TE MANATŪ WAKA
MINISTRY OF TRANSPORT

Domestic Transport Costs and Charges

Information session – Rail transport, Coastal Shipping and Interislander

29 August 2022

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Results included in this file may be subject to revision as the project team finalises the estimates for the DTCC Final Report.

Rail freight and long distance passenger rail

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Coverage

Included

- Networks
- Freight
- Long distance pax trains (briefly)

Excluded

- Land leasing
- Interislander ferries (separate presentation)
- Metro trains (covered in the Urban Public Transport session)
- Minor industrial and heritage operations

Values are in 2018/19 dollars

Basic parameters: networks and freight

3,500 route km track mainly single track

258 locomotives 4605 freight wagons

20 m tonnes hauled 2018/19 (note 1)

4,407 m net tonne km (note 2)

8,605 m gross tonne km (trailing)

Net : Gross ratio = 51%

9.6 m freight train km

Freight revenue $402.7 m

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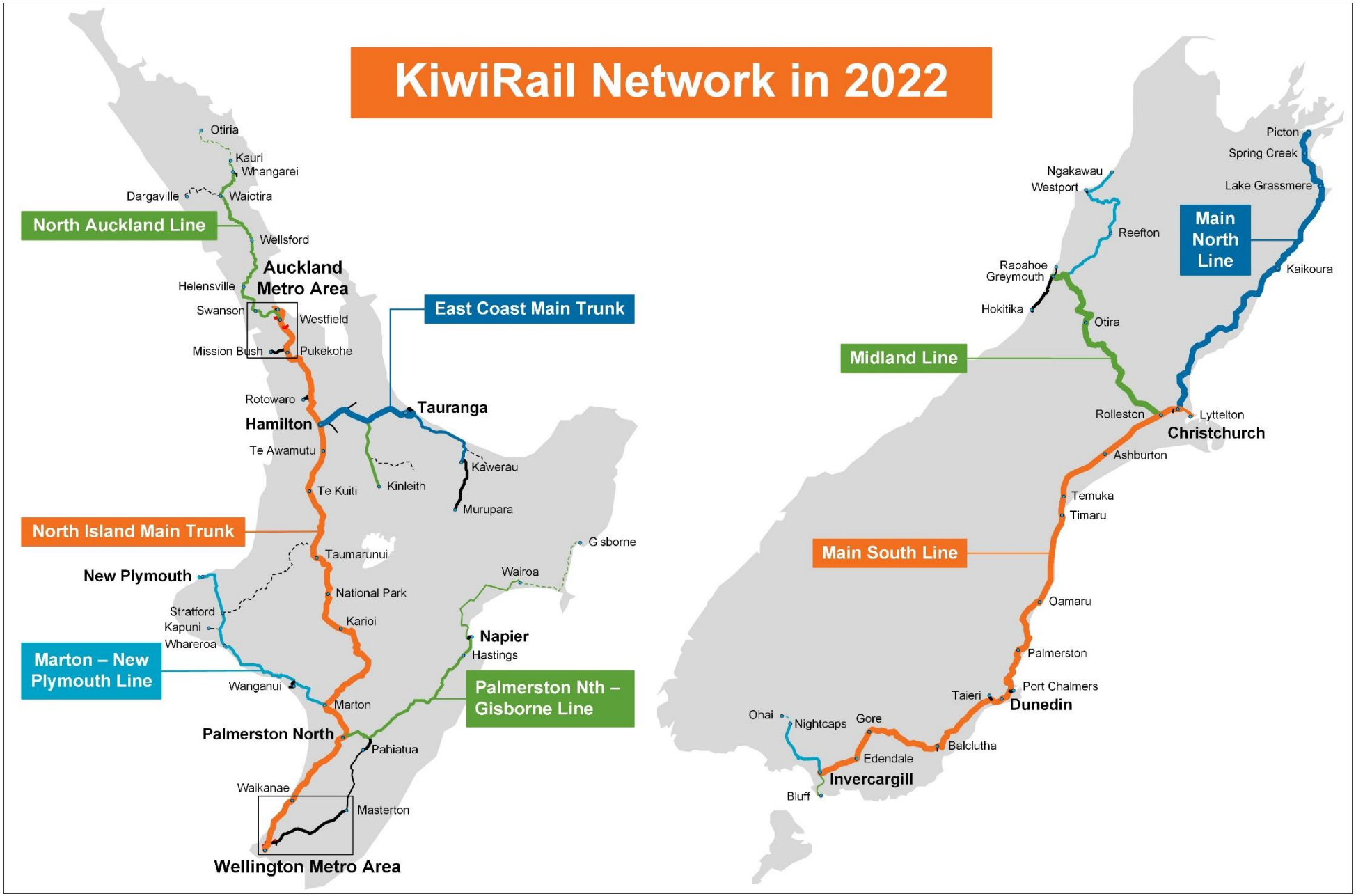
Notes:

1. Including 3rd party container tare weight
2. This reduces to 3,847 m ntkm if excluding 3rd party container tare weight


KiwiRail Network in 2022
Otiria
Kauri
Whangarei
Dargaville
Waiotira
North Auckland Line
Wellsford
Auckland Metro Area
Helensville
Swanson
Westfield
Mission Bush
Pukekohe
East Coast Main Trunk
Rotowaro
Hamilton
Tauranga
Te Awamutu
Kawerau
Kinleith
Te Kuiti
Murupara
North Island Main Trunk
Gisborne
Taumarunui
Wairoa
New Plymouth
National Park
Stratford
Kapuni
Karioi
Whareroa
Napier
Hastings
Marton – New Plymouth Line
Wanganui
Palmerston Nth – Gisborne Line
Marton
Palmerston North
Pahiatua
Waikanae
Masterton
Wellington Metro Area
Picton
Spring Creek
Ngakawau
Westport
Lake Grassmere
Main North Line
Reefton
Rapahoe
Greymouth
Kaikoura
Hokitika
Otira
Midland Line
Rolleston
Lyttelton
Christchurch
Ashburton
Temuka
Timaru
Main South Line
Oamaru
Palmerston
Taieri
Port Chalmers
Dunedin
Ohai
Nightcaps
Gore
Balclutha
Edendale
Invercargill
Bluff

Key freight statistics

- The largest part of the freight business is import-export containers (“IMEX”), regardless of whether the container tare is included.
- Most traffic is in the Auckland - Bay of Plenty “Golden Triangle”
- Apart from the domestic business, average hauls are relatively short.

In millions (except indicated otherwise)	**IMEX**	**Domestic**	**Bulk**	**Forestry**	**Total (including other)**
Tonnes, freight only	7.9	1.6	2.8	4.8	17.3
Ntkm, freight only	1,473.5	917.4	738.8	683.5	3,847.0
Ntkm, incl 3rd party container tares	1,888.1	1,031.8	753.0	688.2	4,407.4
Average haul (km)	187	573	264	143	222

KiwiRail Ltd, an SOE

It operates networks and rail services (excluding urban) as an integrated business

Ownership	
Land	NZ Rail Corp, also an SOE, leased to KiwiRail
Metro infrastructure	Owned and managed by KiwiRail
Metro services including rolling stock	Auckland Transport, Greater Wellington RC

Networks now government funded through Rail Network Investment Plan ("RNIP"); did not apply in 2018/19

- Rail operations need licence granted by Waka Kotahi.
  - Extensive regime principally aimed at safe operation
  - Safe system approach - safety "so far as is reasonably practicable"
- KiwiRail manages access to the rail network. Access granted to other licensed operators by KiwiRail.

New network funding arrangements

- In force from FY 2021/22
- Networks (infrastructure) still integrated but separately accounted for
- Aim to give effect to Rail Plan (produced by MoT, consistent with the Govt Policy Statement on transport)
- Publicly funded through NLTF and Rail Network Investment Programme (RNIP)
- RNIP covers all “below rail” activities, ie infrastructure. Average of $444m a year for 10 years to give a “resilient and reliable” railway.
- KiwiRail (on behalf of freight users) pays a Track User Charge aimed at recovering variable costs of network. Being phased in, will recover 40% of variable costs by year 3

DRAFT RESULTS

Operating and Investment costs

Operating and investment costs		2018/19
Network (freight)	Asset charge (@4%)	$260.7 m
	Depreciation (equivalent)	$217.2 m
	Operations and Maintenance	$89.6 m
Freight train services	Detail redacted	$477.5 m
Total freight operation and capital costs		$1,045 m

- Annual capital costs - depreciation not good indicator (impairment)
- Estimated on steady state basis for major assets

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Return on capital (freight and passenger)

The economic rate of return for the whole study is 4% real

Applied as rail's "asset charge" on previous slide

Asset type	Valuation $m	Return at 4%, $m pa
Land	1,508	60.3
Infrastructure	5,010	200.4
Locomotives	597	23.9
Wagons & Containers	362	14.5
Passenger cars	90	3.6
Other assets	201	8.0
Total	**7,768**	**310.7**

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Basis of Valuation

Infrastructure

- Value as given in Govt Financial Statements
- Prepared om ODC basis
- Adjusted to exclude metro assets (using KR information)

Rolling stock

- Valued at replacement costs for the whole fleet
- **Less** an optimisation allowance, and assumed to be at half life

Land from Govt Financial Statements

NZRC land valued at $3.5bn

Analysed by parcel description with shared lines allocated on train km	
Metro pax	$1.4 b
Freight & long distance pax	$1.5 b
Total rail use	**$2.9 b**

Other assets at book value

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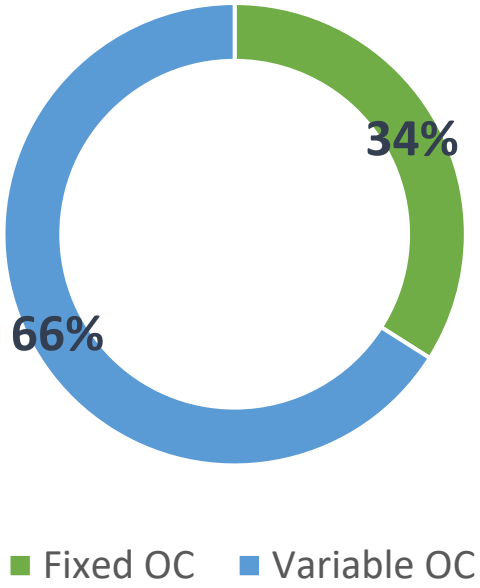
Variability of costs: operating

Most operating costs vary with changes in output (tonne km)

Total fixed operating costs = 34% of total operating costs



- Fixed costs include ferry, buildings, and corporate
- Networks have higher level of fixed costs (e.g. inspections, and costs that relate to environmental degradation rather than wear)
- Fixed costs assessed in TUC work as 59% of network op costs; 75% when buildings corporate, and (part of) train control are included

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Variability of costs - capital

Much of KiwiRail's capital base consists of very long lived assets

- Tunnels
- Formation
- Bridges

these are fixed costs as they do not vary with usage

A portion of track costs is variable, relating to the wear from each train passing. This was assessed as:

- 31% of track costs in the TUC work
- 15% of total network costs
- 11-12% of overall annual capital costs

Locomotives and **wagons** also have long actual lives and are therefore treated as **fixed costs**

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Long distance passenger

- 4 x long distance pax trains
  - 3 x tourist trains
  - 1 x Capital Connection
- 0.5 m pax train km
- 73.1 pax km
- Pax revenue $31M

Capital and operation costs $42 m	
Infrastructure asset charge	$3.0 m
Services asset charge	$3.6 m
Depreciation (equivalent)	$6.0 m
Operations and maintenance	$29.8 m

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Safety performance

Annual average 2010 - 2019	Deaths	Serious injuries	Minor injuries
Level crossings	4.9	3.8	5.1
Unauthorised access	9.7	1.7	1.1
Other	0.2	1.2	0.2
Total	**14.8**	**6.8**	**6.6**

- Very few deaths or injuries involving rail (annual average over ten years)
- No fatalities or injuries from collisions
- Few injuries to pax on platforms or boarding/alighting
- No deaths to staff, but some serious injuries
- Most casualties are third parties interacting with rail
- Primary causes level crossing incidents and unauthorised access

Safety: Level crossings and unauthorised access

- Road users must give way to trains by law
  - Essentially level crossing accidents result from a failure to do that
  - So costs of level crossing accidents are road costs
- About 60%of unauthorised access casualties are suicides - suicides are not counted in road statistics, so removed here
- Costs of death and injury are valued by using MoT's average social cost estimates including Value of Statistical Life (VoSL)

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Safety: allocation of costs

Allocate between rail and other

Annual average (2010-2019)	Estimated social cost $m
Rail	38.2
Road	27
Not transport	26.6
Total	**91.8**

- Rail includes $24.2 m incident costs and other external costs, and $14 m internal costs
- Rail incident and injury related external costs were further analysed by traffic type
- Freight value of $14.5m used in report: comparable figure with road is $10.7m

$m pa	Freight	Urban pax	Long distance pax	Total
Social costs	10.7	8.3	0.8	19.8
Freight delay & TAIC	3.8	0.6	0.1	4.4
Total	**14.5**	**8.9**	**0.9**	**24.2**

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Safety: Road and rail comparison (freight)

Rail has detailed accident statistics, but estimation is needed for comparable road data.

Assumed that accident costs per VKT are constant across truck types.

So costs per ntkm depend on average payload:

- Assumed average payload of 17.3t for a 50 Max vehicle
- Also assumed to be major competitive type vis a vis rail
- On this basis road freight casualties cost 0.73 cents per ntkm
- Rail equivalent is 0.2 cents

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Environmental

From the environmental working papers

Including safety and cap and op costs, economic cost per ntkm is 30c

	Rail freight $m pa	Per ntkm, cents (note)	HCV $m pa	Per ntkm, cents
GHG	13.1	0.3	244	1.0
Local air quality	19.0	0.5	173	0.7
Noise	57.9	1.5	Not available	Not available
Ecological diversity	0.2	0.0	Not available	Not available
Total without safety	90.2	2.3	Not available	Not available

Note: HCV is >10t, approx. 35% of them are >30t. Ntkm for rail exclude 3rd party containers.

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Questions?