RAIL NETWORK
INVESTMENT PROGRAMME

JUNE 2021

Cover: Renewing aged rail and turnouts is part of maintaining the network.
This page: Upgrade work on the commuter networks is an important part of the investment programme.

CONTENTS

1. FOREWORD

KiwiRail is pleased to present this inaugural Rail Network Investment Programme.

Rail in New Zealand is on the cusp of an exciting new era.

Rail has an increasingly important role to play in the transport sector, helping commuters and products get where they need to go – in particular, linking workers with their workplaces in New Zealand's biggest cities, and connecting the nation's exporters to the world.

As a lower emissions transport option, rail can efficiently move large volumes of people and cargo, with a relatively small carbon footprint. At the same time, it can help reduce congestion and wear and tear, and improve safety on New Zealand roads.

To enable rail to fulfil this significant role, it must be funded appropriately. Like the nation's roads and highways, the rail network constitutes vital infrastructure that delivers wider benefits by enabling both the services that use it and the outcomes they achieve.

The changes to the Land Transport Management Act 2003 (LTMA) that take effect this year recognise this wider benefit, and from July 2021 the rail network will be funded on an equitable basis alongside the roading network.

This new investment approach marks a turning point that is crucial to securing the future of rail and unlocking its full potential.

KiwiRail now has certainty about the projected role of rail in New Zealand's future, and a commitment to provide the funding needed to support that role.

This Rail Network Investment Programme (RNIP) sets out the tranches of work to ensure the country has a reliable, resilient and safe rail network.

KiwiRail is excited about taking the next steps towards getting this work underway and investing in the future of rail for all New Zealanders.

Sue McCormack
Acting Chair

Greg Miller
Group Chief Executive

Rail can efficiently transport large volumes of cargo.

2. INTRODUCTION AND APPROVAL

This is the first-ever RNIP, developed in accordance with the requirements of the LTMA as amended in 2020. These amendments enable rail to be eligible for funding from the National Land Transport Fund (NLTF).

The RNIP sets out a three-year investment programme and a 10-year investment forecast for the national rail network – the thousands of kilometres of track and associated infrastructure such as signals, tunnels and bridges, that provide the network for rail freight and passenger services in New Zealand.

The programme has been developed by KiwiRail, guided by:

- the Government Policy Statement on Land Transport 2021 (GPS), and
- the New Zealand Rail Plan (NZ Rail Plan).

The strategic investment priorities for a resilient and reliable rail network as outlined in the NZ Rail Plan are:

- investing in the national rail network to restore rail freight, and provide a platform for future investments for growth
- investing in the metropolitan rail networks to support growth and productivity in New Zealand's largest cities.

KiwiRail has worked with Auckland Transport (AT) and Greater Wellington Regional Council (GWRC) to develop the Auckland and Wellington metropolitan programmes, ensuring alignment with each Regional Land Transport Plan (RLTP).

The investment set out in this programme reflects the work KiwiRail will deliver to:

- enable consistent travel time, meet customer service levels and increase confidence in rail as a transport mode
- anticipate and adapt to emerging threats, withstand and absorb impacts of unplanned disruptive events and respond and recover quickly
- ensure the safety of passengers, staff and the public.

APPROVAL

As Minister of Transport, I am responsible for approving this RNIP, supported by Waka Kotahi in an advisory and monitoring role as well as by the Ministry of Transport and the Treasury.

On 29 June 2021, I, Hon Michael Wood, on behalf of the Crown, approved the Rail Network Investment Programme under Section 22B of the Land Transport Management Act 2003.

Hon Michael Wood
Minister of Transport


Rail
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RAIL NETWORK INVESTMENT PROGRAMME

The RNIP is guided by the New Zealand Rail Plan. The strategic investment priorities for the network are:

- investing in the national rail network to restore rail freight and provide a platform for future investments for growth
- investing in the metropolitan rail networks to support growth and productivity in our largest cities

NLTF – RAIL NETWORK ACTIVITY CLASS (NATIONAL FREIGHT AND TOURISM RAIL NETWORK)			
Category	**(3-year total)**	**Components**	**Benefits**
Network Maintenance, Operations and management	$361m	• Network operations • Maintenance • Track inspections • Asset management	• Enabling services to run on-time, reliably and safely • Improved asset management maturity
Network Renewals	$790m	• Replacing rail, sleepers and ballast; drainage works, civil works to strengthen slopes and prevent coastal erosion, replacing bridges, signalling systems etc. across the national network • New apprentices, trainees and plant to support programme delivery	• Reduction in Temporary Speed Restrictions (TSRs), heat restrictions, derailments • Reduced outages (e.g. signal failures) • Improved safety • Enables increased volumes on rail • Provides capability/employment opportunities
Network Improvements	$50m	• Develop a 30-year network plan • Yard improvements • Otira Tunnel business case • Resilience projects • Level crossings	• Improved safety performance • Improved service levels

NLTF – PUBLIC TRANSPORT INFRASTRUCTURE ACTIVITY CLASS (METRO RAIL NETWORK)			
Category	**(3-year total)**	**Components**	**Benefits**
Auckland Metro – Improvements	$130m	• Fencing and security • Strategic network planning • Integrated rail management centre • Infill signalling • Additional traction feed • European Train Control System (ETCS) level 2 business case	• Critical to enable full benefits of City Rail Link (CRL) to be realised
Wellington Metro - Improvements	$22m	• Re-signalling and train protection • Capacity improvements business case	• Improved safety • Enables increased metro capacity

Significant additional investment is planned in the next three years in metro areas through:

- Renewals and Maintenance programmes delivered through contracts with AT and GWRC.
- Delivering the New Zealand Upgrade Programme (NZUP) (over $1b) in metro areas and completing Transitional Rail projects (Rail Network Growth Impact Management (RNGIM), Auckland Metro Remediation (AMR), Wellington Metro Upgrade Programme (WMUP)).

AT A GLANCE

The focus in this first RNIP is on foundational infrastructure - maintaining and renewing the existing network to a resilient and reliable level, with a modest improvement programme. There is significant additional investment in rail improvements over this period through the NZUP and other Government funding.

HOW WILL WE MEASURE SUCCESS?

Detailed performance measures are shown in Section 10.

1 to 3-year goals:

- Improved asset condition/service level ratings (priority network routes)
- Improved asset management maturity and data quality to support decision making
- Maintaining volumes on rail using existing above rail assets
- Improved financial performance

3 to 10-year goals:

- Improved asset condition/service level ratings (secondary network routes and above rail assets)
- Reduction in outages/asset failures and time to recover
- Growing volumes on rail through introduction of new above rail assets
- Improved financial performance

Contribution to outcomes:

- Improved safety
- Reduced emissions
- Increased value of rail
- Increased contribution of rail to GDP and employment.

WHAT ABOUT BROADER INVESTMENT IN RAIL?

The RNIP provides the foundational network infrastructure, with other investments (funded outside of the NLTF) provided to improve services and grow the network capacity.

Existing Government investments which KiwiRail is delivering total over $4b and includes:

$435m	Interislander Ferry Replacement	**$1,457m***	NZUP (Third Main, Papakura to Pukekohe, Drury Stations, Wellington projects, Marsden Point Spur)
$1,593m	KiwiRail Rolling Stock and Mechanical Facilities	**$329m**	Provincial Growth Fund (PGF)
$327m	Wellington Metro Upgrade Programme (WMUP)	**$13m**	Crown Infrastructure Partners (CIP) – COVID response
$337m	Auckland Rail Network Growth Impact Management (RNGIM)	**$85m**	Hillside Wagon Assembly

*Excludes Marsden Point Rail spur – delivery case to confirm cost.

3. STRATEGIC CONTEXT

3.1 THE ROLE OF RAIL

Rail transports people and freight - supporting productivity and business growth, reducing emissions, congestion and road deaths, and strengthening social and cultural connections between communities.

Rail is a key part of a multi-modal transport system for both freight and passengers in New Zealand, and a critical part of New Zealand's supply chain.

3.2 A NEW APPROACH TO FUNDING NEW ZEALAND'S RAIL NETWORK

3.2.1 Drivers of the new way forward

This investment programme marks the beginning of a new approach to funding the ongoing maintenance, renewal and management of New Zealand's national rail network.

Some sections of the network within the Auckland and Wellington metropolitan areas have already benefited from recent and ongoing improvements to support growing commuter passenger services. However, much of the network is suffering from years of underinvestment in core renewals and maintenance.

As a result, faults and intermittent track closures are not uncommon, and operational restrictions are necessary across sections of the network.

This significantly impacts the timeliness, reliability and capacity of rail services in New Zealand, and ultimately KiwiRail's ability to fully support its freight and tourism customers and growth in metro services.

Like many railways worldwide, KiwiRail operates a vertically integrated model comprising of both above rail operations (locomotives and rolling stock) and the below rail network (tracks, tunnels, bridges etc).

This model reflects that railways are interconnected systems which benefit from a coordinated approach to design, planning, operation and maintenance.

However, the revenue KiwiRail has received from its freight and passenger operations has not been sufficient to meet the combined costs of running the above rail services and replacing associated assets, as well as fully maintaining the track infrastructure and addressing renewals backlogs.

While KiwiRail is confident the above rail business will be able to fund the operation and renewal of associated assets, it is unlikely to generate sufficient cash to fully fund the operation and renewal of the below rail business.

KiwiRail has historically received Government contributions towards upkeep of the rail network via appropriations made under the annual Budget process, but these have been below the level needed to enable a reliable and resilient network.

The short-term nature of the funding provided has also proved unsuitable for planning the maintenance and renewal of some assets which by their nature, require investment decisions to be made on a long-term basis, and often years in advance.

3.2.2 Rethinking the future of rail

In response to these issues, in 2017 the Government initiated the Future of Rail review, which aimed to identify the future role rail could play in New Zealand's transport system. At the same time, it acknowledged that the existing approach to planning and funding rail could not continue.

As well as being an efficient means of transporting large volumes of passengers and freight, rail results in considerably fewer carbon emissions than road transport. This makes it a key ally in efforts to reduce carbon levels and meet climate change goals.

Rail also plays a part in avoiding congestion by decreasing the volume of trucks on the road, which in turn helps lower road injury rates and road maintenance costs.

Key outcomes of the Future of Rail review to date have included:

- the release of the NZ Rail Plan, which outlines the Government's long-term vision and priorities for the national rail network, and
- the establishment of a new planning and funding framework for rail.

The priorities set out in the NZ Rail Plan are:

- investing in the national rail network to restore rail freight, and provide a platform for future investments for growth
- investing in the metropolitan rail networks to support growth and productivity in some of New Zealand's largest cities.

Ultimately, the vision is about recognising and supporting the crucial role that rail plays in a multi-modal transport system, which offers New Zealanders a genuine choice of transport options and meets other important social, economic and environmental goals.

3.2.3 How the new planning and funding framework works

Under the new planning and funding framework that takes effect on 1 July 2021, investment decisions on the rail network will be made under the LTMA.

This means the national rail network will be planned and funded on a long-term basis alongside the rest of the land transport system, including the road and public transport networks.

Rail network funding for the national freight and tourism network will primarily come from the newly established Rail Network activity class under the NLTF, with the money that funds this coming from NLTF revenue, track user charges and a top up from the Crown.

NLTF funding will also support ongoing investment in the metropolitan passenger networks through the Public Transport Infrastructure (PTI) activity class, alongside funding from other sources (the specific funding arrangements that apply to the metropolitan networks are described in more detail in Section 7).

KiwiRail will continue to fund its above rail commercial freight and passenger operations and assets from revenue received from delivering these services, with support from the Crown on a case-by-case basis.

The funding received via the Rail Network activity class will be available for the continuous programmes of maintenance, operations, management and renewal of the rail network. Improvement projects will go through a robust business case process and be approved on a case-by-case basis.

The Ministry of Transport (MoT) has established a framework for KiwiRail to pay track user charges into the NLTF to contribute to the cost of the rail network in a fair and transparent way.

The new approach recognises that like roads, the rail network delivers broader transport benefits and should be funded accordingly. It also embodies the principle of mode neutrality – this means future investment decisions can be based on which transport mode delivers the best overall outcomes.

3.2.4 Broader investment in rail

In addition to introducing the new planning and funding framework for the rail network, the Government has made other significant investments towards revitalising rail in New Zealand.

These investments have been made from the NZUP, PGF, CIP and Budget appropriations to support:

- replacement of aged KiwiRail assets including locomotives, wagons and the Interislander ferries
- regional rail projects
- ongoing network improvements to support Auckland and Wellington's commuter services.

The investments recognise KiwiRail's commercial imperatives and the important role rail has to play in the future of New Zealand's land transport system. Customers are seeking increased and more reliable rail services, and freight volumes are projected to continue growing despite the short-term impacts of COVID-19.

The new approach to planning and funding the rail network, along with the other investments in rail, will enable KiwiRail to secure existing services and lay the foundations for future growth.

More details about the wider funding landscape supporting the revitalisation of rail are provided in Section 8.

3.2.5 The important role of this investment programme

This RNIP plays a critical role in the new planning and funding environment, as it is the means by which KiwiRail:

- outlines the planned investments needed to ensure New Zealand develops reliable, resilient and safe national freight and tourism and metropolitan rail networks, and
- supports its case for the funding needed to carry out this essential work.

These investments align with the long-term vision and priorities for rail set out in the NZ Rail Plan, as well as the broader land transport outcomes and priorities in the GPS.

The GPS identifies how rail can help deliver the strategic priorities that will guide land transport investments from 2021/22 – 2030/31, namely:

- Safety – developing a transport system where no-one is killed or seriously injured
- Improving freight connections for economic benefit
- Climate change – developing a low carbon transport system that supports emission reductions while improving safety and inclusive access.
- Better travel options – providing people with better transport options to access social and economic opportunities.

The Transport Outcomes Framework is shown in Figure 1.

TRANSPORT OUTCOMES

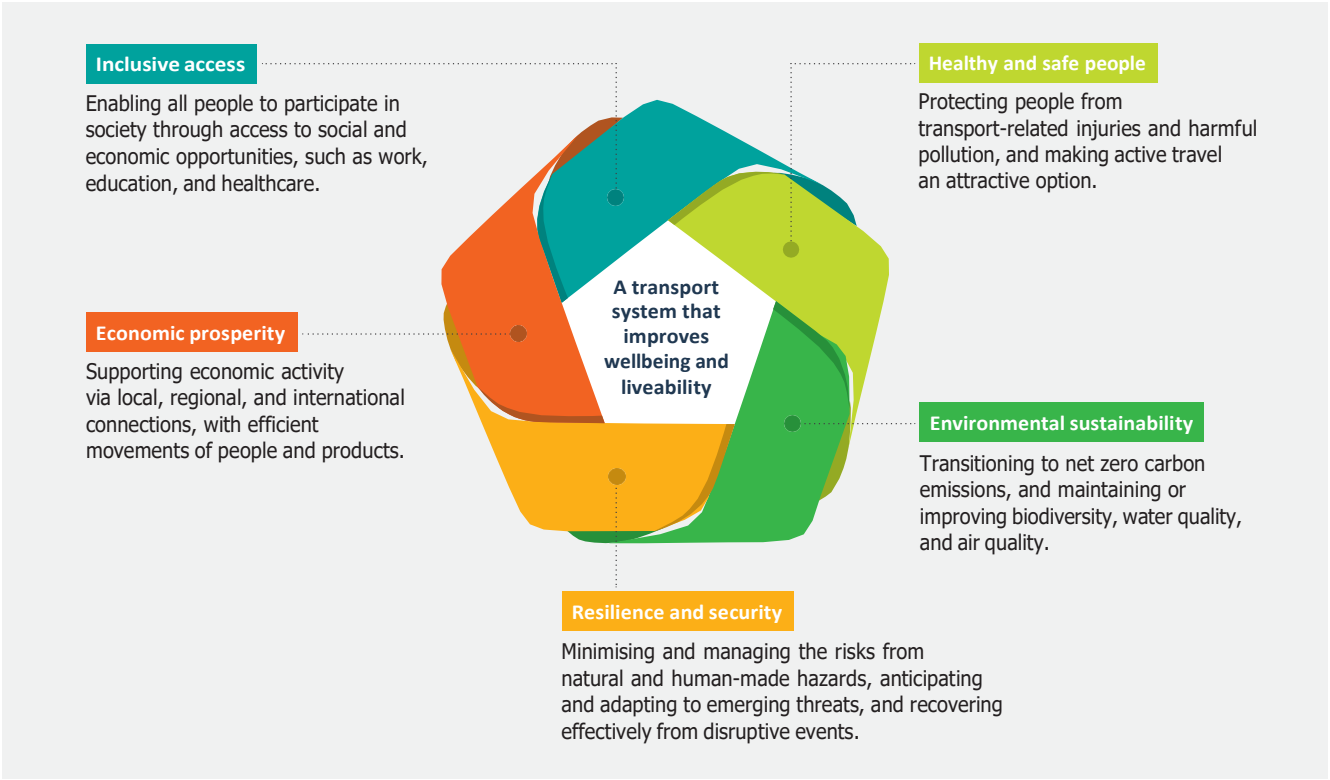


Figure 1: Transport Outcomes Framework (Ministry of Transport)[1]

The priorities in the Plan revolve around investing in the network to restore it to a resilient and reliable state.

1. https://www.transport.govt.nz//assets/Uploads/Paper/Transport-outcomes-framework.pdf

4. THE NATIONAL RAIL NETWORK TODAY

4.1 RAIL NETWORK ASSETS AND INFRASTRUCTURE

New Zealand's national rail network consists of 3,700km of mainline track which is owned, operated and maintained by KiwiRail. The network spans almost the full length of the country and is predominantly single track outside of metro areas. It is supported by marshalling yards, loops and sidings. Some lines are mothballed (not in operation)[2] but include assets which require continued inspection.

There is also almost 250km of track in privately-owned and funded sidings that connect customers to the national network.

The North and South Island networks are connected across Cook Strait by KiwiRail's Interislander ferries, which offer roll on/roll off capability for rail freight travelling between the islands.

Crossing the Awatere River just north of Seddon.

2. When a line is mothballed, assets are left in place to preserve the option value of the line. Most assets will be reused if the line is reopened, although depending on condition, some assets may need to be renewed or upgraded. The cost of removing assets from redundant lines is typically more than their scrap value, so unless those assets present an unacceptable risk, there is no drawback in leaving assets in place, and continuing a low level of maintenance.

NATIONAL RAIL NETWORK

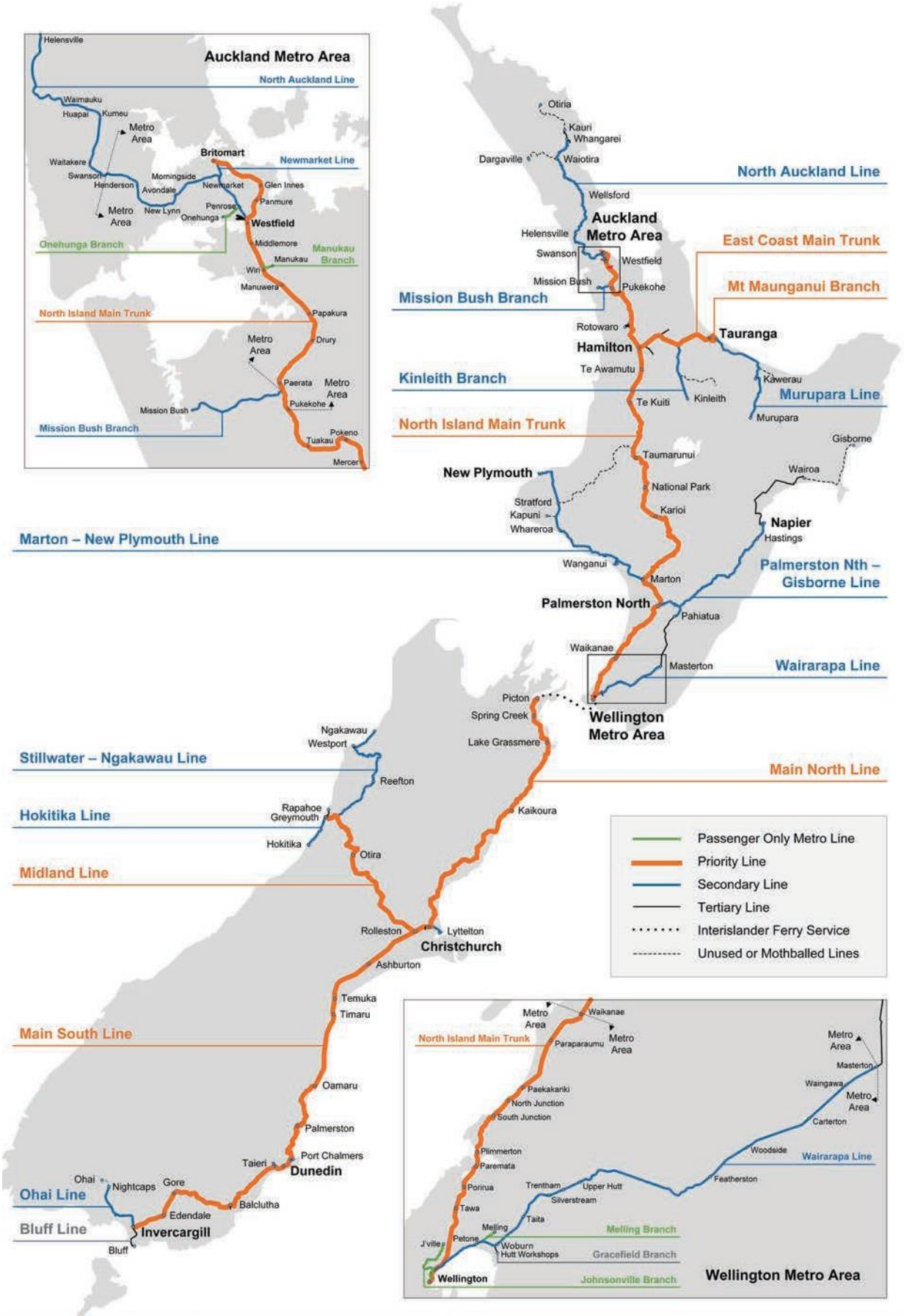


Figure 2: National Rail Network

The network comprises a large number of assets, separated into the following categories:

4.1.1 Track

Components within this asset class include:

Rail – in various weights of steel to support different axle loads

Sleepers – the beams that support and space the rail; traditionally made of timber but gradually being replaced with stronger materials including concrete and composite (plastic)

Ballast – (crushed stone) which supports the sleepers and distributes the weight of passing trains evenly to the ground below

Subgrade – compacted soil that provides the base for the track

Turnouts – short sections of track that enable trains to move between adjacent tracks (enabling trains to pass, branch to other lines, or wagons to be marshalled)

Heavy specialist track equipment – used for renewals, maintenance, inspections and compliance.

4.1.2 Civil assets

Components within this asset class include:

Formation – including cuttings, embankments and slope stabilisation measures that support the track

Drainage – including culverts (generally pipes below the formation that prevent washouts by carrying water underneath the track)

River and coastal protection – including seawalls, groynes and revetments (all intended to protect the rail corridor).

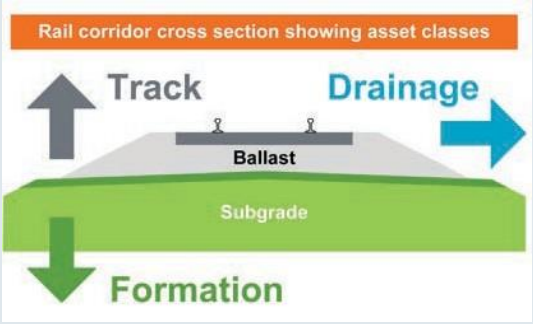


Figure 3: Cross section of assets in rail corridor

4.1.3 Structures

Components within this asset class include:

Bridges and viaducts (bridges more than 20m high) – the network has over 1,300 rail-carrying bridges and viaducts

Tunnels – approximately 100 across the network

Lighting towers – approximately 200 nationwide, which enable operations outside of daylight hours.

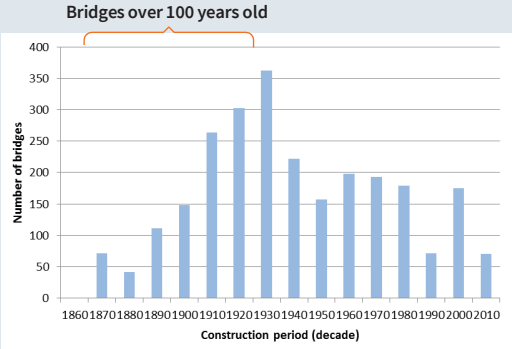


Figure 4: Age profile of rail network bridges

4.1.4 Signals and telecommunications, traction and electrical, and active level crossings

Components within this asset class include:

- **Signals** – trackside indicators (mostly coloured lights) that convey information such as safe speed and right-of-way to train drivers
- **Train control systems** – centralised systems which manage the safe running of trains
- **Telecommunications assets** – a variety of means to transmit voice and data, mainly for communicating with trains, which includes bearer networks (fibre and copper), telemetry equipment, radio networks and line-side systems
- **Traction and electrical** – including overhead wires and traction poles (which support the wires) along electrified sections of the network, as well as electrical assets such as substations, transformers and tunnel ventilation systems
- **Active level crossings** – road crossings controlled by flashing lights, bells and barrier arms (approximately 1,200 across New Zealand).

4.2 SERVICES SUPPORTED BY THE RAIL NETWORK

Current services supported by New Zealand's national rail network include:

- freight services operated nationwide by KiwiRail
- urban passenger rail services in Auckland and Wellington, operated by TransDev on behalf of AT and GWRC
- tourism services operated by KiwiRail including the TranzAlpine, Coastal Pacific and Northern Explorer
- inter-regional passenger services operated by KiwiRail, including the Capital Connection (between Wellington and Palmerston North) and Te Huia (between Hamilton and Auckland)
- other services, including charter services and services run by heritage operators.

In the Auckland and Wellington metropolitan areas, freight trains, urban passenger and inter-regional services currently share most of the same rail network.

4.3 SUPPORTING NEW ZEALAND'S MARKETS AND ECONOMY

Each week, KiwiRail's National Train Control Centre (NTCC) manages the following volumes of scheduled movements across the national rail network:

- 900 freight trains
- 44 inter-city passenger trains
- 2,200 suburban passenger services in Wellington
- 3,700 suburban passenger services in Auckland

Freight, tourism and commuter passenger services form a key part of New Zealand's economy and supply chain by supporting people, businesses, producers and exporters to contribute to national economic productivity as well as regional growth.

Rail transports approximately 12% of New Zealand's total freight task, carrying import and export freight to and from major ports, as well as domestic freight between warehouse distribution centres in major cities. Bulk commodities such as logs and coal are also transported by rail. Of all export freight, 25% is transported by rail.

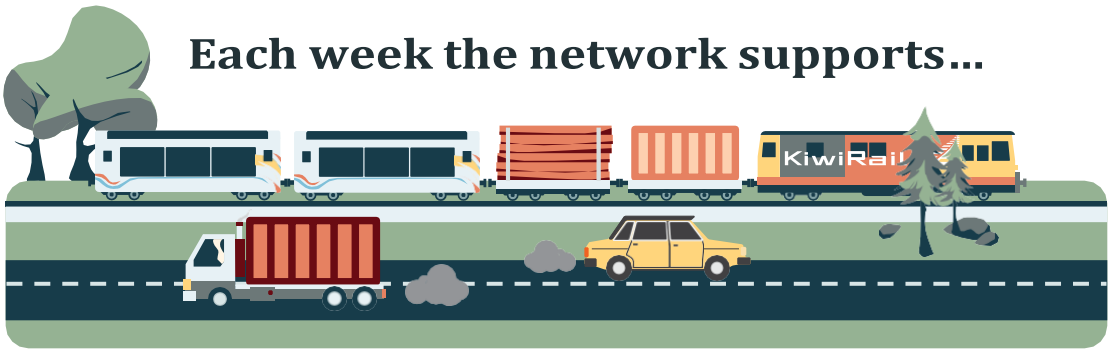
Over 1 million tourist passengers typically use the scenic rail and Interislander services each year, contributing to jobs and prosperity in New Zealand regions. While volumes have been affected in the short term by the reduction in numbers of international visitors as a result of COVID-19, they are expected to bounce back once the borders re-open.

The metropolitan rail networks of Auckland and Wellington underpin more than 35 million commuter trips a year (pre-COVID), connecting people with jobs and supporting businesses to thrive.

The nature of rail activities and services across New Zealand differs considerably from region to region. This is because of the different types and needs of industries, sectors, producers and populations in each region.

4.4 CURRENT STATE OF THE NATIONAL RAIL NETWORK

A railway is a combination of above rail services, comprising the locomotives and rolling stock that transport passengers and freight, and the below rail network – the track and other infrastructure that support rail services.



Regardless of how above and below rail operations are funded, both components must operate together seamlessly for the optimal delivery of rail services.

As the foundation of rail services, it is critical that the rail network itself, with its many interdependent parts, functions effectively and safely (and meets regulatory requirements in accordance with KiwiRail's rail licence and rail safety case).

Because of past underinvestment, maintenance on New Zealand's national rail network has tended to be reactive rather than proactive, and many parts of the network have not been renewed on a timely basis. As a result, there is a backlog of maintenance and renewal work that needs to be addressed as part of shifting towards a more reliable, resilient and safe network.

This backlog of maintenance and renewal work often means that KiwiRail has to introduce operational restrictions such as temporary speed restrictions or reduced axle loads in affected areas to continue safely operating the network. This hinders KiwiRail's ability to deliver efficient and competitive services and increase volumes on rail.

At a high level, the work needed across the following asset classes includes:

Track

- replacing track components that are functionally life expired – in particular, wooden sleepers
- carrying out a national grinding programme to extend the functional life of rail
- addressing a backlog of ballast maintenance. It is important to regularly clean and top up ballast, as over time it degrades and becomes contaminated with smaller particles, weakening its ability to evenly distribute forces and potentially compromising the track's foundations
- strengthening track to enable heavier loads of freight. This generally requires replacing both rail and sleepers and can also require remedial work to the formation.

Structures

- replacing bridges that have the highest priority for renewal, particularly those that include life-expired timber components
- refurbishing steel viaducts to extend their functional life
- carrying out deferred maintenance on tunnels, including addressing track deterioration caused by water seepage, and maintaining tunnel linings
- replacing old lighting towers which typically date back to the 1960s and 70s.

Civil

- weather proofing at-risk sections of the network, e.g. reducing the steepness of slopes and replacing culverts that are in poor condition.

Signals and telecommunications

- upgrading out-dated signals and telecommunication systems
- improving the safety of level crossings by installing more active protection (bells, lights, barrier arms) or other solutions such as grade separation.

Traction and electrical

- replacing high voltage power supply and tunnel ventilation components
- replacing functionally life-expired overhead line equipment, lighting and traction substation fittings and components
- addressing the backlog of high-maintenance wooden power distribution poles

More details about the investment programme are provided in Sections 5 and 6.

4.5 BENEFITS OF INVESTMENTS

The investments in this RNIP will address the work needed across the network to bring it to a more reliable and resilient condition. It will take time for the network to achieve this condition as the investment programme is delivered over the 10-year period.

While we often hear about the costs associated with rail, there is an economic value that is generally not captured in traditional profit and loss calculations.

These benefits are delivered to all New Zealanders through social, environmental and economic values which were first quantified in 2016 by professional services firm EY. They have now updated the Value of Rail in New Zealand report to reflect rail's growing contribution.

A summary of the benefits and value of rail is shown in the following diagram.

The RNIP will enable renewal backlogs to be progressively cleared and avoid backlogs reoccuring. Reactive maintenance work that often impacts network availability will be reduced, and the overall condition and performance of assets will be enhanced. There will be fewer operating restrictions on the network, allowing KiwiRail to increase efficiency and support better service levels.

As a result, the network will be able to:

- enable faster, more reliable services for passenger and priority freight services
- offer increased resilience to extreme or unforeseen events, including storms and moderate seismic events
- deliver expected safety levels for passengers, train crews, the public, maintenance and inspection staff, with fewer operational mitigations required that can impact service levels
- maintain and provide a platform for growth in volumes on rail, and
- support the delivery of transport outcomes.

This increased network performance enables KiwiRail to offer better service levels to customers which will promote growth in rail freight volumes. This supports the GPS strategic direction as outlined in Section 3.

The performance measures that will be used to support KiwiRail's progress in restoring a resilient and reliable network are outlined in Section 10.3.

5. PLANNING AND PRIORITISING INVESTMENT

5.1 ADDRESSING THE SPECIFIC NEEDS OF THE NETWORK

This programme outlines investments for the following parts of the national rail network:

- national freight and tourism network (excluding the Auckland and Wellington metropolitan areas) which principally support freight and tourism services
- the sections of the network within the Auckland and Wellington metropolitan networks, which principally support commuter passenger services, although freight and tourism trains share most of the same lines.

The reason these key parts of the network are treated separately is outlined below.

5.1.1 Specific funding arrangements for metropolitan areas

The Auckland and Wellington metropolitan networks are primarily used by commuter passenger services operated by AT and GWRC.

Specific agreements are in place which set out the contributions AT and GWRC make towards maintenance, renewal and operation of the metropolitan sections of the network, reflecting their position as the major users.

Additionally, significant Crown funding has been provided towards upgrading the metropolitan commuter networks (more details about these are provided in Section 7). This includes various channels such as the NZUP and appropriations to support the WMUP and Auckland Transport Alignment Project (ATAP).

Any additional funding towards the metropolitan networks from the NLTF will therefore take into account and complement the existing funding agreements, as well as the Crown-funded projects currently underway. These will utilise the PTI activity class and assessment process.

5.1.2 Investment priorities

The significant Crown investment towards metropolitan commuter rail in recent years has been aimed at enabling the Auckland and Wellington networks to support the growth of commuter passenger services.

Generally speaking, this means the focus in the metropolitan areas is on completing the work already underway and building on this to enable further growth.

Across the freight and tourism network, the priority is addressing the backlog of maintenance and renewal work needed, bringing the network up to a reliable and resilient standard, and shifting the balance of maintenance to mostly proactive rather than mostly reactive.

5.1.3 Taking into account the specific nature of network services

The investments in the national freight and tourism network and metropolitan commuter networks will also reflect the different nature of services hosted by each network.

For example, some lines used exclusively by freight trains may have only a limited number of trains using the line on any given day. This is a very different scenario to a busy commuter network, where passenger trains operate much more frequently.

A short outage on the former may have little or even no impact on services, whereas the same outage on the latter would likely have a much more disruptive effect. Therefore, investments reflect and meet the particular service levels that apply in each situation.

More information about the approach that has been taken to prioritise investments in Section 5.4.

5.2 TYPES OF INVESTMENTS

For each of the two key sections of the network described in Section 5.1, this RNIP outlines two different categories of investment.

5.2.1 Continuous programmes – network maintenance, operations and management and renewals

Operating a rail network means various ongoing costs must be met in order to:

- keep the network operating safely and effectively within its existing parameters
- maintain current service levels for customers.

Continuous programme costs include the following:

Maintenance

Maintenance costs in the context of a rail network are costs associated with helping to achieve the expected life or continued operation of particular assets or infrastructure.

Maintenance costs are incurred from a range of activities including:

- inspections and monitoring to understand asset condition
- preventive maintenance aimed at avoiding asset failure before it occurs and maintaining compliance with existing engineering and safety standards, and
- corrective and emergency maintenance to return assets from an unsatisfactory or failed condition back to a serviceable condition e.g. within specification.

Work underway at Britomart in Auckland. There are specific funding arrangements for metropolitan areas.

Operations and management

A rail network is a controlled environment, where all train movements are directed and coordinated. This distinguishes it from the road network, where there are road rules underpinned by law, but within those parameters, individuals are generally free to access the network as they please.

In New Zealand, the direction and coordination of train activities takes place via the NTCC, based in Wellington.

The provision of operational activities (such as train control) is an inherent cost to providing a rail network, as without these activities the network would be unable to operate.

Management costs associated with a rail network include asset and data management, planning, safety (Zero Harm) management and corporate costs such as information technology, human resource and finance systems, as well as insurance.

Renewals

Renewal costs in the context of a rail network are costs associated with extending asset life by partially or completely replacing individual assets as necessary.

All assets that comprise the rail network have a finite functional life. This varies significantly depending on the particular asset concerned and the loading and environment they are exposed to.

Most often, assets will be renewed with brand new replacements. In some cases, assets can be renewed with used or recycled assets, such as transferring rail that is no longer suitable for use on main lines to less busy secondary lines.

5.2.2 Improvement projects

A project is considered an improvement when the primary purpose of investment is a new asset or a step change in an existing asset's level of service e.g. double tracking to increase capacity.

This is distinct from renewals where the primary purpose of investment is to replace an asset at the end of its functional life e.g. replacing a bridge with a modern equivalent that happens to allow increased axle loading.

Improvement projects follow a slightly different process to continuous programmes in that they require a business case and evaluation on a case-by-case basis.

This RNIP identifies a small number of opportunities that will improve resilience, reliability and safety on the freight network. There are also opportunities for the metro network which will add additional capacity and growth.

5.3 ASSET MANAGEMENT PLANNING

This RNIP describes at a high level the investments required to ensure a resilient and reliable rail network. It is underpinned by asset management planning processes, reflected in KiwiRail's existing Asset Management Plan and supporting documents.

The focus of these processes and the plan itself will evolve as the new planning and funding framework for the rail network is implemented. This will see KiwiRail's asset management planning develop in maturity and evolve from a largely reactive to a largely proactive approach. This is reflected in the plan for delivering asset management planning maturity as shown in Section 6.1.3.

5.4 PRIORITISING EXPENDITURE

KiwiRail has processes to select and prioritise investment needs e.g. determine what work needs to be done, and when. These processes are consistent with recognised asset management practices.

For the metropolitan areas of the network, decisions on the priority of investments are made jointly between KiwiRail and the organisation's regional partners through the RLTP process.

5.4.1 Identifying what investments are needed

To determine what work KiwiRail needs to do, the following is identified:

- KiwiRail's freight and metro customers' current and future needs
- the required level of service to meet those needs
- the capacity of the network and assets needed to meet the identified level of service.

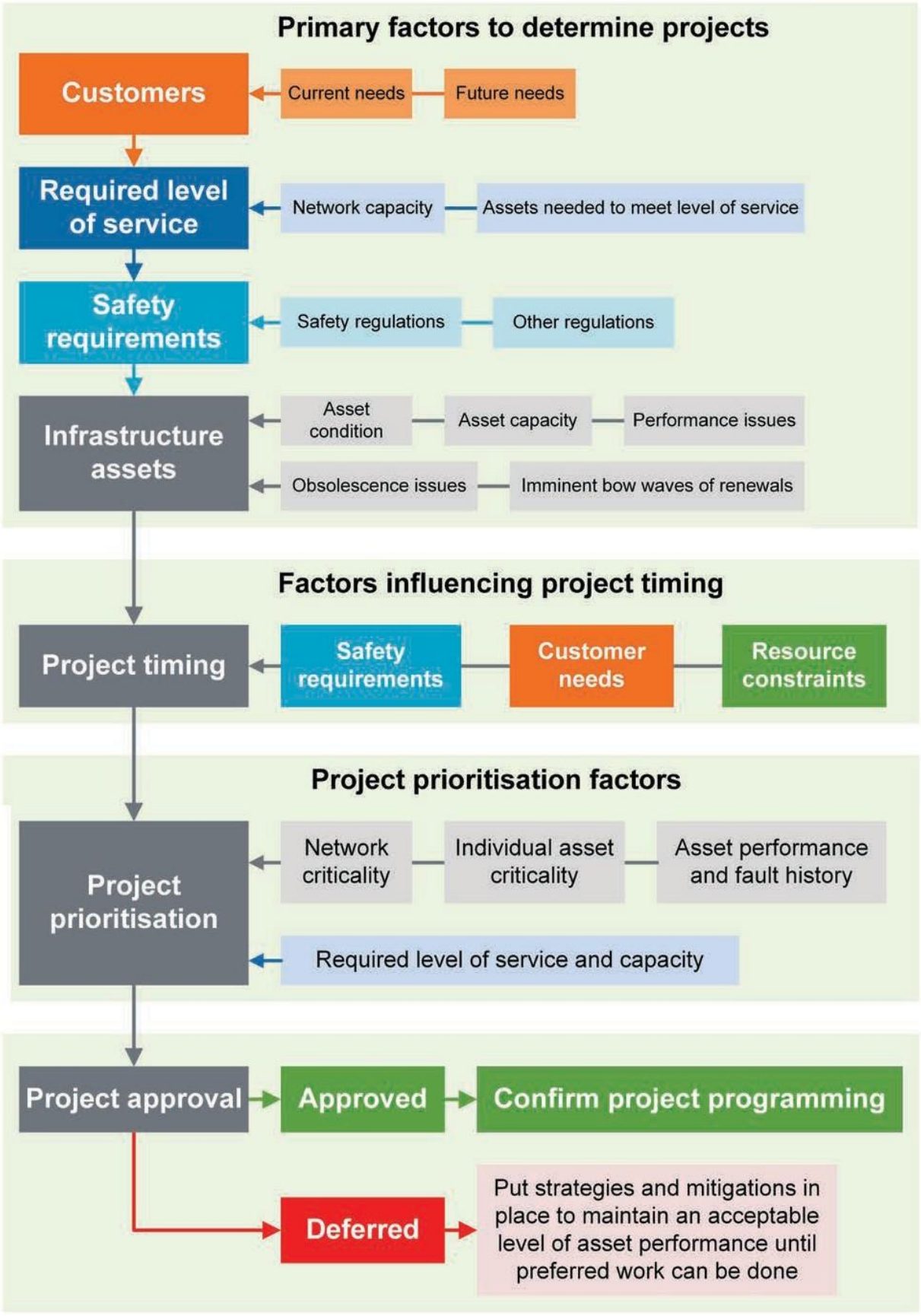
Keeping in mind the level of service we need to deliver, KiwiRail continually monitors:

- safety and other regulations that must be complied with
- the condition and capacity of assets
- any identified performance issues
- current and future obsolescence issues
- imminent bow-waves of renewals (many assets coming to end of life at a similar time).

These are the primary factors that determine what will be included in upcoming work banks (lists of projects to be undertaken).

The prioritisation approach is summarised in the process overview diagram on the next page.

PRIORITISING INFRASTRUCTURE INVESTMENTS - PROCESS OVERVIEW



5.4.2 Identifying when work will be undertaken

The first consideration is to determine a prudent and practical timeframe for clearing the backlog so that:

- safety requirements are met
- customers' needs are met
- resourcing (internal and external) is both initially achievable and sustainable over time.

KiwiRail use a number of factors to prioritise work banks, including:

- Risk – safety risks in relation to service type and potential impacts of failure
- Network criticality – how important a section of line is to the network, in terms of factors such as the total number of trains that use it, types of users and total freight tonnage carried
- Individual asset criticality – how critical is the asset to the operations it supports? A viaduct on a single line, for example, would likely be assessed as more critical than a turnout in a marshalling yard with multiple lines, as failure of the viaduct would halt operations, whereas in the case of the turnout, other lines could potentially be used until the turnout is fixed
- Required levels of service and capacity – the ability of the asset to meet current and future principal operating parameters in terms of axle load, vehicle height, vehicle width and train speed
- Asset fault and performance history.

A robust way of prioritising projects is critical. If additional funding becomes available there may be opportunities to advance aspects of the programme.

Where particular projects in a work bank can't be funded (or resourced) immediately, KiwiRail ensures that appropriate strategies and mitigations are in place to safely maintain an acceptable level of asset performance, until the preferred work can be undertaken.

During the financial year, unforeseen events may occur that impact priorities. KiwiRail's Capital Committee and Board meet regularly to consider any new work that arises on the network that may need to take priority within the continuous programme funding range set by RNIP. Significant changes will be reported to monitoring agencies.

5.4.3 RNIP investment priorities

KiwiRail knows that customers (freight and passenger) place high value on reliability of services. An increased demand from customers as well as support for new lines and services is being seen.

While KiwiRail also shares this ambition for rail, it is important to note that sustained investment is required over the next decade just to meet the goal of bringing the existing national rail network up to a resilient and reliable level. This stable foundation is critical for any future expansion.

In the first RNIP triennium, KiwiRail is focusing on the following in the freight and tourism network:

- improving the network performance of priority routes
- stabilising the network performance of secondary routes and the wider network
- progressively increasing resource capacity to deliver a larger investment programme
- delivering more efficient and effective asset treatments with lower whole-of-life cost
- asset management improvements to better understand the network and to further optimise investments.

KiwiRail's overall investment priorities over the 10-year period are:

- Investing in the national rail network to restore rail freight and provide a platform for future investments for growth, meaning:
    - a primary focus (and majority of spend) on the continuous programmes of maintenance, management and renewal
    - a modest allowance for improvement projects to support resilience and reliability
- Investing in metropolitan rail to support productivity and growth in some of New Zealand's largest cities meaning:
    - a focus on completing the programmes which align with ATAP and the RLTP's, and
    - enhanced regional services (embedding the Hamilton to Auckland and Palmerston North to Wellington services).

These investment priorities are aligned with the strategic investment priorities outlined in the NZ Rail Plan.

5.4.4 Benefits of greater funding certainty

The short-term funding approach KiwiRail has operated under in the past has meant that the focus has tended to be on the upcoming financial year, or just beyond.

Under the new planning and funding model, KiwiRail will be better placed to undertake longer-term prioritisation to better optimise the investment programme.

Greater surety of funding will enable:

- the necessary resources (both human and specialised equipment) to be secured to efficiently carry out the work ahead

- potential procurement savings on larger bodies of work
- assured phasing of multi-year projects, from initial business cases, through the subsequent investigation, optioneering and design phases, to construction
- more efficient long-term planning and integration
- better whole-of-life cost through addressing all asset issues at each site when work is carried out e.g. addressing formation as well as track in one coordinated work package
- greater customer confidence that their needs will be met, supporting increased volumes on rail.

Refurbished steel span being lowered into place.

6. INVESTMENT - NATIONAL FREIGHT AND TOURISM NETWORK

6.1 CONTINUOUS PROGRAMMES – NETWORK MAINTENANCE, OPERATIONS AND MANAGEMENT

6.1.1 Financial summary – network maintenance, operations and management

KiwiRail plan to spend $558.2m across the three-year National Land Transport Programme (NLTP) period, with $361.0m from the NLTF Rail Network activity class as shown below:

Description ($m)	2021/22	2022/23	2023/24	Total
Network maintenance	103.3	106.5	110.5	320.3
Network operations and management	76.6	79.1	82.2	237.9
Total network maintenance, operations and management	**179.9**	**185.6**	**192.7**	**558.2**
AT funded network maintenance, operations and management*	(28.5)	(29.1)	(30.5)	(88.1)
GWRC funded network maintenance, operations and management*	(24.3)	(25.7)	(26.7)	(76.6)
Third-party funded network maintenance, operations and management*	(10.6)	(10.8)	(11.0)	(32.5)
Total freight and tourism maintenance, operations and management	**116.5**	**120.0**	**124.5**	**361.0**

Council contributions for network maintenance, operations and management are funded separately and outside of the Rail Network activity class

6.1.2 Network maintenance

Inspections and monitoring

Inspections and monitoring help us understand asset condition, ensure regulatory and safety compliance and identify the need for maintenance.

As well as cyclical inspections, KiwiRail undertakes special inspections such as heat runs during the summer to detect track buckling, or in response to adverse weather or seismic events. Inspections may be manual (e.g. network staff walking the track) or mechanised (via drone or vehicle).

A large focus over this period is to improve the quality of information that is collected and used to support asset management and data-quality objectives as well as developing future investment programmes. To deliver this, KiwiRail is increasing the number of inspectors and capacity of the asset management team to make use of the information collected.

With improved data quality KiwiRail can refine programmes, ensuring they are optimised to deliver the greatest overall benefit. This is essential to enable the shift to smarter predictive maintenance strategies as outlined below.

Maintenance

The maintenance programme covers all network assets and is critical to ensure the railway is able to continue to operate safely and effectively.

There are multiple maintenance activities that must be undertaken across the full range of assets and their components, e.g. maintenance of turnouts, joints, drainage, culverts, formation, bridges, tunnels, points machines, level crossings, poles, traction cables and radios etc.

Within the maintenance programme, KiwiRail has allowed for:

- **Predictive Maintenance** – in the longer term using the condition data collected to anticipate deterioration of assets and perform regular targeted maintenance based on the analysis.
- **Preventive Maintenance** – e.g. lubricating track (greasing curves so there is less friction and therefore less wear and tear as trains go around curves); cleaning and greasing moving parts of turnouts; regular checks and replacement of fastenings (which connect rails to sleepers and can loosen over time); bolt runs (checking bolts on structures such as bridge spans to ensure they are tight).
- **Corrective Maintenance** – fixing faults identified through EM80 runs (a rail vehicle that uses sensors to automatically detect track faults), and non-destructive testing (NDT) runs – another type of vehicle, which looks for internal defects in rail).
- **Emergency works and maintenance** needing immediate attention e.g. fixing broken rails and sleepers, buckles, obstructions found on track, derailments, points machine failures, signalling faults, bridge strikes, adverse weather runs, etc.

Through the RNIP and with the new longer-term planning and funding model in place, KiwiRail will increase the level of network maintenance and shift towards preventive and predictive maintenance strategies over time. This will reduce the asset failure rate and improve availability and reliability of the network. This will have a positive impact for customers using the network as KiwiRail will be able to provide a more reliable and consistent service.

Ballast cleaners (above) and stabilisers (below) are important tools used to maintain the network.

6.1.3 Network operations and management

The NTCC is KiwiRail's central nervous system, designed to know where every train and track occupancy is, at every second of every day throughout New Zealand.

The Train Control investment programme assumes:

- the construction of a second northern train control centre, with associated operating costs included and
- the relocation of the Wellington railway station centre to a new facility.

Asset Management

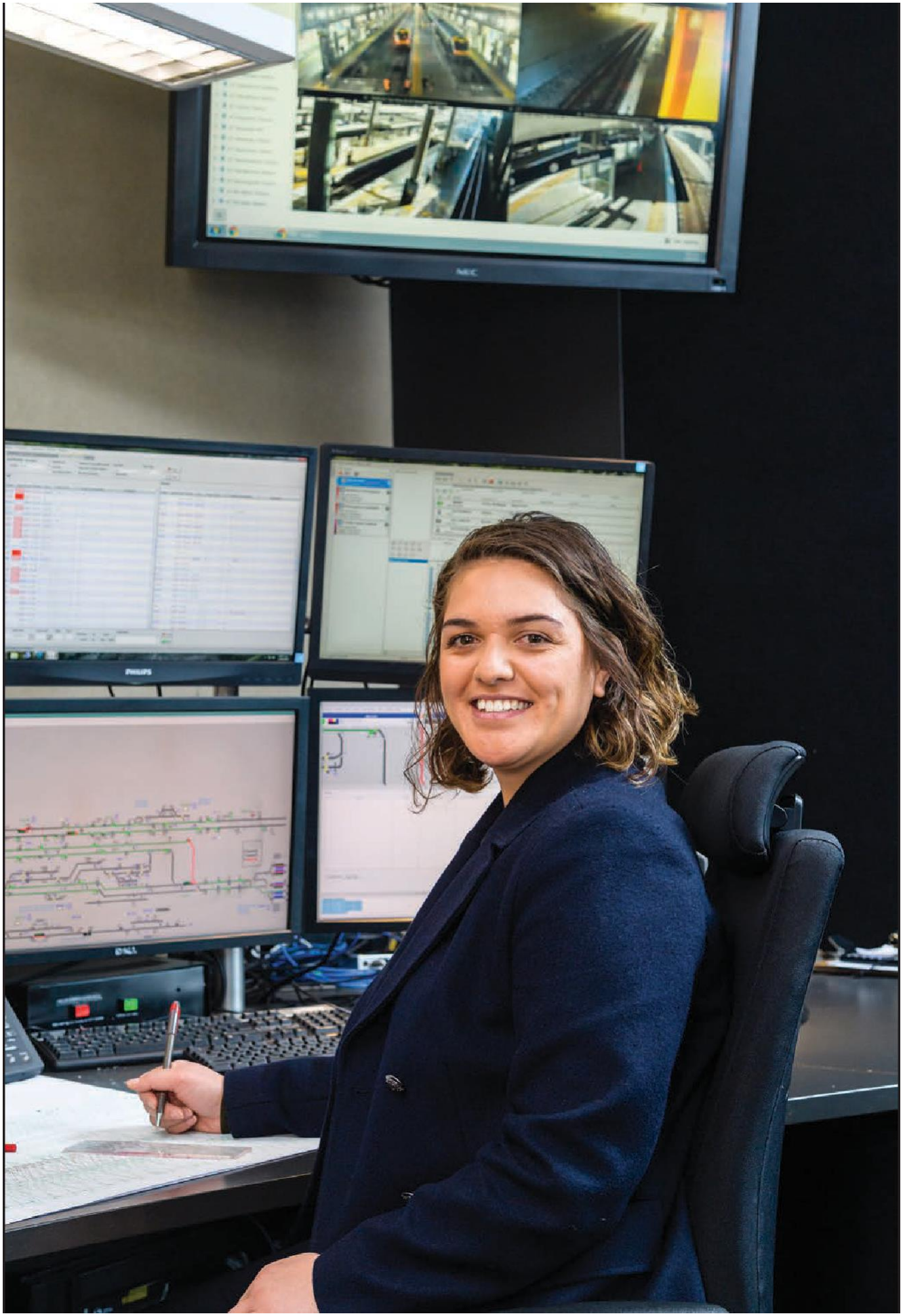
KiwiRail has a centralised in-house asset management team who assist the business in developing the network investment programme and making improvements which enable better investment decision making. The focus over the next three-year period with the longer-term funding in place is on improving KiwiRail's asset management maturity and capability, as well as improving data quality, with specific actions as follows:

- Improving Asset Management Maturity
    - undertake asset management gap analysis and develop an asset management improvement road map
    - develop asset class strategies and update the strategic asset management plan
    - deliver the improvements in the asset management improvement road map
    - produce an updated asset management plan to support the next RNIP and subsequent investment programme(s).
- Improving data quality
    - undertake data quality gap analysis and develop a data quality improvement road map
    - produce a data quality framework
    - deliver on the data quality improvement road map.

Network management and overheads

This includes the cost of managing and supporting the network function and corporate overheads.

The focus over the next three years is on transitioning to the new planning and funding model and investment programme, including corporate support and monitoring/reporting capability. This is essential to ensure the success of the new model.



The National Train Control Centre is KiwiRail's central nervous system.

6.2 CONTINUOUS PROGRAMME – NETWORK RENEWALS

6.2.1 Financial summary – network renewals

KiwiRail plans to spend $789.9m in network renewals across the three-year NLTP period, from the NLTF Rail Network activity class as shown below:

Description ($m)	2021/22	2022/23	2023/24	Total
Track	109.8	135.8	149.4	395.0
Structures	20.1	30.0	38.9	89.1
Civil	29.9	44.0	31.3	105.2
Signals	15.5	17.3	19.7	52.5
Telecommunications	6.5	2.5	4.8	13.8
Traction and Electrical	1.7	1.4	1.2	4.3
Active Level Crossings	5.5	7.5	7.6	20.6
Incidents, unplanned works and contingency	24.5	31.2	31.5	87.3
KiwiRail share of Auckland metro renewals	1.7	1.8	4.1	7.6
KiwiRail share of Wellington metro renewals	5.3	4.8	4.6	14.6
Total KiwiRail renewals	**220.6**	**276.1**	**293.2**	**789.9**

AT and GWRC's planned shares of network funding renewals are shown in Schedule 1.

Timber sleepers being replaced with new higher strength and longer lasting concrete sleepers.

6.2.2 Track

What KiwiRail will deliver

Track and ballast programme with a focus on packaging work (e.g. civil formation) for best whole-of-life cost and outcomes.

Planned investment in specific components within this asset class

Rail

- Three-year programme to replace rail at an average of 25km of track per year where the rail is aged, in poor condition or not suitable for current or future traffic
- Undertake a national rail grinding programme to extend the functional life of the rail.

Sleepers

- Programme to replace around 135,000 timber sleepers per year on average in the triennium with more resilient and longer-lasting materials such as concrete and composites, and mainly on principal lines
- Removing all Prematurely Decayed Sleepers (PDS), generally Peruvian hardwood, which have proven to be less durable than other types of sleeper, within the next five years.

Turnouts

- Over the three years, replace an average of 27 life-expired turnouts per year with longer-life modern designs.

Ballast

- Implement a remediation programme to address below-sleeper ballast deficiencies, prioritised to support track renewals
- Re-implement a proactive, high-production ballast-cleaning programme.

Stability improvements

- Implement a stability management programme comprising ballast renewal, tamping (packing the ballast underneath the track), destressing (to reduce the likelihood of rail buckling during hot weather) and rail welding on priority lines that would otherwise be subject to heat restrictions.

Plant and Equipment

- Retain the newest track machines (e.g. tampers, ballast regulators and dynamic stabilisers) and overhaul them as they fall due for refurbishment in future years
- Replace aged track equipment with modern and more efficient plant required to meet the increasing demand in track work
- Optimise the utilisation of existing major plant e.g. the high-production ballast cleaner
- Investigate the best whole-of-life cost option for providing rail-grinding capacity
- Procure and commission new track-recording technology for monitoring track geometry faults.

KiwiRail is replacing timber sleepers with ones made from more resilient materials.

6.2.3 Structures

What KiwiRail will deliver

Strengthen and improve the performance, condition, reliability and resilience of key structures including bridges, tunnels and major lighting towers.

Planned investment in specific components within this asset class

Bridges

- Three-year programme to replace on average five of the highest-risk (determined through a composite health index of factors affecting bridge condition) bridges per year with modern, 100-year-design-life structures, constructed using more resilient materials such as concrete and steel
- Implement an annual average of 13 partial renewals across the triennium
- Identify and prioritise sites to improve resilience during seismic and weather events, and future-proof assets against long-term environmental changes.

Tunnels

- Renew and implement further preventative measures in tunnels.
- Address issues such as:
    - deterioration of tunnel linings
    - accumulation of debris or contamination from coal or log trains
    - water ingress and drainage (which can also affect the track system - rail, ballast, formation)
    - portal detachments (where the entrance or exit is failing).

Lighting towers

- Replace lattice lighting towers within yards.

Bridges are key structures for KiwiRail – Bridge 41 on ECMT Kaimai Tunnel deviation.

6.2.4 Civil

What KiwiRail will deliver

Improve the condition of civil assets (including formation, culverts, slopes and river and coastal protection) that protect and support the rail infrastructure — in particular the track system.

Planned investment in specific components within this asset class

Culverts

- Over the three years, a programme to replace an average of 20 culverts per year with modern concrete equivalents, prioritised for priority or secondary lines where:
    - failure of the culvert would directly impact the reliable operation of the track (e.g. through collapse or slumping) and subsequently disrupt services; or
    - drainage is critical to ensure resilience during storm events by preventing washouts or flooding.

Slopes

- A risk-based programme to renew or remediate slope sites
- Replace old retaining wall structures in critical locations with more resilient and engineered/designed structures or solutions.

River and Coastal Protection

- A programme to renew river-protection and coastal-protection assets
- Construct new assets in accordance with more reliable modern design standards and take other measures to future-proof assets against long-term environmental changes.

Formation and Drainage

- Implement a remediation programme to address formation and drainage, giving priority to renewing formation alongside other works such as track renewal sites for best whole-of-life cost and outcomes.

The Kaikoura Earthquake involved major civil works.

6.2.5 Signals

What KiwiRail will deliver

Improve the reliability of signals and control systems.

The investment levels in this renewal programme assume the following items are funded from other sources:

- Second northern control centre – funded through NLTF PTI activity class.
- Control systems replacement in the Wellington metro network leading to ETCS Level 2 (a form of automated train protection).

Planned investment in specific components within this asset class

Control and lineside systems

- Uplifted renewal programme for control systems and lineside equipment that provide train detection, train protection and route management (specialised equipment such as interlocking relays, points equipment, train detection circuits/axle counters, etc.).

Signals power supply

- Remove the last remaining section of pole line on the Main North Line (Picton to Christchurch).

Signals and indicators

- Renew remaining single-light signals with modern signals

6.2.6 Telecommunications

What KiwiRail will deliver

Renew the telecommunications network, systems and assets that enable trains and the NTCC to communicate with each other.

Planned investment in specific components within this asset class

Radio equipment and batteries

- Renewal of radio equipment and batteries installed in bulk during the previous radio upgrade project.

Dark territory

- Address areas of poor radio coverage and move towards using multiple communication paths for locomotive radio equipment.

Digital radio

- Renewal programme for the digital radio platform nationally and within the major metropolitan areas.
- Replace the analogue backbone on the radio system with an Internet Protocol (IP) backbone for the remaining 20% of the network.

KiwiRail is investing to improve the reliability of signals.

6.2.7 Traction and electrical

What KiwiRail will deliver

Improve the condition of traction and electrical assets on the three electrified areas of the network (e.g. Wellington metro, Auckland metro and the North Island Main Trunk (NIMT) from Palmerston North to Te Rapa).

Planned investment in specific components within this asset class

The strategy over the next three years focusses on the following key asset investments on the NIMT electrified network between Hamilton and Palmerston North:

Substations

- Replace traction substation assets (specialised equipment such as protection, switching, transformers and rectifiers).

Overhead line

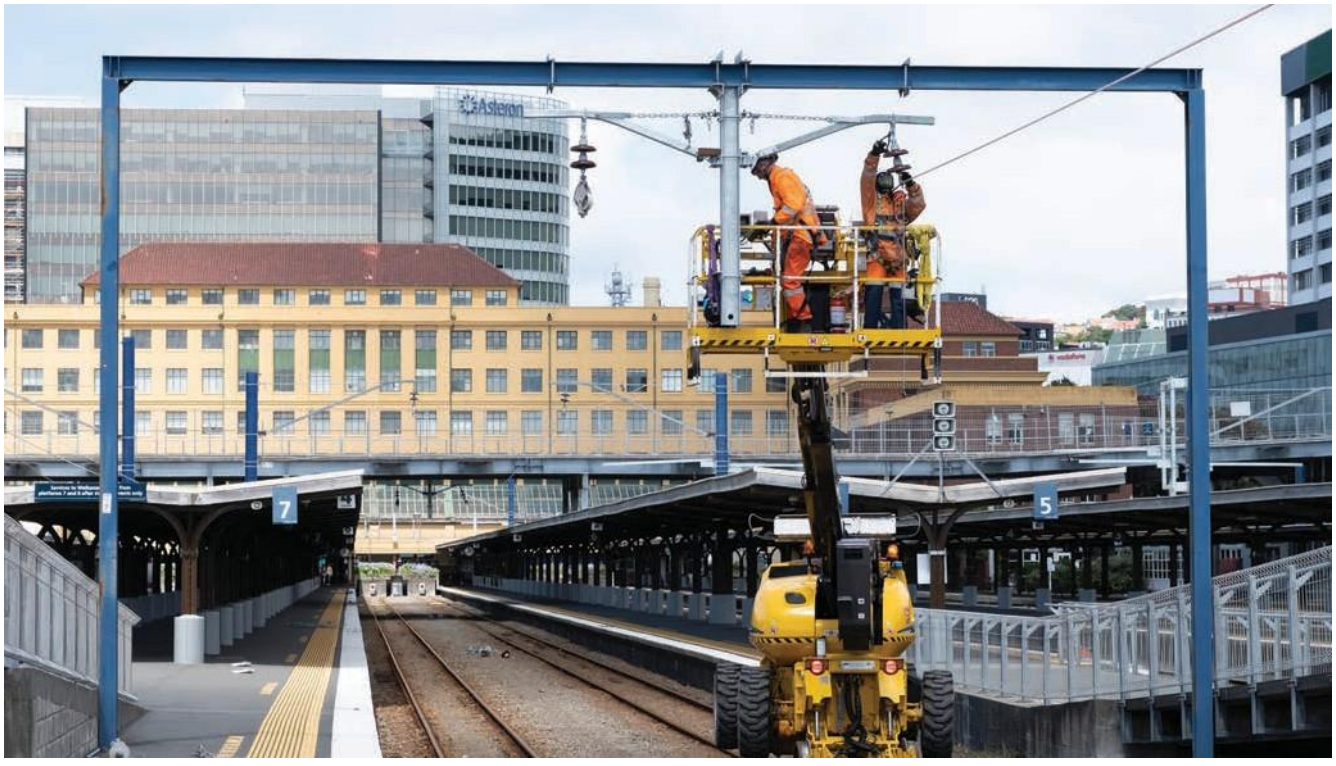
- Overhead line equipment is generally in good condition, but some smaller components will require renewal to ensure the ongoing performance of the overhead system.

Low voltage assets

- Complete smart meter installation and low voltage network asset data collection to improve overall asset management and planning to inform subsequent RNIPs.

The investment levels in this renewal programme assume the following items are funded from other sources:

- The replacement of all remaining wooden traction poles and legacy tension systems in the Wellington metro areas funded under WMUP II.
- Additional and replacement substations in the Wellington metro areas funded under WMUP IV.
- Additional substations and overhead line equipment in the Auckland metro network for:
    - Papakura to Pukekohe (NZUP)
    - Third substation to the west (PTI activity class)
    - City Rail Link (CRL) investments.
- Enhancements to substations on the NIMT to accommodate the extension to the life of the EF (electric) locomotives.



KiwiRail has been working to install modern tensioning systems in the Wellington metro area.

6.2.8 Active level crossings

What KiwiRail will deliver

Renewal/replacement of protection and control assets on public level crossings with active protection. Note that the track element of level crossings is included in track renewals.

Planned investment in specific components within this asset class

The strategy over the next three years focusses on the following key asset investments:

Protection and Control Systems

- Renew or replace protection and control assets that are at end of life or affected by performance issues.
- This investment is focused on larger elements such as control systems, train detection systems and barrier mechanisms, and are prioritised towards higher usage priority lines and sites with increased risk.
- As part of control system renewals, Level Crossing Safety Impact Assessments are being undertaken to ensure the protection provided at existing active crossings is adequate for the current site conditions and/or identify if an upgrade is required. There is a rolling programme to assess all active crossings, including additional assessments triggered by site condition changes.

6.2.9 Incidents, unplanned works and contingency

This covers a prudent level of provision for unforeseen events and unplanned works. Incidents typically include damage from extreme weather events and derailments. Unplanned works are typically small-to-medium additional projects that arise from the premature and unexpected failure of infrastructure assets (to deliver the required level of service) or opportunities for additional works. KiwiRail has insurance for major events, such as repairing earthquake damage.

Level crossing safety enhancements form part of the investment programme.

6.2.10 KiwiRail share of Auckland metro area renewals

This covers KiwiRail's proportion of network renewals based on the apportionment through the Auckland Network Access Agreement (ANAA). KiwiRail's freight share is funded from the Rail Network activity class, whilst AT's metro share is funded separately under the existing arrangement (see Section 7.3.2).

6.2.11 KiwiRail share of Wellington metro area renewals

This covers KiwiRail's proportion of network renewals based on the apportionment through the Wellington Network Access Agreement (WNAA). KiwiRail's freight share is funded from the Rail Network activity class, whilst GWRC's metro share is funded separately under the existing arrangement (see Section 7.4.2).

6.3 IMPROVEMENT PROJECTS

As well as KiwiRail's continuous programmes, some improvement projects are required as part of delivering a resilient and reliable freight network.

In the first three-year period to 2023/24, KiwiRail's focus is primarily on the delivery of the continuous programme with a small investment in improvement projects. These improvement projects are predominantly programme business cases with some construction starting from year three. During this period, KiwiRail (with input from stakeholders) will also develop a long-term 30-year network plan which is aligned with transport outcomes and will guide future business cases.

The business cases (including scope and costing) for improvements highlighted in the NZ Rail Plan will also be delivered, with the intention that most implementation funding for these projects is allocated from the next RNIP.

6.3.1 Financial summary – improvements

KiwiRail's planned spend across the three-year GPS period is shown below:

Description ($m)	2021/22	2022/23	2023/24	Total
Total Improvements	**10.8**	**10.0**	**28.7**	**49.5**

To determine the improvements programme, KiwiRail prioritised using the same factors for renewals (see Section 5.4).

KiwiRail will start on the following improvement projects over the first three years:

Otira Tunnel track

The Otira Tunnel is an 8.6km long tunnel on the Midland Line which joins the West Coast to Canterbury and is critical for coal exports and the TranzAlpine. The track inside the tunnel needs replacement. In renewing the track, a range of options will be considered including slab track, which would be an improvement project. During the first three years a business case will be completed. An appropriate holding strategy will remain in place until the full work commences.

Yard improvements

Efficient design and operation of KiwiRail yards is critical for on time reliable freight services.

The yards business case will assess and identify a prioritised yards programme. The upgrades required are likely to include works such as underfoot conditions, road spacing, renewal of points machines, track and turnout replacement, lighting, drainage and formation works. The programme will also identify the required survey testing and investigations that will be needed to enable detailed design to be carried out.

There are a number of yard projects that need urgent attention. These will be scoped (including survey, testing and investigations), designed and constructed. The works will target specific urgent issues, however, consideration will be taken of the wider yards upgrade programme to ensure the best overall outcome.

Resilience projects

In the first three years, KiwiRail will be completing a business case with some construction works scheduled to be carried out in the third year. A detailed assessment of which projects are the highest priority will be undertaken in order to improve the rail network's resilience, with mitigating climate change being a key focus. These projects may be a mix across all asset classes.

Level Crossing improvements

In the first three-year period, the level crossing delivery resources will be largely committed to deliver maintenance and renewals work and the separately funded improvements listed in Section 8.6. In year three, KiwiRail will begin construction of several level crossing upgrades.

New Zealand Rail Plan aligned improvements

In the first three-year period KiwiRail will develop business cases for improvements that are aligned with the NZ Rail Plan.

This will include:

Further level crossing upgrades

KiwiRail will focus on the development of a programme business case for local road (council) level crossings. The business case will identify the highest priority crossings for KiwiRail to address once resources become available. It will also enable KiwiRail, Waka Kotahi and councils to agree how the costs will be shared and to programme those costs into future programmes (RLTPs and RNIPs) and council annual plans.

Double Track the Whangamarino Swamp and the Ngāruawāhia Bridge

These are the last remaining sections of single track between Auckland and Hamilton. With current and reasonably forecast freight growth levels, it is not urgent to double track these sections, but it would be needed if commuter trains are overlaid on the service pattern. During the first three years, KiwiRail will develop a business case to further investigate this.

Extend and standardise the loop (passing lane equivalent for trains) lengths between Palmerston North and Waikanae

These crossing loops are relatively short compared to those north of Palmerston North. Extending selected loops will increase network capacity by enabling longer trains to operate. The project is integral to the higher rail capacity on the new larger rail ferries and will be considered for implementation funding in the next RNIP.

Improvements beyond the first three years

Projects in Section 6.3 subject to approved business cases will have further costs throughout the remainder of the 10-year period. KiwiRail has allowed for $312m across the remaining seven years for these, as well as other identified improvements.

Lowering the floors in tunnels on the Northland line has allowed hi-cube containers to be transported.

The proposed spend across the next three years includes money for yard improvements.

6.4 FUTURE OPPORTUNITIES

There are many opportunities for investment to enable increased levels of service across the network. KiwiRail will continue to consider these as part of future programmes, with regard to levels of growth in demand for rail services and/or any other policy imperatives.

6.4.1 Re-open the Stratford to Okahukura line

This line has been mothballed since a major derailment in November 2009.

The main advantage in reopening the line would be to provide added resilience to the North Island rail network, as the line provides the only alternative route through the central North Island should the NIMT through National Park be forced to shut due to an event such as a natural disaster.

Additionally, it would also provide a faster route to northern ports and distribution centres for dairy exports, forestry companies and other exporters based in the Taranaki/Whanganui regions.

6.4.2 Increase axle weight to 18 tonnes on South Island branch lines

The majority of the South Island network can handle 18 tonne axle loads, but there are some minor branch lines that are restricted to lower axle loads.

For each line there are different imperatives, and different priorities for raising the axle load. A key consideration is that the future shunt locomotives (that are likely to service these lines) may have an 18-tonne axle load, which would require the lines to be upgraded.

6.4.3 Further electrification

Rail provides a huge opportunity to help meet the Government's commitment to transition to a carbon-neutral economy by 2050.

Freight carried by rail currently saves at least 70% of the carbon emitted by heavy road transport, so each tonne of freight that moves from road to rail makes a tangible difference to New Zealand's overall carbon footprint.

There is much more that could be achieved by a more aggressive carbon reduction strategy.

At present, the most credible low carbon alternative to diesel for long-haul freight is rail electrification. Extending the use of electrically hauled trains requires further investment in electrification of the track infrastructure. Due to the cost involved, this kind of investment can generally only be justified on high volume routes. KiwiRail is investigating electrification on:

- the North Island Main Trunk (NIMT) between Pukekohe and Hamilton,
- the North Island Main Trunk (NIMT) between Palmerston North and Waikanae, and
- the East Coast Main Trunk (ECMT) between Hamilton and Tauranga.

The section of the NIMT between Hamilton and Palmerston North is already electrified.

Outside these areas, alternative zero-emission propulsion systems will be considered as the technology and necessary infrastructure develops.

Low particulate emission diesels are the only option currently available for KiwiRail's upcoming South Island locomotive replacement programme.

For replacement shunt fleets, battery technology is generally suitable for light-shunting requirements.

Through the NZUP, funding has been allocated to extend electrification of the Auckland metropolitan rail network between Papakura and Pukekohe. The already electrified metropolitan rail networks in Auckland and Wellington provide efficient and low emission travel for high patronage commuter travel.

Guests attend the Synlait (milk producer) siding opening south of Dunsandel.

7. INVESTMENT - AUCKLAND AND WELLINGTON METRO

7.1 INTRODUCTION

As outlined in Section 5, different funding mechanisms and service levels apply to the rail networks within the Auckland and Wellington metropolitan areas. Significant investment has already been made, and work is underway to further develop commuter passenger services in these areas.

This section describes the funding agreements and service characteristics unique to the metropolitan networks and outlines the upcoming work as part of this investment programme within the context of the wider investment and work already underway.

While the main aim nationally is restoring the network to a reliable and resilient state to secure existing service levels, in Auckland and Wellington the focus is on completing upgrades already underway and preparing the networks for growth in services.

KiwiRail will also look to embed and enhance already committed inter-regional passenger services.

7.2 MAINTAINING EXISTING INVESTMENT FRAMEWORKS

The existing network access agreement funding mechanism for the Auckland and Wellington rail networks remains unchanged at this time.

The network access agreement process involves KiwiRail negotiating with AT and GWRC:

- the level of access for metro services to the Auckland and Wellington rail networks
- the level of maintenance and renewals of these networks, and
- how costs associated with the networks are apportioned.

The resulting agreements, which take a long-term view while signing up for a three-year period, are the mechanism by which ongoing maintenance and renewals costs are established and apportioned based on the level of network use by each party.

KiwiRail meets the freight share of the costs from the Rail Network activity class, while AT and GWRC will continue to meet their metro share from rates, the NLTF Public Transport Services activity class and passenger fares. If any changes are made to KiwiRail's contributions as the network access agreements are finalised, KiwiRail will manage and prioritise within the Rail Network activity class bounds.

The completion of AT and GWRC improvement projects approved under the Transitional Rail activity class in the 2018-21 NLTP will be funded from the new PTI activity class for the 2021-24 NTLP period commencing 1 July 2021.

New metro network improvement projects included in the RNIP will be considered for funding from the PTI activity class. These projects are informed by the NZ Rail Plan and have been developed in conjunction with the relevant council and council process, such as ATAP, to ensure there is coordinated planning.

A pedestrian underpass at Trentham is one of the works already completed in Wellington to improve the commuter experience.

Projects to improve the Auckland metro network are already underway.

7.3 AUCKLAND METROPOLITAN NETWORK INVESTMENT

7.3.1 Improvement projects underway

There are a number of projects currently underway (funded from other sources) as part of the Auckland Rail Development Programme to improve the performance and capacity of the rail network. Once completed, these projects will:

- support preparedness for the opening of the CRL
- provide a better customer experience for the commuters who already make 20 million journeys on the network each year
- ease congestion on the busiest parts of the network and allow for increased future demand
- allow for freight traffic to better support national supply chains, including the country's two biggest ports in Auckland and Tauranga
- deliver a modern metro network that is resilient and can be efficiently maintained.

Additional information for these projects is provided below with associated financial information in Schedule 4.

New Zealand Upgrade Programme

The NZUP includes Papakura to Pukekohe Electrification, Southern Stations and a third main line from Wiri to Quay Park.

The Papakura to Pukekohe Electrification and Southern Stations projects are critical components to increasing patronage and facilitating urban development in the southern Auckland growth area.

The third line at Wiri to Quay Park Project allows passenger and freight services to be separated on one of the busiest parts of the network (avoiding bottlenecks), enabling higher frequencies of services and improved reliability.

Rail Network Growth Impact Management

In addition to the base renewals through the ANAA, an extensive programme of catch-up renewals, RNGIM, is currently underway.

RNGIM looks to address the maintenance and renewals backlog, lift the codes, standards and maintenance practices to meet the demands of a modern metropolitan system before the opening of CRL. This will include automating the monitoring and inspections of the network infrastructure, assisting a shift from reactive to proactive maintenance strategies. The scale of the programme and level of process and practice improvement included in RNIGM has meant this renewals programme is being managed as an improvement project. RNGIM also includes funding for Auckland Metro Remediation (AMR).

City Rail Link

CRL will have a transformational impact on the Auckland rail network by removing the key city centre bottleneck to the rail system. This will enable an increase in capacity, open more of the city centre to the rail network by constructing two new stations and shorten travel times – especially from the west.

KiwiRail is working to ensure that the new infrastructure will be fit for purpose by providing technical support and also drawing on the organisation's knowledge and skills to facilitate construction on the live network.

KiwiRail has also been commissioned to deliver several CRL related network projects.

Business case development

Business cases, funded from the Transitional Rail activity class, are currently being completed for a pedestrian level crossing programme and an additional power feed.

In addition to delivering these projects, KiwiRail has worked closely with AT to identify further opportunities to enhance the network for inclusion in the RNIP.

7.3.2 Continuous programmes – renewals and maintenance

The base maintenance and renewals programme have been developed through the ANAA process. This is shown in the tables below.

Description ($m)	2021/22	2022/23	2023/24	Total
AT funded network renewals	5.7	5.8	11.3	22.8
KiwiRail funded network renewals	1.7	1.8	4.1	7.6
Total renewals	**7.4**	**7.5**	**15.5**	**30.4**

Description ($m)	2021/22	2022/23	2023/24	Total
AT funded network maintenance	15.2	15.5	16.6	47.3
AT funded network operations and management	13.3	13.6	13.9	40.9
KiwiRail funded network maintenance	3.4	3.4	3.8	10.6
Total network maintenance, operations and management	**31.9**	**32.5**	**34.3**	**98.7**

The above tables outline what KiwiRail has proposed to AT through the ANAA process (still being finalised).

The ATAP process also identified an additional $7.3m each year of ongoing funding required to lift the level of maintenance and renewals to ensure reliable operation of the Auckland rail network in response to increased traffic volumes. While it is important for all parties to recognise the need for increased funding, the correct funding mechanism for, and timing of these increases is being determined. This will be funded through either the ANAA or PTI activity class as per the below table.

Description ($m)	2021/22	2022/23	2023/24	Total
Additional rail maintenance and renewals	7.3	7.3	7.3	21.9

7.3.3 Improvement projects

Implementation funding for transitional rail business cases

KiwiRail will deliver the integrated control centre and additional power feed while AT will apply for funding for the pedestrian level crossing programme. As implementation of these projects will commence from 1 July 2021 funding will come from the PTI activity class.

Improvements identified through ATAP

Progressive fencing and security builds additional fencing across the rail network to provide both safety and security improvements important for maintaining reliable service and safety of those around the rail network.

KiwiRail has also identified the need for funding for strategic future planning and the development of specific business cases. The strategic future planning funding enables KiwiRail to progress planning on a number of near-term projects to a stage where funding for business case development can be sought, supports KiwiRail participation in business cases being undertaken by others and in wider strategic network planning for the Auckland metro area.

The ATAP revision process has also identified a further suite of projects seen as being core to enabling the full benefits of CRL to be realised. These are described below.

The establishment of an integrated rail management centre enables aspects of the Auckland rail network to be managed locally improving coordination, resilience and reliability.

The Infill Signalling project installs additional signals on the network to enable better management of the network improving resilience and reliability.

An additional traction feed in West Auckland will meet the power needs of proposed additional services.

A business case for the next phase of electronic train control for Auckland (ETCS Level 2 Investigation Phase) has been included in the third year of the programme.

These improvement projects are shown in the table below:

Project ($m)	Phase	2021/22	2022/23	2023/24	Total
Auckland Metro Area					
Progressive fencing and security	Programme and implementation	2.0	2.0	2.0	6.0
KiwiRail Strategic Future Planning	Business case	3.0	4.0	5.0	12.0
CRL Day One – Resilience and Asset Maintenance Programme Integrated rail management centre and emergency management systems	Implementation	6.5	23.3	5.9	35.7
CRL Day One – Resilience and Asset Maintenance Programme Infill Signalling	Business case and implementation	1.0	7.0	7.0	15.0
CRL Day One – Infrastructure Package Additional Traction feed (West)	Implementation	25.0	19.0	13.0	57.0
CRL Day One – Infrastructure Package ETCS Level 2	Business case	0.0	0.0	4.0	4.0
Auckland Metro Total		**37.5**	**55.3**	**36.9**	**129.7**

The 10-year forecast for these projects is provided in Schedule Two.

ATAP and the Auckland RLTP classified the above projects as Category One (Committed and Essential), except for the progressive fencing and security project which was identified as Category Two (Discretionary and Essential).

During the ATAP process, responsibility for the level crossing grade separation and road closure project and the pedestrian level crossing project was assigned to AT. While KiwiRail has strong interest in the outcomes of these projects, delivery better aligns with AT roles, responsibilities and expertise. Therefore, AT will advance these projects including the application for project funding.

7.3.4 Future opportunities

Future opportunities are highlighted in ATAP and the NZ Rail Plan. The ATAP process has identified steps two and three of the Rail Programme that were classified as Category Three (Additional Funding Required) as they are outside the ATAP funding envelope and would be considered in later years of the programme if funding became available.

The network components of these programme steps are shown in the table below (indicative only from ATAP):

Project	Cost ($m)
Rail Programme Step 2	
Onehunga Branch Line upgrades	138.0
Resilience and asset maintenance	20.0
Level crossing removal	1,391.0
Westfield Junction grade separation	200.0
Rail Programme Step 3	
Infrastructure capacity/nine car EMU enablement	2,614.0
Total	**4,363.0**

KiwiRail will continue to work through ATAP to consider future opportunities for the Auckland metro network.

7.4 WELLINGTON METROPOLITAN NETWORK INVESTMENT

7.4.1 Improvement projects underway

There are a number of projects currently underway as part of the WMUP.

This programme consists of catch-up renewals and upgrades to enable more people to travel on trains in the future.

Transitional Rail programme of work

Alongside the renewal programme within the WNAA, an extensive programme of catch-up renewals is underway, funded from the Transitional Rail activity class. The programme comprises over 60km of track renewals on the Wairarapa line and 18km of track inside four major tunnels in Wellington, some bridge renewals and some slope stabilisation work.

This programme is in addition to a Crown-funded programme to replace traction assets across the Wellington network.

Transitional Rail funding has also enabled a programme of capacity and resilience upgrades to commence on the Wellington Network. This programme included modifications on both the Kapiti and Hutt Valley Lines necessary for the introduction of a higher frequency metro passenger timetable known as RS1.

New Zealand Upgrade Programme

The NZUP includes two projects designed to build the additional capacity needed to support Wellington's long-distance rolling stock business case. The Wairarapa rail upgrades include additional passing opportunities at Carterton and Maymorn, a second platform at Featherston and a new signalling system. The Wellington station safety improvement programme looks to address current capacity constraints on the Kaiwharawhara – Wellington section of line enabling the frequency and reliability of services to be increased safely.

Business case development

The Transitional Rail activity class funded an indicative business case for the Wellington Metropolitan Rail Network Resignalling and Train Protection programme (WMUP V). This programme would replace Wellington's near end of life signalling and train control systems with one that will provide the levels of safety, capacity and resilience required to support growth in passengers.

7.4.2 Continuous programme – renewals and maintenance

The base maintenance and renewals programme has been developed through the WNAA process. This is shown in the table below:

Description ($m)	2021/22	2022/23	2023/24	Total
GWRC funded network renewals	18.8	20.1	19.9	58.8
KiwiRail funded network renewals	5.3	4.8	4.6	14.6
Total renewals	**24.0**	**24.9**	**24.5**	**73.4**

Description ($m)	2021/22	2022/23	2023/24	Total
GWRC funded network maintenance	8.0	8.4	8.6	25.0
GWRC funded network operations and management	16.3	17.3	18.1	51.7
KiwiRail funded network maintenance	1.6	1.5	1.5	4.6
Total maintenance	**25.9**	**27.2**	**28.2**	**81.3**

The above tables outline what KiwiRail has proposed to GWRC through the WNAA process (still being finalised). The level of funding is higher than previous years and, at GWRCs request; KiwiRail is currently reviewing the programme of work to identify if any components should be delivered from the catch-up programme of work. KiwiRail and GWRC will continue to work together to ensure the network access agreement and improvement programme work are integrated to deliver the best whole of life outcome for the network.

7.4.3 Improvement projects

The key improvement project for the Wellington metro region is the detailed business case phase of the Network Resignalling and Train Protection programme (WMUP V) project. KiwiRail will seek business case and design funding for this project, over the next three years from the PTI activity class.

The NZUP – Wairarapa and Wellington rail projects are delivering capacity improvements to support the long-distance rolling stock business case. Further business case funding has been included to address any network issues arising from GWRC's choice of a new commuter fleet. This includes determining the cost and staging for further northwards extension of electrification on the NIMT, potential partial electrification on the Wairarapa line and the interaction between the new fleet and longer freight trains associated with larger ferries at the freight yard entry.

Project ($m)	Phase	2021/22	2022/23	2023/24	Total
Wellington Metro Area					
WMUP V – Wellington Rail Network Resignalling Renewal	Business case and design	5.2	6.5	8.9	20.6
WMUP VI – Further Capacity improvements beyond current programme - Business Case Development	Business case	0.3	0.7	0.0	1.0
Wellington Metro Total		**5.5**	**7.2**	**8.9**	**21.6**

7.4.4 Future opportunities

With growth and increased pressure on capacity, additional investment may need to be considered.

GWRC is currently completing a programme business case to update the 30-year Wellington Regional Rail Plan. KiwiRail is assisting with this work which will inform future investment in the Wellington rail services and network.

The next rail capacity step change for Wellington metro involves moving to a 10-minute timetable. In the next three-year period, GWRC has included business case funding of $10.5m to determine the rolling stock and network infrastructure improvements needed to enable a 10-minute timetable. While the business case will identify network projects for KiwiRail associated with that step change in capacity, KiwiRail have identified two projects – improvement of the North-South Junction single track section and an additional platform at Waikanae, that are considered to be key in enabling a 10-minute timetable in the future.

GWRC have also included business case and implementation funding for level crossing upgrades and rail infrastructure resilience upgrades in it's RLTP. KiwiRail will work with GWRC to develop these programmes and align them, where possible, with KiwiRails work looking at level crossings and resilience from a national rail network perspective.

Project	Cost $m
Kāpiti Line North – South junction	250.0
Additional Waikanae Platform	50.0
Total	**300.0**

8 OTHER INVESTMENTS

8.1 WIDER FUNDING LANDSCAPE

There is a range of other projects underway or planned that are aimed at revitalising rail in New Zealand or improving the reliability and resilience of the rail network, which are funded from different sources.

This section provides an overview of these projects and funding sources to deliver a complete view of the work being done to secure the future of rail in New Zealand.

8.2 ABOVE RAIL INVESTMENT

The introduction of a new planning and funding framework for the national rail network has been complemented by Government funding commitments for above rail investment.

More than $2.1 billion is allocated for the replacement of ferries, locomotives and wagons, as well as the modernisation of maintenance facilities.

KiwiRail's ability to reliably deliver for the freight and tourism sectors depends on the quality of its above rail assets, and this investment is pivotal to help address the aged nature of the assets inherited when KiwiRail was formed.

Successful rail services rely heavily on the interdependence of above and below rail assets, so the additional funding received will play a crucial part in enabling KiwiRail to meet customers' needs and support the growth of freight and passenger services in the future.

8.2.1 Inter-Island Connections

KiwiRail's project iReX (Inter-Island Resilient Connections) is a once in a multi-generation investment to improve connectivity between the North and South Islands. Ferries and associated infrastructure form the links for State Highway 1 and the Main Trunk Rail Line, and combine elements of both above rail and below rail plus roading.

This RNIP has no allowance for any NLTF funding for the rail infrastructure related to the iReX programme in the three-year period. To the extent any future claim is proposed, that will be assessed on its merits as part of the RNIP update for the next triennium.

8.3 NZ UPGRADE PROGRAMME

As outlined in Section 7, $1.4 billion has been allocated under the NZUP to support rail projects in Auckland and Wellington.

This includes:

- building a third line between Wiri and Quay Park
- electrifying the line between Papakura and Pukekohe
- building new stations in Southern Auckland
- making ongoing improvements to support growth, resilience and safety on the Wellington metro rail network.

In addition, the Government announced in June 2021 that $692m has been allocated from the NZUP for the Marsden Point Rail spur and enabling rail works and SH1 roading improvements. KiwiRail will be completing a delivery case to finalise the scope, cost and timelines for these additional rail works. It is expected that it will take up to five years from initiation to completion of the project.

8.4 COVID-19 RESPONSE FUNDING

KiwiRail received funding for two projects after the Government requested submissions for shovel ready projects - through CIP - to help reduce the economic impact of the COVID-19 pandemic:

- $13m for remediation work to prevent future slips on the line near Omoto on the West Coast

8.5 PROVINCIAL GROWTH FUND

The following projects (to be completed over the RNIP period) are supported by the PGF:

- $178.5m investment to revitalise Northland rail
- $40m to acquire land for the future Marsden Point Line in Northland
- $40m to secure land for a new Central North Island Freight Hub in Palmerston North
- $26m towards regional drainage remediation
- $24m to enhance KiwiRail rail tourism services in the South Island
- $20m for stage 1 of the refurbishment of Hillside Workshop facilities.

8.6 LEVEL CROSSINGS

KiwiRail will continue to invest to improve the safety of two or three of the highest risk level crossings per year through the government funded Public Policy programme. This programme also enables KiwiRail to undertake research and develop standards and guidelines relating to level crossing safety. Public Policy funding has enabled KiwiRail to conduct Level Crossing Safety Impact Assessments to identify the highest risk level crossings.

A large number of State Highway level crossings or crossings adjacent to the State Highway have been improved through Waka Kotahi's Safe Network Programme. A second phase of this programme is currently being considered and, if funded, would enable KiwiRail to continue to build its level crossing improvement capacity and capability whilst delivering these crossings.

8.7 REGIONAL RAIL

The NZ Rail Plan investment priorities for regional commuter rail are to support the Te Huia service between Hamilton and Auckland and the Capital Connection service between Palmerston North and Wellington.

Transitional rail funding has been used for the trial of a Hamilton to Auckland commuter passenger service which commenced on 6 April 2021, and the continuation of the Capital Connection passenger service between Palmerston North and Wellington.

This funding has enabled a number of former Auckland metro carriages to be refurbished for the Te Huia service, along with new or upgraded stations, platforms and support depots.

The Transitional Rail activity class has contributed $3.5m to maintain rolling stock for the Capital Connection service, with NZUP funding contributing an additional $15m for a substantial rolling stock upgrade.

Refurbished carriages will be used to support the continuation of this service, until GWRC is able to purchase new long-distance rolling stock, which will come into service in around five years (subject to funding).

KiwiRail is also working with agencies on a regional rail strategy and the future investment programme.

8.8 ADDRESSING CLIMATE CHANGE PRIORITIES

The RNIP forecasts mode share increasing from 12% to 14% over 10 years. The final Climate Change Commission's proposal shows a demonstration path of 3% freight mode shift (to rail and coastal shipping) by 2030.

While further mode-shift could be met within existing and planned network capacity in line with the investment programme outlined in this RNIP, it will require additional above-rail investment beyond that planned in the resilient and reliable scenario (in particular for the rolling stock fleet of locomotives and wagons to service the growth). In addition, this may also require consideration of additional policies to facilitate the modal shift such as through carbon pricing, incentives or regulations.

KiwiRail is committed to increasing the mode share of rail and will continue to pursue commercial opportunities to achieve this and to work with responsible Ministers and policy agencies to provide options for further investment to accelerate modal shift. KiwiRail is also committed to continued emissions reduction through its strategic capital investment programme.

The success of this considerable investment programme in rail is important to the country's future.

9. DELIVERING ON THIS PROGRAMME

9.1 ROLES AND RESPONSIBILITIES

Roles and responsibilities in respect of the new planning and funding model are set out in the LTMA and NZ Rail Plan.

The new planning and funding framework will require KiwiRail to work together with the MoT, Waka Kotahi, The Treasury, Auckland Council, AT and GWRC to plan and fund New Zealand's rail network infrastructure.

KiwiRail will also continue to work with other councils which have responsibilities for inter-regional rail services.

Planning, operating, and maintaining the rail network and providing the associated freight, tourism and property services remain the core business and responsibility of KiwiRail.

AT and GWRC will remain responsible for planning and operating the metropolitan passenger services in their regions.

MoT will continue to provide strategic policy advice to the Minister of Transport on rail. The Ministry will also play an important role in coordinating the implementation of the Future of Rail Review, including the new planning and funding framework.

Waka Kotahi is responsible for advising the Minister on how the RNIP, and the activities under it, align with:

- the purpose of the LTMA
- strategic priorities for GPS 2021
- the NZ Rail Plan
- Regional Land Transport Plans developed by regional Councils
- the overall land transport investment programme.

Waka Kotahi is also responsible for:

- advising that the activities are efficient and effective, and
- monitoring delivery of the RNIP.

Waka Kotahi continues to be the rail safety regulator.

The Treasury will continue to monitor KiwiRail as a State Owned Enterprise (SOE) in relation to the expectations of the Minister of Finance and the Minister of State Owned Enterprises as Shareholding Ministers.

9.2 RISKS AND CHALLENGES

It is recognised that the RNIP represents a significant step up in the continuous investment programme as KiwiRail moves from managed decline to resilient and reliable.

Implementing this RNIP will require an expansion of the current maintenance and renewal work carried out by KiwiRail.

Key risks and challenges that KiwiRail will be managing as the transition to the new arrangements occurs are:

- Ensuring there is capability and capacity to deliver the programme.
- Applying appropriate governance over the programme.
- Maintaining sufficient flexibility to manage unplanned events and ongoing implications of COVID-19.
- Ensuring stakeholder interests are balanced through planning, prioritisation and delivery.

As this is the first RNIP produced, it is expected that the investment programme will continue to evolve over time. KiwiRail will manage and respond to new information gathered through this period, and as the next RNIP is developed.

9.3 ENSURING THERE IS CAPABILITY AND CAPACITY TO DELIVER THE PROGRAMME

Steps are currently being taken to ensure that KiwiRail has access to the right number of people with the right skills to successfully manage the increased workload ahead.

KiwiRail is used to carrying out big projects. Historically, the approach has been to manage maintenance in-house, and outsource major renewal projects. KiwiRail has also worked in successful alliance arrangements, such as the North Canterbury Transport Infrastructure Recovery programme to rebuild the transport corridor following the 2016 earthquake.

This means KiwiRail already has considerable resources and expertise within the organisation, as well as strong relationships with the wider market.

The work ahead represents a step change, but KiwiRail has a strong base from which to build the extra capacity and capabilities needed to get the job done.

Growing KiwiRail in-house capabilities

To support this increased role, KiwiRail are growing our people and organisation and transforming the way work is done. These changes will also be pivotal in helping KiwiRail deliver the investments set out in this programme over the next 10 years and beyond.

Having a wide range of roles and skills in-house is important, as it gives us greater ability to develop the particular capabilities needed to successfully implement the large programme of work ahead.

KiwiRail is planning for, and growing the skills and resources needed for the future.

Core strategies include:

- **Talent attraction** – including key collaborations with Ministry of Social Development, Department of Corrections, local Iwi and community groups as well as KiwiRail's Te Kupenga Mahi network
- **Growing the next generation of railway professionals through more apprenticeships** – KiwiRail has committed to providing 100 apprenticeship opportunities over the next two years. The investment will also see us establish four new apprenticeship qualifications, in addition to the two existing programmes, ranging from track staff to mechanical engineers, train drivers and signals and electrical specialists
- **Union partnerships** – better engagement with staff through representative unions (High Performance High Engagement programme) means better relationships, collaborative solutions and commitment by everyone in rail to get the work done
- **Diversity and inclusion** – future sustainability depends on a diverse workforce supported by a value based, inclusive culture
- **Building relationships with the wider market** – KiwiRail will work closely with external contractors to ensure the right resources and expertise to get the job done are available. A pipeline of funding with longer term funding certainty allows the market to commit and scale up and helps grow the industry.

9.4 DEMONSTRATING VALUE FOR MONEY

KiwiRail is committed to delivering the RNIP and associated outcomes in the most effective and efficient manner to obtain the best value for money.

KiwiRail uses in-house teams to deliver work that is rail specialised. This work consists of, major and minor track and signals renewals and maintenance across all asset classes.

Having these teams allows KiwiRail to respond quickly to any unplanned events on the network and also provides additional capacity for major improvement projects during seasonal blocks of line.

KiwiRail also operates and maintains rail specific plant and machinery where it makes commercial sense to do so. Rail grinding work is currently outsourced as it is more cost effective to bring in a grinding machine from overseas for a set time than it would be to own one, with low utilisation.

KiwiRail's materials procurement is market tested to ensure the right quality materials are sourced and managed through standard supply contracts.

KiwiRail outsources some work and utilises framework agreements where the supply of goods and services is highly specialised and there is a scarce supplier market. For external construction services, either for an entire job (such as a bridge replacement) or in support of KiwiRail delivered works (such as excavator and earthworks services), pre-approved tier 1, 2 and 3 suppliers are used.

Value for money will be tested and assessed through post-contract reviews by KiwiRail's internal assurance and audit teams – either directly or commissioned.

The final overlay is that despite being publicly funded, KiwiRail is an SOE with a commercial mandate to be a successful business. This culture and focus is essential if the organisation is to compete in the above-rail freight and passenger business, and will apply equally to the delivery of the RNIP.

9.5 PROGRAMME GOVERNANCE

The programme of work ahead is significant and will require strong governance to ensure success.

As an SOE, KiwiRail has a Board of Directors appointed by Shareholding Ministers of the Crown and is accountable to those Ministers for KiwiRail's performance.

The role of the Board is to guide the strategic direction of KiwiRail and to direct and oversee management. It does this by establishing objectives, setting strategies and monitoring performance, within the context of approved policy, risk and compliance frameworks.

The Board has delegated the day-to-day management of KiwiRail to the Group Chief Executive.

The Board and various Board committees (including the Capital Committee) meet regularly during the year. Oversight and advice for significant capital investment programmes is provided by Programme Governance Boards. These are management level boards which in some cases include external members such as independent experts and government agency and council representatives.

10. MEASURING SUCCESS

10.1 OVERVIEW

The success of this investment programme is important to New Zealand's future, and also represents a considerable financial commitment on behalf of all New Zealanders.

For these reasons, it is important that KiwiRail is able to monitor and measure the impact of the investments made to ensure they are achieving their intended purpose.

KiwiRail will work with monitoring agencies to report both the actual improvements to the network itself, as well as the improved transport and economic outcomes that those technical improvements will help deliver.

The link between the investment and the outcomes sought is summarised in the following investment logic map, covering both the RNIP and wider Future of Rail investment package.

It is important to note the interdependencies across the package – as rail is an interconnected system, both the above and below rail investment is required to deliver on the desired outcomes.

KiwiRail's future sustainability depends on attracting a diverse workforce and building talent.

INVESTMENT LOGIC MAP FOR THE NZ RAIL PLAN/FUTURE OF RAIL PACKAGE

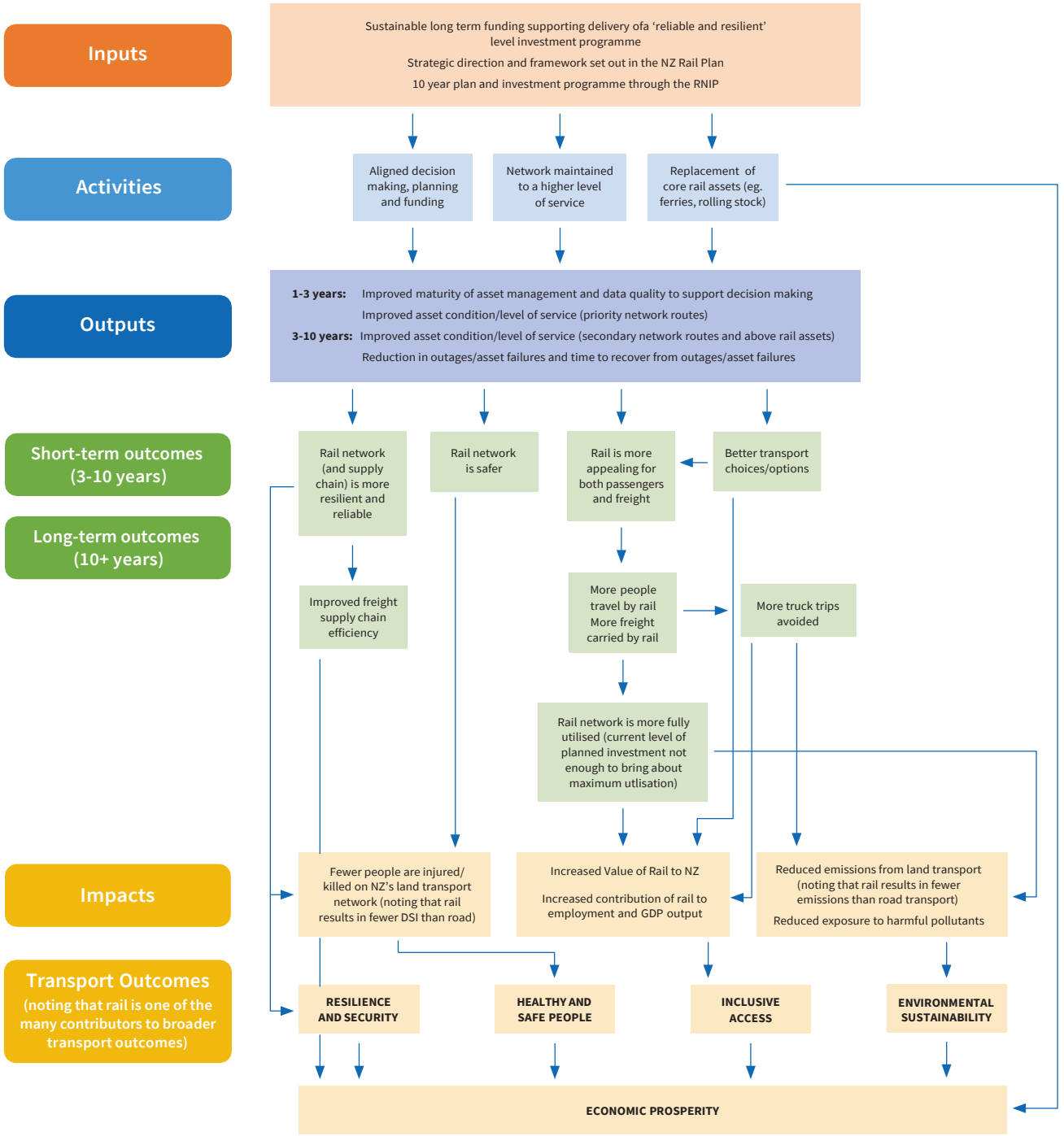


Figure 5: Investment Logic Map for The New Zealand Rail Plan/Future of Rail package

10.2 MEASURING THE ACHIEVEMENT OF OUTCOMES

Outcome Measures	Metric	Target
ADDITIONAL KIWIRAIL OUTCOMES		
Grow volumes on rail	Mode share (% based on tonnes km)	Rail mode share estimated to increase from 12% in 2020 to 14% of total freight task by 2030
Improved KiwiRail commercial performance	Above rail operating surplus Above rail operating surplus ratio	As per KiwiRail Statement of Corporate Intent
Avoided emissions and harmful pollutants	Reduced emissions/harmful pollutants from rail freight	Increase from 236k CO_2 emissions avoided p.a. to 306k p.a. by 2030
Improve the Value of Rail	Value of Rail ($)	Increase from $1.7b in 2020 to $3.5b by 2030

The investment in rail will contribute to the overall outcomes that the Government is aiming to achieve through the transport system.

The NZ Rail Plan sets out a draft framework of the potential indicators for measuring the achievement of rail investment against the Transport outcomes. This is expected to be refined further as the new regime is implemented. Refer to Section 3 of the NZ Rail Plan.

10.3 MEASURING IMPROVEMENTS TO THE NETWORK

10.3.1 Network Measures

KiwiRail has identified a number of infrastructure and asset management targets to be met in shifting to a resilient, reliable and safe network and achieving the outcomes in Section 10.2.

The following measures will be tracked and reported by KiwiRail:

Measure	Target	Timeframe
ASSET AND SERVICE LEVEL MEASURES		
All temporary speed restrictions (average TSRs) within target(s) for priority routes	100% within target(s)	June 2024
All temporary speed restrictions (average TSRs) stabilised for secondary routes	100% within target(s)	June 2024
All Heat 40s (average Heat 40s) within target(s) for priority routes	100% within target(s)	June 2024
All Heat 40s (average Heat 40s) stabilised for secondary routes	100% within target(s)	June 2024
Mainline derailments due to infrastructure defects	5 average p.a.	June 2024
Mainline derailments due to infrastructure defects	0	June 2031
Track Quality Index (average TQI) within target(s) for priority and secondary routes	100% within target(s)	June 2024
Sleeper condition on priority routes	100% of condition 5 sleepers addressed*	June 2024

Measure	Target	Timeframe
Sleeper condition on secondary routes	100% of condition 5 sleepers addressed*	June 2031
Rail condition non-destructive testing (NDT) fault/defects on priority routes	<6 per km	June 2024
Rail condition NDT fault/defects on secondary routes	<6 per km	June 2031
Rail condition on priority routes	100% of condition 5 rail addressed*	June 2024
Rail condition on secondary routes	100% of condition 5 rail addressed*	June 2031
Unplanned infrastructure outages (total minutes across services) by priority route	Improving trend	2022-2031
Structures risk reduction	Priority structures delivered to plan	June 2024
Structures condition (Structures Health Index)	Improving trend	June 2031
Network congestion assessment[3]	Completed	June 2023
Number of level crossings in service	Decreasing number of level crossings	June 2024
Yard asset improvement business case	Completed	June 2023
Resilience improvement business case	Completed	June 2023
LONG TERM NETWORK PLANNING		
Deliver long term 30-year network development plan	Completed	June 2024
ASSET MANAGEMENT AND DATA QUALITY		
Asset Management Gap Analysis and Development of Asset Management Improvement Road Map to align with ISO55001	Completed	June 2022
Development of asset class strategies and updated Strategic Asset Management Plan	Completed	June 2022
Updated AMP to support the next RNIP and investment programme	Completed	June 2023
Data Quality Gap Analysis and development of data quality improvement road map	Completed	June 2022
Updated condition records (currency and completeness) for critical asset classes	Completed	June 2022
Updated condition records (currency and completeness) for remaining asset classes	Completed	June 2024 (subject to road map)

*This measure is based on addressing the condition five assets already known.

10.3.2 Reporting and Monitoring

The roles and responsibilities of Crown agencies (MoT, Waka Kotahi and The Treasury) are outlined in Section 9.1.

To assist the above agencies with their respective roles KiwiRail provides a range of reporting on a regular cycle.

KiwiRail will also report semi-annually against the network measures and transport outcomes outlined in sections 10.2 and 10.3 above.

KiwiRail will work with agencies to further develop the reporting framework.

3. The Metro networks operate at close to their maximum capacity during the commuter peaks. Parts of the freight network also sometimes operate at near maximum capacity (including yards and terminals). During these times, even a modest disruption can lead to significant congestion and delays. To monitor this, KiwiRail will undertake a congestion assessment across its network and report this in its performance measures.

11. INVESTMENT PROGRAMME SCHEDULES

The following schedules are attached:

Rail Network Investment Programme

- Schedule One – Rail Network activity class
    - Below Rail Continuous Programmes – Renewal, maintenance and management of the network
    - Below Rail Improvement projects
- Schedule Two – Public Transport Infrastructure activity class
    - Auckland metro
    - Wellington metro

Other Rail Investment (included for information only)

- Schedule Three – KiwiRail
- Schedule Four – Rail infrastructure projects outside of this RNIP
    - Continuation of transitional rail projects
    - New Zealand Upgrade Programme
    - City Rail Link projects

Increasing commuter capacity is a measurement of success.

SCHEDULE ONE

NATIONAL FREIGHT AND TOURISM NETWORK – RAIL NETWORK ACTIVITY CLASS

As noted throughout the RNIP, the primary focus for the Rail Network activity class is to fund the continuous programme of investment in a resilient and reliable national freight and tourism rail network.

Table 1: Summary – three-year investment programme

Description ($m)	2021/22	2022/23	2023/24	3-Year Total
Total KiwiRail renewals	220.6	276.1	293.2	789.9
Total KiwiRail maintenance, operations and management	116.5	120.0	124.5	361.0
Total KiwiRail improvements	10.8	10.0	28.7	49.5
Total KiwiRail network	**347.9**	**406.1**	**446.4**	**1,200.4**

This table shows the three-year investment programme from the Rail Network activity class. This covers the continuous programme (renewals, maintenance, operations and management) and a small programme of improvements. The investment programme for this class over the three-year period is $1.2b.

The Rail Network activity class is funded from NLTF revenue, Track User Charges, and a top up from the Crown.

Table 2: Summary – 10-year forecast

Description ($m)	2021/22	2022/23	2023/24	2024/25-2026/27	2027/28-2030/31	10-Year Total
Total KiwiRail renewals	220.6	276.1	293.2	852.5	1,132.0	2,774.4
Total KiwiRail maintenance, operations and management	116.5	120.0	124.5	390.1	553.3	1,304.4
Total KiwiRail improvements	10.8	10.0	28.7	131.0	181.1	361.5
Total KiwiRail network	**347.9**	**406.1**	**446.4**	**1,373.6**	**1,866.4**	**4,440.4**

This table shows the 10-year forecast for the Rail Network activity class. The first three years are aligned with table 1, and the next seven years represent the current estimated spend. Forecasts will be reviewed and updated as part of the development of future RNIPs. The 10-year forecast assumes the continuation of funding from the NLTF and Crown at the levels indicated. This is critical to enable the resilient and reliable investment programme to be delivered.

Table 3: Renewals – 10-year forecast

Summary	Description ($m)	2021/22	2022/23	2023/24	2024/25-2026/27	2027/28-2030/31	10-Year Total
Non-metro network renewals	Track	109.8	135.8	149.4	401.0	528.6	1,324.5
	Structures	20.1	30.0	38.9	173.4	217.2	479.7
	Civil	29.9	44.0	31.3	81.4	129.6	316.2
	Signals	15.5	17.3	19.7	29.8	35.3	117.6
	Telecommunications	6.5	2.5	4.8	9.6	7.9	31.2
	Traction and electrical	1.7	1.4	1.2	4.8	7.2	16.2
	Active level crossings	5.5	7.5	7.6	21.6	30.6	72.8
	Incidents, unplanned works and contingency	24.5	31.2	31.5	103.3	136.6	327.2
Metro network renewals	Auckland metro area renewals	7.4	7.5	15.5	48.3	69.0	147.7
	Wellington metro area renewals	24.0	24.9	24.5	78.5	98.2	250.2
Total network renewals	Total renewals	245.1	302.0	324.5	951.5	1,260.2	3,083.2
Metro funded network renewals	AT funded metro renewals	(5.7)	(5.8)	(11.3)	(35.4)	(50.6)	(108.8)
	GWRC funded metro renewals	(18.8)	(20.1)	(19.9)	(63.6)	(77.6)	(200.0)
Total KiwiRail renewals		**220.6**	**276.1**	**293.2**	**852.5**	**1,132.0**	**2,774.4**

This table provides further breakdown for the 10-year forecast for the renewal programme.

Table 4: Maintenance, operations and management – 10-year forecast

Summary	Description ($m)	2021/22	2022/23	2023/24	2024/25-2026/27	2027/28-2030/31	10-Year Total
Total network maintenance	Network maintenance	103.3	106.5	110.5	349.2	496.3	1,165.8
Total network operations and management	Network operations and management	76.6	79.1	82.2	256.3	365.7	859.9
Total network maintenance, operations and management	Total network maintenance, operations and management	179.9	185.6	192.7	605.5	862.0	2,025.8
Metro funded network maintenance, operations and management	AT funded network maintenance, operations and management	(28.5)	(29.1)	(30.5)	(95.1)	(135.9)	(319.1)
	GWRC funded network maintenance, operations and management	(24.3)	(25.7)	(26.7)	(85.9)	(123.6)	(286.1)
	Third-party funded network maintenance, operations and management	(10.6)	(10.8)	(11.0)	(34.5)	(49.2)	(116.2)
Total KiwiRail maintenance, operations and management		**116.5**	**120.0**	**124.5**	**390.1**	**553.3**	**1,304.4**

This table provides further breakdown for the 10-year programme of maintenance, operations and management. It shows the offsetting revenues received from AT and GWRC as their contribution to the programme, as well as the revenues received for third party funded works.

Table 5: Improvements – 10-year forecast

Project ($m)	Description	2021/22	2022/23	2023/24	2024/25-2026/27	2027/28-2030/31	10-Year Total
Otira Tunnel	Business case for the track bed rehabilitation of Otira Tunnel.	1.5	1.6	2.1	0.0	0.0	5.2
Yards	Programme business case for yard safety and operational improvement projects. Implementation of critical yard projects.	7.8	5.9	17.2	0.0	0.0	30.9
Resilience works	Programme business case to develop a prioritised programme of resilience projects with a focus on addressing climate change impacts. Implementation beginning in year three.	0.5	0.5	3.2	0.0	0.0	4.2
Level crossing improvements	Three level crossing improvement projects.	0.0	0.0	3.2	0.0	0.0	3.2
Other improvement projects	Business cases for projects outlined in the NZ Rail Plan, including double tracking, passing loops and level crossings in the first three-years. Future implementation funding for all improvement projects.	1.0	2.0	3.0	131.0	181.1	318.0
Total KiwiRail improvements		**10.8**	**10.0**	**28.7**	**131.0**	**181.1**	**361.5**

This table outlines the improvements which contribute to the resilient and reliable programme of works, aligned with the NZ Rail Plan. The focus in the first three years is on smaller, “shovel ready” improvements and planning for larger works such as Otira tunnel (with an investment case to follow for the full works). KiwiRail has allowed for $312m from year four to ten for improvement works.

SCHEDULE TWO

METROPOLITAN NETWORKS – PUBLIC TRANSPORT INFRASTRUCTURE ACTIVITY CLASS

KiwiRail will deliver improvement projects from this class that have been identified in RLTPs, ATAP, and projects approved under the Transitional Rail Activity Class.

Table 6: Summary – three-year investment programme

Project ($m)	2021/22	2022/23	2023/24	3-Year Total
Total Public Transport Infrastructure projects	**43.0**	**62.5**	**45.8**	**151.3**

This table shows the summary three-year investment programme from the PTI activity class.

Table 7: Auckland Metro Area – three-year investment programme

Project ($m)	Project Description	2021/22	2022/23	2023/24	3-Year Total
Auckland Metro Area					
Progressive fencing and security	Ongoing programme to improve safety and security of the rail corridor through managing access.	2.0	2.0	2.0	6.0
KiwiRail Strategic Future Planning	Strategic planning for future investment in the network including Third and Fourth Mains, 9 car platforms and supporting AT with the Auckland Rail Programme business case.	3.0	4.0	5.0	12.0
CRL Day One – Resilience and Asset Maintenance Programme Integrated rail management centre and emergency management systems	Enables all aspects of the Auckland network to be managed from Auckland improving coordination, resilience and reliability. A component of the Resilience and Asset Maintenance Programme needed to support CRL.	6.5	23.3	5.9	35.7
CRL Day One – Resilience and Asset Maintenance Programme Infill Signalling	The Infill Signalling project installs additional signals to improve network resilience and reliability. A component of the Resilience and Asset Maintenance Programme required to support CRL.	1.0	7.0	7.0	15.0
CRL Day One – Infrastructure Package Additional Traction feed (West)	Development of an additional Traction Feed in the West to power additional trains. A component of the Infrastructure Package required to support CRL.	25.0	19.0	13.0	57.0
CRL Day One – Infrastructure Package ETCS Level 2	Initiating an investigation of the next phase of electronic train control (ETCS Level 2). A component of the Infrastructure Package required to support CRL.	0.0	0.0	4.0	4.0
Auckland Metro Total		**37.5**	**55.3**	**36.9**	**129.7**

This table shows the three-year investment programme by project in Auckland from the PTI activity class.

Table 8: Wellington Metro Area – Three-year investment programme

Project ($m)	Project Description	2021/22	2022/23	2023/24	3-Year Total
Wellington Metro Area					
WMUP V – Wellington Rail Network Resignalling Renewal	End-of-life rail signal system replacement. Network infrastructure safety and capacity improvements within the Wellington Region. Current infrastructure needs replacing and upgrades.	5.2	6.5	8.9	20.6
WMUP VI – Further capacity improvements beyond current programme – Business Case Development	Additional capacity improvements aligned with the longdistance rolling stock business case (beyond those delivered by the NZ Upgrade programme – Wairarapa and Wellington rail improvements).	0.3	0.7	0.0	1.0
Wellington Metro Total		**5.2**	**7.2**	**8.9**	**21.6**

This table shows the three-year investment programme by project in Wellington metro from the PTI activity class.

Table 9: Auckland Metro Area – 10-year forecast

Project ($m)	2021/22	2022/23	2023/24	2024/25-2026/27	2027/28-2030/31	10-Year Total
Auckland Metro Area						
Progressive fencing and security	2.0	2.0	2.0	6.0	8.0	20.0
KiwiRail Strategic Future Planning	3.0	4.0	5.0	15.0	20.0	47.0
CRL Day One – Resilience and Asset Maintenance Programme Integrated rail management centre and emergency management systems	6.5	23.3	5.9	0.0	0.0	35.7
CRL Day One – Resilience and Asset Maintenance Programme Infill Signalling	1.0	7.0	7.0	0.0	0.0	15.0
CRL Day One – Infrastructure Package Additional Traction feed (West)	25.0	19.0	13.0	0.0	0.0	57.0
CRL Day One – Infrastructure Package ETCS Level 2	0.0	0.0	4.0	0.0	0.0	4.0
Additional Rail maintenance and renewals*	7.3	7.3	7.3	21.9	29.2	73.0
Additional MOR for CRL components*	0.0	0.0	0.0	0.0	9.0	9.0
Auckland Metro Total	**7.3**	**7.3**	**7.3**	**21.9**	**38.2**	**82.0**

*Note: Not currently included in the three-year investment programme as funding source is still being confirmed.
This table shows the 10-year investment forecast by project in the Auckland metro from the PTI activity class.

Table 10: Wellington Metro Area – 10-year forecast

Project ($m)	2021/22	2022/23	2023/24	2024/25-2026/27	2027/28-2030/31	10-Year Total
Wellington Metro Area						
WMUP V – Wellington Rail Network Resignalling Renewal	5.2	6.5	8.9	70.8	194.7	286.1
WMUP VI – Further Capacity improvements beyond current programme - business case development	0.3	0.7	0.0	0.0	0.0	1.0
Wellington Metro Total	**5.5**	**7.2**	**8.9**	**70.8**	**194.7**	**287.1**

This table shows the 10-year investment forecast by project in the Wellington metro from the PTI activity class.

SCHEDULE THREE

KIWIRAIL

Table 11: KiwiRail above rail financial summary

Programme ($m)	Description	2021/22	2022/23	2023/24	2024/25-2026/27	2027/28-2030/31	10-Year Total
Future of Rail investments to support a resilient and reliable freight system							
Rolling stock replacement and mechanical depots upgrades $1,593.0m	Replacement of locomotives, shunts and wagons and modernisation of mechanical depots	240.1	403.5	377.7	200.4	0.0	1,221.7
New Interislander Ferry assets $435.0m	Two new rail-enabled ferries and upgraded port side infrastructure in Wellington and Picton	89.0	111.0	130.6	17.3	0.0	347.9
Core asset management	Renewals of existing above rail assets	57.2	23.3	6.8	0.0	0.0	87.3
Total		**386.3**	**537.8**	**515.1**	**217.7**	**0.0**	**1,656.9**
Provincial Growth Fund and other investments to support regional economic development							
Hillside Redevelopment – Stage 1 - $20.0m	New mechanical workshop	7.0	8.9	0.0	0.0	0.0	15.9
Hillside Assembly Workshop – $85.0m	New wagon assembly plant	27.0	19.7	10.2	24.1	0.0	81.0
Tourism – Passenger service refresh - $24.0m	New premium tourism carriages and Greymouth platform extension	9.8	5.8	0.0	0.0	0.0	15.6
NZUP – Capital Connection Carriage Refurbishment $26.0m	Refurbishment of existing carriages	16.2	8.9	0.0	0.0	0.0	25.1
Total		**60.0**	**43.3**	**10.2**	**24.1**	**0.0**	**137.6**

SCHEDULE FOUR

RAIL INFRASTRUCTURE PROJECTS OUTSIDE OF THIS RNIP

Table 12: Continuation of Transitional Rail activity class projects

Project ($m)	Description	2021/22	2022/23	2023/24	2024/25-2026/27	2027/28-2030/31	Total
Auckland Metro Area							
Rail Network Growth Impact Management $336.8m	RNGIM is the Catch-Up Renewals Programme to address a backlog of formation, drainage, and track work and bring the network up to a modern metro standard.	116.5	67.8	61.1	19.8	0.0	265.2
Total Auckland projects		**116.5**	**67.8**	**61.1**	**19.8**	**0.0**	**265.2**
Wellington Metro Area							
WMUP III – Catch-up Renewals $179.9m (P50)	Track renewals with a primary focus on Wairarapa line and Wellington tunnels. Other slope stability work and removal of timber bridge structural elements.	74.7	53.0	18.4	1.0	0.0	147.1
WMUP IV – Capacity & Resilience $147.4m (P50)	Integrated package of network improvements to enable increased capacity and frequency, with resilience.	44.7	22.6	2.1	0.0	0.0	69.4
Total Wellington projects		**119.4**	**75.6**	**20.5**	**1.0**	**0.0**	**216.5**

Table 13: New Zealand Upgrade Programme[4]

Project ($m)	Description	2021/22	2022/23	2023/24	2024/25-2026/27	2027/28-2030/31	Total
Auckland Metro Area							
Papakura to Pukekohe Electrification $374.9m	Electrification of 19km of track between Papakura and Pukekohe, including installation of overhead equipment, a new traction power feed and signaling upgrades.	100.1	106.2	106.5	0.0	0.0	312.8
Wiri to Quay Park $317.6m	Provides a third rail line (third main) to ease the bottleneck between Wiri and Westfield, increase capacity around Westfield Junction and improve rail access to the Ports of Auckland at Quay Park.	75.6	87.5	95.8	0.0	0.0	258.9
Drury Stations $495.0m	Construction of three new rail stations at Drury Central, Drury West and Paerata and the associated bus interchange, park and ride facilities and connecting roads.	82.8	152.5	227.6	26.3	0.0	489.2
Total Auckland projects		**258.5**	**346.2**	**429.9**	**26.3**	**0.0**	**1,060.9**
Wellington Metro Area							
WMUP VIa – Entrance into Wellington Station $88.0m	Infrastructure improvements to enable a safe and reliable increase in the frequency of train services.	10.1	32.7	30.3	14.5	0.0	87.6
WMUP VIb – Wairarapa line capacity upgrades for passengers and freight $155.7m	Infrastructure upgrades to increase capacity and support a planned increased frequency of passenger services.	12.2	39.6	37.3	66.4	0.0	155.5
Total Wellington projects		**22.3**	**72.3**	**67.6**	**80.9**	**0.0**	**243.1**

4. In addition, the Government announced in June 2021 that it has allocated $692m from the NZ Upgrade Programme for the Marsden Point Rail spur and enabling rail works and SH1 roading improvements. KiwiRail will be completing a delivery case to finalise the scope, cost and timelines for these additional rail works. It is expected that it will take up to five years from initiation to completion of the project.

Table 14: City Rail Link Limited projects

Project ($m)	Description	2021/22	2022/23	2023/24	2024/25-2026/27	2027/28-2030/31	Total
Auckland Metro Area							
C9 Britomart East $6.5m	Installation of crossovers and associated traction and signal modifications to enable final track layout.	3.5	0.0	0.0	0.0	0.0	3.5
C8 Newmarket and NAL South works $15.6m	Installation of a crossover with two diamonds at Newmarket junction between NAL and NBL down mains. Allows direct access for down main services from Grafton to Newmarket Station Platform 4.	7.5	0.1	0.0	0.0	0.0	7.6
C5 NAL Early Works $1.4m	Signalling activities to enable decommissioning of NAL Down Main between Grafton scissors and Kingsland and to support decommissioning of Normanby and Porters level crossings.	0.2	0.0	0.0	0.0	0.0	0.2
CRL Interface Programme $20.7m	KiwiRail's involvement in the CRL Project as oulined in the CRLL 'Be involved' agreement.	3.9	4.1	4.8	2.4	0.0	15.2
CRL Be Ready & Be Prepared Programme $14.8m	Transition activities and business improvement initiatives necessary to ensure KiwiRail is operationally ready for the CRL.	1.8	4.8	4.9	2.6	0.0	14.1
C8 Henderson $70.0m (funding to be approved)	Henderson Terminus is required for the post CRL opening timetable. It was in scope and funded by Crown / Council for CRLL. Current circumstances suggest CRLL will not have the financial ability to fund this.	0.0	0.0	0.0	0.0	0.0	0.0
Total CRLL projects		**16.9**	**9.0**	**9.7**	**5.0**	**0.0**	**40.6**

Table 15: Provincial Growth Fund and Crown Infrastructure Projects outside of this RNIP

Project ($m)	Descriptions	2021/22	2022/23	2023/24	2024/25-2026/27	2027/28-2030/31	Total
Drainage programme – National $26.0m	Covid response programme to take on 90 trainees to work on shovel ready drainage renewal and maintenance projects.	3.0	0.0	0.0	0.0	0.0	3.0
Omoto Slip – Slope Stability – West Coast $13.0m	Shovel ready Covid response programme to create jobs on the West Coast and stabilise the Omoto slip near Greymouth improving West Coast transport (road and rail) resilience.	6.1	0.0	0.0	0.0	0.0	6.1
Central North Island Freight Hub $40.0m	Land purchase and master planning project for Central North Island Freight Hub.	19.9	0.0	0.0	0.0	0.0	19.9
Northland Line Upgrade $178.5m	Renewal of the NAL from Swanson to Whangarei including replacement of 5 bridges and lowering 13 tunnels, allowing for high cube container traffic and 18T axle loads on the line.	33.3	8.2	0.0	0.0	0.0	41.5
Marsden Point Line land acquisition $40.0m	Land purchase for Marsden Point Rail spur.	5.0	10.5	10.8	0.0	0.0	26.3
Total PGF & CIP projects		**67.3**	**18.7**	**10.8**	**0.0**	**0.0**	**96.8**