2022 Asset Management Plan

Greater Wellington
Te Pane Matua Taiao

metlink

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List of abbreviations

AMP	Asset Management Plan
BRT	Buses Replacing Trains
Capex	Capital expenses
CBD	Central Business District
CCTO	Council Controlled Trading Organisation
CCTV	Closed Circuit Television
CPTED	Crime Prevention Through Environmental Design
DMU	Diesel Multiple Unit
DEMU	Diesel/Electric Multiple Unit
ECTS	European Train Control System
EMU	Electric Multiple Unit
ERP	Enterprise Resource Planning System
EV	Electric Vehicle
FRACAS	Failure Reporting, Analysis, and Corrective Action System
GPS	Government Policy Statement on Land Transport 2021
GHG	Green House Gas
GWRC	Greater Wellington Regional Council
FRAC	GWRC's Finance, Risk and Assurance Committee
GWRL	Greater Wellington Rail Limited
HVAC	Heating Ventilating and Air Conditioning
IS	Infrastructure Strategy
KPIs	Key Performance Indicators
LGA	Local Government Act 2002
LGWM	Let's Get Wellington Moving
LOS	Level of Service
LTMA	Land Transport Management Act 2003
LTP	Long Term Plan
MaaS	Mobility as a Service
MDC	Masterton District Council
MDBI	Material Damage Business Interruption insurance policy
MDRF	Material Damage Reserve Fund insurance policy
MDBF	Mean Distance between Failures
MoT	Ministry of Transport

MVOS	Minimum Vehicle Operating Standard
MROM	Metropolitan Rail Operating Model
NBS	National Building Standard
NLTF	National Land Transport Fund
Opex	Operating Expenses
PCC	Porirua City Council
PID	Passenger Information Display
PTOM	Public Transport Operating Model
RLTP	Regional Land Transport Plan
RMA	Resource Management Act 1991
RMC	Rail Monitoring Centre
RNIP	Rail Network Investment Plan
RPTP	Wellington Regional Public Transport Plan
RRP	Wellington Regional Rail Plan
RUB	Requirements for Urban Buses in New Zealand
RSS	Rail Safety System
RTI	Real Time Information
RTRT	Wellington Regional Transport Response Team
SE	Suburban express
SPAD	Signal Passed At Danger
SW	Suburban Wairarapa
TA	Territorial Authority
Transdev	Transdev Wellington Ltd
TSR	Temporary Speed Restriction
VQS	Vehicle Quality Standards
Waka Kotahi	Waka Kotahi New Zealand's Transport Agency
WCC	Wellington City Council
WCCL	Wellington Cable Car Limited
WoF	Warrant of Fitness
WNA	Wellington Network Agreement
WNMP	Wellington Network Management Plan
WRGF	Wellington Regional Growth Framework
WRMSP	Wellington Regional Mode Shift Plan

Introduction

This Asset Management Plan (AMP) describes how we are building an efficient, accessible, and low carbon public transport network for the Wellington region. Our multi-modal public transport network of trains, buses, and ferries provides our communities with effective travel options to access jobs, education, healthcare, cultural activities, shops, friends, and whanau. It improves the liveability and economic productivity of our region by:

- decreasing traffic congestion, particularly in the morning and afternoon peak periods, which in turn affects journey times, and journey-time reliability
- providing transport choices, including during off-peak periods
- contributing to the reduction of carbon emissions from transport
- enabling efficient land use and development of a compact, well-designed, and sustainable environment.

Our climate is changing, technology is evolving, congestion is growing. The plans in this AMP set out our response to the public transport challenges our region faces. We have made extensive improvements to our network to deliver affordable, faster, more frequent, and reliable services. We have a great opportunity to further enhance the liveability of our region through creating a more sustainable, accessible, and reliable public transport network. We will continue to invest to improve network resilience and to unlock capacity to facilitate mode shift and meet both current and future demand.

To this end, the key challenges that we address in this AMP are:

- providing sufficient capacity to meet mode shift targets and demand expectations
- meeting customer levels of service expectations
- efficiently delivering our extensive low carbon work programme.

Purpose

Delivering a world-class public transport network that is fit for purpose for now and in the future requires ongoing investment. The purpose of this AMP is to communicate our 30-year investment plans for the prudent management of our public transport network for the period 2021 to 2051. It demonstrates the alignment from our organisational and public transport objectives through to the levels of service, our service providers, the condition of our assets, and the consequent forecast programme of works.

The investment plans contained within this AMP promote efficiency, inclusive access to public transport for all, mode shift, resilience, and security by minimising and managing the risks to our network from natural and human-made hazards and contributing to the transition of New Zealand to a net zero carbon emissions' nation.

Scope

This AMP is also the AMP for Greater Wellington's subsidiary company Greater Wellington Rail Limited (GWRL). GWRL owns a significant number of the rail assets contained within this AMP.

Our public transport services are delivered through a combination of service contracts that we fund and manage, and assets which we own or manage. The assets that we own are contained within four asset classes:

- rail station infrastructure. Apart from Wellington Railway station, we own all the station buildings, overbridges, subways, lighting, fences, bike racks, and other minor rail station infrastructure in the region.
- rail rolling stock
- bus and ferry infrastructure
- customer information assets.

The service contracts (relevant to our public transport asset management) that we fund and / or manage with our service providers are:

- bus operations
- ferry operations
- rail track access agreement.

We have a long-term access agreement with KiwiRail, the owner of the rail network. The assets and activities relating to the rail network, and those related to the rail, bus, and ferry services have been included within this AMP for completeness.

All expenditure presented in this document is on a nominal basis in FY 2021 dollars. Expenditure is shown by June financial year. For example, FY 2021/22 refers to the year 1 July 2021 to 30 June 2022. This AMP has been developed during the Covid-19 pandemic response. As this AMP communicates our 29-year investment plans, our assumption is that the strategic direction will remain constant over the period. The medium to longer term impacts of Covid-19 on patronage trends are yet to be fully understood.

It is expected that in the short-medium term, patronage will be lower than pre-COVID 19 levels due to changes in travel patterns arising from increased levels of working from home. In the long-term, it is expected that a combination of population growth, investment in the network, alongside regional and national initiatives to encourage public transport use will increase demand for our public transport network.

The expenditure in this AMP covers asset renewal capex, asset improvement capex, asset opex, key asset leases, asset insurance, and asset maintenance. We have not included expenditure associated with the following items:

- departmental costs
- our bus fleet as these assets are owned and operated by our bus service operators
- Let's Get Wellington Moving initiatives
- national ticketing systems
- Snapper
- the On-Bus-Next-Stop announcement system
- our back-office IT systems that run our customer information assets
- RTI 2.0 expenditure.

Status

This AMP is an update of our 2021 AMP which underpinned Greater Wellington's 2021-2031 Long Term Plan (LTP).

Since the publication of our 2021 AMP, we have achieved a great deal. This includes:

Commissioned 72 more electric buses on our public transport network	Commissioned a new bus layover and driver facilities at 247 Thorndon Quay.
Improved information to customers during planned and unplanned disruptions on the rail network, through digital signage directing customers to train replacement buses.	Completed Trentham to Upper Hutt rail duplication, including significant improvement to Trentham and Wallaceville stations.
Established Metlink asset criticality framework	Incorporated a new Accessibility Charter into our asset planning
Made ongoing improvements to shelter provision at railway stations	Commissioned the first electric ferry in the southern hemisphere.
Implemented ten new purpose-built, fully electric buses for the Airport Express fleet	Seismically strengthened all rail pedestrian bridges to >67% of the new building standard
Undertook an on-demand public transport trial	Acquired six bus-driver-only toilets
Worked with iwi and Victoria University to create the first living-roof bus shelter in the Wellington region	Fully decarbonised our busiest bus route

AMP document structure

This AMP is structured into nine sections as outlined in Figure 1.

1. Introduction
2. Expenditure Summary
3. Our Operating Environment
4. Metlink: Who we are
5. Our Levels of Service
6. Demand and Growth
7. Risk Management
8. Our Asset Management Approach
9. Our Asset Class Plans

Figure 1: AMP document structure

Expenditure Summary

Expenditure Summary

The expenditure described in this AMP is an investment in our vision of an efficient, accessible, and low carbon public transport network. Our 30-year plan is based on assumptions about the impact of population and demographic changes, the economy, climate change and natural hazards, technology, and legislative and governance changes on our public transport network.

Our key initiatives and investment plans support our three strategic priorities of improving customer experience, increasing mode shift to public transport, and reducing public transport emissions by decarbonising the fleet. These are discussed further below.

Improving Customer Experience

We have identified several initiatives where improving our customers' experience when they use our public transport network has the potential to increase the use of public transport. The forecast activities and expenditure contained within this AMP are required to improve customer experience by improving customer information, comfort, and convenience of our public transport service, and improve accessibility. Our customer expectations are always evolving. The forecast activities and expenditure ensure we can provide:

- information and facilities that assist with making a connected journey using multiple modes of travel, such as cycling or walking for part of that journey
- accessible information tailored for specific needs
- clean and safe vehicles and facilities
- adequate shelter from the weather in exposed waiting areas
- services and facilities near commonly accessed places, such as work, shopping centres and medical facilities
- prompt updates about changes to services and disruptions
- easy to access vehicles and facilities
- accessibility features in all vehicles, facilities and services that provide access equal to that of people without disabilities e.g. wheelchair-accessible and super-low-floor buses and access to trains, use of accessibility and safety standards in the design and development of public transport facilities
- 'Universal Design' principles by engaging people with disabilities during the design and development of new facilities and services.

Increasing mode shift to public transport

Pre-covid, the Wellington region has the highest mode share across New Zealand with 31% of the trips to work being made either on public transport, by walking, or by cycling. Of the 82,000 people commuting into central Wellington during the peak period, 18% are rail

passengers and 16% are bus passengers[1]. This means there is an opportunity to increase mode shift from private vehicle to our public transport network across the region.

The Regional Land Transport Plan 2021 has set a target of a 40% increase in mode shift to active modes and public transport by 2030. Our public transport system has traditionally functioned well for single mode trips, but initiatives that enable more flexibility between modes will be key to making it easier for more people to use shared and active modes for a wider variety of trips, including the traditional journey to work or school. The forecast activities and expenditure within this AMP to support mode shift (in addition to those that relate to customer experience) include integrated ticketing, bike racks on buses, and bike parking at stations.

Reducing public transport emissions by decarbonising the fleet and routes

Our public transport network is a key contributor to reducing greenhouse gas emissions by moving people out of private vehicles and onto another alternative. A move to a zero-carbon emission public transport fleet and the development of a more efficient and reliable public transport network will help achieve Greater Wellington's sustainability goals and contribute to the 2021 Regional Land Transport Plan target of a 35% reduction in carbon emissions from transport by 2030.

Modernisation and decarbonisation of our public transport fleet will be a key contributor to reducing Greater Wellington's carbon footprint. It will lead to more efficient journey times and improved customer experience, which will encourage mode shift to public transport. This will result in a decrease in overall carbon emissions for the region.

Government policy states that all new public transport buses registered for the first time in New Zealand from 1 July 2025 must be zero emissions, and all public transport fleets are to be zero emissions by 2035. Our plan is to reduce public transport emissions by decarbonizing our bus public transport fleet by 2030.

To accelerate decarbonisation of our bus fleet and as outlined in the Wellington Regional Public Transport Plan (RPTP) 2021-31 we are:

- increasing the number of electric buses to 100 by 2023
- ensuring all core service buses are electric by 2030 (Routes 1,2,3,7,110,120,130,220, and AX)
- implementing the agreed pathway to further accelerate decarbonisation of the fleet by 2030
- continuing to work towards a more efficient bus network

[1] Wellington Regional Mode Shift Plan published September 2020

Therefore, all new buses (for growth & age replacements) will be electric, and electric buses or zero emission buses will be a requirement within new contracts. The current contracts have initial terms through to 2027 and 2030.

We are working with KiwiRail to plan rolling stock improvements and electrification of infrastructure.

East by West Ferries, our ferry operator, has invested in an electric ferry, the first commercial electric ferry in the southern hemisphere. This was commissioned in 2021.

There are some key challenges that need to be overcome to achieve full decarbonisation of our bus, rail, and ferry services by 2030 including:

1. **Funding.** The capital expenditure required to implement the decarbonisation agenda is significant and will require contribution from regional and central government sources.
2. **Electricity distribution network infrastructure** In most cases the electrical distribution infrastructure to depot locations is not capable of supplying the amount of electricity required for charging buses. In some cases, the network does not have the required resilience due to the age of the components. Therefore, major upgrades are required.
3. **Electricity generation.** New Zealand's electricity generation is largely from renewable resources. However, a portion is still generated from burning fossil fuels. Full decarbonisation of the public transport fleet cannot be achieved until New Zealand's electricity generation is completely renewable and sustainable.

Expenditure overview

Over the 30-year period covered by this AMP, our total opex forecast for rail is $1.4b. This comprises rates, leases, insurance, electricity, and maintenance.

The total capital forecast for rail for the same period is $3.64b. This includes:

- **capex renewal expenditure** of $462m on the KiwiRail Network, $132m on rail infrastructure, and $691m on rolling stock
- **capex improvement expenditure** of $1.30b on the KiwiRail Network, $169m on rail infrastructure, and $888m on rolling stock.

Our total opex for bus is $223m. This comprises both asset renewal opex and maintenance. The total capex renewal and improvement is $63m.

The expenditure presented in this AMP reflects our dedication to improving customer experience, increasing mode shift to public transport, and reducing public transport emissions by decarbonising the fleet.

The expenditure in this AMP covers asset renewal capex, asset improvement capex, transitional rail, asset opex, key asset leases, asset insurance, and asset maintenance. We have not included expenditure associated with the following items:

- departmental costs
- bus fleet
- purchase or lease of layovers
- Let's Get Wellington Moving initiatives
- national ticketing systems
- snapper
- the On-Bus-Next-Stop announcement system
- our back-office IT systems that run our customer information assets
- the software component of the RTI 2.0 expenditure (please note the asset infrastructure associated with the RTI 2.0 project, such as the RTI display screens is included within this AMP).

Our total public transport asset opex expenditure forecast by asset type is shown Figure 2.

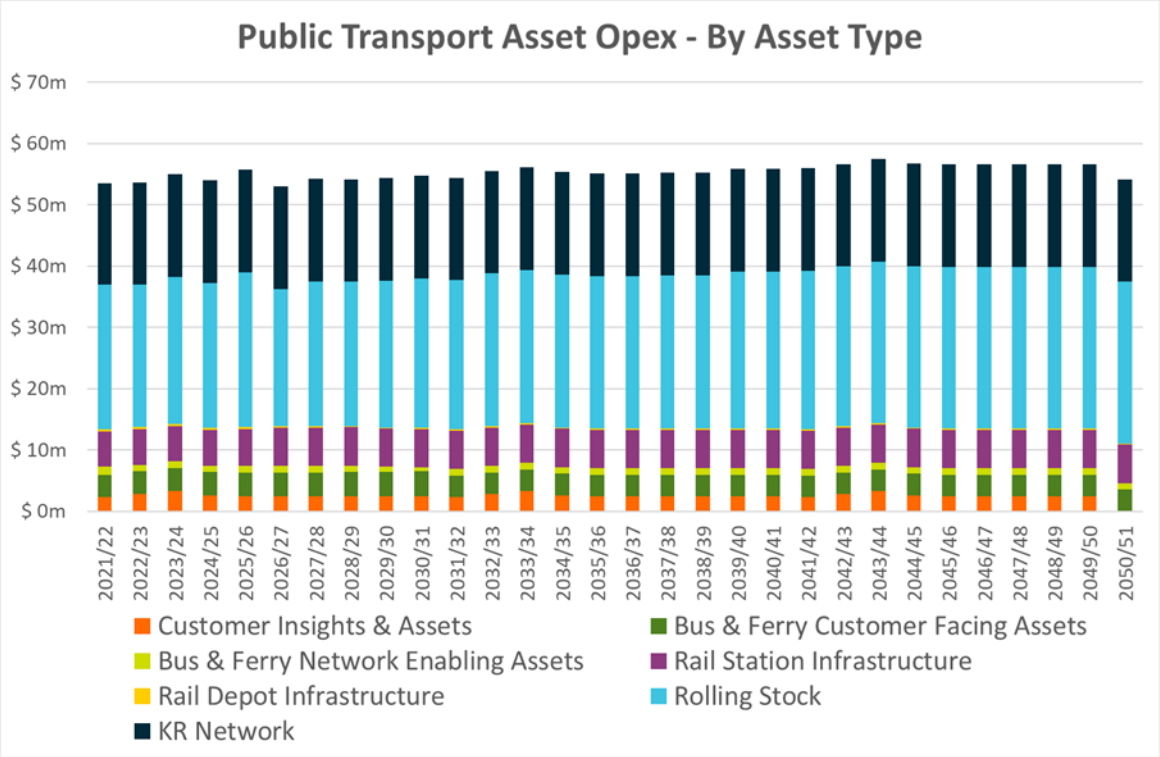


Figure 2: Public Transport asset opex forecast including maintenance

Our public transport asset opex by expenditure type is shown in Figure 3.

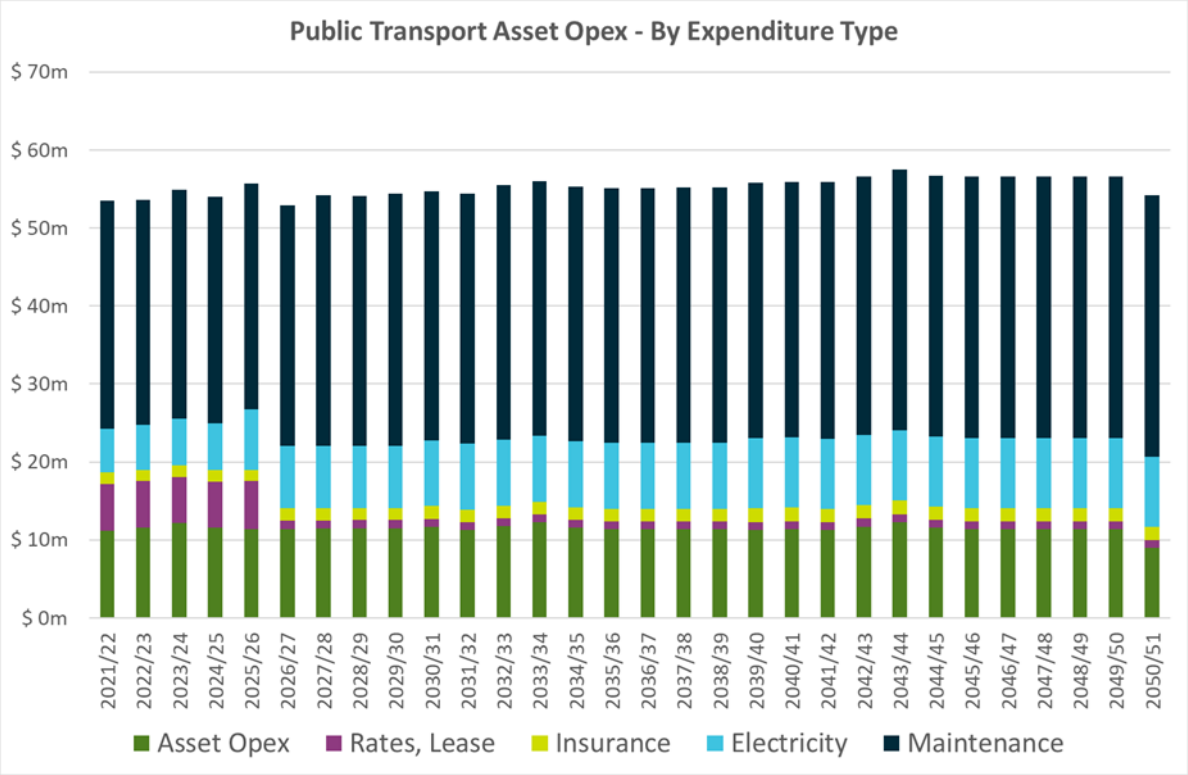


Figure 3: Public transport asset opex by expenditure type

Our total public transport asset capex by asset type is shown in Figure 4.

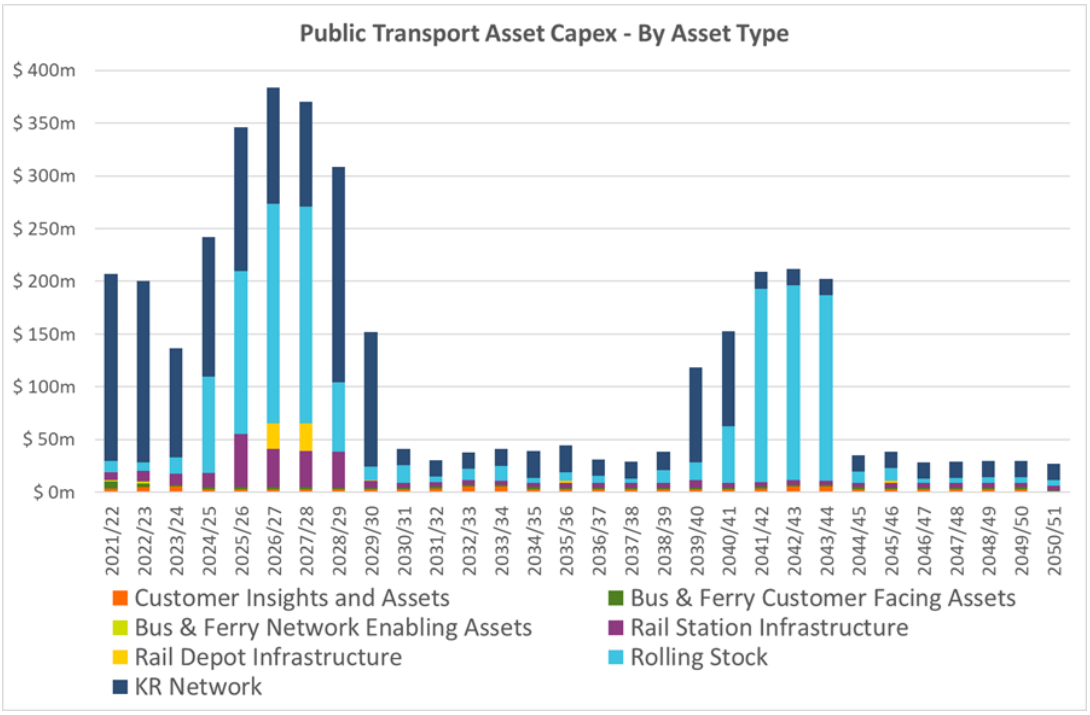


Figure 4: Public transport asset capex by asset type

Our public transport asset capex by renewal and improvements is shown in Figure 5.

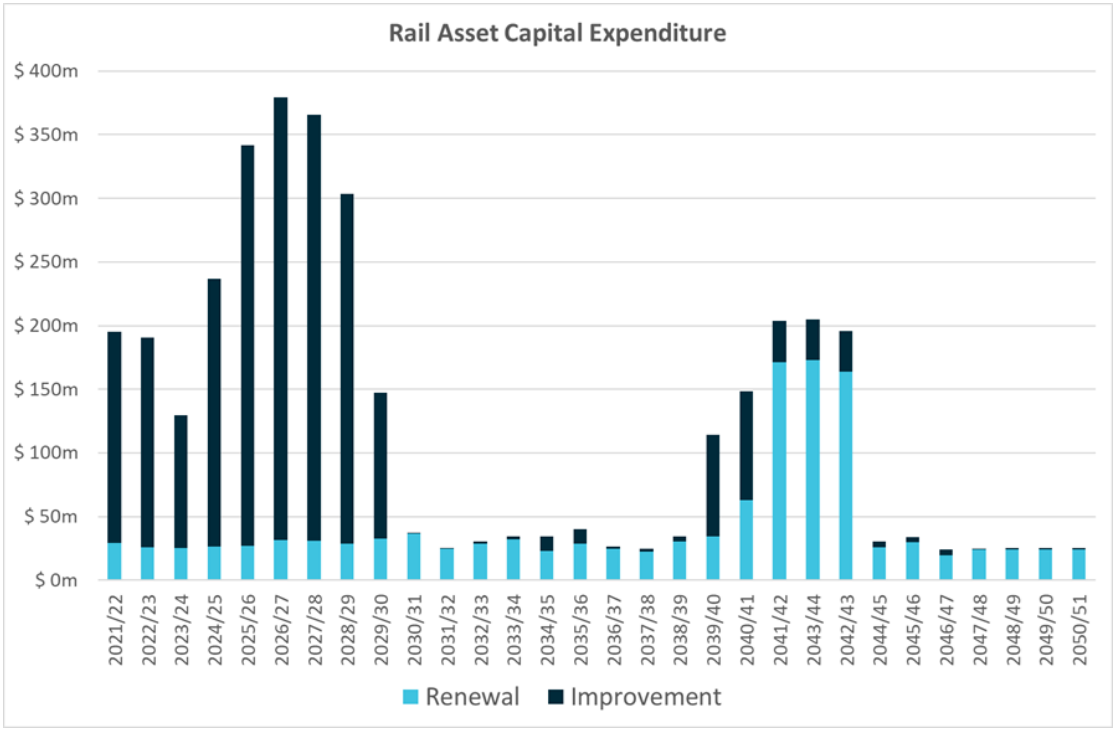


Figure 5: Public transport asset capex by renewals and improvements

Rail Portfolio

Over the 30-year period covered by this AMP, our total opex forecast for rail is $1.4b. This comprises rates, leases, insurance, electricity, and maintenance. The rail portfolio opex is forecast to steadily increase as patronage climbs over the next 30 years. The most notable change within the opex forecast is the proposal to cancel the locomotive hook and tow lease arrangement with KiwiRail for the Wairarapa services in approximately 2028. The hook and tow locomotives will be redundant once we have the new multiple units, low/zero emission fleet operating on this line. Some of these costs are transferred into maintenance costs of the new electric multiple units (EMU) fleet post 2028.

The total capital forecast for rail for the same period is $3.64b. This includes:

- **$1,285m capex renewal expenditure.** This comprises $462m on the KiwiRail Network, $132m on rail infrastructure, and $691m on rolling stock.
- **$2,357m capex improvement expenditure.** This comprises $1.30b on the KiwiRail Network, $169m on rail infrastructure, and $888m on rolling stock.

The significant capex investment is required, particularly in the first decade, to achieve the customer experience improvements, achieve mode shift, and meet growth targets.

The key areas of investment are:

- improvements to rail station infrastructure facilities, with a particular focus on customer experience. This includes increased shelter and improvements in facilities while passengers wait for trains, improved connections between the stations and the community such as improvements to Park and Ride, bicycle storage facilities, and improvements to paths, lighting, security, and general accessibility. For more detail refer to the station infrastructure asset class plan.

- renewal of the carriage fleet, and provision of a low/zero emission fleet for additional capacity and service frequency on the longer distance Wairarapa Line. Additional expenditure is required to boost the capacity and service frequency of the suburban services operating on the current electrified network, in particular on the Hutt and Kapiti Lines.

- KiwiRail network improvements which are critical for achieving a fit-for-purpose metro rail network. We have assumed this will be fully funded by the National Land Transport Fund (NLTF). Therefore, these initiatives have not been included in the

Long-Term Plan (LTP) financials, but they have been included within this AMP. The profile of this investment is shown in Figure 6.

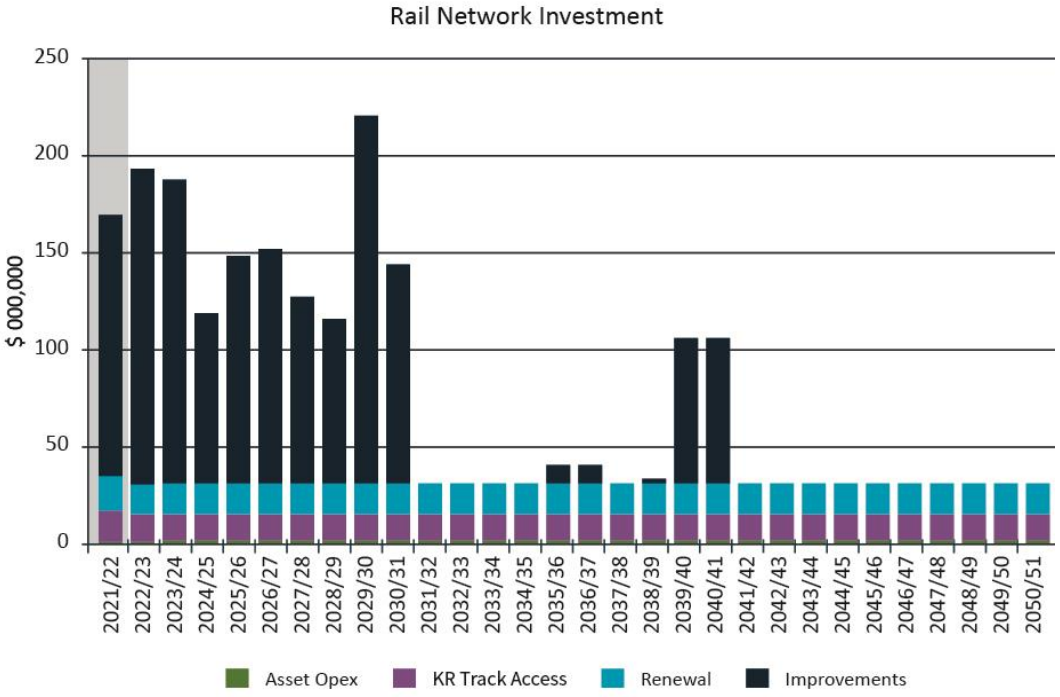


Figure 6: Rail Network investment

This investment involves:

- completing the catch-up renewal of traction overhead line system and track infrastructure
- unlocking capacity and resilience improvements
- Wellington Station signalling and track improvements
- regional capacity and safety improvements to enable improved Lower North Island regional passenger rail services
- renewal of the signalling system to best practice safety standards, improve operational resilience, and enable capacity improvements of the network
- increasing capacity of the network to support a two-tiered layered 10min peak services on the Hutt and Kapiti Lines, which will enable the capacity needed to achieve targeted mode shift
- resilience of the network, including both operational resilience and life-lines resilience
- pedestrian and vehicle level crossing safety improvements across the region, which will become increasingly important as rail service frequency increases.

In July 2022 Greater Wellington endorsed the Wellington Strategic Rail Plan (Rail Plan) which has further broadened the 30-year plan that is outlined within this AMP. The investment plans arising from this Rail Plan will be provided to Waka Kotahi as a Programme Business Case which will, in turn, be reflected in subsequent AMPs.

The Rail Plan identified the following fundamental problems that need to be addressed through investment to enable the objectives of the rail system to be realised:

1. **Inconsistent customer journey experience and limited rail system capacity**. This results in the network being unable to meet mode share targets, which prevent achievement of growth and environmental obligations.
2. **Current infrastructure is not capable of safely accommodating additional trains.** This restricts the options available to accommodate future demand.
3. **The condition and configuration of the rail network makes it vulnerable to service disruptions**. This has a flow on impact onto the wider transport system.

Addressing these issues will enable us, and our regional and central government partners, to achieve a vision of a safe, customer focused, and efficient rail passenger service to drive the region's economic development and social wellbeing in an environmentally and socially sustainable and resilient manner.

The Rail Services Overview section of the AMP provides further detail on the Rail Plan including the preferred programme of work.

Bus and Ferry Portfolio

The key investment drivers for our bus and ferry infrastructure relating to our bus and ferry infrastructure assets are to improve customer experience and promote mode shift from private vehicle to our public transport network.
Our total opex for bus is $223m. This comprises of both asset opex and maintenance for our customer facing and network enabling assets. The bus and ferry asset opex is forecast to remain steady over the planning period. The asset opex covers asset studies and investigations, signage changes due to timetable changes, cleaning costs, and maintenance costs as well as asset management and maintenance costs associated with assets that are part of the Metlink network but are not directly owned by us.
The total capex renewal and capex improvement is $63m.The core capex investments for our bus and ferry portfolio are:

- ***Bus Shelter New & Replacement Programme:*** $43.4m of investment to renew and install new bus shelter facilities. Having a place to wait for a bus service that is safe and protects the customer from environmental factors is key to customer satisfaction. This continuous programme of investment provides facilities that meet CPTED design and best practice for accessibility and encourages mode shift.

- ***Waikanae and Paraparumu Bus Hub improvements:*** $1.33m of investment to improve safety, security and accessibility**.** The investment includes new shelters and canopy, and space for a layover at the Paraparaumu bus hub. This hub will have four bus stops, and space for a layover. Public transport services in Waikanae and Paraparaumu are key to a connected community and reducing congestion on the road network. There are thousands of customer movements through these hubs every day. Safety, security, and inclusive access upgrades are expected to significantly increase the overall customer experience and encourage modeshift. This initiative will actively address CPTED design and accessibility best practice to support our communities' safe use of public transport.

- ***Bus layover area including area for EV charging***: The capital cost of layovers including areas for EV charging is not included within 2021-2031 Long Term Plan (LTP) and not this AMP. However, we have included $2m within the AMP forecast for the investigation to develop options for consideration.

Customer Insights and Assets Portfolio

The key investments for our customer insights and assets portfolio encourage mode shift through the provision of real time information to help customers plan their journey, and to meet our customer's evolving service information needs and expectations.

Key investments include:

- **RTI 2.0** Real time information (RTI) for our bus and ferry services is displayed on electronic displays across approximately 6% of our bus and ferry stops on our network. The majority of these RTI displays are within Wellington City. RTI can also be viewed online through our website, App, and third-party apps such as GoogleMaps. With our customers' increasing dependence on digital interactions to undertake day-to-day tasks, and an increasing expectation that those interactions will be intuitive and helpful, our real-time customer information systems, website, and commuter App are an essential part of our strategy for retaining and growing public transport patronage. Our customers have come to expect accurate and responsive information to help them plan their public transport journey.

  Our RTI system require replacement as it is failing to meet customer and business expectations of accuracy and reliability. Replacement of the current system will improve overall network accessibility and performance.

- **On-bus next-stop announcement system.** We are in the process of evolving and extending the use of the on-bus next stop announcement system. Full region-wide implementation of the system (including the procurement, development, and region-wide deployment of the media players, software, and interface) on our buses

is ultimately required. For example, the on-bus announcement system will provide audio-visual information along each bus route about the next bus stop, key interchanges, the current location of the bus, and network related information (such as public health messages and conditions of carriage).

- **Data warehouse:** Our existing data warehouse is no longer fit for purpose. At present it cannot interrogate more than a few months data. We are in the process of replacing our data warehouse with a cloud-based SaaS solution.

Our Operating Environment

Our Operating Environment

The Wellington region of 2050 will be a very different place to live from the region of today. Our assets and infrastructures must adapt to our region's changing needs and aspirations.

The environment in which we operate is being shaped by several emerging external influences and the wider system and legislative framework within which we operate. This includes national and regional policies, strategies, plans, and societal outcomes by the governmental organisations with whom we work. As an activity of Greater Wellington, our role, purpose, strategic aims, and the investment priorities outlined in this AMP are directed by Greater Wellington's overall vision, purpose, and the community outcomes sought for the Wellington region. Accordingly, the factors affecting our operating environment can be characterised into three main areas:

- emerging trends, both national and regional environmental influences
- national strategic context and legislative environment
- regional Strategic context and Greater Wellington, as our parent organisation.

These are described below.

Emerging trends and environmental influences

Long-term trends such as climate change has significant impacts on our infrastructure. Investing in our public transport network to ensure it is, and remains, fit for purpose into the future requires careful targeting of expenditure on assets and services that count towards delivering a world class service. To do this, we need a realistic view of the future to ensure we continue to provide reliable, cost effective, accessible, and safe services that meet our customers' changing needs.

In line with this, the plans contained within this AMP account for a range of trends and environmental influences that we see emerging within our operating environment. We account for these trends and influences in our planning so that we can ensure a fit for purpose and resilient public transport network for the region we serve. Key trends and influences are discussed below.

Economics

As New Zealand and the world deals with extreme levels of uncertainty surrounding COVID-19, our focus remains on ensuring our region remains resilient and connected. Before COVID-19, the Wellington regional economy was strong, benefiting from an increasing population and positive economic growth.

For the first seven months of the 2019/20 financial year, we were on track to achieve record patronage growth on the network. However, in January 2020, COVID-19 began to emerge as a risk. By the end of March 2020, New Zealand had entered Alert Level 4 lockdown; public transport was deemed by the government to be an essential service which had to keep

operating, patronage plunged dramatically, services were reduced, cleaning increased substantially, driver safety measures were implemented, and it became free to travel on public transport (free travel remained in place until 30 June 2020).

During COVID-19, Metlink worked to ensure the provision of public transport as an essential service in a way that responded to Government directives, customer needs, and the safety of passengers and Metlink staff.

As we emerged from the initial (March 2020) lockdown, we saw sustained patronage growth. Patronage in the Wellington Region increased at a rate higher than anticipated. In fact, Wellington's recovery in terms of patronage was the strongest in the country reaching as high as approximately 85% of pre-COVID-19 levels. However, the continued government response to the resurgence of new variants of COVID-19 has resulted in a declining rate of patronage recovery in more recent months.

We consider that after a short period of stabilised demand for services, in the medium term, strong economic recovery and population growth will increase demand for public transport.

In the short-term, the level of economic growth in the region is highly dependent on the extent and speed of recovery from COVID-19 and the regional/national response.

Over the longer term, it is expected that our region's economic strength will remain, or intensify, in the following industries: professional scientific and technical services; public administration and safety; financial and insurance services; health care and social assistance; and information media and telecommunications.

Population and demographic change

Projections developed by Sense Partners in April 2022 show the population in our region is expected to grow almost 12% in the next 10 years[2]. This estimate, whilst subject to uncertainty, accounts for slower growth in the near term (2021-2023) due to the impacts of Covid-19, including reduced migration flows and economic activity in the region. Population growth is expected to then recover to levels like those experienced in the region in recent years. The median estimates show that the region's population is expected to reach approximately 610,000 by 2031 (12% growth from 2021) and 685,000 by 2043 (25% growth from 2021).

The projections also show that population growth is not expected to be evenly distributed across the region, with higher growth rates expected in Porirua, Kāpiti Coast, and the Wairarapa. As a result, we must plan for both population expansion within existing concentrated areas such as Wellington City and the Hutt Valley, as well as extending our

[2] 50th percentile, current population of 545,000

services to new communities emerging in less heavily developed parts of the region. Increases in population will place pressure on our existing infrastructure and services and it will also require new infrastructure and services.

Demographic changes in age profile are also expected. We expect to see an increasingly aged demographic, exacerbating existing disproportionately aged populations in Kapiti Coast and the Wairarapa, while broadly increasing the proportions across the wider region. An increasing age demographic will require us to adapt the way we offer our current services, ensuring they are future proofed for changing demand and expectations. For example, we will need to be responsive to the mobility needs of an older population and be available beyond the traditional peak commute hours. For the younger population, we expect that they will continue to be centred in the cities, particularly in Porirua, Lower Hutt, and Wellington City.

We need to consider what these changes mean for getting around our region. Careful planning is required to ensure development of our Public Transport network meets the changing needs of our communities and is sustainable, in particular:

1. Whilst there remains a level of uncertainty with respect to the impacts of Covid-19, patronage, growth could outstrip capacity on some services or corridors in the short term. Providing for capacity growth is a key investment area for Metlink.
2. In the medium and longer term, we need to consider new communities or areas of growth in our investment planning to ensure we continue to provide the levels of service our customers need.
3. There is a need for increased focus on accessibility, mobility, and mobility services to be reflected in our service levels and investment planning throughout the period 2021-2024 and beyond.

Natural hazards and climate change

The Wellington region's landscape has been shaped by natural forces that continue to impact on the region. Its physically diverse natural environment is subject to a wide range of natural hazards including earthquakes, tsunami, landslides, river and coastal flooding, erosion, slope failure, drought, and severe wind.

Three major earthquake fault lines run through the region. Seismic uplift created much of the flat land around Wellington Harbour that is now the site of strategic transport infrastructure, including the Wellington Railway Station. Earthquakes continue to impact on the region today, with the 2013 Marlborough and 2016 Kaikoura earthquakes causing significant damage to buildings and infrastructure in the region.

Steep hills, made of fracture-prone greywacke rock, lead to frequent slips that impact on transport routes into, out of and within the region. Major slips in Ngaio Gorge, Ngauranga Gorge, Kapiti Coast, and on the Remutaka Hill Road have all impacted transport in the region.

In the last five years, there have been over 50 slips that needed rectification within the rail network. Eleven of the slips have been struck by trains with the latest occurring on 17 August 2021 causing significant damage to two of our carriages. With increasing service frequency, the likelihood of a train impacting a slip has increased. Data also shows the instances of slips is increasing.

Floods are one of the most frequent hazards impacting on the region. Localised flooding can have significant impacts on communities and temporarily close transport links.

Coastal areas around the region are subject to sea-level rise, storm surges and erosion that cause both temporary and long-term damage.

Much of our infrastructure assets are in areas prone to natural hazards. Climate change will increase both the frequency and magnitude of natural hazard events that already occur in the region. As such, climate adaption and mitigation timeframes as well as our planning timeframes need to be well understood to ensure timely planning processes well ahead of the impacts being felt.

Accordingly, our infrastructure and asset planning decisions that assume lifespans of 30-100 years need to incorporate climate change projections and natural hazards. This is particularly true for decisions that are expensive to alter or reverse. When a decision relates to a long-lived asset, having full information on climate impacts and emission costs is highly unlikely, so our planning approaches must have an adaptability to them and a built-in programme of monitoring and review, so we can incorporate new challenges and opportunities as they arise.

Making our infrastructure more resilient and investing in resilience planning will enable us to recover faster. Therefore, our investment planning for public transport reflects these trends and environmental influences by:

- increasing our focus on resilience planning in our maintenance and capital spend, throughout the asset lifecycle from design to delivery and maintenance
- ensuring resilience initiatives are appropriately prioritised in our expenditure profile and considering the future population growth
- translating climate change effects and adaptation which are considered in regional initiatives such as Let's Get Wellington Moving into our public transport planning.
- working with our partner, KiwiRail, to raise visibility of slope stability risk on the rail network. We have collectively reviewed high risk slopes on the rail network and are establishing a priority and investment plan.

Technological change

Advances in technology are ongoing, rapid, and unpredictable. Technology advancement assists us in delivering value to our customers. There are raised expectations among our communities for more personalised services and more data sources in an increasingly timely and accessible manner. New products and capabilities are changing the way we can communicate with the communities we serve and will enable us to improve the services we offer.

There is opportunity to shift the way we use the data we have from merely measuring performance or reporting, towards driving business operations and planning our network. Additionally, advanced analytics leads to new insights, which mature into new data services, which in turn enable new services that we can offer.

There is high uncertainty around the nature and capabilities of the new technologies with which we will be utilising and interfacing with, and the pace at which these will be adopted. This is driven by the rapid and unpredictable pace of innovation in the technology space, the unpredictable extent of uptake by firms and consumers, and our communities' changing expectations. Keeping pace with our customers' expectations of technology will play an important role in service delivery and the retention and acquisition of customers.

The emergence of new technologies presents both challenges and opportunities for public transport. New payment systems and digital 'mobility as a service' apps are changing customers' expectations. Public transport on-demand connected and autonomous vehicles and car sharing schemes could result in significant changes to the role of public transport. Robust security, privacy, and transparency are both core principles and challenges for us.

Our assumption within this AMP is that technological change will continue, with greater advancements in two-way public engagement and communications. During the period covered by this AMP, we expect to:

- become more focussed on data driven decision making, commensurate with the availability of both the data and the technology to access and analyse the data
- progress the evolution of electronic ticketing solutions, which we consider will evolve quickly
- participate on digital platforms that people will increasingly plan and consume their travel choices (e.g. Mobility as a Service), and public transport on-demand).
- Manage data as an asset
- Take a modular approach to building our information systems (i.e. everything is componentised so that replacement of an aspect doesn't affect the whole system and thus we are able to continually evolve)
- Embed netBI as our data warehouse and single source of truth for all decision-making information. NetBI will be enhanced over the next year to include

telematics data from all operators, KPI reporting, and to manage the abatement process seamlessly. Further updates will include TA, Deprivation Indexes, Complaint Information, Revenue Protection Information, Weather Data and much more to make the data far more comprehensive). In addition, RTI 2.0 will export all data to netBI and may even extract some data from netBI for historical prediction modelling.

Legislative change, governance, and partnerships

The legislative environment in which we operate regularly changes. Legislative, statutory, and regulatory change will be ongoing and may change our role, relationships, and our ways of operating. We may also see new governance roles and responsibilities for climate change and public transport.

Sustainable Public Transport Framework

A significant emerging legislative change for this AMP is cabinet's approval of the new Sustainable Public Transport Framework (SPTF) which is proposed to replace the current Public Transport Operating Model (PTOM). SPTF will be established through, and is dependent on, an amendment to the Land Transport Management Act 2003 (LTMA) to be introduced into Parliament in early 2023.

The proposed SPTF has four objectives:

- public transport services support mode shift from private motor vehicles, by being integrated, reliable, frequent, accessible, affordable, and safe
- employment and engagement of the public transport workforce is fair and equitable, providing for a sustainable labour market and sustainable provision of public transport services
- well-used public transport services reduce the environmental and health impact of land transport, including by reducing reliance on single occupancy vehicles and by using zero emission technology
- provision of services supports value-for-money and efficiency from public transport investment while achieving the first three objectives.

While the legislative process unfolds, Waka Kotahi will be working with key stakeholders including Public Transport Authorities to develop operational policy to give effect to the SPTF's objectives and support more specific reforms including the AMP-relevant focus area of supporting different asset ownership arrangements, including direct public transport authority (PTA) ownership of assets.

Partnership

There are growing expectations around transparency, participation, and partnerships. Increasing democratisation of our work and the growing prevalence of partnership models

will, while bringing funding and resourcing challenges, provide opportunity to improve the quality of our services and outcomes for our region.

The importance of working in partnership will continue to increase. More and more of our work is dependent on partnerships for delivery, whether that be fundamental partnerships with mana whenua, partnerships with territorial authorities in the region on shared delivery, partnerships with government agencies to achieve significant projects and programmes for the region or partnering with the private sector and community organisations to achieve local goals.

Partnership approaches are rewarding, and we need to ensure that our budgeting and resource allocation anticipates a slowed down, more consultative process and is responsive to the changes which may be brought about outside of our line of sight through working in partnership.

Metro Rail Operating Model (MROM)

The MROM was established in 2009. Its sets out the model on ownership and the operation of metro rail in New Zealand, and guidelines on funding structures. It has enabled close partnerships for GWRC with MoT, Waka Kotahi, KiwiRail, and community stakeholders. The current MROM model is now under early review as central and local government along with our representative communities move into a new operating environment that is more sustainable for our current and future generations.

National Strategic Context

Legislation and national transportation priorities sets the national strategic context in which we operate. These are discussed below.

Legislative environment

There are several legislative acts that guide our work. The three key pieces of legislation that set out our role in public transport (as part of Greater Wellington) and describe and prescribe our funding arrangements are:

- **Land Transport Management Act 2003** (LTMA) sets out the planning and funding framework that directs central government funding annually into roading, public transport and traffic safety. It also sets out the requirements for the development of the Regional Land Transport Plan and RPTP. The LTMA was significantly updated in 2008 and 2013.
- **Land Transport Management Amendment Act 2013** established the Public Transport Operating Model (PTOM). The PTOM provides a framework for public transport public-private partnership between regional councils and transport operators.
- **Local Government Act 2002** (LGA) - provides for the local authority to take accountability for meeting current and future community needs including quality

infrastructure and local public services. It also sets out the requirements for the Long- Term Plan and the identification of community outcomes.

The other legislative acts that impact and influence our asset management decisions include:

- Local Government (Rating) Act 2002
- Land Transport Act 2004
- Local Government Borrowing Act 2011
- Climate Change Response (Zero Carbon) Amendment Act 2019
- Resource Management Act 1991
- Civil Defence Emergency Management Act 2002
- Health and Safety at Work Act 2015
- Railways Act 2005
- Building Act 2004

Transportation priorities

The two key documents that provide the national strategic transportation direction and priorities are the **Government Policy Statement on Land Transport 2021** (GPS) and **The New Zealand Rail Plan.** The release of draft New Zealand Rail Plan was timed prior to the engagement on the 2021 GPS to ensure that the government's vision for rail can be considered in the 2021 GPS and future budget decisions. In future years, the New Zealand Rail Plan and GPS will be refreshed concurrently. The government has amended the LTMA to enable the new planning and funding framework for rail.

GPS

The GPS sets out the government's strategic direction for land transport. It guides the allocation of funds by Waka Kotahi NZ Transport Agency from the National Land Transport Fund. The GPS is updated every three years and sets out the strategic priorities the Government is seeking from its land transport investment.

These are:

Safety: Developing a transport system where no-one is killed or seriously injured.

Better Travel Options: Providing people with better transport options to access social and economic opportunities.

Climate Change: Developing a low carbon transport system that supports emission reductions, while improving safety and inclusive access.

Improving Freight Connections: Improving freight connections for economic development.

The GPS has identified five key outcomes from these strategic priorities so that the transport system within New Zealand improves the wellbeing and liveability of New Zealand communities. These are illustrated in Figure 7.

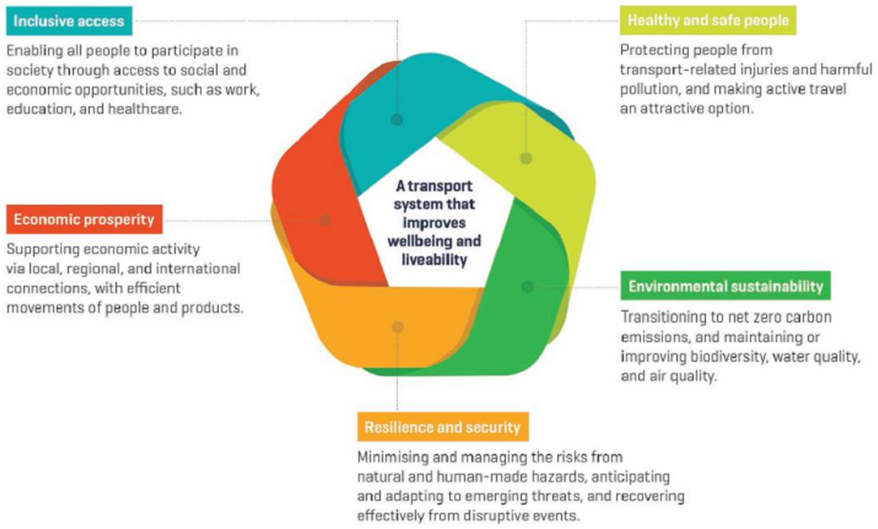


Figure 7: Desired outcomes from GPS

The GPS also confirms the Government's commitment to the Let's Get Wellington Moving (LGWM) programme and support of the implementation of the New Zealand Rail Plan.

In summary, the key elements of the GPS that are relevant to us as the provider of the Wellington region's public transport network are:

- shift transport modes to public transport and active modes
- reduce transport generated emissions
- invest in LGWM and regional rail network
- build public transport capacity
- integrate transport and land use
- provide access to good affordable transport choices
- ensure connected and reliable journeys around the region.

The investment plans contained within this AMP reflects the GPS's strategic priorities except for the strategic priority of 'improving freight connections' as our role and activity is providing public transport for people.

New Zealand Rail Plan

The April 2021 New Zealand Rail Plan (NZRP) outlines the Government's vision and priorities for the national rail network. The NZRP is an output of the recommendations of the Future of Rail review by the Ministry of Transport, Waka Kotahi, KiwiRail, and Treasury, which sought to identify the role of rail in the transport system together with a sustainable long-term funding approach.

The NZRP sets out the government's vision and priorities for rail and its intentions for the first decade of investment needed to achieve a reliable, resilient, and safe rail network. The Government's long-term vision is to provide modern transit systems in New Zealand's largest cities and to enable increasing volumes of freight to be moved off the roads onto rail. In relation to public transport the strategic investment priority is investing in metropolitan rail to support growth in New Zealand's largest cities.

The NZRP investment priorities have informed the 2021 GPS. The NZRP identifies the following future opportunities for the Wellington Metro Rail Network and services to accommodate current growth and safety expectation in the medium term:

- new trains for Wairarapa and Capital Connection and increased service frequency (including a new depot and Wairarapa Line capacity and safety upgrades)
- signalling improvements and automated train protection
- re-modelling rail approaches to Wellington Station to add capacity
- improvements to platforms and station facilities coupled with greater integration with other modes of transport.

Beyond that, the NZRP notes that, with growth and increased pressure on capacity, additional investment may need to be considered to:

- reduce length of the North and South Junction single track section on the Kapiti Line between Pukerua Bay and Paekakariki
- provide an additional platform at Waikanae
- replace and/or expand the electric multiple unit (EMU) fleet
- provide further grade separation
- upgrade the Wellington Station passenger terminal and building.

Regional Strategic Context

The Wellington region covers 8,111km^2 of the lower North Island. The northern boundary goes from the north of Otaki on the west coast across to north of Castlepoint on the east coast. There are eight territorial authorities within the Wellington region. These are the Kapiti Coast District Council, Porirua City Council, Upper Hutt City Council, Hutt City Council, Wellington City Council, Masterton District Council, Carterton District Council, and South Wairarapa District Council.

There are over 530,000 people in the Wellington region. All parts of our region are growing. The Wellington Regional Growth Framework indicates that there will be between 91,000 and 151,000 additional people in the region by 2050.

Transportation priorities

Greater Wellington is responsible for developing policies and plans that direct the activities of the region including public transport. Greater Wellington is required to take into account the Government Policy Statements when developing these policies and plans.

Let's Get Wellington Moving (LGWM) is a joint initiative between Wellington City Council, Greater Wellington and Waka Kotahi and it is also a specific Government Commitment as outlined in the 2021 GPS.

The transportation priorities of Greater Wellington and LGWM are discussed below.

Greater Wellington

Greater Wellington promotes our region's liveability, ensuring the region's environment is protected while meeting the economic, cultural, and social needs of the community.

As an activity group of Greater Wellington, our strategic direction and planning accounts for Greater Wellington's vision and purpose which are:

- **Vision:** An extraordinary region – thriving environment, connected communities, resilient future.
- **Purpose:** Working together for the greater environmental good.

Greater Wellington's desired community outcomes are:

- **Thriving environment:** Healthy fresh and coastal water, air, soils, indigenous biodiversity and unique landscapes that support current and future community wellbeing, clean and safe drinking water, a prosperous low carbon economy.
- **Connected communities:** Vibrant and liveable region in which people can move around, with active and public transport choices, sustainable rural and urban centres that are connected to each other including mana whenua and Maori communities.
- **Resilient future:** Safe, healthy, and prepared communities, inclusive and equitable participation, adapting to the effects of climate change and natural hazards, resilient economic base, modern and robust infrastructure.

Greater Wellington's Wellington Regional Land Transport Plan (RLTP)

The RLTP is a collaboration between all TAs in the region, Waka Kotahi, and KiwiRail overseen by the Regional Transport Committee on behalf of Greater Wellington. It is the strategic document that guides the development of our region's transport system and investment, including public transport. It identifies our region's transport priorities which then inform the National Land Transport Programme. We use the RTLP to communicate our region's direction and priorities with stakeholders, including the public.

The RLTP recognises and articulates the significant role transport plays in shaping what the Wellington region is like as a place to live, work, play and learn, and it provides a framework for transport planning that supports our broader goals for the region. The RLTP recognises that, as the region grows, more people and increased economic activity will place greater demand on the transport network. This demand will be especially patent on the public transport components of the overall network. The RLTP focuses on initiatives that enable us to grow in ways that make it easy to get around while reducing congestion and carbon emissions and creating more liveable places. The RLTP sets the vision for investing in a transport network that:

- offers good, affordable travel choices
- supports compact centres, liveable places, and a strong economy
- is safe
- minimises impacts on the environment
- provides for connected, resilient and reliable journeys.

Recognising that we are in an environment of economic constraint and acknowledging the importance of aligning regional resources and target investment to areas of the greatest regional benefit, to achieve its vision, the RLTP sets out the region's priority areas for investment. These are:

- **Public transport capacity:** Build capacity and reliability into the Wellington region's rail network and into Wellington City's public transport network to accommodate future demand.
- **Travel choice:** Make walking, cycling and public transport a safe and attractive option for more trips throughout the region.
- **Strategic access:** Improve access to key regional destinations, including the port, airport, and hospitals, for people and freight.
- **Safety:** Improve safety, particularly at high-risk intersections and on high risk urban and rural roads
- **Resilience:** Build resilience into the region's transport network by strengthening priority transport lifelines and improving redundancy in the system.

Greater Wellington's Long-Term Plan (LTP)

The purpose of the LTP is to provide a long-term direction and sets out Greater Wellington's priorities, programmes and projects including expenditure, for the region over a 10-year period. Public transport is a significant part of Greater Wellington's long term planning focus, accounting for approximately 65% of Greater Wellington's expenditure. The LTP is reviewed every three years and any changes are addressed during the annual planning process. It sets out the strategic context and the community outcomes for the region

including vision and the priority areas that need planning for. It also includes detail on how each activity is funded, information about council-controlled organisations, the financial and non-financial assumptions that guide Greater Wellington's planning, and Greater Wellington's 10-year Financial Strategy and the 30-year Infrastructure Strategy.

The Infrastructure Strategy provides details of the level and timing of investment needed to operate, replace, renew, and upgrade existing facilities and the Financial Strategy outlines the required rating and debt levels to fund these investments. Together, the two strategies outline how Greater Wellington intends to balance investment in assets and services with affordability. The council uses its asset management plans as a basis for, and to deliver, the Infrastructure Strategy

Our strategic priority is to provide an "efficient, accessible and low carbon public transport network". We will deliver on this via our three key result areas of decarbonisation of our public transport fleet, encouraging modeshift, and ensuring accessibility. Strategic focus areas are:

- for mode shift - Contribute to the regional target of a 40% increase in regional mode share from PT and active modes by 2030, including delivery and implementation of Let's Get Wellington Moving
- for decarbonisation of the public transport vehicle fleet - Reducing public transport emissions by accelerating decarbonisation of the vehicle fleet
- for customer experience - Continue to improve customer experience across all aspects of the network

The following principles embodied in the Infrastructure Strategy ensure a consistent and considered approach for managing infrastructure:

- ***Forward looking*** *- intergenerational equity. Infrastructure is future oriented – developed and managed with consideration for long-term use including future technology and population changes.*
- ***Optimal*** *- Greater Wellington will optimise its infrastructure planning to take account of lifetime cost and demand factors*
- ***Adaptable*** *– We will build and develop assets that are resilient to social and environmental changes, including adverse events*
- ***Coordinated*** *– We develop our infrastructure in consultation with our major partners reflecting our part in the national system (central government, Territorial Authorities, Council Controlled Organisations).*

These principles mean our investment plans will aim to:

- provide an effective and efficient integrated public transport network.
- invest in and improve the public transport.

- provide a high level of continuity in service delivery, albeit with some planned disruptions, while minimising significant unplanned disruptions.

Greater Wellington RPTP

The RPTP provides the strategic direction for our region's public transport network, consistent with the RLTP. The RPTP communicates how we propose to develop our public transport network and is used to engage with all our stakeholders for developing and improving the public transport network in the region.

Wellington Strategic Rail Plan 2022 (Rail Plan)

In July 2022 the Rail Plan was endorsed by Greater Wellington. The Rail Plan is a 30-year customer-driven strategic investment plan that outlines what is required beyond current investment to help drive the region's economic development and social wellbeing in an environmentally and socially sustainable, and resilient manner. It covers the passenger services and infrastructure needed to deliver a modern transit system, and the network infrastructure required to support this system while also enabling a growing freight operation.

The Rail Plan, drives mode shift over a 30-year programme by providing:

- highly connected stations in communities where people work, live, play and learn
- accommodating stations that make any wait both pleasant and productive
- frequent services that are faster and more convenient than by car
- reliable services that recover quickly from disruption
- links that facilitate convenient connections for national freight customers
- infrastructure and safety systems that enable transport without undue conflict.

Train frequency will be able to progressively improve as infrastructure is improved. Peak train services on the Hutt and Kāpiti lines would be increased in 2025 to four trains per hour, along with improved longer distance services to Masterton and Palmerton North by 2028. The peak service frequency is proposed to step up to six trains per hour (every 10 minutes) on the Hutt and Kāpiti lines by 2032, along with inter-peak services increasing to four trains per hour. The Kāpiti line is expected to further improve to 10 trains per hour during the peak by the mid-2030s, and the Hutt Line by early 2040s.

The scope of the Rail Plan complements the Let's Get Wellington Moving (LGWM) programme. LGWM will provide mass transit to the south and east of Wellington City, which will complement the rail system that makes up the rapid transit system to the north, and interface with it at Wellington Station to enhance cross-region travel options and support mode shift. The success of two programmes is consequently interlinked and hence both of equal strategic importance.

The Rail Plan addresses and aims to overcome the following three fundamental problems currently at the heart of the region's rail system:

1. Inconsistent customer journey experience and limited rail system capacity result in the network being unable to meet mode share targets, which prevent achievement of growth and environmental obligations
2. Current infrastructure is not capable of safely accommodating additional trains, restricting the options available to accommodate future demand
3. The condition and configuration of the rail network makes it vulnerable to service disruptions, which has a flow on impact onto the wider transport system.

Addressing these issues will enable us and our regional and central government partners to achieve a vision of a safe, customer focused and efficient rail passenger service to drive the region's economic development and social wellbeing in an environmentally and socially sustainable and resilient manner. The investment for this is not included within this AMP. We will look to include the expenditure within our 2023 AMP.

The Wellington Regional Growth Framework (WRGF)

The WRGF is a spatial plan that will describe a long-term vision for how the region will grow, change, and respond to key urban development challenges and opportunities. The WRGF will identify where (among other regional infrastructure such as housing, three waters etc.) public transport is recommended in the context of climate change, resilience, and natural hazards as well as the aspirations of mana whenua. Its objectives are broader than transport but reinforce both national direction and regional direction emerging from the 2021-2031 RLTP.

The assumptions and directions set out in the WRGF have provided input into our asset management plans at the tactical and strategic level.

Greater Wellington's Annual Plans

Greater Wellington's Annual Plans provide an update on progress on initiatives set out in Greater Wellington's Long-Term Plan.

Wellington Regional Mode Shift Plan (WRMSP)

The WRMSP sets out how our region will make progress over the short-medium term to increase mode shift from private vehicles to travel by public transport, walking, and cycling. The WRMSP outlines focus areas under urban form, making shared and active modes of travel more attractive, and influencing travel demand and transport choice.

The WRMSP provides a strategic direction to our asset strategies and asset management plans.

LGWM

LGWM provides strategic direction to guide investment in the Wellington transport system. It is a joint initiative between Wellington City Council, Greater Wellington, and Waka Kotahi. The focus is the area from Ngauranga Gorge to Miramar including the Wellington Urban Motorway, access to the port, and connections to the central city, Wellington Hospital, and the airport. It includes all modes of transport to get to and around Wellington.

At its heart, LGWM seeks to move more people with fewer vehicles, by providing attractive travel choices. This involves better walking facilities, connected cycleways, high-quality mass rapid transit, more reliable buses, improvements at the Basin Reserve, and an extra Mt Victoria Tunnel.

LGWM's vision is to have a great harbour city that is accessible to all with attractive places, shared streets, and efficient local and regional journeys. To realise its vision, its strategic priority is to move more people with fewer vehicles. Its programme's objectives are for a transport system that:

- enhances the **liveability** of the central city
- provides more efficient and reliable **access** for users
- reduces reliance on private car travel
- improves **safety** for all users
- is **resilient** and adaptable to disruptions and future uncertainty.

In this AMP our investment plans are consistent with the LGWM goals and objectives.

Accounting for our operating environment

Our public transport network contributes directly to the national and regional transportation strategic priorities. As an activity group of Greater Wellington, the plans within this AMP are directed by, and account for, the emerging trends and the strategic context within our operating environment. Our plan for the future is to continue to invest in all aspects of our public transport network to deliver an efficient, accessible and low carbon public transport service. We will make our network the preferred mode choice for all commuters through continuous improvement in service quality, coverage, and affordability.

Our Operating Environment

Metlink: Who we are

We are Greater Wellington's public transport authority which plans and delivers public transport within the wider Wellington region. We connect people within the wider region through a public transport network that stretches from Wellington north to Otaki and east to Masterton. The network consists of four rail lines, more than 85 public bus routes, over 135 school bus routes, four passenger rail lines, and four harbour ferry stops. Discounted taxi services provide travel support and assistance for people who have difficulty using the regular services. We are also responsible for developing and maintaining public transport infrastructure including trains, railway stations, train maintenance depot, bus and ferry shelters, signs, and Park and Ride facilities.

We focus on planning, managing, and operating a public transport network that is fit for purpose now and into the future. We regularly review our services to ensure they continue to meet the needs of the community and provide value for money for users, ratepayers, and taxpayers.

What we do

We are building an efficient, accessible, and low carbon public transport network to make Greater Wellington even greater and we're making extensive improvements to our network to deliver faster, affordable, more frequent, and reliable services.

We plan an integrated public transport network to ensure it operates efficiently and effectively. We organise our network around a layered hierarchy of services of core routes, local routes, and targeted services. Core routes form the network's backbone, linking high demand with high capacity, direct services. Local routes include all-day medium to low frequency services connecting centres within suburban areas. Local routes complement the core network by collecting and distributing passengers from and to the core routes. Targeted services provide services to areas where there is not enough demand to justify core or local routes, or where normal services cannot meet peak demand.

To do this, we plan, fund, and operate the Wellington region's public transport network of train, bus, and harbour ferry services. We own and maintain parts of the public transport network, including trains, railway stations, and bus shelters. We contract companies to operate the train, bus, and harbour ferry services on our behalf. We provide customer information about our public transport services, as well as providing a transport subsidy scheme (Total Mobility) for people with disabilities who cannot easily use public transport.

Our activities are split into six components:

1. **Rail services** provide the core routes which form the network's backbone, linking areas of high demand with high capacity, direct services with extensive operating hours. Our rail services activity covers:

- determining the service level and timetable for rail services
- planning for the future development of the rail services (the Wellington Regional Rail Plan)
- procuring and funding the operator to provide services
- owning, and/or funding, and/or managing assets necessary for the services, including:
  - the rail network owned and maintained by KiwiRail
  - the electric trains that service the metropolitan area and the carriages that service Wairarapa
  - the electric train depot
  - railway stations
  - pedestrian overbridges and underpasses
  - Park and Ride facilities

In 2013, Greater Wellington signed an 85-year track access agreement with KiwiRail. This agreement provides us guaranteed access to the rail network and defines the responsibilities of each party.

2. **Bus services** provide the core routes which form the network's backbone, linking areas of high demand with high capacity, direct services with extensive operating hours; the local routes providing local access to town and activity centres within the suburban areas and complement the core routes; and targeted services providing services to areas or link destinations where there is low demand, or where normal services cannot meet the peak demand. Our bus services activity covers:

   - determining the service level and timetable for bus services
   - planning for the future development of the bus fleet and services
   - procuring and funding the operator to provide services
   - owning and/or funding and/or managing assets necessary for the services, including bus fleet, bus infrastructure such as bus stop signs, bus shelters, bus hubs, and other associated infrastructure.

3. **Ferry services** (including some infrastructure) provide the East West ferry service to and from Eastbourne and Seatoun to the city.

4. **Fares, ticketing, customer services and information** involves a number of initiatives designed to retain and grow public transport patronage by:

   - managing and setting the rules for public transport fares, and managing the public transport ticketing system
   - information about the public transport services for customers to plan and undertake journeys. This includes real time information, journey planning tools,

and timetable information - delivered through Metlink analogue and digital channels and third-party digital information providers.
- managing the Metlink brand and the promotion of public transport
- managing contact with customers, including the provision of a call centre
- understanding customer experience and monitoring customer satisfaction with our services to help us to continually improve them.

5. **Public transport network planning** involves:

   - planning the network so that it operates efficiently and effectively.
   - preparing the Greater Wellington's RPTP which includes identification of the public transport services that are integral to the public transport network; the policies and procedures that apply to those services; and the information and infrastructure that support those services
   - reviewing services to ensure that they are meeting the needs of the community that they serve and providing value for money for users, ratepayers, and taxpayers.

6. **Total Mobility** provides subsidised door-to-door transport services for 12,000 customers who are unable to independently use buses, trains, or ferries due to a permanent impairment – the service aims to ensure our customers continue to have access to an affordable travel option. Our main activities for total mobility include:

   - managing customer applications for the service including contracting assessment agencies to provide eligibility assessments
   - contracting transport operators to provide adequate and appropriate Total Mobility services
   - administering and monitoring Total Mobility to ensure effective and efficient delivery of services.

The implementation of the PTOM has meant that we take an active role in the operation of the bus network with respect to network planning, service delivery, fare revenue, ticketing equipment, and customer engagement.

The region we serve

The Wellington region is an interdependent network of cities, towns, and rural areas with a modern urban economy paired with a quality natural and social environment. It covers 8,111km2. The northern boundary goes from the north of Otaki on the west coast across to

north of Castlepoint on the east coast as shown Figure 8. The Wellington region is home to approximately 530,000 people.[3]

Figure 8: Wellington region

Many people within our region are completely reliant on our public transport network. Our public transport network encourages people to get involved in social and economic activities. This includes people with disabilities, the elderly, young people, and people on low incomes.

Our public transport network is a major contributor to the region's social, economic, and environmental goals by providing access between peoples' homes and where they work,

[3] Statistics NZ subnational population estimate as at 30 June 2019

play, study, and access community services. It also aids decreasing traffic congestion, particularly in the morning and afternoon peak periods which contributes to the reduction of vehicle emissions from private vehicles within our region.

Our Vision and Strategic Focus Areas

Our public transport network helps connect and grow our region and contributes to the overall wellbeing of the Wellington region. To help create an even greater Wellington region, our vision is to provide an efficient, accessible, and low carbon public transport network. We will deliver on this through our three key result areas of decarbonising our public transport fleet, encouraging mode shift, and improving customer experience. Therefore, we have established three strategic priority areas as outlined in the 2021-31 RPTP and shown in Table 1.

Table 1: Our strategic focus areas, key measures and themes

Strategic Priority	Efficient, accessible, and low carbon public transport network		
Strategic Focus Areas	**Mode Shift** Contribute to the regional target of a 40% increase in regional mode share for public transport and active modes by 2030, including delivery and implementation of LGWM and Wellington Regional Rail's Strategic Direction	**Decarbonise Public Transport Vehicle Fleet** Reduce public transport emissions by accelerating decarbonisation of the vehicle fleet	**Improve Customer Experience** Continue to improve customer experience across all aspects of the network Prioritise the safety and maintenance of the public transport network to encourage safe behaviours
Key measures	40% increase in mode shift to public transport by 2030	60% reduction in public transport emissions by 2030 30% reduction in carbon emissions for the Wellington region by 2007 40% reduction in Greater Wellington generated emissions by 2025, and carbon neutral by 2030	Maintain customer satisfaction rating greater than 92% for overall trip 40% reduction in serious injuries on the public transport network by 2030
Themes	Provide a high quality, high capacity, high frequency core network Improve access to public transport Promote behaviour change	Drive environmental and cost sustainability by pursuing smart commercial opportunities and lower carbon technologies Decarbonise the Metlink bus fleet by 2030 Explore ways to further decarbonise the Metlink rail and ferry fleet	Greater choice and flexibility for journey planning, fares, and fare payment options Improve the accessibility of public transport for all Prioritise safety through continuous improvements to both infrastructure and operations.

We have identified several initiatives that will assist us in achieving our vision and strategic focus areas. Those initiatives relevant to the AMP are reflected in our Expenditure Summary and detailed in our Asset Class Plans. Figure 9 shows our line of travel from vision to desired community outcomes.

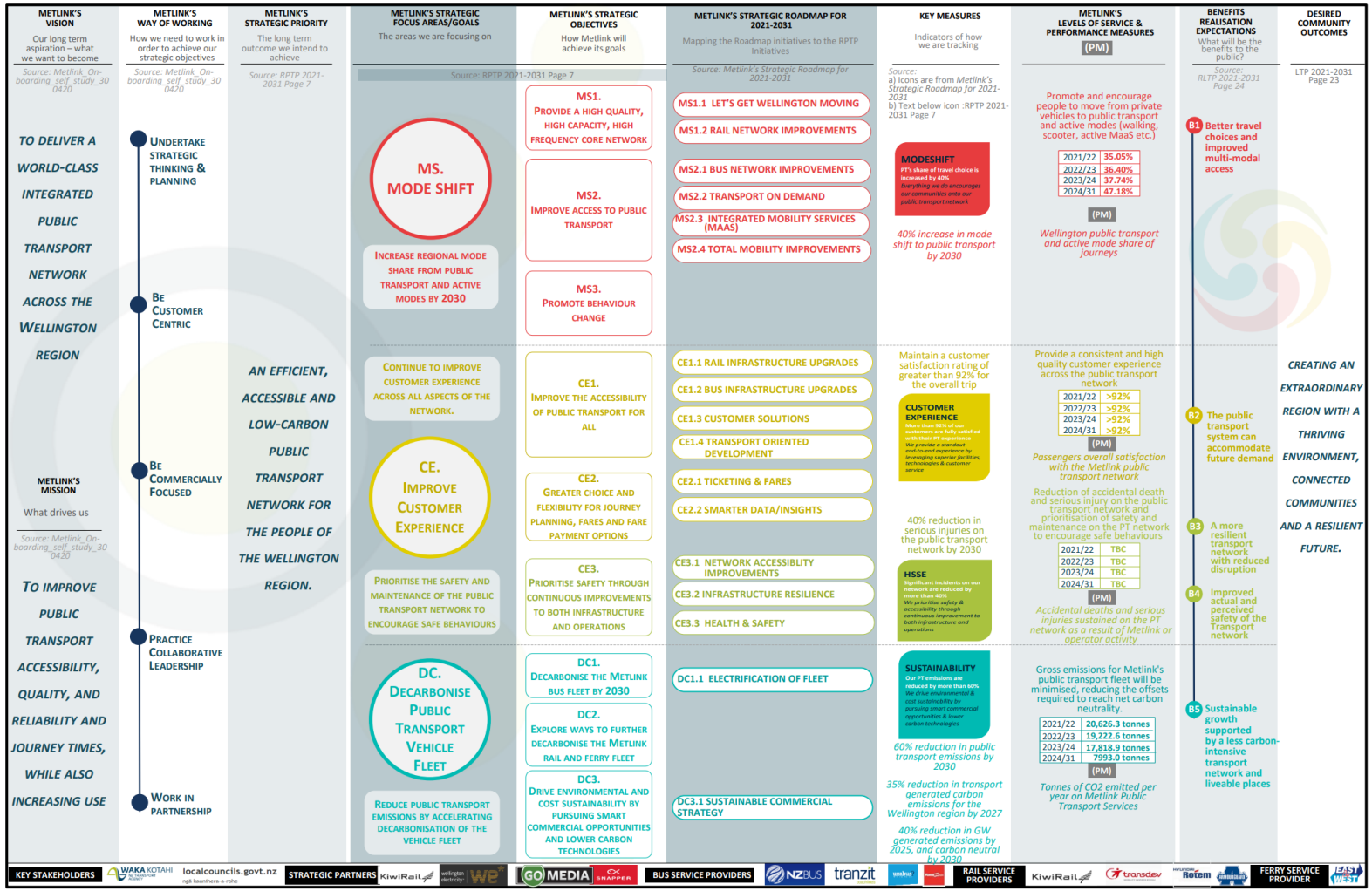


Figure 9:Our line of travel from vision to desired community outcomes

How we are funded

Our public transport network is funded through fares, Greater Wellington rates, and investment from Waka Kotahi. Greater Wellington sets the level of expenditure and the rates contribution as part of the LTP and Annual Plan processes, and reviews the public transport fares every year. The share of funding provided by Waka Kotahi is set by the Financial Assistance Rate.

Our key customers, partners, and stakeholders

We cannot deliver an efficient, accessible, and low carbon public transport network on our own. A crucial part of delivering our service is our working relationship with our key customers, partners, and stakeholders. To ensure we deliver an efficient, accessible, and low carbon public transport network, we continue to partner with mana whenua, central and local government organisations, customers, ratepayers, the region's residents and ratepayers, operators, and maintenance providers.

Customers

Broadly speaking, we characterise our customers into three categories. These are regular customers, customers with disabilities and impairments, and new and potential customers.

Regular customers

This group of customers use public transport on a regular basis to access jobs, education, healthcare, cultural activities, shops, friends, and whanau. Over half of public transport trips occur during peak periods to work and education.

Most regular customers use public transport by choice, with many choosing to live close to public transport services. Other modes of transport are often used to complement their journey, such as walking, biking, driving, or being driven.

However, over 15% of our public transport customers are dependent on public transport. This may be because they have no alternative way of travelling due to, income, disability, impairment, lack of access to a private vehicle, or because they do not have a driver's licence.

With a continual focus on improvement in services, these regular customers could be encouraged to use public transport more often (for instance outside of their normal peak time travel or when their circumstances change). Our regular customers require and expect our public transport to:

- go where they want to go, at times they want to travel
- provide value for money
- be easy to understand and use
- be safe, comfortable, and reliable
- provide flexibility, allowing them to change their plans

- provide competitive journey time

To meet these requirements and expectations of our public transport network it is essential we provide:

- accurate real-time information and prompt updates about changes to services and disruptions
- quick and easy payment methods
- affordable fares
- information and facilities that help them make a connected journey using multiple modes of travel, such as between buses and trains, cycling or walking, for part of that journey
- clean and safe vehicles and facilities
- adequate shelter from the weather in exposed waiting areas
- services and facilities near commonly accessed places, such as work, shopping centres and medical facilities
- easy to access vehicles and facilities.

Customers with disabilities and impairments

People with disabilities and impairments are a significant part of our customer base. We acknowledge that in some cases, a disability or impairment will mean that public transport is the only available or affordable option for travel.

Customers with disabilities and impairments require a high level of consistency and certainty for their travel and expect our public transport network to:

- have accessibility features incorporated into all vehicles, facilities, and services that provide access equal to that of people without disabilities such as wheelchair-accessible and super-low-floor buses, access to trains, accessibility and safety standards in the design and development of public transport facilities
- demonstrate commitment to 'Universal Design' principles and engage people with disabilities during the design and development of new facilities and services
- have accessible information, including in formats tailored for specific needs
- offer concessionary fares
- demonstrate awareness of disability rights and issues by staff who are in contact with customers
- provide appropriate assistance when required – especially when there is a potential safety risk.

We are committed to making it easier for disabled people to access public transport across the region. Greater Wellington's Transport Committee adopted a new Accessibility Charter in September 2021. The Accessibility Charter is the first step towards realising our vision of a

public transport network that is accessible for all with ease and dignity. Following on from this, we are developing an Accessibility Action Plan, which will outline priorities for improving accessibility across the network for the 2024 LTP.

As part of this where we have control over infrastructure design and maintenance, accessibility is a key input into our decision making to ensure that all transport users have equal opportunities to travel. Where we do not have control over infrastructure design and maintenance, we work to influence our strategic partners to consider accessibility in decision making.

We ensure that our vehicle fleet meets required standards for disability access in compliance with Waka Kotahi's Requirements for Urban Buses and Rail Safety Licence requirements as set out in the RPTP. We are in the process of evolving and extending the use of the on-bus next stop announcement system.

New and potential customers

New and potential customers are people who have never used or infrequently use public transport in the Wellington region. Providing them with a reason to use public transport and a good experience throughout their journey will encourage them to adopt public transport as an occasional or preferred mode of travel.

The RLTP has set an objective of achieving 40% mode shift to public transport, cycling and walking by 2030. Adoption of public transport by new customers will be the primary driver of achieving this this outcome.

Many people depend on a private vehicle. These people are unlikely to adopt public transport for practical reasons. However, a change in individual circumstances, such as children becoming more independent, new house, or new job, or expectations have changed, such as increasing road congestion causing increasing journey times and cost, is an opportunity for them to adopt public transport, if it can provide a viable alternative, in terms of reliability, speed, cost, and comfort.

To attract new and potential customers we need to offer:

- frequent and reliable services that allow flexibility and options
- comfortable vehicles and waiting facilities
- convenient and seamless access to services and destinations
- accurate real-time information about departures and journey times
- competitive travel times
- quick and easy payment.

Key Partners

A crucial part of running our public transport network is our relationship and partnership with mana whenua, central government agencies such as Waka Kotahi and the Ministry of

Transport, territorial authorities, KiwiRail, and transport operators. We work together with our partners to deliver a quality service for our customers and to meet the common vision of delivering an efficient, accessible, and low carbon public transport service.

Territorial authorities, Waka Kotahi and KiwiRail provide crucial infrastructure to deliver the network. Where this infrastructure is not fit for purpose or there are gaps, this impacts on reliability and customer satisfaction.

We work with territorial authorities and Waka Kotahi at a number of levels. At a strategic level Greater Wellington works with the Regional Transport Committee through the Regional Land Transport planning process to identify region wide priorities and prioritise activities. On an operational basis, Metlink works with territorial authorities and Waka Kotahi to ensure public transport services are integrated and delivered efficiently and effectively through regular liaison meetings and information sharing.

KiwiRail is the key rail infrastructure owner. In 2013, Greater Wellington signed an 85-year track access agreement with KiwiRail. This agreement provides us guaranteed access to the rail network and defines the responsibilities of each party.

Mana whenua

Our partnership with mana whenua is long standing and ongoing. We have a common goal of supporting the environmental, social, cultural, and economic wellbeing of the region. Our relationship provides a way for us to engage directly on the issues that matter.

We and our six mana whenua partners work together in a unique way. This partnership is important to us as it ensures our partners can be recognised and supported in maintaining their role as kaitiaki (guardians) of their ancestral lands. Table 2 outlines our mana whenua partnership objective.

Table 2: Mana whenua partnership objective

Policy	Actions
Objective: An effective partnership with mana whenua.	
Partner with mana whenua to improve our responsiveness to Māori customers	• Build strong enduring relationships with mana whenua through all facets of public transport delivery. • Explore Māori values and sustainability interface within a Responsiveness to Māori framework. • Work with mana whenua to develop a Māori responsiveness plan for public transport, including the consideration of Kaupapa Māori principles to enhance design of public transport activity and guide current and future public transport policy. • Work with mana whenua to reach communities and build relationships to encourage public transport use. • Ensure that Māori values are reflected in the built environment through our design principles by seeking co-design opportunities where possible. • Extend the use of Te Reo Māori in customer information channels and fare payment methods.

Ministry of Transport (MoT)

The MoT is the government's principal transport advisor. Their aim is to improve the overall performance of the transport system, improve the performance of transport Crown entities, and achieve better value for money for the government from its investment in the transport system. It gives effect to government policy by supporting the development of legislation, regulations and rules. The MoT also manages and accounts for funds invested in transport.

The MoT is responsible for drafting and consulting on the GPS on land transport.

Waka Kotahi Waka Kotahi

Waka Kotahi's primary objective is to contribute to an effective, efficient, and safe land transport system. Its functions include managing funding of the land transport system including auditing the performance of organisations receiving land transport funding; managing regulatory requirement for transport on land; issuing guidelines for, and monitoring the development of, regional public transport plans; determining which activities should be included in the National Land Transport (NLT) Programme and managing the prioritisation of investment in the programme; approving activities as qualifying for payment from the NLT; and approving procurement procedures for land transport activities.

Waka Kotahi's requirements and expectations of us is that our public transport services and infrastructure supports their strategic priorities, is cost effective, funded and procured correctly and the rail system is managed in a safe manner.

Territorial authorities

There are eight territorial authorities within the Wellington region. Territorial authorities are responsible for public transport planning within their territory. They are the infrastructure owners of the roads on which the services operate, the footpaths, the wharves and piers from which the ferries operate, and some bus shelters, covered walkways and seats. The local TAs own the wharves and piers used by the ferries.

The territorial authorities' requirements and expectations are that our public transport network supports their economic and urban development, and their sustainability goals. They also expect that our public transport services and infrastructure are cost effective and meet the needs of their residents.

KiwiRail

KiwiRail owns, maintains, and operates the rail network. It controls network operations, provides rail operators with the access to the tracks, and implements, coordinates, and maintains an approved safety system for the rail network. We have a long-term Access Agreement with KiwiRail which provides us with guaranteed access to the network and defines the responsibility of each party.

We work with KiwiRail to ensure effective demand forecasting, shared infrastructure planning, and shared business case development.

Transport operators

Our network is serviced by a number of transport operators as shown in Table 3.

Table 3: Our service operators

Service	Operator
Bus	NZ Bus, Tranzit Group, Mana Coach Services, Uzabus
Rail	Transdev Wellington Ltd (Transdev)
Ferry	East by West

Our transport operators are discussed further below.

Rail operator

From 3 July 2016, we commenced a 9+6 year performance based partnering contract with Transdev Wellington Ltd (Transdev) to be the rail operator for our region. Transdev holds the rail safety licence with Waka Kotahi.

Transdev has sub-contracted Hyundai Rotem to perform the maintenance function of the Matangi EMU units. Transdev and Hyundai Rotem operate under a 'one company policy' meaning that all standards, policies, and values are consistent across the operations and maintenance depots.

In accordance with the PTOM, we work with Transdev to meet our common vision of delivering an efficient, accessible, and low carbon rail passenger service. Transdev's requirements and expectations of us include effective demand forecasting, shared planning, robust rolling stock renewal planning, reliable and effective maintenance of stations, and provision of security systems at stations and rolling stock yards.

Ferry operator

East by West is our sole ferry operator that runs the ferry service within Wellington Harbour. East by West expectations are that the wharves are easy to manoeuvre into and out of and that they are suitable and appropriate for its ferry fleet.

Bus operators

Our region has an extensive bus network that provides public transport within all our cities and towns and operates as a feeder to the rail network for journeys through the region.

Under the PTOM, services are grouped into 'units' of routes. Our region's bus network is made up of 16 units. We have contracted four bus operators as shown in Table 3 above to operate our bus network.

Our bus operators' expectations and requirements are that we work together with them to meet the region's vision for public transport; bus stops are easy to manoeuvre into and out of; bus stops are easily identifiable; and bus stops are suitable and appropriate for the bus fleet and the bus fleet is of the appropriate standard.

Maintenance contractors

Maintenance contractors are contracted to maintain and improve our public transport assets. Our contractors expect that our public transport assets are easy to maintain and that stops, stations, and wharves are readily identifiable.

Our Levels of Service

Our Levels of Service

We apply the term 'levels of service' as the standard to which we deliver our public transport service to our customers and stakeholders. When we set our levels of service we ensure they are customer focused, address the issues that are important to the communities we serve, are technically meaningful, and align with our vision of providing an efficient, accessible and low carbon public transport network.

Our public transport service also needs to contribute to the government's strategic priorities for land transport. Therefore, we align our levels of service with them and our corresponding strategic focus areas of facilitating mode shift (from private vehicle), maintaining a customer satisfaction rating greater than 92% for the overall trip, and achieving a 30% reduction in transport-generated emissions.

We aim to increase patronage on public transport network through:

- providing reliable and punctual public transport services and assets
- providing convenient and accessible public transport services and assets
- ensuring our public transport services and assets contribute to the reduction of the region's transport carbon emissions
- providing good quality public transport services and assets, by having safe, clean, comfortable, and good condition assets
- delivering information that is easy to use, understand, and supports real time journey planning and payment options

Therefore, our levels of service are the key drivers for the plans and investment identified in this AMP. Our levels of service are:

- provide a consistent and high-quality customer experience across the public transport network
- promote and encourage people to move from private vehicles to public transport and active modes (walking, scooter, active MaaS etc)
- gross emissions for our public transport fleet will be minimised, reducing the offsets required to reach net carbon neutrality
- reduction of accidental death and serious injury on our public transport network to encourage safe behaviours.

Our investment in our public transport network continues to be a success story. Prior to the Covid-19 related lockdown in March 2020, patronage was set to reach new highs across the region. In 2019, there was a significant patronage increase in rail, with a new annual patronage high of 14.3 million passengers, an increase of 800,000 passengers on the previous year. Peak patronage rates were even higher, with Hutt Valley and Kapiti lines rising by 9%. Prior to the March 2020 lockdown, growth continued into 2020 with a further

5.5% increase in peak passengers. This increase in patronage hasn't happened by chance. It's the result of hard work, significant investment in our public transport network, and working with our customers to understand their public transport needs and the expectations of the communities we serve.

Consultation process to define levels of service

We take into consideration our customer views and requirements in our service level targets and resultant improvement opportunities through:

- consulting on our plans and undertaking specific service reviews
- undertaking independent public transport passenger satisfaction surveys
- examining patronage and performance data
- seeking direct feedback.

Each of these are discussed below.

Consulting on our plans and undertaking specific service reviews

Our region's people express their expectations through input into our planning process. This includes consultations undertaken for the RLTP, the Regional Public Transport Plan, the LTP, and consultation on specific projects such as service reviews and the location and design of new infrastructure. Input is also sought on the location and design of new infrastructure, for example bus stop markings and shelters.

In developing its plans, Greater Wellington is also keen on hearing stakeholder views on what they see as priorities across the region. Engagement is always sought, and feedback incorporated into the final plans.

We also undertake specific service reviews. For example, between 2019 and 2020 we undertook a Bus Network Review (BNR), to evaluate the significant changes we made to our bus network in 2018.

The changes involved creating a more efficient network design (routes, bus stops and timetables); high-frequency routes and more services; more effective transfers; and some improved off-peak services (especially at weekends). There were major changes to bus routes and timetables within Wellington City, with minor changes to timetables for the rest of the region.

The Wellington City BNR looked at what worked well and what changes needed to be made. This BNR was run from July to September 2019 and was generously supported by bus customers. We consulted with bus customers and the community through a range of activities, including focus groups, public drop-in workshops, and online surveys.

The feedback received showed that many people were negatively impacted by the July 2018 changes. We have listened and acted upon the feedback received by developing a package

of recommended network improvements and have developed an action plan to address the recommended developments and improvements. The action plan is shaped by the resources (drivers, buses and funding) available to us over the next three years. Working within these constraints, the plan establishes clear expectations for what can be delivered and considered in the short, medium and long-term.

We consulted with the rest of the Greater Wellington region (Porirua, Tawa, Hutt Valley, Kāpiti Coast and the Wairarapa) from March through until May 2020. This. The consultation found that most of the consultation participants are happy that their bus journey meets their needs and most see the network changes as an improvement to the previous network design. However, there is still room for improvement.

The feedback we have received has informed a set of recommendations which we will consider as part of the review of the Regional Public Transport Plan. We will also consider the recommendations as part of the ongoing programme of work to improve customer experience from both a network design and operational perspective, with special attention given to the issues identified by customers with accessibility issues. Where the review has resulted in additional infrastructure investment, we have reflected such investment in this AMP.

Public transport passenger satisfaction survey

Each year we commission an independent survey of customers' experiences of our public transport network. This helps us identify and prioritise improvements for customers and is also part of our reporting requirements to Waka Kotahi and Greater Wellington. The survey's independence and thorough on-vehicle survey methodology gives us a robust benchmarked measure of customer experience over time.

The most recent survey was conducted through June 2022. The results of the survey show that customer satisfaction with the trip on which they were surveyed remains consistently high at 94%, which is on par with previous high scoring surveys.

The results of the on-board survey did show us suggested improvements we can make to our public transport network. These are shown Figure 10 below.

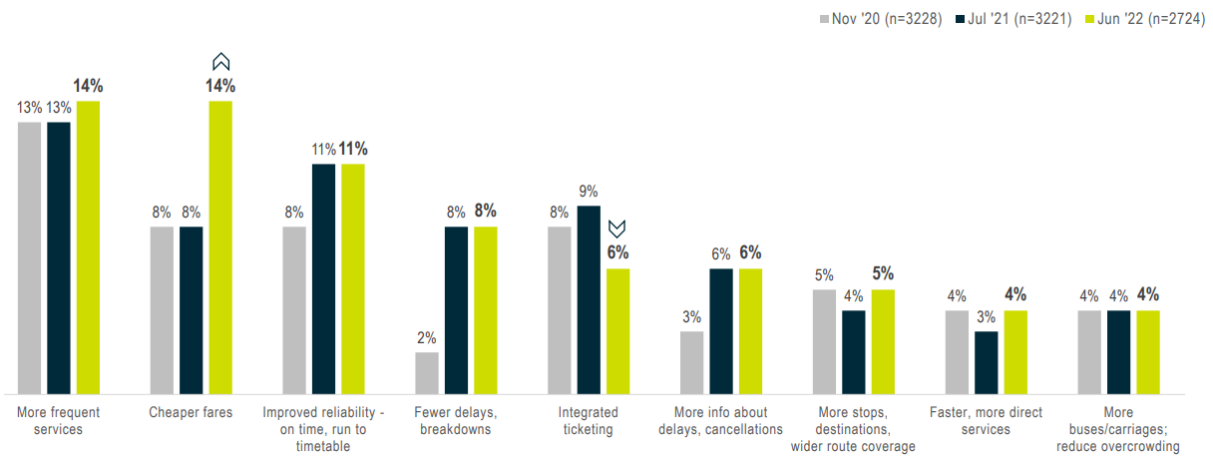


Figure 10: Customer on-board survey suggested improvements to public transport services

The full results of the June 2022 survey are here.

Therefore, the investment outlined in this AMP reflects the need to:

- increase capacity by having more carriages and buses on our network, particularly at peak times, to reduce overcrowding and increase reliability
- provide frequent services
- have fewer delays and breakdowns
- introduce integrated ticketing.

Levels of Service

We have translated Greater Wellington's LTP performance measures into asset specific measures which we have set out in our asset class plans, as strategic investment drivers.

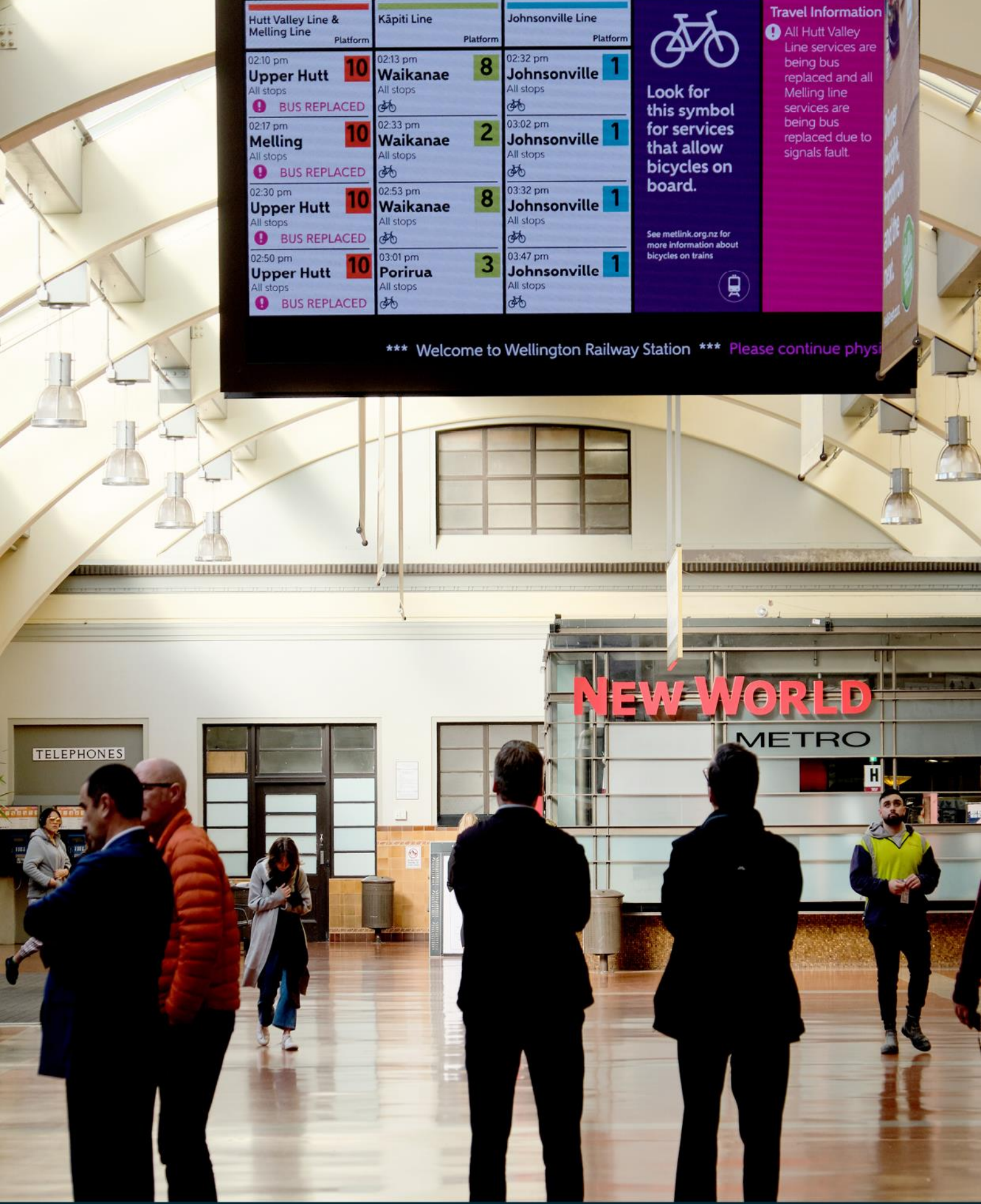
Our levels of service and performance measures are outlined in Table 4.

Strategic Priorities	Key Result Areas	Levels of Service	Performance Measures	Baseline (2019/20)	2021/22 Target	2022/23 Target	2023/24 Target	2024-31 Target
An efficient, accessible and low carbon public transport network	Improving the customer experience across all areas of the public transport network	Provide a consistent and high quality customer experience across the public transport network	Passengers' overall satisfaction with the Metlink public transport (by mode)	New Measure	**Bus** 92% customer satisfaction score	**Bus** 94% customer satisfaction score	**Bus** 95% customer satisfaction score	**Bus** >96% customer satisfaction score
					Rail 93% customer satisfaction score	**Rail** 94% customer satisfaction score	**Rail** >95% customer satisfaction score	**Rail** > 96% customer satisfaction score
					Ferry >98% customer satisfaction score	**Ferry** >98% customer satisfaction score	**Ferry** >98% customer satisfaction score	**Ferry** >98% customer satisfaction score
			Passenger satisfaction with convenience of paying for Metlink public transport	New Measure	>76% customer satisfaction score	>78% customer satisfaction score	>80% customer satisfaction score	>90% customer satisfaction score
			Passenger satisfaction with Metlink information currently available	New Measure	>87% customer satisfaction score	>89% customer satisfaction score	>92% customer satisfaction score	>93% customer satisfaction score
			Passenger satisfaction with Metlink public transport being on time	New Measure	>80% customer satisfaction score	>82% customer satisfaction score	>85% customer satisfaction score	>90% customer satisfaction score
An efficient, accessible and low carbon public transport network			Percentage of scheduled bus trips that depart their timetabled starting location on time (punctuality) – to 5 minutes	94.2%	95%	95%	95%	95%
			Percentage of scheduled rail services on-time (punctuality) – to 5 minutes	89.4%	95%	95%	95%	95%
	40 percent increase in regional mode share for public transport and active modes by 2030	Promote and encourage people to move from private vehicles to public transport	Annual Public Transport boardings per capita	63 per capita	64 per capita	65 per capita	67 per capita	Increasing to 88 per capita by 2030/31
		Provide fit-for-purpose vehicles, infrastructure and services to continually	Percentage of passengers who are satisfied with the condition of the station/stop/wharf	New measure (88% Nov 2020)	90%	92%	94%	>96%

Strategic Priorities	Key Result Areas	Levels of Service	Performance Measures	Baseline (2019/20)	2021/22 Target	2022/23 Target	2023/24 Target	2024-31 Target
		deliver a high quality core network that meets ongoing demand	Percentage of passengers who are satisfied with the condition of the vehicle fleet	New measure (94% Nov 2020)	92%	93%	94%	>96%
	Reducing public transport emissions by accelerating decarbonisation of the vehicle fleet (bus, rail, ferry)	Gross emissions for Metlink's public transport fleet will be minimised, reducing the offsets required to reach net carbon neutrality	Tonnes of CO_2 emitted per year on Metlink Public Transport Services	New Measure (22,030)	20,626 tonnes	19,223 tonnes	17,818 tonnes	5,500 tonnes in 30/31[4]
		Reduction of accidental death and serious injury on the public transport network and prioritisation of safety and maintenance on the Public Transport network to encourage safe behaviours	Accidental deaths and serious injuries sustained on the Public Transport network as a result of Metlink or operator activity	New Measure	Establish a baseline	5% Reduction compared to previous year	5% Reduction compared to previous year	5% Reduction compared to previous year

Table 4: Our Levels of Service

[4] This figure represents the expected emissions in 2030/31. For each of the years 2027/28 to 2029/30 emissions are expected to be 7,993. During the years 2024/25 to 2026/27 emissions are anticipated to be between 16,000-18,000 tonnes per year.



Demand and Growth

Demand and Growth

Prior to COVID-19, our investment into our public transport network continued to encourage strong patronage growth. Prior to lockdown in March 2020, patronage was set to reach new highs across the region. In 2019, there was a significant patronage increase in rail with a new annual patronage high of 14.3 million passengers - an increase of 800,000 passengers on the previous year. Peak patronage rates were even higher, with our two busiest lines Hutt Valley and Kapiti rising by 9 per cent. This increase in patronage hasn't happened by chance. It is the result of hard work, significant investment in our public transport network, and understanding the public transport needs and expectations of our region's people. Prior to lockdown, growth continued into 2020 with a further 5.5% increase in peak passengers.

Over 40% of the region's jobs are in central Wellington[5] which reflects, in part, the concentration of government administration and knowledge-based roles in the city. This creates significant commuter peaks, as people travel to access employment opportunities from residential centres across the region. However, with changing work patterns arising from the COVID-19 pandemic, it is possible that travel patterns in the region will change in the future.

Higher than expected demand for rail travel meant that, prior to the Covid-19 pandemic, many services are operating at or near capacity during the busiest time of the commuter peak. For example, seated capacity and Park and Ride capacity are generally reached on the main lines at approximately 7am and some potential passengers are being deterred from using rail because the trains are full.

Bus patronage was growing significantly prior to COVID causing parts of the network to be operating at or over capacity. The reduction in patronage arising from the COVID pandemic has created some headroom on the network. As patronage begins to recover on the bus network, capacity constraints on the Wellington City bus network, particularly nearer the centre of the city, may re-emerge and impact service reliability and journey times. This makes it important to continue to invest in bus infrastructure to ensure the network is fit for the future.

Space constraints on the Golden Mile mean that only a limited number of buses can reliably run on this corridor (in the order of 60-100 buses per hour per direction). This makes it difficult to add more buses without creating congestion decreasing reliability and creating safety issues for vulnerable users. Outside the Golden Mile, immediate capacity constraints

[5] Let's Get Wellington Moving, Draft Programme Business Case Report June 2019

relate more to the availability of high-capacity buses and route clearance to permit high-capacity buses.

Figure 11 shows the patronage growth across the Metlink network since 2014/2015.

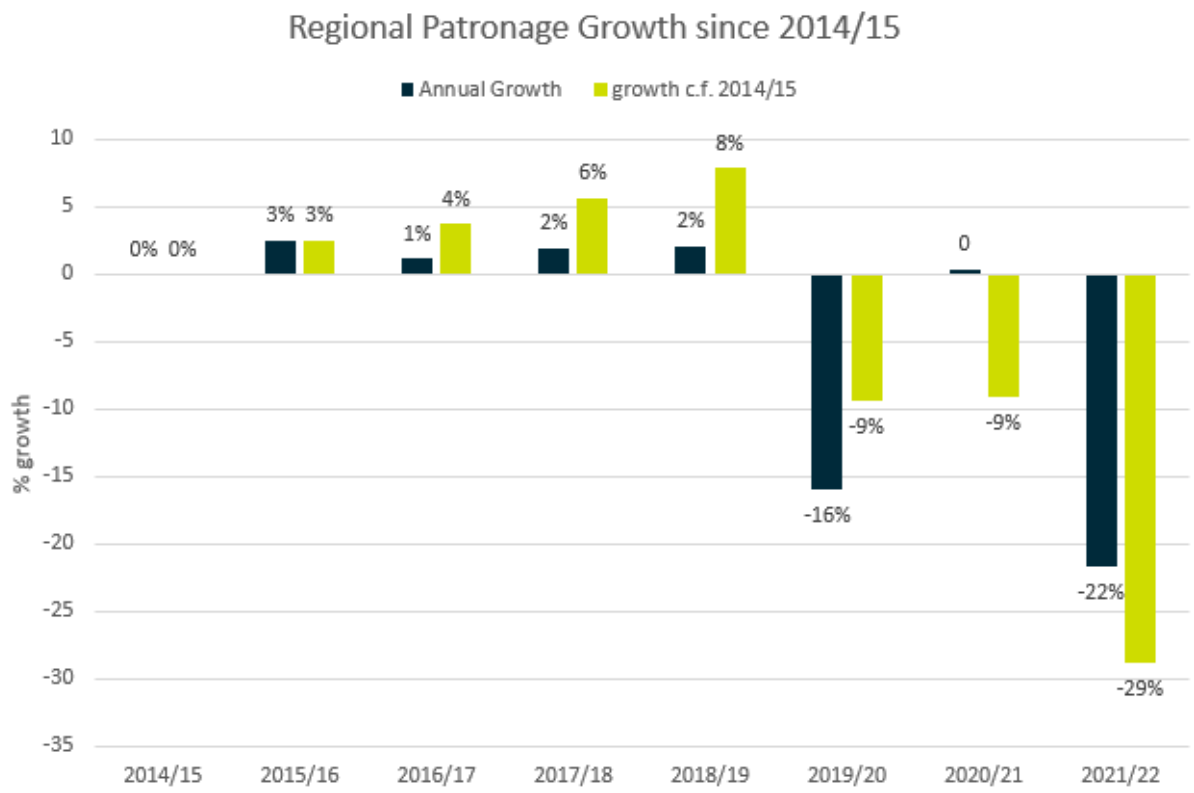


Figure 11: Growth in regional patronage

Patronage and performance data

For our patronage performance reporting we measure passenger boardings on all modes using fares and boarding data. We lack reliable data on transfers between modes and on rail and ferry services.

February 2022 resulted in continued lower passenger boardings. Prior to the Covid-19 level four lockdown in late March 2020, we had record patronage growth for both bus and rail, but since March 2020 we have seen a decline in boardings under various Covid-19 alert levels. There was some recovery from April 2021 onwards, but with the Covid-19 level four lockdown in mid-August 2021 we again saw lower boardings.

Passenger boarding trends

We track passenger boarding trends to provide insights such as whether passengers are choosing to use specific services. We had been experiencing continued passenger boarding growth up to February 2020, but from mid-March 2020 onwards we have experienced a decrease in boarding growth for all modes.

Figure 12 shows the number of passenger boardings for all modes using a 12-month rolling total from July 2015.

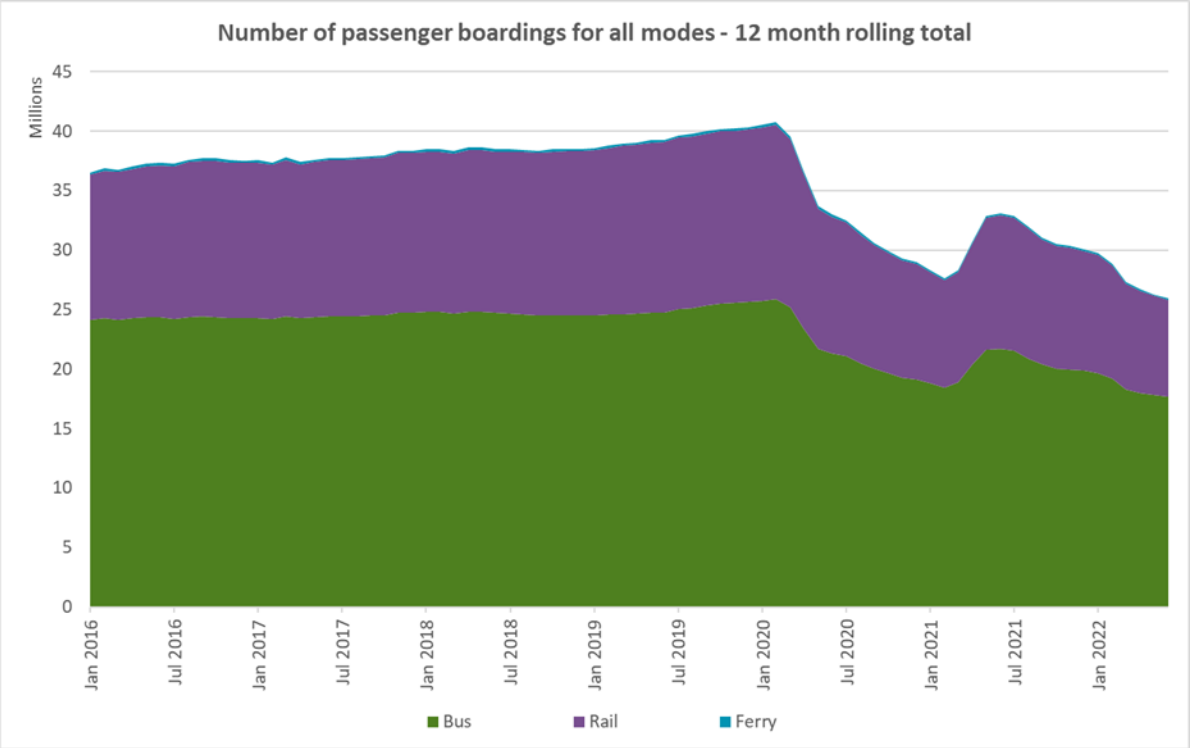


Figure 12: Number of passenger boardings for all modes from July 2015 – 12 month rolling total

Bus passenger boardings

Under Alert Level 1, July 2021 bus passenger boardings were 5.5% lower than July 2020. July 2022 bus passenger boarding were 12.4% lower than July 2021.Pre Covid-19, we were experiencing increased growth of 7.3%.[6]

	Jul-22	Jul-21	% Change

[6] July 2019 to February 2020

Wellington	1,222,589	1,401,838	-12.8%
Hutt Valley	303,868	341,151	-10.9%
Porirua	59,207	69,847	-15.2%
Kapiti	39,617	42,470	-6.7%
Wairarapa	10268	12,349	-16.9%
Total	**1,635,549**	**1,867,655**	**-12.4%**

Table 5 shows the reduction in bus passenger boardings for July 2022 compared with July 2021.

	Jul-22	Jul-21	% Change
Wellington	1,222,589	1,401,838	-12.8%
Hutt Valley	303,868	341,151	-10.9%
Porirua	59,207	69,847	-15.2%
Kapiti	39,617	42,470	-6.7%
Wairarapa	10268	12,349	-16.9%
Total	**1,635,549**	**1,867,655**	**-12.4%**

Table 5: Bus passenger boardings July 2021 vs July 2020

Figure 13 shows the monthly bus passenger boardings from July 2018 to February 2022.

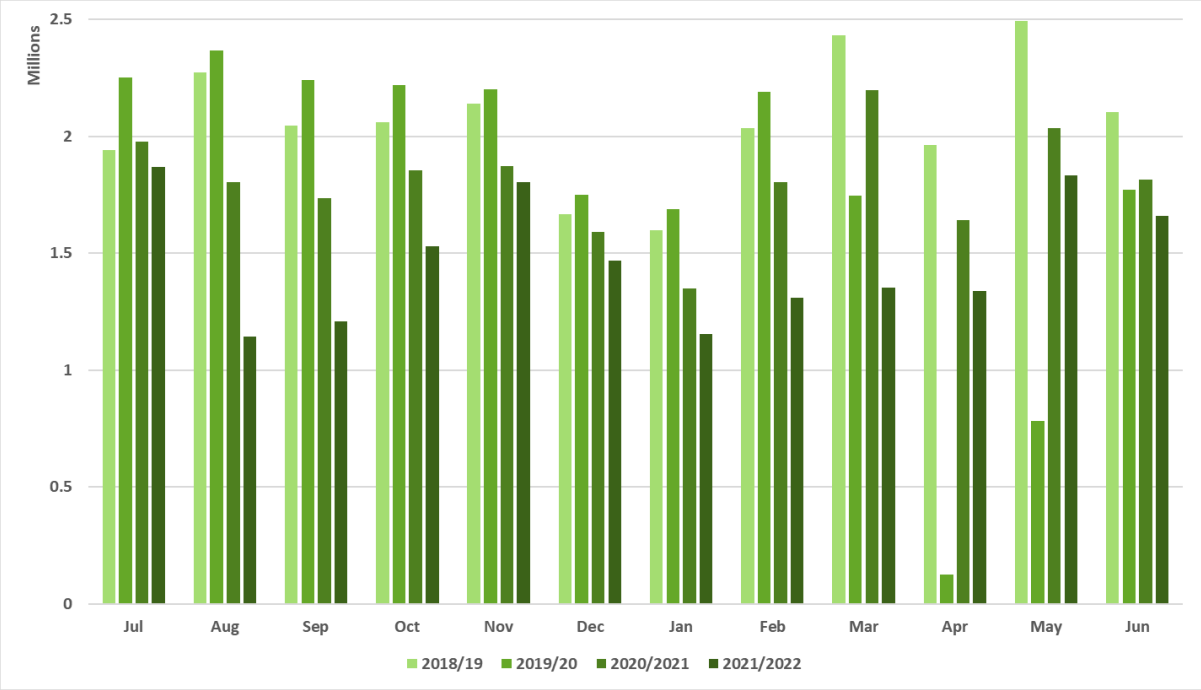


Figure 13: Monthly bus passenger boardings from July 2018 to February 2022

Rail passenger boardings

Under alert level 1, July 2021 rail passenger boardings were 11.1% lower than July 2020. July 2022 rail passenger boardings were 14.4% lower that July 2021. Pre Covid-19, we were experiencing increased growth of 3.5%.[7] Table 6 shows the reduction in rail passenger boardings for July 2022 compared with July 2021.

	Jul-22	Jul-21	% Change
Hutt Valley	338,907	434,700	-22.04%
Kapiti	336,110	356,998	-5.85%
Johnsonville	88,865	95,178	-6.63%
Wairarapa	43,641	56,945	-23.36%
Total	**807,523**	**943,821**	-14.44%

[7] July 2019 to February 2020

Table 6: Rail passenger boardings by line July 2021 vs July 2020

Figure 14 shows the monthly rail passenger boardings from July 2018 to February 2022.

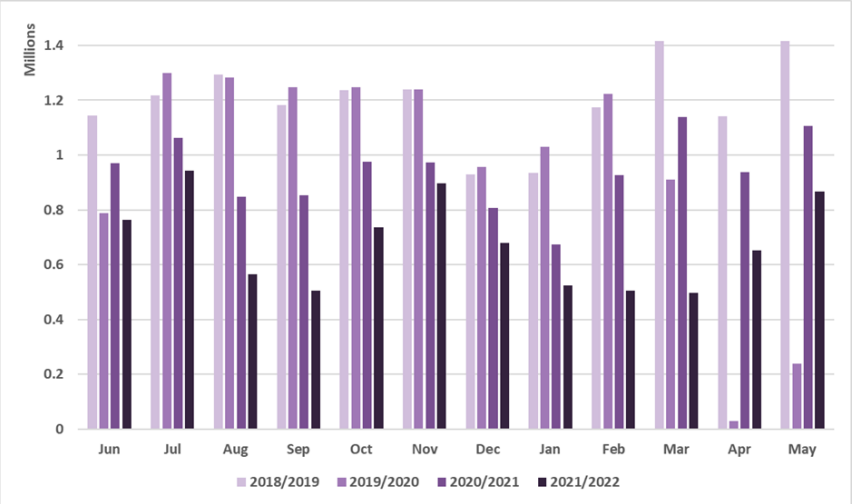


Figure 14: Monthly rail passenger boardings from July 2018 to February 2022

There was also a decrease in total peak growth by line of 23.1% as shown in Table 7.

	Jul-22	Jul-21	% Change
Hutt Valley	213,877	305,183	-29.92%
Kapiti	195,930	231,602	-15.40%
Johnsonville	50,054	59,166	-15.40%
Wairarapa	36,645	49,713	-26.29%
Total	**496,506**	**645,664**	-23.10%

Table 7: Rail peak passenger boardings by line July 2021 vs July 2020

Ferry passenger boardings

Under Alert Level 1, July 2021 ferry passenger boardings increased by 2.0% compared with the same month last year; this is compared to a decrease of 1.4% pre Covid-19 (July 2019 – February 2020). Ferry boardings are often affected by weather. Figure 15 shows the monthly ferry passenger boardings from July 2018 to February 2022.

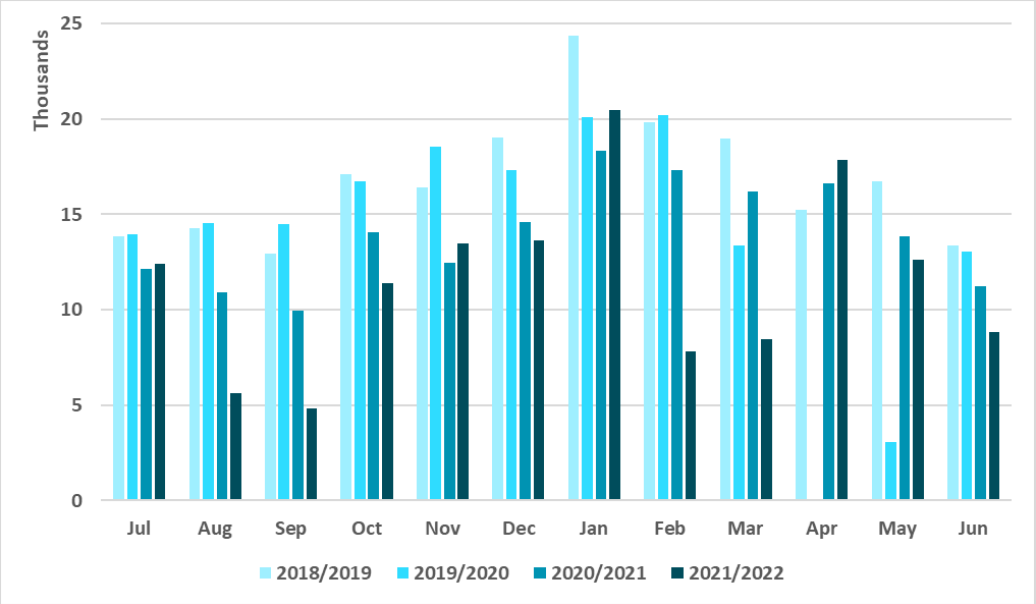


Figure 15: Monthly ferry passenger boardings from July 2018 to February 2022

Expected growth

The Wellington region is the third largest region in New Zealand with a population of approximately 547,000[8]. Our region has experienced stronger than predicted population growth over the past two decades with further growth of up to 200,000 forecast for the next 30 years[9]. An expanded population will bring economic development and changes to where we live, learn, work, and play.

Higher urban density in Wellington and Porirua Cities and the Hutt Valley, and increasing residential growth in the Wairarapa and Kapiti, will place increasing demands on our public transport. For this growth to be sustainable, and to ensure we achieve our goals of improving safety, access, and reducing emissions, we and our regional and central government partners will need to continue to invest in our public transport infrastructure and services.

To plan and budget for the period cover by this AMP, we make assumptions around population and demographic changes, and how these will potentially impact our public transport network. GWRC's 2021-31 LTP identifies that population in the region is expected to grow by almost 9%, with growth rates higher in some places than others. Our region's population is expected to reach approximately 570,000 by 2030 and 632,000 by 2043 (20% growth since 2020). Population growth will not be evenly distributed across the region, with

[8] Subnational population estimates 2021 (https://www.stats.govt.nz/)

[9] Wellington Regional Growth Framework 2021 (https://wrgf.co.nz/reports/)

higher growth rates expected in Porirua, Kāpiti Coast, and the Wairarapa. While there are high levels of uncertainty around the details of this growth, impacts on public transport can be expected. These impacts include patronage growth outstripping capacity in the long term, and the creation of new communities requiring additional infrastructure, stops, and routes. With an aging population, the increases in Gold Card users would require investing in improvements to accessibility of public transport services and infrastructure.

This AMP has been developed during the Covid-19 pandemic and our response. The record patronage growth we were on track to achieve during the 19/20 financial year was materially impacted by Covid-19. With considerable financial support from central government, through Waka Kotahi, we made public transport free of charge from the March 2020 Level 4 lockdown until 30 June 2020. While the region had seen a relatively quick recovery in the aftermath of the first lockdown, subsequent responses to resurgence of COVID-19 variants and the departure from the elimination strategy has meant that patronage has been depressed in 2021/22.

Patronage trends are yet to be fully understood given the uncertainty surrounding the effects of, and recovery from, the Covid-19 pandemic; however, indicative trends in our public transport network predict a potential return to ‘pre-Covid-19’ levels may take a few years longer than initially expected (by 2024/25).

Patronage Growth

The 2021-31 LTP assumes that public transport patronage and annual growth rates are as shown in Table 8.[10] These growth assumptions are the basis of planning in this AMP. The actual patronage growth seen in 2021/2022 has been less than what was anticipated at the time the LTP was drafted. Metlink's view is that the network will see higher growth rates in the short to medium term than shown below as the region recovers from COVID-19, but that the long-term trends predicted in the LTP are still reasonable. Therefore, the decision has been made to continue to plan infrastructure investment around the LTP patronage forecast.

Table 8: Patronage growth rates

Long Term Plan 2021-31 assumptions	Assumed % annual growth			Forecast patronage based on the growth assumptions (millions)			
Year	Bus	Rail	Ferry	Bus	Rail	Ferry	Network
2021/22	7.50%	7.50%	5.50%	23.30	12.12	0.18	35.59
2022/23	3.00%	3.00%	2.00%	23.99	12.48	0.18	36.65
2023/24	3.50%	3.50%	2.50%	24.83	12.92	0.18	37.94
2024/25	3.50%	3.50%	2.50%	25.70	13.37	0.19	39.26
2025/26	3.50%	3.50%	2.50%	26.60	13.84	0.19	40.63
2026/27	3.50%	3.50%	2.50%	27.53	14.32	0.20	42.05
2027/28	3.50%	3.50%	2.50%	28.50	14.82	0.20	43.52
2028/29	3.00%	3.00%	2.00%	29.35	15.27	0.21	44.83
2029/30	3.00%	3.00%	2.00%	30.23	15.72	0.21	46.17
2030/31	3.00%	3.00%	2.00%	31.14	16.20	0.22	47.55

The patronage growth rates take into account the following improvements we have made to our rail and bus services.

[10] Known data used for 2017-18, 2018-19 and most of 2019-20

Rail

- Ongoing work on improving our rail network means that rail service improvements will continue to attract more customers.
- Integrated fares and ticketing (IFT) will generate new customers by improving the convenience and ease of travelling by train (and by using more than one PT mode). IFT will also increase rail revenue through better revenue protection.

Bus

- A significant improvement to our bus network was implemented in July 2018 (with ongoing refinements) such that patronage will continue to increase because of the service improvements.
- Integrated fares and ticketing (IFT) in about 2023 will generate new customers and facilitate travel on more than one PT mode.
- The move towards more electric buses in the Metlink bus fleet is likely to be well received by customers and result in increased bus patronage growth.
- Significant investment in public transport is expected under "Let's Get Wellington Moving" (LGWM) programme, with a greater emphasis on growth in PT over private motor vehicles, which will support increased patronage growth across the PT network. LGWM will stimulate PT patronage over the last half of the LTP planning period.

While the timing and quantum of future growth is now subject to significant uncertainty, the current network may not have sufficient capacity on some services or corridors if the actual growth eventuates to be greater than forecast. Once capacity thresholds are met, rail and bus services are likely to become overcrowded, less reliable, and less attractive, increasing the potential for mode shift to private vehicles.

The large volume of trips made to/from/and within Wellington City each day means that failure to improve capacity and reliability on the region's rail network and Wellington City's bus network will directly impact regional aspirations to increase public transport mode share and reduce transport emissions. It will also make travel around the region more time consuming and costly, with potential to constrain growth. Analysis undertaken as part of the 'Let's Get Wellington Moving' Programme Business Case suggests up to 3,000 jobs could be deferred or located elsewhere due to forecast public transport constraints[11].

Having a resilient, effective, and reliable public transport system that can meet the diverse needs of our growing and changing population therefore continues to be essential, if the

[11] Let's Get Wellington Moving Programme Business Case – Draft June 2019 (refer page 24 https://getwellymoving.co.nz/assets/Documents/Programme-Business-Case/LGWM-PBC-Report-21-June-2019-Draft.pdf)

region is to continue to remain a desirable place for people to live, work and play. Careful planning and investment will be required to ensure the region's transport system supports and enables sustainable population growth and meets the needs of the region's communities both now and in the future.

Our investment plans presented within this AMP (see further sections below) are based on these patronage forecasts.

Risk Management

Risk Management

Risk management guides our asset management and investment decisions. To achieve the service our customers deserve, we take a multi-faceted approach to managing risk. Our approach primarily focuses on identifying significant risks to the reliability and continuity of our service. Our asset management framework incorporates practices designed to identify and mitigate these risks.

Risk management is an integral part of our overall business philosophy and is embedded within all our activities and in the decisions we make. As a part of Greater Wellington, we use Greater Wellington's risk management framework. This is outlined below.

Risk Management Framework

Our Risk Management Policy states the following objectives:

- increase the likelihood of Greater Wellington Regional Council achieving its strategic and business objectives
- safeguard Greater Wellington Regional Council's assets and those people using them, people resources, finances, and reputation
- ensure risk management practices are integrated into all Greater Wellington Regional Council operations and processes
- provide a timely response to risks escalation and issues as they occur
- promote awareness of risk management process and a culture of risk management awareness such that everyone in the organisation is responsible for managing risk
- aid decision making
- maintain a flexible and evolving risk management framework which is aligned with ISO 31000:2018 and best practice generally.

Our Greater Wellington risk management framework closely mirrors the requirements of the international risk management standard ISO 31000. Our risk management approach is focused on understanding, monitoring and proactively uncertainty and risk.

Our approach to risk management includes a formal risk governance structure and clear accountabilities and responsibilities at all levels to ensure our approach to risk is ratified and continuously reviewed.

We have broadly defined the organisational risk categories as set out below in Figure 16

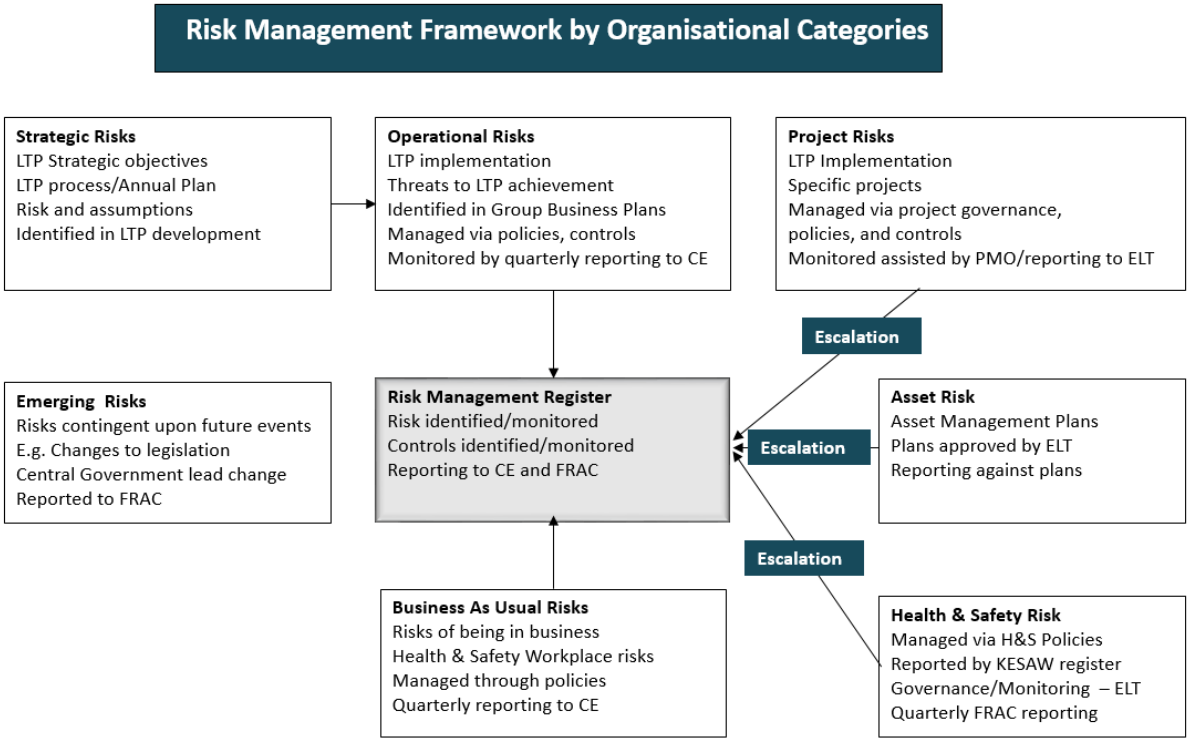


Figure 16: Risk Management Framework by organisational categories

Greater Wellington has stated it will prioritise, for mitigation, any risks with the following potential consequences:

- health and safety of the public, staff, and contractors
- legislative or regulatory breaches
- environmental damage

Our approach to asset risk management aligns with this philosophy.

Asset risk management

Figure 16 describes asset risk in its separate components. We are careful to consider all the aspects of risk as we build, operate, and maintain our assets. These risks include project risks, and health and safety risks and strategic risks.

We recognise there are areas of risk that relate specifically to particular assets, sites, or parts of our public transport network. Our asset management approach incorporates processes designed to identify and mitigate such risks which then influence our individual asset class planning.

The following sets out our practices with respect to asset risk management.

Asset risk

Since our 2021 AMP we have established a criticality framework which presents a structured approach to measuring the impact, or consequence, of an asset failure. It provides a rationale and methodology for the consistent assessment of our current assets and is used in developing our investment priorities across our public transport network. The criticality framework is based on a top-down assessment of the consequence of asset failure on Metlink's organisational vision, goals, and desired outcomes by asset class.

Our criticality framework sits within our asset management system as shown in the Figure 18 and is a component within Metlink's Strategic Asset Management Plan[12]. Greater Wellington's (GW) organisational risk framework drives the primary attributes for our definition of asset criticality. Our criticality framework applies to all Metlink's rail, bus, and ferry assets. It excludes assets provided by contract partners. However, we intend to apply the attributes set out in our criticality framework to critical assets owned and operated by third party partners.

We have assessed each asset class against the criticality dimensions and, when applied and combined with health and condition, will enable us to ascertain a prioritisation for investment for those asset classes to which it applies.

We continuously monitor the condition of our assets. Condition monitoring is carried out on regular intervals dependant on the type and function of each asset. Our decisions to replace or maintain assets are based on the results of our condition monitoring programme. We are currently in the process of further developing our approach to asset condition and asset health through the development of an asset health framework.

The results of these dimensions as applied to our assets will be set out in the relevant asset class plans for the AMP 2023.

Incident Management

We investigate incidents and events during our operations to a level of detail appropriate for the seriousness of the potential or actual consequence. We use a combination of internal and external investigation practices to identify root cause and preventative and mitigation actions. Any actions arising from individual incidents or trend analysis that require us to change our asset design, or rectify particular assets or groups of assets, are incorporated into our investment plans for each asset class.

[12] For more detail please refer to "Our Asset Management Approach" section.

Operational Feedback

Customer feedback regarding bus and ferry assets and infrastructure is received via phone, email, or social media. The details are logged into our CRM Resolve system.

Most of the customer feedback for our bus and ferry assets relate to bus stop or bus shelter repairs, cleaning, or graffiti removal. These are forwarded directly to our cleaning and maintenance contractor who has an obligation to clean or repair the asset within the timeframe specified in the contract, to ensure that the asset is not a health or safety risk to the bus operator or the public. We also use this information to assess the asset condition or performance, and life expectancy of the asset. Examples of other bus assets and infrastructure feedback include:

- request for a bus shelter
- request for a new bus stop
- request to move a bus stop
- request for improving lighting at bus stops
- Real Time Information (RTI) boards not showing accurate information or not working

Feedback is also received from bus operators and mainly relates to accessibility of bus stops and bus stop layout (including road markings), hazards en-route e.g. trees, utility poles, and road layouts.

Issues which require investigation, traffic resolutions, or discussion with a Greater Wellington team, TA, or other external stakeholder, are logged and assigned to one of our team members for investigation. The log provides information on the current state and condition of assets and provides a basis for forward planning for replacements, upgrades, and new infrastructure in the asset class plan, and in conjunction with urban planning and development. Our asset class plans reflect this information.

Natural disaster and climate change

Our region's infrastructure is vulnerable to natural hazards including earthquakes, tsunamis, major storms, floods and landslips, ranging from *high impact/high probability* events (e.g. a major earthquake) to *low impact/high probability events* (e.g. storms). Climate change is expected to increase the frequency and intensity of some of these hazard events.

Within our region, temperatures are warming, and weather patterns are shifting. These changes will have both positive and negative effects for different activities. Therefore, it is important that we understand the forecast impacts of climate change, so we can factor these into our infrastructure investment planning and the work we do

In preparing for natural hazard events and climate, we need to understand the extent of the risks our assets and services are exposed to and understand what may be required to

respond or adapt to them. Accordingly, our infrastructure and asset planning decisions that assume lifespans of 30-100 years incorporate climate change projections and natural hazards events. This is particularly true for decisions that are expensive to alter or reverse.

Surface flooding, from more intense and frequent rain events, and coastal flooding, associated with sea level rise, are the biggest risks identified to our assets, infrastructure and services.[13] Consequently, our assets and activities on floodplains and/or in relative proximity to the coast are the most at risk, i.e. the lower Hutt Valley or Porirua. The area of vulnerability is not just the coastal edge but on the neighbouring vicinity.

Also highlighted are the increasing risks to our services due to failure of other infrastructure or services owned, controlled, or managed by third parties. For example, flooding of the roading network affects our public transport capability.

We continue to incorporate resilience in our investment decision-making through options assessment, asset specification, and designs.

Maintaining service continuity

Te Waihanga New Zealand Infrastructure Commission's publication Rautaki Hanganga o Aotearoa New Zealand Infrastructure Strategy 2022-2052 identifies that infrastructure choices and decisions require a system-wide, co-ordinated approach across institutions in the public and private sectors. This requires thinking more about interdependencies, maintaining service continuity, and community preparedness. To ensure our service continuity now and in the future, our approach to asset and risk management continues to evolve to incorporate the wider perspective of resilience and sustainability into our investment planning.

Our awareness of the importance of resilience and sustainability in maintaining service continuity has been highlighted by events such as the Christchurch and Kaikoura earthquakes, the 2021 and 2022 floods and the global Covid-19 pandemic, as well as emerging environmental influences such as population and demographic change, economic shocks, technological change, and climate change.

The resilience of our infrastructure determines how it will cope in the immediate term after an event or disaster. Resilience is wider than just natural disasters. It incorporates the capacity to withstand disruption, absorb disturbance, act effectively in a crisis, adapt to changing conditions, and adapt to slower changes over time.

Planning for infrastructure sustainability is focused on the longer term of how our infrastructure development meets the needs of the present without compromising the public transport needs of future generations. Global issues like climate change, population growth, resource depletion, economic shocks and natural hazards means that our infrastructure must be sustainable. When designing, constructing, and operating our public

[13] Predictions and associated impacts from NIWA Climate Change Report for the Wellington Region.

transport network we incorporate the concept of sustainability in a manner which optimises our region's environmental, social and economic outcomes for now and in the future. Infrastructure sustainability is a framework we employ to ensure our public transport network contributes to Greater Wellington's vision of a region that has a thriving environment, connected communities and a resilient future. This is an evolving area.

Insurance

We use insurance to manage risk to deliver, with certainty, our TP community outcomes.

Greater Wellington maintains a 'Material Damage Business Interruption' (MDBI) insurance policy for all above-ground assets (excluding motor vehicles and rolling stock, which are separately insured). Above-ground assets are insured on a maximum probable loss basis i.e. the maximum loss that an insurer would be expected to incur on a policy, representing the worst-case scenario for an insurer.

Greater Wellington doesn't insure 100% of its assets due to the unlikelihood that all assets would at the same time be affected by a hazard event. We have MDBI insurance with an excess of 5% site value, minimum $100,000, maximum $20 million. In order to meet this insurance excess, Greater Wellington has set up a cash fund called the Material Damage Reserve Fund (MDRF), initially from the savings of a higher insurance excess and latterly from the proceeds of forestry cutting rights. This MDRF now stands at $9 million and grows as interest is capitalised to it. Public transport assets (excluding motor vehicles and rolling stock) are included. Substantially smaller excesses apply to other hazards e.g. fire.

In 2016, Greater Wellington passed over the process to fully insure rail assets, to Transdev, as part of the tri-party partnering contract ('the rail contract') between Greater Wellington, GWRL, and Transdev.

Covered are:

- vehicles
- EMU depot
- EMU depot plant and equipment

The balance of rail infrastructure assets owned by Greater Wellington is insured under the MDBI policy.

Global insurance costs are increasing, making insurance more difficult to obtain and increasingly unaffordable. As such, we are continually focussing our efforts on value for money aspects of risk to ensure we are insuring for the risks we are least able to control and/or accept.

Our Asset Management Approach

Our Asset Management Approach

As our region grows and new transport technologies and services open up, a world class public transport system has become increasingly important to our region's liveability. The asset planning and investment decisions we make today contribute to making our region a better place to live, while making mobility cheaper, safer, more accessible, and better for our environment. It's all about providing a better public transport experience to make Wellington even greater.

Greater Wellington's aim of reducing the region's carbon footprint incorporates a mode shift from people traveling in private vehicles to more people traveling by bus, train, and ferry, especially at peak times. Our vision of providing an efficient, accessible, and low carbon public transport network aligns with this and sets the foundation of our approach to asset management.

Effective asset management is fundamental to achieving our vision and the Government's strategic priorities. Asset management involves the balancing of costs, opportunities, and risks against achieving our vision, strategic priorities, and desired levels of service. We plan and continuously refine our asset management activities against the Governments' and Greater Wellington's strategic priorities. Our approach to asset management ensures we manage our assets to deliver the desired levels of service and strategic priorities, in the most cost-effective manner throughout an asset's lifecycle, for present and future customers.

Asset management is part of our core business and is integrated with our other business processes.

Asset Management principles and objectives

Greater Wellington's vision and strategic priorities provide an over-arching framework to ensure we are working on the things that matter. The following principles shape how we manage our assets in a consistent and considered way:

1. ***Forward looking.*** Our public transport network is future oriented. It is developed and managed with consideration for long-term use including factors such as environment, future technology, and population changes.
2. ***Optimal.*** We manage our assets in a planned and methodical manner to deliver agreed levels of service that provides the required levels of service at the lowest lifecycle cost for present and future customers.
3. ***Adaptable.*** We will develop and build assets that are resilient to social and environmental changes, including adverse events.

4. ***Compliance.*** Our asset management activities follow our commitment of providing a safe and environmentally sustainable public transport network in a way that complies with statutes, regulations, and industry standards.
5. ***Partner, stakeholder and customer oriented.*** Reflecting our part in the national transport system, we consult with our partners, stakeholders and customers and take into consideration their views and requirements in our plans and levels of service.
6. ***Manage demand and growth.*** We assess and make provision for the future financial and service level impacts of changing population, legislation, demographics, and economic environment.

Our asset management system

Our asset management system provides the direction for our asset planning and recognises the need for clear connectivity between central and regional government's strategic priorities and our day-to-day asset management activities. Our asset management system considers both our internal organisational structure and our external operating environment such as key partner and stakeholder expectations, our legislative requirements and economic constraints.

Asset Management Strategic Plan/ Asset Management Policy

Greater Wellington's Infrastructure Strategy provides direction for the level and timing of investment needed to operate, replace, renew, and upgrade assets. The Financial Strategy outlines the required rating and debt levels to fund these investments. Together the two strategies outline how Greater Wellington intends to balance investment in assets and services with affordability.

Greater Wellington's Asset Management Policy sets our framework for consistent and methodical asset management planning.

Governance and organisational structure

Our governance structure ensures appropriate oversight, and a methodical approach is employed to our asset management activities and decision making. A key facet of our asset management approach is maintaining a clear alignment with our strategic priorities. A robust framework of responsibilities and controls are in place to ensure our asset management decisions align with our strategic priorities.

An overview of the public transport responsibilities and governance roles within this structure are set out in Figure 17.

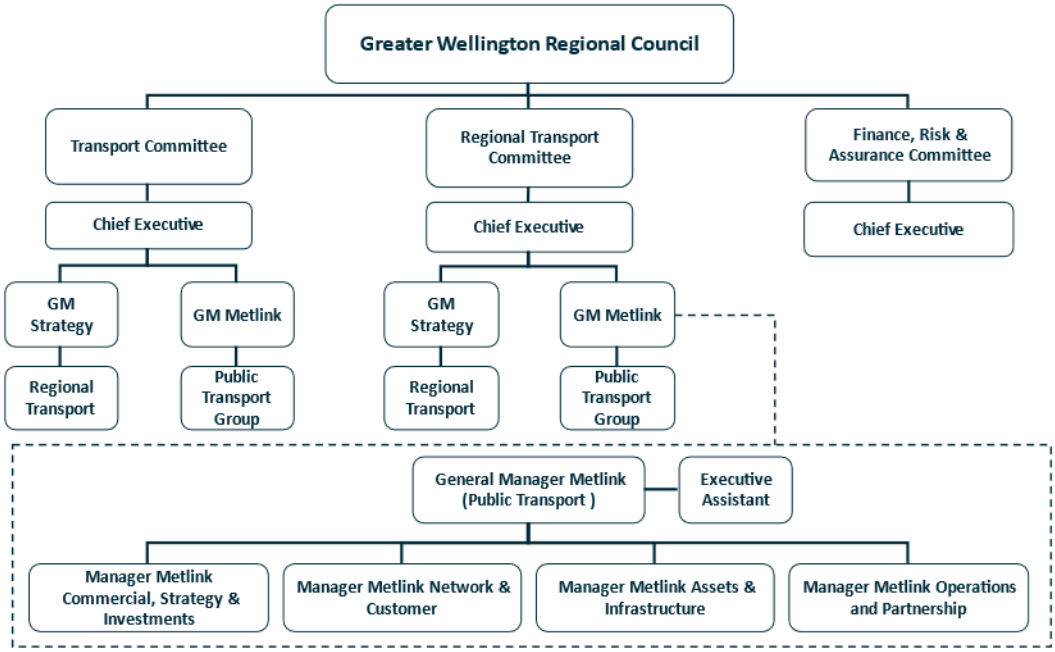


Figure 17: Public transport responsibilities and governance structure

Greater Wellington's Regional Councillors, Regional Council, and Metlink governance

Regional Councillors

Our regional councillors expect Greater Wellington to employ good asset management processes so that its assets deliver the desired outcomes for the communities the regional councillors serve, at least lifecycle cost.

Greater Wellington's asset management governance structure and processes provides assurance to its regional councillors by communicating underlying planning assumptions, the demand drivers, and the consequences of investment decisions, the linkage between Greater Wellington's strategy, strategic priorities and the levels of service required, the costs of projects required to maintain levels of services, and the risks associated with our assets and how those risks are mitigated.

As Greater Wellington is responsible for a wide range of strategies, plans, and functions, our regional councillors need to have a clear understanding of current issues, while being efficient and effective. To achieve this, Greater Wellington has established nine committees and one subcommittee that have specific purpose and responsibilities for particular issues. The committees responsible for public transport are the Transport Committee, Regional Transport Committee, and the Finance, Risk and Assurance Committee.

Transport Committee

The Transport Committee is a committee of Greater Wellington Regional Council, comprising of thirteen councillors. It oversees the development, implementation and review of Greater Wellington's strategic direction and policies for transport and mode-shift and provides input into joint transport-related projects and initiatives. It also ensures that transport programmes promote a thriving environment, connected communities, and a resilient future for the region.

The Transport Committee is responsible for the preparation of the Wellington Regional Public Transport Plan.

Regional Transport Committee

The Regional Transport Committee is comprised of two persons who represent Greater Wellington, one person who represents each of the eight territorial authorities of the region, one person who represents Waka Kotahi, and one person who represents KiwiRail. It promotes the objectives of the Land Transport Management Act 2003 within the region, linking it to other regions of New Zealand and other transport systems.

The Regional Transport Committee is responsible for the RLTP and as such sets the vision for the Regional Public Transport Plan.

Finance, Risk and Assurance Committee

The Finance, Risk and Assurance Committee monitors, evaluates, and reports to Greater Wellington on its finance, risk and assurance management policies, systems and processes.

Greater Wellington

Greater Wellington promotes the region's liveability by ensuring the region's environment is protected while meeting the economic, cultural, and social needs of the region. Its specific responsibilities include environment management, flood protection and land management, provision of regional parks, public transport planning and funding, and metropolitan water supply.

As part of providing public transport, Greater Wellington is responsible for ensuring the delivery of a safe, accessible, reliable, and environmentally friendly transport system, including public transport in the region at least cost to the regional ratepayer. Greater Wellington's Chief Executive is responsible to the thirteen Wellington regional councillors to ensure the region's asset management activities and investments contribute to Greater Wellington's vision of an extraordinary region that has a thriving environment, connected communities and a resilient future.

Metlink

The General Manager Metlink is accountable to Greater Wellington's Chief Executive for our public transport asset planning and investment decisions. Within Metlink, we maintain organisational roles, and responsibilities that are consistent with implementing our vision and strategic priorities.

Our team responsibilities for asset management decision making within Metlink are:

The **Commercial, Strategy and Investments** team provides strategic management and guidance by working with others to set priorities, focus energy and resources, strengthen operations, ensure that staff and other stakeholders are working toward common goals, clarify intended outcomes/results, and assesses and adjusts the Group's direction in response to a changing environment and in line with the RPTP. The Group:

- Leads the public transport strategic planning, investments, policies and business advisory, including Council and local government requirements, as well as strategic insights.
- Provides strategic management and guidance by working with others to set priorities, focus energy and resources, strengthen operations, ensure that staff and other stakeholders are working toward common goals, clarify intended outcomes/results, and assesses and adjusts the Group's direction in response to a changing environment and in line with the RPTP.
- Includes the critical function of long-term planning for public transport investment needs. Focuses on the development of robust business cases for funding, benefit realisation monitoring and managing the co-funding relationship with Waka Kotahi.

Is accountable for business development, exploring new avenues of activity and seeking opportunities to increase revenue. They provide strategic commercial advice and assurance to support strategic decision-making and for policy formulation and delivery.

The **Assets and Infrastructure (A&I)** team is accountable for building, managing and maintaining assets and infrastructure, including Metlink's technology systems and data, to support an integrated network of public transport. This includes contractual oversight of the rail network access, including the metro opex and capex spend and framework.

The objective of the function is to provide the best value level of service for the budget available. It includes the management of the entire life cycle—including design, construction, commissioning, operating, maintaining, repairing, modifying, replacing and decommissioning/disposal—of physical infrastructure and assets. The function also ensures that assets and infrastructure are built and maintained to Group strategy, design, regulatory and contractual requirements to ensure an integrated public transport network that is accessible and meets customer and stakeholder needs and strategic goals.

This group is also accountable for the AMP and is our Group's Centre of Excellence when it comes to project management and coordination, establishing and monitoring the frameworks, disciplines, and tools we use to deliver our projects.

The **Network and Customer** team is accountable for the design of the network and services to be delivered, in consultation with the Operators, ensuring a robust business case is made for change, and design is aligned to strategy and data analysis, including customer experience data. This function ensures that the services, provided through our business partners, are suited to the needs of the customers, and are in line with our commercial agreements. They examine all activities, infrastructure, communication, people, and material components involved in services to improve both quality of service and interactions between the provider of the service, the Group and its customers. It ensures that design changes can be executed effectively and efficiently within commercial constraints, in a fully multi-modal manner.

The **Operations and Partnership** team have the primary relationship with each of our operators, across bus, ferry, rail and total mobility and are accountable for delivering service to customers. They do this by maintaining close and effective working relationships with the Operators to ensure that the operation of public transport conforms to contracted services and performance levels. The function is accountable for operational planning and improvement, including business continuity and disaster recovery planning. They focus on customers and working with Operators on improving services and their delivery. They work across service delivery for all our current modes – Bus, Rail, Ferry and Total Mobility
This group ensures effective monitoring and reporting on bus and rail contracts is undertaken (KPIs, annual planning requirements), and ultimately actioned.

Metlink's A & I Asset Management System and documentation

Our asset management system comprises of our wider organisational strategic framework and A&I's asset management documentation. Critical inputs into our asset management system comprise of stakeholder expectations and requirements, including levels of service, and Greater Wellington's organisational objectives and plans.

As an activity group of Greater Wellington, our asset management decisions and day-to-day activities are aligned with and take account of Greater Wellington's strategic framework, priorities, and direction. These guide our asset management decisions, activities, and expenditure to ensure we contribute to Greater Wellington's vision, purpose, and community outcomes.

Our asset management approach is documented in a hierarchical structure that links and aligns Greater Wellington's and Metlink's organisational vision and strategic objectives to our asset strategies and day-to-day activities, through our ***Strategic Asset Management Plan (SAMP)***.

The A& I team's asset management documentation comprises of its SAMP, Asset Management Policy, Asset Management Framework Portfolio Management Plans, and Project and Programme Delivery Plans. The AMP is published annually.

The key elements and documents within our asset management system are shown in Figure 18.

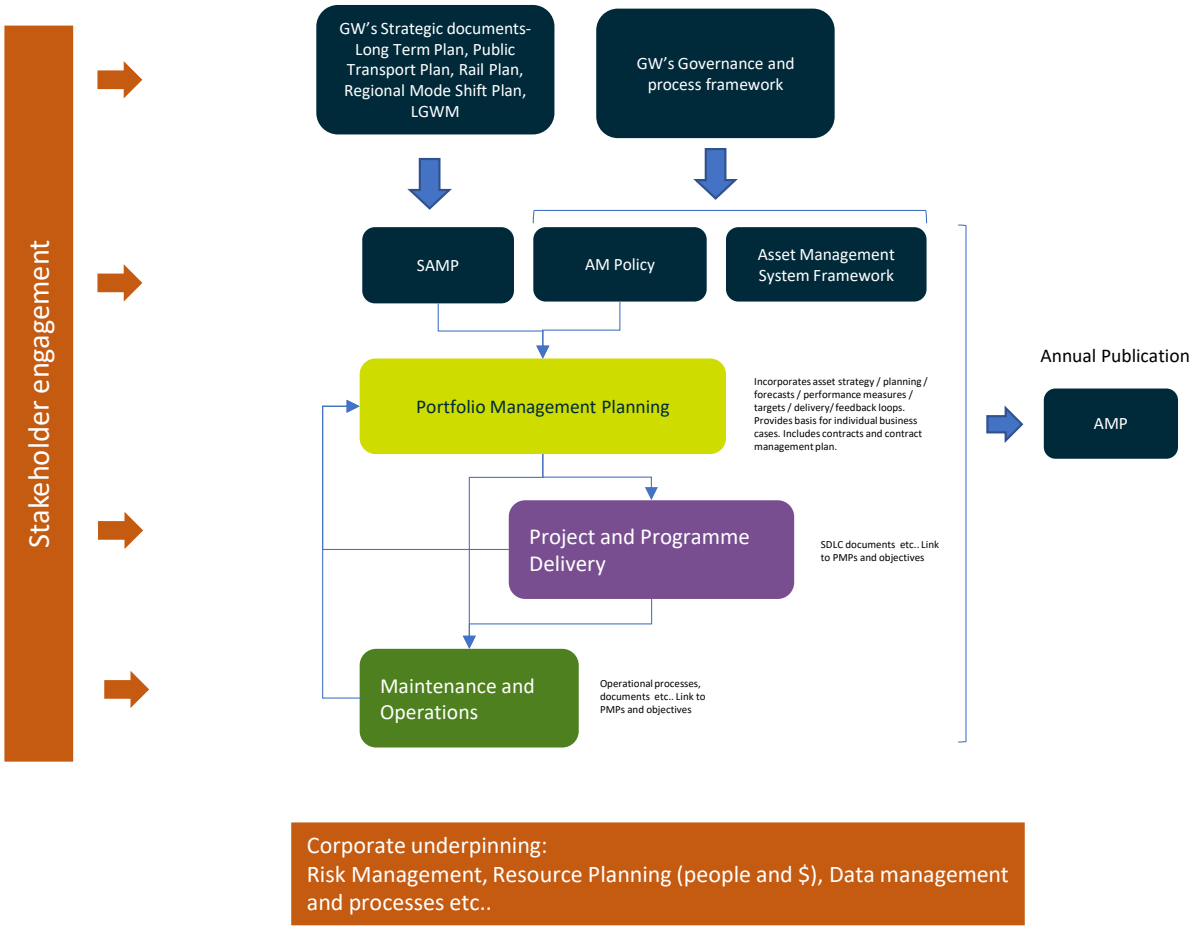


Figure 18: Key elements and documents within the A&I team's asset management system

Asset Lifecycle approach

To realise value from our assets, we employ a lifecycle approach to the management of our assets. This involves all stages in the management of the asset, from the conception of the

need for the asset, to acquiring the asset, and then operating, maintaining, refurbishing, replacing and then either divesting or disposing of the asset, including managing any post disposal liabilities.

Greater Wellington's strategic priorities drive our asset lifecycle management, which in turn influence timing and quality of maintenance, refurbishment, and renewals. We maintain our assets until they reach the end of their useful lives, when they are refurbished or replaced. When determining an asset's useful life, we consider age, condition, performance, customer service, growth and changing demands, criticality and risk, and ongoing maintenance requirements.

The ownership of the assets that make up the public transport network is a complex model. As such, Greater Wellington's asset management role and practices are scaled as appropriate to the situation. Where we do not own the assets that are fundamental to our service delivery, we ensure there are appropriate contracts and arrangements in place to manage our service risk from asset degradation and configuration. This requires a contract management and relationship management model that aligns as much as possible to our own practices and delivers the outcomes we are seeking for our customers.

Our methodical lifecycle approach means we consider lowest whole of life cost, rather than short term savings, when making decisions. Taking a lifecycle approach to our planning also assists us in making our assets and programmes of work more sustainable and environmentally friendly. For example, integrating whole of life carbon thinking when planning and delivering our infrastructure assets is a practical approach we are taking to achieve our vision of a low carbon public transport network.

Our asset management approach reflects our lifecycle activities, encapsulating the main activities and information flows within our asset management value chain.

Figure 19 shows our asset lifecycle activities.

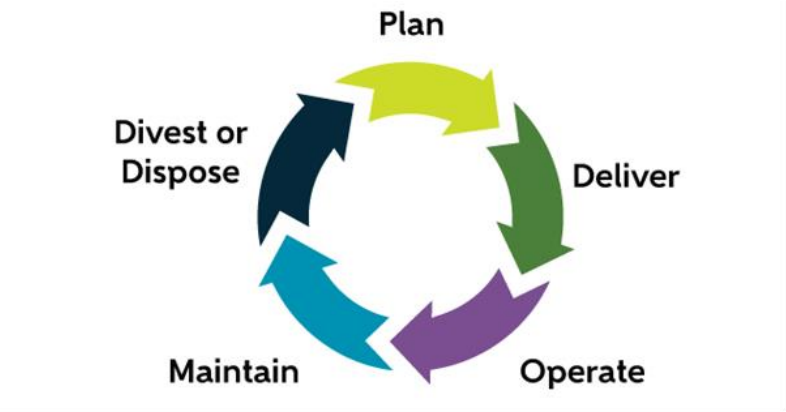


Figure 19: Our asset lifecycle activities

Further detail of our asset lifecycle activities is provided below.

Planning. Our planning lifecycle stage consists of several interrelated activities, to ensure investments deliver the right service, at the right cost, and within acceptable risk tolerances. This requires understanding asset management drivers, identifying, prioritising, and integrating options, and estimating costs. Decisions are made within the context of our overall strategic priorities.

Deliver. Throughout the deliver lifecycle stage our objective is to safely, and cost-effectively, deliver our programmes of works. This requires us to continually challenge and improve our project planning, project management, and delivery skills to deliver the required levels of service.

Operate. During this stage, we operate our network to ensure we meet our levels of service.

Maintain. Throughout the maintain stage, we proactively maintain our public transport assets to ensure they remain safe, secure, and reliable.

Divest or dispose. Our assets that are surplus to requirements will be disposed of. Our criteria for determining asset disposal include underutilisation, obsolescence, provision exceeds required levels of service, replacement before predicted economic life, life expired rolling stock retired if remanufacture is not economically viable, uneconomic to upgrade, policy changes, service provided by other means such as private sector involvement, and potential risk of ownership such as financial, environmental, legal, and social risk.

Asset information

Robust asset knowledge and information is crucial to good asset management as it enables evidence based- decision making. Our knowledge of our assets and forecasting capability

has continued to grow. Our emphasis on asset data for use in investment decision making has resulted in our focus to improve our asset data quality so that our systems, processes, and data are sustainable, robust, and fit for purpose. As part of this we are in the process of implementing a new asset management information system, Ngātahi.

Ngātahi our asset information system is used to support the development of our asset management plans. Ngātahi allows our field staff to enter asset data at source. While out in the field, our field staff can update asset condition ratings, update asset records and attributes, record asset defects, and creating new work orders.

Our current data warehouse system is no longer fit for purpose. At present it cannot interrogate more than a few months data. We are in the process of replacing our data warehouse with a cloud-based SaaS solution.

Industry standards

We are committed to providing a safe and environmentally sustainable public transport network in a way that complies with industry standards. Our asset management decisions account for:

1. **Requirements for Urban Buses in New Zealand (RUB).** The purpose of the RUB is to standardise urban bus requirements across regional councils and Auckland Transport to create efficiencies and improve the usability and accessibility of buses for all customers. It documents the standards for design and performance of the bus fleet, access and seating configuration including priority seating and luggage storage, facilities for passengers with impairments, safety and security, and internal, external and operational communication. The RUB is currently being reviewed.
2. **New Zealand Public Transport Design Guidelines (Guidelines).** The Guidelines are being developed collaboratively by Waka Kotahi with an industry Reference Group. The industry Reference Group members are from all over New Zealand, reflecting a range of contexts and perspectives. The principles of the Guidelines were created to encourage the public transport system is consistent in design, accessible, safe, affordable, operationally efficient, support mode shift and positive urban design.
3. **National Rail Safety Standards (NRSS).** The objective of the National Rail System Standards is to provide a generic framework for the management of safety and change within the Rail Safety System (RSS). It is applicable for all activities involving the operation of Rail Service Vehicles on the National Rail System and is designed to meet the requirements set out in the Railways Act and the Land Transport Safety Authority document "Rail Safety Licensing and Audit Guidelines." The NRSS covers safety management, health assessment of rail safety workers, risk assessment, occurrence management, mechanical engineering interoperability, rail operations

interoperability, audit, document control, crisis management, and heritage vehicle and train management.

Continuous Improvement

We are committed to continually improving our asset management approach and look for ways to improve all aspects of our asset planning and management. As part of this we have sufficient rigour in our processes and systems to ensure there are feedback loops between delivery and strategy/planning to enable continuous improvement.

Since the publication of our 2021 AMP, we have established the Asset and Infrastructure Asset Management Framework (AM Framework). The AM Framework sets out our asset management system and processes. As part of this we have produced a Strategic Asset Management Plan, an Asset Management Policy, and an Asset Criticality Framework. We have aligned our AM System to the international standard ISO 55000 suite of documents for asset management.

Going forward we are continuing to evolve and strengthen our asset management approach. As part of this we are looking to:

- develop a universal investment decision framework
- strengthen our cost estimation processes
- further implement data driven decision making including improving and cleansing existing data and capturing new data
- leverage the functionality of our new asset management system, Ngātahi, including implementation of asset health modelling for specific assets
- use of risk and criticality in our decision making where necessary and practicable.

Our Asset Class Plans

Our Asset Class Plans

This section describes our asset management approach, strategic objectives, risks, plans and financial expenditure forecasts for the assets covered by this AMP. We have categorised these assets between three categories of portfolios. These are Rail Services, Bus and Ferry Services, and Customer Insights and Assets. These three asset portfolios are documented within seven asset class plans. These are Rail Rolling Stock, Rail Station Infrastructure, Rail EMU Maintenance Depot, Bus and Ferry Customer Facing Assets, Bus and Ferry Network Enabling Assets, Bus Fleet, EV Charging and Depot, and Customer Insights and Assets. Each of these are described below.

Rail Services Overview

Introduction

Our rail portfolio covers the assets we use for delivering metro rail services within the Wellington region. These assets are detailed in the Rolling Stock and Station Infrastructure asset class plans. We own, fund, and/or manage the assets necessary for the Wellington region's metro rail services. We determine the service level and timetable for rail services, plan for future development of the rail services, procure, and fund the operator to provide services.

Our rail network consists of the Johnsonville, Kapiti, Hutt Valley (including Melling), and Wairarapa passenger lines. It provides a transit system that delivers vital support for the significant commercial, government, and professional service industries in our region.

Approximately 75 percent of our region's population lives north of the Wellington CBD. Our rail network provides high-capacity, long-distance, time-competitive commuter services connecting key urban areas across the region to Wellington's CBD. 425,000 residents are served by our 2,250 commuter trains in a typical week. Those customers make up about 42,000 trips per weekday (at peak). Rail currently accounts for 41 percent of peak trips from the north (18 percent of all peak trips) to the Wellington CBD, where 40 percent of jobs are located.

Greater Wellington's subsidiary, (GWRL), took ownership of a significant number of the rail assets in 2011. Transdev is our contracted rail operator for the region. Since 2011, we have invested significantly into our rail assets and network to improve the infrastructure and services. These improvements have led to a growth in our rail patronage from 12.8 million passenger journeys to 14.3 million journeys between 2015 and 2019. Our rail patronage continued to grow in the first half of the 2019/20 financial year until the 2020 Covid-19 disruptions.

With ever-increasing demand on our rail services, it is imperative we continue to operate a safe, reliable, and resilient service. Keeping our rail network and assets fit for purpose and fit for the future requires ongoing investment. This involves continuing to maintain and improve the level of service provided by our existing infrastructure through:

- targeted and catch-up renewals of the rail network assets (owned by KiwiRail)
- targeted routine maintenance and renewals of assets owned by GWRL
- upgrades and investment in new infrastructure across all assets to improve the level of service to meet our customer's expectations.

We are committed to investing to accommodate growth expectations and the resultant increased pressure on capacity. The rail asset class plans outlined in this AMP support the continual improvement targets in levels of service for our passengers, will unlock capacity for ongoing and expected high levels of growth, and improve resilience of the network. The investment aligns with, and contributes to, the achievement of our strategic priorities of mode shift, customer experience, carbon footprint reduction, and safety.

KiwiRail Agreements

We have in place several KiwiRail leases. These are discussed below.

Wellington Network Agreement (WNA)

In June 2013, we signed an 85-year WNA which grants Greater Wellington access to the Wellington railway network to operate metro rail services within the Wellington region.

KiwiRail remains the owner of the rail network which includes track; signals; telecommunications; network control; overhead traction power system; station platforms; some structures (bridges and tunnels); slopes and drainage; and level crossings.

Under the WNA, we pay a share (based on tonnage or train km's depending on asset wear mechanism) of annual maintenance and renewal costs.

The WNA requires KiwiRail to prepare a Wellington Network Management Plan (WNMP) structured around three-year windows for budgeting and delivering within an overall planning horizon. KiwiRail is required to plan and undertake all maintenance and renewal work on the rail network. The WNMP is the mechanism for Greater Wellington and KiwiRail to agree the desired level of network performance and the investment required to achieve such service.

The age of the rail network infrastructure varies, and the expected asset life also varies significantly depending on the asset type. Some assets, such as bridges and tunnels, have a life of greater than 100 years. KiwiRail's primary objective is to keep the network safe and open. However, KiwiRail currently carries a significant level of deferred maintenance. As such, network performance lags our desired levels of service. In the case of the Wairarapa Line (north of Upper Hutt), the condition and performance are declining, with the current speed restrictions resulting in 2-3 times the "acceptable" level of delays. There is a specific programme of work currently being undertaken to target 'catch up renewals'; this is a programme of tactical upgrades designed to lift the network standard to that which one would expect of an effective and efficient metro rail network.

In the last five years, there have been over 50 slips that needed rectification within the rail network. Eleven of the slips have been struck by trains with the latest occurring on 17 August 2021 causing significant damage to two of our carriages. With increasing service

frequency, the likelihood of a train impacting a slip has increased. Data also shows the instances of slips is increasing.

We have been working with KiwiRail to raise visibility of slope stability risk on the rail network. and agree the prioritisation approach for the higher risk slopes on the rail network to establish the appropriate action to take to reduce the likelihood and/or consequence of the risk.

Locomotive hook and tow agreement

To operate the carriage fleet on the Wairarapa Line, we lease from KiwiRail two diesel electric shunt locomotives, and a hook and tow service which provides the mainline locomotives and drivers for the Wairarapa line passenger services.

One of the diesel electric shunt locomotives is used for shunting carriage trains between the carriage depot and Wellington Station. The other shunt is used for moving vehicles in and out of the unpowered heavy lift road in the EMU depot.

The maintenance and long-term asset management of the electric shunt locomotives are the responsibility of KiwiRail, as the asset owners.

Wellington Railway Station

We also have lease arrangements with KiwiRail regarding Wellington Station. These include Wellington Railway Station staff areas; Wellington Station public toilets; Wellington Station concourse (public area); Wellington Station platforms; and carriage depot. These agreements require us to manage or fund maintenance and cleaning of these assets.

As a result of significant recent investment, the condition of these assets is adequate; however, significant further investment is required to lift the accessibility, customer experience, seismic performance and capacity to ensure this flagship station can deliver the future outcomes being sought for the metro rail services.

Key investments

Over the 30-year period covered by this AMP, our total opex forecast for rail is $1.4b. This comprises rates, leases, insurance, electricity, and maintenance. The rail portfolio opex is forecast to steadily climb as patronage increases over the next 30 years. The most notable change within the opex forecast is the proposal to cancel the locomotive hook and tow lease arrangement with KiwiRail for the Wairarapa services in 2026. The hook and tow locomotives will be redundant once we have the new multiple units, low/zero emission fleet operating on this line. Some of these costs will be transferred into maintenance costs of the new electric multiple units (EMU) fleet.

Figure 20 shows our rail opex forecast.

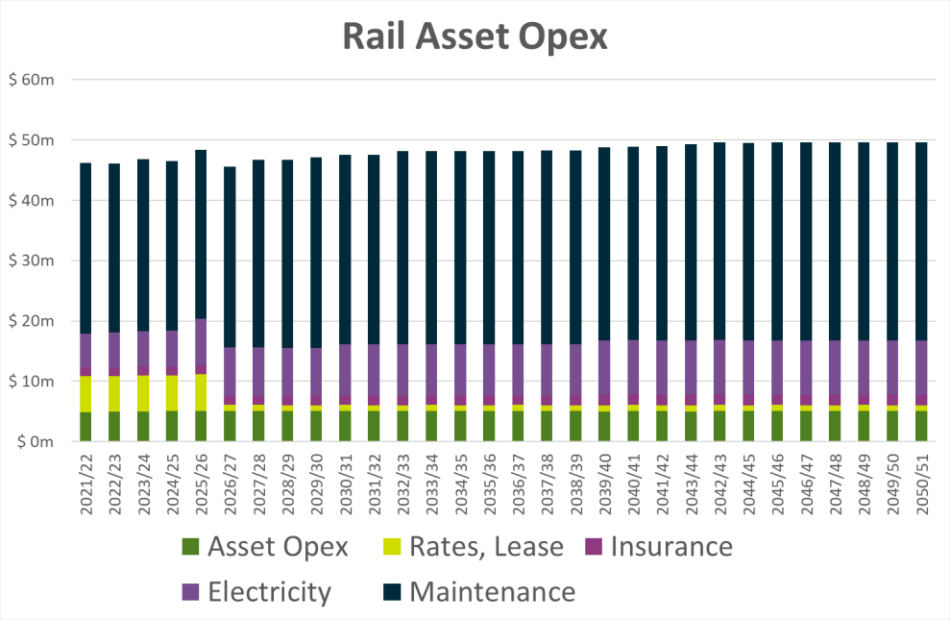


Figure 20: Rail opex forecast

The total capital forecast for rail for the same period is $3.64b. This includes:

- **capex renewal expenditure** of $462m on the KiwiRail Network, $132m on rail infrastructure, and $691m on rolling stock
- **capex improvement expenditure** of $1.30b on the KiwiRail Network, $169m on rail infrastructure, and $888m on rolling stock. The significant capex investment is required, particularly in the first decade, to achieve the customer experience improvements, achieve mode shift, and meet growth targets.

The key areas of investment are:

1. Improvements to rail station infrastructure facilities, with a particular focus on customer experience. This includes increased shelter and improvements in facilities while passengers wait for trains, improved connections between the stations and the community such as improvements to Park and Ride, bicycle storage facilities, and improvements to paths, lighting, security, and general accessibility. For more detail refer to the station infrastructure asset class plan.
2. Renewal of the carriage fleet, and provision of a low/zero emission fleet for additional capacity and service frequency on both the longer distance Wairarapa and Kapiti Lines. Additional expenditure is required to boost the capacity and service frequency of the suburban services operating on the current electrified network, particularly on the Hutt and Kapiti Lines to drive mode shift and reduction of transport emissions.

Figure 21 shows our rail capex forecast.

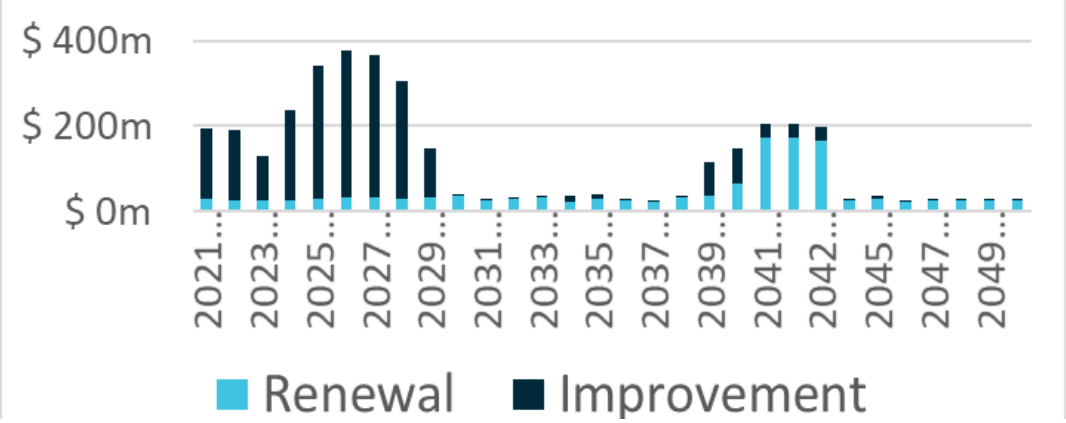


Figure 21: Rail capex forecast

KiwiRail Network

KiwiRail Network improvements, which are critical for achieving a fit-for-purpose metro rail network. We have assumed this will be fully funded by the National Land Transport Fund (NLTF). Therefore, these initiatives have not been included in the 2021-2031 Long Term Plan (LTP) financials, but they have been included within this AMP. The KiwiRail network improvements involve:

- completing the catch-up renewal of traction overhead line system and track infrastructure
- unlocking capacity and resilience improvements
- Wellington Station signalling and track improvements
- regional capacity and safety improvements to enable improved Lower North Island regional passenger rail services
- renewal of the signalling system to best practice safety standards, improve operational resilience, and enable capacity improvements of the network
- increasing capacity of the network to support a two-tiered layered 10min peak service on the Hutt and Kapiti Lines, which will enable the capacity needed to achieve targeted mode shift
- resilience of the network, including both operational resilience and life-lines resilience
- pedestrian and vehicle level crossing safety improvements across the region, which will become increasingly important as rail service frequency increases.

The profile of the rail network investment is shown in Figure 22.

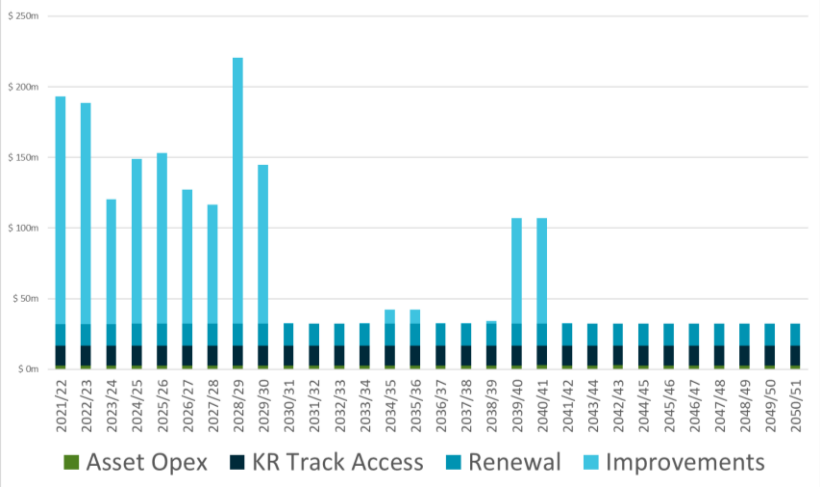


Figure 22: Rail Network investment

Wellington Strategic Rail Plan (Rail Plan)

In July 2022 Greater Wellington endorsed the Rail Plan (Rail Plan) which has further broadened the 30-year investment plan that is outlined within this AMP noting this investment uplift has not yet been incorporated in the financial plans in this 2022 AMP.

The Rail Plan identified the following fundamental problems that need to be addressed through investment to enable the objectives of the rail system to be realised:

- **Inconsistent customer journey experience and limited rail system capacity**. This results in the network being unable to meet mode shift targets, which prevent achievement of growth and environmental obligations.
- **Current infrastructure is not capable of safely accommodating additional trains.** This restricts the options available to accommodate future demand.
- **The condition and configuration of the rail network makes it vulnerable to service disruptions**. This has a flow on impact onto the wider transport system.

Addressing these issues will enable us, and our regional and central government partners, to achieve a vision of a safe, customer focused, and efficient rail passenger service to drive the region's economic development and social wellbeing in an environmentally and socially sustainable and resilient manner.

Preferred Programme

The Rail Plan identified a preferred programme which delivers a 'fit for purpose', resilient, and safe rail system. The preferred programme enhances customer experience which

encourages mode shift, and supports the capacity needed to meet and drive high patronage growth, by providing:

- Highly connected stations in communities where people work, live, play and learn
- Stations that make any wait both pleasant and productive
- Frequent services that are faster and more convenient than by car
- Reliable services that recover quickly from disruption
- Links that facilitate convenient connections for national freight customers
- Infrastructure and safety systems that enable transport without undue conflict.

The programme includes a wide range of improvements including:

- **Station access improvements** to make active and public transport more attractive as access modes, which will support first and last mile accessibility, reduce the reliance on private vehicle and park and ride in line with zero carbon objectives, and support intensification near stations as envisaged by the RGF and NPS-UD.
- **Improvements to all aspects of station amenity** across the network, including to accessibility, shelter, and information, which will ensure that accessibility obligations to disabled customers are met, that the waiting and overall customer journey experience is first-class, and that it is attractive to new customers for mode shift. These improvements will support increased at-station transit-oriented development where feasible.
- Progressive **service frequency improvements**, from the current 20-minute peak frequency to a 15-minute, then 10-minute, and finally 6-minute peak (turn up and go) frequency at most stations on the Hutt and Kāpiti lines, along with an improved 15-minute off-peak frequency within the electrified area and significantly improved service levels on long-distance services, which will provide better travel options for customers, support the region's growth, and deliver the capacity needed to drive and accommodate the required mode shift.
- Supporting **electric multiple unit (EMU) fleet expansion** to enable the higher frequencies, and replacement and expansion of the mixed and obsolete long-distance Wairarapa and Manawatū train fleets with new low emission trains to reduce rail emissions and provide system bridging capacity in first decade.
- **Network resilience and operational flexibility upgrades**, including improvements to slopes, bridges, culverts, track infrastructure, areas subject to sea level rise and storm surge, and operational patterns and maintenance, which will make the Wellington rail system safer and more resilient, particularly in the face of climate change, and ensure that it can recover quickly when events occur to minimise customer impact.
- **Wellington throat capacity improvements**, including a fourth main to enable the operational separation of Hutt and Kāpiti services, northern access to EMU stabling, and

separated access to the Wellington freight terminal, which will significantly reduce conflict between passenger and freight services and improve network and service resilience and reliability.

- **Full duplication between Pukerua Bay and Paekakariki** (North-South Junction), a key single-track constraint with several tunnels, and addition of a third main in the Porirua-Tawa area, which will enable higher passenger frequencies and improve service resilience and reliability on the Kāpiti Line. This will make rail a more attractive travel option on that line, where population growth is expected to be highest, and ensure continued freight access to the network as passenger frequencies increase.
- **Duplicated approach to the Waikanae Station**, including a bridge and second platform, which will reduce conflict between passenger and freight services, improve service resilience and reliability, and enable higher passenger frequencies on the Kāpiti and Manawatū lines.
- **Network resignalling**, which will remove restrictions on the number of peak hour services, safely enable future frequency improvements, and improve operational flexibility, resilience, and reliability.
- **Traction power upgrades**, including additional substations and wider enabling power network upgrades, which will overcome current limitations and enable higher future train frequencies.
- **Rail network segregation** at all places where reasonably practicable, including improved fencing and grade separation of pedestrian and vehicle level crossings, which will significantly improve safety and the experience of surrounding communities as frequencies increase.
- **Continuous improvement of systems, processes, and capability**, including improved asset management.
    -

The preferred programme has a positive benefit cost ratio (BCR) range of 1.1 to 1.5 (capital over 30 years. Such benefits relates to wider economic, road user, public transport user, land use, rail freight, and other benefits.

The 30-year capital cost is estimated at between $7.3b – $15.6b. Around 69 per cent of capital costs relate to below rail infrastructure (rail network infrastructure and network segregation), and 25 per cent to rolling stock (train fleet expansion and replacement). The balance relates to above rail infrastructure (station, station precinct, and station access improvements).

Risks and uncertainties

The primary expenditure uncertainty within this portfolio relates to:

- uncertainty of the Crown's contribution to invest in lifting the rail network Infrastructure up to the required standard of serviceability, particularly rail network resilience (eg. slope stability, seismic strength), safety (eg. signalling system, level crossings, slope stability), overall network performance (eg. Temporary Speed Restrictions due to catch up renewals), renewal deliverability capability and ultimately asset management maturity.
- funding allocation and investment certainty for the significant work programmes
- uncertainty within the patronage forecast and its translation into capacity requirements; this is due to Covid impact and also the growth assumptions embodied in the forecast
- KiwiRail network resilience, safety, and overall performance
- cost uncertainty due to escalating costs as a result of Covid-19, which has created labour and material shortages.

Rail Services asset class plans

The rail services asset class plans describe, in more detail, our asset management approach for our rail assets. These are separated into three asset class plans:

1. Rail Rolling Stock
2. Station Infrastructure
3. Rail Maintenance Depot

These asset class plans describe the strategy, asset characteristics, management approach, and expenditure profile.

Rail Rolling Stock Asset Class Plan

This asset class plan describes our lifecycle management approach for our rolling stock assets. Rail rolling stock represents our largest asset portfolio.

Our rolling stock assets consist of:

- Two-car Matangi Electric Multiple Units (EMU)
- EMU driver training simulator
- Wairarapa locomotive hauled carriages (Wairarapa carriages)
- Auxiliary Generator222 (AG222) generator and luggage carriage
- Zephir electric shunt crabs

Plan summary

Our rolling stock is critical for delivering an efficient, accessible, and low carbon rail service. Therefore, our overarching objective is to provide high quality, safe, and fit for purpose rolling stock at the service frequency, level of comfort, and reliability expected by our customers.

Our key strategies for achieving this key objective are:

- model future demand to ensure our investment planning incorporates the need for additional rolling stock to maintain our capacity in line with the demand.
- specify the design requirements for our rolling stock to meet the requisite levels of service through the life of the assets.
- ensure our planned and heavy maintenance regime maintains the vehicles to the required level of condition and performance throughout their asset life.
- provide a driver training simulator, to enable training to be undertaken in a safe environment and reduce requirement for actual rolling stock.

Our rolling stock is operated and maintained under contract with Transdev. Transdev has sub-contracted Hyundai Rotem to undertake the maintenance function of the EMU units and Wairarapa locomotive hauled carriage fleet.

We operate the EMUs on the Johnsonville, Kapiti, Hutt and Melling lines. They are modern, in good condition, and will require replacement from the mid-2040s. Our Wairarapa carriages are operated on the Wairarapa line. They are approaching the end of their serviceable and safety lives and will require replacement by approximately 2027.

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The maintenance opex is approximately $12.5m per year and is forecast to gradually increase over the next 30 years to $15.1m per year as the fleet grows in response to predicted demand. Most of this expenditure includes cleaning, planned and corrective maintenance, vehicle configuration management, depot plant and equipment maintenance, inventory management, warehouse facility and inventory financing, software Escrow[14], and insurance.

Over the next 30 years, the renewal capex is forecast to be $691m. This expenditure will fluctuate over time due to the various lifecycles of rolling stock major components and systems. Over the next 10 years, the average renewal capital investment is expected to be approximately $9.3m per year (with a range between $5.4m and $16.5m).

The capex is required to renew the Wairarapa carriage fleet with the objectives of:

- Providing provide a low/zero emission fleet for additional capacity and service frequency on both the longer distance Wairarapa and Kapiti Lines;
- Boosting the capacity and service frequency of the suburban services operating on the current electrified network; in particular, on the Hutt and Kapiti Lines;
- Replacing the EMUs between 2040 and 2045, which will also provide additional capacity to meet demand projections.

Figure 23 shows our forecast rolling stock operational and capital expenditure.

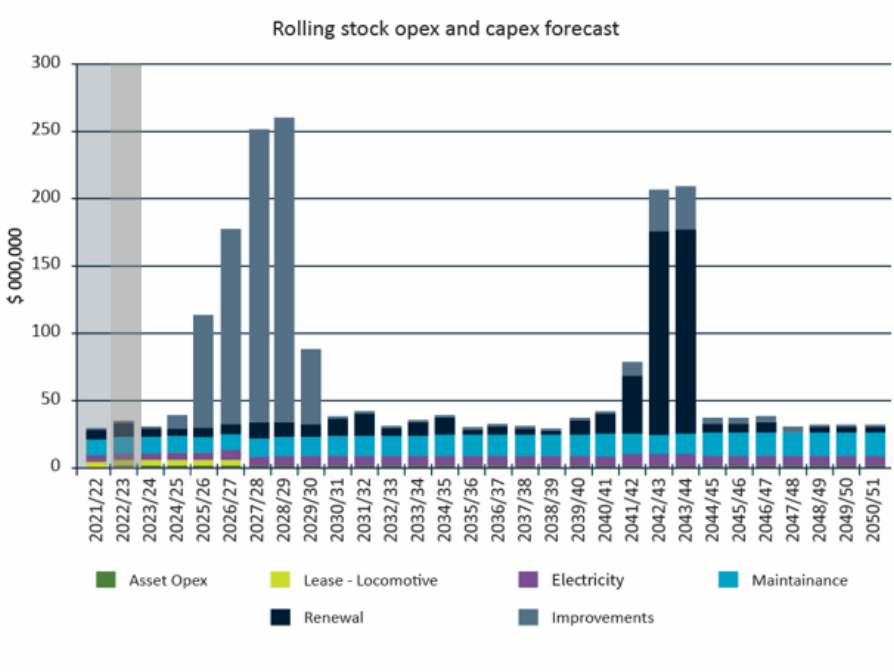


Figure 23: Rolling stock opex and capex forecast in 2022 dollars

[14] Escrow is a third-party Intellectual Property 'bank'

Strategic objectives

Our overarching objective is to provide high quality, safe, and fit for purpose rolling stock at the service frequency, level of comfort, and reliability expected by our customers.

To achieve this, our key objectives are:

Customer Experience:

- provide carriages designed to appropriate standards, to achieve the following outcomes:
  - all vehicles maintain comfortable interior temperature (HVAC system)
  - all vehicles have features for a wide range of users (wheelchairs, prams, cycle storage, visually impaired, hearing impaired, etc)
  - Passengers experience consistent and comfortable ride quality
- provide a full suite of information for all customers, including next stop passenger information, Public Address system, hearing loops, help points, route maps, and safety information.

Mode Shift:

- ensure our planned and heavy maintenance regime maintains the vehicles to the required level of condition and performance throughout their asset life so we achieve the availability and reliability standards in our performance measures
- ensure we plan for future capacity and account for vehicle procurement lead time

Decarbonisation

- ensure our replacement rolling stock is procured to achieve our decarbonisation strategies and service levels.

Safety

- provide carriages designed to appropriate safety standards to achieve the following outcomes:
  - rolling stock interfaces safely with the network infrastructure
  - carriages meet structural strength, fatigue, and crashworthiness requirements
  - door operation is safe
  - interior layout provides a safe and secure environment (i.e., lighting, CCTV Systems, help points, clear and open visibility)
  - maintain high train visibility

Our progress towards achieving these objectives is monitored as performance measures, which are described further below.

Our key strategies for achieving these key objectives are:

- specify, in our maintenance contract, the prescribed planned and heavy maintenance regime to ensure the vehicles remain at the required level of condition and performance throughout their asset life.
- monitor compliance with the contract through an assurance regime in particular:
  - compliance with the Minimum Vehicle Operating Standards (MVOS)
  - monthly performance lead and lag indicators, including corrective and preventive maintenance
  - regular maintenance management systems and processes
  - inventory and stock management and levels ensuring they are sufficient for foreseeable faults, planned and unplanned maintenance
- undertake and monitor a Failure Reporting Analysis and Corrective Action systems to ensure maintenance processes & procedures and vehicle design are continuously improving.
- undertake a robust engineering change process to ensure all changes are justified and well considered with respect to the overall performance (customer, safety, whole of life cost, etc) of the vehicle

- have a driver training simulator to enable training to be undertaken cost effectively, efficiently, and safely.
- undertake future demand modelling to forecast future rolling stock needs.

Asset characteristics - current state

Our EMUs are two-car units and are designed to run on all lines in Wellington's 1500V DC overhead electrified system. Each unit is made up of a semi-permanently coupled power car and trailer car. They are of stainless-steel construction and have a low-floor/level boarding section, air conditioning, passenger-operated doors, and an AC traction system with blended regenerative braking. The first EMU entered service in February 2011 and the last EMU in October 2016.

An EMU is shown in Figure 24below.

Figure 24: Four EMU's

We use our Wairarapa carriages to provide the longer-run train services on the non-electrified Wairarapa line. They are hauled by diesel-electric locomotives provided by KiwiRail, via a hook and tow agreement. The maximum train length used in service is nine carriages.

Our Wairarapa trains include a generator to provide onboard power to the train, and an accessible carriage. All the carriage types are interoperable, which means they can be

coupled as required. All passenger carriages are equipped with passenger operated power doors, air conditioning, and a passenger information system.

We have two types of Wairarapa carriages: the suburban Wairarapa (SW) carriages and the suburban express (SE) Wairarapa carriages. Both types were originally early 1970's British Rail Mk II carriages. Between 2007-2010 KiwiRail rebuilt and converted them to be compatible with the New Zealand rail network. During the conversion, bogies were fitted to the carriages.

The level of rebuild for the SE carriages was much less than that of the SW carriages as they were quickly introduced into service in 2010 to increase capacity on the Hutt Valley and Kapiti lines until the introduction of the EMUs. In 2013, further work, such as installation of standard toilets into two of the SEs, and an accessible toilet unit in the SEs, was carried out to make them suitable for use on the Wairarapa line to supplement the SW fleet. They re-entered service 1st of July 2013. The SE carriages retain many of the original MkII design features including original window configuration, lighting, and high-density airline-style seating.

Figure 25 is an example of our SW carriage.

Figure 25: SW carriage

Figure 26 is an example of our SE carriage.

Figure 26: SE carriage

The AG222 is a generator and luggage carriage; it does not have seating for passengers. It is used to increase bicycle and luggage capacity on scheduled services. It also is equipped with an electrical generator which can be used to supply power to trains if either an SE or SW generator is not available.

Figure 27 is an example of a AG222 carriage.

Figure 27: AG222 carriage

The EMU driver training simulator is a replica of the EMU driver cab. It enables drivers to be safely trained and assessed in a full range of operational environments and situations.

The Zephir 1800E electric crab is a road rail vehicle designed for moving rolling stock within a depot. They have the capability of providing tractive power and braking to a 200-tonne load. The Zephir 1800E electric crabs are used for safe controlled movements of rolling stock within the EMU depot and wheel lathe facilities.

Asset importance

The Wellington passenger rail network forms the backbone of our Public Transport network. Our rolling stock is a critical component of our rail network and provides a vital passenger transport link across the Greater Wellington region. The provision of modern, safe, and reliable rolling stock connects our customers to their places of work, schools, events, and communities. Realising our strategic goals of mode shift, decarbonisation of our public transport fleet, and improving our customer experience depend on modern, safe, and reliable rolling stock.

Our region's prosperity relies on our rolling stock to transport high volumes of commuters into and out of the CBD each day from surrounding communities. Our region's road network does not have capacity for these commuters. When there is an outage in our rail network, the region's road network becomes heavily congested. Outages on our rail network negatively impacts our customers, who often rely solely on our network to access jobs, education, healthcare, cultural activities, shops, friends, and whanau.

Without sufficient rolling stock capacity, the service we provide would be significantly degraded.

Unreliable rolling stock impacts our ability to deliver the required capacity; this ultimately affects our customer's experience of our service, which in turn reduces demand for our service. Our customers have high expectations for on-time performance and seating capacity. Analysis has shown these factors have a material impact on customer experience and demand for our rail service.

Our EMU driver training simulator is an integral part of driver training for new drivers, refresher training of experienced drivers, and qualification of drivers returning to service. The simulator allows new drivers to learn to drive in a safe and controlled environment and makes it possible to practice techniques and scenarios which are not practical or safe in a 'live' railway environment. The simulator simulates varying weather conditions, degraded modes, and potential hazards (e.g., earthquake, flood, track obstruction).

Population

Our rolling stock consists of seven asset types. The asset types by population are shown in Table 9.

Table 9: Rolling stock asset population

Asset types	Population	Seated Capacity
EMU 1, 2 Car Units	48	147
EMU 2, 2 Car Units	35	147
EMU driver training simulator	1	n/a
SW carriage cars	18	37-64
SE carriage cars	6	40-69
AG222 Cars	1	n/a
Zephir 1800E crab	2	n/a

Age profile and life expectancy

The age of our rolling stock ranges from 4 years to 50 years. Each rolling stock type has a different life expectancy. The expected life, along with the expected timeframe for half-life refurbishments and the end-of life and for each asset type, is summarised in Table 10.

Table 10: Age expectancy of rolling stock

Asset type	Current age	Standard base life	Mid-life refurb due	End-of life
EMU 1, two-Car Units	9-11 years	30 years	2025-2027	2040-42
EMU 2, 2- Car Units	5-7 years	30 years	2030-2031	2045-46
Matangi driver training simulator	3 years	28 years	2030	2050
SW carriage cars	46-51 Years Rebuilt and entered service 2007-08	20 years	Minor refurbishment in progress - due to be completed 2023	2027-2028
SE carriage cars	46-51 Years refurbished and entered service 2010	20 years	Minor refurbishment completed 2021	2027-28

Asset type	Current age	Standard base life	Mid-life refurb due	End-of life
AG222 Cars	41 years Refurbished and entered service 2008	20 years	Minor refurbishment Completed 2020	2027-28
Zephir 1800E crab	4 Years	30 years	2032	2047

Figure 28 shows our rolling stock age profile.

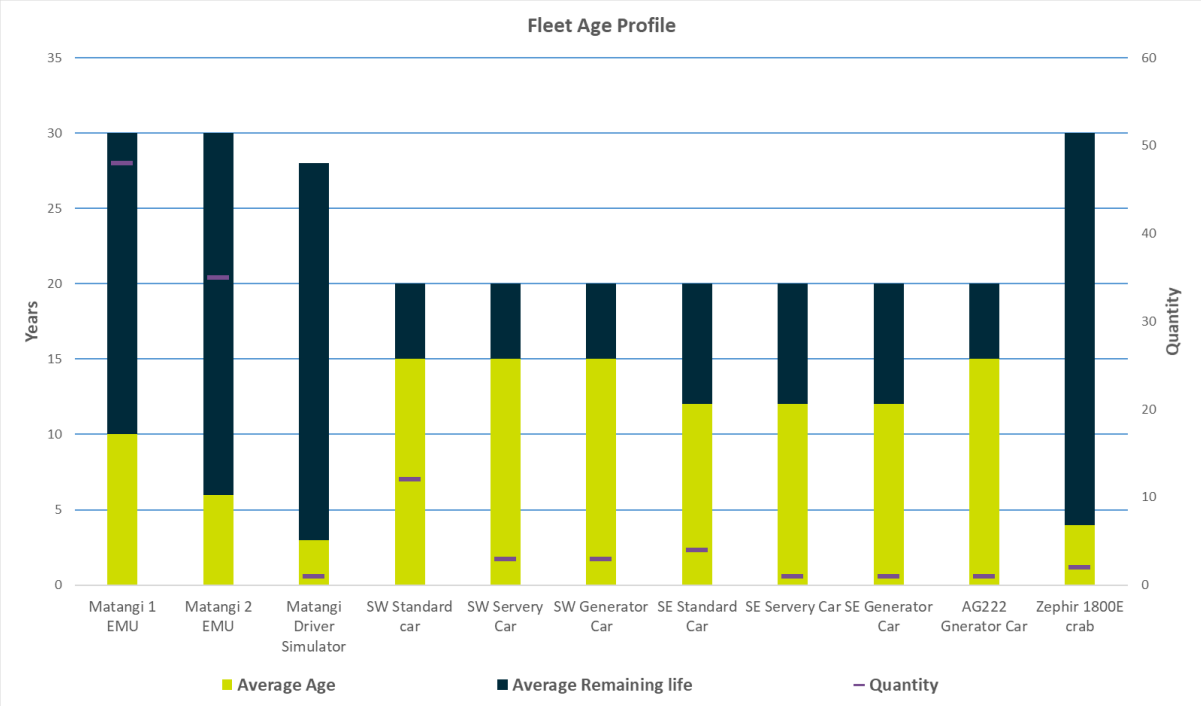


Figure 28: Rolling stock age profile

Asset condition

We determine the condition of our rolling stock assets by using the condition grade rating system within the International Infrastructure Management Manual (IIMM). Table 11 shows our condition rating description.

Table 11: Description of condition rating

Condition Rating	
Rating	**Description of Condition**
1	Very good condition only preventative maintenance required
2	Good condition: Minor maintenance required plus Preventative maintenance
3	Moderate condition: Significant maintenance required
4	Poor condition: Significant maintenance required
5	Poor condition: Unserviceable

Overall, the health of our rolling stock is good. Table 12 below summarises the current asset condition across our rolling stock assets.

Table 12: Rolling stock asset condition desktop assessment undertaken in 2022

Assets	Condition Rating
EMU 1	2.5
EMU 2	2
driver training simulator	1.3
SW	2.5 (2022)
SE	2.1 (2022)
AG222	2.2 (post minor refurbishment and generator replacement)
Zephir 1800E crab	1.3

The condition is described in more detail below.

EMUs

The EMU 1 fleet has an overall condition rating of 2.5 (good) and the EMU 2 fleet has an overall condition rating of 2 (good). The overall operational performance and reliability of the fleet is meeting expectations of a modern fleet.

The EMUs contain multiple sub-systems and components that form the train. Each of these sub-systems have a different expected life, and hence require replacement or refurbishment at different frequencies.

These assets (at the sub-system and aggregated up to provide overall condition rating) are monitored through an internal asset fleet condition review process which is peer reviewed at regular intervals by an external party.

An overhaul/renewal maintenance programme is in place. This is intended to maintain the condition of the vehicle and its sub systems/components throughout the design life of the vehicles. To maximise the efficiency of the heavy maintenance / renewal activities, these are grouped together at three yearly intervals for each unit, with the objective of lifting the condition grade back to the baseline.

The rail partnering contract includes a detailed MVOS to which the operator must adhere. It details the extent of allowable defects and the duration these defects can remain unrepaired. If the vehicle fails to meet this requirement, then it is removed from service for repair. The maintenance programme and the MVOS ensure the EMUs operating in service meet our expectations of reliability, appearance, customer safety, and comfort throughout the life of the asset.

The EMUs safety and customer features are commensurate with a rail vehicle manufactured in 2010 such as low floor accessibility, compliance with BS6855 Class 1B Fire Rating, and GM/RT2100 structural compliance including crashworthiness features such as anti-climb fins, and crumble zones.

EMU driver training simulator

The driver training simulator is in very good condition. It is located in a customised training facility with restricted access and is maintained by a dedicated and qualified technician.

Wairarapa carriages (carriages)

The SW & SE carriage fleet condition is monitored through an internal asset condition review. A maintenance programme is in place to maintain the condition throughout the design life of the carriages. This maintenance plan is time and distance-based with heavy maintenance work carried out every 300,000-400,000 kilometres.

To maximise the efficiency of the heavy maintenance and renewal activities, they are grouped together into two key overhaul cycles (half wheel life, and full wheel life), with the objective of lifting the condition grade back to the baseline.

As for the EMUs, the MVOS also details the standard to which the maintenance service provider must adhere for these vehicles and contains the same conditions for when the standards are not met.

Despite their age and the fact they are nearing their end of life, these carriages have an acceptable condition rating, with the SW fleet having a moderate condition and the SE fleet with a good condition. Operational reliability and availability are good.

SW Carriages

The SW carriages are currently undergoing minor refurbishment which addresses the passenger facing wear that was evident in the 2018 condition assessment. This programme of work is due to be completed in early 2023 and will ensure the carriages will meet their 20-year design life. The work includes corrosion repair of the body shell and repainting, replacing the windows with double glazing units which meet current design standards, concertina rebuild, carpet replacement, HVAC overhaul and performance improvement, and seat refurbishment. The fleet currently has a 50/50 split of refurbished vs non refurbished carriages. The refurbished carriages have a condition of 2.09 and the non-refurbished carriages a condition of 3; this gives an average overall condition rating of 2.54. Overall condition rating will improve as the balance of the SW carriages undergo refurbishment and heavy maintenance activities.

The SW carriages are nearing the end of their safety design life, which expires in 2027/28. This life cannot be cost effectively extended.

SE Carriages

The SE carriages underwent refurbishment in 2020/21 addressing the known issues as identified in the 2018 condition assessment. The scope of the refurbishment programme included corrosion repair of the body shell and repainting, replacing the windows with double glazing units which meet current design standards, concertina rebuild, carpet replacement, and seat refurbishment. HVAC overhaul was not included in the scope of work, but minor upgrades may be required before the end of life. The condition of the SE carriages is considered good with a rating of 2.1.

The SW carriages are nearing the end of their safety design life, which expires in 2027/28. This life cannot be cost effectively extended.

AG222

The AG222 has a condition rating of good. It received minor refurbishment in 2020 as substantial corrosion was identified and removed in the body and doors and rotten timber flooring was replaced. The AG222 is an old vehicle. However, maintenance programmes to maintain bogies, brake equipment, draw-gear, and surface integrity will mean this asset will not reach the end-of-life until2027/28.

The generator set is expected to have a reliable working life of 25,000 operating hours and was replaced in line with the heavy maintenance schedule in 2021.

A specific overhaul and renewal maintenance programme will maintain the condition of the carriages and its sub systems/components throughout the design life. To maximise the efficiency of the heavy maintenance and renewal activities, they are grouped together into two key overhaul cycles (half wheel life, and full wheel life), with the objective of lifting the condition grade back to the baseline.

Like the EMUs and Wairarapa carriages, to ensure the AG222 meets our expectations in reliability, and appearance, as well as safety throughout the life of the asset, the MVOS details the standard to which the operator must adhere for the AG222 and the actions required should that standard not be met.

Zephir 1800E crab

The Zephir 1800E crabs were built between March and May 2017 and are in very good condition.

Overhaul and renewal maintenance programmes are in place which maintain the condition of the vehicle and its sub systems/components throughout the design life of the vehicles.

Asset risk

Rolling stock are critical assets. Whilst the likelihood of losing all our rolling stock at once is very low, there are several risks that have the potential to affect the function or service of our rolling stock assets. These risks manifest across the asset base to varying degrees. We have limited ability to quickly replace any lost or damaged rolling stock as our trains are bespoke and purpose-built due to the narrow-gauge railway 15000vdc we have in Wellington.

Insurance plays a key role in mitigating the financial risks. Our rolling stock is insured for material damage. To ensure premiums remain cost-effective, we take a Maximum Probably Loss approach.[15]

The following describes the risks and mitigations to our rolling stock assets.

Environmental Risks

The largest risk to our rolling stock assets is a tsunami which inundates the Wellington railway yards where a significant proportion of the fleet is stored between peaks during the day. The rail network on which our rolling stock operates has low resilience to adverse weather and natural disasters; these have the potential to damage our assets and ongoing service. KiwiRail, as the network asset owner, manages these risks with our input.

Such environmental risks include:

[15] The realistic maximum loss in a single event

- overtopping of the tracks and trains caused by increased wave action and storm surge
- flooding
- earthquakes
- network slope failure due to historic engineering practices, weather conditions, climate change, and human interaction.

There are a range of Wellington Metro Upgrade Projects that are improving the resilience of Wellington's network to adverse weather and natural disaster. However, further investment is needed.

Operational Risks

Driver error can lead to vehicle collision or derailment. Our trains are equipped with a range of features such as:

- a driver vigilance device
- over-speed protection
- tripcock devices which apply the brakes in case of signal overrun.

Unpredictable low adhesion track conditions which impede braking is another serious risk which can lead to 'signal passed at danger' and in extreme cases, vehicle collision. Special grip improving "sandite" machines have been installed in high-risk locations around the network.

Driver training and awareness is a key mitigation of operational risks that relate to driver training or inexperience. Our EMU driver training simulator enables drivers to practice driving in a range of unusual conditions and degraded modes which better equips them for hazardous conditions.

Our Wairarapa carriages were designed and built in the 1970's. Although upgraded to meet operational requirements, they are still based on a 50-year-old design. The age profile of these carriages creates several specific risks. These include:

1. Crash worthiness design standards have improved significantly since the carriages were designed. Whilst condition is maintained, the fleet will not perform as well as new rolling stock in an accident. As such, this risk continues to increase with age and increased network issues such as slope instability.
2. Unknown Structural defects due to initial manufacture or rebuild/refurbishment error or degradation in structural materials.

Identification, assessment, and mitigation of these operational risks is ongoing and requires a multi-party approach involving Metlink, KiwiRail, Waka Kotahi, and Transdev.

Equipment failure and maintenance induced defects

Our rolling stock assets are at risk of equipment failure and maintenance induced defects.

The risk of equipment failure is managed through our maintenance plan. The maintenance plan has been informed by the probability and criticality of risks determined by Failure Mode Effects and Criticality (FMECA). This includes regular inspection of critical equipment and replacement, or refurbishment based on equipment condition or anticipated service life. Unexpected failures and defects are investigated using the Failure Reporting, Analysis, and Corrective Action System (FRACAS) to determine root causes and check and update the FMECA.

Maintenance induced faults are reduced by identifying high-risk maintenance activities and defining the required experience and qualification to undertake the task. In-service maintenance induced defects are also handled by the FRACAS to understand root-causes and prevent recurrence.

Supply chain continuity and obsolescence

A consistent single fleet increases the risks associated with supply chain continuity. Our rolling stock assets rely on maintenance spare parts and consumables which are manufactured overseas. In many cases, the parts are specifically designed for our EMUs and the supplier pool is limited. As such, supply continuity over the 30-year design life is uncertain. To help mitigate this risk, software source code is held in Escrow, and most suppliers have signed Continuity of Supply agreements.

The covid-19 pandemic has increased lead times and made transportation of goods to New Zealand more challenging. This is requiring more planning and management and essentially increased the risk of material shortages resulting in vehicle unavailability.

Obsolescence

Obsolescence risk for our rolling stock assets also include digital obsolescence and future safety, accessibility, and network compatibility obsolescence. Many of the EMU systems rely on microprocessor controlled electronic equipment and, over time, this equipment will become obsolete and require replacement and upgrade. In addition to planned maintenance interventions, which include computer chip and memory replacements, the EMU fleet is planned for a mid-life upgrade when they reach the 15-year mark. The scope of this mid-life refurbishment will include required technology upgrades of the computer systems to ensure the design life can be achieved.

Our ongoing ability to meet safety, accessibility, and network compatibility requirements is always a risk to assets with a long service life operating in the context of changing legislative

and regulatory requirements. It is certain that the Wellington Metro Network will be re-signalled within the EMU's expected lifetime. This will likely require major retrofit of modern signalling equipment to maintain compatibility with the network. It is also possible that unforeseen changes are required to meet future safety or network standards. Similarly, there could be future accessibility or human factor requirements which our rolling stock cannot meet and will require retrofit or potentially early replacement.

Due to the age of our Wairarapa carriages, obsolescence risk is high. We have no warranties or other contractual safeguards that reduce this risk.

Asset Performance

Our rolling stock assets are generally performing well. Table 13 outlines our rolling stock asset and service performance objectives.

Table 13: Rolling stock asset and service performance objectives

Asset type	Functional quality	Customer Experience	Safety
EMU 2 Car Units	**Reliability)**: Vehicle reliability MDBF > 40,000km **Availability (PI1)**: non - availability shall be equal to or less than 1 vehicle per month during the AM and PM Peaks **MVOS**: On each day the total number of vehicles used in service which exceed the acceptable limits of the Operationally Restricted - Minimum Vehicle Operating Standards requirements shall be less than or equal to 2 **Rail vehicle Utilisation** (PI3): Aim to get even wear and tear across the fleet	**MVOS**: Presentation Defects - Minimum Vehicle Operating Standards requirements shall be less than or equal to 2. **Customer Satisfaction Survey:** Comfort of the inside temperature How often the service runs Having enough seats available Service being on time	Maintenance compliance against plan
EMU simulator	Availability	N/A	N/A
SW carriages	**Reliability:** Vehicle reliability MDBF > 80,000km	**MVOS:** Presentation Defects - Minimum Vehicle Operating Standards requirements	Maintenance compliance against plan
SE carriages			

AG222 Cars	**Availability:** non - availability shall be equal to or less than 1 vehicle per month during the AM and PM Peaks **MVOS:** On each day the total number of vehicles used in service which exceed the acceptable limits of the Operationally Restricted - Minimum Vehicle Operating Standards requirements shall be less than or equal to 2 **Rail vehicle Utilisation:** Aim to get even wear and tear across the fleet	shall be less than or equal to 2 **Customer Satisfaction Survey:** Comfort of the inside temperature How often the service runs Having enough seats available Service being on time	
Zephir 1800E crab	Availability	N/A	Maintenance compliance against plan

EMUs

The average reliability of our EMUs is consistently above our asset performance target of mean distance between service failures (MDBF) of 40,000km. They are meeting design objectives and performing well against similar vehicles internationally. Figure 29 shows the reliability of the EMU Fleet.

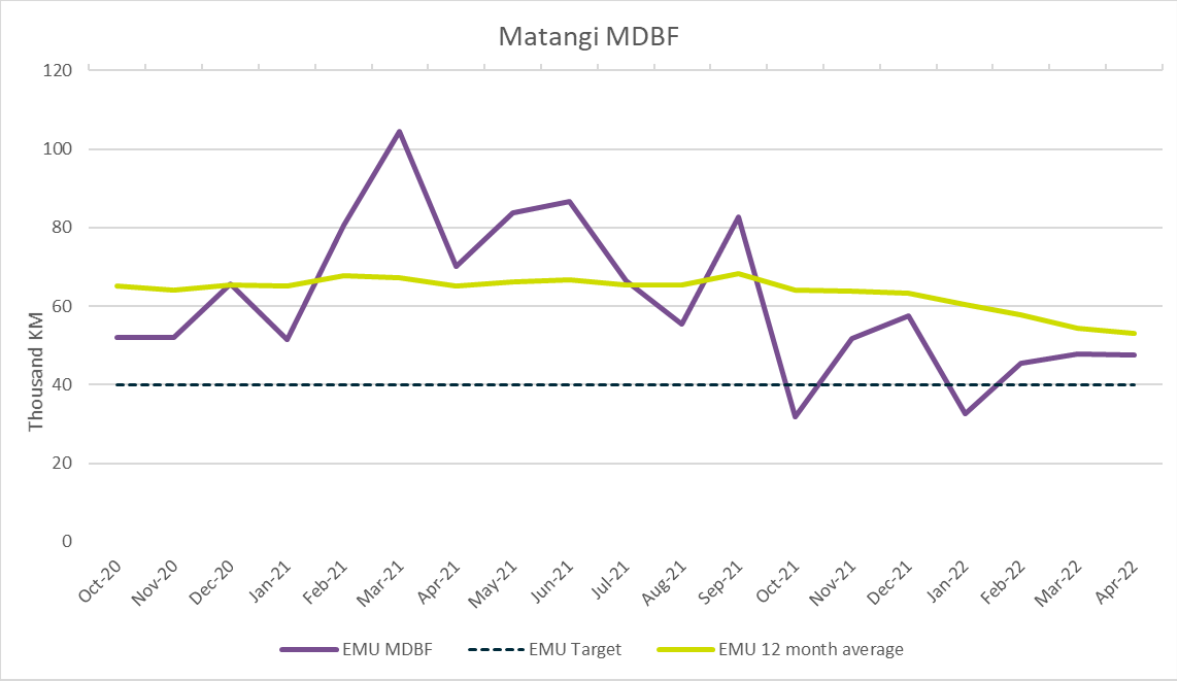


Figure 29: EMU reliability

We use FRACAS to identify defects that affect reliability. We investigate the root causes of these defects and design corrective actions to resolve them. In addition to FRACAS, we have a reliability growth plan in place to target the highest 'reliability affecting' issues and forecast the impact of the corrective actions.

This year's reliability improvement initiatives include:

- door track improvement modifications
- Coil design improvement
- Redefine maintenance cycle for vigilance pedals
- TGPIS cleaning improvements
- C38 Valve improvement
- Valve design improvement
- Realtime APC and TMS reporting and remote CCTV download

Once implemented, these improvements should see an upward trend in reliability over the next 24 months.

Our EMUs provide a good quality customer experience through:

- sealed windows with air conditioning, for quietness and comfort
- smooth acceleration, deceleration, and ride quality (within the limitations of the track quality prevailing in the Wellington Metro area)
- passenger-operated doors to minimize unnecessary opening/closing cycles and associated drafts and heat loss or gain
- passenger information displays and auto generated announcements
- level boarding (from compliant platforms) and a flat-floor section, particularly convenient for bicycles, wheelchair, mobility scooters, and the mobility-impaired
- open access between the cars of each pair allowing easy movement to reduce local crowding.

Our EMUs meet modern safety standards. They are fitted with the following specific safety features:

- a fire safety design appropriate to vehicles with a significant proportion of tunnel operation
- crashworthiness design including a crumple zone and anti-climb fittings appropriate to a mixed-traffic (freight and passenger) rail-line
- an easily deployed evacuation ramp with handrails at each end door
- CCTV and personal call points, to increase passenger security.

Wairarapa carriages

Reliability of our Wairarapa carriages is measured as a collective rather than at the carriage level. The MDBF target for our Wairarapa carriages is 80,000km. Reliability is consistently above the MDBF target. Our Wairarapa carriages are meeting design objectives and performing well against similar vehicles internationally.

Figure 30 shows our Wairarapa carriage reliability. Due to ongoing network renewal activities the number of service kms accumulated by the fleet has dramatically decreased. As such, failures that affect service have a larger impact on the reliability results.

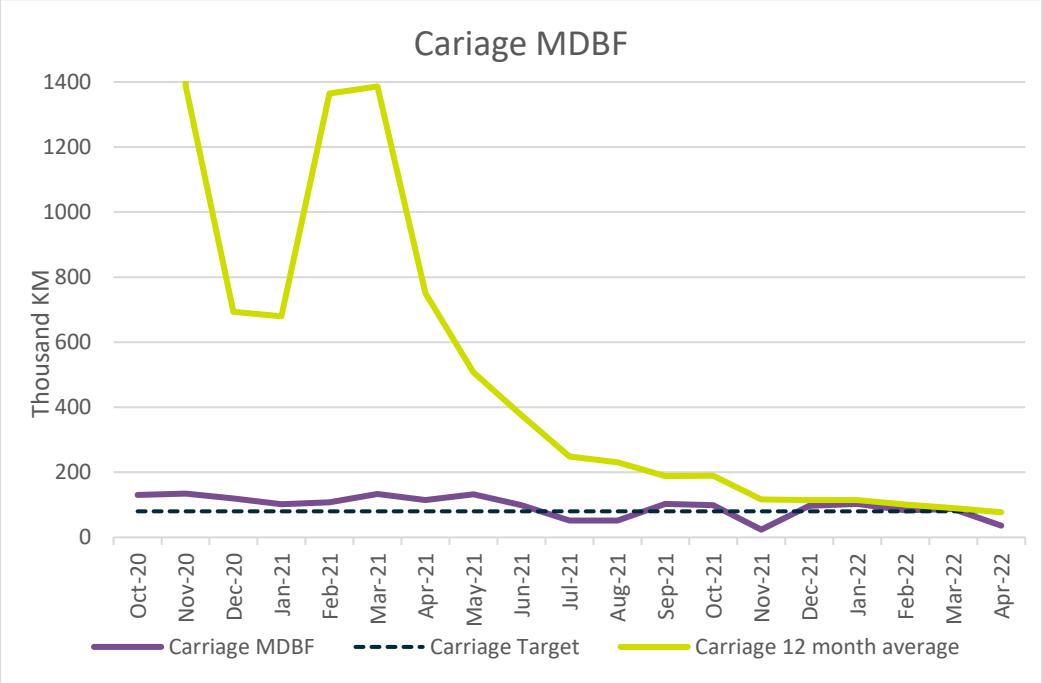


Figure 30: Wairarapa carriage fleet reliability

FRACAS is also used for our Wairarapa carriages in the same way, and for the same purposes, as our EMUs.

Current reliability improvement initiatives include:

- CCTV system replacement
- Addition of automatic passenger counting
- Door Cam Follower Bearing maintenance improvement.

Prior to Covid-19, patronage growth was exceeding forecast. Therefore, the ability to provide sufficient capacity during peak times became challenging. The SW and SE carriage quality and functionality largely meet the requirements for our Wairarapa services with

modern amenities (air conditioning, passenger information system, etc). The locomotive hauled carriage operating model is dated and, as a result, journey times are sub-optimal.

Passenger accessibility on most of the carriage fleet is poor by today's standards; we have four accessible carriages in our fleet, with three being used every peak. The mobility-impaired access is via hydraulic lifts installed in each SWS/SES carriage, which also has a disabled-access toilet.

The carriage fleet provides a good quality passenger environment, including:

- onboard toilets
- passenger-operated end doors, with automatic extendable steps
- open gangways, to enable passengers to traverse the entire train's length
- low interior noise levels achieved through end vestibules
- automatic internal vestibule doors as per long-distance train practice
- climate control with air conditioning, heating, and ventilation systems
- Passenger Information Displays and automated announcement system
- high-backed long-distance seating including head rest
- tables
- carpet, modern lighting, and interior décor.

The SW fleet provides slightly higher level of passenger amenity with the following additional features:

- seats fitted with drop down tables and power outlets for laptops, and overhead reading lights
- onboard snack vending machines
- onboard potable water coolers
- large full-length windows for improved viewing and curtains.

The ride quality between the SE and SW fleets also varies. Both are acceptable and within the limitations of the track quality prevailing on the Wairarapa line. The SW fleet has slightly lower performance with its coil spring suspension system, while the SE has a modern constant ride height air-sprung bogie.

The overall journey time and service frequency of the service is constrained by the type of rolling stock used and the condition of the network. A locomotive-hauled carriage passenger train has much lower acceleration and de-acceleration profiles in comparison to the EMUs. The locomotive also needs to be cut off, turned, and re-coupled to the train after each trip. This incurs high operating costs and slows the equipment cycle time leading to lower utilisation and less platform and service capacity. This ultimately reduces customer experience and satisfaction.

The investment plan provides for replacement rolling stock and reflects Kiwirail's renewal work on the track to improve the Wairarapa service performance.

EMU driving simulator and Zephir shunt crabs

The EMU driver training simulator and the Zephir electric shunt crabs are meeting performance expectations as outlined in Table 13.

Asset information

We have a high level of confidence in our asset data for our rolling stock fleets. We have reliable data about the asset type, condition, construction date, location, quantity, and performance.

All vehicle and vehicle documentation changes since Greater Wellington has obtained ownership have been managed through an Engineering Change process. Part of change implementation includes updating fleet documentation.

For the EMU fleet, the level of knowledge and documentation is extensive, covering the vehicle design and manufacture, as well as the maintenance records. Our primary data sources include design documentation, manufacturing records, Fleet Maintenance Plan, as-built drawings, and FMECA records.

The Wairarapa carriage fleet documentation is not as extensive as the EMU but still provides the level of information needed to maintain and operate the vehicles in line with the design requirements.

For all our vehicle fleet, the vehicle asset data is available through the IBM Maximo Maintenance Management Information System (MMIS) which is managed by vehicle services subcontractor.

Fleet condition assessments are undertaken every two-years to determine asset condition grades and highlight areas of issue or risk. The condition assessments are undertaken internally or externally.

Lifecycle Management and Activities

Our asset management lifecycle approach for our rolling stock is to ensure that the vehicles can meet our service requirements (performance, reliability, safety, comfort, availability) for the duration of their expected life.

Planning

Prudent management of the rolling stock fleet ensures the necessary capacity, reliability, safety, and customer expectations can be delivered every day into the future.

Due to the long lead times to undertake renewals, upgrades, and replacement activities, forward planning is critical for rolling stock fleet management to ensure that the demanded

capacity and frequency can be met and that journeys are on-time to meet customers' expectations.

Capacity management - current and future requirements

Rolling stock is custom built for the Wellington rail environment. Procuring a few additional vehicles to meet demand growth is not cost-effective due to the cost to design and set up production for a small vehicle order. The lead time to procure a new fleet of trains for the Wellington rail environment is typically 5-6 years and forward planning is critical to manage the level of investment and capacity demands.

Capacity planning is undertaken with the objective of procuring sufficiently large quantities to attract international market attention at affordable prices. Ideally, procurement for capacity should be managed at the same time as procurement for renewal. However, where growth is accelerated, additional out of cycle capacity uplifts are likely to be required.

Figure 31shows rail's peak hour demand and capacity initiatives.

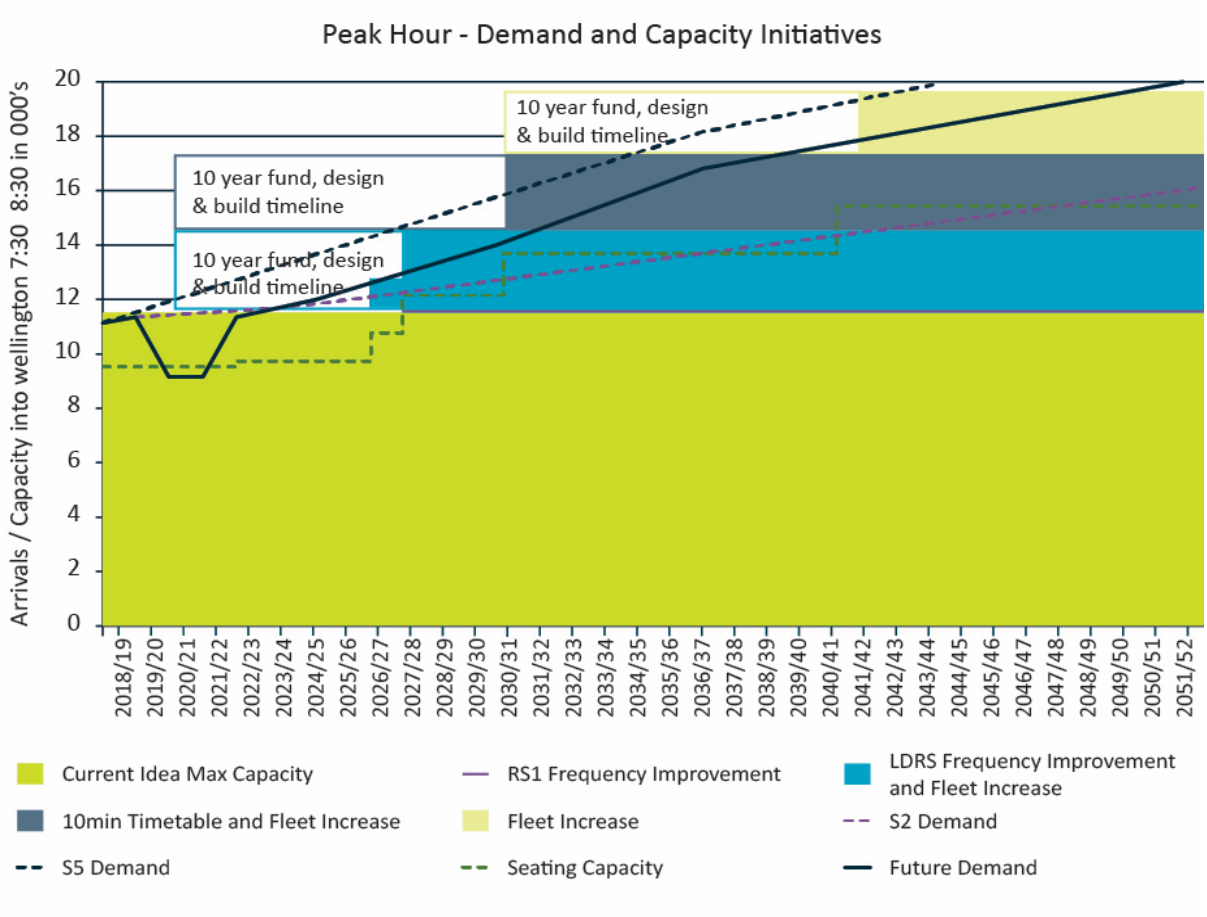


Figure 31: Rail peak hour demand and capacity initiatives

Our current forecast and plans are based on the Wairarapa fleet capacity increase being timed to coincide with the proposed fleet renewal in 2027.

Cost Estimation

Cost estimation for planning purposes is established through knowledge of the market and previous activities of similar nature.

The maintenance and renewal costs are based on fixed price agreements as part of the operator maintenance contract. We have confidence in the costs during the term of the contract (through to 2029). The refurbishment and renewal activities in the contract are currently priced below market actuals. Therefore, a significant cost uplift is expected at the end of the contract term.

The cost for new rolling stock is difficult to accurately estimate, as the cost is impacted by the order size, specification, and the market. Indicative costings are obtained through enquires with manufacturers.

Table 14 below outlines the risks to our forecasting assumptions. If these risks manifest, investment will be prioritised based on risk and criticality.

Table 14: Risks to significant forecasting assumptions

Risk	Risk Level	Likely Financial Effect	Consequence/Mitigation Strategy
Inflation is lower or higher than anticipated	Med	Med	Changes the level of rates and debts
Interest rates are higher or lower	Med	Med	Changes the level of rates and debts/offset by hedging strategies
Funding from Waka Kotahi and other funding streams is higher or lower	High	High	Changes the levels of rates and debts. Review level of service and work programmes, adjust as required Strengthen relationships with funding partners
Exchange rate is higher or lower affecting the purchase price of passenger rolling stock	Med	Med	Changes levels of rates and debts/hedging of known liabilities and seek more funding from the Crown
Natural disaster/flood event damages Greater Wellington's property, plant, and equipment	Med	Med	Call on insurance and self-insurance funds, adjust operating programmes

Risk	Risk Level	Likely Financial Effect	Consequence/Mitigation Strategy
			and change the level of rates and debt if necessary Working with access provider to improve network resilience
Patronage forecast is lower or higher than anticipated	Med	Med	Regular review of long-term strategic plans and growth forecasts, modelling growth scenarios and evaluating interventions on a risk basis at time of investment decision making

Procurement

The procurement of new rolling stock is typically undertaken through an international two stage (EOI and RFT) procurement process. The procurement includes design and build, but there is an opportunity to include maintenance, operation, maintenance facilities, and financing.

Procurement for the maintenance and refurbishment of existing rolling stock was undertaken via a two stage (EOI / RFT) international procurement process and included the operation of the rail service. The current contract is a 9 plus 6-year contract and is 4 years into its term. A 6-year extension is based on performance.

Contingency planning

The following specific contingency planning is undertaken:

1. We procure sufficient rolling stock to allow for maintenance, renewals, and mid-life activities throughout the lifecycle of the asset, as well as patronage growth.
2. We procure sufficient critical inventory spares during the procurement of new trains to enable renewal activities to occur (i.e., sufficiently large rotable pool). Purchasing insurance spares is also critical for contingency planning. In addition, we procure spare items that are at risk of being damaged or broken during the life of the fleet, and are likely to be difficult to source, expensive, and/or have long lead times.
3. Our contract with our rolling stock maintenance provider allows for a range of contingency options for Greater Wellington to transfer staff and maintenance operation to Greater Wellington or alternative provider if the provider were to withdraw from the contract.

Deliver

Within the Deliver lifecycle stage, we construct and commission the programmes of work that have been identified within the Planning Stage.

When a new rolling stock contract is awarded, we maintain a high level of management oversight throughout the design, manufacture, testing, and commissioning process to ensure that the ideal design, quality, reliability, customer, and safety expectations are achieved.

Operate

Operation and maintenance are contracted through the Partnering Contract. The Partnering contract is a nine plus six-year service contract which commenced in 2016.

The Partnering Contract includes several provisions to ensure the assets are operated in a manner which helps to achieve our desired levels of service; these include:

- a requirement for the fleet to be operated to balance the fleet utilisation within a specific set of MVOS
- a regular interior and exterior cleaning regime
- a regular reporting of asset utilisation, performance, and maintenance activities
- continuous improvement processes such as FRACAS, Warranty Management Configuration and Change Control Processes
- security management services, and rectification of vandalism.

Maintain

We undertake regular exterior and interior cleaning, including graffiti removal, of our rolling stock assets.

Figure 32shows our EMUs in the maintenance depot.

Figure 32: EMUs in the maintenance depot

The maintenance requirements for our rolling stock assets are outlined below.

EMUs

The maintenance programme for our EMUs is shown in Table 15. The maintenance programme has been developed to meet GWRL expectations of service reliability and quality throughout the life of the fleet.

Table 15: EMU's maintenance schedule

Maintenance Check	Interval	
	Time	Mileage
Planned Maintenance		
'A' Check	30 days	7,500 km
'B' Check	60 days	15,000 km
Annual Electrical Fitness Test	1 year	N/A

Maintenance Check	Interval	
	Time	Mileage
Renewals / Heavy Maintenance		
'C1' Check	3 years & 21 Years	270,000 km & 1,890,000km
'C2' Check	6 years & 24 Years	540,000 km & 2,160,000km
'C3' Check	9 years & 27 Years	810,000 km & 2,430,000km
'C4' Check	12 years & 30 Years	1,080,000 km & 2,700,000km
'C5' Check	15 years	1,350,000 km
'C6' Check	18 Years	1,620,000km

Technology on our EMUs, such as the AC traction equipment (VVVF inverters and traction motors), is new to the NZ rail industry. As a result, experienced overhaulers are only available overseas or alternatively, specialist tooling, processes, and expertise needs to be developed in New Zealand. During the planning of these renewal and overhaul activities, the options, lead times, benefits, risks, and costs are evaluated for each component. Changes to fleet maintenance must be approved by GWRL and potentially any cost savings shared.

Maintenance is based on component exchange to reduce out-of-service time and to standardise component repair processes. We seek to maintain fleet availability within 90-95% during peak service periods.

Major component renewals, replacements, refurbishment are carried out during C Checks – heavy maintenance, which are budgeted as Renewals or Capex. The life of major components and systems on a train have different periods. Our renewal programme bundles heavy maintenance into a C Check, which is undertaken every three years. Each check focuses on different components and systems based on its life cycle.

As part of the overhaul process, we work with our contractors to seek opportunities to further optimise the renewal programme and extend the overhaul intervals; this reduces the whole of life cost and/or risk profile of the asset. Where possible, savings are shared with the maintenance provider.

All heavy maintenance occurs at the first-line maintenance depot. We have planned a half-life refurbishment (rehabilitation) programme in 2025-28 in conjunction with the C5 check to implement technology upgrades and refit the interior of the trains. We will also consider increased safety features (such as European Train Control System (ETCS)) at this time subject to a business case and funding support. Figure 33 shows our EMU heavy maintenance expenditure.

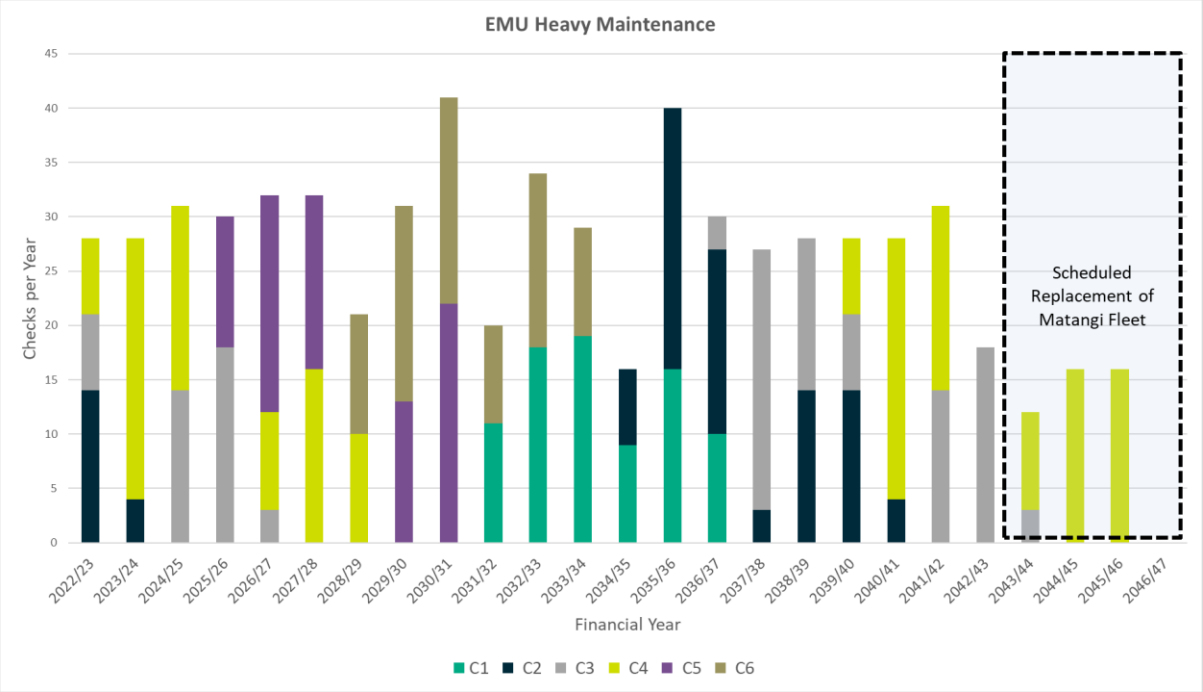


Figure 33: EMU heavy maintenance expenditure

The planned fleet life is 30 years, meaning fleet replacement can be expected to occur around 2040-47, subject to life-extending initiatives.

Figure 34 shows our carriage heavy maintenance and refurbishment expenditure.

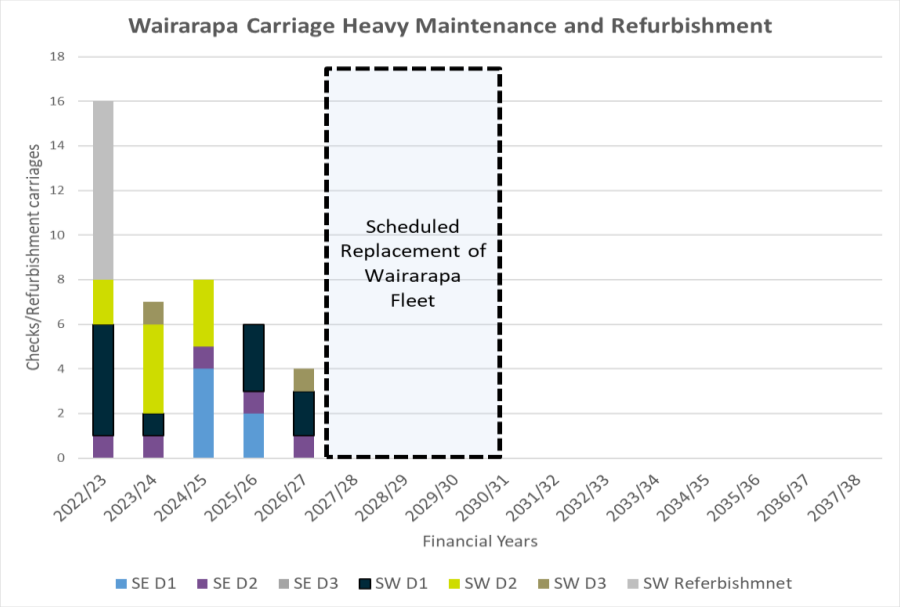


Figure 34: Carriage heavy maintenance and refurbishment expenditure

A business case has been submitted for funding to replace the Wairarapa carriages in 2027/28. Any delay in the funding approval, may result in discontinuity of service, or quality of service that can be delivered (lower speed, or capacity), because of these carriages being at the end of their safety life.

EMU driver training simulator

The EMU driver training simulator has the following preventative maintenance requirements:

1 month:	Cleaning
6 months:	Calibration and database checks
12 months:	Deep cleaning and data archiving
4 years:	UPS battery replacement

SW class, SE class and AG222 carriages

SW, SE, and AG carriages are maintained by our maintenance contractor in the KiwiRail owned Carriage Depot, which also supports KiwiRail's other passenger carriage services. It includes an automated exterior wash plant and a stabling and marshalling yard. Cleaning is the same as for the EMUs.

The maintenance programme for the carriages, has been developed to meet our expectations of service reliability and quality throughout the life of the assets. Table 16 shows the carriage maintenance schedule.

Table 16: Carriage maintenance schedule

Maintenance Check	Interval	
	Time	Mileage
Planned Maintenance		
Servicing	As required	
Daily	When carriage is in the Wellington carriage depot	Max 1500km
'A' Check		12,000km
'B' Check		24,000km
'C' Check (including electrical warrant of fitness)	12 months	
Generator Servicing	450 & 1800 hours	
Renewals / Heavy Maintenance		
'D1' Check	Half wheel life	Approximately 300,000 -400,000km
'D2' Check – Bogie Overhaul	Full wheel life	Approximately 600,000km – 800,000km
'D3' Check – Generator Replacement	25,000 hours	

Maintenance practices and cost sharing arrangements are the same as for the EMUs.

The components and systems on a carriage are far less extensive than on the EMUs. Renewal programmes are bundled into three different renewal programmes called D Checks; these checks are undertaken at half wheel life and full wheel life (due to the wheel replacement being the most significant component on a carriage), and 25,000 hrs of generator operation. All renewal activities are planned to occur at the first-line maintenance depot.

Major component renewals and replacements are carried out during the D Checks, which are budgeted as Renewals.

Zephir 1800E crab

Table 17 shows the Zephir 1800E crab preventative maintenance plan which is built around hours of operation.

Table 17: Zephir 1800E crab preventative maintenance requirements

Hours of operation	Overview of requirements
Every 500	General inspection of components, insulation checks, battery checks, lubrication levels, and Functional tests
Every 1000	Lubrication, oil and filter replacement, security of fasteners
Every 3000	Replace hydraulic oil
~6000	Rubber rail wheels
~12000	Battery pack replacement

The preventative maintenance programme is included within the vehicle services contract.

Divest or Dispose

There are currently no plans to divest or dispose of rolling stock other than when it is at end of life and has been replaced with a new fleet.

The market for resale of New Zealand end of life passenger rolling stock is limited as there are limited third world countries or developing nations which have a narrow-gauge railway. While there is potentially some resale for the Wairarapa carriage fleet (locomotive hauled) for heritage operators or similar within New Zealand, it is unlikely there is a need for the entire fleet. The practical resale opportunities for the EMUs are almost none, due to Wellington's unique narrow gauge and 15000vdc railway network.

While resale opportunities will be explored, it is likely the most practical option for disposal is likely to be scrapping.

Forecast expenditure

Figure 35 shows our rolling stock operational and capital expenditure forecast.

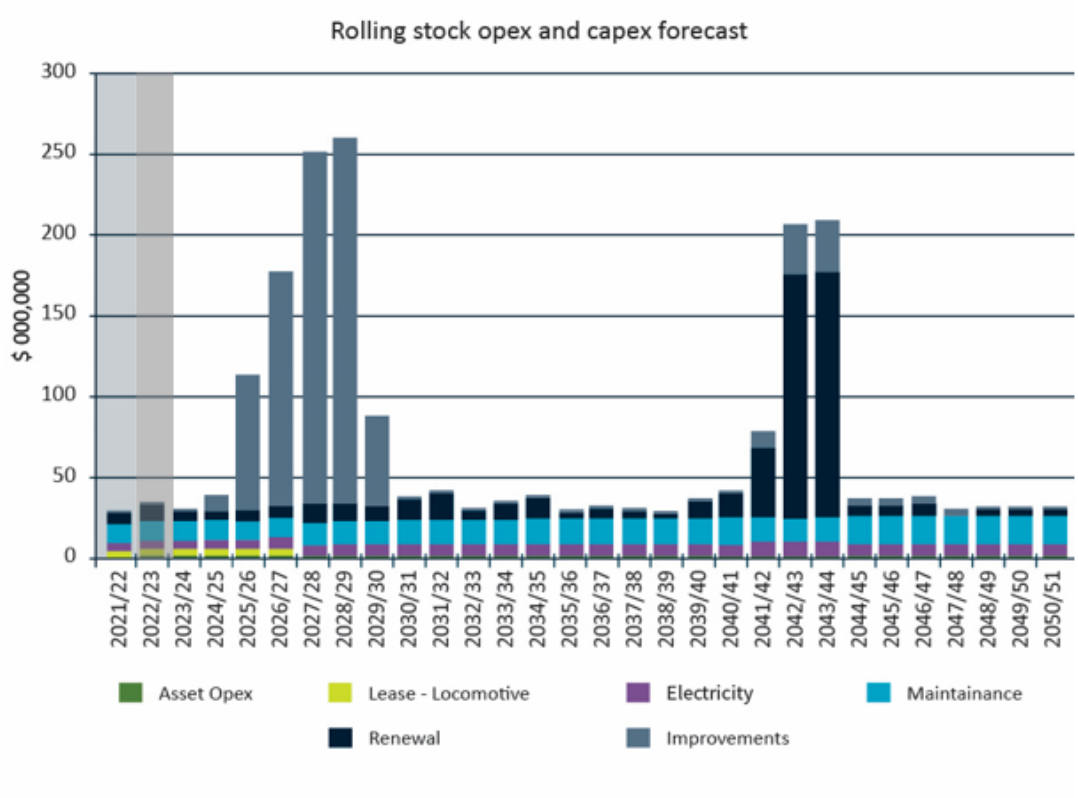


Figure 35: Rolling stock operational and capital expenditure forecast in 2021 dollars

Operating expenditure

The operational maintenance expenditure for the rolling stock fleet is currently approximately $12.5m per year and is forecast to gradually increase over the next 30 years to $15.1m per year as the fleet grows in response to the predicted demand.

Most of the operational maintenance costs for the rolling stock assets are within a fixed price contract with our contracted operator and maintainer Transdev / Hyundai-Rotem; these costs are reflected in our 30-year asset investment plan. These operational costs include cleaning, planned maintenance and corrective maintenance, depot plant and equipment maintenance, inventory management, warehouse facility and inventory financing, software Escrow, and insurance.

Capital Expenditure

As shown in Figure 35 above, the renewal capital expenditure for the rolling stock fleet is forecast to fluctuate over time due to the various life cycles of rolling stock major components and systems. Over the next 10 years, the average renewal capital investment is expected to be approximately $9.3m per year (with a range between $5.4m and $16.5m).

However, over the next 30 years, we have forecast:

- substantial investment in replacement and additional rolling stock. This is for the renewal of the carriage fleet, and provision a low/zero emission fleet for additional capacity and service frequency on both the longer distance Wairarapa and Kapiti Lines.
- investment to boost the capacity and service frequency of the suburban services operating on the current electrified network; in particular, on the Hutt and Kapiti Lines.
- investment in replacement and additional rolling stock between 2040 and 2045 to enable replacement of the EMU fleet and provide additional capacity for the ongoing increases in demand.

Rail Station Infrastructure Asset Class Plan

This asset class plan describes our asset lifecycle management of our station infrastructure assets. Our station infrastructure assets are located on rail platforms which are owned and operated by KiwiRail.

Our station infrastructure assets consist of:

On-station assets:

- station buildings
- station shelters
- station platform furniture
- customer information assets

Station Access assets:

- station pedestrian overbridges
- station pedestrian subways
- station Park and Ride facilities
- station Bike and Ride assets
- access pathway assets

Station Auxiliary assets:

- security assets
- lighting
- signage

Plan summary

To increase the number of people who use our public transport network, we need to make it easier for them to access our public transport network. Our station infrastructure assets are a vital component of this and so they must provide an accommodating and safe environment, vehicle and cycle parking facilities, drop-off facilities, easy to use passenger overbridges and subways, and good information signage.

Therefore, our overarching objective is to provide safe, high quality, fit-for-purpose rail station infrastructure which contributes to attracting new public transport users. Our key strategies for achieving this are:

- ensure our station infrastructure assets are regularly cleaned, and free of graffiti and vandalism to provide a clean, comfortable, and accommodating environment
- provide a safe environment through Crime Prevention Through Environment (CPTED) design for our station infrastructure assets

- maintain, build new, and upgrade existing assets to ensure that all station infrastructure assets meet our requisite levels of service, at least lifecycle costs.

Our station infrastructure assets cover multiple types of assets with a wide range of customer utilisation, life expectancies, and intervention points. A significant proportion of our station infrastructure buildings, shelters, overbridges, and subways are very old. Some are heritage protected which means higher upgrade costs and longer planning and design phases.

The operational maintenance expenditure for our station infrastructure assets is forecast to remain relatively steady at approximately $6.2m per year over the next 30 years. This operating expenditure covers costs such as cleaning, rates, lease, insurance, electricity, and planned and corrective maintenance activities.

The renewal capital expenditure for our rail station infrastructure assets is forecast to remain relatively steady at $4.2m per year.

An estimated $166m in improvement capital expenditure is expected over the next 10 years for our station infrastructure assets. This investment includes increased shelter for passengers while they wait for our rail service, and improved connections to our stations such as improved Park and Ride facilities, bicycle storage facilities, and improvements to paths, lighting, security, and general accessibility improvements.

Figure 36 shows our station infrastructure assets operational and capital expenditure forecast.

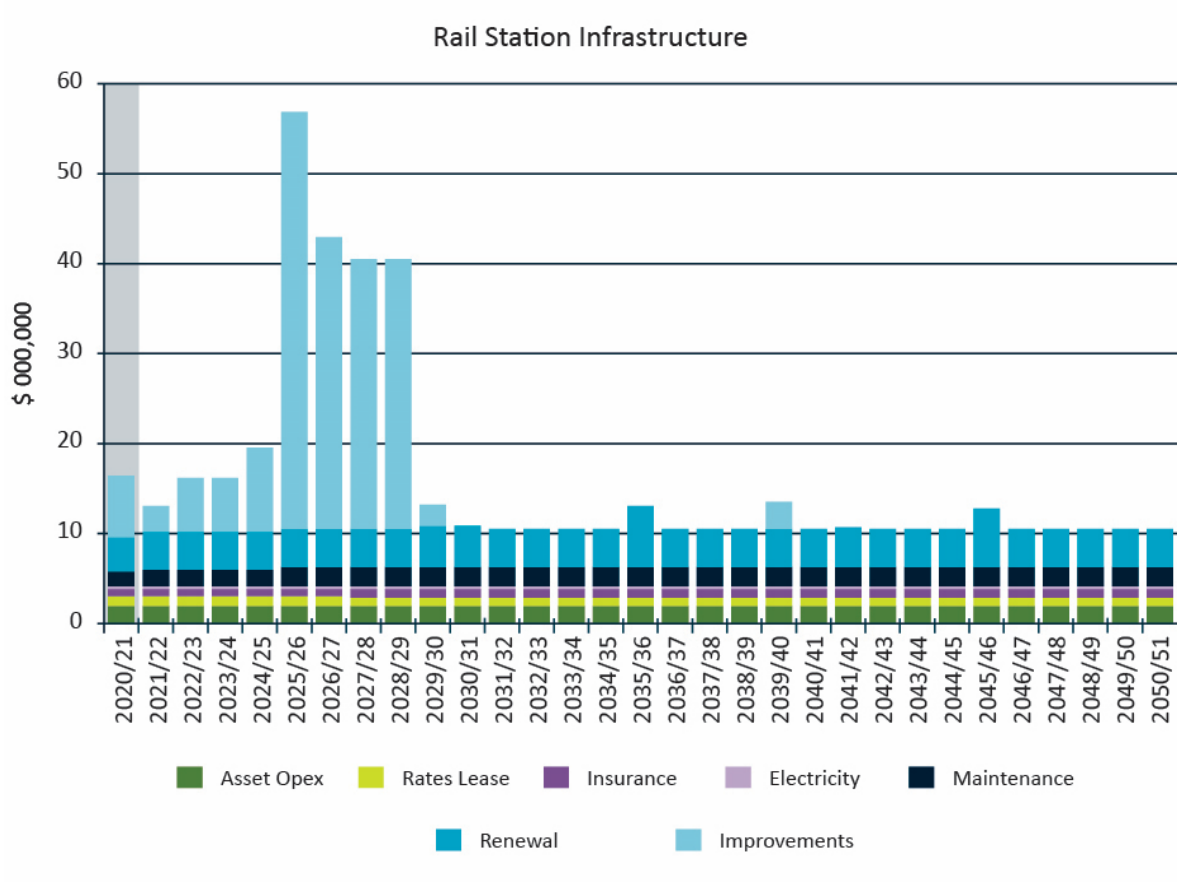


Figure 36: Station infrastructure operational and capital expenditure forecast.

Strategic objectives

Our overarching objective is to provide safe, high quality, fit-for-purpose rail station infrastructure which increases customer experience and contributes to our strategic goals of mode shift and decarbonisation to meet our service levels.

To achieve this, our key objectives are:

Customer Experience:

- provide an accommodating and safe environment for passengers to wait and store their bicycles
- provide sufficient information for our customers so they can plan and execute their journey
- provide adequate shelter for all passengers including enough capacity at peak times so that:
    - ≥91% of passengers are satisfied with the overall station
    - ≥85% of passengers are satisfied with the cleanliness of our stations

- ≥89% of our passengers feel safe while using our station facility
- ≥89% of our passengers are satisfied with the information at our stations
- our station buildings, shelters, pedestrian overbridges and subways, and Park and Ride assets are in good condition with a condition grade of ≤2.5
- 94% of our stations buildings and shelters are in moderate condition or above with a condition grade of ≤3
- 92% of our pedestrian overbridges and subways are in moderate condition or above with a condition grade of ≤3
- 80% of our station Park and Ride facilities are in moderate condition grade or above with a condition grade of ≤3.

Mode shift

- provide well designed access to the train service for all our public transport users
- ensure our station infrastructure assets are placed at destinations to encourage multimodal access and connectivity between our public transport network and the communities we serve so that:
  - ≥91% of passengers are satisfied with the overall station
  - ≥89% of our passengers feel safe while using our station facility
  - ≥89% of our passengers are satisfied with the information at our stations.

Decarbonisation

- ensure that environmental, sustainability, cultural and health outcomes are considered in the planning and provision of our station infrastructure assets.

Safety

- ensure that accessibility and safety is incorporated in the planning and provision of all our rail station infrastructure, so that:
  - 96% of our stations have CCTV coverage
  - 100% of our station pedestrian overbridges to be at least 67% of NBS
  - 38% of our station pedestrian subways to be at least 67% of NBS.

Our key strategies for achieving these key objectives are:

- ensure our station infrastructure assets are regularly cleaned, and free of graffiti and vandalism, to provide a clean, comfortable, and accommodating environment
- provide a safe environment through Crime Prevention Through Environment (CPTED) design for our station infrastructure assets
- maintain, build new, and uprate existing assets to ensure that all station infrastructure assets meet our requisite levels of service, at least lifecycle cost. We

will address localised deterioration with repairs and minor replacements to enable deferral of major investment until maintenance is no longer an economic solution. In the case where specific hazards are identified, we will put mitigation programmes in place.

- Build partnerships with mana whenua
- ensure station infrastructure signage is in easy-to-find locations and is easy for passengers to understand.

The investments outlined in this AMP are focussed on meeting these objective, strategies, and targets.

Asset characteristics - current state

Our station infrastructure assets are located on rail platforms which are owned and operated by KiwiRail. There are 48 stations across our rail network. Except for Wellington Station, which is owned by KiwiRail, Greater Wellington owns and manages the customer facing facilities at all these stations.

Station infrastructure covers a number of asset categories with a wide range of customer utilisation, life expectancies, and intervention points. A significant proportion of our station infrastructure buildings, shelters, overbridges, and subways are very old. Some are heritage protected which results in higher upgrade costs and longer planning and design phases.

When ownership of the station infrastructure assets was transferred to us in 2011, they were in poor condition. Since then, significant investment has been required to maintain, renew, and replace the infrastructure to bring these assets up to the requisite levels of service.

We categorise our stations based on use as shown in Table 18.

Extremely High Use (>15000 passengers/week)	Very High Use (>10,000 and <15000 passengers/week)	High Use (>5500 and <10000 passengers/week)	Medium Use (>3500 and <5500 passengers/week)	Low Use (<3500 passengers/week)
Wellington Porirua Waterloo	Paraparaumu Waikanae Petone Upper Hutt	Paremata Linden Johnsonville Woburn Raroa Taita Trentham Tawa Silverstream Plimmerton	Naenae Pukerua Bay Simla Crescent Wallaceville Khandallah Featherston Masterton Carterton Paekakariki Redwood Ava Ngaio Crofton Downs Takapu Road	Western Hutt Maymorn Woodside Matarawa Solway Renall Street Awarua Street Mana Epuni Pomare Ngauranga Heretaunga Kenepuru Melling Box Hill Wingate Manor Park

Table 18: Station categorisation based on use

The following is an overview of our station infrastructure assets.

Station buildings

We own seventeen station buildings[16] [17] along our rail network. In addition, Wellington Station building is owned by KiwiRail with key public and operational areas leased to us. We make the operational areas available to Transdev. Our station buildings vary significantly in size and functionality. Our assets range from large, staffed station buildings at very high use stations to small, unstaffed station buildings at low use stations.

[16] Six station buildings have been reclassified as shelters. These stations previously had buildings and the classification was not updated when they were renewed and replaced by shelters.
[17] Pomare building was demolished in early 2022 due to seismic issues and will be replaced by a custom built shelter by August 2022.

Figure 37 shows the very high use and staffed Upper Hutt Station.

Figure 37: Upper Hutt Station Building – rebuilt in 2015.

Historically, most station buildings provided customer service amenities such as toilets and waiting areas but over time, the number of staffed stations across the network has reduced to ten. These are Wellington, Petone, Waterloo, Upper Hutt, Porirua, Paraparaumu, Waikanae, Featherston, Carterton, and Masterton. These stations all still provide toilets, waiting areas, and ticket offices.

The reduction in the number of staffed stations has resulted in some buildings being closed to the public. Several station buildings have been renovated, with the improved areas made available for local community or commercial activities. For example, Paekakariki and Carterton Stations have a museum; Plimmerton Station has a model railway store; and Paraparaumu, and Porirua Stations have a small coffee shop.

Several of our station buildings are heritage protected, which means higher upgrade costs and longer planning and design phases. Figure 38 shows the heritage protected Carterton station building.

Figure 38: Carterton Station Building

Station shelters

We provide station shelters on all rail platforms. These range from extensive shelters, such as Paraparaumu Station which run most of the platform length, to smaller aluminium or timber shelters such as Matarawa Station.

Previously, several of our station shelters were very old and in poor condition. Our shelter renewal and upgrade programme has improved the condition with many new shelters built throughout the network to provide a comfortable waiting area for customers. High use stations have larger or multiple shelters and low use stations have smaller single shelters.

Our station shelter improvement programme is in place to ensure we provide sufficient shelter for the demand at a station, as well as aiming to standardise our shelter offering to provide a consistent look and feel across most of our stations.

Heretaunga Station has recently had its shelter replaced and is shown in Figure 39. Wingate Station, shown in Figure 40, is scheduled to undergo a similar renewal.

Figure 39: New Heretaunga shelter

Figure 40: Wingate shelter

Station platform furniture

Our platform furniture assets consist of seats and litter bins. Seats are provided for customer comfort at all our stations, and litter bins assist in keeping our stations tidy.

Our seats typically consist of bench style seats made of either timber or galvanised steel to provide a comfortable place for customers to wait for their rail service. In the past, these seats have been constructed in various colours and materials, but our approach is now to standardise seating across stations to ensure cost efficiency and a consistent feel across our network.

Figure 41 shows our timber bench style seats which are installed in covered locations.

Figure 41: Timber seats at Redwood Station

Figure 42 shows our galvanised steel bench style seats which are installed in uncovered locations.

Figure 42: Galvanised seats at Trentham Station

Previously, litter bins were only installed at staffed stations but since 2016, litter bins have been installed at all stations across our network. An example of such a litter bin is shown in Figure 43.

Figure 43: Litter bin with signage wrap

Station Customer information and signage assets

Our customer information and signage assets provide customers with the necessary information for their journeys.

These assets include the Wellington Station customer information system, buses replacing trains (BRT) LED signage, totems and flat panel signage, directional and timetable signage, and the outer station PA system.

The Wellington Station customer information system ensures customers are informed of platform departures as well as any disruptions. The system includes a large Jumbotron display, platform departure displays, and audio equipment, all combined with capability that allows automated departure announcements and dynamic changes.

The BRT LED signage can display coloured text indicating when trains are replaced by buses, or other service information, to alert customers about journey changes before they reach the platforms.

Outer station remote PA announcements can be made as necessary. Multicasting, which will allow for the same PA announcement to be broadcast to many stations at once, is being rolled out along the network to increase the methods we have available to provide customers with up-to-date information.

Totem and flat panel signage provide a consistent level of directional and timetable information, along with maps of the local area relative to each station, across all our stations to ensure customers know where to look for information no matter which station they're using.

We have rolled out standardised Metlink signs across the network. We are currently planning a signage refresh for our platform number signage, and directional wayfinding signage.

Station pedestrian overbridges

We have 11 pedestrian overbridges across nine stations. These provide passengers access to platforms and were in very poor condition when ownership was transferred. Most of these bridges have now been upgraded through a rolling programme of seismic and cosmetic improvements and are now in good condition.

Station pedestrian subways

We have 14 pedestrian subways across the network to enable passengers to access platforms. The subway at Trentham Station has just been constructed as part of the Trentham to Upper Hutt double tracking improvements. The remaining 13 are in basic functional state. They were in very poor condition when ownership was transferred. We

have a rolling programme of seismic and cosmetic improvements over the next five years which will improve these assets.

Station Park and Ride

Park and Ride facilities are a vital part of our integrated public transport network. They provide carparks at, or near, our railways stations where customers can park their vehicle for free and continue their journey on our public transport network. This results in less road congestion, reduced emissions, and enhances travel choice and accessibility to our public transport network. Our Park and Ride facilities are mostly off-street facilities; however, we also work with local TAs to provide on street parking in the vicinity of some stations such as Taita, Naenae, Tawa and Silverstream.

We provide 65[18] Park and Ride facilities at 33 stations across our network. They range from small carparks with fewer than 50 spaces, to large carparks with more than 400 spaces. At some stations, like Upper Hutt and Petone, numerous car parking areas are provided, while at other stations, like Khandallah and Raroa, a single car parking area is provided. At key stations where Park and Ride is in high demand, we provide carpool parking spaces in preferred parking areas reserved for anyone with two or more people arriving in a single vehicle.

The demand for Park and Ride capacity is always rising and to date, increasing Park and Ride facilities has been a key factor in growing rail patronage as it provides easy first and last mile connections for our customers. Generally, the new facilities have filled up as quickly as they are built, although opportunities to expand Park and Ride facilities are nw limited due to lack of land availability and decarbonisation strategies.

In most instances, our Park and Ride assets consist of the pavement structures and kerbing. The land is a mixture of ownership and lease arrangements. We own significant land at Tawa, Heretaunga, Paraparaumu, Petone, Porirua, and Waikanae. Recent Park and Ride facilities constructed at Porirua, Paremata, and Waterloo stations have also included stormwater treatment devices in their design in the form of rain gardens for the carpark run-offs. This contributes to better environmental outcomes for these facilities. Figure 44 shows the recently constructed Waterloo Station Pohutukawa Street Park and Ride facility.

[18] Trentham Park and Ride has undergone work as part of the recent Trentham to Upper Hutt double tracking project and has combined three parking areas into one.

Figure 44: Waterloo Station Pohutukawa Street Park and Ride

Figure 45 shows our Porirua Park and Ride northern rain garden.

Figure 45: Porirua Park and Ride northern rain garden

Station Bike and Ride assets

Our Bike and Ride assets comprise of cycle cones, bike racks, cycle lockers, double tiered cycle shelters, and a small number of cycle storage sheds. We provide these assets for the safe, secure storage of bicycles at our stations to increase first and last mile travel options

for our rail customers. Due to increased demand, carrying bicycles within the saloon area of trains during peak time is no longer suitable. As a result, we are improving and increasing the provision of cycle storage facilities to enable passengers to leave their bicycles safely and securely at the outer stations.

At several key stations there are cycle locker units for the storage of bicycles. These are either a single unit, which can store one bike, or double units with separate lockers at each end separated by a diagonal divider which can store two bikes. Cycle lockers are no longer being added to our stations due to the costs involved in maintaining and operating these assets. Instead, we are rolling out a series of double tiered cycle shelters at key stations. We have invested in additional security enhancements like improved lighting, CCTV, and locating Bike and Rides in places with passive surveillance to improve customers' ability to cycle to stations and safely store their bikes. To date, these double tiered cycle shelters have been installed at numerous stations including Paraparaumu, Paekakariki, Tawa, Redwood, Carterton, Waterloo, Woburn, Trentham, Wallaceville and Porirua. Figure 46 shows the double tiered cycle shelter at Paraparaumu Station.

Figure 46: Paraparaumu Bike and Ride

Station access pathway assets

Our access pathway assets consist of access paths and fences. Our access paths provide the link to and from our rail platforms. They enable easy, identifiable routes for our customers to move safely and efficiently to and from our platforms.

Many of our access paths are sealed with asphalt and have a barrier or fence running alongside them for safety.

Station security assets

National research identifies that personal security concerns become common barriers to the use of public transport. Personal safety is highly correlated with customer satisfaction.

Our security assets consist of closed-circuit television (CCTV), associated network and recording equipment, and emergency call points. These assets assist in crime prevention and anti-social behaviour at our stations and shelters. We use them for both the security of our assets and the safety of our customers. This equipment is installed at all stations (except Matarawa and Western Hutt), all rolling stock stabling yards, and 87% of Park and Rides.

We have 920 cameras which are monitored 24/7. The emergency call points are also monitored.

We undertake rolling CCTV renewals and network expansion is planned for remaining Park and Ride sites and station underpasses.

Figure 47 shows an example of our station CCTV cameras.

Figure 47: Station CCTV cameras

Station Lighting

A high standard of lighting is essential to enable customers to safely access our network at night. We have a minimum level of service of 50 lux (average) across all station platforms.

The lighting across our network is installed to deliver a specific function, which is either flood lighting, such as most of the pole top lights on platforms or Park and Ride facilities, or localised lighting within shelters and subways. In addition, emergency lighting is also provided in some locations. A range of lighting types have been deployed across the network.

We have a 2-year programme to upgrade all our lighting to LED fittings. These have a lower energy consumption, longer asset life, and lower all of life cost. Currently 76% of our lights are LED, with the remaining 24% due to be replaced over the next year as part of our renewal programme.

Figure 48 provides an example our platform lights.

Figure 48: Platform lights at Carterton and Paraparaumu stations

Population, life expectancy and current remaining useful life

Our station infrastructure assets cover a large range of assets and customer utilisation, life expectancies, and intervention points.

Table 19 below shows the asset population by type, along with their expected life and current average remaining useful life of our station infrastructure assets.

Table 19: Rail station infrastructure population, life expectancy, and current remaining life

Asset type	Population	Standard Base Life (years)	Current Remaining Useful Life (years)
Station buildings	17	80-150 (Average 87 years)	11-72 (Average 35 years)
Station shelters	62	30 – 150 (Average 44 years)	7-58 (Average 23 years)
Station platform furniture	245 seats 86 litter bins	15 – seats 25 – litter bins	4-10 (Average 7 years) - seats 24 – litter bins
Station Customer Information	59 totems and flat panels 72 BRT LED signs 226 PA speakers 24 digital displays	15 – totems and flat panels 15 – BRT LED Signs 7 – PA Speakers 15 – digital displays	13-15 – totems and flat panels 14 – BRT LED signs 1-7 – PA Speakers 13 – digital displays
Station overbridges	11	50-100	7-58 (Average 38 years)
Station subways	14	50-100	16-50 (Average 31 years)
Station Park and Ride	65 separate Park and Ride areas across 33 stations	25	1-24 (Average 17 years)
Station Bike and Ride – Cycle Shelter	13	25	22-25 years
Station Bike and Ride - cycle facilities (cone, rack and box)	21 cycle cones 22 cycle racks 81 cycle lockers	15-20 (Average 19 years)	1-20 (Average 10 years)
Station access pathways	Fences (metres) Walkways (metres)	25-35 (Average 29 years)	9-25 (Average 16 years)
Station CCTV	920 cameras 58 duress points	7-10	1-7 (Average 4 years)
Station lighting	1136 lights	10 – 20 (Average 15 years)	1-20 (Average 8 years)
Station signage	1906 signs	7	1-7 (Average 4 years)

The ages of our station buildings vary significantly from historic buildings (built pre-1900s) through to recently renewed buildings. Our historic station buildings, such as Paekakariki (built in 1910) and Carterton (built in 1879), have heritage protection. Figure 49 shows the era our station buildings were built.

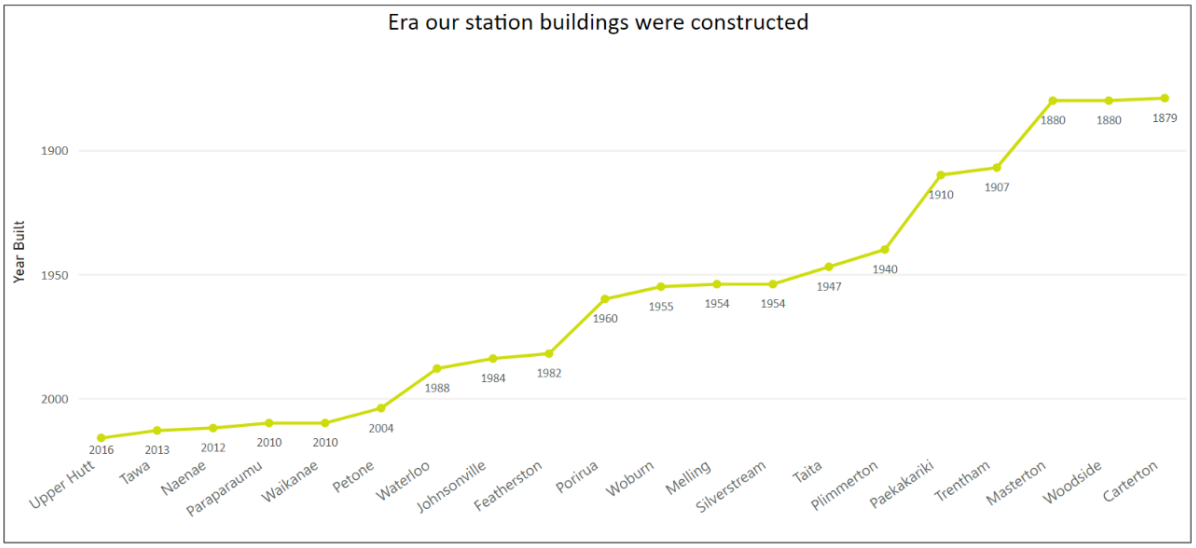


Figure 49: Era our station buildings were built

Asset importance

We determine the importance of our station infrastructure assets by the average number of people that pass through each location each week, referenced as typical weekday boardings. All assets at each site are considered to have the same importance as the station. For example, a bike stand at a busy station will have a higher importance than one at a small station.

We recognise that our very high use stations (as categorised in Table 18) Petone, Waterloo, Taita, Upper Hutt, Porirua, Paraparaumu, and Waikanae are stations of particular importance due to the number of people that use these locations daily. While closure of these stations is unlikely to result in a complete loss of the entire rail service, we recognise that closure of these stations would result in major disruption to the local area and the significant number of our customers who use these stations.

Table 20 shows our key stations and their typical weekday boardings in 2019 and 2022.

Table 20: Key stations and their typical weekday boardings

Station	Typical Weekday Boardings (2022)[19]	Typical Weekday Boardings (2019)
Wellington (not owned by Greater Wellington)	13,400	21,240
Porirua	2,180	3,120
Waterloo	1,820	2,900
Paraparaumu	1,450	2,300
Petone	1,110	1,740
Taita	570	760
Waikanae	1,150	1,650
Upper Hutt	1,000	1,210

In addition to station or site-based importance, there are some assets that have a particular impact on public safety and therefore are always considered important assets irrespective of where they are located. For example, we have 10 stations where the station platform is located between the rail tracks. This means that if either the pedestrian overbridge or subway which provides access to the station platform is closed, there is no other way for our customers to access the station. This would result in having to close the station. While this would not prevent the rail service from running, it would cause significant disruption for customers who use that station.

Figure 50 shows our Porirua Station, which we recognise as a key station on our network due to the typical weekday boardings.

[19] The typical weekend in 2022 include a reduction in patronage due to the effects of Covid-19.

Figure 50: Porirua Station

Asset condition

We determine the condition of our station infrastructure by using the condition grade rating system within the International Infrastructure Management Manual (IIMM).

Table 21 describes the condition rating system.

Table 21: Description of condition rating system

Condition Rating	
Rating	**Description of Condition**
1	Very good condition only preventative maintenance required
2	Good condition: Minor maintenance required plus Preventative maintenance
3	Moderate condition: Significant maintenance required
4	Poor condition: Significant maintenance required
5	Poor condition: Unserviceable

Table 22 shows the average condition rating and the percentage of each asset type with a condition grade greater than four across our station assets based on a desktop assessment of the assets.

Table 22: Station infrastructure asset condition

Assets	Average Condition Rating	% of Assets with Condition Grade >4
Station Buildings	1.45	2.5%
Station Shelters	1.48	1.8%
Structures (overbridges & subways)	2.44	0%
Park and Ride	2.13	4.8%
CCTV	1.88	11.6%
Lighting	1.83	22.6%
Signage	2.17	11.8%
Station seats and litter bins	1.45	0.6%
Bike and Ride	1.65	2.7%
Station Access	2.00	0%

Station buildings

Our station buildings are internally condition assessed annually and three yearly by an external party. The condition rating of the buildings is an averaged score of its component parts. The results from the condition assessments are a key input into our forward maintenance planning which informs our expenditure forecast.

The condition of our station buildings varies from slightly poor condition to recently upgraded or renewed assets such as Upper Hutt and Taita. Most of our station buildings are in good condition with significant maintenance work undertaken since we took over ownership of these assets.

Waterloo Station building does not have the overall worst condition of our station buildings; however, the roof canopy is in very poor condition. The canopy's outer skin is corroded, and its design is known to create a wind tunnel effect, particularly in southerly winds; this significantly impacts our customers. The Waterloo Station building is expensive to maintain

due to the confined working space at height. An investigation is currently in progress to determine the best long-term solution for the building, with a concept study for a transit orientated design facility underway. Complete replacement of the Waterloo canopy is desired due to its poor condition, high ongoing maintenance costs, and performance issues. We are taking a long-term view of options for this facility to ensure the right solution is found prior to upcoming planned maintenance work on the spaceframe structure.

The condition profile of our station buildings is shown in Figure 51.

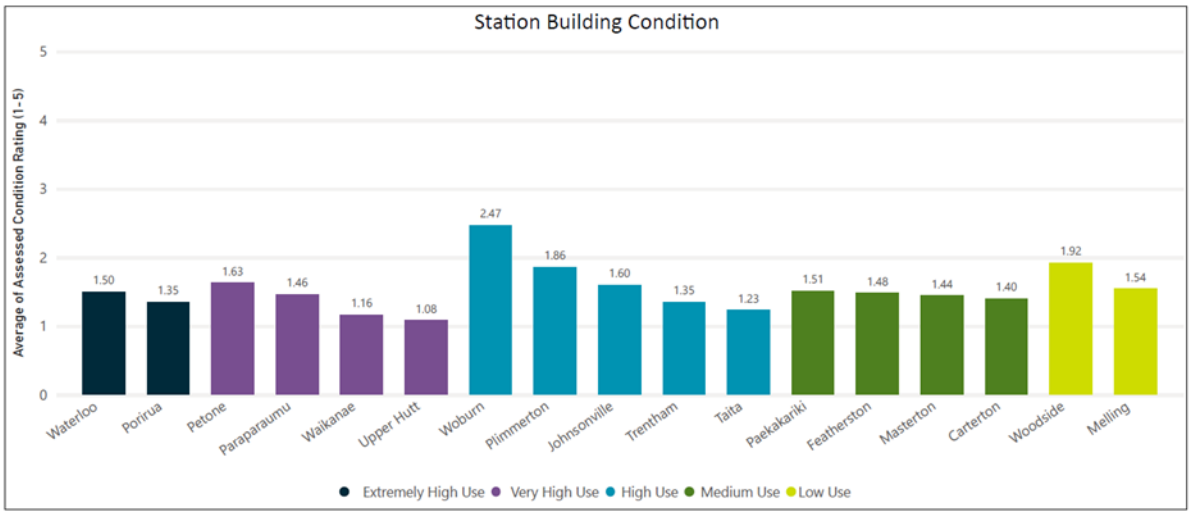


Figure 51: Station building condition at mid-2022

Station shelters

The condition of our shelters is internally assessed annually and three yearly by an external party. Figure 52 shows the condition profile of our station shelters.

Kenepuru and Awarua Street are the station shelters that have the worst overall condition. These are planned for refurbishment or renewal as part on the ongoing shelter programme.

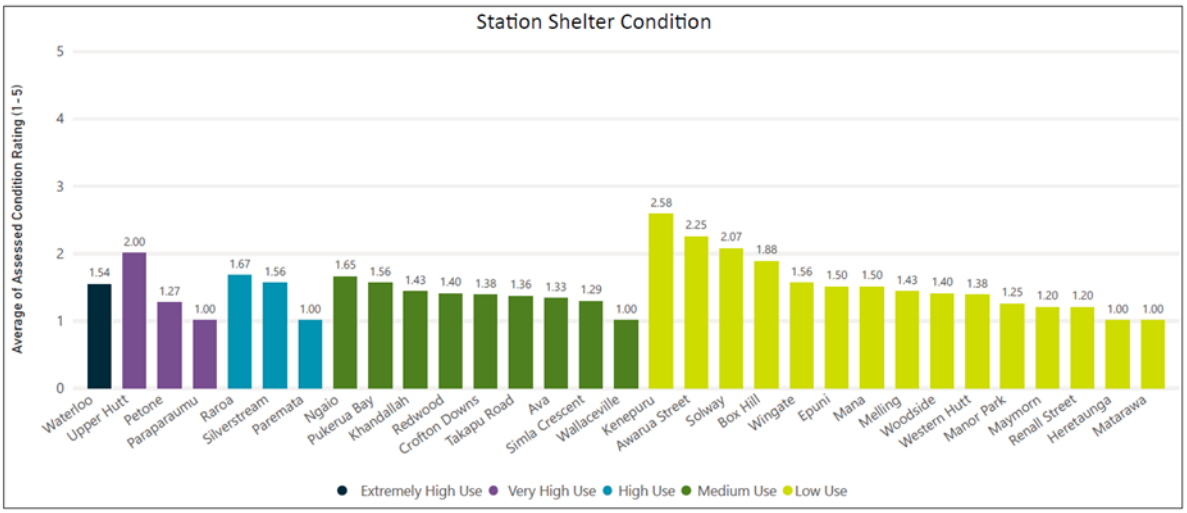


Figure 52: Shelter condition at mid-2022

Station pedestrian overbridges

The overbridges are old, long-life assets, which have had minimal to no preventative maintenance through much of their life. However, since we have taken ownership of these assets, we have been investing in progressively improving the condition of the overbridges.

Figure 53 shows the overall condition profile of the station overbridges from the Harrison Grierson Inspection Report dated February 2021 condition assessment, except for Tawa which was last assessed in 2020. Since the condition assessments, Tawa, Raroa and Heretaunga overbridges have all undergone maintenance to improve their overall appearance and functionality.

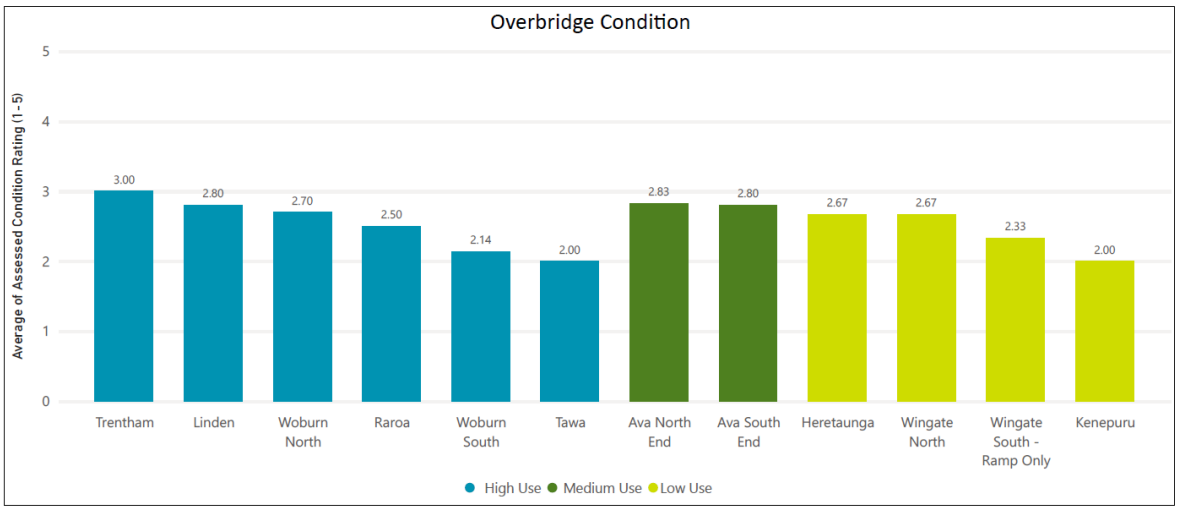


Figure 53: Pedestrian overbridge condition at mid-2022

Station subways

Our station subways have historically had very little maintenance. However, since ownership was transferred to us, we have invested in resolving deferred maintenance issues. Our station subways are condition assessed on factors such as painting, floor coverings, lighting, and structural integrity.

Petone, Taita and Epuni subways are in the poorest condition overall and are all due to undergo cosmetic refurbishment over the next two years. Naenae subway is scheduled for a complete cosmetic refurbishment in 2023/24 following engagement with the community on the draft plan to create a brighter and safer environment through the installation of CCTV cameras, a PA system, improved lighting, and new flooring and wall coverings.

Figure 54 shows the overall condition profile of the station subways as assessed by Harrison Grierson 2021.

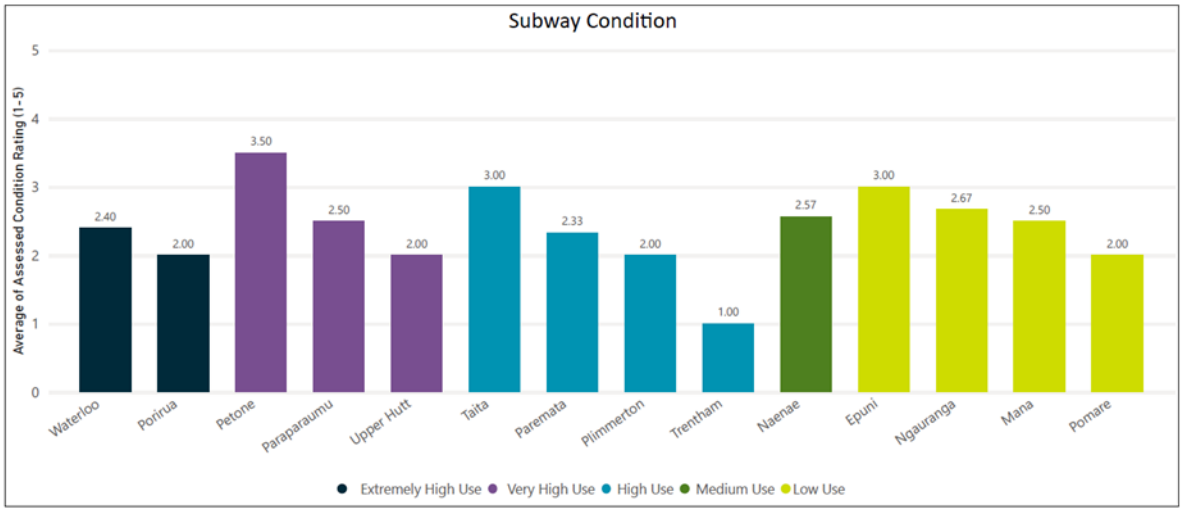


Figure 54: Subway condition mid-2022.

Station Park and Ride

Our station Park and Rides are condition assessed annually by us and our carpark maintenance contractor, with a programme of work in place to resurface the parking areas that are in poor condition.

Overall, our Park and Ride facilities are in good condition with only a few in poor condition. Resurfacing has been deferred at some sites while other projects such as Plimmerton Access Corridor Enhancements (PACE) take place. Resurfacing will take place following the completion of this project.

Figure 55 shows the overall condition profile of our station Park and Ride carparks.

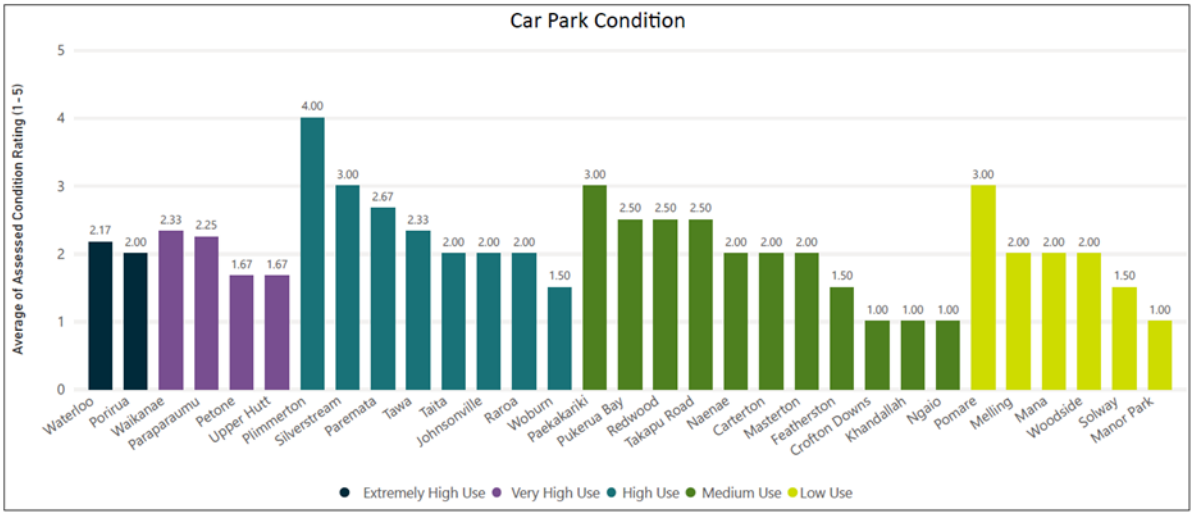


Figure 55: Carpark condition

Station security assets

Figure 56 shows the condition of our station security assets at each location based on average condition of equipment at each location. This includes CCTV cameras, PA system, emergency points, and network hardware.

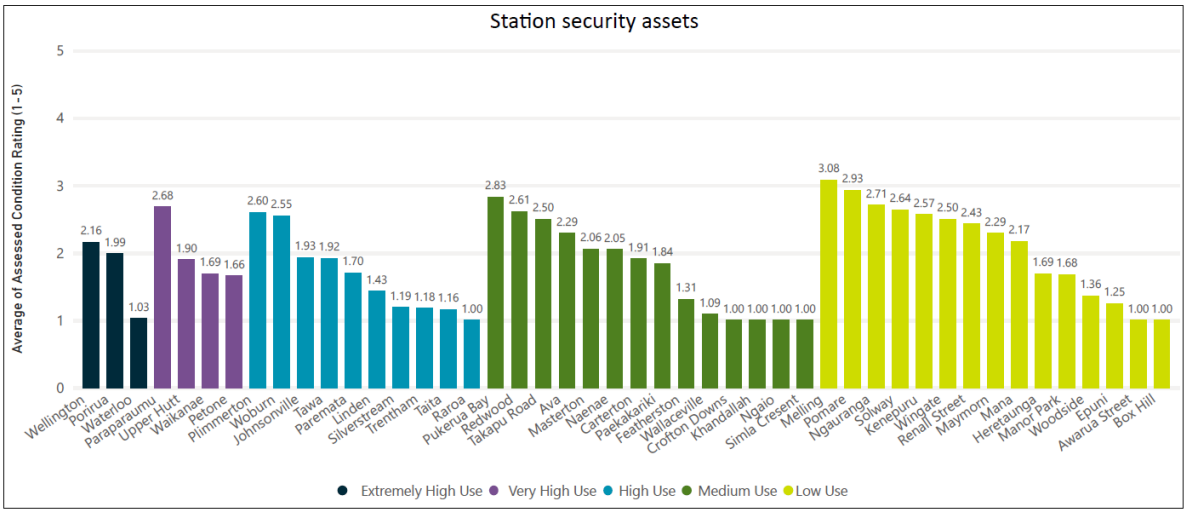


Figure 56: Station security assets condition 2022

Station Lighting

Figure 57 shows the condition of our station platform, access and Park and Ride lighting. Overall, our station lighting is in reasonable condition with a renewal programme underway to upgrade all remaining poor condition lighting to LED.

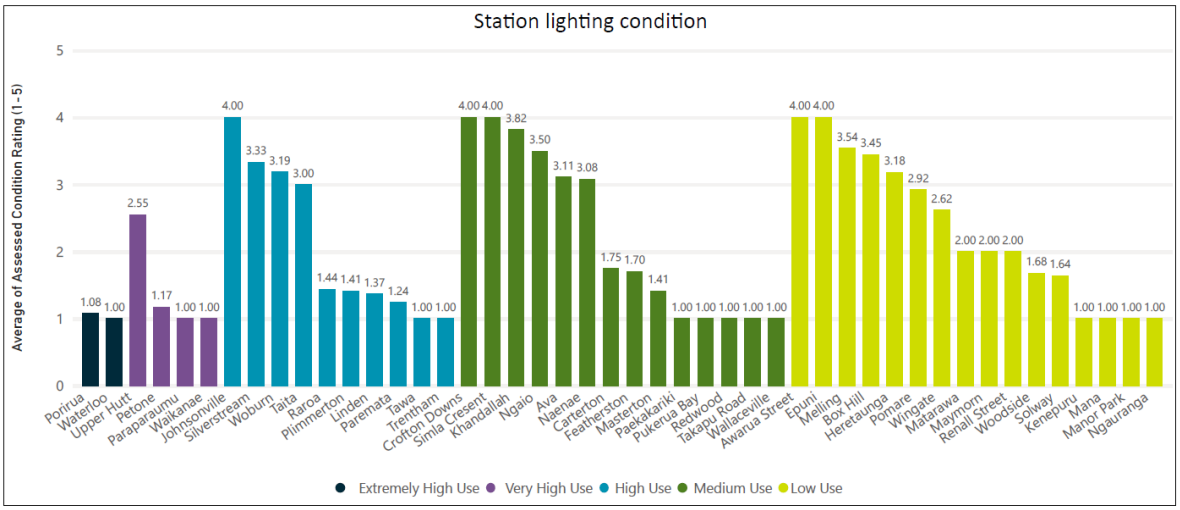


Figure 57: Station lighting condition

Note: This is a desktop assessment. A physical assessment is planned to take place before the end of 2022. The condition is based on light fittings and does not currently consider pole condition. We plan to capture pole condition over the next three years.

Station Signage

Figure 58 shows the overall average condition of our signage at each location. Most of our signage is relatively new and in good condition.

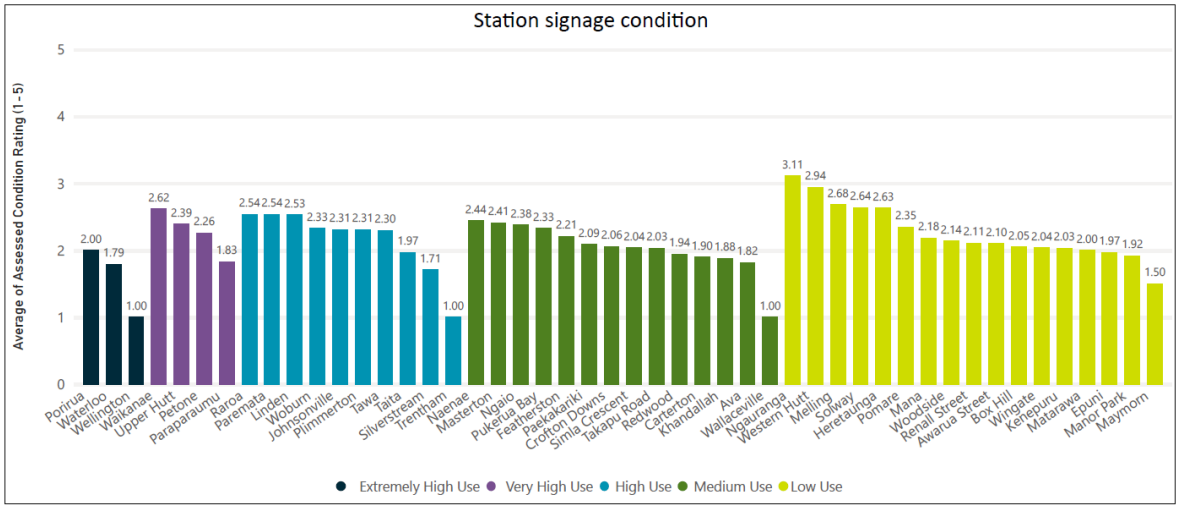


Figure 58: Station signage condition

Station Bike and Ride

Several of our Bike and Ride facilities are older assets, with most of them having an average of seven years life left. However, the majority are in good conditions with many facilities having been replaced by sheltered double tiered bike racks in the last three years.

We have a prioritisation programme for upgrading and installing new cycle storage facilities and will continue to do so as funding becomes available. and we will look to upgrade these facilities as funding becomes available.

Where feasible, we reuse cycle storage facilities that are in a fair condition. For example, following the recent installation of sheltered double tiered bike racks at Paekakariki and Porirua stations, we removed and refurbished the existing assets at these stations and used these to replace poor condition assets at other stations.

Figure 59 shows the condition profile of the Bike and Ride facilities at our stations.

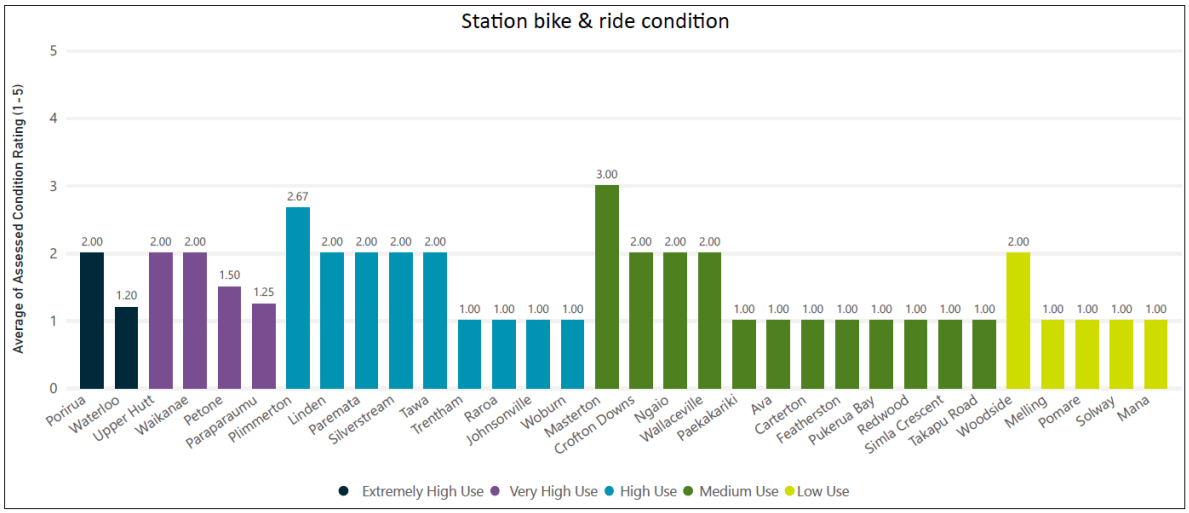


Figure 59: Bike and Ride condition

Station seats and litter bins

Our station seats and litter bins are generally in good or very good condition as shown in Figure 60.

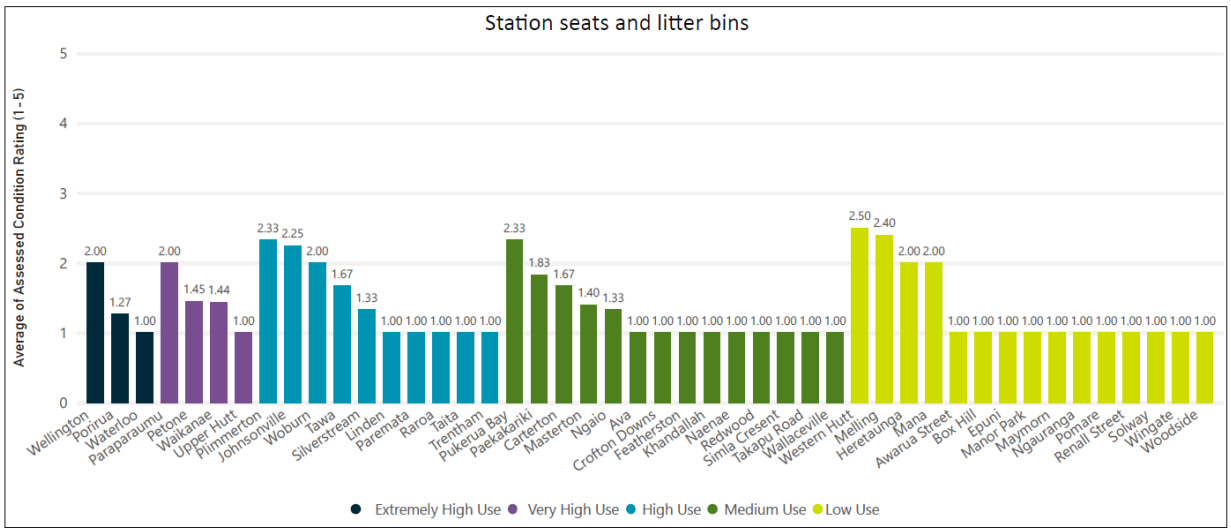


Figure 60: Station seats and litter bins condition mid 2022

Station access assets

Figure 61 shows the condition of our access paths at each site location, based on the average condition of equipment installed at that site location.

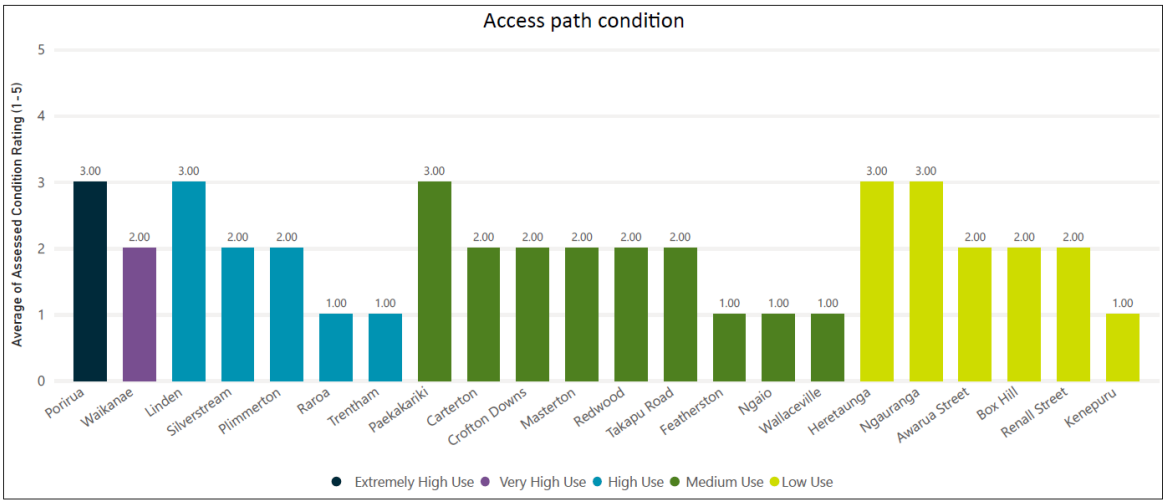


Figure 61: Station access path condition

Figure 62 shows the condition of our fences and barriers.

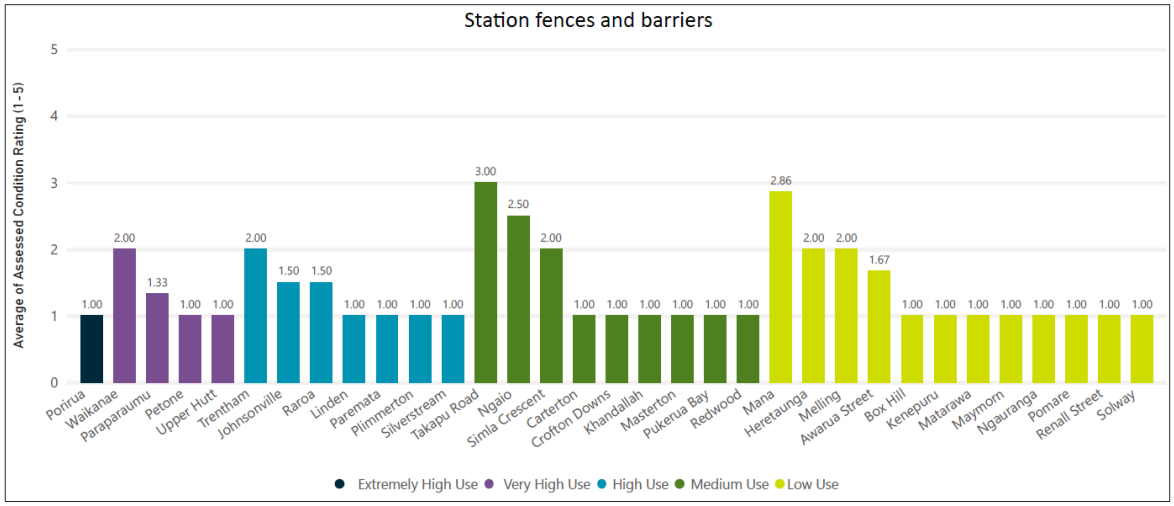


Figure 62: Station fences and barriers condition

Asset risk

While station infrastructure assets are important assets from a rail service perspective, the likelihood and overall risk of any single asset having significant impact to the overall rail service is small. However, it is more likely that service to localised communities could be impacted by infrastructure failure if risks are not appropriately managed. There are several risks that have the potential to affect the function of these assets. These are seismic performance, asbestos management, corrosion management and storm event management. The following describes these asset risks and their mitigations for our station infrastructure assets. These risks manifest across the asset base to varying degrees.

Seismic performance

Seismic performance is a key risk to manage with respect to our assets. Whilst insurance plays a key role in mitigating the financial risks, the likelihood of us being able to quickly recover our asset performance after a major seismic event is low. While all our structures meet the minimum seismic capacity of 33% of the New Building Standard seismic rating (NBS), there is a significant proportion that are considered earthquake prone, as they fail to meet 67% NBS. As a result, we have a seismic strengthening programming in place to raise all structures meet or exceed 67% NBS.

Station buildings and shelters

All our station buildings have been inspected and assessed for seismic performance, with all of them being assessed at least 50%[20] of the New Building Standard (NBS). Pomare was at

[20] Please note, two of our station buildings and shelters have not been assessed.

46% of the NBS but has since been demolished to be replaced by a new shelter. Eight of our station buildings and four of our station shelters remain below our desired seismic strength of 67% of the NBS. We have a programme in place to strengthen these buildings to meet or exceed 67% of the NBS over the next 10 years.

When significant maintenance work is undertaken at a station building or shelter, we upgrade the seismic rating of the building or shelter to meet or exceed at least 67% of the NBS. Most of these assets are now at, or above, 50% NBS, with 12 of the 47 stations having a seismic strength between 50 and 66% NBS.

Pedestrian overbridges and subways

All our station overbridges have had a detailed seismic assessment completed and all were assessed above the minimum requirement of 33% of the NBS. As of 2021/22, all station overbridges have undergone seismic strengthening and now meet or exceed 67% of the NBS seismic rating.

Figure 63 shows the post seismic strengthening improvements that have been made on the Wingate North pedestrian overbridge.

Figure 63: Wingate North pedestrian overbridge – post seismic strengthening improvements

shows the seismic improvements made to our station overbridges.

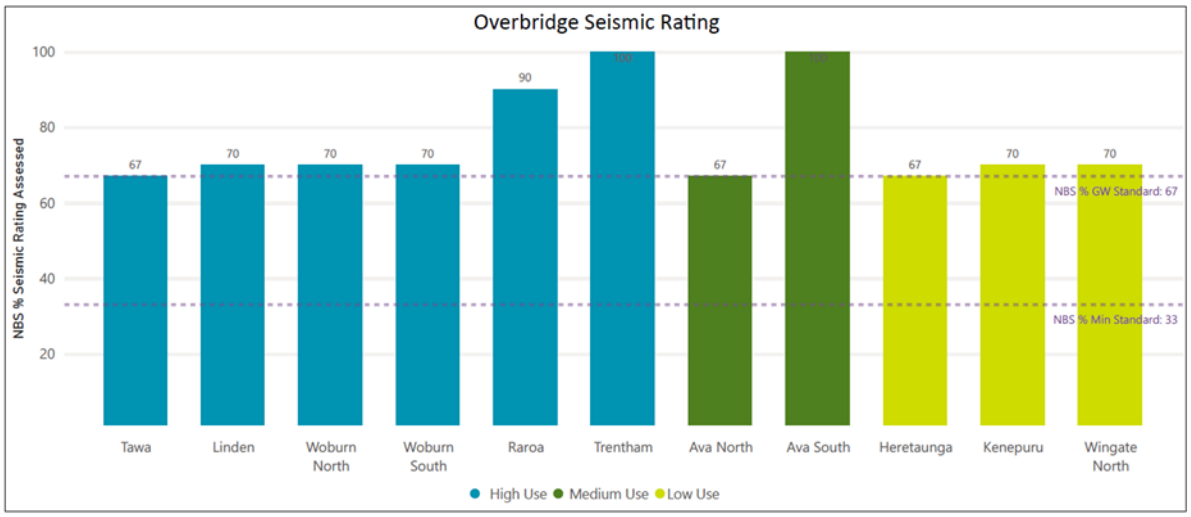


Figure 64: Current and historic overbridge seismic rating

Pedestrian subways

All subways have had a detailed seismic assessment completed and the majority have achieved the minimum requirement of 33% of the NBS. However there remains a significant risk as currently six of the fourteen subways have been assessed as less than the GWRC policy of meeting or exceeding 67% of the NBS seismic rating.

Mana and Ngauranga subways present the largest risk and have undergone temporary remediation works, to lift them to 33% of the NBS.

A subway renewal programme is underway to strengthen all subways to 67% of the NBS seismic rating over the next 3 years.

Several seismic improvements have already been made as shown in Figure 65.

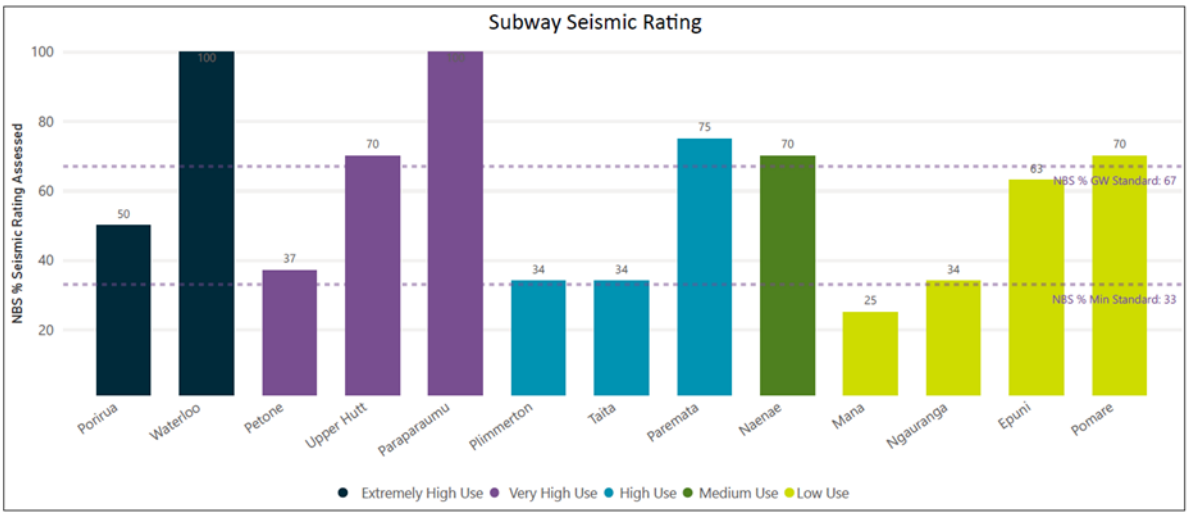


Figure 65: Current and historic pedestrian subway seismic rating

Asbestos management

Due to the age of our station buildings and shelters, several of our station buildings and shelters contain asbestos. We manage the asbestos risk at our stations in accordance with the Health and Safety at Work (Asbestos) Regulations 2016 to ensure the health and safety of our customers, service providers and the public. We have a register of our assets which contain asbestos, detailing the location and state of the asbestos across our sites. This is regularly monitored and reviewed through condition inspections.

We have an Asbestos Management Plan in place to ensure the most appropriate treatment has been identified. Treatment measures involve either elimination or appropriate isolation measures (encapsulation). Almost all our assets have now had the asbestos encapsulated to ensure the risk is minimised. We have an active programme of work to remove asbestos, where practical, to eliminate the risk at that location. In recent years, both Linden and Pomare stations have undergone asbestos removal.

We use GWRC's standard operating procedure to manage asbestos under the hazard management policy. We work to ensure all practicable steps are taken to ensure that exposure to asbestos is kept and maintained as low as possible and under no circumstances exceed the workplace exposure standards.

Storm events

Storm events can cause permanent damage to our station infrastructure assets. Flooding is a risk for our subway assets either due to insufficient capacity of the drainage and pumping systems, or failure of the drainage and pumping systems within the subways. As a result, a regular maintenance plan is in place. Several our subways have had new pipes installed to prevent water flowing into the subways and flooding them during large storm events. The

frequency and severity of these storm events are increasing due to climate change and while rail station infrastructure is insured, the deductible is set at a level that is unlikely to aid the financial loss as a result of flooding.

Coastal Environment - Corrosion

The coastal environment at several stations such as Paremata and Ngauranga is also a key factor that can considerably shorten the life of station assets if appropriate maintenance activities do not occur. Marine deposits such as salt spray, sand, and seaweed, are regularly removed through a building wash down programme but these stations still require the regular application of corrosion protection products to help reduce the whole of life costs.

Asset performance

Our year-to-date performance against our customer satisfaction and asset-related targets show that we are generally trending positively to achieve them. In line with this, our assets in this asset class have generally performed well.

There are instances of slips, trips, and falls across our network. We continually review the occurrence of these and address any key hotspots. For example, we salt pedestrian overbridges and access paths to mitigate the risk of slips.

Station buildings and shelters

Our station building assets are generally functional. However, with the significant growth in patronage, the shelter provided by our buildings and shelters is insufficient to provide adequate protection from the wind and rain while waiting for our rail service. As a result, increased shelter is required in several locations.

The design and layout of a few of our buildings and shelters are sub-optimal to promote the feeling of personal safety and security. Hence, CPTED enhancements are needed.

Some of our station buildings are disused and boarded up; however, we are progressively upgrading them to so they can be leased by other organisations such as small businesses or community groups. This approach has been effective in creating community ownership, reducing vandalism and crime, and ultimately improving customer safety due to passive surveillance.

Station pedestrian overbridges

Generally, our overbridges are in a basic functional state, with reliable availability. .

Many of our pedestrian overbridges would not meet today's building or disability construction standards, particularly with respect to ramp gradients and step dimensions. Due to the geometric constraints, it is cost prohibitive to rectify these issues in the short term. Opportunities to improve accessibility will be assessed and considered during any future renewal and/or strengthening activities.

Many structures do not meet accessibility guidelines in terms of colour contrast and handrail dimensions and placement. A programme of works is being developed to rectify these issues.

Our seismic strengthening programme for pedestrian overbridges is complete with the last overbridge at Woburn being finished in 2021/21.

Station pedestrian subways

Generally, our subways are in a basic functional state with reliable availability.

Many of our pedestrian subways would not meet today's building or disability construction standards, particularly with respect to ramp gradients and step dimensions. Due to the geometric constraints, it is cost prohibitive to rectify these issues in the short term. Opportunities to improve accessibility will be assessed and considered during any future renewal and/or strengthening activities.

The tiles fitted to the walls and ceiling of Waterloo pedestrian subway, are progressively losing their adhesion, and dropping off the ceilings and walls. We are planning to renew all the tiling in the subway to reduce the risk of injury.

Several of our pedestrian subways have poor lighting which decreases the perception of personal safety while in the subways. Due to the restricted height within the subways and on-going vandalism, we continue to experiment with different solutions that both improve the lighting levels and mitigate the potential of vandalism.

Station Park and Ride

The functionality of our Park and Ride facilities is very good, and are highly utilised, pre-Covid-19 pandemic majority of Park and Ride facilities were at capacity part way through the morning peak.

The quality of the Park and Rides is also adequate.. We consider that our Park and Ride assets are safe. However, we recognise that due to over demand for Park and Rides services, people do park in unallocated parking areas, which can affect visibility within the Park and Ride – we deploy roving guards to identify and enable resolution of these issues. Where excess demand causes issues within the surrounding streets, we liaise with the relevant TA to identify options to address the issue.

We are continually exploring better placement for accessible parking spaces and are developing a programme for dedicated carpool spaces and improved access through Park and Ride to encourage mode shift.

As we renew Park and Ride facilities, we have a Policy of installing best practice on site Storm Water treatment technologies to avoid harmful discharge into our waterways.

Station security assets, lighting, and signage

Our CCTV system is considered reliable. We have a regular, three-monthly preventative maintenance programme in place. The 24-hour 7 day a week monitoring of the cameras across the network is proving effective in discouraging vandalism and improving the perception of safety across the network. However, at this stage the CCTV system does not provide full coverage of the network, in particular, the fibre optic link has not yet been installed on the Johnsonville Line.

We consider our lighting assets as a key component for maintaining safety and security. As such, significant effort has been put in the last few years to improve lighting performance and asset condition.

Lighting is one of the most important factors in the principal of CPTED. CPTED lighting principles adopted in our lighting upgrades are set out below:

- Lighting design must avoid creating blind spots and coverage must include all critical areas.
- Area such as pathways, stairs, entrances/exits, and parking areas must be well lit.
- Lighting needs to be designed to avoid creating blinding glare or deep shadows
- Shielded or cut-off luminaires must be used to control glare.
- Lighting must be placed along pathways and other pedestrian-use areas at proper heights to light people's faces.

The quality of lighting varies with age and condition. Many of the older lights emit less light and have poorer lighting efficiency than the newer ones. Lamp reliability is typically described by the average rated life in hours. This can vary considerably depending on the technology used. We are progressively implementing LED technology to reduce energy consumption, as well as maintenance costs because of the longer life bulbs. This planned replacement can enable equipment and energy savings as lighting designs can be reassessed to reduce compensatory lighting, typically applied to overcome poor lighting.

Unfortunately, our lighting is vulnerable to vandalism; this affects reliability. Lighting is regularly checked as part of routine maintenance by contractors at each site and complaints are addressed as received.

The reliability of our signage mainly relates to the readability of the sign and response time for replacement if vandalised or damaged. This is undertaken by the regular maintenance and inspection programme.

At present, our rail platform signs are not directly lit at night. Passenger information systems are now provided on all trains as an alternative.

The graphics tend to be affected by UV light, which significantly reduces the useful life of the assets at sites with high UV light exposure.

Station Bike and Ride

Our station Bike and Ride is reliable and has good availability. Any new assets installed are completed before the old assets are removed. The removed assets, if in an acceptable condition and design, are re-purposed to stations which currently don't have bike parking.

At stations where there are good cycling routes for access, our Bike and Ride facilities are well utilised and this is demonstrated at stations such as Paraparaumu and Porirua, where most cycle facilities are often at peak occupancy.

Several our Bike and Ride assets are the older model cycle cones or toaster racks; these are not favoured by our customers as they can cause damage to bicycles through poor frame support. These aging assets are progressively being replaced with new Bike and Ride double tiered facilities.

As we install these new assets, we are also installing dedicated CCTV and lighting. We also ensure they are placed in areas with good passive surveillance and easy access for nearby cycle or shared pathways.

Station access assets

The fences along our access paths generally consist of two types, known either as a 'Type A' fence or a 'Type B' fence as shown in Figure 66 and Figure 67. 'Type A' is a vertical paling fence, and a 'Type B' fence is a simple timber post and rail fence. There are many 'Type B' fences on our access paths. We are considering upgrading them to a 'Type A' to prevent small children from either going under them or climbing over them.

Many of our fences are made from steel wire mesh and need to be able to withstand the saltwater environment in the Wellington region.

Figure 66: 'Type A' fence

Figure 67: 'Type B" fence

We consider the operation of our access paths to be reliable. Several our access paths cross the rail lines making them a safety hazard. KiwiRail are improving these access ways by installing automated level crossing gates.

Asset information

We are investing time and effort in improving our accuracy and knowledge of our data. However, further improvements in the data quality and the analysis of this data are an ongoing process. Our new Enterprise Resource Planning system, Ngātahi, went live in February 2022, and we are now working to improve our data quality and incorporate it into a single system.

Lifecycle management and activities

Our asset management approach for our station infrastructure assets is to maintain, build new, and uprate existing assets so that we can provide a safe, high quality, fit-for-purpose station infrastructure at least lifecycle cost. To enable deferral of major investment until maintenance is no longer an economic solution, we address localised deterioration with repairs and minor replacements.

We apply national and regional strategic priorities and our station infrastructure strategic objectives to our planning, to ensure our investment is targeted and prioritised so we can meet our key objectives and desired Levels of Service. We also involve local communities in aspects of our renewal projects. For example, Plimmerton Station displays local schools' artwork and the Taita pedestrian subway has artwork from a local artist. This has helped reduce incidences of local vandalism.

Our asset management approach reflects our lifecycle activities of planning, deliver, operate, maintain, and divest or dispose. Each of these are discussed below.

Planning

Our planning activities include:

- Making provision for increasing service frequency which may result in planning for new assets, refurbishing existing assets, or relocating assets to where they are better utilised.
- Regularly reviewing patronage demand and ensuring that sufficient provision of shelter from the wind and the rain is available for peak demand.
- Strengthening all buildings and structures to at least 67% of the NBS.
- Undertaking risk mitigation programmes for specific hazards eg our Asbestos Management Plan.
- Ensuring our stations and facilities are regularly cleaned and free of graffiti and vandalism to ensure station infrastructure provides a safe and accommodating environment.
- Renewing and updating the suite of information provided at stations including timetable, real time service information, ticketing, service disruption information, and wayfinding information for both the station and the community in which the station is located.
- Upgrading facilitates during renewal and improvements activities to improve accessibility.
- Working with communities and partnering with Mana Whenua to foster a sense of community ownership.

Table 23: Planned facilities available at each station categoryTable 23 provides an overview of the planning standard of facilities we work towards for each station category.

Table 23: Planned facilities available at each station category

	Extremely High Use (>15000 passengers/week)	Very High Use (>10,000 and <15000 passengers/week)	High Use (>5500 and <10000 passengers/week)	Medium Use (>3500 and <5500 passengers/week)	Low Use (<3500 passengers/ week)
Sufficient shelter from weather for peak use	Yes	Yes	Yes	Yes	Yes
Ticket office	Yes	Yes	No	No (except on Wairarapa Line)	No

Internal Waiting Room	Yes	Yes	No	No (except on Wairarapa Line)	No
Toilets	Yes	Yes	No	No (except on Wairarapa Line)	No
Bus Inter Change	Yes	Yes	No	No (except on Wairarapa Line)	No
Bus Connection	Yes	Yes	Desired	No (except on Wairarapa Line)	No
Snapper Top Up	Yes	Yes	No	No (except on Wairarapa Line)	No
Duress Help Points	Yes	Yes	Yes	Yes	Desired
Park and Ride	Yes	Yes	Yes	Desired	Desired
CCTV - at Station	Yes	Yes	Yes	Yes	Desired
CCTV - at Park and Ride	Yes	Yes	Yes	Yes	Desired
Accessibility Compliant	Yes	Yes	Yes	Desired	Desired
Cycle Storage Locker	Yes	Yes	Yes	Yes	Desired
Cycle Cones	Yes	Yes	Yes	Yes	Yes
Rubbish Bins	Yes	Yes	Yes	Yes	Desired
RTI	Yes	Yes	Yes	Yes	Desired
Overall Condition Grade of Station	<3.0	<3.0	<3.0	<3.0	<3.0

Decision Prioritisation

The work programme for station infrastructure assets is determined by applying our prioritisation processes.

A maintenance, renewal, and upgrade prioritisation process is applied to our planning to ensure that the funding is allocated appropriately to address areas with greatest need.

The assets are inspected by a third party every three years to develop a detailed five-year maintenance, renewal, and upgrade program. The asset conditions are also internally re-assessed annually, and the programme fine-tuned accordingly.

Our work programme is prioritised based on safety and then assets that have a condition rating of Condition 5 and Condition 4. These are then ranked within each group by:

- passenger numbers
- risk of safety issues if not addressed
- risk of cost increase if not addressed (damage to associated items)
- risk of further degradation of asset if not addressed
- risk of service issues if not addressed.

Our station infrastructure investment priority framework is shown in Figure 68. This investment priority framework will be reviewed and updated, due to improvements to management and modelling of asset health and criticality.

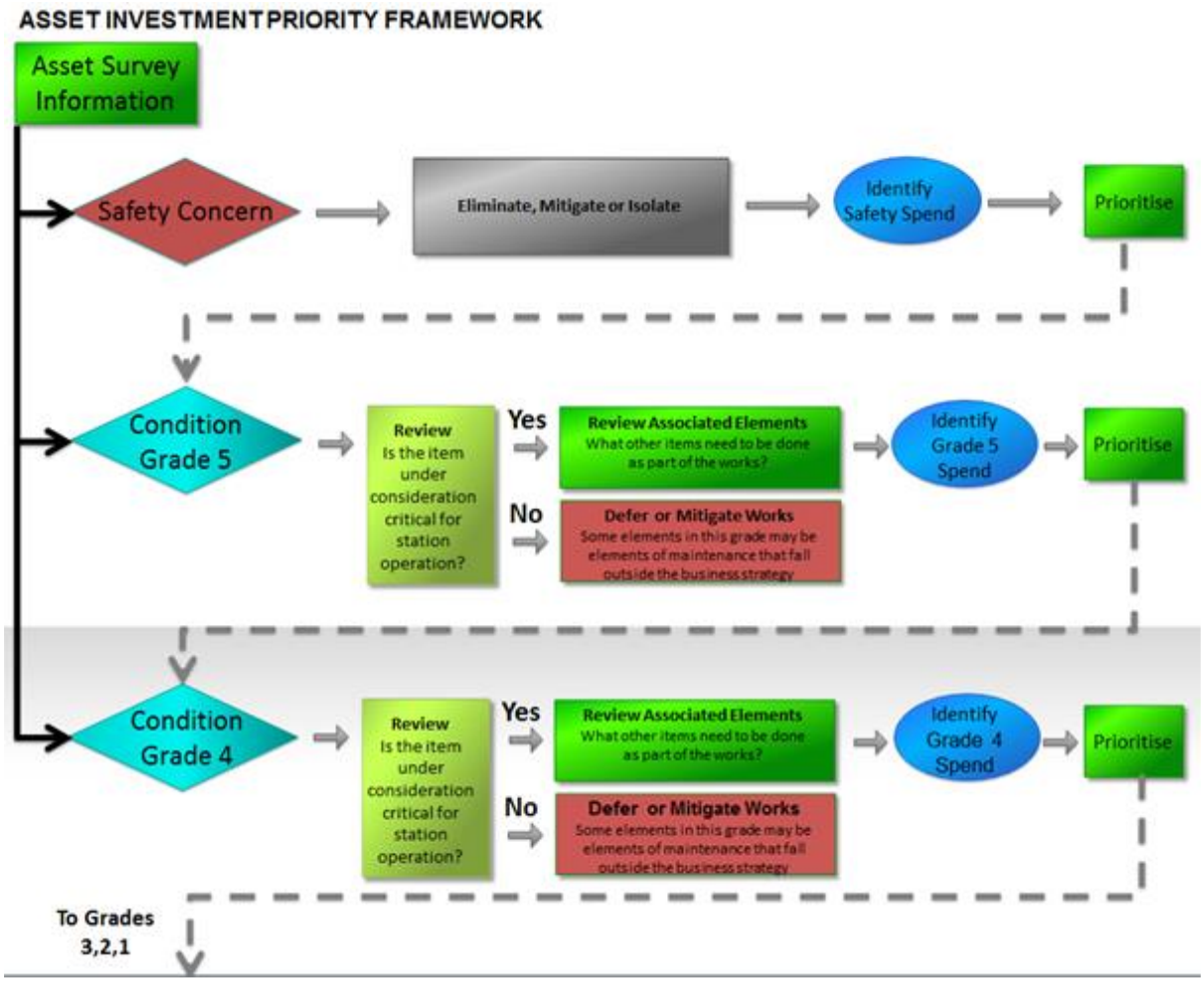


Figure 68: Station infrastructure investment priority framework

Wellington, Porirua & Waterloo stations are designated as “Major Bus-Rail Interchanges” and Waikanae, Paraparaumu, Upper Hutt, Taita, Petone and Johnsonville stations are designated as “Bus-Rail Interchanges”. Any enhancements or renewals at these sites require increased consideration with respect to integration with the bus facilities within the interchange.

Capacity Management - current and future requirements

With the growth in patronage, the shelter provided by many of our buildings is insufficient to provide adequate protection from the wind and rain while waiting for a train. As a result, increased shelter is required in several locations.

Modelling has been completed to illustrate the current and forecast shortage of shelter capacity at our stations to prioritise investment. This expenditure is incorporated into our investment planning.

Cost Estimation

Most of the maintenance and renewal activities that are required to be undertaken are specific to our 'brown field' sites and the rail corridor (which has access limitations, and high health and safety management expectations). As such, cost estimation of future projects has a high degree of uncertainty.

Cost estimation for planning is established through knowledge of the current market, and previous activities of similar nature. We typically procure contract maintenance, renewal, and improvement activities contracts, with standard rates and these provide a level of certainty in the short to medium term.

Deliver

Within the Deliver lifecycle stage we procure, construct, and commission the programmes of work that have been identified within the Planning Stage. Where applicable, works are integrated into a wider programme schedule and this incorporates other works at the same locations for resource and cost efficiency.

The activities are typically set up and managed as projects using our project management framework. An external engineer to contract is often required for the larger scale infrastructure renewal or new projects.

Procurement

Procurement is undertaken in accordance with Greater Wellington Procurement Policy, Waka Kotahi's Procurement Rules, and Government Procurement Rules. As a result, contracts more than $200,000 are generally undertaken on an open tender basis, with a quality price assessment process to ensure overall value for money.

Generally, we undertake procurement for multi-year contracts with the ability to extend them if contractor performance is meeting expectations.

Operate

From 3 July 2016, we commenced a 9+6-year performance based Partnering Contract with Transdev Wellington Ltd (Transdev) to be the rail operator for our region.

The Partnering Contract includes several provisions to provide resources at a number of key stations. These are Wellington Porirua, Paraparaumu, Waikanae, Petone, Waterloo, Upper Hutt, and Masterton stations. The remainder of our stations are unmanned; however, the Partnering Contract also resources a 24 hr / 7 day per week rail monitoring centre, which uses the >800 cameras across the rail network to actively monitor and manage asset and personal safety across the network. In addition, we have a roving security presence which helps to identify and/or prevent issues.

Our station cleaning and minor maintenance contract requires daily visits to undertake cleaning and identify and promptly remedy any vandalism.

Maintain

Maintenance activities for our station infrastructure assets are undertaken through various maintenance contracts. Annual maintenance inspections are undertaken for all assets, and corrective planned maintenance works are undertaken and prioritised in accordance with these inspections.

An overview of our key maintenance contracts for our station infrastructure assets is outlined in Table 24.

Table 24: Station infrastructure key maintenance contracts

Cleaning and minor maintenance	Provision of station cleaning services, and maintenance repairs, for example glass repair, painting, and graffiti removal etc.
Maintenance	Carry out planned minor maintenance works.
WoF and fire monitoring	Carry out Code of Compliance checks.
Cleaning and maintenance	Car park surface repairs/maintenance and undertake an annual car park clean for each car park.
Maintenance	Undertake a rolling 5-year bulb replacement program
Security	Undertakes new installations and maintenance of security (e.g. CCTV) and audio systems (e.g., Public Address & Help Points).

Station buildings and shelters

We have a station cleaning and minor maintenance contract in place to undertake cleaning and minor repairs of the stations including the buildings, shelters, and subways. Although most aspects of maintenance are planned, such as daily cleaning, there is an element of reactive maintenance that includes:

- responding to public inquires
- maintenance to assets that are damaged externally such as vandalism.
- substantial reactive maintenance, which is agreed prior to any works being carried out.

The assets are internally inspected each year and extensively inspected by a third party every 3 years. This enables our detailed 5-year maintenance, renewal, and upgrade program to be re-developed every 3 years and the programme fine-tuned each year.

Station pedestrian overbridges and subways

All maintenance is undertaken through a maintenance contract with Service Resources. Annual maintenance inspections are undertaken for all assets and corrective planned maintenance works is prioritised and undertaken in accordance with these inspections.

Lighting

An annual cleaning, maintenance, and inspection programme has been introduced for our lighting poles and fittings to ensure that issues are identified and rectified early, particularly in relation to environmental and corrosion issues.

Historically, we have undertaken a rolling five yearly bulb replacement programme on all station and car park lighting to minimise the cost and disruption to repair ad hoc bulb failures. As we are progressively moving to LED technology across the network, this renewal cycle will be extended out to a 10-year replacement, and hence we expect a substantial whole of life cost saving for the asset type.

Station Park and Ride

Maintenance of Park and Ride assets is undertaken through a maintenance contract; activities include:

- An annual clean of each car park
- 6 monthly sump cleans
- 3 monthly car park sump cleans
- Maintenance of storm water treatment devices such as upflo filters, and rain gardens
- Monthly vegetation maintenance
- Car park service repairs and maintenance activities

Car park resurfacing is based on a programme of forecast renewals.

Station security assets

Our CCTV service contract contains a preventative maintenance schedule, which includes the servicing of the CCTV assets on a six-monthly basis. Any reactive maintenance is agreed prior to any works being carried out.

Divest or Dispose

There are currently no plans to divest or dispose of any rail station infrastructure assets. However, prior to investing in a major asset renewal, we review the condition and performance of the existing asset and assess if the asset should be refurbished, or alternatively completely replaced.

Due to the nature of the assets, there is very little opportunity or practicality to sell the assets. Some components can be recycled during the demolition process.

Forecast expenditure

Figure 69 shows our station infrastructure operational and capital expenditure forecast.

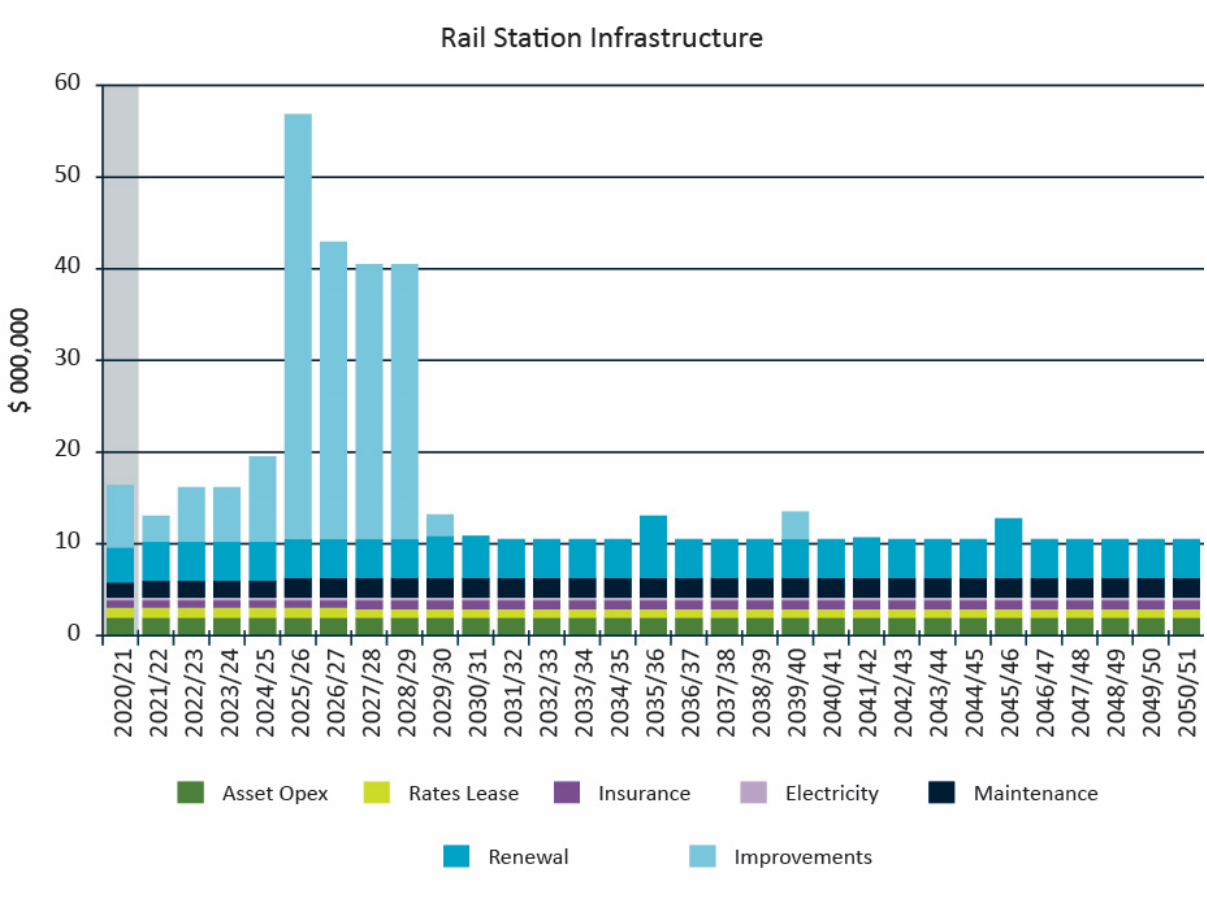


Figure 69: Station infrastructure operational and capital expenditure forecast

Operating expenditure

The operational maintenance expenditure for rail station infrastructure is forecast to remain relatively steady at approximately $6.2m per year over the next 30 years. This operating expenditure covers, costs such as cleaning, rates, lease, insurance, electricity, and planned and corrective maintenance activities.

Capital Expenditure

The renewal costs for rail station infrastructure is forecast to remain relatively steady at $4.2m per year.

To achieve the customer experience improvements, and the achievement of the mode shift and growth targets, the forecast includes improvements to rail station infrastructure

facilities. This includes increased shelter and improvements in facilities while passengers wait for trains, and improved connections between the stations and the community such as improvements to Park and Ride, bicycle storage facilities, and improvements to paths, lighting, security and general accessibility.

Rail EMU Maintenance Depot Asset Class Plan

This asset class plan describes our lifecycle management approach for our EMU depot, and the depot plant and equipment assets. These assets are required to support and carryout maintenance activities on our rolling stock assets. The assets in this asset class plan consist of:

- Rail maintenance depot comprising:
  - One Maintenance depot building
  - One Wheel Lathe building
  - Two Train wash buildings
- Train wash
- Underfloor wheel lathe
- 15-ton gantry crane
- Train Jacks and control console
- Wheel drop hoist
- 1-ton mono crane
- Scissor lift table
- Masterton compressor.

Description and current state

GWRL owns all the assets detailed within this asset class plan. The land these buildings are on is owned by KiwiRail. GWRL has a long-term lease on this land.

EMU maintenance depot

The EMU Maintenance Depot is in the Thorndon rail yard and is used for the routine maintenance for our EMU fleet and heavy maintenance for our rolling stock. The routine maintenance of our Wairarapa carriages is undertaken at a different facility, which is owned and maintained by KiwiRail. We have a licence to occupy this site for the maintenance of these carriages.

The EMU Maintenance Depot is 5,000m2 and includes a five-road maintenance floor and facilities for staff. Other buildings included at the maintenance depot site are a wheel lathe building located approximately 300m north of the maintenance depot, and two EMU train wash buildings, which are semi attached to the main maintenance depot.

It also includes office space and staff amenities.

Figure 70 shows an external and internal view of our EMU maintenance depot facility.

Figure 70: EMU maintenance depot facility

Depot plant and equipment

Specialist depot plant and equipment are needed for the maintenance of our rolling stock assets. Apart from the Masterton compressor, these assets are accommodated within the main depot building and the wheel lathe building.

Train wash

The train wash is located on the wash road adjacent to the EMU depot and is housed in two purpose-built shelters. It comprises a control room, chemical application bay, wash and rinse bay, and underground sump.

The wash is required to meet the cleaning requirements of the EMUs and preserve their stainless-steel body shells. It was selected in conjunction with the train manufacturer during the EMU design phase and construction.

Wheel lathe

The Heggenscheidt underfloor wheel lathe is a computer-controlled, purpose-built, machine for re-profiling rail wheels on rolling stock. It is primarily used for the EMU and Wairarapa carriage fleets but is also used to carry out work for Kiwirail. It is located north of the EMU depot in a purpose-built facility. The wheel lathe is essential plant to maintain the ability of rolling stock to meet the requirements to run on the rail network.

15-ton gantry cranes

The gantry cranes are located within the EMU depot facility over the length of road one. They provide support for heavy maintenance activities and general logistics. In addition to moving parts, they can be used to lift the Wairarapa carriages for heavy maintenance activities.

Train Jacks

The train jacks are required to lift rolling stock for heavy and unplanned maintenance. They can only be used in the EMU depot. They comprise of nine jacks (this includes one spare) and a central control console. Hyundai Rotem purchased another set of train jacks to

supplement the GWRL ones. GWRL will purchase these from Hyundai Rotem at the expiry of the operations and maintenance contract.

Wheel drop hoist

The wheel drop hoist is primarily used to replace components installed on the underframe of the rolling stock without the requirement to lift the vehicle. Because of its dimensions, it has limited use on the EMU fleet.

Scissor lift table

The scissors lift table is used in conjunction with the train jacks to replace underframe equipment.

Masterton Compressor

Located in Masterton, this is used to provide pneumatic shore supply to the Wairarapa carriages.

Age Profile and life expectancies

The main maintenance depot building has been added to over the years and has two sections to the one building. There is the 1970's portion, which is one EMU in length and four roads wide, with full roof access on three of these roads. The depot was extended in 2011. The extension is two EMUs long, five roads wide, includes full underframe access, and roof access platforms.

Most of the depot plant and equipment assets were purchased and installed in 2010 during the depot build. The standard planned life of each of these assets is 30 years, with planned routine maintenance being carried out in accordance with the manufacturer's recommendations. The condition of major components is monitored, and renewals are carried out based on condition.

The age, life expectancy, including expected end of life of our Plant and Equipment assets are summarised and in Table 1.

Table 25: Age profile, population and life expectance of Depot plant and equipment

Asset type	Quantity	Current age	Standard base life	End-of life
Train wash	1	12 Years	30 years	2040
Wheel lathe	1	12 Years	30 years	2040
15-ton gantry crane	2	12 Years	30 years	2040

Train jacks	9	12 Years	30 years	2040
EMU wheel drop hoist	1	12 Years	30 years	2040
2-ton mono crane	1	12 Years	30 years	2040
Scissor lift table	1	12 Years	30 years	2040
Masterton compressor	1	15 Years	30 years	2035

Asset condition

We determine the condition of our rail EMU maintenance depot assets by using the condition grade rating system within the International Infrastructure Management Manual (IIMM).

Table 26 describes the condition rating system.

Table 26: Description of condition rating system

Condition Rating	
Rating	**Description of Condition**
1	Very good condition only preventative maintenance required
2	Good condition: Minor maintenance required plus Preventative maintenance
3	Moderate condition: Significant maintenance required
4	Poor condition: Significant maintenance required
5	Poor condition: Unserviceable

Our maintenance depot and wheel lathe building are in reasonable condition. Their size and the nature of the heavy maintenance activities that occur inside them mean they require constant ongoing maintenance to ensure they remain in a serviceable condition.

Figure 71 shows the maintenance depot and buildings condition.

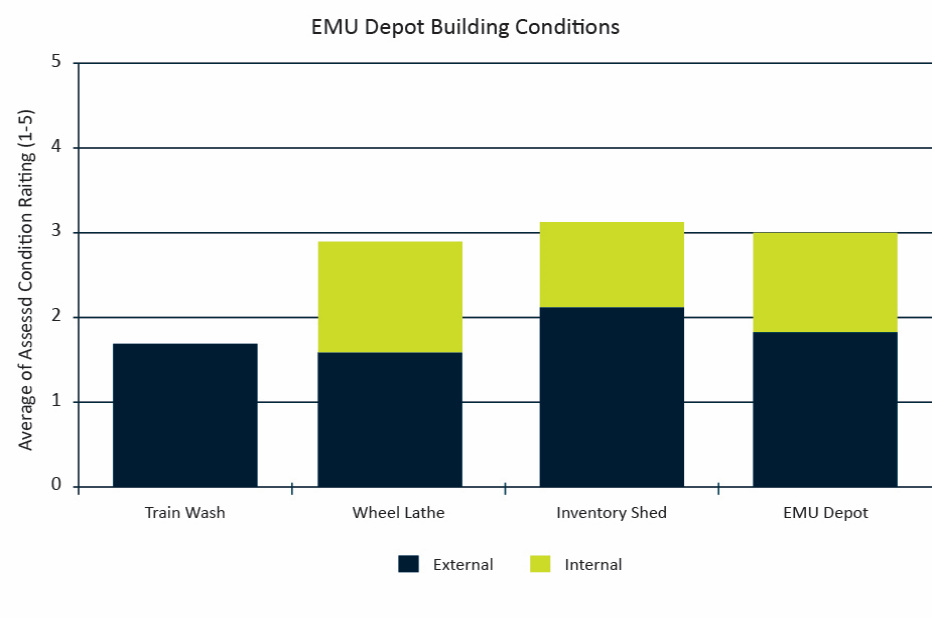


Figure 71: Maintenance depot and buildings condition

Overall, the condition of our plant and equipment assets is good. This is based on the Transdev Wellington 2022/23 Asset Management Plan. During 2022/23 full condition assessments are planned. This will identify any likely renewals for the contract period.

Figure 72 shows the plant and equipment age profile and condition.

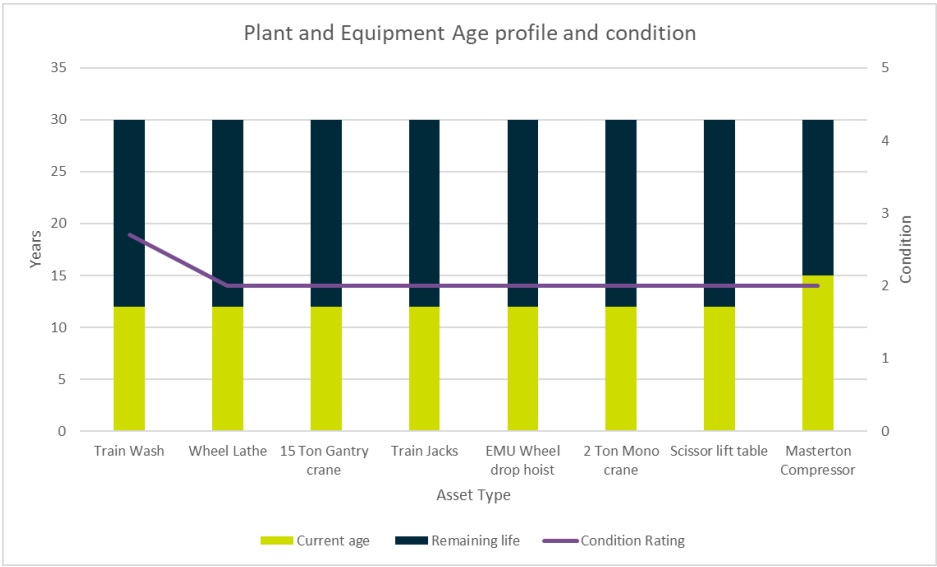


Figure 72: Plant and equipment age profile and condition

Maintain

We contract out the maintenance of the maintenance depot and wheel lathe buildings to our maintenance service provider. All maintenance conforms to agreed service standards outlined in the contract. Although most aspects of maintenance are planned, such as washing facility servicing, testing of gas heaters etc., there is a component of reactive maintenance.

The plant and equipment within the maintenance depots facilities are maintained by Transdev – Hyundai-Rotem through the operations contract to ensure that maintenance is timed to best suit their vehicle maintenance requirements.

The maintenance carried out is in accordance with the recommendations of the original equipment manufacturer's instructions.

Asset risk

These assets are required to support and carry out maintenance activities on the rolling stock assets. Failure of these assets would directly affect the ability to carry out critical maintenance on rolling stock, potentially resulting in under supply for scheduled services.

The plant and equipment assets are considered to have high criticality cto maintain rolling stock in a condition that meets customer, performance, and network requirements and, as such, must be maintained to a high level.

As the equipment is specialised, planning replacement and/or major maintenance activities must take into consideration the impact on the ability to deliver passenger services.

Most of the equipment is manufactured outside New Zealand and has considerable lead times and costs to replace.

Asset information

Plant and Equipment is managed in the same manner as rolling stock assets within the Maximo MMIS system. Changes to the manuals or maintenance regimes must be done through the approved engineering change process.

The maintenance depot asset information is held in our asset management system, Ngatahi.

Financial Expenditure

Figure 73 shows our rail EMU depot expenditure forecast.

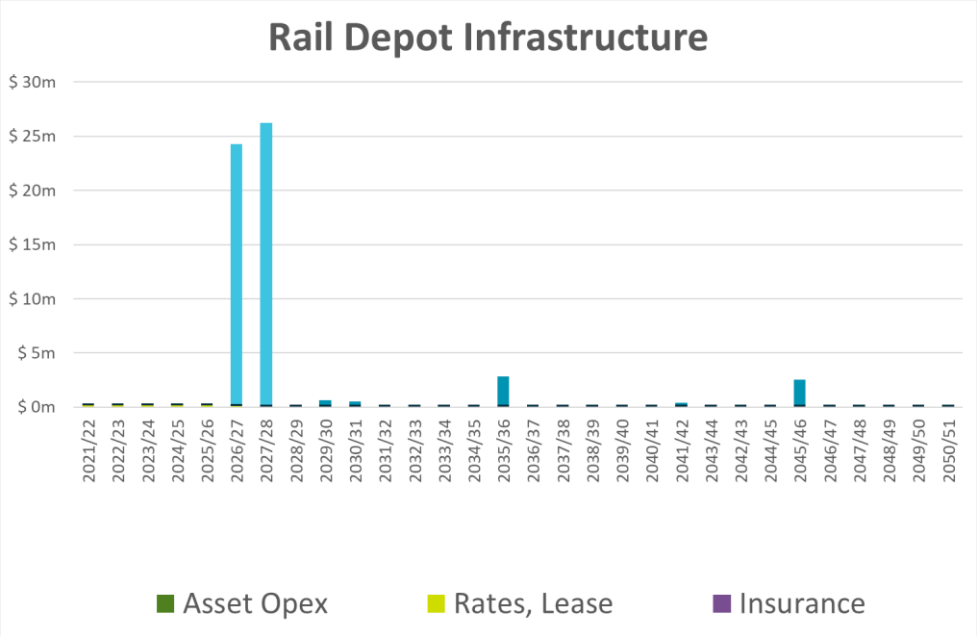


Figure 73:Rail EMU depot expenditure forecast

Bus and Ferry Overview

Our bus and ferry portfolio covers the assets we use for delivering our bus and ferry services within the Wellington region. We categorise these assets into the following asset class plans:

- Bus and Ferry Customer Facing
- Bus and Ferry Network Enabling
- Bus Fleet, Depots, and EV Chargers

We have an extensive network of bus routes which we set and review on an ongoing basis. Our bus services enable people to move between many origins, including through connector services to train stations. Bus trips make up two-thirds of the Wellington region's public transport trips but only 40% of passenger kilometres.

Our overarching objective is to provide high-quality, fit-for purpose bus and ferry stop infrastructure that retains existing customers and attracts new public transport users. We achieve this by:

- providing an accommodating environment to wait
- ensuring the stops and shelters are well designed for the vehicles using the stop ensuring the stops and associated infrastructure are accessible, safe, and affordable
- placing the stops at destinations to encourage multimodal access and connectivity between our public transport network and the communities we serve
- ensuring that accessibility and safety is incorporated in the planning and provision of all our bus and ferry stop infrastructure.

All buses on our network have been fitted with bike racks to encourage modeshift from private vehicle to public transport and active modes of transport. The use of bike racks is increasing.

Most of the buses currently operating on our network are diesel powered; however, we are progressively replacing these with electric buses as we implement our strategic priorities of decarbonisation and climate change mitigation. Therefore, an important focus for our operational and asset planning is to ensure we have sufficiently resourced bus depots and bus layovers to service and accommodate an increasingly electrified fleet.

Core layover and charging areas in the region are under pressure. As we acquire more fleet to support a growing network, and increased patronage demand, there will be increasing demand for additional layover space and EV charging areas. Furthermore, bus layover space at the Lambton Quay Interchange is about to be reduced, due to vehicle and pedestrian safety improvements and the installation of EV charging equipment there. Also, a proposal exists for the owners of the land where the Lambton Quay Interchange is located to

redevelop the area for other purposes. This will further reduce layover capacity on the network. To continue to provide core services to the wider public transport network new bus layover areas with EV charging is required. We are investigating several locations.

We strongly hold that to be truly strategic in our planning and provision of world-class public transport, we need to have stronger control of critical network enabling infrastructure such as layovers and depots. This is to ensure critical assets remain available to public transport use and not converted into other uses such as retail or housing.

We also believe that public ownership of the bus fleet provides a better ability to be agile in fleet distribution to meet demand, security and continuity of fleet availability in our region, and a financially beneficial approach to procurement.

Our ferry provides services between Days Bay, Seatoun, Queens Wharf, and to the Department of Conservation reserve on Matiu Somes Island. While our ferries have a small share of the total public transport trips in the region, they provide a valuable niche service for commuters and visitors. Deployment of the innovative new electric ferry, the first in the southern hemisphere, has enhanced the sustainability and customer experience of this service.

Expenditure

The expenditure detailed in this AMP covers the operational, maintenance, and capital expenditure of our customer facing and network enabling assets.

The Bus Fleet, Depots, and EV Chargers Asset Class Plan is included in this AMP for completeness. The expenditure related to these assets are included in Greater Wellington's 2021-2031 LTP and detailed expenditure will be included in the 2023 AMP.

Key investments

The key investment drivers for our bus and ferry infrastructure are to improve customer experience and promote mode shift from private vehicle to our public transport network.

Our total opex for bus is $223m over the 30-year period. The bus and ferry asset opex is forecast to remain steady over the planning period. The asset opex covers asset studies and investigations, signage changes due to timetable changes, cleaning costs, and maintenance costs. Our opex costs also include the costs to maintain and manage assets that form part of our network but are not owned by us.

Our total capex renewal and capex improvement is $63m.The core capex investments for our bus and ferry portfolio are:

Bus Shelter New & Replacement Programme: $43.4m of investment to renew and install new bus shelter facilities. Having a place to wait for a bus service that is safe and protects the customer from environmental factors is key to customer satisfaction. This continuous programme of investment provides facilities that meet CPTED design and best practice for accessibility and encourages mode shift.

Waikanae and Paraparumu Bus Hub improvements: $1.33m of investment to improve safety, security and accessibility**.** The investment includes new shelters and canopy, and space for a layover at the Paraparaumu bus hub. This hub will have four bus stops, and space for a layover. Public transport services in Waikanae and Paraparaumu are key to a connected community and reducing congestion on the road network. There are thousands of customer movements through these hubs every day. Safety, security, and inclusive access upgrades are expected to significantly increase the overall customer experience and encourage mode shift. This initiative will actively address CPTED design and accessibility best practice to support our communities' safe use of public transport.

Bus layover area including area for EV charging: The capital cost of layovers, including areas for EV charging, is not included within 2021-2031 Long Term Plan (LTP) or this AMP. However, we have included $2m within the AMP forecast for the investigation to develop options for consideration.

Figure 74 shows our bus and ferry infrastructure asset opex, asset maintenance, capex renewal, and capex improvement expenditure over the planning period of this AMP.

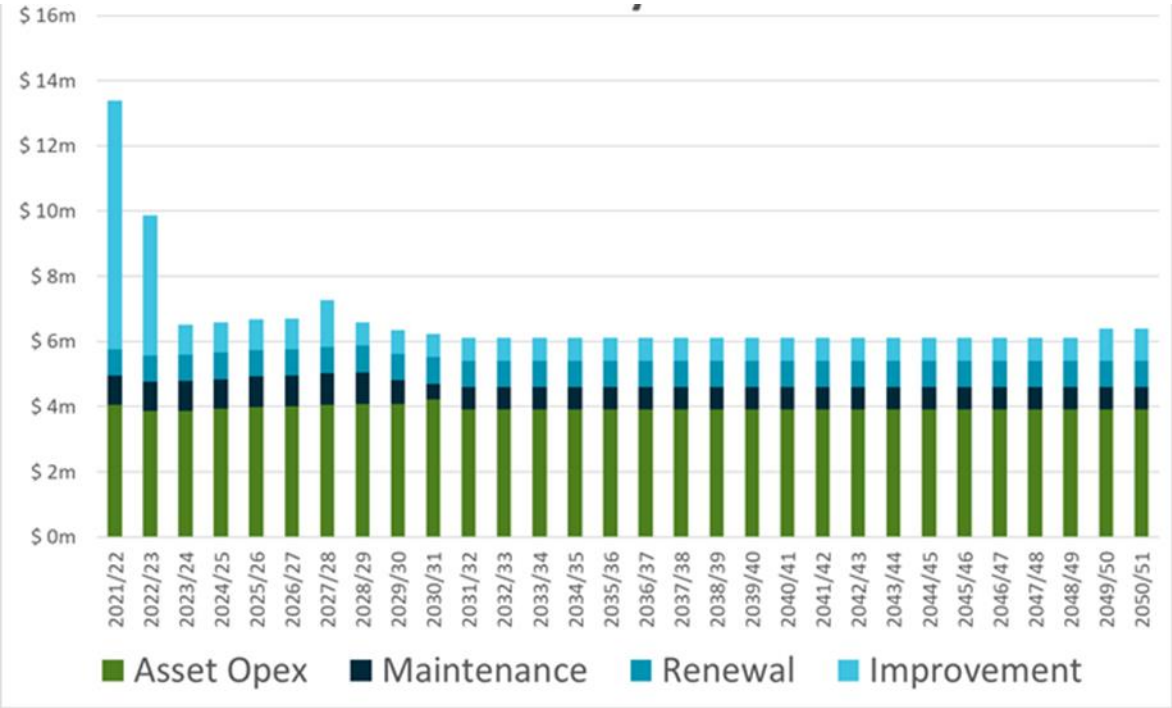


Figure 74: Bus and ferry infrastructure expenditure

Asset Class Plans

The following sections describe, in more detail, our asset management approach for our bus and ferry infrastructure assets. These are separated into three asset class plans:

1. Bus and Ferry Customer Facing
2. Bus and Ferry Network Enabling
3. Bus Fleet, EV Charging, and Depot.

These asset class plans describe the strategy, asset characteristics, and management approach for these assets.

Bus and Ferry Customer Facing Asset Class Plan

This asset class plan describes our lifecycle management approach for our bus and ferry customer facing assets. The assets and categorisations outlined in this asset class plan apply to all the assets on our public transport network, irrespective whether we own them or whether they are owned by the local Territorial Authority (TA).

Our bus and ferry customer facing assets consist of the asset types as shown in Table 27.

Table 27: Bus and ferry customer facing assets

Item	Description
Bus shelters	Provides seating, shelter, and hard standing area for passengers to wait for bus services.
Metlink and Metlink/RP5 Signs	Signs with unique stop number displayed. Current design incorporates stop number and RP5 into one sign.
RP5 Signs	Bus stop sign when traffic resolution parking restrictions are in place (combined Metlink/RP5 signage is included in the number above).
Poles	Allowing Metlink, RP5 signs, and timetable cases to be displayed.
Timetable display cases	Provides dry space for paper timetable to be displayed. Various sizes used.
Totems	Provides directional, route information and timetable information. Totems have more space for timetables than timetable display cases.
Wayfinding signs	Provide passengers with simple directions to public transport and other places of significance Typically located at major stops.
RTI displays	Electronic displays providing customers with real-time bus departure time information.
Seats	Separate seating that is not incorporated into a shelter or owned by the local authority (installed by exception).
Hub assets	Large shelter, incorporating network information, route information displayed, lighting, CCTV, and high level of accessibility to buses

Below is a description of the assets that form this asset class.

Bus shelters

There are a variety of bus shelter designs on our public transport network. Our older bus shelters are constructed with different materials and layouts as historically each TA installed shelters to their own requirements and with local colours.

The variety of bus shelter designs and the manufacturers on our network are DesignBrand, CAM, Kiwi, HM, Metro, Concrete Bunker, and Wooden. Each of these are shown below from Figure 75 to Figure 81.

Figure 75: CAM bus shelter

Figure 76: HM bus shelter

Figure 77: Kiwi bus shelter

Figure 78: Metro bus shelter

Figure 79: Concrete and wood bus shelter

Figure 80: Concrete bus shelter

Figure 81: Wooden bus shelter

We now plan our new bus shelters to a standard modular design, which considers durability and quality elements, but also accessibility requirements such as wheelchair access and clearance around structures. This design provides a 'clean' overall appearance while minimising the scope for injury and vandalism. The design of these shelters incorporates Crime Prevention through Environmental Design (CPTED) standards. Standard installations are 3.6m x 1.2m, with larger and smaller shelters an option depending on site specific requirements and constraints.

New shelter installations typically have an artwork laminate on them to reduce vandalism.

Figure 82: Design Brand bus shelter with laminate

Lighting is provided at some shelters via solar lighting on a limited case by case basis. In some cases, we work with the TA to improve or adjust street lighting. New installations consider existing lighting when locating the shelter.

Signage

Our existing bus stop signs vary, as designs have developed over time. The current design of our signs combines both the Metlink sign information and the RP5 sign (see below) to maintain cost efficiency and avoid excess signage. Our new signs include the legal RP5 sign, which means traffic resolutions are required at all bus stops with this sign. Traffic resolutions are the responsibility of the TA and should be in place at all bus stops. However, there are several bus stops, particularly low category stops in the regions, which do not have a traffic resolution, resulting in our customers having to board/alight the bus in the carriageway as the bus is unable to pull up to the kerb. Much of our signage is installed on utility company poles.

Table 28 shows and describes the various bus stop signs on our public transport network.

Table 28: Various bus stop signage design

	Combined Metlink/RP5 (Type D)	Metlink and RP5	Metlink Bus Stop Letter	Rail replacement	Metlink Logo	Route #
Example						
Description	Current standard for new sign installations	Alternative for new sign installations Typically used where the bus stop has time restrictions, such as school stops	Current standard at major stops and hubs where there is more than one stop grouped in one location Requires an RP5 to be installed separately	Current standard for new sign installations at stops where buses replace trains. A number of stops have older style signage.	Older signage no longer installed but meets requirements No new installations Will be phased out over time	Older signage that may have out of date route number information. No new installations Will be phased out over time
No. assets installed with an RP5	1661	43	18	5	750	43
No. assets installed without an RP5	N/A	28	5	43	17	85

In addition to the signs listed in Table 28, there are 196 stops with an RP5 but no Metlink signage, and 138 stops without any signage at all (most of these are hail & ride and/or school stops).

Totems and wayfinding signage

Timetable information on totems is expensive to replace when bus timetables are amended. This expense is considered when we plan or review totems.

Bus hubs

Our bus hubs are a collection of bus stops located close together that connect buses from outer suburbs with main routes. We own the bus hub assets. They are sheltered, well-lit spaces, making transferring between buses easy. Figure 83 is a picture of our Brooklyn bus hub.

Figure 83: Brooklyn bus hub

RTI displays

Our RTI displays are the electronic displays providing customers with real-time bus departure time information. RTI displays in the region vary from having three lines of information (the most common) to six, eight, or 18 lines. Additionally, a few key locations have LCD televisions displaying real time information. RTI displays have been in place since 2011 with coverage growing since then. They form a part of bus stop infrastructure at major stops. Customers can also access RTI via their smartphones through either the Metlink website or apps.

Bus stop assets owned by others

In addition to our bus stop assets, several assets that are required to operate a successful public transport bus service are not owned by us. These are:

1. **Road corridor.** The road corridor is where bus stop infrastructure is located, including the footpath, berms and road pavement. Allocating space within the road corridor for bus infrastructure is the responsibility of the road controlling authority. Depending on the road, this could be the TA or Waka Kotahi. They are also responsible for the painted bus stop markings. We recommend a 15m bus box and 9m entry and exit tapers.
2. **Privately owned verandas.** These provide shelter from the weather at 112 of our bus stops, meaning the bus stop does not require a Metlink bus shelter.
3. **Seating.** The TAs within our region own 991 seats for our passengers to await our bus services.
4. **Utility Poles.** Our signage is installed on 932 utility provider owned poles to reduce clutter.
5. **Adshel bus shelters.** There are 181 bus shelters on our bus network that are owned and maintained by Adshel NZ Ltd, under contract with the TA, to display advertising.
6. **Lambton Interchange.** Wellington City Council owns the Lambton Interchange. It is responsible for the maintenance and cleaning of the interchange, which is funded by Metlink. Please note the asset management activities for the layover part of Lambton Interchange is discussed in the Bus and Ferry Asset Class Plan.
7. **TA shelters.** WCC and Wairarapa TA's have retained ownership of the shelters they have installed, with WCC still adding to the network. Metlink undertakes to clean and maintain all shelters on the network
8. **Litter bins.** These are owned, managed, and maintained by the relevant TA.

Strategic objectives

Our overarching objective is to provide a high quality, fit-for-purpose bus and ferry stop infrastructure that attracts new public transport users. To achieve this, our key objectives are:

Customer Experience:

- provide a safe and comfortable environment to wait
- provide provision of shelter from weather at all Category 3[21] and above stops, including stops at retirement villages.

[21] Our bus stop categories are defined in the Asset Importance section

Mode shift

- ensure our bus stops are well designed and provide easy access to the bus and ferry for all our public transport users
- ensure our bus stops are placed at destinations to encourage multimodal access and connectivity between our public transport network and the communities we serve.

Decarbonisation

- ensure that environmental, sustainability and health outcomes are considered in the planning and provision of our bus and ferry stops.

Safety

- ensure that accessibility, safety, and security are incorporated in the planning and provision of all our bus and ferry stop infrastructure.

Asset characteristics - current state

Our bus stops are a place where our passengers embark and disembark. The simplicity of this process belies the complexity of the bus stop design details required to achieve an accessible, safe, and affordable bus stop. The key component to bus stop design is that the bus can reliably and consistently get close and parallel to the kerb and stops where passengers expect it to stop relative to the flag, shelter, and road markings; and does not obstruct the road.

Asset Importance

We have over 3,000 bus stops on our network. To manage them, we define each bus stop as being in one of five categories. The five bus stop categories are based on importance to our public transport network and consider the function and location of the bus stop. The function of the bus stop accounts for the importance of the bus stop within our network, including the number of trips servicing a bus stop and the connections that can be made. The location of the bus stop accounts for the proximity of the bus stop to places of employment, major destinations, local community facilities, and shops.

We have defined our bus stops categories as follows:

Category 1 – Premium stops

Category 1 bus stops are served by high frequency services and multiple routes. They must be used by more than 250 services per day and be within proximity to a large number of employment sources, businesses, shops and community facilities. Category 1 bus stops must have a large, sheltered area with seating, large RTI sign, network map, lighting, totem sign for timetable display, painted bus box and tapers, bus stop traffic resolution, and a hard

standing surface. We plan that Category 1 bus stops have CCTV. We currently have 29 Category 1 bus stops. The indicative cost to install a Category 1 bus stop is $106,000.

Figure 84 below is bus stop 5000 Courtenay Place, which is a Category 1 bus stop.

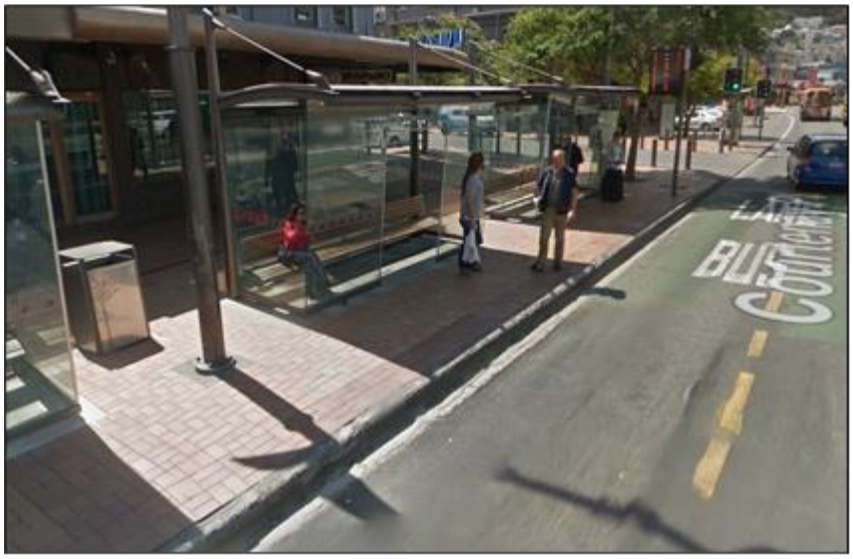


Figure 84: Category 1 bus stop

Category 2- Major stops

Category 2 bus stops are served by high frequency services and multiple routes. They must be used by more than 150 services per day and be within proximity to a large number of employment sources, businesses, shops, and community facilities. Category 2 bus stops must have a sheltered area with seating, RTI sign, timetable and case, painted bus box and tapers, bus stop traffic resolution, hard standing surface, and Metlink bus stop sign. We plan that Category 2 bus stops have lighting, totem sign for timetable display, large RTI sign, and a network map. We currently have 68 Category 2 bus stops. The indicative cost to install a Category 2 bus stop is $69,000.

Figure 85 is an example of a Category 2 bus stop.

Figure 85: Category 2 bus stop

Category 3 – Standard Stops

These bus stops are served by high frequency bus routes and are often located in suburban areas, near local centres. It is planned that Category 3 bus stops have sheltered area with seating, timetable and case, painted bus box and tapers, bus stop traffic resolution, hard standing surface, and a Metlink bus stop sign. If appropriate for the location, lighting, and a RTI sign may be provided. The indicative cost to install a Category 3 bus stop is $25,000. We currently have 558 Category 3 bus stops.

Figure 86 is bus stop 8004 Jackson Street at Sydney Street.

Figure 86: Category 3 bus stop

Category 4 – Local Stops

Category 4 bus stops are served by standard bus routes and are often located in suburban areas. They tend to be low patronage suburban inbound stops. It is planned for Category 4 bus stops to have a timetable and case, painted bus box and tapers, bus stop traffic resolution, hard standing surface, and a Metlink bus stop sign. If appropriate for the location, Category 4 bus stops will have lighting and seating. We currently have 1,087 Category 4 bus stops. The indicative cost to install a Category 4 bus stop is $2,000.00.

Figure 87 is bus stop 3504 Helston Road at McMahon Way.

Figure 87: Category 4 bus stop

Category 5 – Minor Stops

Category 5 bus stops are used predominantly as set down only bus stops and can be located anywhere in the region. They tend to be outbound stops where people get off the bus and where they do not tend to get on the bus. Category 5 bus stops must have a bus stop traffic resolution, hard standing surface, and a Metlink bus stop sign. If appropriate for the

location, Category 5 bus stops will have painted bus box and tapers, lighting, and site-specific timetable and case. We currently have 1243 Category 5 bus stops. The indicative cost to install a Category 5 bus stop is $2,000.00.

Figure 88 is bus stop 5351 Montgomery Avenue at Skyline Reserve, which is the second to last stop on the route.

Figure 88: Category 5 bus stop

A further bus stop type is for train replacement services, known as buses replacing trains (BRT). As these have a specific and limited purpose; they are not included within the current categorisation.

Summary

Table 29 summarises the assets required at each bus stop by category.

Table 29: Assets at each bus stop by category

Category	Assets Required
1	Category 2 assets plus: • Large shelter/covered area with seating • Large RTI sign • Network map • Lighting • Timetable incorporated into a totem
2	Category 3 assets plus: • RTI sign
3	Category 4 assets plus: • Shelter/covered area with seating
4	Category 5 assets plus: • Timetable and case • Painted bus box and tapers
5	• Bus stop traffic resolution • Hard standing surface • Metlink bus stop sign

The number of bus stops by category and TA is shown in Table 30.

Table 30: Bus stop population by category by region

	Number of Bus Stops by Category						
TLA	**1**	**2**	**3**	**4**	**5**	**BRT**	**Total**
Wellington	26	45	262	563	421	**14**	**1331**
Lower Hutt	2	15	171	220	245	**11**	**664**
Upper Hutt	0	1	34	60	133	**4**	**232**
Porirua	0	6	47	120	152	**4**	**329**
Kapiti	0	1	14	143	131	**1**	**291**
Wairarapa	0	0	4	4	160	**5**	**173**
Total	**28**	**68**	**532**	**1110**	**1243**	**39**	**3020**

Population and life expectancy

The quantity and life expectancy of our bus stops assets are shown in Table 31.

Table 31: Shelter population and life expectancy

Asset	Quantity	Life expectancy (years)
Seating	87	20
Shelter – Design Brand	347	25
Shelter – CAM	95	20
Shelter – Kiwi	51	20
Shelter – Metro	46	20
Shelter – Concrete Bunker	80	45
Shelter – Wooden	79	45
Shelter – Concrete and Wood	22	45
Shelter – Heritage	6	45
Shelter – HM	48	20
Shelter – Concrete Block	9	45
Shelter - Metlink	32	20
Shelter – Metco	12	25
Shelter – Bespoke	1	20
Shelter – Other	13	20
Combined Metlink/RP5	2698	7
BRT Signs	62	7
Wayfinding Signs	39	3
Timetable and case	2872	10
Totem	54	7
RTI Display	199	10

Asset condition

Our bus and ferry stop assets have their condition assessed by our maintenance contractor during their regular cleaning and maintenance activities, which is outlined in our contract. Table 32 describes our condition rating scale for shelters.

Table 32: Condition rating scale

Rating	Condition	Description
1	**Very Good:** Only routine maintenance required	Sound physical condition well maintained. Asset likely to perform adequately with routine maintenance for 10 years or more. No work required.
2	**Good:** Minor maintenance required	Generally sound physical condition, showing minor wear or deterioration, well maintained. Deterioration has no significant impact on asset performance. Only minor work required (if any).
3	**Moderate:** Moderate maintenance required	Acceptable physical condition, showing some wear or deterioration, well maintained. Some parts of the asset need replacement or repair, asset still functions safely at adequate level of service. Moderate work required.
4	**Poor:** Significant maintenance required	Poor physical condition, significant wear or deterioration, pars of the asset need replacement or repair. No immediate risk to health or safety, barely adequate level of service. Substantial work required short term.
5	**Very Poor:** Asset requires upgrading, replacement or written off	Failed or failure imminent. Immediate need to replace most or entire asset. Health and safety hazards exist or asset cannot be serviced without risk to personnel. Major work or replacement required.

Shelters are assessed for replacement on both condition and functionality. Table 33 shows bus shelter condition by TA.

Table 33: Bus shelter condition by TA as at May 2022

Condition category	KCDC	PCC	WCC	HCC	UHCC	WAI	All
Good Condition	10	34	72	102	24	6	**248**
Reasonable Condition	55	79	280	116	22	21	**573**
Aged Condition		1	11	11	1		**24**
TOTAL	**65**	**114**	**363**	**229**	**47**	**27**	**845**

The functionality of a shelter is an assessment of meeting Crime Prevention through Environmental Design (CPTED) guidelines, accessibility and it's fit for purpose.

CPTED provides a framework for incorporating crime prevention within quality urban design by focusing on reducing the opportunity to commit crime. For asset owners this leads to the reduction of vandalism (cost of maintenance) and enhances the feel of safety for users of the facilities.

Examples of bus stop functionality is shown in Table 34.

Table 34: Bus stop functionality

CPTED Guidelines	Accessibility	Fit for purpose
• No spaces for entrapment • Good visibility in and out of the shelter • well maintained, community value • users feel safe	• no trip hazards, flush flooring to footpath • area for wheelchair or walking aids • visibility for bus to see patron (patron to see bus approaching)	• weather protection (wind and rain) • dry place to sit

The functionality assessment is broken down by shelter type. The older concrete and wooden shelters overall have low functionality, while the metal-built shelters have glass and/or better accessibility standards but some still have issues which impact our customers. The newer design of shelters meets the functionality requirements.

Figure 89 and Table 35 shows our bus shelters' fit for purpose by region as of May 2022.

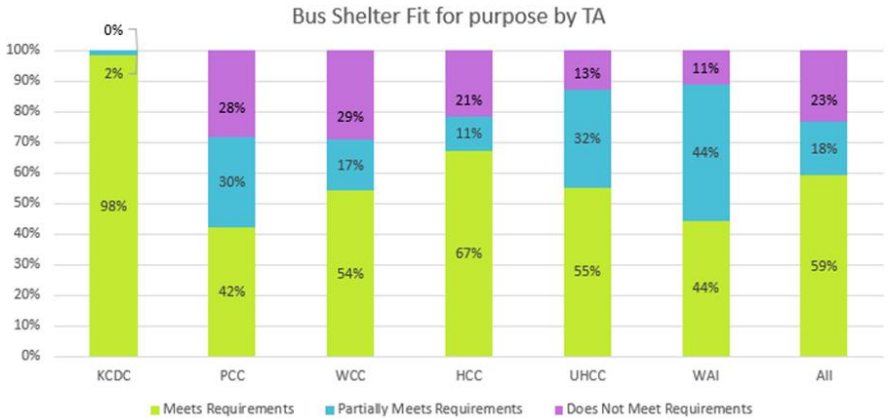


Figure 89: Bus shelters fit for purpose by region

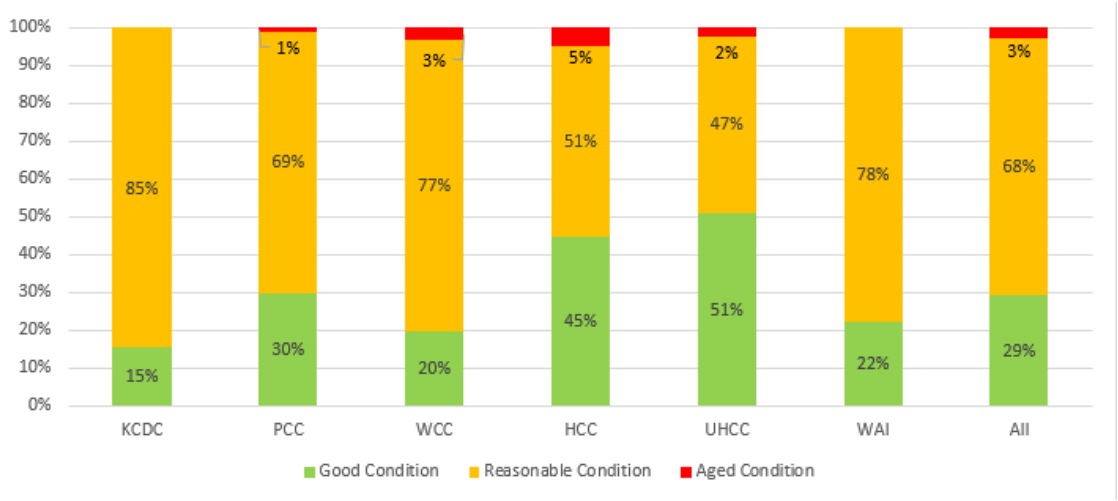
Table 35: Bus shelter fit for purpose by region

Fit for purpose	KCDC	PCC	WCC	HCC	UHCC	WAI	ALL
Meets Requirements	64	48	197	154	26	12	**501**
Partially Meets Requirements	1	34	61	26	15	12	**148**
Does Not Meet Requirements	0	32	105	49	6	3	**196**
	65	**114**	**363**	**229**	**47**	**27**	**845**

A detailed condition assessment for our shelters was completed in 2022. A summary of the condition assessment by TA is shown in

Figure 90 shows bus shelter condition by TA.

Figure 90: Bus shelter condition by TA



We replace signage and timetable cases if the asset is damaged or unusable. The monthly quantity of signs replaced due to damage is approximately 5-10, depending on reporting and actual cases of damage. The signage asset's condition is recorded using the condition rating scale set out in Table 32.

Table 36 shows that 9% of our bus and ferry signage assets have a condition rating of 3 or better and 7% of our bus and ferry assets have a condition rating of 4 or 5. These assets are programmed for replacement or refurbishment.

Table 36: Bus stop asset condition ratings

Condition Rating	1 - Very Good	2 - Good	3 - Moderate	4 - Poor	5 – Very poor	TOTAL
Metlink signage	163	2070	209	98	158	2698
BRT signage	45	16	1			62
RP5 sign	35	169	25	5	47	281
Timetable and case	488	1278	979	97	30	2872
Totem	1	54	1	1	0	57
% of assets	**12%**	**60%**	**20%**	**3%**	**4%**	

Asset risk

The main risks facing our bus and ferry stop assets are weather, geological hazards, environmental conditions, human-caused accidents, vandalism, capacity, and technological.

To mitigate these risks for our new bus and ferry stop installations, we carry out site specific assessments so that our planning takes into consideration location, orientation, and construction materials (including using specialist coatings to prevent permanent graffiti damage).

Our RTI displays rely on the continuous supply of electricity and telecommunications. If they are disrupted, they may also be interrupted.

As patronage increases in certain areas, our assets could no longer be fit for purpose.

Asset performance

If one of our bus stop assets fail, our bus service is likely to still operate but the level of service would diminish. Our bus stop assets have generally performed well from a condition perspective but not always from a functionality and CPTED viewpoint.

There are currently 344 shelters that either partially or do not meet current CPTED and functionality requirements. We are addressing this level of service gap through our shelter renewal programme.

Not all our bus stops meet the current draft Waka Kotahi Design Guidance for Public Transport. This coupled with existing building canopies constructed close to the edge of the footpath results in a collision risk between bus and the existing structure. Our bus stop improvement programme of work aims to address such deficiencies. Our ability to implement these improvements is often dependent upon the support of the local territorial authority, which can be difficult to obtain particularly where our changes require a reduction in on-road parking for private vehicles.

Figure 91 shows an example of a building canopy overhanging the edge of the footpath.

Figure 91: Example of a building canopy overhanging the edge of the footpath

Our planning considers the lifecycle of all components of our bus stop assets. This includes ensuring the laminates on our assets are replaced in accordance with the manufacturer's guidelines, particularly age-related guidelines. We have found that if our laminates are replaced after the recommended replacement age, it is more costly to remove these laminates as the adhesive hardens.

We are also reviewing the Bus Replace Trains (BRT) network in light of the significant work being undertaken on the rail corridor. This network is not performing well given the frequency with which it is used, and this will be a key focus for us in the current and future trienniums.

Asset information

Our condition information is reliable. Service providers routinely inspect all our bus stop assets. This information is recorded annually within our asset management information system.

Our asset capture includes information such as condition, cost of replacement, location, and updated photographs.

The road marking data held by the TAs indicates whether a stop is marked or not. A data improvement plan has been identified for implementation in 2022/23 to ascertain whether a bus stop is marked and complies with the draft Waka Kotahi Guidelines for Public Transport.

Lifecycle Maintenance and Activities

Our asset management lifecycle approach for our bus and ferry stop assets is discussed below.

Planning

We use our bus stop categorisation tool to identify and prioritise our bus and ferry stop improvements. We have prioritised our stop improvement programme by assessing the percentage of Category 1-3 stops per route. The outcome of this prioritisation is that those routes which have the highest percentage of our higher category stops will be addressed first. All the routes have been assessed and a detailed five-year delivery programme developed. More detailed planning is carried out the year prior to delivery.

Deliver

Once we have identified our required work programme, we undertake consultation, and finalise the delivery requirements. This can be a lengthy process. Once finalised, we instruct our service providers to undertake the work, except for road marking, which is undertaken by the relevant TA.

The timeframe for this process is generally 12 months.

Operate

We ensure our bus stop sites and assets are in a clean, sanitary, and tidy state and free from items such as gum, rubbish, posters, stickers, graffiti, and any other undesirable material. All individual components within a site or a bus stop asset will be cleaned, including the signs timetable holders, posts, bus shelters and bus stop footpath areas.

The standards and methods of cleaning are shown in Table 37 below.

Table 37: Bus and ferry stop cleaning requirements

Item	Requirements	Standard
Glass/plastic surfaces	All Unauthorised Materials will be removed using approved methods. All accessible surfaces will be fully cleaned. All glass surfaces and large plastic surfaces will be washed using water and detergent, hosed down and squeegeed.	Clear of Unauthorised Materials and streak free.
Seating	All Unauthorised Materials will be removed using approved methods. Seating will be hosed down using hoses that are of pressure to fully clean the surface without damaging the surface and then dried.	Clear of Unauthorised Materials, no visible stains or dirt and dry.
Shelter roofing	All Unauthorised Materials will be removed using approved methods. Underside hosed down using hoses that are of pressure to fully clean the surface without damaging the surface. Topside to be cleaned of vegetation, lichen and other materials, all spouting to be cleared	Clear of Unauthorised Materials, no visible stains or dirt and dry.
RTI Displays	All Unauthorised Materials will be removed using approved methods. Washed down using a low-pressure water device, delivery of the water is to be through a soft bristled cleaning brush to remove any dust and dirt together with any residue from the removal of unauthorised materials. Each display screen or totem must then be wiped with a dry cloth to remove any residue or streaking.	Clear of Unauthorised Materials, no visible stains or dirt, dry and streak free.
Timetable holders	All Unauthorised Materials will be removed using approved methods. Each holder cleaned with a citrus based cleaner or other Materials approved by us.	Clear of Unauthorised Materials, no visible stains or dirt, dry and streak free.

Item	Requirements	Standard
		Paper timetables must remain dry.
Footpath	All footpath areas will be swept, and debris removed. The pavements (include the floor areas inside the shelter) will then be hosed to remove stains (from dropped food, drinks etc.), ingrained dirt and any other Unauthorised Materials.	Surface maintained in as close to 'as new' condition as possible.

Maintain

We undertake routine maintenance which consists of planned and scheduled maintenance. We also undertake non-routine maintenance which consists of reactive maintenance and emergency work maintenance in response to issues noted by us, our service providers, the relevant TA, or the public. Routine maintenance consists of:

- reattaching signs where band / brackets have broken or come undone
- replacing damaged RP5 and Metlink signs that cannot be reused or reattached
- replacing missing sign pole wedges
- replacing damaged poles and reattaching signs
- reattaching timetable holders
- replacing timetable inserts
- realigning poles that have rotated in the wind or due to vandalism
- removal of damaged Metlink signs that cannot be reattached
- straightening of bent poles
- minor repairs to seats, spouting, and timber walls.

The response times for reactive maintenance and emergency works is shown in Table 38.

Table 38: Reactive and emergency works specified timeframes for bus and ferry stop assets

Request for Service	Response
Issue reaches the threshold for Emergency Works and is outside the Wairarapa region.	Within 2 hours
Issue reaches the threshold for Emergency Works and is within the Wairarapa Region.	Within 4 hours
Smashed or broken glass that does not meet the threshold for Emergency Works	Make safe within 24 hours unless notified otherwise.
Damaged and unsafe assets that do not meet the threshold for Emergency Works	Make safe within 24 hours and replace within 2 weeks, unless otherwise notified by us.
Damaged and safe assets	Inspect at weekly inspection and rectify within 2 weeks, unless otherwise notified by us.
Offensive graffiti	Remove and clean within 24 hours.
One off cleaning	As agreed with us.

Forecast expenditure

The key investment drivers for our bus and ferry customer facing assets are to improve customer experience and promote mode shift from private vehicle to our public transport network.

Our total opex for bus is $223m. This comprises both asset opex and maintenance for our customer facing and network enabling assets. The bus and ferry asset opex is forecast to remain steady over the planning period. The asset opex covers asset studies and investigations, signage changes due to timetable changes, cleaning costs, and maintenance costs as well as asset management and maintenance costs associated with assets that are part of the Metlink network but that we do not own.

The total capex renewal and capex improvement is $63m. The core capex investments for our bus and ferry portfolio are:

Bus Shelter New & Replacement Programme: $43.4m of investment to renew and install new bus shelter facilities. Having a place to wait for a bus service that is safe and protects the customer from environmental factors is key to customer satisfaction. This continuous

programme of investment provides facilities that meet CPTED design and best practice for accessibility and encourages mode shift.

Waikanae and Paraparumu Bus Hub improvements: $1.33m of investment to improve safety, security, and accessibility. Public transport services in Waikanae and Paraparaumu are key to a connected community and reducing congestion on the road network. There are thousands of customer movements through these hubs every day. Safety, security, and inclusive access upgrades are expected to significantly increase the overall customer experience and encourage modeshift. This initiative will actively address CPTED design and accessibility best practice to support our communities' safe use of public transport.

Bus layover area including area for EV charging: The capital cost of layovers including areas for EV charging, is not included within this AMP or the 2021-2031 Long Term Plan (LTP). However, we have included $2m within the AMP forecast for the investigation to develop options for consideration.

Figure 92 shows our bus and ferry infrastructure asset opex, asset maintenance, capex renewal, and capex improvement expenditure over the planning period of this AMP.

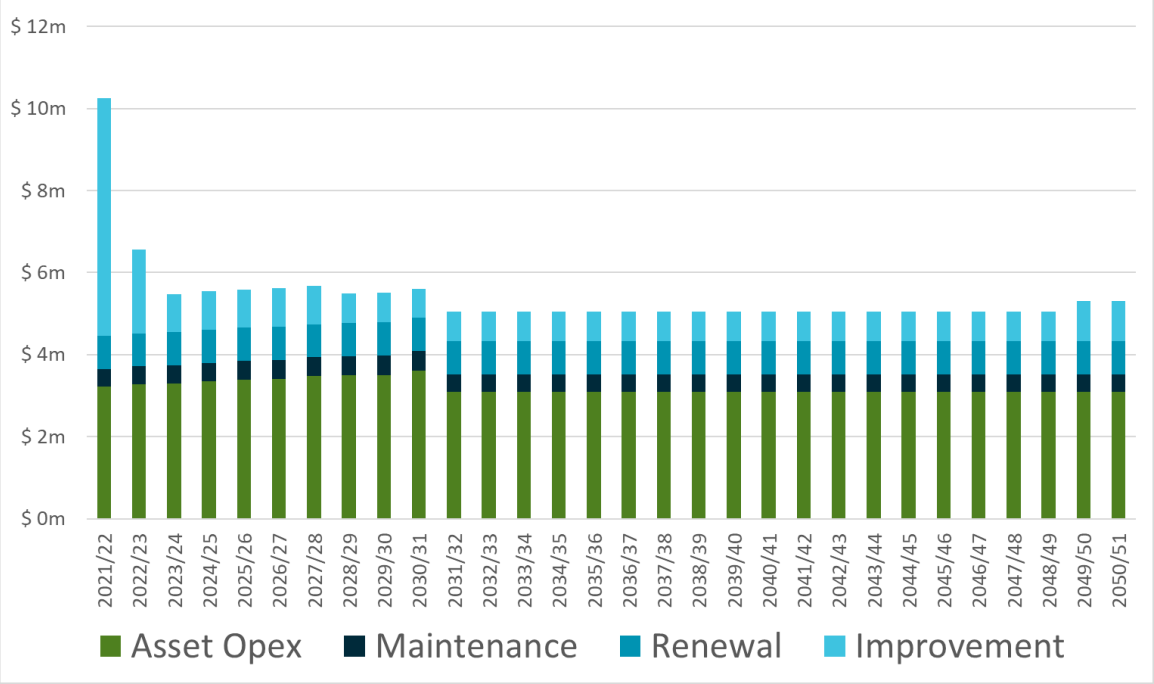


Figure 92: Bus and ferry customer facing assets expenditure

Bus and Ferry Network Enabling Asset Class Plan

This asset class plan describes our lifecycle management approach for our bus and ferry network enabling assets. Network enabling assets consist of bus layovers and driver facilities. Bus layovers are designated areas of the carriageway or dedicated areas of land where buses park between trips, and drivers take their legally required meal/tea breaks. We separate driver facilities into two categories, driver toilets and driver meal break rooms. Some layover areas only provide standalone driver toilets, and some provide driver toilets and meal break rooms.

Our network has grown over recent years with increased frequency of services. As we acquire more fleet to support a growing network and increased patronage demand, there is an increasing demand for additional layover space and driver facilities. It is challenging to keep up with the demand for layovers and driver facilities. With sparsely located layovers in the current network, the network's efficiency and potential for growth is limited. Therefore, it is critical we assess and plan to deliver more network enabling assets. We are investigating and assessing suitability of several locations across the region for additional layover space.

Strategic objectives

Our overarching objective is to provide a high quality, fit-for-purpose public transport network. To achieve this, our key objectives are:

Customer Experience:

- improve overall customer experience with increased punctuality and reliability because of improved and increased provision of network enabling assets.

Decarbonisation

- ensure that environmental, sustainability and health outcomes are considered in the planning and provision of our network enabling assets.

Safety

- ensure bus layovers are easy to manoeuvre around, safe to use, easily identifiable
- work with the bus operator on the design and location decision making for these assets to ensure safety and practicability.

Asset characteristics and current state

Layovers

The location and number of layovers on a network has a significant impact on service delivery. The more strategically placed the layovers, the more efficient the network

schedule can be, as the time taken for dead running (bus travelling '*Not In Service'* between trips) is minimised.

Currently, there are 35 formal and 24 informal bus layover spaces on our network of which either bus operators own and manage, or the layover sits on the carriageway that is owned and maintained by the local TA. We define a formal layover as specifically designated spaces on the network for layover purposes that often have other network enabling assets at the same location. We define an informal layover as spaces that are not designated layover areas but are just regular bus stops or areas where parking on a side road is available to layover and take scheduled breaks.

All our high frequency bus services travel through the Lambton Quay bus interchange with most originating and terminating their trips there. Because of this, and the volume of trips originating and terminating there, we have 18 layover spaces. However, layover space is about to be reduced permanently due to a complete redevelopment of the interchange that involves vehicle and pedestrian safety improvements, and the installation of EV charging equipment. To address the reduction of layover space during construction and beyond, we have leased land at 248 Thorndon Quay and have constructed an additional bus layover (11 layover spaces) and driver facilities incorporating a meal-break room and driver toilets. We own all assets at this site, except for the land. With development completed in 2022, the assets are in excellent condition.

Driver facilities

Our drivers have access to approximately 199 public and driver- only toilets, and three driver meal rooms on the network.[22] The number of GWRC provided driver only toilets is eight.

[22] Please note the number of driver meal break rooms included in this asset class plan does not include meal break rooms at the bus operators' depots.

Table 39 below lists out the driver facilities by TA.

Table 39: Driver facilities by TA

Assets	Number on the network accessible to drivers (total outside of depots)	By TA (total estimate- outside of depots)	Number of Driver Only toilets (outside of depots)	Number of public toilets available to drivers
Driver toilets	~199	• WCC: 94 • PCC: 40 • HCC: 30 • KCDC: 12 • UHCC: 13 • Wairarapa: 10	• WCC: 6 (Metlink will own these from mid-2022) • PCC: 0 • HCC: 0 • KCDC: 0 • UHCC: 3 • Wairarapa: 0	• WCC: 88 • PCC: 40 • HCC: 30 • KCDC: 12 • UHCC: 10 • Wairarapa: 10
Driver meal break rooms	3	• 2 WCC owned: (Lambton Interchange – maintenance charged to GWRC and included in this AMP, Reef Street- Island Bay – this is maintained by an agreement between the Operator Transurban and WCC) • 1 GWRC owned: (248 Thorndon Quay)		

Table 40 below lists the current driver meal break rooms on the network.

Table 40: Driver meal break rooms

Driver meal break room description	Infrastructure/Consumables present	Ownership/management details
248 Thorndon Quay	• Fridge • Microwave • Tables and seating area • Sofa • Hot/cold water pump • Heat pump/air conditioning	Greater Wellington Regional Council
Lambton Interchange	• Tables and seating area • Hot/cold water pump	Wellington City Council (building ownership) Greater Wellington Regional Council
Reef Street, Island Bay	• Milk • Tea • Coffee • Fridge • Space heater • Table • Chairs • stools	Tranzurban

In mid-2022, WCC transferred the ownership of six driver-only toilets to GWRC. All of these are located within Wellington City. They are typically in isolated locations at the end of Wellington City bus routes and are subject to vandalism. A 2021 condition assessment found these toilets are in very poor condition. Two are condemned and closed for use with temporary units having been installed to compensate for their closure. Examples of deferred maintenance include overgrown vegetation, roof replacements and painting, and toilets not in working condition. Asbestos Contaminate Materials were found in most facilities in glazing putty, bitumen lining under the roofing material, and possible residual material from concrete formwork.

Our plan is to replace these toilets with new purpose-built assets that will:

- Provide new, safe, comfortable, and consistent high-quality facilities for bus drivers that will significantly improve the working conditions for the workforce.
- Meet current Crime Prevention Through Environmental Design (CPTED) best practice.
- Improve driver working conditions and the general attractiveness of the job to aid our current driver shortage
- Be cheaper to maintain.

Lifecycle Maintenance and Activities

Our approach to managing our customer enabling assets is driven from Greater Wellington's strategic priority areas, the agreed Levels of Service, and the asset class strategy. We also incorporate all the applicable standards and requirements for the asset type.

Planning

The location of layovers, as well as the number assets at each location, has a direct impact on how the bus network and timetables are scheduled. The more options for bus layover and depots, the more efficient a network schedule. To ensure an efficient network schedule, our layover planning considers:

- Minimizing bus circulation
- Safe layover location to minimise impact on traffic and pedestrian movements
- Provision of walking routes for staff within the layover space
- Sensitive to local land use
- Optimal cost and efficiency.

Deliver

Once we have identified our required work programme, we undertake consultation, and finalise the delivery requirements. This can be a lengthy process. Once finalised, we instruct our service providers to undertake the work.

Maintain

Regular maintenance of the assets we own and/or manage is undertaken by our service provider in accordance with our maintenance contract The large maintenance contract arrangements are outlined in the Rail Asset Class Plan as for efficiency purposes, we use the same contractual arrangements across all assets where practicable.

Forecast expenditure

The financial expenditure for our network enabling assets is shown in Figure 93.

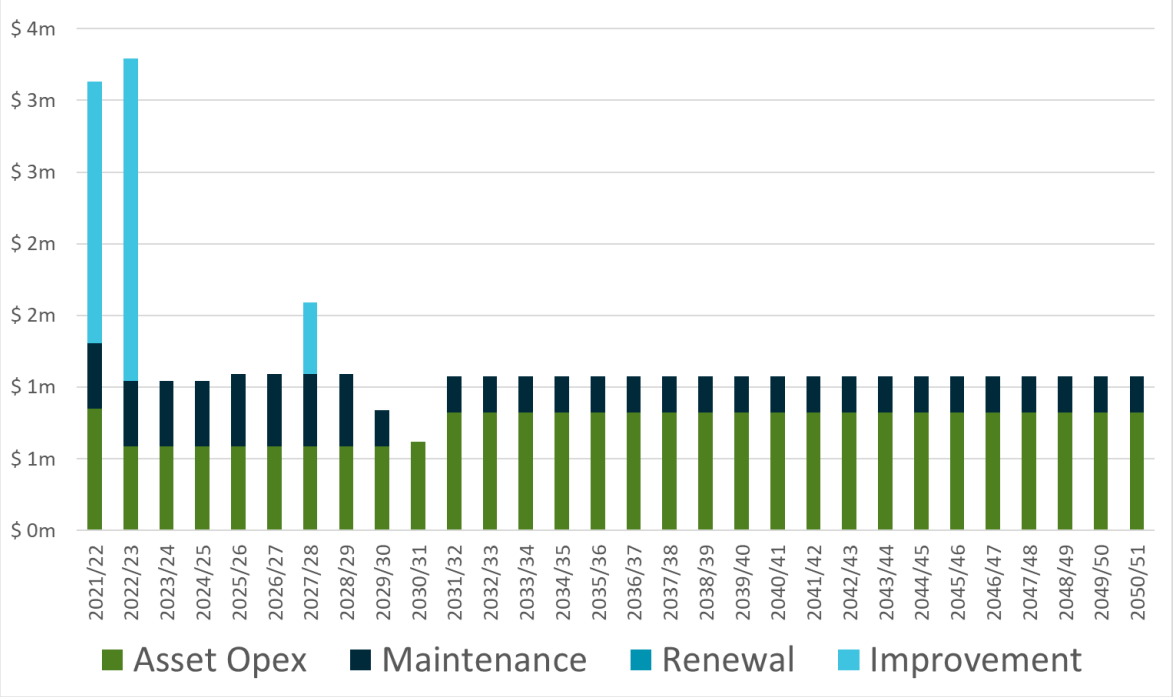


Figure 93: Bus and Ferry Network Enabling Assets forecast expenditure

Bus Fleet, EV Charging and Depot Asset Class Plan

We have an extensive bus network within and around the cities and towns across our region. Our bus network also connects to the rail network for journeys between centres. Whilst we do not own most of the bus fleet and a significant amount of the supporting fleet infrastructure, the bus fleet operating on our public transport network remains an integral component of our asset management planning and investment. This asset class plan describes our asset management approach to the bus fleet and corresponding infrastructure such as bus depots and EV charging infrastructure.

We have contracted four bus operators to operate our bus network. Our bus operators are responsible for ensuring the buses that operate on our network comply with the Partnering Contract, which includes the Requirements for Urban Buses (RUB) and the Vehicle Quality Standards (VQS) and several contractually mandated plans. As part of our contract with our bus operators, we monitor compliance with these requirements.

In 2022, consistent with our ongoing drive to improve services to our communities, as a 12-month trial, we launched an on-demand service in Tawa. Using a mobile phone app, people in Tawa can order rides from buses operating without set routes between flexible pick-up and drop-off locations, also as known as 'virtual stops.' For this trial we have purchased six small second-hand diesel buses.

We have also added ten new purpose-built, fully electric buses for the Airport Express (AX) service. The AX service started on 1 July 2022 and runs between Wellington Railway Station and Wellington International Airport approximately every 10-20 minutes depending on the time of day, seven days a week. This service connects our regional rail and bus networks to the airport.

Strategic objectives

Our overall objective is to ensure we deliver a safe, efficient, modern, comfortable, low emission bus fleet that provides a consistent and high-quality customer experience. A key consideration for our planning is both the environmental benefits and environmental impact of our bus fleet.

Therefore, within this context our key strategies for achieving our objectives are:

- procure new electric vehicle (EV) buses and associated charging infrastructure to meet our strategic priority of decarbonising our public transport fleet by 2030.
- ensure that the bus size requirements specified by the timetable can be met from our bus fleet, so that no customer is left behind.
- provide fit-for-purpose bus fleet compliant with contractual and legislative requirements to consistently deliver a high-quality customer outcome.
- ensure there are sufficient buses and depot capacity to keep up with patronage demand.
- ensure sufficient electrical charging infrastructure to ensure maximum utilisation of the EV fleet.

Asset characteristics - current state

We are currently operating under the Public Operating Model (PTOM) which was established through the Land Transport Management Amendment Act 2013. PTOM provides the framework for public transport public-private partnership between regional councils and transport operators. The focus for implementing PTOM was to build commercially based partnering relationships with bus operators to improve services and grow patronage. The contracts offer incentives for bus operators to continually improve their performance, provide value for money services to customers, and grow patronage.

Operators are responsible for their own depots, buses, and staff. Our contract lifespans are between 9 and 11 years with most of our current contracts reaching their initial terms in 2027. Any extension to the contract terms is at our discretion and must have the approval of Waka Kotahi. Within the contract, there is agreement that we take ownership of some of the buses, chargers, and depots at the expiry of the contract. We refer to these as transferring assets. The contract details a mechanism which will be used to determine the price we pay.

Our contracts also specify the requirements of bus operators with respect to fleet, chargers, and depot. These include:

- the Peak Vehicle Requirement (PVR) of each bus size
- performance requirements and the features the buses must have as set out in the RUB and VQS
- specific exhaust emission requirements
- provision of an inventory of its buses, including spare buses, which make up its Metlink fleet
- maximum age of the bus
- the average age of the operator's fleet, including the spare buses
- consultation and agreement on changes made to the fleet and depot.
- bus fleet maintenance plans for transferring buses

- bus fleet inspection and cleaning plans for all buses
- vehicle acquisition plans
- electric vehicle charging plan
- depot acquisition programme.

The contracts include key performance measures, which include timetable reliability and punctuality measures.

The buses within our fleet comprise a variety of manufacturers, models, and size. Currently, most of the buses are diesel but we are moving to a zero-emission fleet. All buses on our network are required to be available and be of the right size, as defined by the timetable.

Population, age profile, and life expectancy

Table 41 shows the profile of our bus fleet by bus operator.

Table 41: Bus fleet population by bus operator

Bus Operator	EV	Diesel	Total Population	Age 0-5 yrs	Age 5–10 yrs	Age 10–15 yrs	Age 15-20 yrs
Metlink		6	6		6		
NZ Bus	51	95	146	64	10	41	31
Transurban	21	216	237	237			
Uzabus		23	23	21	1		1
Mana	10	30	40	33		17	
Total	**82**	**370**	**452**	**345**	**17**	**58**	**32**

The addition of EV buses significantly reduces our carbon footprint by retiring approximately the same number of diesel buses.

Life expectancy

The maximum permitted vehicle age for an urban public transport bus is 20 years. In accordance with our contracts, the maximum average age of an operator's bus fleet must not exceed 10 years and buses introduced to the fleet must be new buses. The operational life of chargers and EV batteries is approximately 12 years.

Asset health

All buses are compliant with transport regulations and are assessed through the Certificate of Fitness (COF) process. Buses are required to have a (COF) at least every six months. Most of the buses within our fleet were new in 2018 and these are in good condition. Our buses are compliant with the RUB apart from a small number of outstanding VQS compliance

issues which are being resolved. There are 17 buses in service which we defined as “interim buses” as they do not fully comply with VQS and can be identified by the fact they are not in Metlink livery. These buses have been permitted to operate because at the commencement of the contracts in 2018, the bus operator was not able to bring into service the new buses that were required. Occasionally, there will be an interim bus introduced where there is a need for additional capacity inside the lead-time for new electric buses. The new buses that are to replace these interim buses are on order and will be delivered from 2021 through to early 2024. All these new buses will be electric.

As we do not own, operate, or maintain the bus depots, the asset health of the depots is unknown.

We have 10 brand new transferring EV buses and 5 chargers.

When EV chargers are commissioned into service, operators are required to provide a charging certificate and charging plan. This certificate and plan cover factors that relate to the regulatory compliance and performance of EV chargers. Except for one charger, all chargers are in a managed environment (not exposed to the weather or salt spray). We have one EV charger hood (not a transferring asset) that is exposed to the weather and salt spray.

Asset importance

Buses are fundamental to our public transport network. The network is designed around having a bus of a predetermined size (passenger loading capacity) operating on a route at a predetermined time that customers can rely on. Buses also have a range of design features (as defined by the RUB and VQS) that are important for the comfort and security of customers. The buses must comply with these features upon entering the fleet and consistently throughout their operating life.

Likewise, bus depots and their location are of fundamental importance to the efficient operation of the bus network. Those depots with EV Chargers are critically important for the provision of our services.

Asset risk

The following describes the key asset risks and their mitigations for our bus fleet, EV chargers, and depots. These risks manifest across the asset base to varying degrees.

Operator contract performance: There is a general risk that the operators do not manage their buses and charging infrastructure properly, which may lead to poor delivery performance and poor customer experience. To manage this risk, we undertake contract management activities as allowed and enabled by the contract. For the buses and charging infrastructure that are transferring assets, there is the additional requirement for the operator to provide a maintenance management plan. We audit against this plan.

Bus breaks down: The operator has approximately 10% more buses than the Peak Vehicle Requirement (PVR) of each bus size to allow for routine maintenance and breakdowns. We work with the operators to ensure that maintenance plans are appropriate & focused on preventative/predictive practices.

Bus is damaged in an accident: The operator has approximately. 10% more buses than the PVR of each bus size to allow for routine maintenance and breakdowns. We track damage causes and ensure that roading infrastructure is not the cause.

Insufficient buses to meet future patronage demand growth: We are further developing our forward planning processes to identify the operator's future fleet requirements.

Buses that are operational in a fault condition. We track customer complaints and follow up on trends and individual cases. We use the Vehicle Condition Audit (VCA) programme to audit the condition of the buses. We work with the operator to develop a process that identifies the importance of typical faults and the nature of the response. Safety related faults are picked up through the certificate of fitness (CoF) process. We get regular reports from NZTA on the compliance status of the Metlink bus fleet.

Loss of a depot or loss of access to the depot: Risks include tsunami, sea rising (Eastbourne), land slips, earthquake, fire, oil and diesel containment and fire mitigation (because of large diesel tanks for filling the buses). This risk is yet to be quantified. Each of the current depot sites will be assessed for this risk and a management plan developed. All future depot sites that GWRC are considering investing in are assessed for these risks during the feasibility stage.

EV charging fault that causes buses to be unavailable for service (this includes an electricity network outage). The operator provides charging and business continuity plans. The charging plan details the business processes in place to mitigate charger faults and un-availability. Operators do not currently have backup generators (apart from Mana which is exclusive to the Airport Service bus depot). One operator has multiple sites including on-route chargers that mitigate the risk. We are currently refining the charging plans to include risk mitigation.

Buses do not comply with the RUB and VQS: All buses are assessed for compliance with the RUB and VQS before they are permitted to enter the Metlink fleet. The VCA programme is used to assess the state of ongoing compliance of the buses.

Buses are not clean: The minimum cleaning requirements for buses are detailed in the partnering contract. The VCA programme audits against these requirements.

Bus fleet performance

As part of the VQS, we have a vehicle condition assessment programme. This programme identifies the items to be audited and provides a non-conformance scaling system to rate the performance and determine the corrective action timeline and actions that must be taken. This programme is currently being developed.

The operator is required to produce an inspection and cleaning plan, which must contain the minimum requirements identified in the contract.

We monitor customer complaints, which are collated within the Metlink Resolve system. These categories are Safety, Vandalism, Presentation/Cleanliness, Poor Maintenance and Comfort/Heating. This is used to drive improvement activities. Individual complaints are sent to operators for response. Significant issues are individually investigated.

For buses and charging infrastructure that are transferring assets, the operator must produce a bus fleet and charger maintenance plan. This details all the maintenance activities.

Asset Management Activities

A strategic driver for the management of our bus fleet is the planning activities associated with growth and decarbonization of our bus fleet. We are on a pathway to provide a zero-carbon bus fleet by 2030 for the Wellington region.

The buses, EV chargers and depot are managed to the extent that the PTOM contractual provisions facilitate. This is through the review and approval of the plans that the operator is required to submit. We audit against these plans and contractual specifications (RUB and VQS). We also audit the CoF compliance of the bus fleet.

The Vehicle Acquisition Plan details the activities relating to buses being retired and new buses being introduced into the fleet. It is through this plan that the fleet capacity, age, and average age profiles are managed.

Planning - Growth and decarbonisation

Government policy states that all new buses purchased from 2025[23] will be zero emissions, and all public transport fleets will be zero emissions by 2035. Our plan is to reduce public transport emissions by decarbonizing our public transport fleet by 2030.

To accelerate decarbonisation of our bus fleet (and as outlined in the Wellington Regional Public Transport Plan 2021-31) we are:

[23] This is for all public transport buses first registered before 2025.

- Increasing the number of electric buses to 100 by 2023
- Ensuring all core service buses are electric by 2030 (Routes 1,2,3,7,110,120,130,220, and AX)
- Implementing the agreed pathway to further accelerate decarbonisation of the fleet by 2030
- Continuing to work towards a more efficient bus network.

Therefore (and as outlined in 2021-31 LTP):

- All new buses (for growth & age replacements) will be electric
- Electric buses or zero emission buses will be a requirement within new contracts (2027 and 2030). The current contracts have initial terms through to 2027 and 2030.

A 10-year network patronage forecast is produced and periodically updated. This forecast is then translated into the number of buses by bus size required by each operator. This work also identifies the part of the network for which the the capacity is required and therefore the impact on depot requirements. This is also used to develop the LTP budget and the vehicle acquisition plans with the operators.

To address both decarbonisation and network growth targets our plans consist of:

1. Proposing new electric articulated buses as the preferred option for growing bus capacity on Route 2.
2. Increasing the total EV buses in the fleet to 128 by 2024.
3. Replacing end-of-life diesel buses with EV buses.
4. Optimising the allocation of EV using the network planning process and our emissions modelling tool. EVs will be prioritised onto core routes (Routes 1,2,3,7,110,120,130,220,AX).

Inspections and Maintenance

The maintenance activities for the on-demand buses that we own are contracted out to the on-demand operator. This contract includes the maintenance plan and the requirement to use only original equipment manufacturer parts. Also included is the requirement for maintaining records and reporting to us.

There are no maintenance-related reporting requirements for the buses and EV chargers that are owned by the operators and are not transferring assets. For the operator-owned buses and EV chargers that are transferring assets the operator is required to provide a maintenance plan.

All buses, irrespective of being transferring or not, are subject to the VCA audit programme, which incorporates compliance with the RUB/VQS and cleanliness.

For all buses, the operator has a contractual requirement to ensure the buses and EV chargers comply with all statuary requirements.

Operations

For most of the bus fleet and chargers, we pay annual lease type payments through the life of the contract.

Forecast Expenditure

The expenditure for our bus fleet, depots, and EV chargers is covered within Greater Wellington's 2021-31 Long Term Plan and not this AMP as it is considered operational cost. We have included the description and planning activities for the assets in the asset class plan for completeness.

Customer Insights and Assets Portfolio Asset Class Plan

This asset class plan provides a description of our customer insights and assets portfolio. We categorise these into the following areas:

- Real Time Information (RTI) system
- On-bus next-stop announcement system
- Metlink website and commuter app
- Data warehouse system

Digital information has become a key dependency in public transport customer experience. Customers expect accurate and responsive information to help them plan their public transport journey. Improvement of digital information is a key part of our strategy for retaining existing customers and growing patronage.

Description of our customer insight assets

Below is a brief description of the assets covered in this asset class plan.

Real Time Information System (RTI)

The current RTI system was introduced in 2011. At that time, it was designed to provide on street real-time information to customers via digital signs at bus stops and railway stations[24]. Since then, the RTI software has been adapted to provide real time information through the Metlink website and app, and to provide data for operator performance management systems required for managing operator contracts.

The system currently includes over 300 bus stop and railway station signs and tracking devices installed on each of the 450+ buses in the fleet. Our RTI displays vary from having three lines of information, which is the most common, to six, eight, or 18 lines. A few key locations have LCD televisions displaying real time information.

On-bus next-stop announcement system

The primary purpose of the on-bus next-stop announcement system is to provide information to people with visual and cognitive disabilities so they can confidently get off at their stop. As part of our Public Transport Transformation Programme and our commitment to the disability community, the functionality of our on-bus announcement system is a core component of our goal to provide a ‘fully accessible’ bus fleet. The system will also improve accessibility for passengers who are new or unfamiliar with a bus route.

We are in the process of evolving and extending the use of the on-bus next stop announcement system.

[24] Rail services are tracked through a different Kiwirail system related to their rail network management, which feeds data into the RTI system.

Under the PTOM partnering contracts' vehicle quality standards (VQS), all new buses introduced since May 2018 have been required to include screens and speakers. These are owned by the bus operators and form part of each bus. This specification remains for all new buses entering our public transport network. Full region-wide implementation of the system (including the procurement, development, and region-wide deployment of the media players, software, and interface) on our buses is ultimately required. For example, the on-bus announcement system will provide audio-visual information along each bus route about the next bus stop, key interchanges, the current location of the bus, and network related information (such as public health messages and conditions of carriage).

With the advent of Covid-19, the system has also played a key role in promptly broadcasting important public information about safe bus travel or changes in service (for instance changes to physical distancing rules or payment methods).

Metlink Website and Commuter App

In 2016, we launched a website that combined all modes of public transport and included real-time information. This was followed by the launch of the commuter app in 2017, specifically targeted at commuters. This change significantly improved customer engagement with our online channels to the point where our website is now the most popular channel for obtaining information

Our upgraded website and commuter app provide useful information to customers, and with continual improvement, it will keep pace with customers' expectations of usability and accuracy. We seek to increase our reach and target patronage growth by continuing to invest in the provision of customer information through third-party, independent websites, and apps through provision of our open-source data and application programming interfaces that allow easy integration of data and information. Independent travel information websites and apps can also provide a higher level of specialisation and innovation.

The universal challenge of managing online channels is the need to keep pace with our customers' rapidly evolving expectations driven by their daily experience of using numerous online channels. For us, this means providing a user experience consistent with other public transport information providers such as Google Maps.

Data Warehouse

Our data warehouse system aggregates data from different sources into a single, central data store. It allows us to run analytics on the data we collect.

Strategic Context

With the increasing dependence of customers on digital interactions to undertake day-to-day tasks and an increasing expectation that those interactions will be intuitive and helpful, our real-time customer information systems, website, and commuter App are an essential part of our strategy for retaining and growing public transport patronage. Our customers have come to expect accurate and responsive information to help them plan their public transport journey.

As well as influencing the accessibility and satisfaction of our public transport service with existing customers, insights from our customer segmentation survey also highlight the benefit of providing rich digital information to infrequent and new public transport customers to promote the value of public transport and encourage its adoption.

Expectations of accuracy and responsiveness have increased based on customers' experiences with other digital services. The expectations of our customers include:

- accurate real-time information with the ability to see where a vehicle is now and know when it will arrive
- comparisons between travel modes that allow an informed travel choice to be made:
  - The actual door-to-door cost for different travel modes such as public transport, driving (including fuel, wear-and-tear and parking), and on demand and traditional taxi services.
  - The actual time, including the influence of travel conditions for the journey, such as the weather, road works, planned disruptions, and road congestion
  - Connections with micro-mobility modes in journey planning
- information about loading and comfort on public transport vehicles, such as whether seats are available on any given service.

The availability of travel information online is increasingly providing customers access to a wider range of travel choices. To be competitive with other modes of travel, we must start providing information that allows our customers to compare the benefits of different modes of travel.

A range of independent travel apps, such as Google Maps, have been using our data for some years to display our services as an option, comparing door to door travel times and costs, alongside other travel modes such as driving or catching an on-demand taxi service.

Strategic objectives

The overall objective for our customer insights and assets is to encourage mode shift to our public transport service through the provision of information to help customers plan their journey, and to meet our customer's evolving information needs and expectations by:

- providing more accurate real-time information through a system that is future-proofed to meet increasing demands for accuracy
- providing a greater range of information to allow customers to make a more informed choice about their travel
- providing robust open-source data and information through our customers' channel of choice, including third-party/independent travel websites and apps to increase the reach of public transport information and to access best practice digital innovation
- ensuring our data and information can be easily integrated into future 'smart travel' and 'Mobility as a Service' platforms so our service is competitive in a digital travel marketplace.

Our key strategy for achieving these objectives is to upgrade our current information systems to a more open and componentised architecture to improve accuracy of data, usability, and adaptability.

Asset Importance

Approximately 80% of our customers use public transport by choice rather than through necessity. The quality and reliability of our digital customer information assets is essential for positive brand reputation and for improving customer satisfaction. It is also a significant contributor to encouraging people to move from private vehicles to public transport. With the increasing dependence of customers on digital interactions to undertake day-to-day tasks and an increasing expectation that those interactions will be intuitive and helpful, our real-time customer information systems are an essential part of both regional and national strategies for retaining and growing public transport patronage.

The effective performance of our customer insight assets includes the provision of information that can be used in specific applications that support accessibility, and the provision and storage of data to inform network design and performance improvements, including monitoring operator performance.

Asset and Service Performance

RTI

Our current RTI system is reaching the end of its life. It is failing to meet customer and business expectations of accuracy and reliability required for journey planning and contract management involved for the 40+ million annual public transport trips currently delivered. The provision of timely and accurate customer information is currently our most significant customer pain-point. There has been a notable decline in customer satisfaction with the current RTI system in recent years.

Replacement of the real-time information system for our customers and network operators will improve overall network accessibility and performance. It is one of our highest priorities.

On-bus next-stop announcement system

The assets associated with the on-bus next-stop announcement system are being scoped and deployed. As such there are no current performance measures for the on-Bus next stop announcement system.

Metlink Website and commuter App

As one of our primary touchpoints with our customers, the quality of the online experience has a significant influence on customer satisfaction, brand reputation, and cost to serve. The universal challenge of managing online channels is the need to keep pace with customers' rapidly evolving expectations of improving functionality which is driven by their daily experience of using numerous online channels. For us, this means providing a user experience on par with other public transport information providers such as Google Maps.

Since the launch of our website, we have received significant customer feedback on how our online channels could be improved. Since 2017, customer satisfaction with our information and online channels has declined significantly.

Therefore, we undertook a comprehensive usability review of our website. As a result, a programme of work has been completed that has upgraded the online experience for our customers. The programme of work has resulted in:

- an upgrade of the Metlink website and commuter app
- improved user experience for mobile consumers of the website
- improved notifications about cancelled bus services on homepage (including unplanned cancellations as well as planned)
- improved visibility/access to vehicle location function
- improved usability for people with disabilities
- improved quality of journey planning results
- increased frequency of RTI updates - smoothing of vehicle location function.

Improvements to the usability and functionality of our website and commuter app has been an opportunity to:

- increase customer satisfaction with the delivery of Metlink information and overall perceptions of service delivery
- encourage the increased adoption of online information channels and move customers away from more expensive information channels, such as printed timetables

- reduce the cost of providing automatic notifications to customers.

Data warehouse

Our existing data warehouse is no longer fit for purpose. At present it cannot interrogate more than a few months data. We are in the process of replacing our data warehouse with a cloud-based SaaS solution.

Asset risk

Our information systems rely on the continuous supply of electricity and telecommunications. If they are disrupted, our information systems may also be interrupted.

Secure back-up and storage of data is also essential. If data storage is damaged or 'hacked', information systems may be disrupted.

Asset Management Activities

Our asset management activities and planning ensure that our investment in customer insight assets is targeted and prioritised to meet national and regional strategic priorities.

During the development and/or replacement of systems our planning:

- ensures seamless integration
- uses the opportunity to reduce lifecycle costs eg build componentised systems
- removes the reliance on expensive propriety hardware
- ensures our technology keeps pace with customers' expectations of improved accuracy and responsiveness from real-time information

Financial Expenditure

The key investments for our customer insights and assets portfolio encourage mode shift through the provision of real time information to help customers plan their journey, and to meet our customer's evolving service information needs and expectations. The expenditure in this AMP covers the asset infrastructure associated with the RTI2.0 project, such as the replacement of the RTI display screens. The software component of the RTI2.0 expenditure and the other expenditure noted below is included in the 2021-31 LTP and not included within this 2022 AMP.

Key investments include:

- **RTI 2.0** Real time information (RTI) for our bus and ferry services is displayed on electronic displays across approximately 6% of our bus and ferry stops on our network. The majority of these RTI displays are within Wellington City. RTI can also be viewed online through our website, App, and third-party apps such as GoogleMaps. With our customers' increasing dependence on digital interactions to

undertake day-to-day tasks, and an increasing expectation that those interactions will be intuitive and helpful, our real-time customer information systems, website, and commuter App are an essential part of our strategy for retaining and growing public transport patronage. Our customers have come to expect accurate and responsive information to help them plan their public transport journey.

Our RTI system require replacement as it is failing to meet customer and business expectations of accuracy and reliability. Replacement of the current system will improve overall network accessibility and performance.

- **On-bus next-stop announcement system.** We are in the process of evolving and extending the use of the on-bus next stop announcement system. Full region-wide implementation of the system (including the procurement, development, and region-wide deployment of the media players, software, and interface) on our buses is ultimately required. For example, the on-bus announcement system will provide audio-visual information along each bus route about the next bus stop, key interchanges, the current location of the bus, and network related information (such as public health messages and conditions of carriage).
- **Data warehouse:** Our existing data warehouse is no longer fit for purpose. At present it cannot interrogate more than a few months data. We are in the process of replacing our data warehouse with a cloud-based SaaS solution.

Figure 94 shows our customer insights and assets opex and capex expenditure.

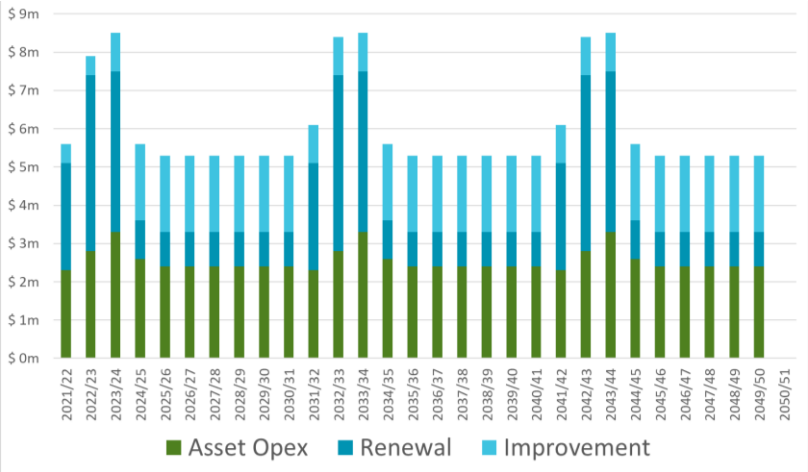


Figure 94: Customer insights and assets opex and capex expenditure

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