APPENDIX D – FREIGHT SERVICE CONSTRAINTS

ILLUSTRATION: IMPACT ON NZ IMPORTS AND EXPORTS MARKET (IMEX)

The Auckland import-export (IMEX) market is principally that operating between the international ports of Auckland and Tauranga (and Northport), involving the movement of containerised freight between ports and inland hubs.

KiwiRail operates a weekly programme moving containers of goods between the ports and inland freight container parks e.g., Southdown or Wiri. These services operate on a set timetable to optimise the physical resources allocated to the freight task. For example, a regular cycle of services that arrive in Auckland from Tauranga have a defined window to be unloaded then reloaded, then the service heads back to Tauranga, where it has a window to unload, and then reload. This service operates cyclically throughout the day.

Under the terms of the Common Access Agreement, rail freight is deprioritised behind passenger services if there is a delay on the network. The delay for freight trains may be up to 30 minutes.

Where Auckland Metro Services already on the Auckland Network have been delayed (other than when the delay is caused by the Auckland Metro Services Operator), other Services (Nominated Freight Services, Long Distance Passenger Services and Freight Services) will be delayed from entering the Auckland Network for the time periods set out in this priority table.

Figure D1: Common Access Agreement Terms (extract)

2. PRIORITY RULES: TIMETABLED SERVICES

PRIORITY RULES TABLE - TIMETABLED SERVICES

NETWORK DELAYS	On-Time Auckland Metro Service *READ DOWN* @	On-Time Nominated Freight Service	On-Time Long Distance Passenger Service	On-Time Freight Service	On-Time Charter Service	On-Time Scheduled Maintenance Service
LATE Auckland Metro Service *READ ACROSS* @	A	B	C	C	D	E
LATE Nominated Freight Service	B / # C					
LATE Long Distance Passenger Service	B / # C					
LATE Freight Service	C / # D					
LATE Charter	C / # D					

A	Run affected Auckland Metro Services correspondingly Late unless otherwise requested by the Auckland Metro Services Operator.
B	Delay no longer than 10 minutes.
C	Delay no longer than 30 minutes.
D	Delay no longer than 45 minutes.
E	Delay no longer than 60 minutes provided work can be carried out within the reduced maintenance window or as otherwise reasonably determined after consultation with affected Operators.
#	If an Auckland Metro Service will be consequentially delayed by more than 10 minutes Off-Peak or 5 minutes Peak and Interpeak periods.

Figure D2: Common access agreement – priority rules

Once a train is off schedule, then it is unlikely to be able to recover that time, as its full window is required to unload and reload. This leads to its next departure being off-schedule, and more

vulnerable to incurring additional delays since it is already unable to meet its defined "slot" in the timetable. It cannot recover time by going faster en-route as the network is speed limited. Therefore, the only way for it to regain schedule is to either short-load (i.e., go half empty) or to skip a cycle completely. Both options mean that some freight is left behind and is not transported by rail that day. Such a decision has a commercial implication for the parties involved, with the impacts being, but not limited to:

- Pair of services is cancelled to bring all services back into line with the planned timetables and schedules,
- Reduction of capacity able to be moved in each direction,
- Potential missed shipping line deadlines for loading – freight misses its booked ship and may incur late or additional freight charges,
- Additional roading costs may be incurred as a result, to meet shipping line deadlines,
- Overall, the supply chain loses capacity,
- Loss confidence in the ability of a Metroport integrated rail solution to deliver,
- Potential loss of confidence by shipping lines to use rail as a solution.

As the affected freight represents a significant proportion of New Zealand's imports and exports, the wider impact that this has for producers and distributors is clear, as is their likely lack of confidence in using rail freight networks in the first place.

Problem drivers: Insufficient capacity on network, insufficient resilience on network to recover from any disruptions, reliability issues which undermine confidence in the rail value proposition, uneven loads driving higher costs.

ILLUSTRATION: IMPACTS ON THE DOMESTIC FREIGHT MARKET

The domestic freight network is principally FMCG[6] goods that move between regions on linehaul services. Auckland is a large receiver of imported goods that are unloaded from import containers and stored in domestic warehouses, awaiting orders from customers outside of Auckland. Once ordered, the freight is picked and dispatched, typically moved and consolidated by a freight forwarder e.g., Toll, Mainfreight, Owens etc, and then moved between regions on rail services. The key markets are the larger population destinations, namely Palmerston North, Wellington, Christchurch, and Dunedin.

KiwiRail forms part of the overall supply chain logistics network. The network operates to a standard and typical service offering (each freight forwarder is competing on service reliability). For example, in a typical day the following occurs:

- Local delivery occurs in the morning runs,
- Local pick-ups occur in the afternoons,
- Freight is consolidated into destinations in the early/late evenings,
- Linehaul (road or rail) then departs at set times to arrive at set times – either to meet ferry connections, or to arrive at destination at set times,

[6] Fast moving consumer goods

- At destination, freight is deconsolidated and put into local delivery runs,
- Local delivery runs occur in the mornings.

The characteristics of this process are relatively standard across all freight forwarders. Reliability and capacity are critical, as are factors such as damage levels of freight etc. End customers may move freight forwarders for price, but they often return to those whose service reliability is superior.

The use of rail as part of the overall logistics system places a high reliance on rail being able to deliver a reliable and consistent service. As loads on a single freight train far exceed a load of a single truck, when rail is late it has a much greater impact on more customers than if a single truck arrives late at a destination.

Rail has a slower transit time than road, given the average speed that trains can operate on the existing network. To meet the same arrival time as road, rail needs to depart earlier – this creates a smaller window as freight is consolidated to build and dispatch product on rail. Ideally, rail also have a later departure to allow later arriving freight to be consolidated and loaded into or on rail wagons.

In the Auckland network context, an optimal[7] rail departure time in the evening is as close to midnight as possible. In the mornings an optimal arrival time for rail coming from other regions is prior to 6-7 am. If wagons into Auckland are delayed, freight to customers is likely to miss the morning delivery windows, and it is likely that there will be a shortage of wagons emptied and ready for the afternoon/evening loading window.

Timing of services is therefore significantly driven by the need to arrive in Christchurch early enough for logistics networks to distribute the freight. This in turn is affected by ferry crossings. Currently Auckland metro network capacity dictates the timing and availability of the entire national rail freight chain.

The freight & logistics process for an Auckland-Christchurch journey commencing on Monday is illustratively (and approximately):

- KiwiRail distributes containers to freight forwarders such as Toll, Mainfreight, etc (step not shown in diagram below)
- Customers send freight by road to forwarders throughout the course of the day,
- At ~19:00 on Monday evening, containers are sent to Westfield for compilation into a train,
- At ~22:00 on Monday evening, the compiled train departs Auckland south on the NIMT,
- At ~11:00 on Tuesday train arrives in Wellington,
- Train waits until Ferry arrives for loading.
- At ~15:00 on Tuesday, ferry departs Wellington,

[7] Optimal in this context means most desirable for the time-sensitive supply chain, and therefore the "premium" service offering. For less time-sensitive goods, other timings are available. However, all timings are designed to intersect with ferry sailings, hence are heavily dependent on departing Auckland at the right time to meet those crossings.

- At ~18:30 on Tuesday, ferry arrives Picton,
- At ~21:00 on Tuesday, train departs Picton,
- At ~06:00 on Wednesday, train has arrived in Christchurch and containers and wagons are presented to the forwarders for devanning ready for local delivery to customers.

This is illustrated in Figure D3.

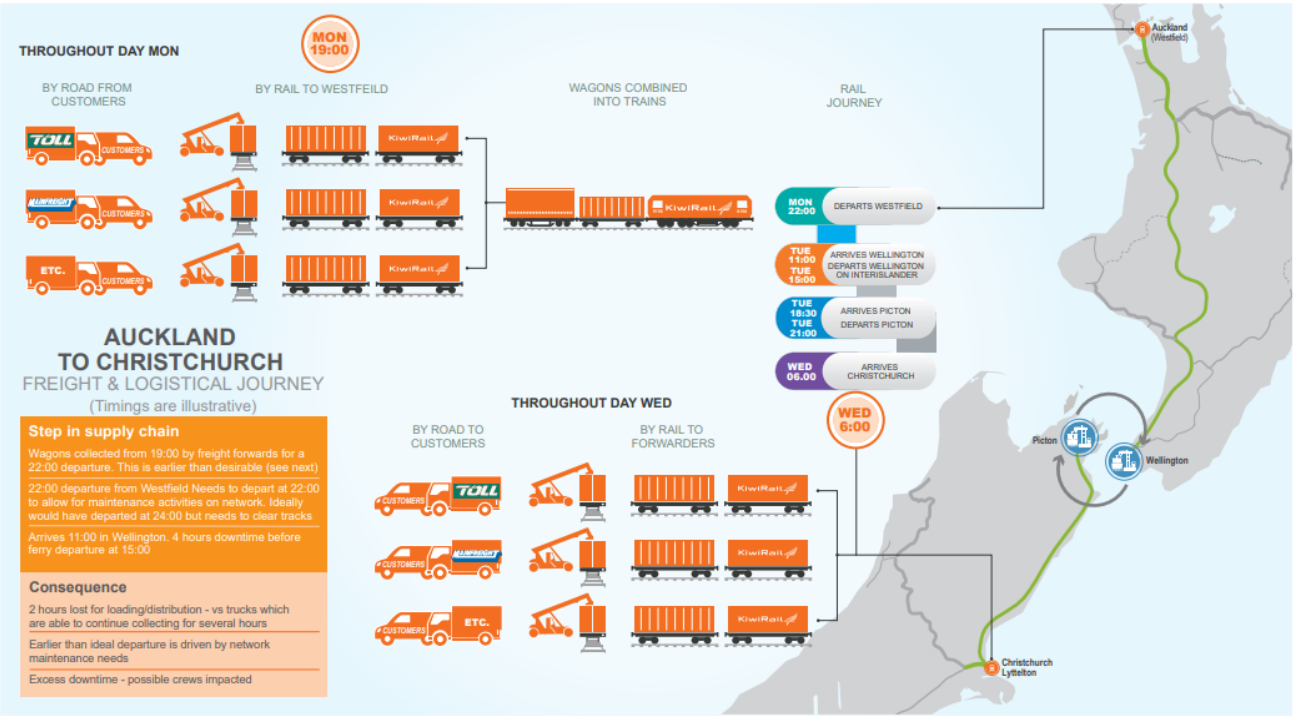

Figure D3: Illustrative Auckland-Christchurch freight journey

Ideally, the timing of rail freight should be driven by required time of arrival. However, because of the lack of available capacity on the Auckland network, the freight must be compiled at Westfield for a 22:00 departure to ensure that the network can be cleared of trains to enable overnight maintenance to take place.

This has several adverse effects, including:

- Freight must be either collected into Westfield earlier than it should be, which reduces the amount of time available for customers to send their freight (= reduction in competitiveness vs road haulage), or freight is forced to travel on alternate transport mode.
- Trains may arrive at Wellington too early, and have excess downtime[8]
- Some of the addressable market spills to road because it has the flexibility for later departure times, has capacity and is considered reliable.

The above illustrates the inefficiencies for the national freight and logistics industries due to insufficient available capacity on the Auckland rail network. These impacts occur daily, by timetabled design (and in this example, illustrate the impact due to maintenance activities having

[8] It is noted that there can also be benefits to early arrival, including de-risking the train timetable against late arrivals or providing resilience in the event external factors cause ferry timetables to change.

to take place at night). If additional disruptions occur that mean trains don't meet the requisite ferry, the impact is felt throughout the national logistics chain. KiwiRail therefore works hard to avoid that occurrence (and would short-load trains rather than miss departure slots).

Problem drivers: Insufficient capacity on network, insufficient resilience, non-segregated tracks leading to conflicts with maintenance and/or metro services which also require track availability.

Government policy[9] indicates a stronger future emphasis on the importance of freight and the role of rail in the national freight task. The Auckland rail network does not have sufficient capacity to accommodate both freight and metro services base case forecast growth, and not to the extent required to meet New Zealand's emission reduction requirements.

[9] https://consult.transport.govt.nz/policy/new-zealand-freight-and-supply-chain-issues/supporting_documents/Freight%20and%20supply%20chain%20issues%20paper%20%20full%20version.pdf