By email

3 October 2022

File Ref: EXTR-9-1367

Hon Grant Robertson
Minister of Finance
Freepost PO Box 18 888
Parliament Buildings
Wellington 6160
g.robertson@ministers.govt.nz

Hon Michael Wood
Minister of Transport
Freepost PO Box 18 888
Parliament Buildings
Wellington 6160
m.wood@ministers.govt.nz

Tēnā kōrua Ministers

Lower North Island Passenger Trains

Thank you for taking the time on Tuesday 6 September to further discuss our proposal for new lower North Island passenger trains and the funding, scope, and timing options we are working on toward our Budget 2023 funding bid.

To recap, our Budget bid relates to Crown funding for 34-39% of the upfront capital cost of new rolling stock for the services between Wellington and Palmerston North (the Capital Connection) and between Wellington and Masterton (the Wairarapa service). If new rolling stock is not purchased, the services will have to cease from around 2027 as the current rolling stock will be at end of life. In addition, we will have no capacity to increase patronage on the existing metropolitan train network (e.g. Waikanae to Wellington; Upper Hutt to Wellington).

At the 6 September meeting, you raised three potential risk areas for which you and the Ministry of Transport are seeking assurance and greater understanding. The Ministry has previously shared these concerns through our Budget 2022 debrief and we believe we have responded to all their questions.

We would like to take this opportunity to expand on our responses given during the meeting relating to these issues, which are:

- Demand on the Manawatu line
- Technology risk – tri-mode propulsion
- Procurement timeframe.

Demand on the Manawatū Line

The Ministry pointed out that most of the demand on the Manawatū line will be for people travelling between Levin and Wellington and question the need for the proposed number of trains to travel to Palmerston North.

We agree that the highest demand will come from the Levin to Waikanae catchment, and this is further illustrated by the high population growth forecasts for the Kāpiti Coast and Horowhenua districts[1]. Territorial authorities along the rail corridor are now exercising a range of planning tools to support increasing population growth and density.

However, the LNIRIM proposal is not simply a Wellington-centric commuter option. If we wish to drive mode shift to access employment, education, and whanau, we need to provide increased frequency in the peak and throughout the day, throughout the entire corridor between Palmerston North and Wellington. Only then will we create the flexibility and utility that people require to enable them to consider mode shift to public transport.

As a comparison the current Wairarapa service has offered multiple commuter rail options for many decades. With the new rolling stock and the improved network, the current journey time between Masterton and Wellington (approx. 1hr 50min) is expected to reduce to below 1hr 30min. Despite ongoing reliability and punctuality issues on this line (due to rail network infrastructure and rolling stock challenges), patronage continues to grow. Pre-Covid approximately 1,000[2] people went through the Remutaka Tunnel by rail during peak times.

In comparison, the Capital Connection Service has been a single peak service since the late 1990s. The journey time between Palmerston North and Wellington is comparable to the Wairarapa service (2 hrs 5 min) and we expect a saving of approx 10min on this line with the new rolling stock. This improved frequency and reduced journey time will both support regular commuting by train becoming a credible option, like the Wairarapa.

We firmly believe that the improved connectivity and access justifies the additional operational costs of running all services to/from Palmerston North. Because of the journey length, we would require the same number of trains to deliver the proposed Manawatū Line service frequency regardless of whether the service originates/terminates in Levin or Palmerston North. Therefore, the additional benefits of running all services to Palmerston North is greater than the marginal increase in operational cost.

Technology risks – tri-mode propulsion

Our detailed business case evaluated a range of propulsion modes and found the Tri-Mode Unit (TMU) to best meet our requirements and provided the best whole of life benefit cost. TMUs can

[1] Approximately 33% population growth is expected on the Palmerston North to Ōtaki corridor over next 30 years.
[2] Equivalent to approximately 770 return car trips

switch between electric, battery and diesel modes depending on need. The Ministry has raised concern about the technological risks of being an "early adopter" of tri-mode propulsion technology.

Trains have a long life (30+ years) and we need to provide a solution that is fit for a zero-carbon future. While hybrid trains are relatively new, they are being quickly adopted around the world to meet transport emission reduction objectives. We have supplied a list of examples of hybrid trains in-service and on-order below (Annex A). These include Sydney's hybrid Trainlink Regional Rail fleet, and Transport for Wales' Trimode fleet. Officers from both GWRC and Horizons Regional Council attended the InnoTrans rail fair in Berlin in late September to gather further information about the technology and its operating performance.

The technology is actually very simple, mature, and well proven since it is effectively just an electric train with a battery module and a generator module. The inclusion of a generator module ensures the vehicle range is not limited by current battery capacity. We expect that the generator would be replaced by batteries as technology advances, and in fact it may never be deployed – potentially making the Units bi-mode from the outset.

The investment in a TMU fleet is estimated to cost around 25% more than a conventional Electric Multiple Unit (EMU) fleet for the rolling stock only. However, an EMU fleet would require full electrification of the line. Our assessments show that it is not economically viable to electrify the Wairarapa line, and that electrification of the NIMT between Waikanae and Palmerston North would add significant cost (>$600M) and build time.

A conventional diesel multiple unit (DMU) with mechanical transmission was not fully assessed in the detailed business case because this would lock in fossil fuel dependence and carbon emissions. A more futureproof DMU variant with electric traction motors and batteries was shortlisted and estimated to be around 5% lower capital cost than a TMU. However, this comes with a significantly higher carbon footprint.

Procurement Timeline

We have been very clear about the immediate need for investment to ensure new trains are available to take over when our carriage fleet is retired in around 2027. We expect that it will take about 5 years from commencement of procurement, through to delivery and commissioning of new rolling stock. This timeframe allows 18 months for the procurement process, and three years to design, build, test, and commission the first train, with the remaining fleet delivered over the following year.

To meet this timeframe, we propose to commence the procurement EOI process ahead of the Budget 2023 funding decision and prepare the RFP ready for release soon after funding confirmation in mid-2023. Confirmation of funding is a vital precursor to commencing a competitive and credible RFP process.

Due to the relatively short time remaining to prepare our Budget 23 funding bid we would like to reiterate our need for Ministry and Treasury officials to work openly and collaboratively with our team and ensure that they give us the opportunity to address any remaining misunderstandings, concerns, or issues they may have with the proposal.

Ngā mihi

Daran Ponter
Chair, Greater Wellington

Rachel Keedwell
Chair, Horizons

ANNEX A: Examples of Hybrid Trains

There are many countries currently using similar technologies. The table below shows examples.

Country		**Manufacturer/ model**	**Order Size**	**Propulsion**	**Status**
Japan		JR East HB-E210	8x 2-car	Hybrid: Diesel + Battery	In service since 2015
	DENCHA	JR BEC819 BEMU	18x 2-car	BEMU: Electric 20kVAC + Battery	In service since 2016
		JR Tokai HC85	64x 2/4-car	Hybrid: Diesel + Battery	Entered service 2022
UK	British Rail Class 769 Flex	Brush 769 Flex	36x 4-car	Converted Trimode	In service since 2020
	British Rail Class 230	Vivarail D-Train	15x 2/3 car	Converted BEMU Electric 750VDC + Battery	In service since 2019
Australia	NSW TrainLink Regional Rail Fleet	CAF Civity Bimode	29x 3/6-car	Hybrid: Electric 1500VDC + diesel	Contract award 2019 Delivery 2023
Italy	Trenitalia 'Blues' regional train	Hitachi HTR.312/HTR.412	43x 3/4-car	Trimode: Electric 3kVDC + Battery + diesel	Contract award 2019 Delivery 2022
Wales		Stadler Flirt Class 231 & 756	35x 3/4 - car	Trimode: Electric 25kVAC + Battery + diesel	Contract award 2019 Delivery 2022
Germany	VMS Chemnitz-Leipzig	Alstom Coradia Continental	29x 3/50-car	BEMU: Electric + Battery	Contract award 2020 Delivery 2023
	HLB		32x 4/5-car		Contract award 2021 Delivery 2023

	VRR & NWL	CAF Civity Bimode	63 units	BEMU: Electric + Battery	Contract award 2021 Delivery 2024
	NEB	Siemens Mireo Plus B	31x 2-car	BEMU: Electric + Battery	Contract award 2021 Delivery 2024/2025
	DB Regio	Stadler Flirt Akku	14x 2-car	BEMU: Electric + Battery	Contract award 2022 Delivery 2026
Denmark		Siemens Mireo Plus B	7x 2-car	BEMU: Electric + Battery	Contract award 2022 Delivery 2024
Sweden	Transitio regional	CAF Civity Hybird	8x 4-car	Hybrid: Electric + Biodiesel	Contract award 2021 Delivery 2026
Ireland	DART+	Alstom X'trapolis battery	13x 5-car	Electric 1500VDC + Battery	Contract Award 2021 Delivery 2025