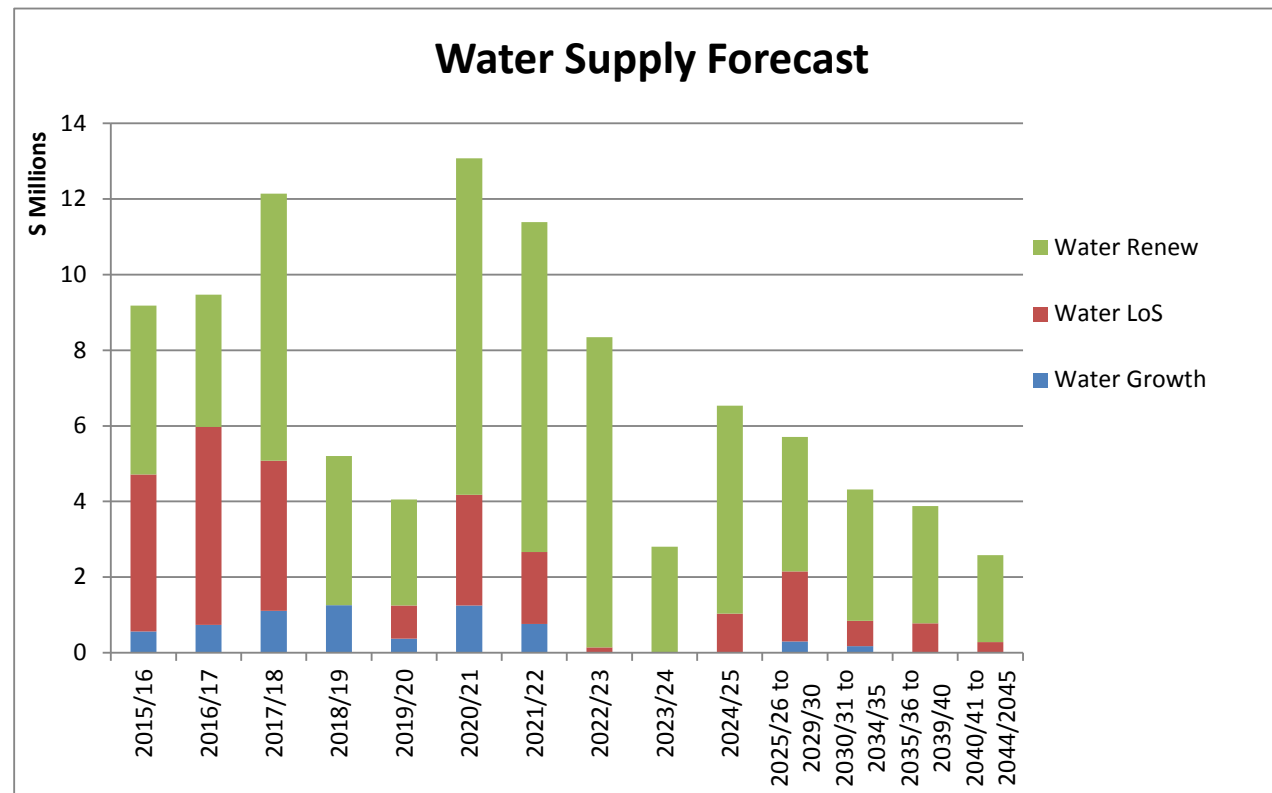


Infrastructure Strategy

6.2 Water

The projected capital expenditure associated with the water infrastructure assets are graphically represented below:

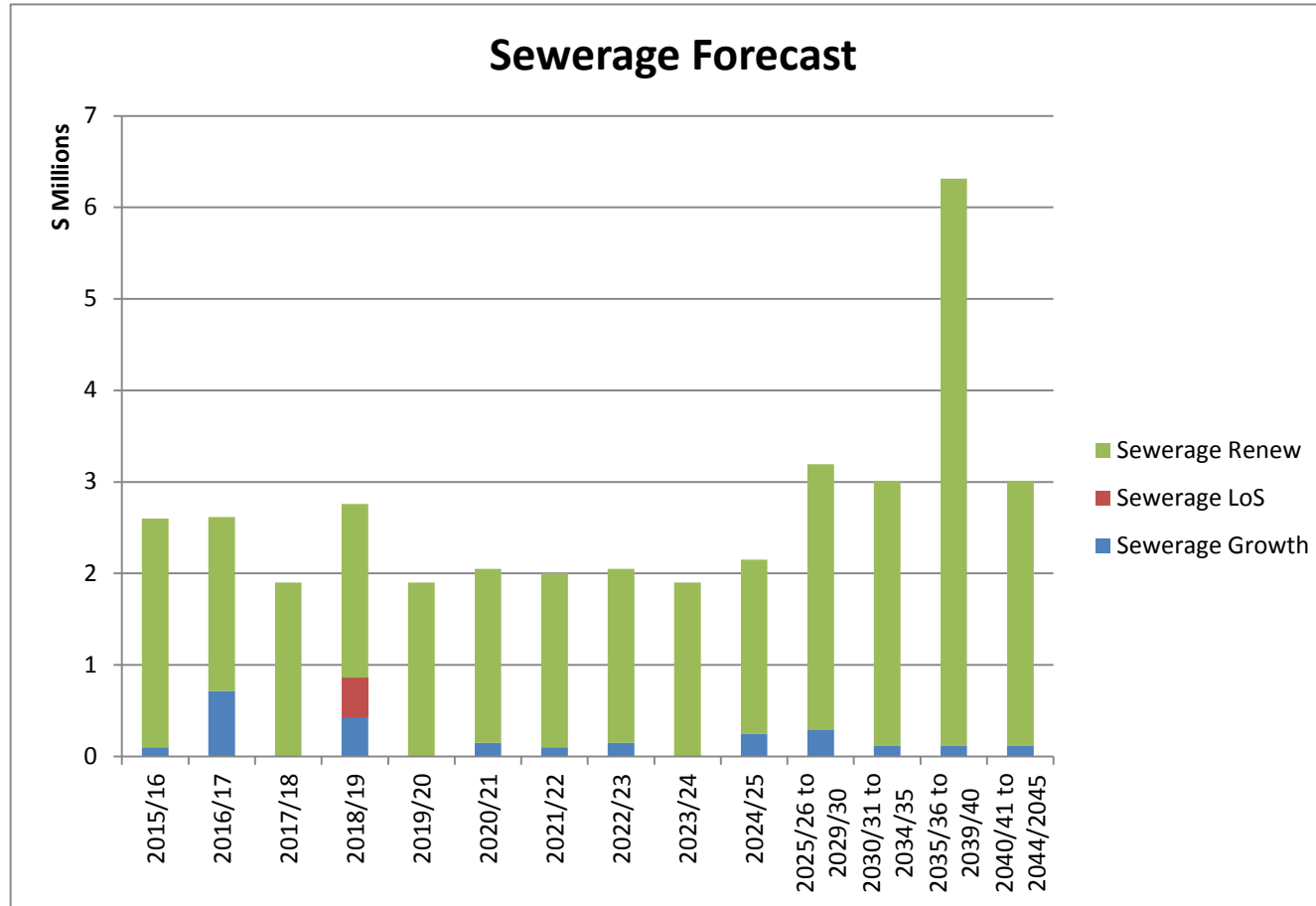
Figure 9: Projected Capital Expenditure – Water



Infrastructure Strategy

6.3 Sewerage

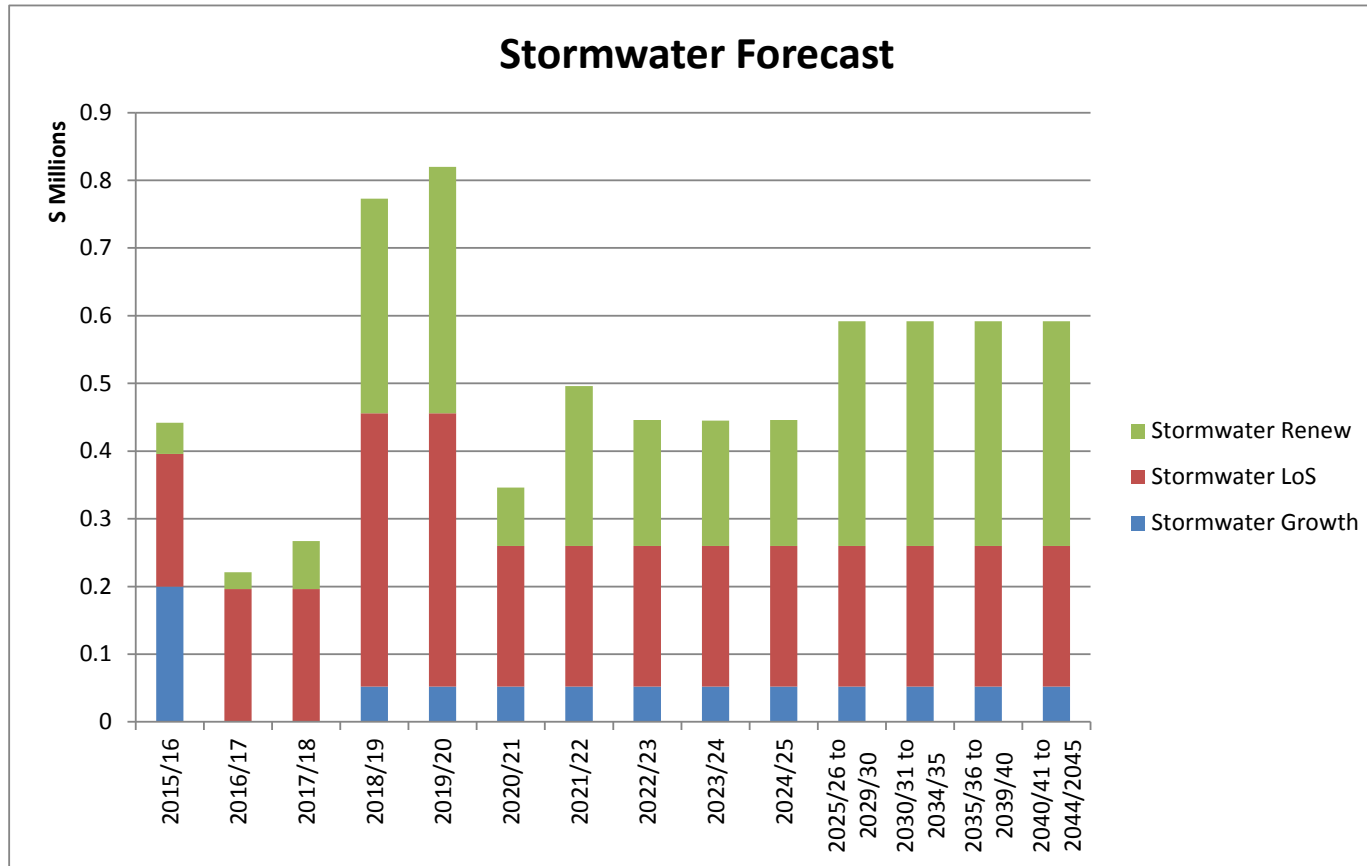
Figure 10: Projected Capital Expenditure - Sewerage



Infrastructure Strategy

6.4 Stormwater

Figure 11: Projected Capital Expenditure – Stormwater



Infrastructure Strategy

6.5 Roads and Footpaths

Figure 12: Projected Capital Expenditure – Roads and Footpaths

