Submission on Inquiry into the future of inter-regional passenger rail in New Zealand

Heriot-Edievale Limited

Michael van Drogenbroek

Photo Source: KiwiRail

Table of Contents

New Zealand Railway Characteristics, Overview and Historical Perspective

New Zealand
Australia
UAE

New Zealand Railways Characteristics

- Cape Gauge (1067mm) Network with quite tight gauge and kinematic envelopes. About 3700km operating of which 1500km passenger (additional 400 km mothballed) – mostly diesel
- NIMT electrified 1980's Palmerston North to Hamilton (25Kv), Auckland Metro (25 kV AC) in 2010's and Wellington Metro (1500-1600 V Dc) network beginning mid 1930's.
- Quite a lot recent reinvestment to rehabilitate / replace assets - ongoing especially in Auckland
- Axle load is generally 18 tonne – some lines are less at 16 tonne
- Interisland rail capable ferries operate between North and South Island – with two new large rail capable ferries on order for 2025 delivery
- Top rated speed for pax is 110 kph for NIMT – although much of network is rated lower at 100 kph or less at 90kph, 80kph or even less on some regional lines.
- Predominately freight network outside of Auckland and Wellington Metros with limited inter-regional passenger trains and some long-distance Scenic Trains operating. Freight is Bulk (Coal, Forestry, Milk etc), Intermodal Import/Export containers (Dairy, Meat, General etc), Domestic Intermodal logistics distribution (JIT), Manufactured product (Such as steel etc)

New Zealand Railways Organisations

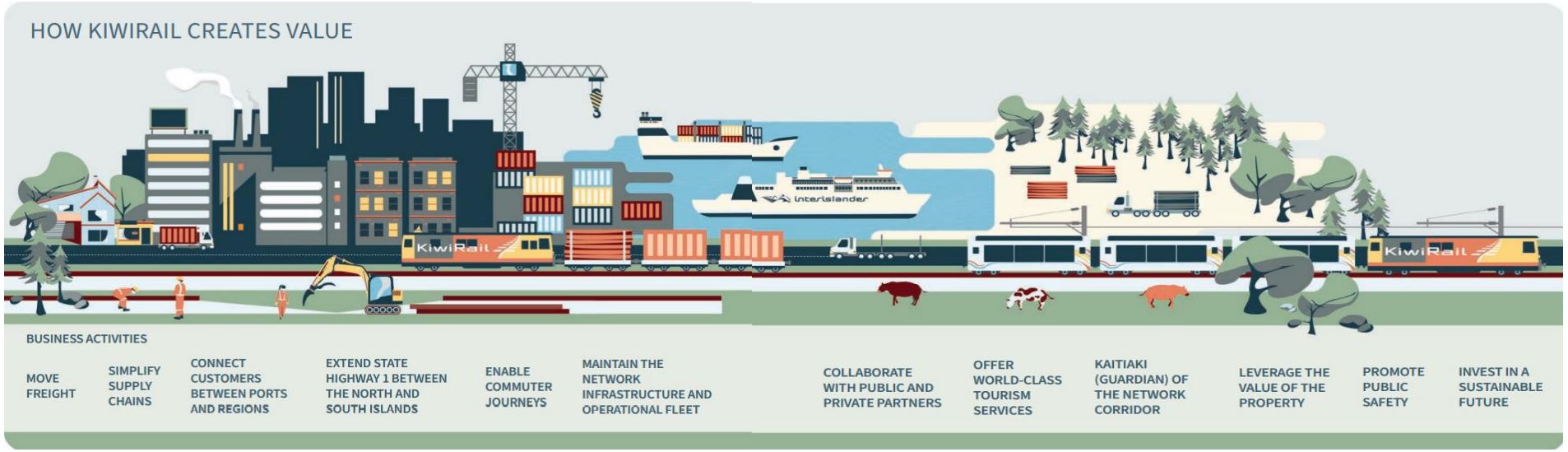
Main Government Agencies / Organisations

- **KiwiRail** – State Owned Enterprise - Access Provider, Network Owner / Developer as well as Rail operator of Freight services, Long Distance/Inter-Regional passenger – **Vertically Integrated Railway**
- **New Zealand Transport Agency (NZTA) - *Waka Kotahi*** – Funding / Regulator / Multi Modal Transport Agency Planning
- **Ministry of Transport (MoT)** – Transport policy and advice across transport
- **Auckland Transport (AT)** – Client / Planner for Auckland Metro Rail Passenger
- **Wellington Regional Council** – Client / Planner for Wellington Metro Rail Passenger
- **Waikato Regional Council** – Client / Planner for Waikato Regional Rail Passenger
- **Other Regional Councils** – Potential Clients for Regional Rail Passenger

Operators / Major Participants

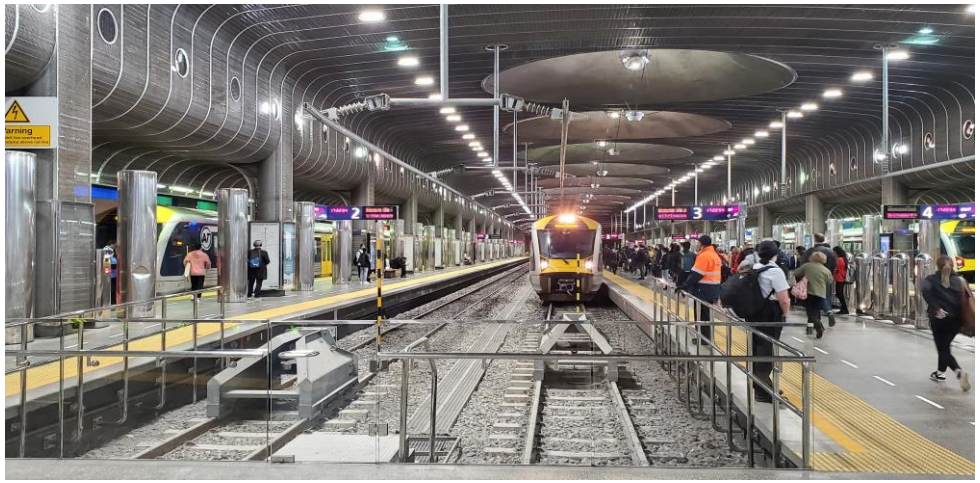
- **KiwiRail** – National Rail freight operator and Long Distance / Regional Passenger and Interisland Ferry Operator - **Vertically Integrated Railway Operator**
- **Transdev Wellington** – Operator Wellington Metro Rail since 2016
- **ComfortDelGro / UGL - Auckland (Auckland One Rail)** - Operator Auckland Metro Rail since 2022
- **CAF** - Rolling stock maintainer Auckland Metro Rail to 2024
- **Hyundai Rotem** – Rolling stock maintainer Wellington Metro Rail
- **Various Heritage Rail Operators** e.g. Dunedin Railways, GVR, Steam Inc

KiwiRail's Place and The Passenger Context



As New Zealand's national rail organisation KiwiRail is a fully above and below rail integrated operation

The 2020's – Today – NZ Passenger Rail



Auckland Metro – Auckland One Rail (CDC & UGL)

The Great Journeys of New Zealand – KiwiRail

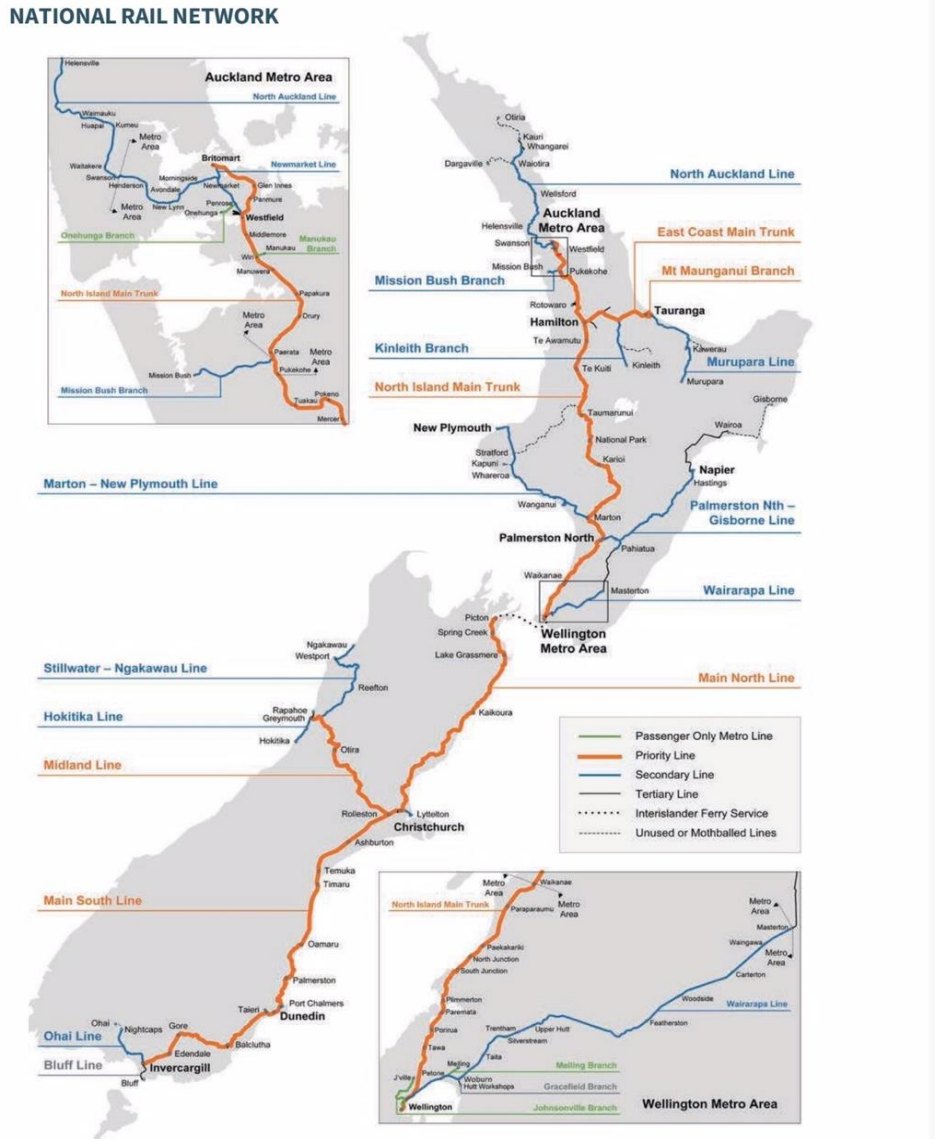
Wellington Metro - Transdev

Inter-Regional Passenger Rail - KiwiRail

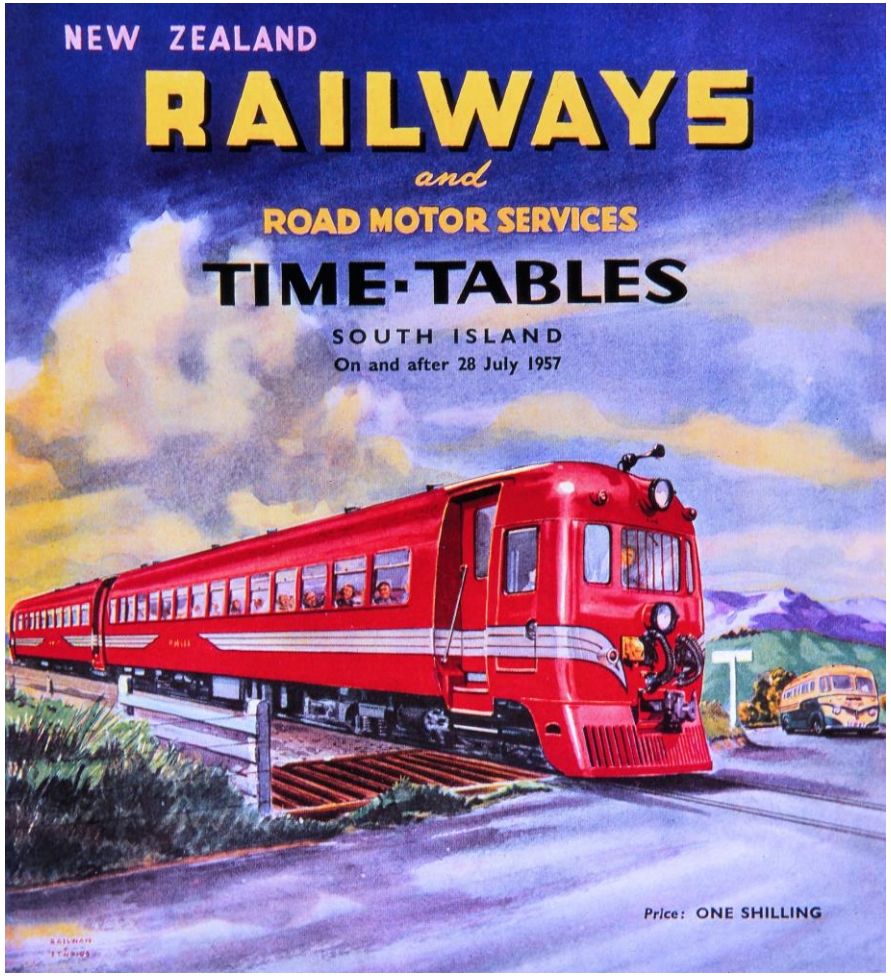
New Zealand Passenger Rail Network Today

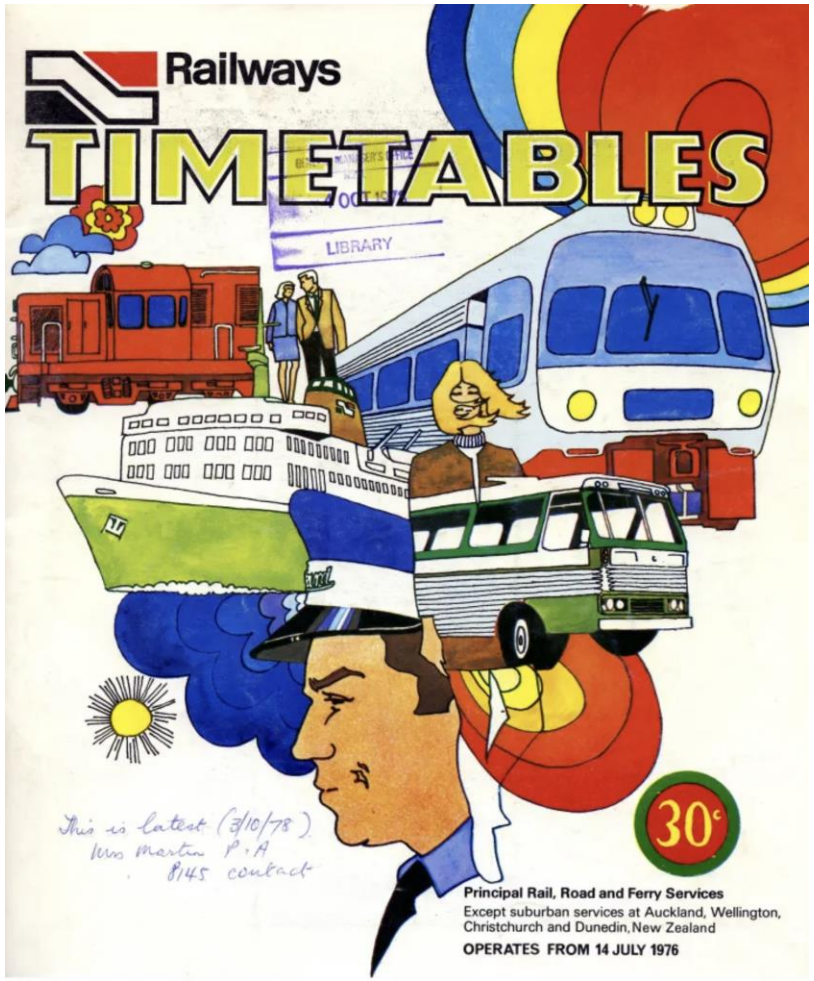
Passenger Rail services operate on about 1500 route Km of KiwiRail's 3,700 route Km operating network as follows:

- Auckland Metro Passenger Network (25 kV AC)
- Wellington Metro Passenger Network (1500-1600 V Dc)
- Wairarapa Services (Masterton - Wellington)
- Capital Connection (Palmerston North - Wellington)
- Te Huia (Hamilton – Auckland)
- Northern Explorer (Auckland – Wellington)
- Interisland Rail RoRo Ferries (Wellington – Picton)
- Coastal Pacific (Picton – Christchurch)
- Tranz Alpine (Christchurch Greymouth)
- Dunedin Railway Services access KiwiRail Network
- Heritage mainline operators access KiwiRail Network



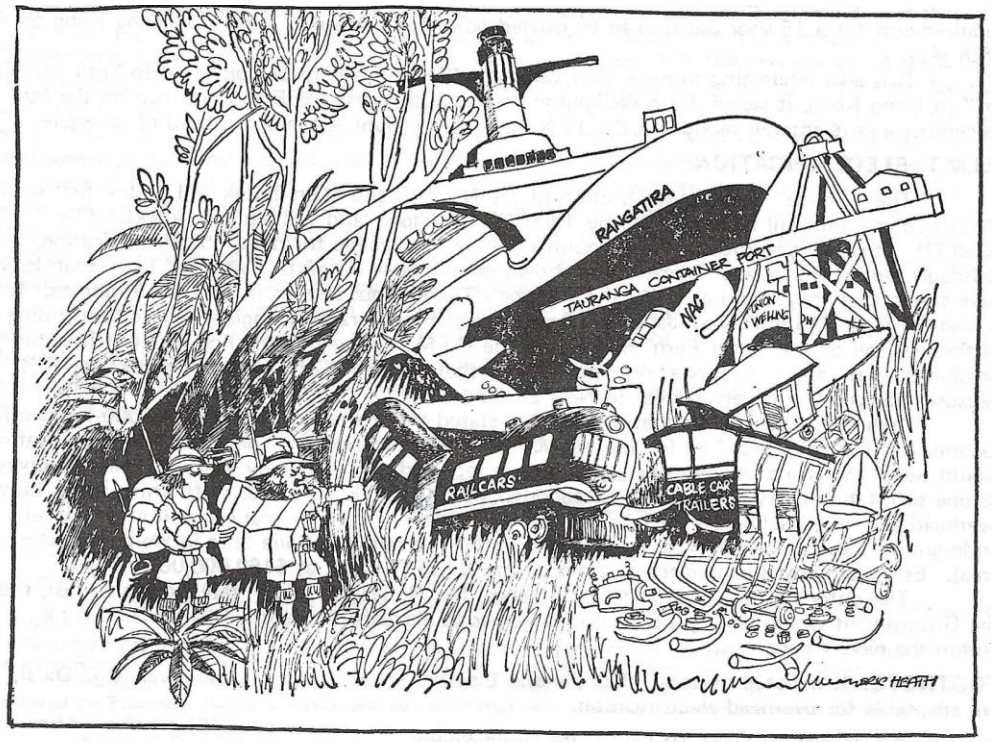
Past Moves To Modern Integrated Networks





Railways timetables from the 1950's to 1970's reflected optimism, modernity and a move towards a national multi-modal integrated network by the 1970's

Railcars - From Optimistic Confidence to Despair



"Gad, Carruthers! I do believe it's the lost graveyard of white elephants."

"reprinted from 'The Dominion' with thanks"

The optimism of the New Railcars from the 1950's had turned to despair by the 1970's as the Railcars were progressively withdrawn due to mechanical challenges and lack of capital renewals to replace them

Flashback - Wellington - Auckland By Rail 8hr:37min in 1967 with NZ Built 1938 Railcar

In 1967 a trial test train, using a 1938 NZ built railcar, ran from Wellington to Auckland in a net time of 8 hours 37 minutes. The run from Hamilton Frankton to Auckland Strand was just 1 hour 34 minutes compared to Te Huia today taking about 2 hours 30 minutes for the exact same trip.

RECORD-BREAKING RAILCAR TRIP ON NORTH ISLAND MAIN TRUNK RAILWAY

Railcar Sets New Times On Round Trip

OLDEST RAILCAR on the Wellington - New Plymouth service, RM 30, "Aotea", sped from Wellington to Auckland and back on Saturday, January 28, to break both northbound and southbound time records.

THE CAR, which carried 24 railway enthusiasts as passengers, was chartered by Mr. J. A. Murphy, of Lower Hutt.

The performance of "Aotea" on January 28 was due to several factors, including improvements to the track since 1938, centralised traffic control as compared with the old tablet system, and the enthusiastic co-operation of Railways' personnel.

TIMEKEEPERS

Among the timekeepers on the car were Messrs. T. A. McGavin, K. I. Bullock, K. J. Hesz and G. Troup.

RM 30 left No. 4 Platform, Wellington, at 12.1 am and ran non-stop to Palmerston North, where it departed at 1.40¼am.

Other stops were made at Marton (depart 2.18¼am), Hunterville (to cross No. 227 Auckland - Wellington Express — depart 2.53¼am), Ngaurukehu (to cross southbound "Night Limited"—depart 4.13¼am) and Hihitahi, before arriving at Taumarunui at 6.2¼am, where the car was refuelled.

SIGNAL CHECKS

The car left Taumarunui at 6.39¼am and arrived in Frankton at 8.43am, after four signal checks—at Ongarue, Waimiha, Porootarao and Mangapehi.

After a change of drivers, the car left Frankton at 8.46¼am and arrived in Auckland at 10.20¼am, 40 min early.

Gross running time was 10hr 19¼min, and net 8hr 54min.

LATE DEPARTURE

At Auckland servicing troubles were experienced, causing a late departure of 38min—at 12.38¼pm.

Fine weather and relatively light opposing traffic enabled an all-out effort to be made and all lost time was recovered by Taumarunui.

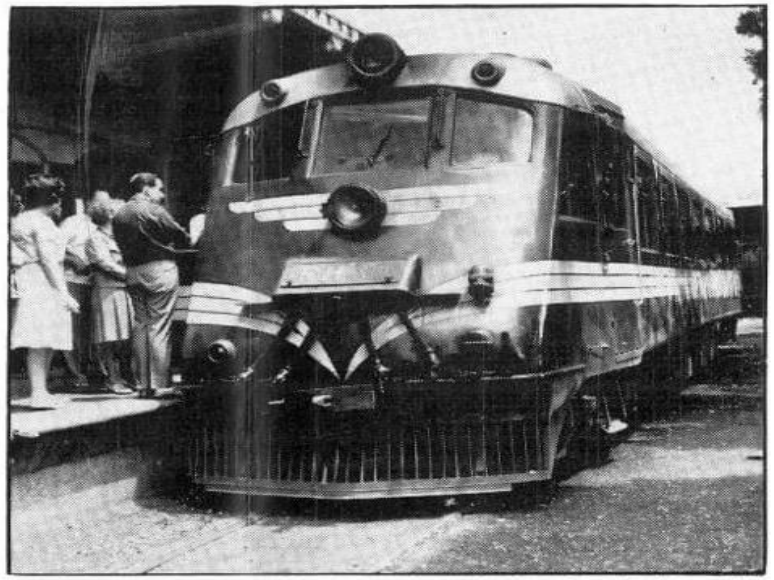
A non-stop run to Frankton (depart 2.15pm) was followed by further stops at Taringamotu (to cross northbound "Scenic Daylight"—depart 4.5pm), Taumarunui (to refuel—depart 4.29pm), Mananui, and Piriaka (to pick up two passengers who were left behind at Taumarunui).

FURTHER STOPS

After further signal stops at Kakahi and Erua, Taihape was reached at 6.46¼ pm, where the pilot was set down. The car cleared Taihape at 6.48¼pm and after a further signal check at Mangaweka, arrived at Palmerston North at 8.15pm.

RM 30 departed Palmerston North after a refreshment stop at 8.25pm and after crossings at Levin and Manakau, arrived back in Wellington at 10.4¼pm.

Gross southbound time was 9hr 26¼min, and net 8hr 42¼min.



RM 30, "Aotea" at No. 1 Platform, Auckland Railway Station, after its record-breaking run from Wellington on January 28.—Photo, K. J. Hesz, "Evening Post" block."

'Surprising Performance' On Main Trunk

ENTHUSIASTS who made the journey by special railcar from Wellington to Auckland and back last month soon found that the schedule, which offered better than usual speeds, was easily improved upon.

NEARLY all running was well ahead of schedule and in fact on at least one occasion was 26min in advance.

Only twice did RM 30 fall behind time.

These delays were caused by the unavailability of torque converter oil at Auckland and "lost" passengers at Taumarunui.

The rate at which "Aotea" progressed up and down the Main Trunk was really surprising—in fact at least one experienced observer considered his records as unbelievable.

"Aotea" probably broke about 90 per cent of all the intermediate records on the run.

The two best times are probably Wellington-Palmerston North, 98min; Frankton-Auckland, 94min.

This remarkable journey recorded by a mere handful of observers will have provided them with intermediate times that will take a long time to improve upon—thanks to the excellent co-operation of NZR train control staff and railcar crews.—"TINHARE."

Previous Records On Main Trunk

THE previous northbound record was held by the General Manager's four-wheel inspection car, "Red Terror," which took 8hr 56 min net, in August, 1938. In December, 1938, RM 31, "Tokomaru," made the run in 10hr 20min gross.

The southbound record of 9hr 45min net was set by RM 9, "Arai-Te-Uru," a Wairarapa railcar, in February, 1938.

STEAM SHUNTING DECLINES

"Express" Reporter

DUNEDIN may beat Timaru to be the first South Island shunting area to be dieselised.

THERE are now four "Dsc's" in use—Nos. 460 to 463—on shunting duties.

Steam only appears for about two hours on odd days.

This is handled by "Ba" 552 one week and "Bb" 626 the next.

"Ba" 551 and "Bb" 633 have not been used recently and are quietly gathering dust in the back of the locomotive shed.

WAGONS SHIPPED TO SOUTH ISLAND

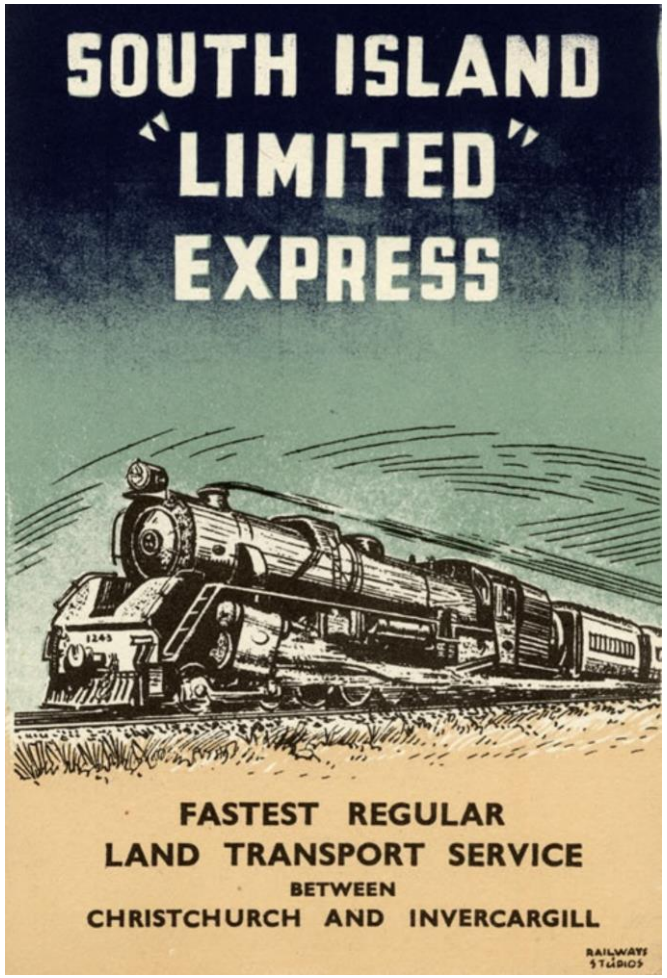
"Express" Reporter

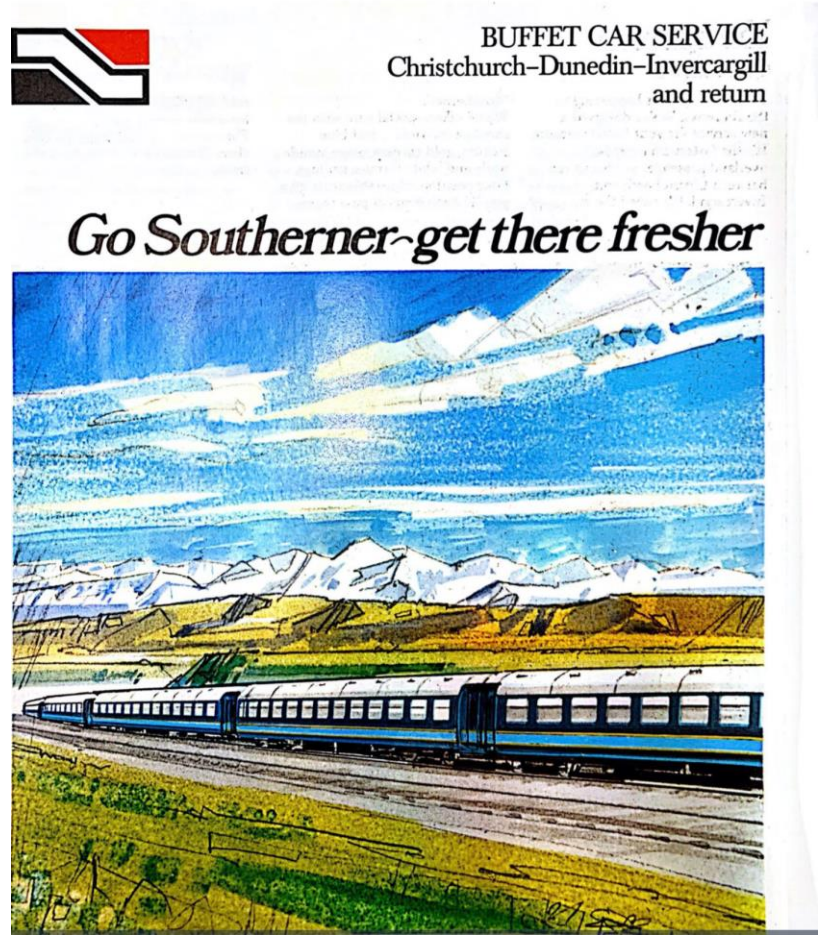
DURING January a total of 45 "Ur" and "Ub" wagons went south on the rail ferry in nests of three (see illustration last month).

To judge from the steady flow of such wagons with ordinary loads to the south the imbalance must have been much more than 45.

Most of the loads were cars and lorries destined for all parts of the South Island.

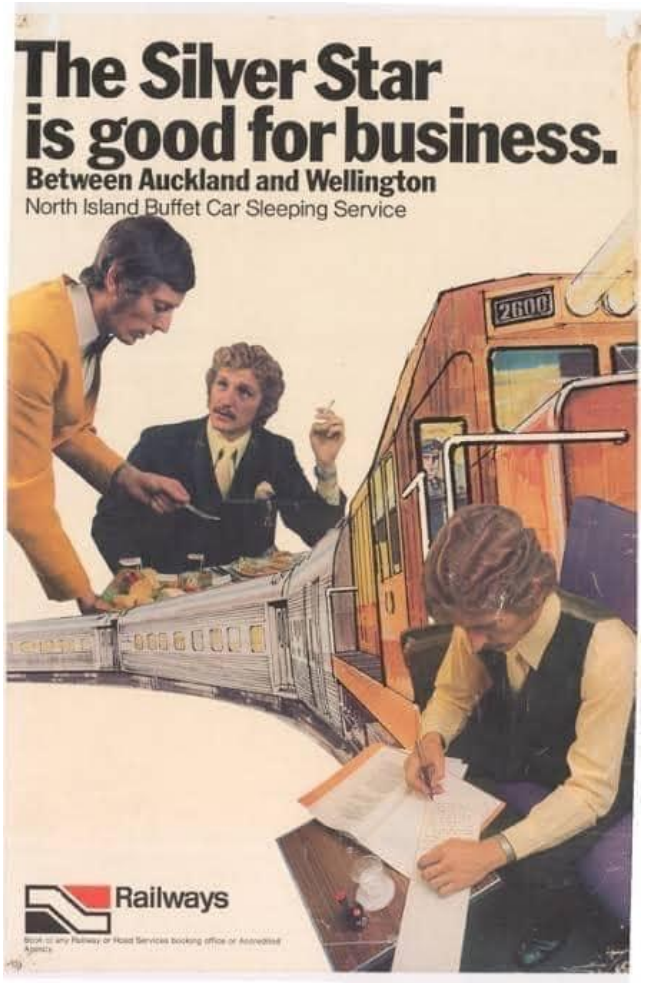
Flashback - South Island (NZ's Past Fastest Train)

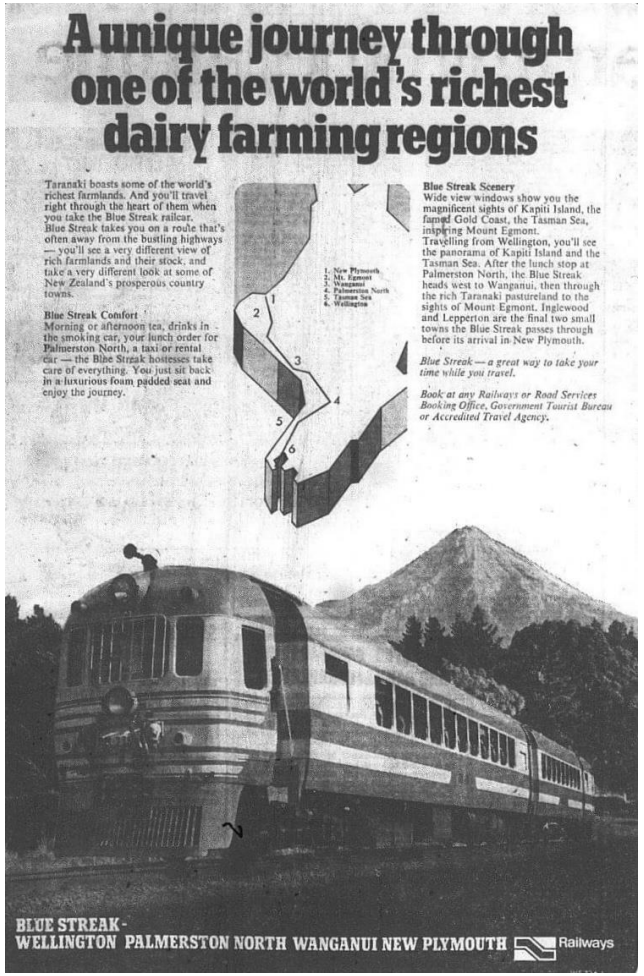


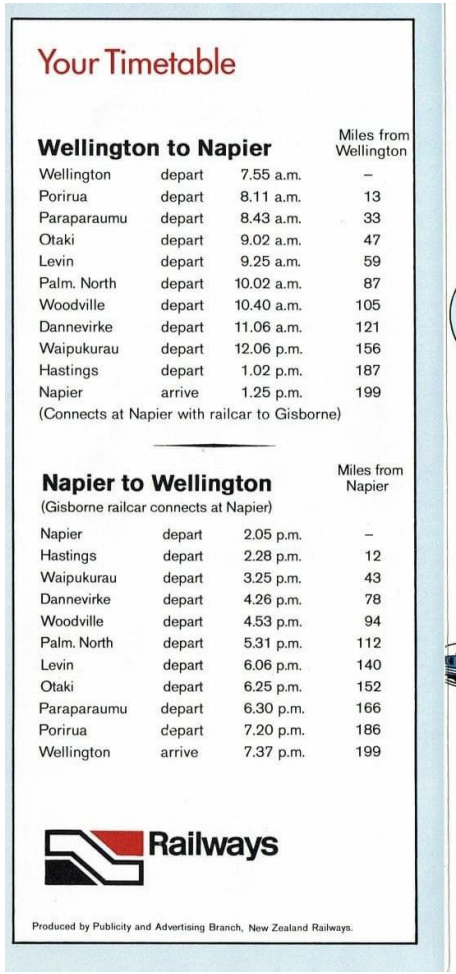


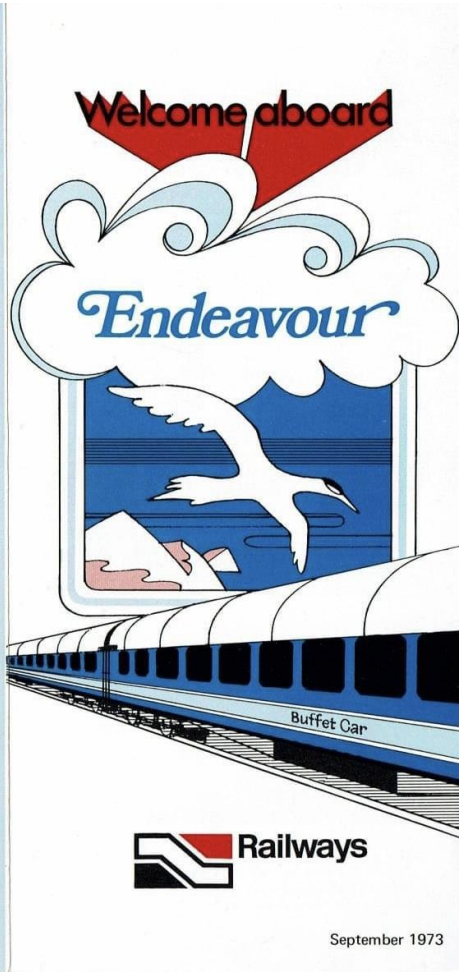
The South Island was the first to have the prestige passenger trains in 1970's with Southerner launched on 1 December 1970 between Christchurch, Dunedin and Invercargill – it was finally withdrawn in 2002

Flashback - Mid 1970's - The Top Notch Premier Trains



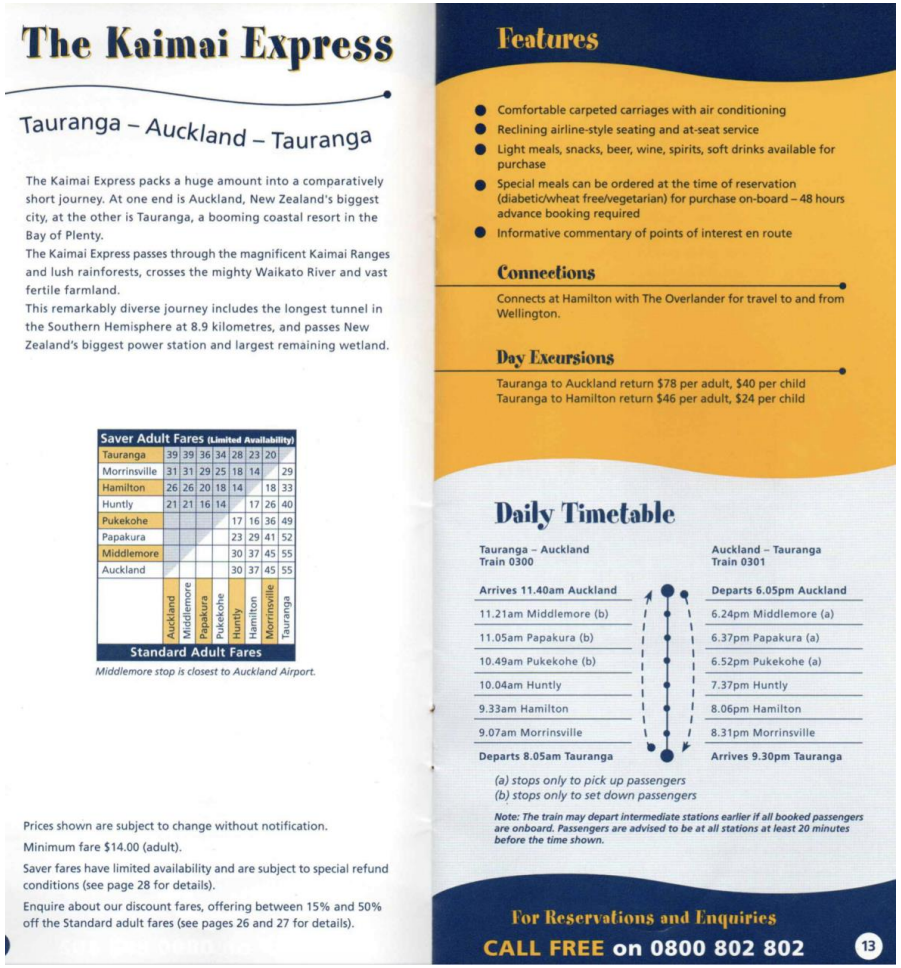






The North Island followed with its own prestige passenger trains slightly later in the decade with the likes of the Silver Star sleeper train, The Blue Streak Railcar and The Endeavour – all were gone by 2001

1990's – Regional Rail Last Gasp Growth



The Kaimai Express

Tauranga – Auckland – Tauranga

The Kaimai Express packs a huge amount into a comparatively short journey. At one end is Auckland, New Zealand's biggest city, at the other is Tauranga, a booming coastal resort in the Bay of Plenty.
The Kaimai Express passes through the magnificent Kaimai Ranges and lush rainforests, crosses the mighty Waikato River and vast fertile farmland.
This remarkably diverse journey includes the longest tunnel in the Southern Hemisphere at 8.9 kilometres, and passes New Zealand's biggest power station and largest remaining wetland.

Saver Adult Fares (Limited Availability)

	Auckland	Middlemore	Papakura	Pukekohe	Huntly	Hamilton	Morrinsville	Tauranga
Tauranga	39	39	36	34	28	23	20	
Morrinsville	31	31	29	25	18	14		29
Hamilton	26	26	20	18	14		18	33
Huntly	21	21	16	14		17	26	40
Pukekohe					17	16	36	49
Papakura					23	29	41	52
Middlemore					30	37	45	55
Auckland					30	37	45	55

Standard Adult Fares

Middlemore stop is closest to Auckland Airport.

Prices shown are subject to change without notification.

Minimum fare $14.00 (adult).

Saver fares have limited availability and are subject to special refund conditions (see page 28 for details).

Enquire about our discount fares, offering between 15% and 50% off the Standard adult fares (see pages 26 and 27 for details).

Features

- Comfortable carpeted carriages with air conditioning
- Reclining airline-style seating and at-seat service
- Light meals, snacks, beer, wine, spirits, soft drinks available for purchase
- Special meals can be ordered at the time of reservation (diabetic/wheat free/vegetarian) for purchase on-board – 48 hours advance booking required
- Informative commentary of points of interest en route

Connections

Connects at Hamilton with The Overlander for travel to and from Wellington.

Day Excursions

Tauranga to Auckland return $78 per adult, $40 per child
Tauranga to Hamilton return $46 per adult, $24 per child

Daily Timetable

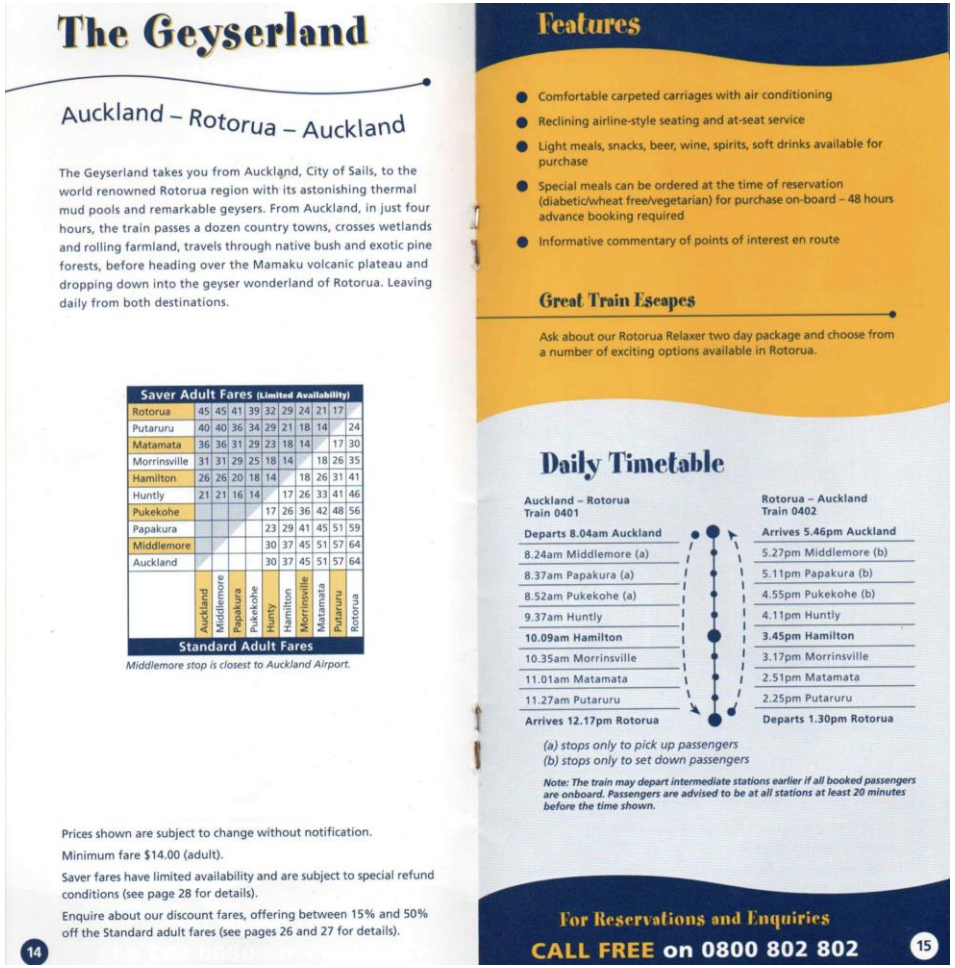
Tauranga – Auckland Train 0300	Auckland – Tauranga Train 0301
Arrives 11.40am Auckland	Departs 6.05pm Auckland
11.21am Middlemore (b)	6.24pm Middlemore (a)
11.05am Papakura (b)	6.37pm Papakura (a)
10.49am Pukekohe (b)	6.52pm Pukekohe (a)
10.04am Huntly	7.37pm Huntly
9.33am Hamilton	8.06pm Hamilton
9.07am Morrinsville	8.31pm Morrinsville
Departs 8.05am Tauranga	Arrives 9.30pm Tauranga

(a) stops only to pick up passengers
(b) stops only to set down passengers

Note: The train may depart intermediate stations earlier if all booked passengers are onboard. Passengers are advised to be at all stations at least 20 minutes before the time shown.

For Reservations and Enquiries
CALL FREE on 0800 802 802

13



The Geyserland

Auckland – Rotorua – Auckland

The Geyserland takes you from Auckland, City of Sails, to the world renowned Rotorua region with its astonishing thermal mud pools and remarkable geysers. From Auckland, in just four hours, the train passes a dozen country towns, crosses wetlands and rolling farmland, travels through native bush and exotic pine forests, before heading over the Mamaku volcanic plateau and dropping down into the geyser wonderland of Rotorua. Leaving daily from both destinations.

Saver Adult Fares (Limited Availability)

	Auckland	Middlemore	Papakura	Pukekohe	Huntly	Hamilton	Morrinsville	Matamata	Putaruru	Rotorua
Rotorua	45	45	41	39	32	29	24	21	17	
Putaruru	40	40	36	34	29	21	18	14		24
Matamata	36	36	31	29	23	18	14		17	30
Morrinsville	31	31	29	25	18	14		18	26	35
Hamilton	26	26	20	18	14		18	26	31	41
Huntly	21	21	16	14		17	26	33	41	46
Pukekohe					17	26	36	42	48	56
Papakura					23	29	41	45	51	59
Middlemore					30	37	45	51	57	64
Auckland					30	37	45	51	57	64

Standard Adult Fares

Middlemore stop is closest to Auckland Airport.

Prices shown are subject to change without notification.

Minimum fare $14.00 (adult).

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14

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- Light meals, snacks, beer, wine, spirits, soft drinks available for purchase
- Special meals can be ordered at the time of reservation (diabetic/wheat free/vegetarian) for purchase on-board – 48 hours advance booking required
- Informative commentary of points of interest en route

Great Train Escapes

Ask about our Rotorua Relaxer two day package and choose from a number of exciting options available in Rotorua.

Daily Timetable

Auckland – Rotorua Train 0401	Rotorua – Auckland Train 0402
Departs 8.04am Auckland	Arrives 5.46pm Auckland
8.24am Middlemore (a)	5.27pm Middlemore (b)
8.37am Papakura (a)	5.11pm Papakura (b)
8.52am Pukekohe (a)	4.55pm Pukekohe (b)
9.37am Huntly	4.11pm Huntly
10.09am Hamilton	**3.45pm Hamilton**
10.35am Morrinsville	3.17pm Morrinsville
11.01am Matamata	2.51pm Matamata
11.27am Putaruru	2.25pm Putaruru
Arrives 12.17pm Rotorua	Departs 1.30pm Rotorua

(a) stops only to pick up passengers
(b) stops only to set down passengers

Note: The train may depart intermediate stations earlier if all booked passengers are onboard. Passengers are advised to be at all stations at least 20 minutes before the time shown.

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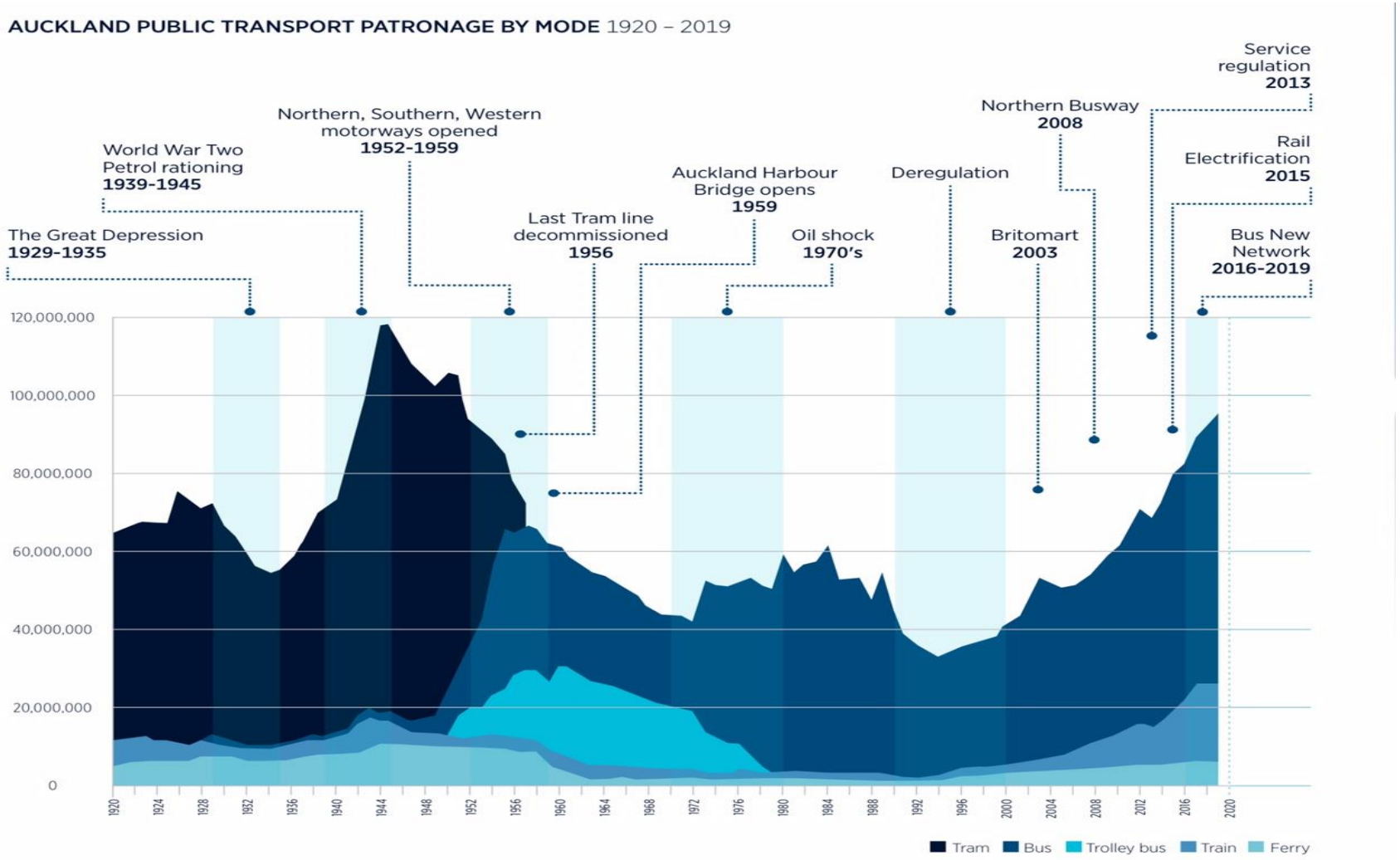
CALL FREE on 0800 802 802

15

In 1991 Passenger services were relaunched on two new routes from Auckland to both Tauranga and Rotorua using displaced Silver Fern Railcars from the NINT – They lasted just under 10 years to 2001

Public Transport (PT) Use Trends New Zealand – Auckland example

A systematic policy move away from PT towards private based mobility (motorcars) saw PT use decline significantly as shown. Auckland has more than triple the population today than in the 1940's but way less PT trips. For regional rail this is even more pronounced as policies until recently have effectively discouraged PT use over the last 70 years.



New Zealand
Australia
UAE

Why Inter-Regional Passenger Rail? Funding and Success Factors

Photo Source: Michael van Drogenbroek

New Zealand
Australia
UAE

The Case For National Integrated Public Transport Planning - Rail Perspective

- NZ at a junction when comes to inter-regional public transport and passenger rail.
- Will it continue its rail focus of almost entirely focusing investment on urban passenger rail in Auckland and Wellington regions ?
- Or can it expand planning to include passenger rail reconnecting regions to main urban areas and extend back into the Heartland as a national network?
- What sort of country we want NZ to be? At stake is social equity, national connectivity, transport accessibility, meeting climate change commitments, improved transport safety, regional rejuvenation, affordable housing access and **even patriotic national pride as one joined up nation.**
- Few things give the perception of a united nation like quality national rail networks.
- Need national consensus to correctly identify viable opportunities and problems trying to solve to fulfill potential to help deliver a more sustainable future that helps NZ fully realise it's potential. Linking opportunities to spatial planning for our towns and cities also important

Why Inter-Regional Passenger Rail?

- In deciding what a future inter-regional rail network may look like it is important to establish what some of the key success factors may be.
- Key criteria include identifying where rail has a strategic advantage over other Public Transport modes or private motor car use. Some ability to move passengers from the very high emissions aviation sector on specific corridors where rail could compete on convenience e.g. Sleeper overnight trains between Auckland and Wellington - Vehicle kilometres travelled reduction thus enabled (land and air)
- Some of these include potential journey time advantages due to superior rail alignments over road such as tunnelling or serving larger intermediate towns on route where large passenger flows can be generated.
- As an example: the route between Wellington and Wairarapa through the Remutaka tunnel offers a key advantage over road avoiding the trip over the hills. Whilst strictly not inter-regional, as both the Hutt and the Wairarapa are part of the broader Greater Wellington region, it does demonstrate how such advantages has seen rail flourish.
- Analysing transport demand - current, latent, induced – how does rail affect PT Transport demand?
- Spatial planning to ensure growth strategies are integrated with transport priorities with regional and inter-regional rail investment

Key Success Factors In Passenger Rail

- Provide critical community links to New Zealand between Cities, Towns and Country – **Connecting Communities**
- Support Economic Growth
- Promote modal shift by encouraging public transport by increasing its attractiveness
- Affordable fares that require farebox subsidy with nationally tap and go integrated ticketing
- Integration networks with other public transport eg, Buses, micro mobility for last mile, ferries
- Only targeted park and ride facilities (not always) where needed for modal shift encouragement
- Improve transport corridors capacity and resilience across society as a whole
- Enable Value for money of rail investments – integration e.g. common national standards for rolling stock
- Improve safety and reducing road congestion
- Reduce greenhouse gas emissions – supporting climate change initiatives – reducing VKT's
- Funding by Value Capture through Transit Hubs / TOD's / Development concessions near stations
- Corridor / Housing / Land Use intensification right economics – Spatial Planning
- Getting / Estimate services demand right in post Covid-19 uncertain World

Rail Impact On Vehicle Kilometres Travelled (VKT)

- VKT in NZ continue to increase as encouraged by Government policies and investment bias towards roading network improvements concurrent with a move to domestic air travel since the 1960's onwards at the expense of rail
- NZ has one of the highest car ownership rates in the World - large portions of the population have been encouraged to use personal mobility through cheap 2nd hand car imports from Japan. Being a country of two main Islands means air travel use is also very high per capita
- Rail can have direct overhead electrification capability rather than having to always rely on batteries as EV's do. EV's may reduce fossil fuel emissions but not the other negative impacts from higher VKT's. Aviation decarbonisation from electrification is many decades away in any meaningful form
- Rail, if well utilised, offers a significant opportunity to reduce net emissions through lower net vehicle kilometre travelled. Targeted overnight passenger train routes such as Auckland - Wellington can help at the margin to reduce dependence on domestic aviation as can faster rail connections on shorter aviation corridors such as Auckland – Tauranga where aviation use should be discouraged
- Rail is very energy efficient in operation and even allowing for imbedded incremental carbon in its construction delivery, is many times better than road per passenger trip basis when well utilised
- One train carrying say 250 passengers could take an average of say 170 cars trips of the road

Inter-Regional Passenger Rail Funding - Process

- The MoT working on guidance for local councils to assist planning, costing, funding and other considerations for new regional passenger rail service development framework.
- *Waka Kotahi,* responsible for funding Government's contribution services, and KiwiRail (operator) both involved.
- Currently regional councils and *Waka Kotahi* contribute funding to the current inter-regional trains *Te Huia* and *The Capital Connection*.
- Process to consider viability / establishment of further inter-regional passenger trains in NZ spelt out on Kiwi Rails website.
- Up to Regions to prioritise new service in Regional Land Transport Plan (RLTP), used by *Waka Kotahi* to determine regional transport initiative funding.
- Including a regional rail proposal in RLTP signals a new passenger rail service ready for funding. Only then does Government consider if to be prioritised in NZ Rail Plan – a 10-year vision for rail in NZ to guide future investment decisions.

Inter-Regional Passenger Rail Funding - Process

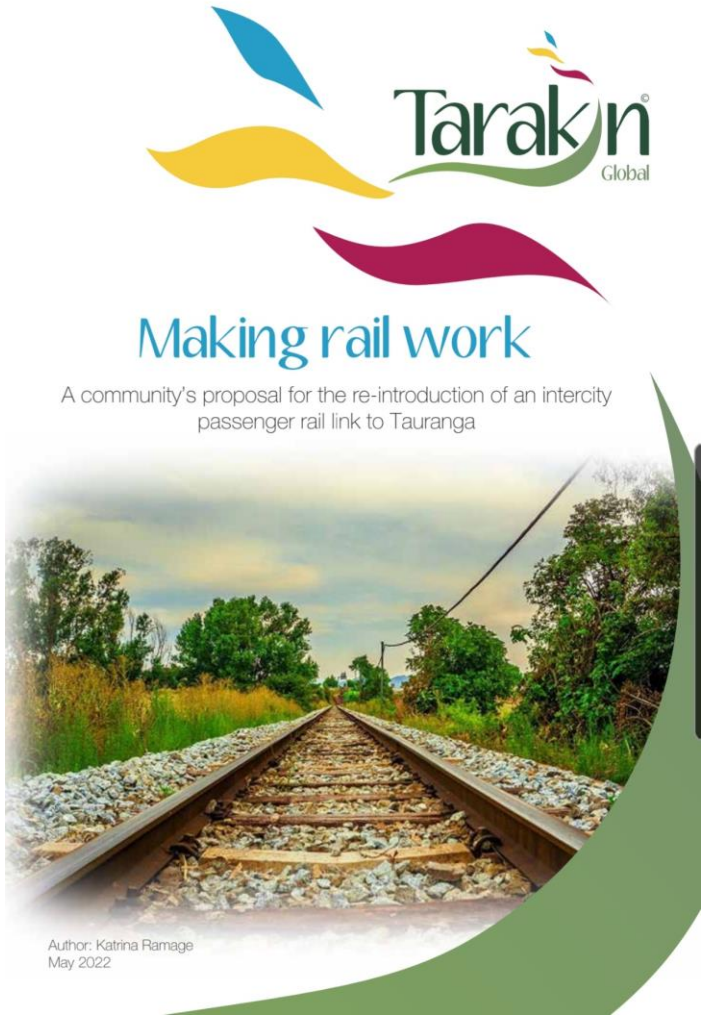
- Approach highlights a significant deficiency in current process. Everything has to be instigated by regions but **inter-regional and national public transport a national issue**. Makes inter-regional rail very challenging.

- **Where is the national vision?** Who is responsible for that? Central Government agency leadership required with regional partnerships for inter-regional PT and rail to develop. The current PT planning process heavily biased to intra-regional which worked well for Auckland and Wellington Rail but not so much elsewhere.

- **Establishment of a stronger National Public Transport function with a mandate to plan/develop national and regional integrated PT networks (Buses, Rail and Ferries) across all NZ** would be a start. Would help alignment with national development priorities and ensure business cases are **funded, not just a regional activities, but as national development ones**. Not a replacement for regional council transport functions rather a **framework & resource with national joined up PT planning function** something lacking in NZ today.

- Overhaul of Public Transport Operating Model (PTOM) required – This is now underway

Bringing Passenger Rail Back From The Brink



"There is no reason to believe that bureaucrats and politicians, no matter how well meaning, are better at solving problems than the people on the spot, who have the strongest incentive to get the right solution."

Elinor Ostrom

The policy for inter-city and community rail networks should never have been abandoned in New Zealand without a proper inter-generational and cross societal discussion.

Networks like rail make everyone in society feel connected.
The longer we avoid the conversation, the more expensive it gets to fix the oversights of the past.
It is time to start a new conversation!

See www.heriot-edievale.com for this document

Possible Inter-Regional Passenger Rail Networks Development Sequence

Photo Source: VLIne, Vic, Australia

New Zealand
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Possible Inter-Regional Rail Networks

The following is a list of regional sub-networks that could be developed in order of priority:

1. **Upper North Island Golden Triangle:** Auckland – Hamilton – Tauranga
2. **Lower North Island**: Wellington – Masterton & Wellington - Palmerston North – Whanganui
3. **National Network Connectors:** Auckland – Wellington and Wellington – Christchurch via IIL
4. **Central South Island:** Christchurch – Ashburton – Timaru
5. **Additional Local Networks**: Auckland Metro, Wellington Metro, Suburban Christchurch, Mosgiel – Port Chalmers (Dunedin Railways), Waikato Local services, BoP Local services, Hawkes Bay Local
6. **Tourism Services**: Tranz Alpine and National Tour Train (all pax lines) / Charter Services – Fully Commercial
7. **Eventual Network Expansion:** Extend Timaru to Dunedin then Invercargill, Wellington - Napier, Wellington - New Plymouth and maybe even Northland, Rotorua? Gisborne?
8. **Heritage Operators**: e.g. Dunedin Railways, GVR, Mainline Steam, Steam Inc etc

1. Golden Triangle Network (2020's - 2040's)

Description: Fast frequent pass rail connections Auckland - Hamilton - Tauranga with up to 160kph speed using possible Tri-Mode rolling stock – 50% of NZs population lives north of about Te Awamutu

Current Status: *Te Huia* Hamilton to Auckland launched April 2021 using refurbished ex BR rolling stock (DFB hauled) – top speed 100 kph. Infrequent service and no service to Tauranga. Hamilton - Auckland Intercity Project (Faster Rail) underway for MoT as client, Making Rail Work political discussion paper (Tarakin Global) – see www.heriot-edievale.com for public documents

Selected Challenges: Auckland Metro rail network congestion north of Pukekohe for fast frequent train pathing, broken electrification, Congested freight only ECMT, Kaimai Tunnel, lack of Tauranga passenger infrastructure, Level crossings, Track condition and alignment, non commercial funding required

Interventions required: Auckland Rail PBC, Auckland third and partial fourth mains, Central Auckland station location, enhanced signalling (Infill/ETCS), partial track duplication ECMT, Kaimai tunnel upgrade, new stations, Level crossing upgrades, alignment deviations, network speed upgrades to 130kph ultimately targeting 160kph, new Tri-Mode rolling stock, possible electrification extension to Hamilton and eventually Tauranga, funding/delivery model

Waikato - Auckland Example – *Te Huia*

- *Te Huia* Hamilton - Auckland started in April 2021 - 2 return services Mon - Fri and 1 return service on Saturdays
- Locomotive hauled refurbed ex BR cars (3 train sets) but new Tri or Bi Mode trains to be considered later
- Initially impacted by Covid-19 restrictions and long journey times due to Auckland Metro congestion – has improved steadily since restrictions eased - stops at Puhinui for transfer to Airport by express bus with terminal station at The Strand, Central Auckland
- Plans for additional service enhancement underway to build on services strengths e.g. Interpeak services
- Longer term network capacity enhancement like 3rd and 4th main, additional platforms at Puhinui to speed up service enable more services and possible extension of services to South (Wellington) / East of Hamilton (Tauranga)
- Faster Rail business case – Cape gauge tilt trains (160kph) – preliminary business case has suggesting alignment deviations been developed and firmer business case now under development by MoT
- Golden Triangle start and now very real and has major implications for Auckland rail network for service increase

2. Lower North Island Network (2020's - 2030's)

Description: Fast frequent pass rail connections Wellington - Masterton and Wellington - Palmerston North - Whanganui with up to 130kph speed using possible Tri-Mode rolling stock – Corridors already have relatively high rail uptake

Current Status: *Wairarapa Connection* Wellington - Masterton and *Capital Connection* Wellington - Palmerston North using refurbished ex BR rolling stock (DFB hauled) – top speed 90/100 kph. Infrequent service and no service to Whanganui. Lower North Island Rail Integrated Mobility - Rolling Stock Business Case – currently unfunded see www.heriot-edievale.com for public documents

Selected Challenges: Selecting rolling stock, new maintenance/stabling/servicing facilities, signalling capacity, broken electrification, slower speed line to Whanganui, additional crossing loops /new stations, Level Crossings, Track condition and alignment, non commercial funding sources

Interventions required: Wellington network upgrades (Some underway), enhanced signalling (Infill/ETCS), crossing loops, new stations, modest alignment deviations (eg Forest Lakes), network speed upgrades to 120kph targeting 130kph, new Tri-Mode rolling stock, possible electrification extension, funding/delivery model

3. Connector National Network (2020's - 2030's)

Description: Auckland - Wellington and Picton - Christchurch passenger rail connections with up to 120kph speed using possible Tri-Mode (NI) and Bi Mode (SI) rolling stock leveraging of upgrades on Auckland - Hamilton and Wellington - Palmerston North corridors. This joins the network from Auckland all the way to Christchurch and ultimately Invercargill after subsequent investments made. This service would serve current and intermediate towns not currently served by the *Northern Explorer* e.g. Te Awamutu, Te Kuiti, Taumarunui, Taihape, Marton, Fielding, Levin etc. The Auckland to Wellington route is also a candidate for a potential overnight sleeper train service as ideal route for such a service.

Current Status: *Northern Explorer* Auckland - Wellington service and *Coastal Pacific* Picton - Christchurch services currently exists – Infrequent service recommenced September 2022

Selected Challenges: Selecting new rolling stock, enhanced maintenance facilities, station upgrades, signalling upgrades, track condition, non commercial funding sources

Interventions required: Enhanced signalling MNL, track quality improvements for network speed upgrades to 110/120kph, new Tri & Bi-Mode rolling stock to have daily services on these routes with funding/delivery model. Development for an overnight sleeper train on the Auckland – Wellington route. Intermediate step is using existing *Northern Explorer* and *Coastal Pacific* rolling stock with small configuration changes until new rolling stock procured ie. Mixed PT and Scenic service configuration

4. Central South Island Network (2030's)

Description: Fast frequent pass rail connections Christchurch - Ashburton - Timaru with up to 120kph speed using possible Bi-Mode (Hydrogen/Diesel & Battery) rolling stock. Potential fast flat and fairly straight running across Canterbury Plains. Enables a commuter style service at quite fast speeds. Onwards coach connections (e.g. InterCity) at Timaru to locations such as Oamaru, Dunedin, Invercargill and Queenstown utilising the relative speed advantage of both modes on relative corridors. Short PT regional bus connections to intermediate towns such as Geraldine etc. from nearest railhead. A stepping stone to rail further south to Dunedin and Invercargill as infrastructure to south improves allowing higher speeds – - see **7. Network Expansion**.

Current Status: No service currently exists – freight only line south of Rolleston, Formerly NZ's highest speed railway as flat alignment. New Rolling stock facility at Waltham could be perhaps be expanded

Selected Challenges: Selecting rolling stock, enhanced maintenance/stabling/servicing facilities, signalling upgrade, line speed has slipped to Freight speeds, additional crossing loops / new stations required, Level crossings improvements, Track condition, non commercial funding sources

Interventions required: Freight corridor upgrades, new central Christchurch Railway station enhanced signalling, crossing loops, new station Ashburton, Level crossings, track quality improvements for network speed upgrades to 120kph targeting 130kph, Bi-Mode rolling stock, funding and delivery model

5. Regional “Metro” Networks (2020’s - 2040’s)

Description: Develop Local Metro networks operations in Auckland, Wellington, Waikato, BOP, Hawkes Bay, Christchurch and Dunedin - Time frames – mostly 2030’s and beyond

Current Status: Auckland and Wellington networks being developed and upgraded with network / station / signalling upgrades, electrification extensions, CRL in Auckland. No current local networks in Waikato (except Te Huia), BoP, Hawkes Bay, Christchurch or Dunedin.

Selected Challenges: Selecting new rolling stock, enhanced maintenance/stabling facilities, track remediation, additional crossing loops / double tracking, signalling upgrades, new stations, non commercial funding sources

Interventions required: Waikato’s network developments, BoP networks, Hawkes Bay (Napier and Hastings and to south), Lyttleton - Rolleston and services to Rangiora in Christchurch. Utilise Dunedin Railways assets initially for Port Chalmers - Dunedin - Mosgiel passenger rail network, track quality improvements, New signalling, new stations, Bi-Mode rolling stock, new maintenance service facilities, funding/delivery model to be developed. As a test case Dunedin Railways could start a metro operation with some modest crown investment in a couple of crossing loops on the MSL and some operating support utilising Dunedin Railways current rolling stock

6. Tourism / Charter Network (2020's – 2030's)

Description: *Tranz Alpine* tourism train Christchurch - Greymouth, Tour Train travelling NZ wide with premium commercial service level, and Charter Trains. Loco hauled carriage rolling stock using reconfigured AK loco hauled rolling stock. Speeds of 100 kph. Possible to run occasionally on routes such as Northland, Taranaki, Hawkes Bay as tour trains etc. Integration with tour packages for off Rail adventures as per *The Great Journeys of New Zealand* brand of KiwiRail.

Current Status: *Tranz Alpine* currently exists and over time other AK fleet used for *Coastal Pacific* and *Northern Explorer* could be repurposed to 1 tour train set and 1 charter train set. New Rolling stock facility at Waltham can manage fleet

Selected Challenges: Release some of AK fleet for repurposing depends on new rolling stock for general *Coastal Pacific* and *Northern Explorer* route. Fully commercial services possible.

Interventions required: Depends on AK fleet being released from existing services and then being refurbished to higher standard. Some of this is being done. Fully commercial business case for operating and capital investment – operation could be partially privatised or concession given to enable innovation to higher service standards

6. Tourism / Charter Network (2020's – 2030's)

A potential layout of a upmarket passenger car configuration for the upmarket tourist and charter market sector tour trains

7. Network Expansion (2030's and 2040's)

Description: Extend passenger rail networks beyond the core networks over time including extensions from Timaru to Oamaru, Dunedin and Invercargill, Hawkes Bay (Napier / Hastings), New Plymouth and perhaps Northland. Rotorua and Gisborne possible if lines repaired and reopened but would require substantial capital investment. Bi-Mode rolling stock would be required

Current Status: None of these services exist but over half of them existed up to to 2001. infrastructure standards fallen since this time and effectively now just a freight only network

Selected Challenges: Selecting rolling stock, enhanced maintenance/stabling facilities, signalling upgrades from TWC, line speed has slipped to slower Freight only speeds, additional crossing loops / upgraded stations required, Track condition, non commercial funding sources. Significant investment may be required to make these services time competitive for faster speeds.

Interventions required: Freight corridor upgrades, upgraded and some new Railway stations, enhanced signalling, possible crossing loops, level crossing improvements, track quality improvements for network speed upgrades to 90 - 110kph. Bi-Mode rolling stock, funding/delivery model. A train from Christchurch to Dunedin could be perhaps delivered sooner (extension from Timaru proposed service) due to its scenic potential south of Oamaru – but would not be time completive with road on this sections without significant capital investment.

8. Heritage Operation (2020's & Beyond)

Description: Enablement funding to preserve selected New Zealand's Rail heritage fleet to run. Set up a contestable funding mechanism for sustaining capital for heritage lines of unique national significance such as Taieri Gorge Rail (DR), Bay Of Islands Scenic Railway, GVR, Kingston Flyer etc

Current Status: Dunedin Railways services mostly suspended, Kingston Flyer re-establishing, other operators find it challenging to keep rolling stock able to meet Main Line access standards so risk of loosing operations over time

Selected Challenges: Heritage Lines eg OCB falling into disrepair due to lack of investment and asset life expiry, volunteer operating models, safety operating concerns for heritage rolling stock access on national network, likely main line steam running will not occur in future if not given attention

Interventions required: Funding source established to recognise cultural significance of NZ's rail heritage. Could be used for asset refurbishment by bidding process in partnership with regional / local body agencies that see value e.g. Dunedin City support *Dunedin Railways*. This is done in Victoria, Australia and in other jurisdictions where operations have social or societal significance and bring Wider Economic Benefits eg. Puffing Billy.

Key Investments and Summary

Photo Source: Michael van Drogenbroek

New Zealand
Australia
UAE

Key Investments For Inter-Regional Rail

- Infrastructure Civil Works eg track upgrades (sub formation, formation, top, line, level, curve easements, level crossings, deviations), line classifications 90Kph, 110 Kph, 130 Kph, 160 Kph?? Average speed more important Signalling upgrades eg ETCS, CBTC, line capacity enhancements
- Rolling national electrification programme on key routes – Pukekohe - Hamilton - Tauranga a priority
- New and upgraded stations – getting platform heights consistent, national standards
- Rolling Stock selection as much as possible to national standards with regional adaptation as required eg, Electrification, EMU, DMU, Bi/Tri Mode new fuel technologies – procurement benefits result, synergies
- Stabling facilities for interpeak and overnight – often quite difficult
- Maintenance facilities (heavy and light and servicing at strategic locations enhancing region businesses)
- Last Mile solutions for door to door travel – autonomous vehicles, Mobility as a Service, Micro mobility
- Other things – simulators, new control centres, PT national integrated ticketing (Tap & ride)
- NZ Rail Academy - rebuild rail & public transport knowledge, prof development
- Job creation in rolling stock development, apprenticeship training skills, Maintenance facilities in regions
- Integration in other areas such as access to affordable housing and spatial planning integration

New Emerging Rolling Stock – Bi/Tri-Mode

(VLine (Victoria) VLocity, Etihad Rail, DB/Siemens and Wink/Stadler)

Potential inter-regional rail rolling stock is adapting fast. From all diesel units like, the VLocity used in Vic. Australia to new trains that are either Bi or Tri-Mode Units (TMU). On a TMU, the CI engine has no mechanical drive and is connected to a generator to power the train. When in electric mode it can be power from wires overhead direct or the battery which is charged either from the CI engine or Overhead - thus can it run in 3 modes of power

National procurement strategy using common fleet of common national standards fo efficiency

Key Barriers/Challenges Investments - Summary

- Integration with Metro Networks - Auckland Network congestion post CRL – solution infill signalling, ETCS Level 2, Level Crossing eliminations, Third and Fourth Mains, New Auckland Terminus for regional rail or run via alternative routes through Auckland to NIMT – Auckland Rail PBC addressing this.
- Wellington network congestion – move to ETCS / CBTC
- East Coast Main Trunk congestion e.g. Kaimai Tunnel, single track, Tauranga entry
- Current focus on freight network standards rather than passenger in regions
- Lack of integrated National Public Transport Planning
- Getting the numbers right for forecasting demand for Transport – current, latent, induced, managed
- Funding sources and delivery timeframes – international partners, Export financing, wet leasing
- Non partisan political support / consensus building to avoid political football of rail from the past
- Rail and PT industry delivery / structure reform / accountability / value for money be examined closely
- Rail industry & construction delivery certainty with pipeline of committed projects / knowledge capability - Academy of Rail / PT in NZ be developed
- Other public transport integration / connections like Buses (InterCity coach network) for connecting to non rail served regions to build true National Public Transport network

Summary Conclusions

- National Public Transport Functions need improving and integrating including Regional Metro Networks **– A National Public Transport Planning Agency required**
- Regional Involvement critical to keep planning attuned to local needs but national lens needed to **Connect Communities nationwide with Integrated PT networks including buses, ferries**
- Staged improvements over 10 to 30 years but with eye on Vision of continuous build up – **Golden Triangle** first followed by Lower North Island, then national Interconnector and then South Island
- A compelling case for all stakeholders for approval of funding and delivery is required. Whilst this maybe a 10 – 30 year plus vision there is no better time to start than now.
- Funding regime: Affordable fares to encourage usage (Farebox), Land Value Uplift Capture, TOD's, NZLTF, fuel and general taxation, local body rates as presently, overseas funding partners, population growth increasing funding base, capital release from less private car ownership, Community based partnerships (Co Ops)
- Various delivery models incl. franchising, concessions, national operator like Vline be explored
- Passenger Rail isn't needed on all lines – public bus improvements for many routes to be encouraged
- Rails key advantages should be leveraged off e.g. More direct routes, faster corridors, key population corridor flows, average speed more important than top speed
- Not just Here & Now – to think outside box – Ambitions and new thinking required

Making Rail Work

Case Study - Rail and Infrastructure for Passenger Rail On The Golden Triangle

October 2022

New Zealand
Australia
UAE

"It was a big job, and it required men that could think a mile high and three thousand miles long."

Johnny Cash, Riding the Rails, 1974

Source: www.johnnycash.com

Chapter Author : **Michael van Drogenbroek**

Technical Lead | michael@makingrailwork.com

With special thanks to : Svetlana Andryuchshenko, James Llewellyn, Chris McKellar, Paul Callister (Save Our Trains) Vin Porter, Kira Soeberg, and the Making Rail Work Team of Katrina Ramage, Susan Trodden, and Mary Abiad.

Case Study - Rail and Infrastructure for Rail Passenger Implementation

This is a technical case study on matters relating to the implementation requirements on introducing passenger rail services to the Auckland-Waikato-Bay of Plenty corridor and can be read as a standalone document; however, we would encourage the committee to consider the contents in conjunction with submissions from Tarakin Global and Making Rail Work. The principals of these organisations have been key partners in the work undertaken.

The Tarakin Global work offers a potential framework (Cooperative model) for delivery of the service. The Making Rail work submission discusses Community Engagement and Empowerment matters to take this forward.

Primarily the work of all three organisations in relation to this case study submission is focused on a rail proposition for the Golden Triangle (Auckland-Waikato-Bay of Plenty) however it has scope and growth potential for wider application across Aotearoa New Zealand .

Rail Network Overview

Rail in New Zealand operates as a vertically integrated system comprising both above rail operations (moving assets such as locomotives, rolling stock, train operations, facilities etc) and *below railhead network assets* (tracks, tunnels, bridges, signalling, stations etc). As this integrated system reflects railways are interconnected systems which benefit from a coordinated approach to design, planning, operation and maintenance.

The tolerances in railway systems, such as infrastructure and vehicle engineering, operations and planning must be fine tuned and integrated in order to realise the best outcomes from the whole system. Integrated planning and operational delivery results in more efficient, reliable operations and service provisions to end users and customers.

This approach leads to more sustainable practises with optimal cost management that produces a safer, more economic and financially sustainable railway for the nation's people.

Source: Dept. of Transport, Victoria, Australia, February 2022

Key interventions required to Make Rail passenger services possible on the Tauranga to Auckland Golden Triangle corridor are discussed below.

Below Railhead Infrastructure

Duplication and Alignment

In most areas of the North Island Main Trunk (NIMT) the railway follows the original alignment where it was first built in the 19th century. This is comparable to the parallel State Highway 1, the now Waikato Expressway, where much of it has been rebuilt over the last 30 years with major deviations such as the Huntly and Hamilton city bypass.

The NIMT between Auckland and Hamilton is mostly duplicated already. However, the section from Meremere to Te Kauwhata through the Whangamarino Wetlands, a Wetland Management reserve, currently remains as a single track section.

This is a very geotechnically challenging area and there is limited ability to duplicate/rebuild the railway on the existing alignment. Consideration could be given over time to relocating and duplicating the NIMT further to the west (closer to SH1) or even having the alignment crossing to the other side of the Waikato River north of Huntly to re-join the existing NIMT somewhere south of Tuakau.

A further short section crossing of the Waikato river at Ngaruawahia needs to be duplicated - or preferably, a new alignment could bypass the town of Ngaruawahia altogether and cross the Waikato River to the East of the town. Curve easements and other minor deviations should also be undertaken.

Source: Michael van Drogenbroek, January 2022

The East Coast Main Trunk (ECMT) is all single track. Targeted track duplication together with strategically located crossing loops for trains to pass each other will be required. Key choke points include that immediately east of Frankton Hamilton junction with the NIMT, through the Hamilton CBD tunnel under Centre Place Mall, the bridge across the Waikato river and through Hamilton East suburbs like Claudelands to Ruakura, and the lead up to the western and eastern portals of the Kaimai Tunnel.

Track and Structures

For passenger trains to ultimately run faster, and more reliably, on what is currently a freight only portion of the Rail system, improved track quality is required.

Currently KiwiRail are doing major rehabilitation work on the Auckland Rail network to improve reliability and speed. Further work is needed all the way to Tauranga but this is generally less than Auckland Metro as operational intensity is much less. However, the work required is not insubstantial. This includes improvements to sub-formation, formation, drainage, rerailing, re-sleepering, better rail anchoring to sleepers, re-ballasting, track cant on curves, etc. Further bridge replacements will also be required over time and progress has been made in this area by KiwiRail in recent years.

A gradual raising of speed towards 160kph south of Papakura to Hamilton enabled by investment in upgraded infrastructure, deviations and tilt train technology should be the aim. This paves the way

for the expansion of time competitive services to Hamilton and Tauranga from Auckland.

It is critical that an overall and holistic Improved Rail Asset Maintenance Management Regime be put in place. Whilst initially resulting in higher maintenance costs, ultimately it will result in lower whole of life asset cost which has not always been the case in New Zealand.

This includes things like rail grinding to optimise the wheel to rail interface to get the best out of long-life high value assets. Keeping the network to the higher code required will deliver higher speed and improved, consistent reliability with excellent safety outcomes.

Electrifications

Currently the Auckland Rail suburban network is electrified from the CBD to Papakura in South Auckland. KiwiRail are extending electrification to Pukekohe for suburban services, expected to be completed in late 2024.

Electrification to bridge the gap between the Auckland Metro's 25Kv and the NIMT 25Kv electrifications between Te Rapa and Palmerston North is currently under preliminary investigation by KiwiRail. This project has major benefits for KiwiRail of being able to run electric freight trains through the Auckland isthmus all the way to Palmerston North where a major logistics hub for the lower North Island is planned. The project concurrently enables operation of potential inter regional full electric passenger trains between Hamilton and Auckland

A Pukekohe to Te Rapa Electrification is a pre-requisite move to electrifying the ECMT to Tauranga. This is a longer-term option and has the advantage of being able to reduce current operating constraints by removing diesel trains through the Kaimai tunnel enabling freight trains to be fully electrified from the Port of Tauranga to Auckland and electric passenger trains to operate and better integrate within the Auckland rail network.

Source: Michael van Drogenbroek, April 2021

Kaimai Tunnel Improvements

The Kaimai single track rail tunnel was completed in September 1978 and has significantly more traffic passing through it than was envisioned at the time it was built. Port of Tauranga traffic expansion, together with higher safety standards today, has put pressure on its capacity. As trains passing through it are all diesel hauled there are issues with potential fumes from increased operations that include passenger trains.

If the ECMT was electrified this issue would be significantly mitigated and many more trains could operate through this tunnel – up to 4 per hour (say 40 trains per day each way) across a 20 hour operating day assuming other network capacity improvements were simultaneously made.

Longer term a second tunnel could be considered (but this could be postponed a few decades) where electrification, higher capacity signalling, and duplicated track sections could be constructed either side of the tunnel portals.

Signalling Systems

Signalling is important for many reasons in Rail including safety, reliability and network capacity. A rollout towards a more Communications Based Train Control systems (CBTC) is taking place in the Auckland network. The move to European Train Control Systems (ETCS) as the signalling and control component of the European Rail Traffic Management System (ERTMS) is enabling greater traffic throughput, enhanced safety, train running speed and greater reliability. Over time this could be implemented from Auckland through to Tauranga, mitigating physical track capacity constraints eg. single track systems through the Kaimai tunnel.

Auckland Metro Rail

The Auckland Rail network's constraints that cause rail congestion in Auckland need to be eased. Currently the network is heavily used by Metro passenger services, freight shunts within the isthmus, longer distance freight trains and inter-regional passenger trains (Te Huia and Northern Explorer).

The Auckland Rail Programme Business Case (PBC) is looking forward 30 years into the future to identify interventions to enhance capacity on the Auckland network. Things identified to benefit regional rail access include further third mains (currently under delivery between Wiri and Westfield), four, and even six up to six mains, through certain strategic locations.

This will enable a better balance between growing Metro, inter-regional and long distance passenger and freight rail demands by separating out these train types thus enabling more passenger and freight capacity in a less constrained and much speedier fashion. This is critical for adequate passenger rail capacity from Tauranga and Hamilton to Auckland central.

Further projects such as grade level crossings eliminations for road vehicles and pedestrians are required. This is a multi-decade / multi-billion dollar programme of work that is to be progressively delivered. It is critical to the longer term success of regional passenger rail services to Auckland as part of the Golden Triangle

Source: Stadler Website, 2022

Station Locations

On the Golden Triangle, Central Station locations in Tauranga, Hamilton, and Auckland are critical. Ideally station integration into urban form and Transit Oriented Developments would help pave the way for greater efficiency and amenity. In Auckland, Britomart has worked well with the station below ground and development of retail precincts above ground with excellent urban penetration. This is an example of how public/ private organisations can work together to produce better outcomes for all.

The Te Huia service has shown an Auckland Central station location for trains to/from Tauranga is critical for long-term success. The Auckland Rail PBC is currently examining suitable locations in Auckland where inter regional passenger trains

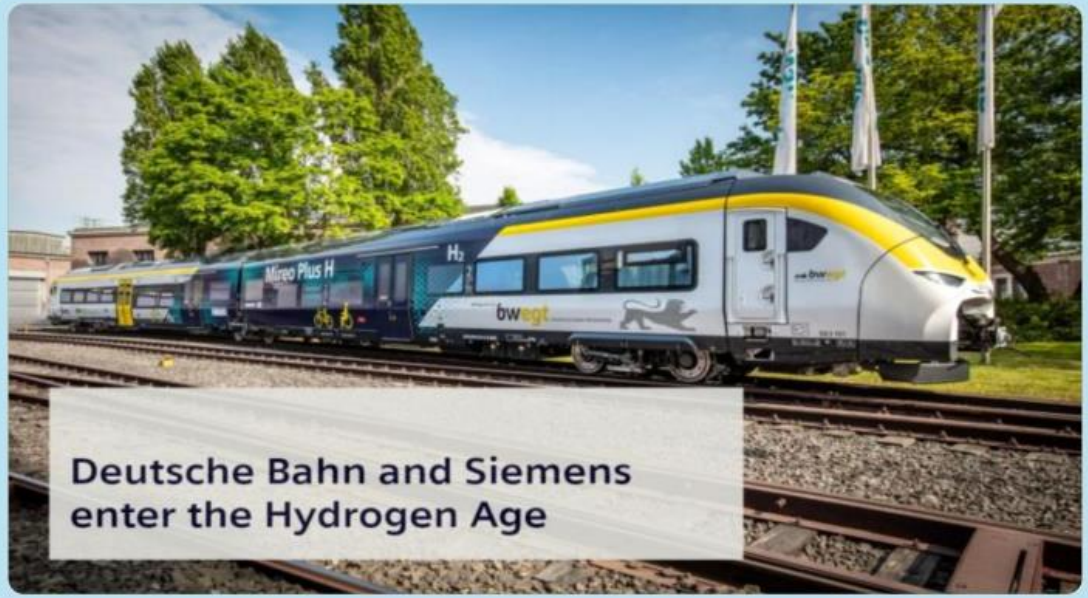
could terminate with better integration into the Auckland Public Transport network. Opportunities could include regional passenger station redevelopment at the current Strand location. A redeveloped Strand station would need to provide better direct access to the Metro network through interconnecting platforms on the Eastern line. Other options could include re accessing Britomart, if compliant rolling stock can be procured.

Currently there are two stations in Hamilton - one at Rotokauri (The Base) and the other at Frankton Junction where the line to Tauranga (ECMT) diverges from the line to the South (NIMT). Various stakeholders have suggested a return to the out-of-use underground platform under the Centre Place Mall in the Hamilton CBD. Tainui Holdings are currently planning to redevelop this area and are promoting the idea of a central Hamilton Station underneath the mall where the current ECMT passes – a Hamilton version of Auckland's Britomart.

Though not without technical challenges (the corridor width and proximity to the Waikato river crossing) the idea certainly has merit and would likely provide a key boost to passenger rail revival in the Waikato with links to Tauranga and Auckland.

In Tauranga a Central Station with good access would be a key enabler for success. A key location could include – Tauranga Dive Crescent, close to where the Kaimai express terminated up to 2001, which is right downtown. Consideration could also be given to a station at Mount Maunganui.

Regional stations are important for regional nodes to capture the largest possible hinterland.



Source: Press Release Siemens, September 2022

As in major centres, you need good integration with existing transport options such as Public Transport, Micro Mobility and access to private motor car such as "Kiss and Ride" and "Park and Ride" facilities to the hinterland. Station locations on the ECMT at Morrinsville and Waharoa would be key. Morrinsville has the original station site used up to 2001 and Waharoa, as the junction site for the Kinleith branch, is only 5km from Matamata and could serve as its station with connecting shuttle bus links like Woodside in the Wairarapa connecting to Greytown.

It could link to the Hobbiton movie set. Other stations could be on the outskirts of Tauranga.

Rolling Stock Assets

For rolling stock timeframes over which the service is to be delivered need to be considered. For example, if the service were to be delivered now, it is likely that diesel locomotive hauled carriage rolling stock similar to Te Huia could be used.

However, if a medium term outlook is taken (which may be appropriate), where for example electrification is completed between Auckland and Hamilton, then Tri-Mode (Electric, Battery, and Diesel) rolling stock could be used. Longer-term, where the corridor is electrified all the way to Tauranga, only fully electric rolling stock would be required.

Looking at a medium term solution, a Tri-mode (25Kv + CI + battery) Multiple Unit (TMU) would be used. This option assumes utilisation of the existing 25 Kv network in place on the Auckland commuter network and a CI engine as well as battery on the non-electrified lines south of Pukekohe to Tauranga – or if electrified to Hamilton, the non-electric option would be used east of Hamilton onto Tauranga only. Battery technology is expected to advance with the passage of time, allowing the battery range to be further extended in the later lifecycle of the trains, while reducing dependency on any form of fossil or other fuel over time.

On a TMU, the CI engine has no mechanical drive and is connected to a generator. When in electric mode, the power is sourced from the overhead line for both traction and to recharge the battery.

Energy from regenerative braking is used to charge the battery until the battery is fully charged when the energy is returned to the overhead line. In self-power mode, traction power is sourced from the battery or a combination of the battery and the CI engine. Additionally, the CI engine can be used to charge the battery.

Diesel or electric trains with an optional fuel cell such as Hydrogen could be considered also. It would be recommended as time passes that a watching brief be maintained over the emerging technology as this area is currently developing quite quickly.

There are such initiatives as the one in Victoria Australia where local labour content is encouraged in the manufacturing/assembly of rolling stock. This has the added benefit of creating new manufacturing jobs that support local industry and improve national strategic resilience.

Source: Michael van Drogenbroek, February 2022

Rolling Stock Facilities

As trains would start & terminate on all three points of the Golden Triangle, stabling and servicing facilities would be required at each of Auckland, Hamilton and Tauranga. Hamilton already has one basic facility for Te Huia. Both Auckland and Tauranga would need additional stabling and Light Maintenance facilities.

Factors to be considered for these facilities could include:

- New heavy maintenance depot to be built at a strategic location eg. Tauranga to boost local economy
- Light maintenance and presentation (cleaning) service facilities
- Interpeak overnight and daytime stabling within Auckland / Hamilton / Tauranga yard regions close to terminal stations
- Delivery of a fixed simulator to support crew training

Case Study: A brief history of rail

"There is more to be done than to make figures to show whether the railways are paying or not. You have to take into account consideration the areas to be tapped and the development of the country through which the railway passes _ instead of that, people bought and sold land and they got rich: and it was almost painted on the clouds the railways were not paying." - Michael Joseph Savage – Evening Post 10 June 1938, 10.

New Zealand has had a few of what could be termed Golden Ages of Rail. This includes the late 1920's with the crack limited express from Auckland running down to Wellington, to Northland or Rotorua, the 1950's when the largest extant of the network existed with crack railcars serving the regions or the early 1970's with the prestigious modern rail passenger services with names like The Blue Streak, The Endeavour, The Silver Star and The Southerner.

Even the 1990's saw a renaissance of sorts with BoP services launched between Auckland and Tauranga (the Kaimai express) and between Auckland and Rotorua (he Geyserland express) after an absence of 25 years of no rail services to those cities. It has always struggled between the desire to turn a financial profit and the more lofty ideal of providing a service to build a prosperous nation.

It is an interesting observation, that in some parts of the network, passenger trains were faster over 50 years ago than they are today.

As the article besides shows, a 1938 New Zealand build railcar, with top speeds of around 70 miles per hour, ran a test service in 1967 from Auckland to Wellington. This railcar running on the original North Island Main Trunk alignment before all the interventions of the 1970's and 1980's like the Mangaweka Deviation, and those associated with the electrification project, ran the trip in a net travel time of 8 hours 42 minutes. This compares to the Northern Explorer trip today taking closer to 11 hours for the same trip. Even more specifically the transit time from Hamilton Frankton to Auckland Central Strand, the exact same origin destination pairs that Te Huia takes today, was completed in 1 hour 34 minutes compared to nearly 2 hours 30 minutes today. This 1967 trial time is only 4 minutes slower than what is being proposed in this paper and well under the over 2 hours road trip that could be achieved at the time in 1967.

Rail in NZ has not only not kept pace with road speed improvements – it has materially worsened against its own self! It is time to fix this!

4 THE EXPRESS, FEBRUARY, 1967 THE EXPRESS, FEBRUARY, 1967 5

RECORD-BREAKING RAILCAR TRIP ON NORTH ISLAND MAIN TRUNK RAILWAY

Railcar Sets New Times On Round Trip

OLDEST RAILCAR on the Wellington - New Plymouth service, RM 30, "Aotea", sped from Wellington to Auckland and back on Saturday, January 28, to break both northbound and southbound time records.

THE CAR, which carried 24 railway enthusiasts as passengers, was chartered by Mr. J. A. Murphy, of Lower Hutt.

The performance of "Aotea" on January 28 was due to several factors, including improvements to the track since 1938, centralised traffic control as compared with the old tablet system, and the enthusiastic co-operation of Railways' personnel.

TIMEKEEPERS

Among the timekeepers on the car were Messrs. T. A. McGavin, K. I. Bullock, K. J. Hesz and G. Troup.

RM 30 left No. 4 Platform, Wellington, at 12.1 am and ran non-stop to Palmerston North, where it departed at 1.40|am.

Other stops were made at Marton (depart 2.18|am), Hunterville (to cross No. 227 Auckland - Wellington Express — depart 2.53|am), Ngaurukehu (to cross southbound "Night Limited"—depart 4.13|am) and Hihitahi, before arriving at Taumarunui at 6.2|am, where the car was refuelled.

SIGNAL CHECKS

The car left Taumarunui at 6.39|am and arrived in Frankton at 8.43am, after four signal checks—at Ongarue, Waimihia, Porootarao and Mangapehi.

After a change of drivers, the car left Frankton at 8.46|am and arrived in Auckland at 10.20|am, 40 min early.

Gross running time was 10hr 19|min, and net 8hr 54min.

LATE DEPARTURE

At Auckland servicing troubles were experienced, causing a late departure of 38min—at 12.38|pm.

Fine weather and relatively light opposing traffic enabled an all-out effort to be made and all lost time was recovered by Taumarunui.

A non-stop run to Frankton (depart 2.15pm) was followed by further stops at Taringamotu (to cross northbound "Scenic Daylight"—depart 4.5pm), Taumarunui (to refuel—depart 4.29pm), Manunui, and Piriaka (to pick up two passengers who were left behind at Taumarunui).

FURTHER STOPS

After further signal stops at Kakahi and Erua, Taihape was reached at 6.46|pm, where the pilot was set down. The car cleared Taihape at 6.48|pm and after a further signal check at Mangaweka, arrived at Palmerston North at 8.15pm.

RM 30 departed Palmerston North after a refreshment stop at 8.25pm and after crossings at Levin and Manakau, arrived back in Wellington at 10.4|pm.

Gross southbound time was 9hr 26|min, and net 8hr 42|min.

RM 30, "Aotea" at No. 1 Platform, Auckland Railway Station, after its record-breaking run from Wellington on January 28.—Photo, K. J. Hesz, "Evening Post" block."

'Surprising Performance' On Main Trunk

ENTHUSIASTS who made the journey by special railcar from Wellington to Auckland and back last month soon found that the schedule, which offered better than usual speeds, was easily improved upon. NEARLY all running was well ahead of schedule and in fact on at least one occasion was 26min in advance.

Only twice did RM 30 fall behind time.

These delays were caused by the unavailability of torque converter oil at Auckland and "lost" passengers at Tasmarunui.

The rate at which "Aotea" progressed up and down the Main Trunk was really surprising—in fact at least one experienced observer considered his records as unbelievable.

"Aotea" probably broke about 90 per cent of all the intermediate records on the run.

The two best times are probably Wellington-Palmerston North, 98min; Frankton-Auckland, 94min.

This remarkable journey recorded by a mere handful of observers will have provided them with intermediate times that will take a long time to improve upon—thanks to the excellent co-operation of NZR train control staff and railcar crews.—"TINHARE."

Previous Records On Main Trunk

THE previous northbound record was held by the General Manager's four-wheel inspection car, "Red Terror," which took 8hr 56 min net, in August, 1938. In December, 1938, RM 31, "Tokomaru," made the run in 10hr 20min gross.

The southbound record of 9hr 45min net was set by RM 9, "Arai-Te-Uru," a Wairarapa railcar, in February, 1938.

STEAM SHUNTING DECLINES

"Express" Reporter

DUNEDIN may beat Timaru to be the first South Island shunting area to be dieselised.

THERE are now four "Dsc's" in use—Nos. 460 to 463—on shunting duties.

Steam only appears for about two hours on odd days.

This is handled by "Ba" 552 one week and "Bb" 626 the next.

"Ba" 551 and "Bb" 633 have not been used recently and are quietly gathering dust in the back of the locomotive shed.

WAGONS SHIPPED TO SOUTH ISLAND

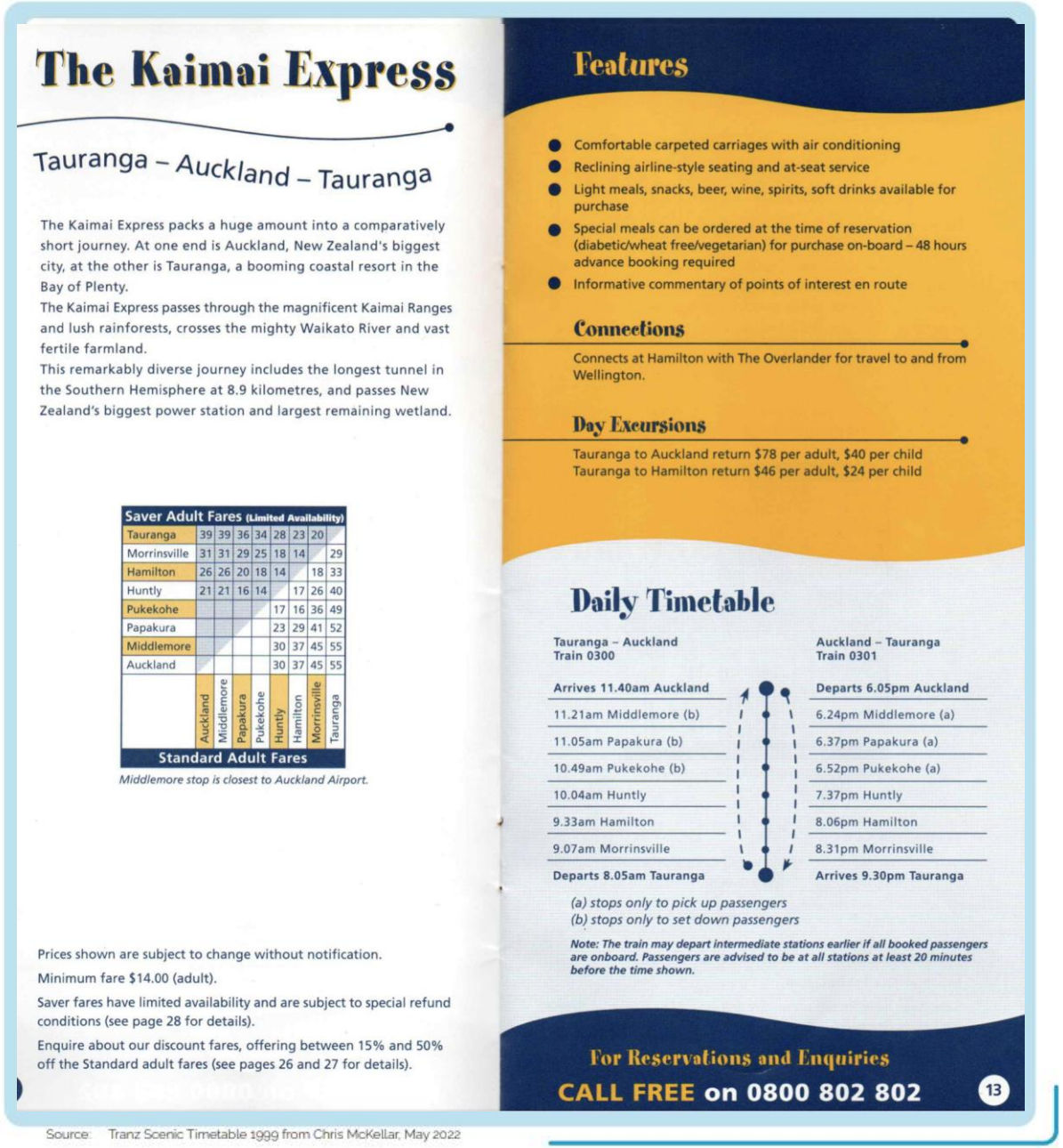
"Express" Reporter

DURING January a total of 45 "Ur" and "Ub" wagons went south on the rail ferry in nests of three (see illustration last month).

To judge from the steady flow of such wagons with ordinary loads to the south the imbalance must have been much more than 45.

Most of the loads were cars and lorries destined for all parts of the South Island.

Fig 1.1: The Express Magazine, February 1967



The Kaimai Express

Tauranga – Auckland – Tauranga

The Kaimai Express packs a huge amount into a comparatively short journey. At one end is Auckland, New Zealand's biggest city, at the other is Tauranga, a booming coastal resort in the Bay of Plenty.
The Kaimai Express passes through the magnificent Kaimai Ranges and lush rainforests, crosses the mighty Waikato River and vast fertile farmland.
This remarkably diverse journey includes the longest tunnel in the Southern Hemisphere at 8.9 kilometres, and passes New Zealand's biggest power station and largest remaining wetland.

Saver Adult Fares (Limited Availability)

	Auckland	Middlemore	Papakura	Pukekohe	Huntly	Hamilton	Morrinsville	Tauranga
Tauranga	39	39	36	34	28	23	20	
Morrinsville	31	31	29	25	18	14		29
Hamilton	26	26	20	18	14		18	33
Huntly	21	21	16	14		17	26	40
Pukekohe					17	16	36	49
Papakura					23	29	41	52
Middlemore					30	37	45	55
Auckland					30	37	45	55

Standard Adult Fares

Middlemore stop is closest to Auckland Airport.

Prices shown are subject to change without notification.

Minimum fare $14.00 (adult).

Saver fares have limited availability and are subject to special refund conditions (see page 28 for details).

Enquire about our discount fares, offering between 15% and 50% off the Standard adult fares (see pages 26 and 27 for details).

Features

- Comfortable carpeted carriages with air conditioning
- Reclining airline-style seating and at-seat service
- Light meals, snacks, beer, wine, spirits, soft drinks available for purchase
- Special meals can be ordered at the time of reservation (diabetic/wheat free/vegetarian) for purchase on-board – 48 hours advance booking required
- Informative commentary of points of interest en route

Connections

Connects at Hamilton with The Overlander for travel to and from Wellington.

Day Excursions

Tauranga to Auckland return $78 per adult, $40 per child
Tauranga to Hamilton return $46 per adult, $24 per child

Daily Timetable

Tauranga – Auckland Train 0300	Auckland – Tauranga Train 0301
Arrives 11.40am Auckland	Departs 6.05pm Auckland
11.21am Middlemore (b)	6.24pm Middlemore (a)
11.05am Papakura (b)	6.37pm Papakura (a)
10.49am Pukekohe (b)	6.52pm Pukekohe (a)
10.04am Huntly	7.37pm Huntly
9.33am Hamilton	8.06pm Hamilton
9.07am Morrinsville	8.31pm Morrinsville
Departs 8.05am Tauranga	Arrives 9.30pm Tauranga

(a) stops only to pick up passengers
(b) stops only to set down passengers

Note: The train may depart intermediate stations earlier if all booked passengers are onboard. Passengers are advised to be at all stations at least 20 minutes before the time shown.

For Reservations and Enquiries
CALL FREE on 0800 802 802

13

Source: Tranz Scenic Timetable 1999 from Chris McKellar, May 2022

Rail System Planning

Rail Planning

Railway Operational Planning is a critical part of delivering any rail passenger service. This needs to see network asset configuration being planned, delivered and ultimately operationalised. This includes consideration of train schedules integrated into planned metro and freight services, locations of stations, servicing facilities, crossing loops and track speeds alongside many other factors.

Timetable Frequency

Train services every two hours from 6 am to 8pm from both Tauranga and Auckland Central Stations should be feasible once configured networks are optimised as described earlier. This would mean about 8 services each way a day between Tauranga and Auckland. This shouldn't pose much stress on network once capacity in the infrastructure is enabled. Until all infrastructure capacity projects are delivered, 4 services each way could be implemented initially.

Improvements to the Auckland Network and between Auckland and Tauranga identified in this chapter should see Hamilton being equidistant (about 90 minutes) between Auckland and Tauranga – a total of 3 hours between the Auckland CBD and Tauranga. By way of comparison, the Kaimai express took about 3 hours 35 minutes in 2001, so this is a good improvement. Further, average speed is more important than top speed and will be improved over time.

Te Huia Integration

There are plans to increase service level improvements on the current Te Huia (Hamilton – Auckland) service over the coming decade as funding and resources allow. The nature of these improvements, including those being proposed under the Faster Rail Business case (known as the Hamilton – Auckland Intercity Connectivity Indicative Business Case) are currently still under discussion. However, it is likely that the corridor will be shared between faster non-stopping and stopping services, at least to some extent, and stations served will be similar.

A Tauranga service is a logical extension of the Te Huia service so rolling stock, heavy maintenance and service facilities can be shared leading to an integrated planning approach.

There may be more frequent services on the Auckland to Hamilton section of the corridor – say, one train an hour with every second service extending to Tauranga. In this respect rail planning across the entire corridor is integral for economies of scale and efficiency. Things such as rolling stock procurement for a replacement Te Huia service should be lined up for the longer-term vision of an extension to Tauranga.

Freight Service Integration

The Tauranga – Auckland corridor is busy for freight and is likely to become busier over the next decade, mostly driven by two major factors:

- The increasing flows to/from the Port of Tauranga to Hamilton and Auckland
- The movement of processed dairy products for Fonterra.

The development of the Ruakura Freight Hub in Hamilton will add more trains to the congested parts of the freight network. To alleviate this pressure, and accommodate passenger trains, careful integrated rail planning needs to take place for network optimisation for both freight growth and passenger traffic. Many improvements identified to handle increased freight flows – for example, third main in the Auckland Metro, or higher speed turnouts for crossing loops enabling passenger trains to pass freight trains at higher speeds – can be easily adopted or enhanced for passenger rail.

Delivery Timing

This is likely a multi-decade development initiative. However, an initial train service by the end of the decade is a possibility with a Te Huia-type service potentially even being introduced sooner. Decisions need to be made over trade-offs between expediency and the ability to deliver initial higher quality services over a longer time.

New Zealand has a lot going on in the rail construction and delivery space presently. Significantly expanded capabilities for timely development are required. Rail knowledge build up through things like a New Zealand Rail Academy, similar to that developed in other countries, is required. Much institutional knowledge was lost from the rail industry between the 1980's and the 2000's. Rebuilding this will come at some cost but over time the creation of new jobs in a reinvigorated industry will yield much broader economic benefits to all of New Zealand.

Final Thought

Providing viable rail services to the nation is not as simple as having a railway line in place, placing a rail vehicle on it, and running a train. Rather rail is an integrated system of components from the bottom up that must be finely honed and tuned together to be fully optimised.

" The railroad track is miles away,
And the day is loud with voices speaking,
Yet there isn't a train goes by all day
But I hear its whistle shrieking.

All night there isn't a train goes by,
Though the night is still for sleep and dreaming,
But I see its cinders red on the sky,
And hear its engine steaming.

My heart is warm with the friends I make,
And better friends I'll not be knowing;
Yet there isn't a train I wouldn't take,
No matter where it's going."

Edna St. Vincent Millay in her poem "Travel", 1921

Source: www.poetryfoundation.org

Evidence

Year	Title
July 2020	Hamilton to Auckland Intercity Connectivity Interim Indicative Business Case, Ministry of Transport (Prepared by WSP), www.transport.govt.nz/assets/Uploads/Report/HamiltonToAucklandIntercityConnectivityIndicativeBusinesCase.pdf
2021	Can't Get There From Here – New Zealand Passenger Rail Since 1920, Andre Brett, Maps by Sam van der Weerden, Otago University Press
Nov 2021	Lower North Island Rail Integrated Mobility Business Case, Greater Wellington Regional Council (Prepared by RPS), www.gw.govt.nz/assets/Documents/2022/05/Redacted-LNIRIM_DBC_V1_20211101_Council-Approved_Redacted.pdf
March 2022	The Future of Regional and Long-Distance Rail in New Zealand – Chartered Institute of Land Transport magazine – (page 9-12), Michael van Drogenbroek, www.heriot-edievale.com
15 June 2022	Presentation to RTSA on the Future of Regional and Long-Distance Passenger Rail in New Zealand – Michael van Drogenbroek, www.heriot-edievale.com

Passenger Rail Article Published in Chartered Institute of Land Transport Magazine

Photo Source: KiwiRail

New Zealand
Australia
UAE

Chartered Institute of Transport – March 2022

A new Etihad Rail prototype long distance passenger train. *Photo: Etihad Rail, UAE*

The Future of Regional and Long Distance Passenger Rail In New Zealand

BY MICHAEL VAN DROGENBROEK

Introduction

New Zealand is at a junction when it comes to inter-regional public transport and passenger rail.

Will it continue its recent path of almost entirely focusing investment on urban passenger rail in the Auckland and Wellington regions? Or is there room to expand planning to include passenger rail reconnecting regions to the main urban areas and extending into New Zealand's Heartland as a national network?

This comes down to the question as to what sort of country we want New Zealand to be? At stake are questions of social equity, national connectivity, transport accessibility, meeting climate change commitments, improved transport safety, regional rejuvenation, affordable housing access, and even patriotic national pride as one joined up nation. Few things give the perception of a united nation like quality national rail networks. In order to get sustainable regional rail up in New Zealand, we will need national consensus to correctly identify viable opportunities and problems we are trying to solve so it can fulfill its potential to help deliver a more sustainable future that helps New Zealand fully realise it's potential.

Brief History Of Rail Passenger

Rail in New Zealand was first delivered by the Provincial Governments from 1863 onwards. About 1873, Julius Vogel, often called the father of New Zealand Railways (and briefly New Zealand Premier), developed a plan for an affordable Cape gauge national rail network spanning the length and breadth of the land. The network was finally completed when the Interisland Picton - Wellington Rail Ferries entered service in 1962. At its height in 1953, 5,690 route km of track were open, however, this has reduced to about 3,700 operational route km today of which only about 700 km is used by passenger trains. In the 1970's, premier trains such as *The Silver Star, The Silver Ferns, The Northerner, The Endeavour, The Blue Streak* and *The Southerner* linked New Zealand main centres into a national network of quality services. Various regional trains also ran to outlying regions. NZ Railways Road Services (buses) initially setup to link areas not served by passenger rail, started replacing rail services over time. This combined Railways network of trains and buses enabled a joined up public transport network across pretty much all of New Zealand. This Railways-run national public transport network was systematically dismantled from 1987 to 2002 when regions were left to determine public transport networks for each individual region. A big change occurred in 1991 when Railways Road Services were sold to a consortium that has since run the InterCity group fully commercial bus network. The national connected public transport network was thus lost.

In 2001/2002 passenger rail services to Rotorua, Tauranga, Napier, Dunedin, and Invercargill ceased. The Auckland and Wellington overnight train ceased in 2004. Only the day time Auckland to Wellington, Picton to Christchurch, and Christchurch to Greymouth rail passenger routes connecting the three main centres via the Interisland Ferry connection remained as 2020 dawned. Over time these services moved more towards a foreign tourist base losing their public transport focus with a new carriage fleet being delivered around 2011.

Cont. on page 10

Current State

COVID-19 has not been kind to long distance rail in New Zealand. The recent announcements by KiwiRail of the cancellation of the *Northern Explorer* and the *Coastal Pacific*, due in part to absence of international tourism, has reduced the New Zealand passenger network to about 700 route km in total including Metro. These two trains were the last rail passenger connection between our largest main centres of Auckland, Wellington, and Christchurch via the Interisland Ferry connection. KiwiRail's current plan, "Project Restart '22", is to introduce "Trains on tour" covering these, and potentially other, routes when high value international tourism rebounds. This involves reconfiguring the rolling stock from the former services into a cruise on rail concept. It seems unlikely there will be any services for people making more general same day journeys between the main centres rendering intercity rail between New Zealand's main centres dead, an outcome that seems to have gone largely unnoticed.

One bright spot is that in 2021 the Te Huia rail passenger service between Hamilton and Auckland commenced. Unfortunately starting in the middle of a pandemic has not helped its passenger loadings due to various restrictions and constraints. However, it is the first service in perhaps a new paradigm and helps give a glimpse of a model as to how regional rail could re-emerge.

The Capital Connection between Wellington and Palmerston North, running since 1991, also continues to run with replacement carriages currently under refurbishment. Further, the TranzAlpine continues its run between Christchurch and Greymouth as a gesture of good will by KiwiRail to promote domestic tourism.

The Way Forward

In deciding what a future inter-regional rail network may look like, it is important to establish what some of the key success factors may be. Key criteria include identifying where rail has a strategic advantage over other public transport modes or private motor car use. Some of these include potential journey time advantages due to superior rail alignments over road such as tunnelling or serving larger intermediate towns on route where large passenger flows can be generated. As an example, the route between Wellington and Wairarapa through the Remutaka Tunnel offers a key advantage over road avoiding the trip over the hills. Whilst strictly not inter-regional, as both the Hutt and the Wairarapa are part of the broader Greater Wellington region, it does demonstrate how such advantages has seen rail flourish.

Areas for regional rail development broadly follow into four sub networks:

The new regional standard gauge VLocity Train heading to Albury from Melbourne – *Photos: Dept. Of Transport, Victoria, Australia*

The VLocity trains can run at faster speeds (up to 130km/h) than classic fleet trains.

Chartered Institute of Transport – March 2022

1. The Golden Triangle: Auckland – Hamilton – Tauranga

This sub network would connect the three major urban areas of Auckland, Hamilton, and Tauranga and is about 250 route km. Close to 50 per cent of New Zealand's population lives in these regions. Reconfiguration of the Auckland Strand Railway Station to an improved regional rail terminus together with good access to a relocated Parnell Station would enable regional passengers to connect with Auckland's City Rail Link stations. A fourth main line should be prioritised between Wiri and Westfield (currently the third main is being built) with third mains extended south towards Pukekohe. This should be part of the Auckland Rail programme business case currently under development as it has the benefit of not only facilitating regional rail connections into Auckland but enables Auckland Transport to implement more express services rather than the frustrating situation that sees all trains stop at all stations from Pukekohe to Auckland Central. This development is one of national strategic importance for all New Zealanders – not just Aucklanders and without it, regional rail into Auckland will surely struggle to develop.

A gradual raising of speed towards 160kph south of Papakura to Hamilton enabled by investment in upgraded infrastructure, deviations, and tilt train technology should be the aim. This paves the way for the expansion of time competitive services to Hamilton and Tauranga. Additionally, a sub-regional Waikato network may develop with commuter type services between Te Awamutu, Hamilton, and Huntly and Hamilton to Morrinsville coupled with the reopening of the underground station at Hamilton Central. Duplication of some track and new signalling east of Hamilton towards Waharoa junction will improve capacity on what is one of KiwiRail's busiest freight corridors. Additionally, electrification south of Pukekohe together with the use of bi/tri-mode (electric, battery, and fuel cell/diesel engine) trains will increase speed efficiency and deal with issues such as fumes in the Kaimai Tunnel. Service patterns with trains every one to two hours on these routes could be feasible over time.

2. Lower North Island: Wellington – Palmerston North – Whanganui

In the lower North Island, a focus on extending metro services north towards Ōtaki and inter-regionally to Levin, Palmerston North, and even Whanganui should be the aim. Much of this is under planning now with regional councils in those areas, with new rolling stock options for these routes being subject to business cases. Extending electrification north towards Palmerston North should be the aim but bi/tri-mode rolling stock provides a cost-effective flexible solution in the meantime. The Wairarapa services, though not inter-regional, will utilise this rolling stock too. A move to higher capacity signalling, such as ETCS L2 along with modest infrastructure will enable better network capacity utilisation and improve transit time.

3. Canterbury and Otago

In the South Island, rapid rail from Christchurch through Ashburton to Timaru would be a priority. These are quite large cities and towns whilst the rail alignment is capable of faster runs compared to road with only relatively modest investment in stations, infrastructure, and rolling stock being required. This could encourage significant regional growth along that corridor. Urban rail initiatives in Christchurch such as suburban trains on the Lyttelton to Rolleston and north to Rangiora corridors are possible. A Christchurch central station at the former Moorehouse Avenue site would only be a short stroll to the CBD.

Dunedin could have a commuter rail service linking Port Chalmers to Mosgiel. The rail route is ideal as the Dunedin Railway Station is very central being near the new hospital, university, and business/retail district. The rail route is more direct and likely quicker than road at peak periods despite motorway improvements in recent years, due to tunnels through Caversham and Chain Hills as well as to Port Chalmers. This could be run by Dunedin Railways, who have a limited operation in Dunedin. Basic metro stations and some limited track duplication may be required.

4. National Network Integration

A national network that largely joins these sub networks already existed up to 2021. First the Northern Explorer, or a replacement service, should remain and ultimately be enhanced connecting the Golden Triangle and lower North Island current services (Hamilton to Palmerston North through the central North Island). Secondly, the Picton to Christchurch Coastal Pacific Train route should be retained. This would give a national network from Auckland to Timaru in the south over time. The TranzAlpine between Christchurch and Greymouth would remain as the world-famous tourist route it is.

Cont. on page 12

Despite the pandemic constraining passenger numbers, the Te Huia is the first service in perhaps a new paradigm and helps give a glimpse of a model as to how regional rail could re-emerge. *Photo Michael van Drogenbroek*

Outside of these areas, regional rail can be rebuilt over time as demand and funding allows. Extensions to Dunedin and Invercargill, Hawke's Bay (Napier and Hastings) and possibly New Plymouth and Northland could be considered. These are unlikely to be a priority for now due to lower passenger demand flows and costly capital requirements to get infrastructure up to acceptable service standards. Success of the earlier states of the network will help here – ambition has no limits. InterCity bus networks could connect these regions to rail-served regions in the meantime, thus providing a truly national affordable inter-regional public transport to the nation's people.

Auckland to Christchurch by passenger rail should survive. After all, we already have a State Highway 1 for roads, so why not a State Railway 1 for rail? A change of mindset is required.

Funding and Process

The Ministry of Transport is currently working on guidance for local councils to assist in the planning, costing, funding, and other considerations for establishing a new regional passenger rail service development framework. Waka Kotahi NZ Transport Agency (Waka Kotahi) responsible for funding the Government's contribution to these services, and KiwiRail, as an operator are both involved in this work.

Currently, regional councils and Waka Kotahi both contribute to funding the two current inter-regional rail services Te Huia and The Capital Connection. The process to consider the viability and establishment of further inter-regional passenger trains in New Zealand is spelt out on KiwiRail's website. It is up to regions to prioritise the new service in their Regional Land Transport Plan (RLTP), used by Waka Kotahi to determine regional transport initiative funding. Including a regional rail proposal in the RLTP clearly signals a new passenger rail service is ready for funding. Only then does Government consider if this should be prioritised in The New Zealand Rail Plan – a 10-year vision for rail in New Zealand to guide future investment decisions.

This approach highlights a significant deficiency in the current process. Everything must be instigated by the regions when inter-regional and national public transport is clearly a national issue. This makes establishing inter-regional rail very challenging.

Where is the national vision and who is responsible for that? Therefore, central Government agency leadership is required together with regional partnerships for inter-regional public transport and rail to develop. The current public transport planning process is heavily biased to intra-regional transport which has worked well for rail in Auckland and Wellington but not so much elsewhere.

The Coastal Pacific Train on one of its northern journeys from Kaikoura to Picton. *Photo: KiwiRail*

The establishment of a national public transport function with a mandate to plan and develop national and regional integrated public transport networks (buses, rail, and ferries) across all New Zealand would be a start. This will help alignment with national development priorities and ensure business cases are funded, not just as a regional activity, but as national development ones. This would not be a replacement for regional council transport functions, rather a framework and resource with a national joined up public transport planning function – something sadly lacking in New Zealand today.

What Needs To Happen Now

As a matter of urgency, we need to stabilise the situation by halting the move to turn the Northern Explorer and Coastal Pacific trains to exclusive tour train service configurations. This would require an interim subsidy by Government to KiwiRail to top up the revenue to keep these routes active. Whilst a subsidy is required, it is still likely a higher fare box recovery than that in Auckland or Wellington metro during COVID-19 – so perspective is required. High value tour trains should probably not be the priority for passenger rail in New Zealand right now.

Further, the business cases under development for new regional rolling stock by Greater Wellington and Horowhenua regions need alignment to national network platform standards so that with modest configuration and design changes for types of propulsion energy/fuel required, this rolling stock could be deployed to other potential routes across New Zealand. Joined up thinking is essential for an affordable national rail passenger network.

A compelling case for all stakeholders for approval of funding and delivery is required. Whilst this maybe a 20-year vision, there is no better time to start than now. Let's do this New Zealand!

Michael van Drogenbroek
Michael is a Transport Consultant/ Advisor at Heriot-Edievale Ltd with 30 plus years' experience. Currently, he is working with various clients on rail, public transport, and freight development projects both in New Zealand and overseas jurisdictions including the Middle East. He has held various senior executive/management roles in public transport, railway and strategic planning in Victoria Australia, Etihad Rail in the UAE together with over 20 years at KiwiRail and its predecessors.

Epilogue - NZ Railways Is Your Railway!

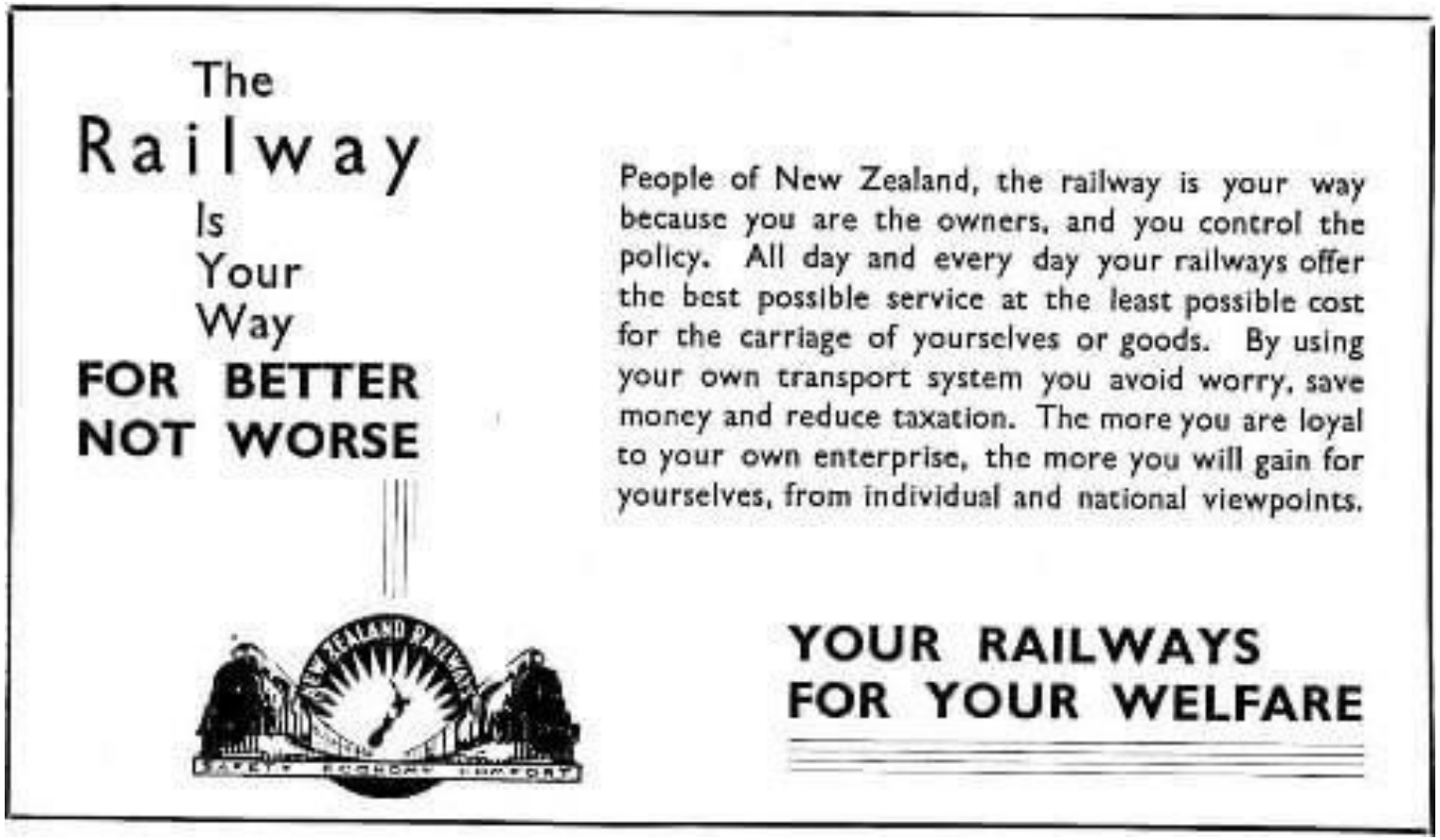


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Photo Source: Michael van Drogenbroek