Nelson City Council
te kaunihera ō whakatū

Infrastructure Strategy





Draft January 2015

Contents Page

1 INTRODUCTION

1.1 Purpose

Changes to the Local Government Act 2002 (enacted in August 2014) require that all local authorities prepare an infrastructure strategy of no less than 30 years and include it in their Long Term Plan 2015-25.

The primary purpose of the Infrastructure Strategy is to identify the key strategic infrastructure issues over the period of the strategy and describe options and cost for managing. The strategy must also summarise the key decisions required, costs and assumptions for the most likely scenario.

Additionally, the strategy 'outlines how the local authority intends to manage its infrastructure assets, taking into account the need to':

- renew and replace of assets
- adapt to possible changes in demand for services
- respond to possible changes in service levels
- maintain or improve public health and environmental outcomes (or mitigate the adverse effects of infrastructure on these values)
- manage the risks relating to natural hazards and provide appropriate funding to respond and mitigate

The five core infrastructure assets the Act requires are:

- water supply
- wastewater network, treatment and disposal
- stormwater
- flood protection
- transport

1.2 Nelson City Council Approach

The people of Nelson collectively own more than one billion dollars of infrastructure assets which provide the essential services related to transport, water supply, wastewater, stormwater and flood protection.

Providing infrastructure must find the balance between desired community outcomes, legislative responsibilities and the affordability of providing the services. This includes making optimum use of infrastructure assets to support growth and meet required levels of service.

This strategy focuses on significant issues with the potential to impact on Nelson City Council's ability to provide required levels of service in a cost effective manner. It considers Council's plans for the future, including environmental, social and economic goals, and likely demand for the services.

The infrastructure strategy applies asset management practices to the strategic issues and includes considering:

- opportunities to reduce costs
- means to reduce adverse impacts on the environment
- opportunities to extend the life of the assets
- risks to the assets related to issues like sea level rise, flooding and earthquakes
- the effects of population growth (and changing demographics) on the provision of services

The Infrastructure Strategy is part of the Long Term Plan 2015-25 so it takes effect when the Long Term Plan is adopted in June 2015. A summary of this strategy is included as part of the consultation process.

This infrastructure strategy will be reviewed and updated every three years as part of the asset management planning and long term plan (LTP) cycle.

Guidelines and principles from the following groups and documents have been referenced in development of this strategy:

- NAMS (New Zealand Asset Management Support)
- SOLGM (Society of Local Government Managers)
- ISO 55000 – International Standards Organisation - Asset Management Standard
- NZ Coastal Policy Statement
- National Policy Statement Freshwater

Council recognises it is good practice to plan for a period longer than 30 years and that the strategy could consider other physical and social infrastructure. While the focus is on the first 3, then 10 and next 30 years, consideration is given to longer term issues where possible. The first implementation of this strategy focuses primarily on a 30 year time period and on the core services listed in the paragraph above. Longer timeframes and a broader range of infrastructure may be included in future versions of this strategy.

2 Current Context

2.1 Geography

The central city area is bounded by the sea and low foothills. The Maitai River, Brook Stream and York Stream flow through this area. Substantial parts of the city are built on land reclaimed from the sea and historical foreshore. Because of the close proximity of the Nelson foothills and the encroachment of development on the flood plains and riparian margins, the stream and river catchments are relatively short, narrow and steep leading to rapid stormwater runoff and flash flooding in higher intensity rain events.

2.2 Assets Included in the Infrastructure Strategy[1]

Transport

Council's transport infrastructure includes roads, footpaths, cycleways, parking, traffic controls and public transport. These transport assets include:

- 2.1km^2 of road (this equates to approximately 300km of roading)
- 44 bridges
- 31,000m^2 of retaining wall
- 500000m^2 of footpaths, 523,000m^2 of walkways, 71,000m^2 of cycleways
- 3,300 parking spaces in the Nelson CBD (including the fringe area)
- 540 parking spaces in central Stoke and 330 in Tahunanui

These assets are a mix of subsidised and unsubsidised with NZTA contributing approximately 50% to those that are subsidised.

Water Supply

The objective is to provide a water supply to Nelson City that is capable of abstracting, treating and distributing potable water in an efficient, safe, reliable and sustainable way whilst ensuring that the ecological, recreational and cultural interests of the community in the water sources are recognised and enhanced.

[1] Legislation requirements currently exclude Solid Waste

Council supplies high quality water piped to Nelson households and businesses from two sources, the Maitai (Mahitahi) and Roding rivers. The water supply assets include 370km of pipelines and network fittings, 37 reservoirs and tanks, nine pump stations, one treatment plant and two dams. Assets were valued at $247M as at 30 June 2014.

Approximately 50% of the pipework was installed between 1930 and 1980 using a range of materials including concrete, asbestos cement, cast-iron, uPVC, steel and high density polyethylene.

Generally the network is in good condition although the earliest of pipelines are nearing the end of their expected service lives and losses from the network through joints and fittings is an ongoing issue.

Council has an active renewal programme to renew the pipelines before failures and maintenance costs become excessive. The current activity emphasis is on duplicating the supply lines from the river intakes to the treatment plant and on to the city. The renewal strategy is based on replacing one type of asbestos cement pipe installed in the 1950's that has high levels of failures when compared with other materials.

Wastewater

The objective is to provide a wastewater system to Nelson City that is capable of collecting, containing and treating wastewater in an efficient, safe and sustainable way whilst ensuring that the ecological, recreational and cultural interests of the community in the waterways and the marine environment are recognised and enhanced.

The Nelson Wastewater network comprises 378km of pipework, manholes and fittings, 25 pump stations, 12 detention tanks and meter enclosures and one treatment plant. The residents of Nelson discharge about 16 million litres of wastewater a day, with the Nelson North system treating around 8 million litres of this total and the Bell Island treatment plant taking an average of 8 million litres. The Bell Island treatment plant, rising mains and pump stations are shared with Tasman District Council. Assets were valued at $226M as at 30 June 2014.

The capacity and performance of the wastewater network is achieved through the pipe and pump network and the sewage treatment plants. While parts of the pipeline network date to the early 1900's the majority has been installed since 1950. Earthenware, concrete and asbestos cement dominated the early pipeline construction, with uPVC and medium density polyethylene becoming dominant from the mid-1970's.

The pipe network is in generally fair condition with issues evident in both the gravity and pumped lines.

The earthenware pipe network is nearing the end of its service life as evidenced by the increasing number of blockages and the high levels of water entering the network, resulting in overflows, during rain events. Council has an active renewal programme to renew pipes in areas with the highest levels of overflows.

The main pumped line from the city to the Nelson Waste Water Treatment Plant suffered significant damage from acid attack after approximately 30 years of service and underwent extensively repairs in the 1990's. Further recent failures have raised the issue of the likely reliable life before this line needs to be duplicated or replaced.

Occasional odour issues continue with the wastewater treatment plant and a small number of pump stations. Redevelopment of pump stations in the future is expected to address this issue as will de-sludging the oxidation ponds and the construction of covers to open chambers at the treatment plant.

Stormwater and flood protection

The objective is to provide a stormwater and flood protection system to Nelson City that is capable of accommodating storm flows in an efficient and sustainable way.

The stormwater system has two parts:

- A natural component consisting of 27km of rivers and streams, which includes flood protection works, and
- A constructed stormwater system consisting of 181km of mains, manholes and sumps, two pump stations ,six detention dams and 420 outfalls to rivers, streams or the sea.

Stormwater infrastructure required to service growth areas can include new and larger pipes, and works in natural systems to increase their capacity to contain flows during heavy rain.

The stormwater and flood protection assets were valued at $182M as at 30 June 2014.

The pipe network is in generally fair-good condition with some issues evident in box culverts and structures exposed to salt water.

Open channels, streams and rivers in the urban area are generally able to cope with Q_{20} flows with some sections of the larger river and streams upgraded in recent years to Q_{50}.

In achieving the goal the system should minimise flood damage to property or infrastructure and ensure that the ecological, recreational and cultural interests of the community in the natural forms of waterways are recognised and enhanced.

2.3 Required Levels of Service

The required levels of service and performance measures are detailed in the Long Term Plan and Asset Management Plans.

Transport

The service levels for local roads, walking, cycling and schools are fundamental in delivering the softer traffic management goals. The service levels encourage safer conditions and lower traffic volumes by offering alternative transport modes.

Arterial traffic service levels provide the other half of a balanced network approach by recognising the importance of well located, strong transport corridors that offer the potential for the efficient and safe flow of people and goods to assist the economic vitality of our region.

The "Safe System Approach" to road safety recognises that drivers make mistakes but should not die or be seriously injured as a result. As a local road controlling authority, Nelson City Council has a part to play in providing safe roads and roadsides along with safe speeds on the roads that it administers.

The Top of the South councils (Nelson, Tasman and Marlborough) in partnership with the New Zealand Transport Agency, have collaborated to develop joint objectives and outcomes in the individual Regional Land Transport Plans. These joint objectives and outcomes aim to provide the top of the south community with an efficient, safe and resilient road network.

Water Supply

Council will provide a potable water supply to the maximum practicable number of people in the city and will be guided by the following key levels of service:

Good quality water as measured by meeting Ministry of Health Drinking Water Standards for New Zealand and supplying potable water.

A **reliable** supply provided by ensuring that under normal operating conditions the city has day to day continuity of supply for 99.5% of the year and a maximum outage when repairs or upgrades are being constructed of 24 hours. Continuity should also be achieved during short duration drought conditions although water use restrictions will be necessary.

Acceptable water **pressure** as measured by at least 80% of properties having pressure within 30m-90m head range with less than 35% variation from average pressure. There is a need to optimise water pressures across the city to reduce water losses from leaks, while maintaining adequate fire flows and increasing the percentage of properties that have water pressure within the stated range.

Adequate flows of water as measured by ensuring the network can provide 95%-99% of properties with fire flows that meet the NZ Fire Service Code of Practice for Fire Fighting Flows.

A **prompt emergency response** as measured by the ability of Councils external contractors to respond to emergency events within timeframes set out in the contract.

A network that **protects the natural environment** recognises the need to ensure that water takes are the minimum necessary and the impacts of the various structures on the environment are identified and minimised.

Wastewater

Council will provide a wastewater collection and treatment network for both residential and commercial wastes that is available to the maximum practical number of residents and guided by the key levels of service:

The wastewater treatment plant meets its **resource consent conditions**.

Emergency response to failures in the network are resolved timely.

Environment is protected by ensuring resource consent conditions relating to accidental discharges are met and there are limited odour complaints about pump stations

Stormwater and flood protection

Council will provide stormwater disposal and flooding protection in urban areas that minimises and prevents damage to properties and infrastructure from flooding while being environmentally considerate and affordable.

Open channels, streams and rivers in the urban area are generally able to cope with Q_{20} flows with some sections of the larger river and streams upgraded in recent years to Q_{50}.

Recent extreme weather events have lead to significant damage to property and infrastructure throughout the city and raised the question of whether these levels of protection need to increase, especially in the light of the expected impacts of future climate change.

Council is currently considering the merits, costs and environmental impact of increasing the protection to Q_{20} (5% probability of occurrence in any year) stormwater in reticulation and to Q_{100} (1% probability of occurrence in any year) for flood events in streams and rivers.

In rural areas the costs of any works undertaken by Council will be apportioned between the properties that benefit.

The operation of the network will be assessed against the following criteria:

Environment Protected and Improved through ensuring compliance with resource consent conditions for stormwater discharges; together with ensuring appropriate disposal options are available.

Reliability of service by meeting required response times to failures and faults.

Emergency response: network issues by ensuring contractor(s) meet contract requirements.

Protection for the urban built and **natural environment** from floods by ensuring capital expenditure programmes are met and urban sections of streams and the Maitai river are inspected and maintained.

Integration of **ecological** and flood protection requirements in urban sections of streams and rivers by ensuring fish passage is maximised and ecological impact of structures is minimised. Through the Long Term Plan it is proposed to set an additional performance measure of "channel maintenance works carried out in accordance with resource consent conditions."

2.4 Asset Management

The purpose of local government is 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.

In the Act, good-quality, in relation to local infrastructure, means infrastructure, services, and performance that are efficient, effective and appropriate to present and anticipated future circumstances.

The objective of asset management is to meet required levels of service in the most cost-effective manner with consideration to both current and future customers.

The Infrastructure Asset Management Plans (AMPs) document asset management practices and future works programmes required to meet service level requirements. This strategy draws together the overall forward facing view across the infrastructure AMPs for the next 30 years.

2.5 Asset management Strategies

Asset criticality

Critical assets are considered to be those assets for which the consequence of failure is unacceptable and would result in a major disruption to the network or failure in meeting one or more levels of service.

Critical assets have been identified as:

Water supply:

- Headworks including dams and intakes
- Raw water trunk mains
- Raw water pump stations
- Water Treatment Plant including the Clearwater Reservoir
- Treated water trunk mains
- Treated water pump stations
- Reservoirs

Stormwater:

- All pump stations
- All rising mains
- All river and stream channels
- Detention dams
- Open channels and the piped network

Wastewater:

- All pump stations
- All rising mains
- All reticulation
- The waste water treatment plants
- SCADA system

Transport:

- Emergency service and hospital routes
- Arterial routes
- Access to water supplies
- Routes to the port and airport

Lifecycle Management Strategies

Asset management strategies are applied throughout the life of infrastructure assets. This starts with the need for the asset and follows through the concept, design, construction, operation, renewal, upgrade and disposal. The full lifecycle cost is considered to give the best value for money over the asset's expected life. This may not align with the lowest cost tender or design concept.

Operations and Maintenance activities ensure the relevant networks will be operated and maintained on a day-to-day basis to consistently achieve the optimum use of assets.

Operations activities are designed to ensure efficient utilisation of the assets, and therefore that the assets achieve their service potential. Operational strategies cover activities such as energy usage, control of mechanical and electrical plant, inspections and service management.

Maintenance - Maintenance strategies are designed to enable existing assets to operate to their service potential and extend their useful life while continuing to meet required levels of service. Maintenance strategies prevent premature asset failure and unplanned deterioration. Different asset types require different combinations of these strategies for optimum performance. There are three types of maintenance:

- Preventative Maintenance - A base level of maintenance carried out to a predetermined schedule. Its objective is to maintain the service potential of the asset system. This approach is not necessarily the most cost effective and is only selectively used where appropriate.
- Predictive Maintenance - Maintenance undertaken as a result of condition or performance evaluations of infrastructure components. Its objective is to avoid primary system failure while maximising the effective life of components. Maintenance is carried out in optimal time frames.
- Reactive Maintenance - Maintenance carried out in response to reported problems or failures. The objective is to restore unforeseen failures in day-to-day levels of service.

Renewal strategies are 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 ensures that the community's investment in the City's infrastructure is maintained and that service levels are acceptable.

The level of expenditure on cyclic asset replacement varies from year to year, reflecting:

- The age profile of the system
- The condition profile of the system
- The ongoing maintenance trends
- Customer service issues, and
- The differing economic lives of individual assets comprising the overall asset system.

Asset **upgrades** provide a planned increase in asset performance and:

- Close gaps between the current capability of the asset and target service standards
- Accommodate growth
- Build resilience

Renewals and upgrades are achieved by the capital upgrade programme which seeks to progressively close gaps between target service requirements (taking account of inter alia demographic and economic growth projections) and the current service capability of the asset system. The programme follows a structured approach including:

- Identification of upgrade needs (including future-proofing)
- Project Categorisation (capital, operational, growth, Level of service, renewal)
- Prioritisation of projects - timing of investment decisions to optimise asset utilisation
- Project Approval gating
- Project design and quality control
- Funding Strategies
- Meeting strategic and environmental outcomes

Asset disposal is the final phase of the lifecycle and includes the activities and costs associated with the decommissioning and disposal of the assets which are no longer economically viable to maintain.

3 Strategic Issues

This section outlines the issues that could significantly impact on the Council's ability to deliver core services, the principal option to address each of these significant issues and the implications of these options. It also considers what could deliver core services in the most cost-effective manner.

The strategic issues have been grouped into the following:

Issue 1: Natural Hazards

Issue 2: Growth & Development

Issue 3: Level of Service Change

Issue 4: Affordability in ongoing provision of services

3.1 Planning for and adapting to Natural Hazards

Natural hazards include both meteorological and geological events (including climate change issues). The result can be a change in rainfall patterns, sea levels rise, more

frequent extreme weather events (droughts, heavy rainstorms), higher temperatures, earthquakes, coastal erosion, landslides and liquefaction.

Natural hazards are neither certain in their likelihood nor their consequence. They present risks that vary both across the city and by hazard type and severity. As a result, potential impacts of natural hazards can be especially difficult to predict and to plan for. However, due to the magnitude of the potential impacts, a precautionary approach needs to be taken for infrastructure management.

Infrastructure Objective: To ensure Nelson's infrastructure is resilient to the impacts of natural hazards and evaluates long term sustainable risk reduction approaches including relocation, protection and removal.

Hazard: Sea Level Rise

Climate change predictions include predicted sea level rises. These may pose significant threats to coastal communities and Council infrastructure. The information held by Council on coastal erosion and hazards, stormwater surge, wave setup and wave run up has recently been reviewed. The base assumption is that a rise in line with the Ministry for the Environment prediction needs to be considered. This assumption will be checked by continuously monitoring the trends and updating this strategy every 3 years to calibrate the actual trend to the predictions. The NZCPS (coastal policy statement) requires that Council assess a range of options for reducing coastal hazard risk as part of asset planning programmes and the Nelson Plan Review.

What does this mean for infrastructure and what is being done?

Much of our coastal communities, the Wood, Central City area, Tahuna, airport area and Monaco will be subject to the effects of sea level change. Much of our essential infrastructure is also located within the coastal environment, including wastewater treatment and reticulation networks, arterial roading links, the Port and Airport.

Critical assets likely to be affected include: Wastewater plants and low lying roads & bridges, wastewater pumping stations and pipelines and water supply pipelines.

Based on the Ministry for the Environment predictions for sea level rise, no Nelson City Council infrastructure assets require urgent consideration in the period between now and the next strategy review (2018). The lead-time required for resource consents and mitigation strategies allows the development and selection of options prior to the 2018 review. These will be a combination of phased retreat, relocation and protection. The assessment required by the NZCPS will be addressed in more detail and programmed into the relevant AMPs.

Council is currently developing a flood model to evaluate, amongst other things, the impacts of sea level rise, flooding and storm surge on the Nelson North Wastewater Treatment Ponds.

An evaluation of the life of all other resource consents for infrastructure in the coastal environment will be undertaken in 2015/16 to schedule the required assessment and infrastructure planning.

The significant capital expenditure decisions section covers the specific issue and options in more detail.

Hazard: Flooding

National rainfall patterns are expected to change with increased rainfall in the Nelson / Tasman region. Climate change is expected to lead to increases in extreme rainfall

events. This is likely to translate to more severe and frequent river flooding. Flooding and sediment deposition from rivers could be most severe in the coastal reaches of rivers if sea-level rise slows the flow of water out to the sea. The changes in weather patterns will be monitored and re-assessed every 3 years.

What does this mean for infrastructure and what is being done?

The key issue is to balance protection of council assets and property as well as personal property with maintaining and improving recreational and ecological qualities of streams.

Much of the floodplain within Nelson is developed or urbanised, and these activities have affected the ability of rivers and streams to carry water during high rainfall events.

A city-wide strategy is currently being developed. An infrastructure response to flooding requires more than just consideration of flood channels. Responses need to be balanced with environmental and social desires of the community. In many cases, development close to the edges of rivers and streams confines the waterways into narrow channels, reducing their ability to contain flows. This raises the risk of flooding during intense rainfall events.

The significant capital expenditure decisions section covers the specific issues around flood protection and options in more detail.

Hazard: Drought

National rainfall patterns are expected to change with both increased rainfall in the Nelson / Tasman region during the wet periods of the year and less rainfall during the dryer. Climate change is expected to lead to increases in the extremes of both rainfall and drought events. This is likely to translate to more summer droughts. The changes in weather patterns will be monitored and re-assessed every 3 years.

What does this mean for infrastructure?

The key issue is to balance the provision of a reliable water supply to the city while maintaining and improving recreational and ecological qualities of streams.

Current peak daily demand calculations show that Nelson has sufficient water to maintain supply requirements for the projected population increases until at least 2050 as long as current abstraction rates remain in place.

Tasman District Council are currently investigating a storage dam to mitigate the effects of drought on the Waimea Plains region.

Hazard: Fault Hazards

The unpredictability of fault activity frequency and damage largely precludes preventing damage to infrastructure apart from employing sound location and construction methodologies. The nature of the event (shallow, deep, direction of movement and angle of fault line) determines the degree of damage more than the seismic magnitude. Ensuring existing and new infrastructure is resilient to the threat of ground shaking or rupture from earthquakes is largely focussed on appropriate location and the ability to get lifeline infrastructure back up and running as quickly as possible following earthquake damage.

What does this mean for infrastructure?

Council has recently updated its fault hazard overlays and is now able to more accurately predict risk than previously. New infrastructure should be located to avoid where possible and constructed in a manner that enhances resilience to earthquake events. Council has budgeted for a series of assessments on the resilience of infrastructure to

seismic events. New installations consider the design practices for seismic resilience. Investigation funding will be prioritised on asset criticality and the likely consequence of failure.

It is recognised that in future, more time and funding will be required to do this work as part of capital works and resource consent applications.

Hazard: Liquefaction

There is a need to better understand the risk that liquefaction poses to assets and then to make existing, affected infrastructure more resilient to the threat of liquefaction as a result of earthquakes. This includes responses to get lifeline infrastructure or assets back up and running following an earthquake event. Infrastructure that is located in and around Tahuna, the Wood, the Port and Central City areas is more susceptible to liquefaction as a result of a strong earthquake.

What does this mean for our infrastructure and what is being done?

Infrastructure that is located in and around Tahuna, the Wood, the Port, and Central City areas is more susceptible to liquefaction as a result of an earthquake. Future renewals and upgrades within these areas need to avoid if possible and then consider best practice regarding liquefaction resilience.

What is already taking place to ensure Nelson's infrastructure is resilient to the impacts of natural hazards:

Emergency Management

The Council works closely with the Nelson Tasman CDEM (Civil Defence Emergency Management) group to respond, manage and restore infrastructure in the event of significant natural events. This close integration is achieved by key Council staff holding strategic positions within the CDEM group and being part of the management thereof.

Civil Defence and Emergency Response Plans

The following documents are available for guidance in the Civil Defence and Emergency Management:

- Nelson Tasman Civil Defence Emergency Management Group Plan
- Nelson Tasman Civil Defence Emergency Management Group Recovery Plan
- Nelson City Council Emergency Procedures Manual - exercises are carried out on a six monthly basis to ensure all staff are familiar with the procedures.

Activities	Description	Documents
Risk Reduction	Identifying hazards, describing risks, and taking actions to reduce the probability or consequences of potential events.	Asset Management Plan Risk Treatment Schedule and Plan.
Readiness	Planning and preparation required to equip agencies and communities to respond and recover.	Emergency procedures manual and exercises.
Response	Addressing immediate problems after an emergency.	Nelson-Tasman Civil Defence Emergency Management
Recovery	Addressing the long-term rehabilitation of the community.	Nelson-Tasman Civil Defence Emergency Management

Lifelines

The Civil Defence and Emergency Management Act 2002 requires that every lifeline utility must:

- Ensure that it is able to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency.
- Have plans for such a continuity that can be made available to the Director (of Ministry of Civil Defence and Emergency Management) if requested.
- Participate in the development of the National Strategy and Civil Defence Emergency Management Plans (where requested).
- Provide technical advice on Civil Defence Emergency Management issues, where reasonably requested by Civil Defence Emergency Management Groups or the Director.

Lifeline Utilities for Nelson are: Electricity, water supply, wastewater, telecommunications, roads, airport, the port and some broadcast media.

Insurance provision

Strong earthquakes can damage treatment plant, reservoirs and pipelines leading to water supply problems and no drinking water. Nelson City Council has insurance cover for the Wastewater, Water & Stormwater services, staff and property.

Local Authority Protection Programme (LAPP)

Nelson City Council is a member of the Local Authority Protection Programme Disaster Fund. This is a mutual pool created by local authorities in 1993 to cater for the replacement of infrastructure following catastrophic damage by natural disaster.

Nelson City Council also has a disaster relief fund to address future events. This will contribute to future event damage once the recent event accounts have been settled.

What will need additional consideration in the future?

Additional insurance and/or funding as contingency for above ground assets needs to be considered.

3.2 Growth & Development

Changes to the population size and makeup affect the requirements for infrastructure. Development of areas needs to be integrated with the provision of infrastructure..

Based on medium growth projections, Nelson will have an extra 5100 households over the next 30 years (2015-2045). As at 2014 there is enough undeveloped but zoned residential land in Nelson to accommodate the next 15 years growth as Greenfield development. Existing urban areas can also accommodate up to 1500 households through redevelopment and/or intensification over the next 30 years. Many greenfield areas have one or more infrastructure constraints. Council is currently undertaking work to understand infrastructure capacity in existing urban areas where it is likely that there will be market demand for redevelopment and intensification over the next 30 years.

From a transport perspective, the trend over the last ten years has seen household travel not follow the increase in population growth. This may be linked to the economic cycle and fuel prices. The trend is being monitored to inform future capacity requirements. Nelson City Council is developing better localised traffic modelling capabilities and is working with NZTA on arterial models.

Infrastructure Objective: Provide the right infrastructure at the right time to support growth and development.

What does this mean for our infrastructure?

Council cannot afford to provide services to all growth areas at once, and needs to do so in a prioritised manner that meets Councils strategic outcomes, supports market demand and optimises use of the assets. The Nelson Plan will assess a range of options to provide for growth, particularly intensification, and these will influence the demand and market uptake of different development options in the future and the provision of services to greenfield areas.

The provision of infrastructure needs to be closely aligned with the planning, prioritisation and implementation of new developments and growth strategies, the Long Term Plan and Development Contribution Policy. This will avoid infrastructure being underutilised and will avoid expensive reactive provision of services, or growth before services availability.

What is already taking place to ensure infrastructure is supplied to support growth and development?

An infrastructure prioritisation process will inform the implementation of this strategy, the asset management plans, Long Term Plan and the Development Contributions policy.

This process will ensure an integrated approach to long term planning for development and growth and for the delivery of infrastructure in a prioritised and co-ordinated manner. It will also make a clear financial link between provision of infrastructure for new development, the timing of development of different areas, and the collection and use of development contributions.

Nelson City Council is currently considering requests from Tasman District Council for financial support for the construction of the Waimea Community Dam. The dam is a water retention structure that will augment flows in the Waimea River and allow increased security of supply for irrigation and community water supplies into the future.

Nelson City is investigating the direct economic and environmental benefits that may accrue to the city before seeking community views on any financial contribution. This dam may contribute to meeting population growth if future restrictions limit the existing water take consents.

Ongoing monitoring of the travel demand trends will identify emerging risks in time to address any capacity issues.

The Nelson City Council's Development Contribution Policy is currently under review to better support the growth and development strategy and to meet the requirements of the Local Government Act and Council's functions under section 30(1)(gb) of the RMA "the strategic integration of infrastructure with land use". Consultation with developers as part of the Long Term Plan will determine the extent to which infrastructure is to be prioritised to match developer intentions and to meet the strategic outcomes of Council.

What will need additional consideration in the future?

Intensification or redevelopment of existing residential areas is an option that may be better able to meet the needs of changing population demographics, providing greater housing choice, and affordability to meet Council's strategic outcomes for the city. This would also assist with outcomes sought in relation to revitalising the central city area of Nelson. The delivery and upgrading of infrastructure services relies on being advised of this planning early enough to cater for the lead-time of projects to meet the changes in demand.

Nelson is now required to consider preparing a Special Housing Accord. A special housing accord will impact the rate of infrastructure roll-out to growth areas, and will have significant implications for infrastructure investment.

In transport, NZTA is currently investigating options for an additional arterial route to manage future increases in traffic volume.

3.3 Level of Service Changes

Potential legislation changes are difficult to predict but the trend to increased focus on public health, infrastructure efficiency and affordability and improving the environment are clear. Infrastructure planning appreciates this and looks to plan as far as practical to accommodate these trends.

Infrastructure Objective: Respond to possible changes in community expectations and legislative needs

What does this mean for infrastructure?

Infrastructure and land supply have been hot topics in both the Resource Management Act and the Local Government Act reforms. Proposed changes at the time of writing this strategy include:

Proposed changes to section 6 and 7 of the RMA will include as matters of national importance:

(l) the effective functioning of the built environment, including the availability of land to support changes in population and urban development demand;

(n) the efficient provision of infrastructure

Changes in customer demographics may also mean that changes in the level of services are necessary to meet community needs. Council must take cognisance of the impact of these demographics on the nature and affordability of services into the future (for example an aging population on fixed income).

Council has recently confirmed a series of strategic outcomes. Those which relate to infrastructure provision for growth include:

- Coordinate growth and infrastructure
- Prioritise supply of infrastructure to achieve strategic outcomes.
- Enable housing choice
- Prioritise urban intensification
- Encourage higher density clusters around key centres such as the central city, victory, Tahunanui and stoke.

The Treaty Settlements for Te Tau Ihu have resulted in iwi having a statutory acknowledgment in relation to the coastal marine area, waterways and catchments within the district. A partnership approach would be prudent with respect to planning of works within those areas.

This section highlights potential changes in levels of service from those approved under the Long Term Plan in 2012. These levels of service change need to be debated with the community as part of the consultation on the Long Term Plan in 2015.

What is already taking place to ensure infrastructure planning supports level of service changes?

Where Level of Service changes are considered or required by legislation, these are made in a co-ordinated way between all parts of council and key stakeholders and are ratified where appropriate by managers, the senior leadership team and elected members.

Council community surveys and Long Term Plan consultation provides one source of feedback from the community. Elected members provide ongoing input to levels of service.

- The asset management plans take cognisance of growth and demographic trends and seek to match these with likely future levels of service.
- Council is exploring better ways of accommodating future changes in levels of service when delivering infrastructure.
- Council has introduced the Major Projects Team to provide advice for project planning and scoping for infrastructural projects in relation to achieving environmental outcomes, meeting national legislation requirements and anticipating future requirements.
- Council has introduced an improved project gating process through a projects governance board.

What will need additional consideration in the future?

Mechanisms to implement service level changes to meet customer expectations while considering their overall affordability need to be further evaluated.

Recognition and response to tensions that develop between customers that are impacted by lower levels of service and others in the community seeking different outcomes.

3.4 Affordability of ongoing provision of services

Council needs to carefully balance affordability of service provision with the communities required levels of service.

Infrastructure Objective: Renew and upgrade infrastructure in a cost-effective way and partner with others in our community and region to deliver services efficiently.

What does this mean for infrastructure?

Ongoing increases in the cost of infrastructure materials and labour are likely to be higher than CPI. This is due to a number of factors including:

- a shortage of engineering and trade skills
- the impact of increased environmental considerations when selecting materials and methodologies
- increased requirements around contractor health and safety.

Supporting environmental and public health outcomes – air, water, land, biodiversity – are likely to change levels of service and conflict with affordability. Previously planned renewals may have to become upgrades to meet increased environmental and public health requirements.

Changes to revenue (i.e. funding changes from Central Government or other sources – NZTA) may require different models to be used e.g. a user pays approach.

Maintaining debt levels within required tolerances could also become an issue if capital works increases and/ or levels or growth slow or decline. This would mean a more aggressive approach to prioritising infrastructure work to stay within limits.

What we're currently doing to ensure required levels of service are affordable

Council seeks to extend the life of assets by using condition assessment to renew as late as possible to extract maximum cost benefit from assets. (e.g. gravity wastewater systems can have renewal spend extended over a longer time period). Other considerations include:

- Ongoing reviews of the optimum level of service, taking the cost to benefit ratio into account.
- Multi-discipline renewals and works are co-ordinated to reduce the cost and disruption
- Exploring joint regional ventures and shared facilities (e.g. NRSBU, joint landfill, regional transport initiatives)
- Aligned regional engineering service and Land Development Standards
- Inflow and infiltration projects
- Benchmarking water loss trends
- Council is debating the cost vs. benefits of various flood protection strategies

Currently, our understanding of some of the higher value transport assets is relatively basic (e.g. road pavements). Ongoing NZTA funding will require us to develop a better understanding of the transport assets and the specific deterioration curves. Our understanding of carriageway surface ages and conditions has recently improved enough to know that there is a significant backlog in road surface renewals and along with it a cost of around $6M. This is able to be spread to catch up over a ten year period to reduce the annual cost to around $1.6M on average over 40 years. Condition data on the pavement structure is limited and renewal is far more costly than surface renewal. As a result, if a similar backlog was to be found for this asset then the cost would be significant.

NZTA are currently undertaking investigation work to determine whether a third southern arterial will be built. If this project does go ahead then the new road will be the state highway and the current state highway (Rocks Road) would become a Council asset. Along with ownership of this asset will come a significant maintenance cost.

What will need additional consideration in the future?

Nelson City Council will need to consider increasing use of shared services with Tasman District Council to achieve efficiency and resilience goals.

Greater use of infrastructure delivery at a regional scale can deliver significant cost benefits where the assets being managed are also at that scale. For significant capital expenditure, scale can provide the specialist skills needed to manage scope, procurement, timing, financing and operational issues. However, biggest is not always the best and there is a need to assess optimal size in terms of both contracts and management/governance requirements. However, in a number of areas larger scale delivery entities have greater ability than smaller ones to deliver affordable infrastructure to all communities.

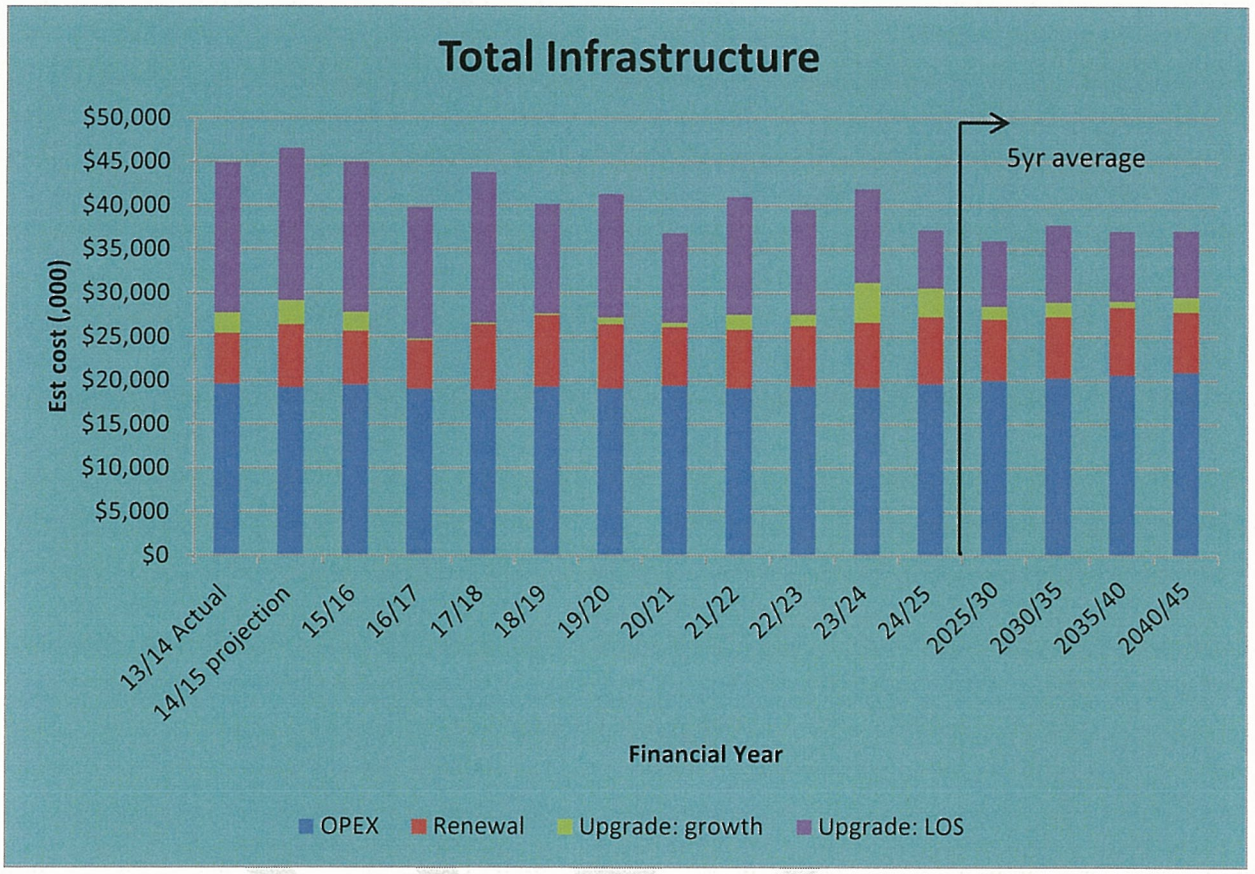
Areas for consideration are capital works, operations, maintenance and joint (council and private) ventures.

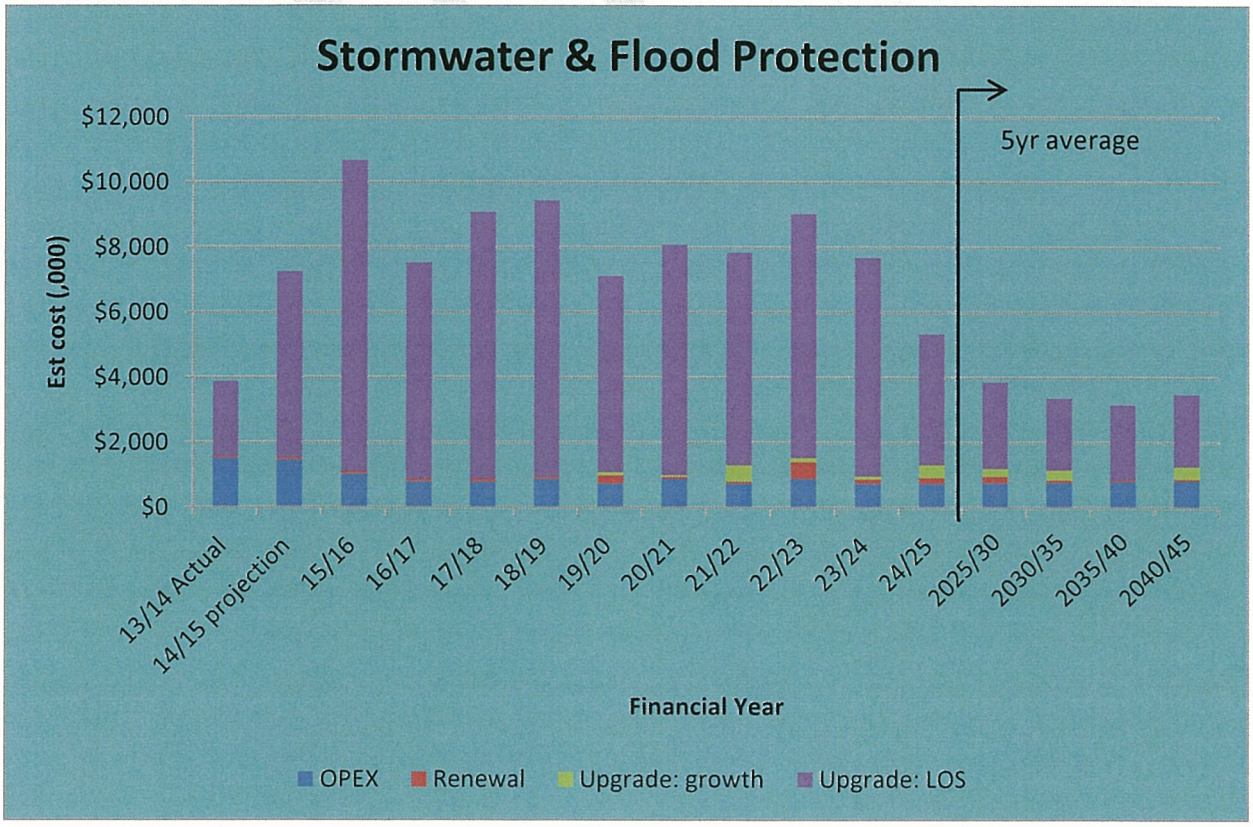
Improvement work needs to be prioritized where this can impact on affordability. e.g. water losses, cross contamination, infiltration of stormwater to wastewater.

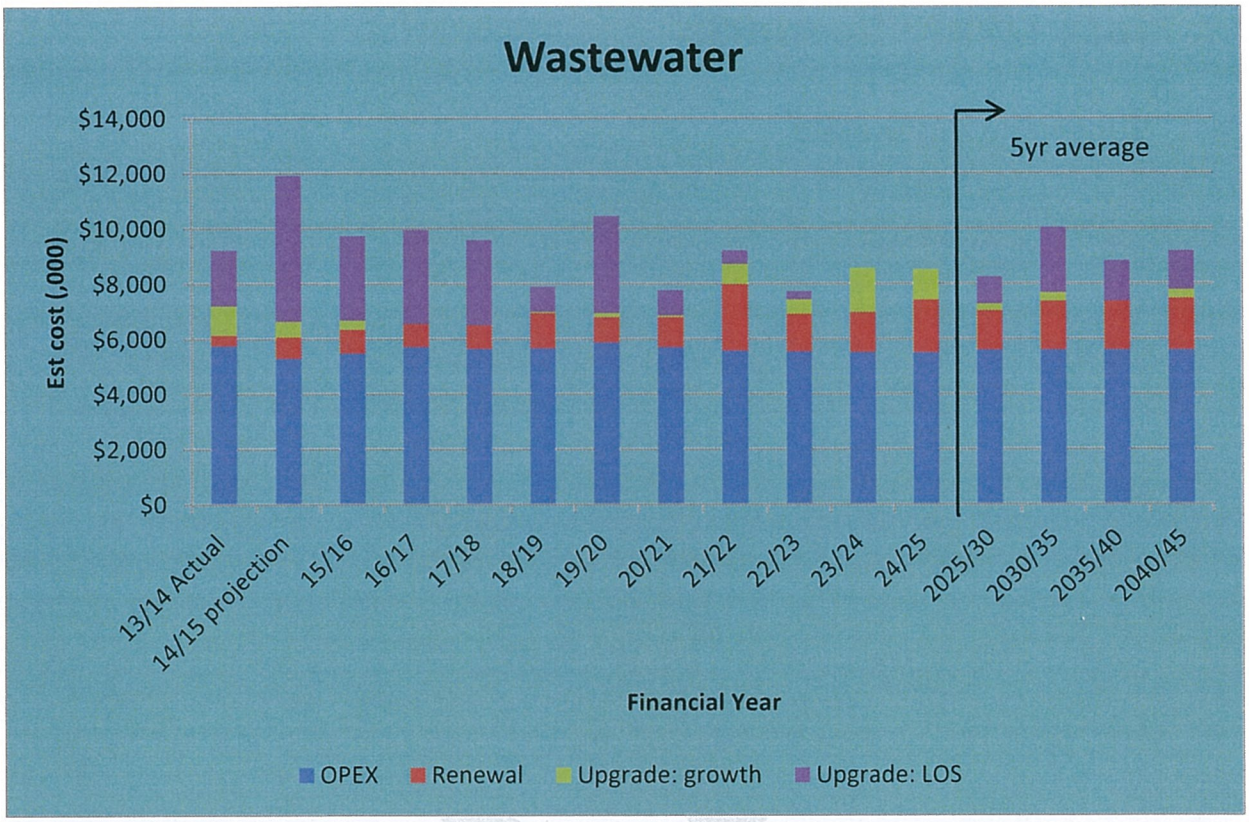
Council is also seeking to work collaboratively with the Tasman District Council recognising the reliance each has on the other for infrastructure and that the communities we serve seek common regional outcomes.

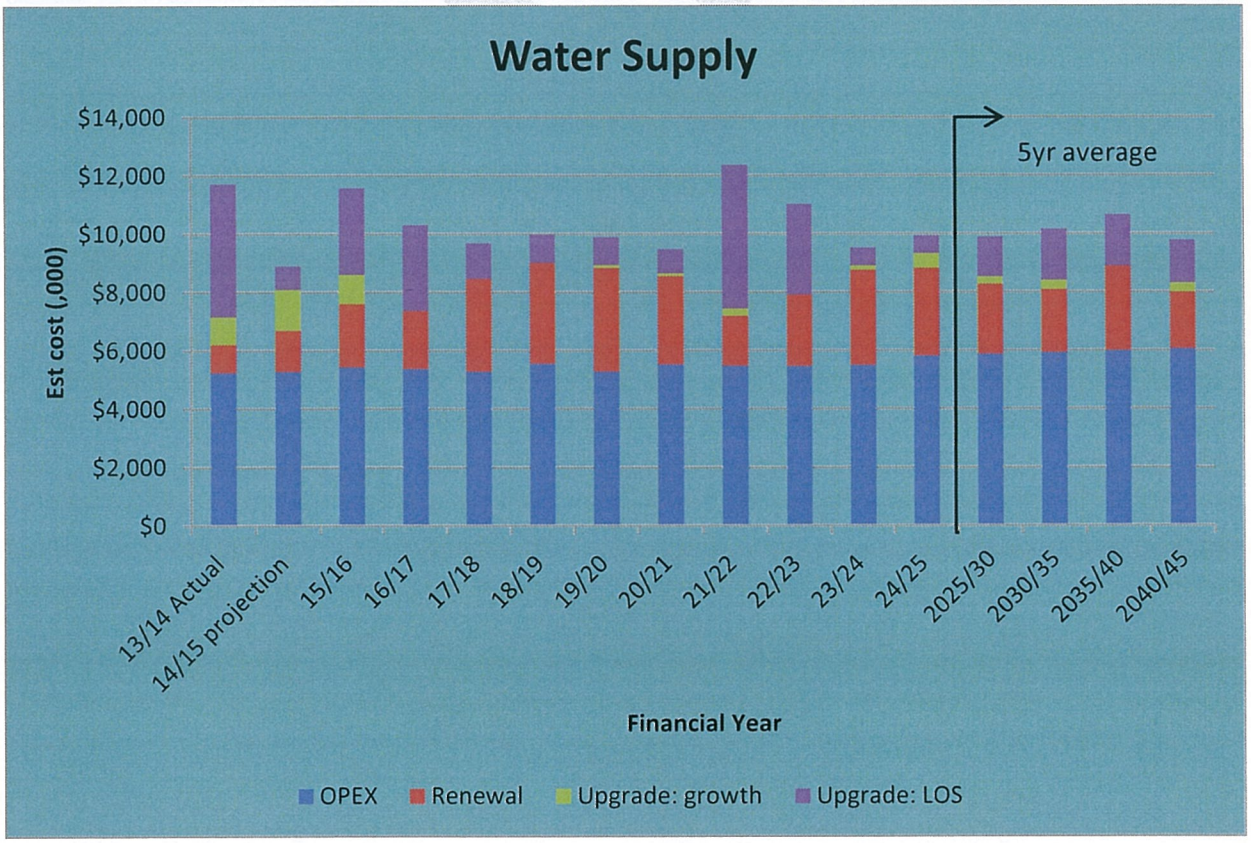
4 Most Likely Scenario

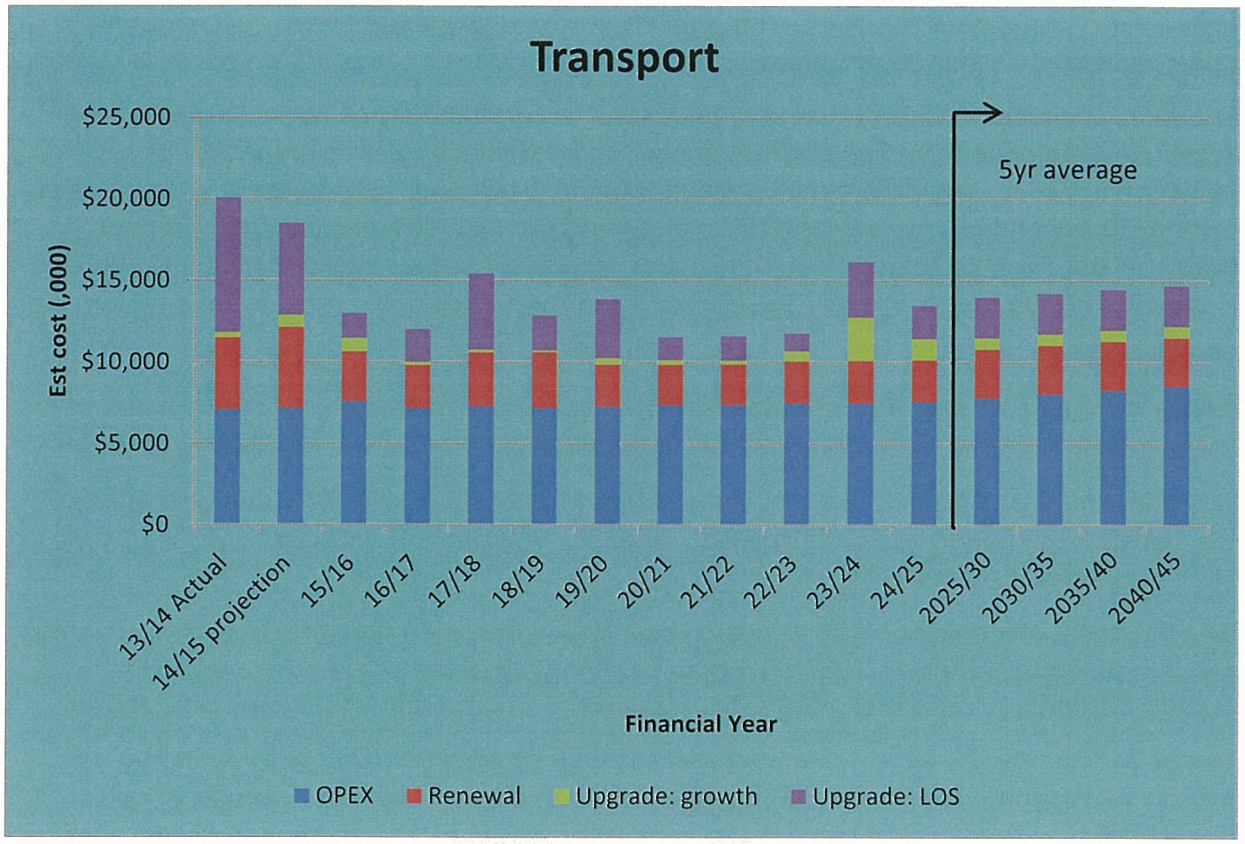
4.1 Summary Financials






Wastewater
$14,000
$12,000
$10,000
$8,000
$6,000
$4,000
$2,000
$0
Est cost (,000)
5yr average
13/14 Actual
14/15 projection
15/16
16/17
17/18
18/19
19/20
20/21
21/22
22/23
23/24
24/25
2025/30
2030/35
2035/40
2040/45
Financial Year
OPEX
Renewal
Upgrade: growth
Upgrade: LOS


Water Supply
$14,000
$12,000
$10,000
$8,000
$6,000
$4,000
$2,000
$0
Est cost (,000)
5yr average
13/14 Actual
14/15 projection
15/16
16/17
17/18
18/19
19/20
20/21
21/22
22/23
23/24
24/25
2025/30
2030/35
2035/40
2040/45
Financial Year
OPEX
Renewal
Upgrade: growth
Upgrade: LOS



Linkage to the Financial Strategy

The financial strategy has a limit on rates increases of Local government cost index (LGCI) plus 2% after growth in each of the 10 years of the Long Term Plan. Increasing costs of infrastructure, including more assets being built and maintained by Council puts pressure of this limit and Council need to be mindful of this.

There is also a limit around the level of debt Council can have, whereby debt cannot be more than 150% of total revenue in each of the 10 years of the Long Term Plan. This limit was required to be set during the Long Term Plan 2012-22 and has been set at this level to ensure that the Council remains financially prudent and can comfortably maintain the Standard and Poor's long term credit rating of AA-.

See the Financial Strategy for more details.

4.2 Significant Capital Expenditure Decisions

Stormwater & Flood Protection

Issue: More intense localised rain events and sea level rise increases probability of flooding along urban streams and rivers. This could lead to property damage and business disruption. Given the significant cost of this level of service Council will need to consider carefully the appropriate investment in protection works.

The **preferred option** is to upgrade the capacity of the urban streams and rivers to cope with a Q100 flow over the next twenty five years. Detailed design would allow for the future growth in the city and ensure the upgraded channels provided for environmental and recreational values. As growth in the city intensifies it will become more difficult to carry out this work in an integrated fashion and identifying and protecting corridors for the works will be important. The upgrades involve taking an inventory of the various streams capacities, looking at options, prioritising areas based on risk, and implementing

high priority mitigating solutions. The prioritised stages are expected to cost around $56M, spread over the 30 yr period.

The **primary alternative** option is to adopt the lesser standard of upgrading of Q50 and accept that damage from flooding will impact on a larger number of properties at a greater frequency. The difference between flows in Q100 and Q50 events can be between 15%-25% depending on how long the rain event lasts but differences in construction costs are not likely to match this. The cost of equivalent stages noted in the option above is expected to be approximately $51M over the 30 yr period.

Wastewater

Issue 1: Sea Level rise may threaten network with infiltration and inundation. More large storms could damage assets on low lying land close to waterways and Tasman Bay.

The **preferred option** is to protect the existing location and relocate vulnerable parts of the network to support resource consent renewals. Initiate this with sufficient lead-time to secure resource consents.

The primary alternative is to relocate the assets when they reach their end of life and are scheduled for renewal. This is likely to be higher cost than the above protection option. Technology advances may solve wastewater treatment in the likely time frame.

Issue 2: The primary sewer pumping main and pump stations from the city to the Nelson Wastewater Treatment Plant to the North of the city need to be replaced or duplicated.

The **preferred option**- Duplication of the rising main along the same general route is preferred at this early stage to ensure the network remains operational and we maximise the service life of the existing main. A new pump station at Neale Park is currently being designed. The duplication of the rising main is expected to cost $12.5M.

The **primary alternative** – Alternative options involving a new location of any new main are subject to further investigation and monitoring of sea level changes into the future. Allied to this investigation is the evaluation of the long term future of the Nelson Wastewater Treatment Plant to the North of the city. The location of this facility, adjacent the Boulder Bank, may be at risk should sea levels rise significantly in the future.

The Nelson **wastewater treatment plant resource consent expires** in ten years. By monitoring and calibrating the sea level rise predictions regularly, the actual risk will be better known approaching the resource consent renewal. There is a significant risk that renewal of consents for infrastructure in exposed coastal areas may not be successful without considerations that mitigate natural hazards. The resource re-consenting process must consider this and be initiated with sufficient lead time. This includes undertaking the assessment required by the NZCPS which includes:

a) promoting and identifying long-term sustainable risk reduction approaches including the relocation or removal of existing development or structures at risk;
b) identifying the consequences of potential strategic options relative to the option of 'do-nothing';
c) recognising that hard protection structures may be the only practical means to protect certain parts of existing infrastructure;
d) recognising and considering the environmental and social costs of permitting hard protection structures to protect private property; and
e) identifying and planning for transition mechanisms and timeframes for moving to more sustainable approaches.

Water Supply

Issue 1: Natural hazard and Climate change projections suggest parts of the network are likely to be impacted by earthquakes, liquefaction, more intense localised rain events, sea level rise and warmer drier summers. Earthquakes can damage all parts of the infrastructure and more intense rain events increase the probability of damage to water supply catchments and parts of the network from slips and erosion. Warmer drier summers increase the risk of drought conditions.

The **preferred option** is to identify and secure those elements of the network exposed to extreme events. Duplication of the trunk main from the Maitai dam to the treatment plant has been completed and the next stage from the treatment plant to Westbrook Terrace is currently being designed. Construction is programmed for 2015/16 – 2016/17 at a cost of $4.1M. Further investigation of hazards and network upgrades are proposed for the first six years of the LTP, with a budget of $700,000. Reducing the level of water losses from leaks in the network has been identified as the response to the risk of drought. A budget of $2.25M has been included in the LTP 2015-25.

The **primary alternative** option is to adopt a lesser standard of resilience within the water network, repair damage as and when it occurs and encourage greater resilience amongst customers. Drought response would focus on monitoring water use and imposing restrictions to ensure supply was sustainable and encouraging significant on site private water storage by customers.

Issue 2: Resource consents for water abstraction from the Maitai and Roding rivers expire in 2017. These consents set out the amounts of water that are able to be taken from the rivers and the conditions that have to be met. Without these consents the city would not be able to operate the water supply.

The **preferred option** is for new consents to be issued for the current abstraction amounts and the same conditions. A budget of $1.2M has been identified in the LTP 2015-25 for the works associated with these consents.

The **primary alternative** option is to accept lesser abstraction amounts and / or more stringent conditions. The cost to the community from this is likely to be measured by the future development opportunities that would not proceed because of a lack of a secure water supply and / or the cost of meeting new resource consent conditions.

Transport

Issue 1: As we understand the age, condition and deterioration of our transport assets better there is likely be a change in expenditure to match the expected renewal and maintenance required that we are currently unaware of. Until the work to understand the assets better has been done it is not possible to anticipate the order of costs associated with this issue. This work is to be done over the next three years, in time to inform the next infrastructure strategy.

The **preferred option** is to undertake the work as planned in the 2015-18 period to better understand the useful remaining life of the assets that we lack knowledge in. A budget of $75,000 per annum has been identified in the 2015-18 period for this.

The **primary alternative** option is to accept higher risk of asset failure and more reactive maintenance and renewal work on the $700M transport asset.

Issue 2: Should the NZTA Southern Arterial investigation show that construction of a third arterial route is viable the cost is expected to be in the range $50M - $60M. There is

not expected to be significant cost to Council as central government, via NZTA, would be expected to fund almost all of the cost.

The **preferred option** is to wait until the Southern Arterial investigation is complete before informing the next Infrastructure Strategy.

The **primary alternative** is to include the routine operation and renewal cost of the Haven Road, Wakefield Quay, Rocks Road and Tahunanui Drive route should the project go ahead. This is expected to cost in the vicinity of $1.5M annually.

Issue 3: Demand Forecasting, the trend over the last ten years has seen household travel not follow the increase in population growth. This may be linked to the economic cycle and fuel prices. The trend is being closely monitored to inform future capacity requirements. Nelson City Council is developing better localised traffic modelling capabilities and is working with NZTA on arterial models.

The **preferred option** is to wait until the network wide modelling scheduled for 2015/16 is complete before informing the next Infrastructure Strategy.

The **primary alternative** option is to include network wide improvements to maintain the level of service in a high traffic growth scenario (safety and capacity) at a cost of $30M over 15 years.

4.3 Assumptions

Assumption ratification process:

The assumptions are based on best information available to officers. The ratification process involves passing the assumptions through the senior leadership team and via the Long Term Plan process, through elected members and is part of the consultation process.

Nelson and Richmond Population Projections

This information is based on population projections by Statistics New Zealand published on 19 February 2015, using Census 2013 demographics and trends as a base. The medium growth series has been used as Statistics New Zealand advised at the time that the medium projection is considered suitable for assessing future population change.

Growth Assumptions

- Nelson's population is expected to grow by 3,600 residents over the next ten years, to 53,320 in 2025 (and we're likely to hit 50,000 by early 2016)
- Population growth is expected to slow down over time, based on the assumptions that deaths will increase while births stay constant, and that migration rates also remain constant
- The proportion of the population aged 65 years and over will increase from 18% in 2015 to 25% in 2025 and is likely to make up more than a third of the population in 2045
- The number of children is expected to decrease after 2018
- The number of households in Nelson is projected to increase by about 1,800 in the ten years between 2015 and 2025, to 22,310 households

Transport

- Development occurs in the already zoned areas that currently have service overlays along with the area covered by plan change 18.
- Climate change will happen as described by the Ministry for the Environment as at October 2014.
- NZTA funding subsidies will continue to be approximately 50%.
- Projects to cater for growth will be funded using development contributions at a rate of 100% of the portion of the project associated with growth.

All Water Utilities:

It is assumed that the service delivery strategy will be sustained for the term of the strategy, where Council manages maintenance, renewal and asset replacement through an internal business unit and hires specialist consultants and contractors as required.

Water Supply

- Resource consents will be granted for the abstraction of water and ongoing use of necessary structures
- Tasman District Council will continue to supply The Wakatu Industrial Estate and Champion Road area
- Nelson's climate will remain substantially unchanged for the next decade and that climate change predictions do not vary from current predictions (2014)
- Drought period demand does not exceed storage volume of the Maitai dam;
- New development is concentrated in the Nelson urban area rather than rural areas
- No new high water demand industries establish in Nelson until water losses are reduced
- Renewals will continue as set out in the AMP
- Water supply activity will continue to be funded from water charges
- The service delivery strategy will continue in its current form unless changed as a result of community consultation
- Water conservation and the demand for water is expected to continue to primarily be managed through Council's water charging system.
- Waimea community dam (TDC) – It is currently not known whether this dam will go ahead or not. Nelson could be asked to contribute to this dam (total cost approximately $70mil – any possible Nelson contribution is not yet decided).

Wastewater

- Resource consents will be granted for the continued operation of the Nelson Wastewater treatment plant and marine outfall.
- Existing Atawhai Rising Main continues in operation until duplicated
- Nelson's climate will remain substantially unchanged for the next decade and that climate change predictions do not vary substantially from the current predictions (2014)
- Inflow and Infiltration initiatives reduce peak wet weather flows to 4 x average dry weather flows
- New development is concentrated in the Nelson urban area
- No new high wastewater volume industries establish in Nelson in the next 6 years
- Renewals will continue as set out in the AMP
- Wastewater activity will continue to be funded from wastewater charges and development/financial contributions
- The service delivery strategy will continue in its current form.

Stormwater and flood protection

- Resource consents will be granted for the continued discharge of stormwater to freshwater

- No significant effects on stormwater structures occur within the next ten years from climate change-induced sea level rise. However, such effects may arise in the longer term
- Climate change predictions do not vary significantly from current MfE predictions (2014)
- New stormwater reticulation will be designed for a Q20 event with roads and overland flow providing the flow path for larger events
- It is assumed that new flood protection works are designed for a Q100 event with roads and overland flow providing the flow path for larger events. (The level of protection is currently being assessed by council)

Relevant Long Term Plan Assumptions

<table>
<tr><th>Forecasting assumptions</th><th>Risk/uncertainty</th><th>Impact</th><th>Comment/mitigation</th></tr>
<tr><td>Affordability: The Nelson Tasman economy has grown more slowly than the national average for a number of years but overall has weathered the global economic downturn reasonably well. Council is taking a cautious approach to prospects for the regional economy, noting that the ageing demographic will bring older residents who are no longer in employment and potentially less able to afford increasing rates.</td><td>Economic pressures lead to more residents defaulting on rates payments than expected.</td><td>Medium</td><td>This will be a medium to long term impact particularly if, as predicted, the average retirement age also rises significantly.</td></tr>
<tr><td>Inflation/Price changes: Council uses inflation forecasts from Business and Economic Research Ltd (BERL) to estimate inflation over time. It is assumed that inflation rates are as predicted and modelled in budgets.

<table>
<tr><th>Year ending</th><th>CPI %</th><th>BERL LGCI Opex %</th><th>BERL LGCI capex %</th><th>BERL LGCI %</th></tr>
<tr><td>30-Jun-16</td><td>1.7</td><td>2.2</td><td>2.3</td><td>2.2</td></tr>
<tr><td>30-Jun-17</td><td>1.9</td><td>2.3</td><td>2.6</td><td>2.5</td></tr>
<tr><td>30-Jun-18</td><td>2.0</td><td>2.4</td><td>2.6</td><td>2.5</td></tr>
<tr><td>30-Jun-19</td><td>2.1</td><td>2.6</td><td>2.7</td><td>2.6</td></tr>
<tr><td>30-Jun-20</td><td>2.1</td><td>2.7</td><td>2.8</td><td>2.8</td></tr>
<tr><td>30-Jun-21</td><td>2.2</td><td>2.9</td><td>3.0</td><td>2.9</td></tr>
<tr><td>30-Jun-22</td><td>2.3</td><td>3.0</td><td>3.1</td><td>3.0</td></tr>
<tr><td>30-Jun-23</td><td>2.4</td><td>3.1</td><td>3.3</td><td>3.2</td></tr>
<tr><td>30-Jun-24</td><td>2.4</td><td>3.3</td><td>3.5</td><td>3.4</td></tr>
<tr><td>30-Jun-25</td><td>2.5</td><td>3.4</td><td>3.7</td><td>3.5</td></tr>
</table>
CPI = Consumer price index
LGCI = Local government cost index
Opex = Operating expenditure
Capex = Capital expenditure</td><td>Inflation higher than expected, increasing costs for Council.</td><td>Medium</td><td>Likely to be some variation in actual rates of inflation from predictions and this will impact on the financial results of Council. Changing costs may mean the timing of projects needs to be adjusted.

Council has relied on the current parameters the Reserve Bank is required to operate under in terms of inflation being held within the range of 1 – 3 %</td></tr>
</table>

Forecasting assumptions	Risk/uncertainty	Impact	Comment/mitigation
Interest rates: In preparing the Long Term Plan the Council has assumed an interest rate of between 5.15 and 5.45%. Assumptions are based on detailed analysis of the cost of both existing and future debts and anticipated interest rates.	The prevailing interest rates differ significantly from those estimated by the Reserve Bank of New Zealand.	Medium	Increase in interest rates flow through to higher debt servicing costs and higher rates funding requirements. The Council has mitigated these risks with a prudent hedging programme developed within the limits of a prudent treasury policy.
Climate change and natural disasters: It is assumed that natural disasters will occur with increasing frequency. This has been the experience of recent years and is consistent with predictions of climate change impacts. Exposure of low lying land to the risk of inundation from sea level rise is another assumption related to climate change. Council relies on Ministry for Environment guidelines in estimating sea level rise. Council's Land Development Manual currently provides for a 0.5m sea level rise by the end of the century but this will be reviewed in line with the latest MfE advice (1m for 100 years). The Nelson Tasman Civil Defence Emergency Plan states that the most significant natural hazards for Nelson are: earthquakes (greatest impact) and flooding (most likely). The probability of a magnitude 7 earthquake in Nelson is 87% in the next 50 years, and 98% in the next 100 years. The probability of a magnitude 8 earthquake is 43% in the next 50 years, and 67% in the next 100 years.	Climatic events lead to increased costs for Council in both responding to events and building greater resilience into infrastructure.	Medium	A characteristic of the Nelson community is the concentration of lifelines infrastructure (roading network, port, airport etc) on low-lying areas. Council has been increasing its contributions to the Disaster Recovery Fund as one method of mitigating the risk of natural disasters.

Forecasting assumptions	Risk/uncertainty	Impact	Comment/mitigation
Hazards: It is expected that dealing with contaminated land in capital and maintenance projects will become more common as the HAIL register is refined and added to.	Investigation, consenting, handling and disposal of contaminated material lead to an increased overall cost of projects.	Medium	Increased design and construction budgets in the annual and long term plans. If Council has made past decisions that were compliant with the legislation at the time of consent being granted, then it is unlikely that it would then be financially liable for remediation or mitigation of identified hazards after that time. In relation to the private use of land, council has a duty of care in issuing LIM's, and must ensure that an applicant has been informed properly and fairly about relevant features or characteristics of the land and its uses. Council includes HAIL information on LIM reports to ensure all known information is made available. In granting a resource consent, where there are likely or known hazards, then any consent issued requires these hazards or adverse effects to be mitigated or removed.
Useful lives of significant assets: It is assumed that there will be no reassessment of the useful lives of assets during the 10 year period covered by this plan. The detail of useful lives for each asset category is covered in the Statement of Accounting Policies.	Assets wearing out earlier than predicted and funding needs to be found for replacements.	Low	This may result in changes needing to be made to the underlying capital expenditure programme.
NZ Transport Agency funding: NZTA has reviewed the principals and methods used in setting its financial assistance rates. For 2015/16 the FAR will be 47% and will rise by 1% per year to 51% over six years.	NZTA providing less funding than currently indicated and Council's share of project costs therefore increasing.	Medium	Changes to the funding priorities of New Zealand Transport Agency are outside Council control.
Resource consents: It is assumed that resource consents held by Council will not be significantly altered and any due for renewal during the life of the plan can be renewed accordingly.	Conditions of resource consents altered and significant new compliance costs or consents cannot be renewed as expected.	Medium	Budgets are in place for renewal of resource consents and there is no expectation of significant departure from requirements over the next 10 years.

Forecasting assumptions	Risk/uncertainty	Impact	Comment/mitigation
Insurance costs: It has been assumed that insurance premiums continue at current levels plus inflation and that we can get 100% cover and that the Local Authority Protection Programme Disaster Fund continues	Premiums increasing above inflation and/or Council cannot get 100% cover.	Medium	Any increase in premiums above the level assumed will have an impact on rates. Council may need to make decisions about cover levels during 10 year period.
Government Policy Changes: It is assumed that the any future Government legislation changes will take into account the need for a stable working and statutory framework. The Government has made known its intention to reform the Resource Management Act 1991, to receive a report back from the Rules Reduction Taskforce, and to continue to seek ways of addressing housing affordability and social housing need. It has also introduced the Building (Earthquake-Prone Buildings) Amendment Bill which includes a requirement on Councils to complete seismic assessments and to earthquake strengthen specified buildings. Further changes to legislation impacting on local government may take place, but this is not known at this time. It is assumed that Government will work with Councils to ensure that any legislative changes are managed appropriately.	Government policy shifts may result in new or amended legislation either requiring significant response and cost to administer by Council or result in changes to services delivered.	Medium	Financial impact resulting from a need to respond to significant legislation changes would impact on rates or fees and charges. It is not possible to quantify the potential financial impact of any future legislative changes at this time.
Co-funding arrangements: It is assumed that for projects where other partners are contributing part of the funding, this funding will still be available.	Partners will no longer be in a position to provide funding which will result in an increased level of input from Council, or the termination of the project	High	Viability of projects would be threatened and Council would need to consider its ongoing funding commitment.