

UNDER the Resource Management Act 1991 ("**RMA**")

AND

IN THE MATTER of a notice of requirement ("**NoR**") for a designation by KiwiRail Holdings Limited ("**KiwiRail**") for the Palmerston North Regional Freight Hub ("**Freight Hub**") under section 168 of the RMA

**STATEMENT OF EVIDENCE OF MARK GEORGESON
ON BEHALF OF KIWIRAIL HOLDINGS LIMITED**

TRANSPORT

1. SUMMARY

- 1.1 I was responsible for preparing the Integrated Transport Assessment, dated 23 October 2020 ("**ITA**") that was included as Technical Report C to the Assessment of Environmental Effects ("**AEE**") for the Freight Hub.
- 1.2 This evidence addresses the likely transport effects of the Freight Hub which include effects on network traffic, travel times, level crossing, road safety, public transport users, walking and cycling routes and on parking. Overall, I consider that with the mitigation proposed by KiwiRail, the traffic effects of the Freight Hub will be acceptable to the receiving environment.
- 1.3 The positive effects of the Freight Hub include those relating to level crossing closures, the opportunities created to improve the public transport facilities at the North East Industrial Zone ("**NEIZ**") and the walking and cycling network in the vicinity of the Freight Hub.
- 1.4 There are a number of transport network upgrades relevant to the Freight Hub which are planned and funded and will be in place before the Freight Hub is operational. KiwiRail has also proposed upgrades to the surrounding transport network. In my opinion, with these transport upgrades in place, the transport network will be readily able to accommodate the traffic volumes generated by the Freight Hub and the adverse effects on the transport network will be minor.

I consider that the effects on travel time will also be minor, and that there will be no adverse safety or parking effects.

- 1.5 My evidence will also respond to relevant transportation issues raised in submissions and confirms that those various transportation concerns will be either avoided, or mitigated, or will be no more than minor. I will also respond to various transportation matters raised in the Section 42A Report, as well as by Ms Fraser and Mr van Bentum in their technical evidence.

2. INTRODUCTION

- 2.1 My full name is Mark Grant Georgeson. I am a transport engineer and am currently the Transport Operations Leader for Stantec New Zealand. Prior to that, I worked as a transportation engineer with Traffic Design Group.

- 2.2 I am a Chartered Professional Engineer and hold a Bachelor of Civil Engineering degree from the University of Auckland. I am:

- (a) a Member of Engineering New Zealand and its specialist Transportation Group;
- (b) an International Professional Engineer;
- (c) a Member of the Institute of Transportation Engineers USA;
- (d) a Member of the Institute of Public Works Engineering Australasia;
- (e) a Member of the New Zealand Parking Association; and
- (f) an Associate Member of the New Zealand Planning Institute.

Experience

- 2.3 I have 29 years' experience as a transportation engineering specialist, practicing throughout New Zealand.

- 2.4 I have been involved in a number of strategic projects within Palmerston North and many site-specific developments, from which I have acquired a broad working knowledge of the area. Key strategic transport studies I have been involved with in the last ten years include:

- (a) the Palmerston North-Manawatu Strategic Transport Study;

- (b) Palmerston North City Council Plan Change for Fringe and Business zoning;
- (c) Palmerston North Airport Limited Plan Change for industrial zoning expansion towards Richardsons Line; and
- (d) Palmerston North City Council Plan Change 15E: North East Industrial Zone Extension, Intersections Assessment Report.

2.5 I have appeared as an expert witness before councils and the Environment Court on multiple projects of various scales.

Involvement in the Regional Freight Hub

2.6 I was engaged by KiwiRail in 2019 to lead the transportation investigations for the Freight Hub.

2.7 I was responsible for the ITA that was included as Technical Report C to the AEE for the NoR.

2.8 I also assisted with KiwiRail's responses to Palmerston North City Council's ("**PNCC**") further information requests in relation to transport matters. Since the lodgement of the NoR, I was responsible for responding to transport matters raised in PNCC's first section 92 Request, dated December 2020 and did so by way of a report dated 12 February 2021 ("**First Section 92 Response**").

2.9 I attended a number of KiwiRail's in-community engagement events (which are described in Ms Poulsen's evidence)¹ and have continued to engage with PNCC's transport advisor, Ms Fraser, with respect to transportation effects of the Freight Hub, including providing further clarification of the transport model in a Technical Memo dated 30 April 2021, **Appendix A**.

2.10 I am familiar with the proposed site for the Freight Hub ("**Site**") and surrounding transport environment, having undertaken numerous site visits during the resource consenting phase of the Freight Hub. I most recently visited the Site on 5 May 2021.

Code of conduct

2.11 I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and that I agree to comply with

¹ Evidence of Olivia Poulsen, dated 9 July 2021, at paragraphs 6.18 to 6.25.

it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise, except where I state that I am relying on the evidence of another person.

3. SCOPE OF EVIDENCE

3.1 In my evidence I:

- (a) provide an overview of the key transportation elements of the Freight Hub that relate to my area of expertise, including describing the transport-related changes that have been made since the NoR was lodged (Section 4);
- (b) summarise the existing transport environment for the Freight Hub (Section 5);
- (c) provide an overview of the predicted trip generation for the Freight Hub (Section 6);
- (d) summarise the assessment of effects of the Freight Hub on the transport network (Section 7);
- (e) outline the recommended mitigation (Section 8);
- (f) respond to the submissions received that relate to the traffic effects of the Freight Hub (Section 9);
- (g) respond to matters raised in the Section 42A Report that relate to my area of expertise (Section 10); and
- (h) comment on the proposed conditions (Section 11).

3.2 I have drawn together a summary and key conclusion, included at the beginning of my evidence.

4. OVERVIEW OF THE FREIGHT HUB

4.1 The Freight Hub is proposed to be located at the north-eastern extent of Palmerston North, shown in blue in Figure 1 below. The Site is bounded generally by Railway Road to the east and north and Roberts Line to the south. The North Island Main Trunk ("**NIMT**") is located on the eastern edge of the Site, with Railway Road lying between the NIMT and the Site. The Palmerston

North Gisborne Line ("PNGL") is located south of the proposed Freight Hub as shown on Figure 1.

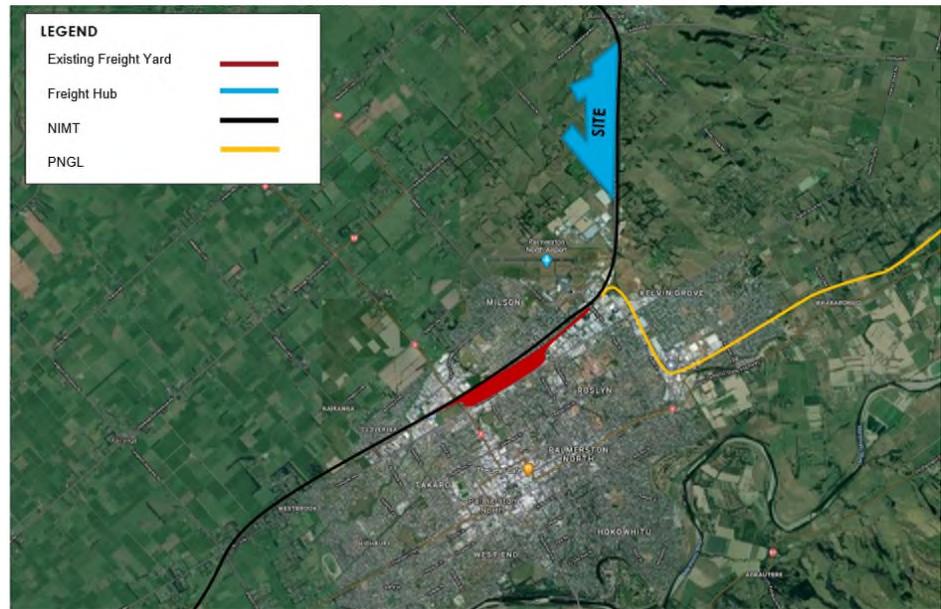


Figure 1: Location of KiwiRail's Existing Freight Yard compared to the Freight Hub

- 4.2 The Freight Hub will be established over 177.7 hectares, approximately four times the size of KiwiRail's existing freight yard at Tremain Avenue ("**Existing Freight Yard**").
- 4.3 The Freight Hub will accommodate similar activities to the Existing Freight Yard including marshalling yards, container terminal, maintenance and network service facilities, and wagon storage. The traffic generating activities of the Freight Hub can be grouped into four general categories:
- (a) depots;
 - (b) freight Forwarders;
 - (c) container Terminal; and
 - (d) logs handling facilities.
- 4.4 A distinguishing feature of the Freight Hub compared to the Existing Freight Yard is the internal roading network for the Site. As proposed, all parts of the Site will be connected internally without the need for vehicles to travel outside the Site to access other parts of the Freight Hub. This contrasts with the Existing Freight Yard which requires use of the external public roading network to access from one gate to another.

4.5 The key transportation-related aspects of the establishment of the Freight Hub are as follows:

- (a) closure of Railway Road from Roberts Line to approximately 50m south of Maple Street;
- (b) construction of a 2.6km new Perimeter Road extending between Maple Street and Roberts Line. This Perimeter Road is required to replace Railway Road and will provide access to the Freight Hub;
- (c) two accesses to the Freight Hub from the Perimeter Road, on the northern and western boundaries of the Site;
- (d) a new intersection of Roberts Line to the new Perimeter Road;
- (e) Richardsons Line east of the Roberts Line / Richardsons Line intersection closed and converted to a Freight Hub access;
- (f) a posted speed limit of 80km/h for the new Perimeter Road. A posted speed limit reduction to 60km/h is envisaged for Roberts Line between Railway Road and the new Perimeter Road, as now intended by PNCC's Speed Limits Bylaw that came into effect on 1 April 2021;
- (g) closure of Te Ngaio Road (approximately 250m from the Clevely Line / Te Ngaio Road intersection);
- (h) closure of the Richardsons Line level crossing along Railway Road;
and
- (i) Sangsters Road improvements to Roberts Line.

4.6 The ITA listed the closure of the Clevely Line and Roberts Line level crossings as a feature of the Freight Hub Project. However, as confirmed in the Section 42A Technical Evidence of Ms Fraser, PNCC has written to KiwiRail seeking approval to close these two level crossings independent of the Freight Hub,² such that the physical changes and associated impacts will be in place well in advance of the operation of the Freight Hub. Since the current bus services follow a route that includes Clevely Line, the established services and bus stops will also change in response to these PNCC-initiated level crossing closures.

² Section 42A Technical Evidence Traffic and Transportation, dated 18 June 2018, of Harriet Fraser, dated 18 June 2021, at [39](e)].

- 4.7 Figure 2 is a schematic plan showing the proposed changes ((a) to (i) listed above) to the road network surrounding the Site once the Freight Hub is operational, in addition to the baseline upgrades I describe later at paragraph 5.28 of my evidence.

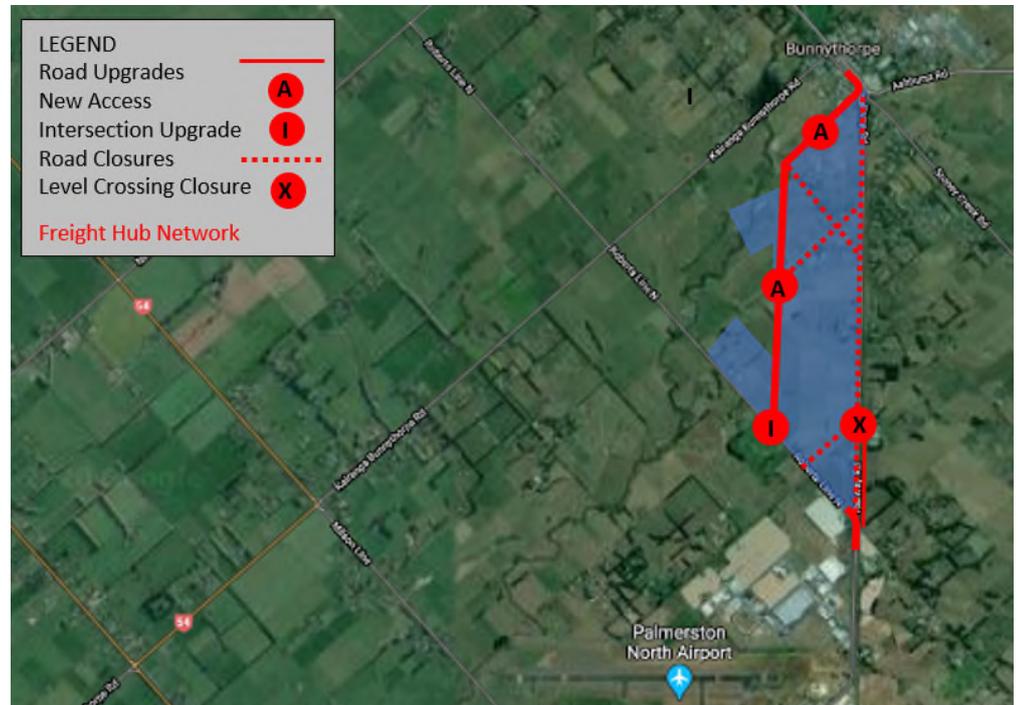


Figure 2: Freight Hub induced network changes

Proposed Staging

- 4.8 Based on KiwiRail's proposed timing of the Freight Hub, I anticipate that the Freight Hub will begin generating operational traffic in approximately 2031. I refer to this as the 'initial stage', which will cater for the existing operation traffic plus a component of additional traffic demand.
- 4.9 I understand that the Freight Hub will be fully operational by approximately 2051. I refer to this as the 'full build out' stage.
- 4.10 Table 9-1 in the ITA presents a breakdown of the anticipated development staging of the Freight Hub by activity.

5. OVERVIEW OF EXISTING TRANSPORT ENVIRONMENT

Existing Freight Yard

- 5.1 The Existing Freight Yard occupies approximately 40 hectares of land and is served by four vehicle accesses onto Tremain Avenue. These are located at the intersections of Tremain Avenue / Toll Access, Tremain Avenue / North

Street, Tremaine Avenue / KiwiRail Access and Tremaine Avenue/Matthews Avenue.

Existing Road Environment

- 5.2 The road network surrounding the Freight Hub comprises multiple road types and hierarchies, which have been identified using the Waka Kotahi NZ Transport Agency ("**Waka Kotahi**") One Network Road Classification ("**ONRC**").
- 5.3 Railway Road is classified as an arterial road,³ comprising one lane in each direction. This road provides access to three level crossings over the NIMT, comprising two KiwiRail owned and operated level crossings (Roberts Line and Clevely Line), which PNCC has requested be closed,⁴ and one privately owned and operated level crossing (Richardsons Line).
- 5.4 Kairanga Bunnythorpe ("**KB**") Road is a two-lane, two-way road and is classified as an arterial road in its length between Campbell Road and Roberts Line and as a primary collector road⁵ Between Roberts Line and Milson Line. It has a level crossing at its eastern end at Bunnythorpe. There are two weight restricted bridges along its length, which restrict the movement of heavy vehicles over 4,500kg, between Te Ngaio Road and Campbell Road.
- 5.5 Campbell Road is an arterial that connects between Feilding and Bunnythorpe township. There is a level crossing at the extension of Campbell Road northwards at Waughs Road. It serves a key commuter route and also supports a portion of the Te Araroa New Zealand Trail ("**Te Araroa Trail**").
- 5.6 Ashhurst Road is classified as an arterial connecting between Ashhurst and Bunnythorpe. This road terminates at the intersection with Stoney Creek Road and Campbell Road.

³ These roads make a significant contribution to social and economic wellbeing, link regionally significant places, industries, ports or airports and may be the only route available to some places within the region (i.e. they may perform a significant lifeline function). <https://www.nzta.govt.nz/assets/Road-Efficiency-Group/docs/functional-classification.pdf>

⁴ Section 42A Technical Evidence of Harriet Fraser, dated 18 June 2021, at [39](e).

⁵ These are locally important roads that provide a primary distributor/collector function, linking significant local economic areas or areas of population. <https://www.nzta.govt.nz/assets/Road-Efficiency-Group/docs/functional-classification.pdf>

- 5.7 Tremaine Avenue is classified as an arterial. From the south, the road continues as an extension of No 1 Line through to Midhurst Street in the Kelvin Grove area.
- 5.8 Tremaine Avenue provides access to the Existing Freight Yard at four locations. This portion of the road is urban, with one lane in each direction and a flush median for most of its length.
- 5.9 Roberts Line is classified as a secondary collector road,⁶ running from Newbury Line in the west to Kelvin Grove Road. There is a level crossing across the NIMT at the Railway Road intersection that PNCC is proposing to close. To the west of Railway Road, Roberts Line provides access into parts of the North East Industrial Zone ("**NEIZ**").
- 5.10 Richardsons Line is classified as an access road and runs along the boundary of the NEIZ and the airport from Milson Line to Railway Road. The privately owned and operated level crossing on the eastern side of Railway Road provides access to two residential properties. Currently, there are no access points into the NEIZ from Richardsons Line.
- 5.11 Clevely Line also has the function of an access road. The road extends between Stoney Creek Road and Roberts Line, with a level crossing at Railway Road.
- 5.12 Te Ngaio Road is an access road. The road runs from Newbury Line to a T-Intersection at Railway Road. There is a bridge along this road that lies in a flood plain.
- 5.13 Sangsters Road is an access road which runs on the opposite (eastern) side of Railway Road. It is formed between Clevely Line and Tutaki Road, with an unformed section (paper road) south of Tutaki Road. The route also forms a part of the Te Araroa Trail.
- 5.14 Table 5-1 in the ITA provides a summary of the characteristics of these and other surrounding roads including hierarchy, speed and typical daily volumes.⁷

⁶ These are roads that provide a secondary distributor / collector function, linking local areas of population and economic sites and may be the only route available to some places within this local area.

⁷ ITA, dated 23 October 2020, at page 18.

Existing Public Transport Network

- 5.15 I have reviewed the bus-services which operate near or through the vicinity of the proposed Freight Hub. There is a single bus route which runs between Feilding and Palmerston North. The route also includes a school bus service.
- 5.16 From the south, the bus route follows Railway Road, crosses the Clevely Line level crossing towards Bunnythorpe, before travelling along Campbell Road towards Feilding. Currently, the only bus stops (one in each direction) within the vicinity of the Freight Hub are along Campbell Road, near Dutton Street. There are 14 scheduled buses on a typical weekday. There are currently no bus stops within or near the NEIZ.
- 5.17 There is an existing passenger train station at the Existing Freight Yard. The passenger train station will remain at the current site at the end of Mathews Avenue.

Existing Walking and Cycling Facilities

- 5.18 I have assessed the active mode network in the immediate vicinity (Railway Road, Roberts Line, Richardsons Line, Clevely Line and Te Ngaio Road) of the Freight Hub. There are currently no formal walking facilities or cycling routes on this network near the Site.
- 5.19 From the north, the Te Araroa Trail follows Campbell Road, switching to Waughs Road at the level crossing, accessing Stoney Creek Road via Bunnythorpe, then traverses Sangsters Road before joining the shared path along Railway Road south of the Roberts Line intersection.
- 5.20 I also note that PNCC is reviewing the active mode connections in the vicinity of the Freight Hub Site as part of the Palmerston North to Feilding Active Mode Connectivity Project,⁸ which intends to provide additional on and off-road walking and cycling routes between Palmerston North and Feilding. Project planning is ongoing.
- 5.21 The Freight Hub will also provide opportunities for improvements to cycling and walking, including along the Te Araroa Trail and new Perimeter Road.

⁸ Active Mode Connectivity Palmerston North to Feilding Single Stage Business Case Report, dated 15 August 2019.

Road Safety

- 5.22 In preparing the ITA for the Freight Hub, I carried out a search of Waka Kotahi's Crash Analysis System ("CAS") for all reported crashes (80 in total) within the vicinity of the Site for the full five-year period from 2015 to 2019. The CAS search area is shown in Figure 3 below.

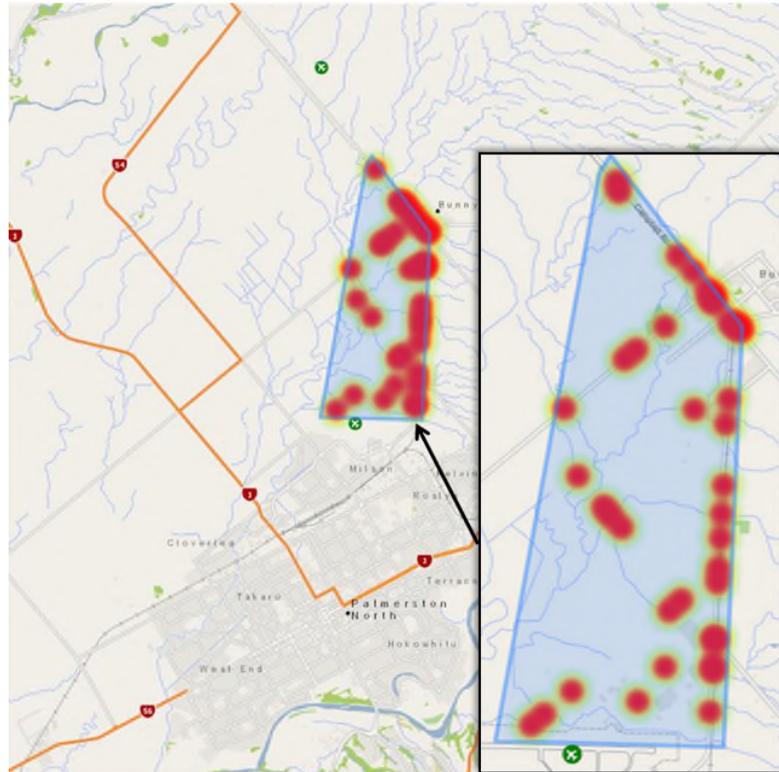


Figure 3: CAS Search Area

- 5.23 From this search, a total of 24 injury crashes were identified of which 2 resulted in fatalities, 7 resulted in serious injuries and 15 resulted in minor injuries. Of the serious and fatal crashes, five occurred on Railway Road, two on KB Road and one each on Campbell Road and Stoney Creek Road.
- 5.24 Twelve percent of all crashes involved heavy vehicles (10 crashes in total). Seven occurred at intersections that carry a high percentage of heavy vehicles, listed below:
- (a) Campbell Road / KB Road;
 - (b) Railway Road / Cleverly Line; and
 - (c) Railway Road / Roberts Line.
- 5.25 More recently, I carried out a further search of the CAS to assess whether any crashes had been recorded since the analysis period detailed in my ITA, and

note that in 2020 there were two fatal injury crashes, one at Railway Road / Roberts Line intersection involving a truck and the other at the Clevely Line level crossing involving a school bus. These crashes have set in motion PNCC's plans to close the Roberts Line and Clevely Line level crossings, independent of the Freight Hub proposal.

- 5.26 I also utilised the Waka Kotahi Mega Maps tool to determine the Collective Risk and Infrastructure Risk Rating ("IRR") for roads in the vicinity of the proposed Site. Mega Maps is an industry accepted risk assessment tool which provides a standardised view of road risk. Collective Risk is a measure of the total number of fatal and serious injury crashes per kilometre (essentially the crash density) over a section of road. The IRR assessment presents the risk of road segments independent of the crash history, representing the underlying risk inherent to the road based on engineering features and traffic volumes. From this assessment, I found that the majority of the roads surrounding the proposed Site have a low to medium Collective Risk, due to the low traffic volumes in the area and low number of fatal and serious injury crashes that have occurred. Railway Road and KB Road have a medium-high risk profile.
- 5.27 In terms of IRR, there is a medium high to high rating for roads in the immediate vicinity of the proposed Site due to their respective infrastructure deficiencies, including Railway Road, KB Road, Ashhurst Road, Richardsons Line, Clevely Line, Te Ngaio Road, and Campbell Road. Their deficiencies include narrowness, lack of shoulders and unprotected roadside hazards.

Future Road Network

- 5.28 As set out in section 7.1.1 of the ITA,⁹ the transportation assessment for the Freight Hub assessed the baseline transportation environment on the basis that the following funded infrastructure improvements will be in place before the Freight Hub is operational, as a "Do Minimum scenario":
- (a) KB Road - Two Roundabouts with SH54 and SH3;
 - (b) KB Road - Road widening between SH3 and SH54;
 - (c) KB Road bridge strengthening and renewal (Jacks Creek and Mangaone Stream);
 - (d) Campbell Road - Bridge Renewal;

⁹ ITA, dated 23 October 2020, at page 39.

- (e) Richardsons Line upgrade: Road widening between Milson Line and Roberts Line. The Roberts Line to Railway Road section will be closed and displaced by the Freight Hub;
- (f) Richardsons Line / Roberts Line intersection upgrade (roundabout);
- (g) Alderson Drive to Richardsons Line: New link to NEIZ off Richardsons Line and an access into NEIZ;
- (h) Setters Line to Richardsons Line: New access into NEIZ; and
- (i) Roberts Line road widening between KB Road and Richardsons Line.

5.29 These Do Minimum scenario improvements are shown schematically in Figure 4 below.



Figure 4: Do Minimum Road Network

5.30 In preparing the ITA, I considered it appropriate that the abovementioned Do Minimum transport network upgrades should form part of the existing environment for the purposes of assessing the transportation effects of the Freight Hub. This is because, in my opinion, there is sufficient certainty that these infrastructure upgrades will be in place before the Freight Hub is

operational and as such form part of the reasonably foreseeable future environment. The Do Minimum upgrades are planned with committed funding as included in the PNCC 10-year plan, the Regional Land Transport Plan and the Waka Kotahi National Land Transport Programme.¹⁰

5.31 I understand that the Palmerston North Integrated Transport Initiative ("**PNITI**") has recently received final endorsement from the Waka Kotahi Board. An updated PNITI programme is shown in the draft Transport Asset Management Plan dated April 2021.¹¹ It includes the following strategic improvements to the transport network in the area surrounding the Site:

- (a) A western bypass of Bunnythorpe – Connecting KB Road to Waughs Road;
- (b) A southern bypass of Bunnythorpe – Connecting Ashhurst Road to KB Road;
- (c) A full ring road - A regional ring road, with a downstream bridge connection across the Manawatu River;
- (d) Reclassifying Ashhurst Road from Arterial to Inter-Regional and associated road upgrades; and
- (e) Reclassifying KB Road from Arterial to Inter-Regional and associated road upgrades.

5.32 I have not considered these changes as part of the existing (future) environment for the Freight Hub, given that there is no certainty around their funding or implementation commitments. Notwithstanding, I am aware that these projects continue to be reviewed by Waka Kotahi and PNCC and are expected to form part of the future roading network of the city.

5.33 In Section 7.1 of the ITA I consider that opportunities for the coordination of future upgrades can be addressed through a Road Network Integration Plan ("**RNIP**"), which is a proposed condition for the NoR. The objective of the RNIP is to ensure that the roading network for the Freight Hub is appropriately

¹⁰

<https://www.pncc.govt.nz/media/3131028/10-year-plan-2018-28.pdf>

<https://www.horizons.govt.nz/HRC/media/Media/Bus-Route-Timetable/Final-RLTP-2015-25.pdf?ext=.pdf>

<https://www.nzta.govt.nz/planning-and-investment/national-land-transport-programme/2018-21-nltp>

¹¹

<https://www.pncc.govt.nz/media/3133853/transport-asset-management-plan-april-2021.pdf>

managed and integrated with the wider transport network. Therefore, the RNIP will provide the basis for a coordinated approach to the required transport network improvements with PNCC and Waka Kotahi, an approach which I consider is entirely reasonable given the multiple parties and timeframes involved.

Future North East Industrial Zone Demand

- 5.34 The NEIZ is located adjacent to the proposed Freight Hub. The NEIZ comprises approximately 240 hectares, with equal parts allocated to the NEIZ and the NEIZ Extension ("**Extension**"). Around 36 hectares of the total NEIZ area is developed to date. I understand that the NEIZ and the Extension is expected to be fully developed prior to the full buildout of the Freight Hub (2051).
- 5.35 On behalf of PNCC I was responsible for preparing the Intersections Assessment Report for Plan Change 15 to the District Plan,¹² for PNCC, which examined the intersection effects of the proposed NEIZ Extension. Drawing from that Report, the NEIZ is expected to generate approximately 13,500 vehicles per day ("**vpd**") and the Extension is expected to generate an equivalent 13,500vpd. The developed area of the NEIZ generates 4,100vpd, with the remaining designated NEIZ land therefore expected to generate a total of 22,900vpd once fully developed. These volumes are relevant in terms of the displacement assessment I make from paragraph 6.8 to 6.10.
- 5.36 For the purposes of my transport assessment, I have assumed that the NEIZ will be fully developed by 2031 and that one-third of the Extension will be developed by 2031. Once fully developed, it is expected that the final form of the NEIZ will have access to Roberts Line, Richardsons Line, and El Prado Drive.

6. PREDICTED TRIP GENERATION

Trip Generation at the Existing Freight Yard

- 6.1 Traffic counts undertaken at each of the four gate accesses at the Existing Freight Yard have informed a baseline traffic position for the Freight Hub.
- 6.2 I have determined the following from September 2019 count data for the Existing Freight Yard:

¹² Palmerston North City Council, Plan Change 15E: North East Industrial Zone Extension, Intersections Assessment Report, TDG, October 2014.

- (a) the busiest periods occurred between 6:00 – 8:00am and 16:00 – 18:00pm;
- (b) the site has a 7-day average daily traffic of 3,650vpd;
- (c) the depot activity generated a daily volume of 750vpd;
- (d) the freight forwarders activity generated a daily traffic volume of 2,450vpd;
- (e) the container terminal generated a daily traffic volume of 300vpd;
- (f) activity associated with logs generated a daily traffic volume of 150vpd; and
- (g) the data showed a light / heavy vehicle split of 80% / 20% for the Existing Freight Yard.

6.3 In order to benchmark these September 2019 counts, I also reviewed the rail freight commodities through Palmerston North for 2018 provided by KiwiRail. From this, I determined the seasonal variation using the commodity tonnage and found that September 2019 represented 86% of the total throughout when compared to an average month. Using this I estimated that the Existing Freight Yard generates approximately 4,200vpd in an average month.

6.4 Further, after discussions with the KiwiRail operations team I considered that the observed heavy vehicle proportion at the Existing Freight Yard was lower than what is typical for the Existing Freight Yard, likely due to the season during which the count was undertaken. Therefore, I have adopted a light / heavy vehicle split of 60% / 40% which I, along with KiwiRail's operations team, consider better represents typical operations.

Trip Generation Rates

6.5 Using the scaled traffic volumes and the traffic generating areas of the Existing Freight Yard, I calculated the trip generation rate per 100m² for each land use. Table 1 below summarises the calculated trip generation rates for the Existing Freight Yard.

Table 1: Calculated trip generation rates at the Existing Freight Yard

Land use	Trip Generation Rates (per 100m ²)	
	PM Peak Hour	Daily
Depots	0.11	1.25
Freight Forwarders	0.34	5.50
Container Terminal	0.13	2.50
Logs	0.08	1.00

Traffic Generation of Freight Hub

6.6 I calculated the potential traffic generation at the Site based on areas for each land use for the initial stage and for the full build out, on the following principles:

- (a) I utilised commodity forecast for 2050 from the National Freight Demand Study¹³ to calculate the potential traffic generating area for depots and logs at the Freight Hub. Based on the projected growth I determined that the traffic generating area associated with depots increased by 60%, and logs increased by 30%, compared with the Existing Freight Yard;
- (b) One of the intentions of the Freight Hub is to maximise the freight forwarders operation. I therefore assumed that the full area allocated to freight forwarders as shown in Table 9.1 in section 9.2 of the ITA¹⁴ will be traffic generating; and
- (c) The area allocated to the container terminal as set out in Table 9.1 of my ITA is more than 13 times larger than the area allocated at the Existing Freight Yard as it includes a significant area allocated for container storage which will not generate any traffic. I therefore assumed that approximately 50% of the area would be traffic generating.

6.7 Table 2 below summarises the anticipated daily trip generation for each land use for the initial stage and the full buildout of the proposed Freight Hub.

¹³ <https://www.transport.govt.nz/assets/Uploads/Report/NFDS3-Final-Report-Oct2019-Rev1.pdf>

¹⁴ ITA, dated 23 October 2020, at page 58.

Table 2: Estimated Daily Traffic Demand for the Freight Hub

Land use	Traffic Generating Area (m ²)		Daily Traffic Demand (vpd)	
	Initial Stage	Full build-out	Initial Stage	Full build-out
Depots	67,000	105,000	850	1,300
Freight	50,000	150,000	2,800	8,500
Container Terminal	80,000	80,000	2,000	2,000
Logs	15,000	20,000	150	200
Total	212,000	355,000	5,800	12,000

NEIZ Displacement

6.8 The Freight Hub is proposed to be developed on a portion of land currently allocated to the NEIZ Extension. This is shown in Figure 5 below.

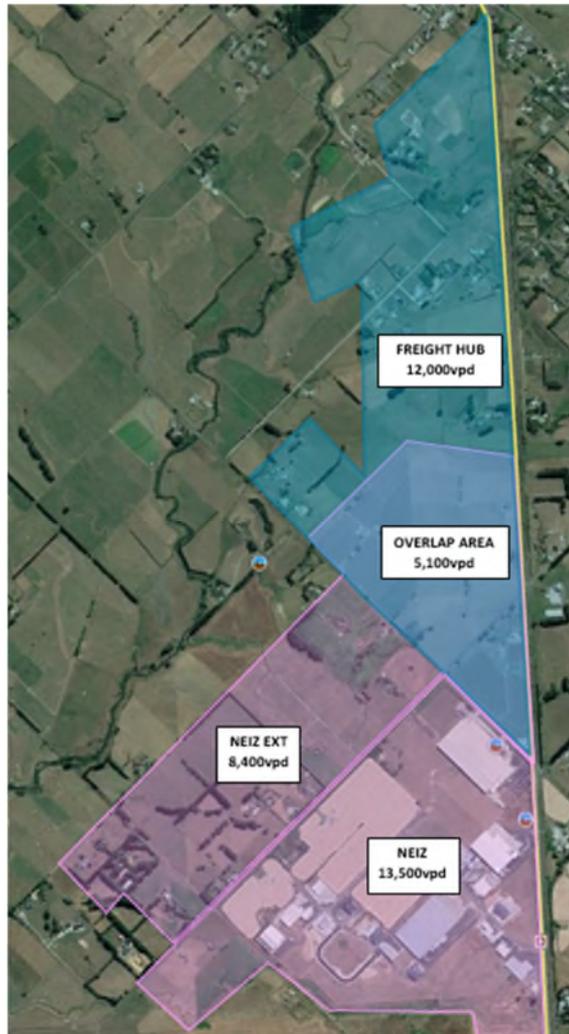


Figure 5: NEIZ and Freight Hub Traffic Generating Area

- 6.9 I have calculated that 37.5% of the NEIZ Extension area will be occupied by the Freight Hub and have assumed that 37.5% of the traffic generated by the full buildout of the NEIZ extension will be displaced by the Freight Hub.
- 6.10 Considering the above, I conclude that the overall net increase to the network due to the full build out of Freight Hub will be approximately 6,900vpd, as set out at Section 7.2.1 of the ITA.¹⁵

Freight Traffic Distribution

- 6.11 I have used Waka Kotahi's Traffic Monitoring System ("**TMS**") to determine the distribution of Freight Hub traffic to the four primary freight routes in and out of Palmerston North, listed below:
- (a) SH3;
 - (b) SH56;
 - (c) Waughs Road / Campbell Road; and
 - (d) Ashhurst Road.
- 6.12 Figure 6 below shows the anticipated heavy vehicle split to and from the proposed Freight Hub.

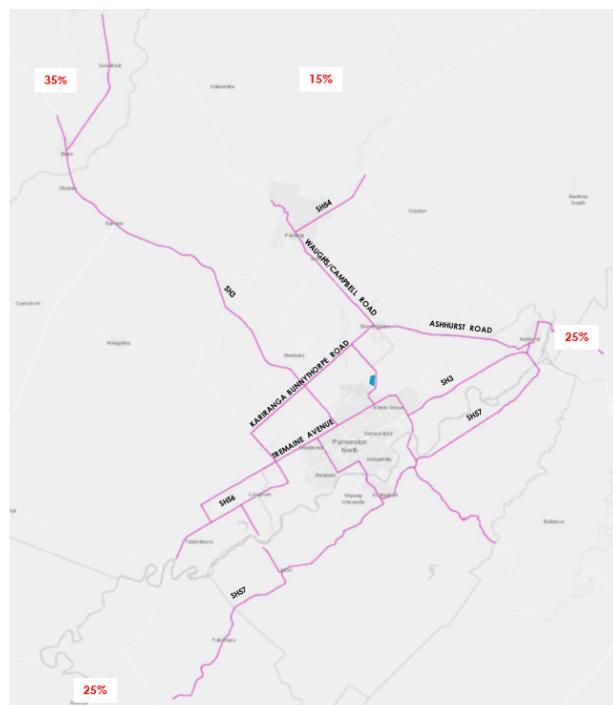


Figure 6: Heavy Vehicle Strategic Routes to Palmerston North

¹⁵ ITA, dated 23 October 2020, at page 42.

7. ASSESSMENT OF EFFECTS ON THE TRANSPORT NETWORK

Assessment methodology

7.1 The seven categories listed below were evaluated for the Freight Hub. I consider these categories to be the primary transport groupings that provide appropriate coverage of the issues for the purposes of this assessment:

- (a) Network Traffic Effects;
- (b) Effects on Travel Times;
- (c) Level Crossing Effects;
- (d) Road Safety Effects;
- (e) Effects on Public Transport Users;
- (f) Effects on Walking and Cycling routes; and
- (g) Parking Effects.

7.2 Each category was rated according to a six-point scale ranging from significantly positive impact to significantly negative impact. Table 4-2 in the ITA outlines the measures used to analyse each category and the thresholds assumed for minor, moderate and significant impact.¹⁶

7.3 I turn to address each category from paragraph 7.1. Before doing so, I note that one of the methodology assumptions shared with PNCC in advance of undertaking the transportation assessment related to the use of the Palmerston North Area Traffic Model ("**PNATM**") as the primary assessment tool for the Project. The PNATM was provided to Stantec by PNCC. The model was validated by Beca and peer reviewed by a third party which concluded that "*Overall, the base-year model is well specified and can be regarded as being fit for purpose for subsequent application to forecasting and specific assessments*".¹⁷

7.4 It is my view that the PNATM provides an appropriate level of detail for informing the NoR assessments, as adopted for this purpose. In the Stantec Technical Memo dated April 2021 ("**Memo**") which was provided to Ms Fraser

¹⁶ ITA, dated 23 October 2020, at page 15.

¹⁷ Palmerston North Area traffic Model, Peer Review Report (including Beca responses to issues raised), Tim Kelly Transportation Planning Ltd, 2015.

to further clarify modelling assumptions and outputs,¹⁸ I stated PNCC's acceptance of the PNATM as an appropriate project assessment tool for the Freight Hub.¹⁹ The Memo also included details of further analysis provided that reconfirmed that the PNATM is 'fit for purpose'. I have attached a copy of the Memo as **Appendix A**.

Network Traffic Effects

7.5 I arranged for the following five scenarios to be assessed using the PNATM:

- (a) a 2021 Existing Scenario (Existing Freight Yard);
- (b) a 2031 Without Freight Hub Scenario;
- (c) a 2031 With Freight Hub Scenario;
- (d) a 2041/51 Without Freight Hub Scenario; and
- (e) a 2041/51 With Freight Hub Scenario.

7.6 The traffic model scenarios are summarised in Table 3 and Table 4 below.

Table 3: Traffic Model – 'without Freight Hub' Scenarios

Scenarios			
Scenario		Additional Land use	Do Minimum Road Improvements
'without Freight Hub	Existing	1. Existing NEIZ– 4,100vpd	None
	Initial Stage	1. Existing NEIZ– 13,500vpd	Detailed in Section 7.1 of the ITA
		2. NEIZ Extension– 4,500vpd	
Full build-out	1. Existing NEIZ– 13,500vpd	Detailed in Section 7.1 of the ITA	
	2. NEIZ Extension– 13,500vpd		

¹⁸ Section 3.3 of the S42A Technical Evidence: Traffic and Transportation references material considered as part of the technical evidence which includes the Stantec Technical Memo dated 30 April 2021.

¹⁹ *'The Cube model is appropriate but should be updated to reflect the change in land use both from the development and the existing railway land'*: Memo - Feedback on draft Assessment Scope and Assumption documents for Transport and Flooding and Stormwater, issued by Anita Copplestone dated 26 May 2020.

Table 4: Traffic Model – 'with Freight Hub' Scenarios

Scenarios				
Scenario		Additional Land use	Do Minimum Road Improvements	Freight Hub Road Improvements
'with Freight Hub	Initial stage	1. Existing NEIZ– 13,500vpd	Detailed in Section 7.1 of the ITA	Detailed in Section 9.3 of the ITA
		2. NEIZ Extension– 4,500vpd		
		3. Traffic at the Existing Freight Yard remains – 4,700vpd		
		4. Initial Stage Freight Hub - 5,800vpd		
Full build-out		1. Existing NEIZ– 13,500vpd	Detailed in Section 7.1 of the ITA	Detailed in Section 9.6 of the ITA
		2. NEIZ Extension (less 37.5%) – 8,400vpd		
		3. Traffic at the Existing Freight Yard remains – 4,700vpd		
		4. Full build-out Freight Hub - 12,000vpd		

7.7 The PNATM, as initially provided by PNCC, permitted all vehicle movements along Flyers Line and Richardsons Line.

7.8 However, PNCC considered that route choice along these two roads for heavy vehicles did not reflect the intended use of the road network. I agree with this assessment, noting the narrow width and surface condition of these roads are such that trucks tend to use alternative routes.

7.9 Therefore, as sought by PNCC, and set out in KiwiRail's first Section 92 Response dated February 2021, the following changes were made to all five scenarios in the PNATM model:

- (a) Flyers Line between Gillespies Line and Milson Line was converted to an access only route; and

- (b) the western end of Richardsons Line was made accessible to light but not heavy vehicles.

7.10 Based on the outputs of the PNATM, Figure 7 below presents the difference in total traffic volumes at a daily level in 2041/51 with the Freight Hub compared to the 2041/51 scenario without the Freight Hub.

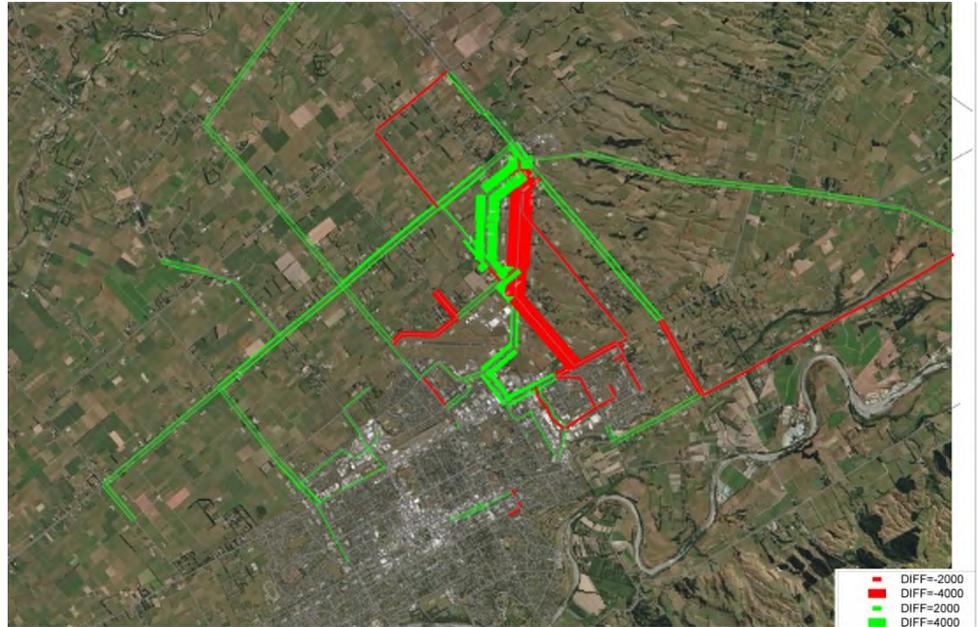


Figure 7: Daily Traffic Volume Shift

- 7.11 The largest traffic shift once the Freight Hub is operational will be from the existing Railway Road to the new Perimeter Road, expected to be in the order of 10,000vpd. The new Perimeter Road will be designed to a level able to accommodate the anticipated future traffic volumes generated by the Freight Hub. I also acknowledge that there will be an increase in traffic along local routes surrounding the Freight Hub including along Stoney Creek Road, Ashhurst Road and the southern portion of Railway Road.
- 7.12 For Stoney Creek Road, the traffic modelling indicates that there will likely be an increase in traffic of around 1,200vpd associated with the full buildout of the Freight Hub. I consider that this is well within the traffic carrying capacity of Stoney Creek Road and note that most of the traffic shifting onto Stoney Creek Road will result from the closure of the Roberts Line level crossing, as now proposed by PNCC independent of the Freight Hub proposal.
- 7.13 Figure 8 below presents the difference in heavy vehicle volumes at a daily levels in 2041/51 with the Freight Hub, compared to the 2041/51 scenario without the Freight Hub.

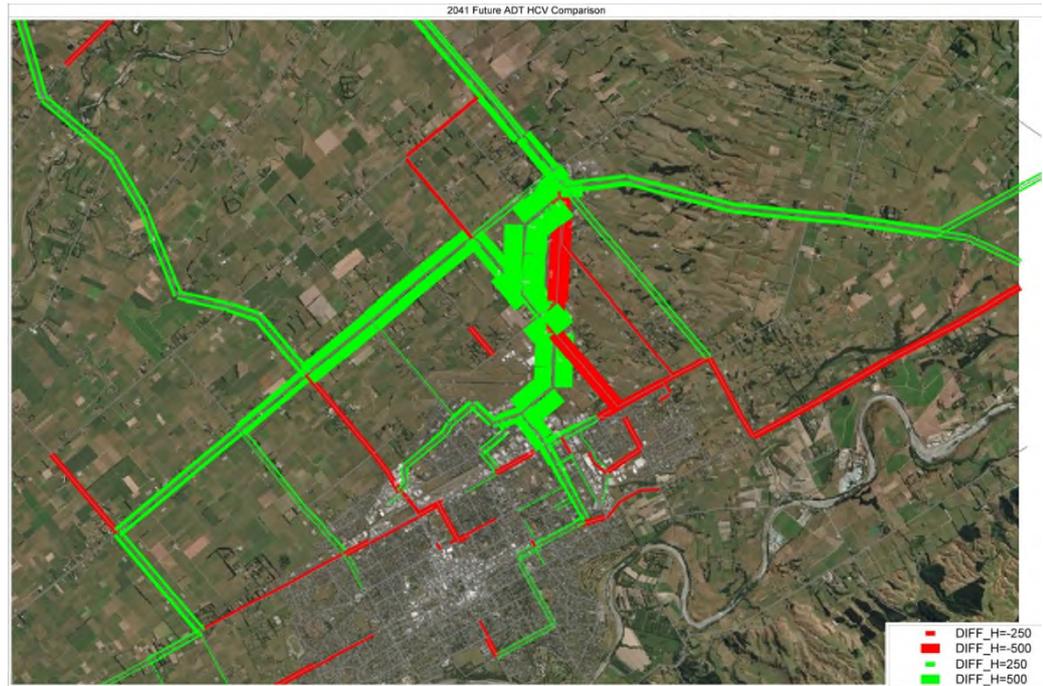


Figure 8: Heavy Vehicle Volume Shift

- 7.14 Traffic modelling indicates an increase in heavy vehicles along SH3, KB Road, Ashhurst Road, Campbell Road, Richardsons Line, and the southern extent of Railway Road. For these routes, I do not consider that any infrastructure upgrades are required beyond what has already been identified by roading authorities (as mentioned in paragraph 5.28 above), what will be provided by KiwiRail (as mentioned in paragraph 4.5 above) and those discussed later in paragraphs 8.2 and 8.3 identified as locations of future deficiencies.
- 7.15 As shown in Section 10.1 of the ITA, modelling of future traffic conditions when the Freight Hub is operational confirms that:
- (a) with the exception of Waughs Road between SH54 to Feilding, the roads in the vicinity of the Freight Hub will operate between LOS A²⁰ to LOS D in the PM peak (worst peak) which indicates generally good traffic operations with moderate delays;
 - (b) Waughs Road between SH54 and Feilding will continue to operate at LOS E regardless of whether the Freight Hub is developed;
 - (c) the new Perimeter Road, when assessed as an arterial road with an operating speed of 80km/h, will operate at a similar performance compared to Railway Road in the 'Without Freight Hub' scenarios;

²⁰ Table 8-1 and 8-2 in the ITA define the Intersection and Link LOS Thresholds used as part of the modelling assessment.

- (d) the SH54 / Waughs Road, Tremaine Avenue/Milson Line, SH3 / Flyers Line, and Campbell Road/KB Road intersections in their existing format will perform poorly with or without the Freight Hub (LOS F).

- 7.16 In my opinion, aspects of the road network will need to be upgraded irrespective of the Freight Hub and I consider that the RNIP will provide the right mechanism for a coordinated approach with Waka Kotahi and PNCC to address identified future deficiencies.

- 7.17 Using traffic volume data extracted from the PNATM I arranged for SIDRA intersection models to be developed for the following intersections in the vicinity of the Freight Hub Site that were identified as critical in the PNATM for the 2041/2051 scenarios:
 - (a) SH54 - Waughs Road;
 - (b) Tremaine Avenue - Milson Line;
 - (c) SH3 - Flyers Line; and
 - (d) Campbell Road - KB Road.

- 7.18 Section 10.1 of the ITA details the proposed upgrades for these intersections. With the identified upgrades the SIDRA analysis indicates that the intersections will perform at an overall LOS C with and without the Freight Hub, as shown in Table 5 below.

- 7.19 A co-ordinated traffic signal for the Campbell Road / KB Road, Railway Road / KB Road, and KB Road level crossing was analysed as a potential solution at this node. I should note that an infrastructure upgrade at the Campbell Road / KB Road intersection could be superseded by the implementation of the western and southern bypasses, depending on timing, and again pointing to the relevance of the proposed RNIP condition to provide a coordinated approach to infrastructure improvements.

Table 5: Full Build out Sidra Results including proposed mitigation

Site	'without Freight Hub' LOS (2041)	'with Freight Hub' LOS (Full Buildout)
SH54 – Waughs Road (roundabout)	C	C
SH3 – Flyers Line (roundabout)	C	C
Tremaine Avenue - Milson Line (increased lanes)	C	C
Campbell Road / KB Road (signal)	C	C

7.20 I conclude therefore that the transport network, with the baseline infrastructure upgrades mentioned in paragraph 5.28 above, the proposed upgrades to be undertaken by KiwiRail (detailed in paragraph 4.5) and the proposed mitigation in 8.2 and 8.3, is readily able to accommodate the traffic volumes generated by the Freight Hub. In my opinion the adverse effects of the Freight Hub on network traffic will be minor.

Travel time effects

7.21 On average, between key origin and destinations, increases in travel times due to increased traffic on the network generated by the Freight Hub will be less than two minutes. The two properties on Richardsons Line (422 and 422A Railway Road) will have a travel time impact of six minutes when travelling to the Bunnythorpe township. It is my opinion that the infrastructure costs required to shorten this travel time by, for example, constructing a new road link to Tutaki Road is not a sustainable response given the majority of related property traffic movements are to and from the south.

7.22 In other instances, changes to travel times are inevitable in response to the PNCC-initiated closures of the Roberts Line and Clevely Line level crossings.

7.23 Travel time impacts due to increased train lengths were analysed based on a train speed ranging between 30-80km/h. The results show that the longer trains (1,500m) could cause an increase in travel times ranging up to one minute (for the first vehicle at the level crossing).

7.24 I consider these travel times to be acceptable for the area. In my opinion the travel time effects of the Freight Hub will be minor.

Level crossing effects

- 7.25 The Australian Level Crossing Assessment Model ("**ALCAM**") was used to assess the impacts of the Freight Hub at level crossings in the area adjacent to the Freight Hub. The ALCAM is an industry accepted risk assessment tool that considers unique crossing infrastructure, user exposure (train and vehicle / pedestrian volumes) and the consequence of an incident to determine a comparative crossing risk score as well as identify some of the key risks at the crossing.
- 7.26 Based on the ALCAM scores, the existing Clevely Line, Richardsons Line and Roberts Line level crossings are high risk crossings. I again note that PNCC has plans to close Clevely Line and Roberts Line at the level crossings, independent of the Freight Hub proposal. The Richardsons Line level crossing will close in response to the Freight Hub Project. The high ALCAM risk will be removed once these crossings are closed.
- 7.27 Based on the ALCAM score, my analysis of the Change in Use (change in train length and traffic volumes) at the Kairanga Bunnythorpe level crossing shows it will remain as a Criterion ¹²¹ which means the crossings has a "Low" ($LCSS \leq 19$) or "Medium-Low" ($LCSS 20 \leq x < 30$) risk score.
- 7.28 The level crossing closures will cause a redistribution of traffic throughout the network and will result in reduced traffic on the Palmerston North Gisborne Line ("**PNGL**") level crossings at Roberts Line and James Line.
- 7.29 Based on the above, I consider that the effects associated with the level crossing closures are overall positive, noting this includes the changes to be advanced by PNCC in respect to the Roberts Line and Clevely Line level crossings.

Safety risk

- 7.30 I undertook the analysis for the safety risk category using the Waka Kotahi Mega Maps Tools. The results are presented in Section 10.4 of the ITA and show that the safety risk will reduce on the following roads once the Freight Hub is operational:
- (a) Railway Road;

²¹ Refer to section 2.2 of the Level Crossing Risk Assessment Guidance (October 2018).

- (b) Perimeter Road (compared to existing Railway Road between KB Road and Roberts Line);
 - (c) Richardsons Line; and
 - (d) Roberts Line.
- 7.31 The traffic generated by the Freight Hub will not result in the risk band (Collective and IRR) thresholds being exceeded for the following roads:
- (a) SH54;
 - (b) Railway Road (between Roberts Line and Airport Drive);
 - (c) Campbell Road; and
 - (d) Waughs Road.
- 7.32 Based on the above, I consider that the Freight Hub will have an overall neutral effect on road safety.

Public transport effects

- 7.33 The bus route connecting Bunnythorpe and Feilding to Palmerston North will be disrupted due to the closure of the Clevely Line level crossing, as planned by PNCC independent of the Freight Hub proposal. Once the Freight Hub is established, an alternative route, along the new Perimeter Road, will present the logical alternative to Railway Road, being 200m longer than the existing route. This will result in an increase in travel time of less than 15 seconds. This redirected route will trigger the relocation of the Bunnythorpe stops near Dutton Street. As such, and including PNCC's plans to close the Clevely Line level crossing, the Freight Hub will not materially impact this public transport route.
- 7.34 In my opinion the Freight Hub will provide an opportunity to improve public transport offerings for the NEIZ and Freight Hub and will therefore have an overall positive effect.

Effects on walking and cycling

- 7.35 The Freight Hub will provide the opportunity for the existing Te Araroa Trail to be improved within the Designation Extent, as well as an opportunity for additional recreational areas around the Freight Hub. The Freight Hub is not expected to disrupt any existing or planned walking and cycling routes.

- 7.36 The design of the new Perimeter Road will include provision for walking and cycling. Therefore, I consider that overall, the Freight Hub will contribute positively to the walking and cycling network in the vicinity of the Site.

Parking effects

- 7.37 All parking requirements for the Freight Hub will be accommodated on Site. Therefore, there will be no adverse parking effects from the Freight Hub.

8. RECOMMENDED MITIGATION

- 8.1 In addition to the infrastructure upgrades I listed above at paragraph 4.5, KiwiRail has proposed to undertake the following mitigation measures, which are reflected in the conditions attached to Ms Bell's evidence at Appendix 1:

- (a) a Level Crossing Safety Impact Assessment ("**LCSIA**") to determine the safety risks and need for safety improvements at selected level crossings;
- (b) a RNIP that has an objective to ensure the roading network for the Freight Hub is appropriately managed and safely and efficiently integrated with the wider transport network. It includes recognising the stopping of roads, level crossing closures, changes to property accesses, the form of pedestrian, cycling and public transport improvements, and the identification of infrastructure works to integrate with other funded works;
- (c) a Construction Traffic Management Plan ("**CTMP**"). It is recommended the CTMP be prepared once details around the Freight Hub construction become clearer. The objective of the CTMP is to minimise adverse effects on property access, traffic safety and efficiency as a result of enabling construction works activities through the construction of all Freight Hub stages; and
- (d) an Operational Traffic Management Plan ("**OTMP**"). It is recommended an OTMP be prepared to manage the traffic generated by the operational activities of the Freight Hub over time and outline the methods that will be undertaken to manage any identified adverse transport effects.

8.2 In addition to the "Do Minimum" requirements outlined above at paragraph 5.28, the following transportation infrastructure upgrades were identified through analysis for the "without Hub" scenario, as upgrades to address existing and future deficiencies. As such, it is anticipated they will be delivered by PNCC and Waka Kotahi. These are:

- (a) upgrade of SH54/Waugh's Road intersection from a priority control to a roundabout;
- (b) upgrade of SH3/Flygers Line intersection from a priority control to a roundabout; and
- (c) upgrade of Tremaine Avenue/Milson Line intersection to include additional through lanes on each approach.

8.3 The analysis also showed that the following intersections and midblock will require upgrades. KiwiRail is conscious that the traffic generated by the Freight Hub will compound conditions in these locations and will work with the roading authority to facilitate improvements:

- (a) intersection upgrade at the Bunnythorpe node incorporating the intersection of Campbell Road/KB Road, the intersection of Railway Road/KB Road, and the level crossing as addressed above at paragraph 7.19; and
- (b) safety improvements along Roberts Line (Railway Road to Richardsons Line).

8.4 Section 11 below discusses the transportation related conditions, which relate to Level Crossings, Road Network Integration Plan and Construction. As I discussed above at paragraph 5.33, the RNIP is extremely important in ensuring the road network supporting the community and the Freight Hub is developed in a fair and holistic manner. This Plan will provide the basis for a coordinated approach to the required improvements with PNCC and Waka Kotahi.

9. RESPONSE TO SUBMISSIONS

9.1 A number of submitters have raised concerns which relate to such matters as dust and noise from traffic. These are more appropriately addressed by other specialists.

- 9.2 Transport matters related to construction, design and operations, and rail versus road mode share have also been addressed by other specialists but are also mentioned at a high level in my further evidence to follow.
- 9.3 A number of the submissions received on the NoR raise matters relating to traffic effects and transportation matters associated with the Freight Hub. I have read and reviewed each submission in so far as they relate to transport matters and consider that they can be grouped into the following topic areas to which this section of my evidence will respond:
- (a) Integration with future transport network upgrades
 - (b) effects of additional traffic generated by the Freight Hub, including the ability for the road network to accommodate the traffic generated by the Freight Hub;
 - (c) property access, including increase in road travel times;
 - (d) safety; and
 - (e) active mode safety.

Integration with future transport network upgrades

- 9.4 Integration has been highlighted as a primary concern for many residents in the area, with particular focus on the integration with Waka Kotahi's strategic roading plans I referred to earlier at paragraph 5.31. Waka Kotahi has released an Interim Business Case ("**IBC**") for the ring road and bypasses at Bunnythorpe, setting out a staged approach for the development of the future roading network.
- 9.5 Although the IBC shows an outline of potential future road network for the area, details around intersection / interchange form, road configuration and design parameters have not yet been developed and therefore could not be considered at the time of preparing the ITA or preparing this evidence. These upgrades are not KiwiRail's responsibility and without this detail I do not consider that it is appropriate to make assumptions for the purpose of modelling the effects of these upgrades. I do note however that the information released in the IBC aligns with that included at Figure 12.3 from the ITA, which I repeat below in Figure 9. This image demonstrates that the proposed road network of the Freight Hub will not foreclose future development of the strategic roading network.

- 9.6 To ensure that the NoR and any future upgrades are appropriately integrated, KiwiRail has proposed a RNIP condition which has been included to ensure the development of the road network in an integrated manner.

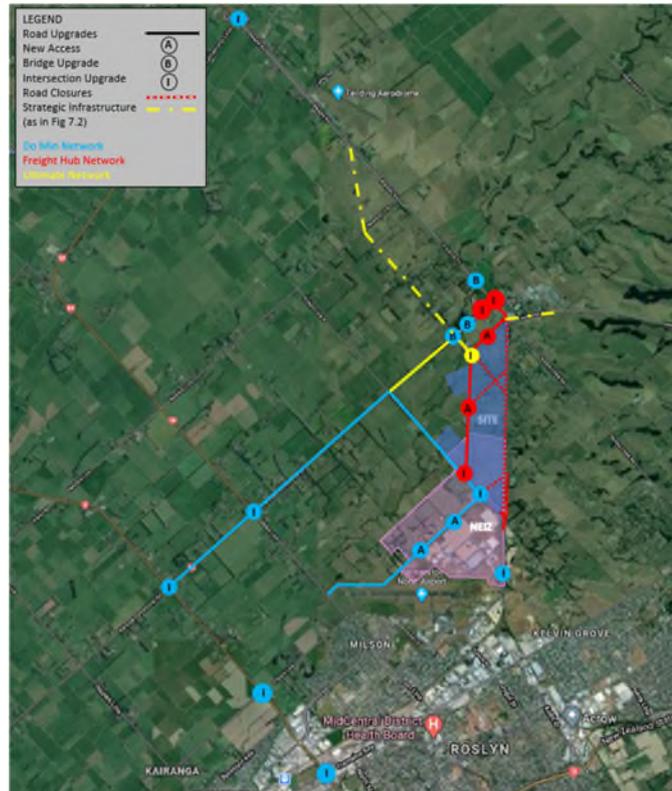


Figure 9: Ultimate Road Network – Do Minimum plus Freight Hub Triggered plus Strategic Infrastructure Improvements

Effects of additional traffic generated by the Freight Hub

- 9.7 Some submitters have expressed concerns that the additional traffic generated by the Freight Hub will have significant effects on the surrounding road network environment. These concerns include:
- (a) the ability for the surrounding road network to accommodate the additional traffic from the Freight Hub;
 - (b) the impacts on the road network between the NEIZ and the Freight Hub;
 - (c) effects on commuters between Feilding and Palmerston North; and
 - (d) effects on Bunnythorpe School.

Effects on the roading network generally

- 9.8 As I set out in the Assessment of Effects section of my evidence (Section 7), the full build out of the Freight Hub is expected to generate approximately 12,000vpd resulting in a net increase on the surrounding road network of 6,900vpd. By implementing the mitigations set out throughout my evidence it is clear that the traffic generated by the Freight Hub can be accommodated on the road network safely.
- 9.9 The 2041/51 PNATM shows that Railway Road is expected to carry approximately 8,900vpd in the future without the Freight Hub. The full build-out scenario with the Freight Hub shows that the new Perimeter Road is expected to carry approximately 9,600vpd. The volume difference is small. Additionally, in my opinion the location of the Perimeter Road and the Freight Hub will not bisect the Bunnythorpe area any more than Railway Road and the NIMT do at present.
- 9.10 I have previously concluded at paragraph 7.20 that the transport network, with the baseline infrastructure upgrades mentioned in paragraph 5.28, in conjunction with the proposed upgrades to be undertaken by KiwiRail (outlined in paragraph 4.5) and those further upgrades identified in paragraphs 8.2 and 8.3, will be able to accommodate the proposed Freight Hub traffic generation in 2051. However, several submitters²² have raised concerns about the effects of the additional traffic on the surrounding rural roads and have suggested that rural roads such as Clevely Line, Parris Road, Tutaki Road, and Sangsters Road, in their current condition, are not adequate to accommodate the traffic generated by the Freight Hub and particularly heavy vehicles.
- 9.11 While the Freight Hub is expected to generate approximately 12,000vpd, the roads identified above by submitters have no direct connection to the Freight Hub or Railway Road. I believe that the rural roads mentioned will continue to be utilised primarily by the immediate traffic and that there will be only a minor increase, if any, in traffic on surrounding local rural roads of a scale that is acceptable on those roads in their current condition. There would certainly be no heavy vehicles associated with the Freight Hub on these roads.
- 9.12 I acknowledge that there will likely be an increase in traffic along Stoney Creek Road as a result of the Freight Hub. The modelling results as set out in Figure 7 of my evidence, indicate that traffic volumes along Stoney Creek Road will be in the order of 2,700vpd (total in both directions) in 2051 with the full buildout

²² Submissions by Rochelle & Rex McGill, Jeff Williams Sonia and Neal Watson.

of the Freight Hub. For heavy vehicles, the results of Figure 8 show that there will be an increase from 8 to 10%. In my view Stoney Creek Road in its current condition has adequate capacity and form to accommodate these changes, noting most will arise in response to PNCC's proposal to close the Roberts Line level crossing independent of the Freight Hub proposal.

- 9.13 Based on the above, and as set out in Section 7 of my evidence, I consider that the surrounding transport network (with the upgrades proposed) will be able to accommodate the additional traffic generated from the Freight Hub once operational.

Connection between NEIZ and Freight Hub

- 9.14 Submitters Nicola Schreus and Thomas Good noted that there is no rail connection between the NEIZ and the Freight Hub and raise concerns that heavy vehicle traffic travelling between the NEIZ and Freight Hub will be mixed with general traffic travelling between Feilding and Palmerston North. As demonstrated in Section 10.1 of the ITA, the Perimeter Road including the roundabout upgrade at the Roberts Line/Richardsons Line intersection will have sufficient capacity to accommodate the traffic generated between these sites without requiring a private siding or other road solutions.
- 9.15 I acknowledge that heavy vehicles will be required to travel a short distance to access the NEIZ from the Freight Hub. Traffic modelling (refer to ITA Section 10.1) indicates that approximately 730 heavy vpd in 2051 will travel between the Freight Hub and the NEIZ, of which 320 heavy vpd will use Richardsons Line for access and 410 heavy vpd will use the El Prado Drive access.
- 9.16 Further, as outlined in the First Section 92 Response, the NEIZ and the NEIZ Extension will have multiple accesses along Richardsons Line and the existing access at Railway Road/El Prado Drive, such that movements will not be concentrated at any one location. Based on the modelling undertaken, no capacity or performance issues have been identified in terms of travel efficiencies between and near the NEIZ and Freight Hub not otherwise addressed by the suite of infrastructure improvements.
- 9.17 Based on the above, it is my opinion that the additional heavy vehicles generated from the Freight Hub will be able to be accommodated on the road network between the NEIZ and the Freight Hub, inclusive of the Richardsons Line upgrade being progressed independently by PNCC.

Effects on commuters between Feilding and Palmerston North

- 9.18 Submitters Andreas Johannes Hofman and Peter Hurly have raised concerns about the effect of the Freight Hub on commuters travelling between Palmerston North and Feilding and have queried whether any infrastructure upgrades will be provided.
- 9.19 The two main travel routes between Feilding and Palmerston North are along SH54 and along Campbell Road (and via the new Perimeter Road in the future). It is my opinion that the closure of Railway Road will have minimal effect on commuters as the new Perimeter Road will provide for an alternative connection, offering a substantially improved design and safer travel compared with the existing road. I also do not consider that there will be adverse effects on commuters' travel time for the same reason. PNCC's transport expert, Ms Fraser, has also agreed that the additional route length of the new Perimeter Road compared with Railway Road will make very little difference to overall travel times.²³

Effects on Bunnythorpe School

- 9.20 The Minister of Education has raised concerns relating to increased traffic passing Bunnythorpe School affecting the safety of those travelling to and from the school during construction and operation. Baring Street (directly adjacent to the School) has no direct link to a preferred traffic route to and from the Freight Hub. In addition, the PNATM shows that the difference in volumes in the "without Hub" and "with Hub" scenarios is very minor at 10 vpd for the Bunnythorpe township combined (for both 2031 and 2041/2051) illustrating that almost no traffic travelling to the Freight Hub will do so via Bunnythorpe township.
- 9.21 In addition, the potential signalisation of the Bunnythorpe node (Campbell Road/KB Road, KB Road/Railway Road and the KB Road level crossing) will improve safety for crossing pedestrians and cyclists. In my opinion this will also improve the safety for pedestrians travelling to and from Bunnythorpe School from Bunnythorpe West.
- 9.22 Overall, I consider that the Freight Hub can be established as proposed in a manner such that the transportation effects, particularly related to safe travel to and from Bunnythorpe School, will be less than minor. I do not consider that any additional upgrades or mitigation (other than those already proposed by

²³ Section 42A Technical Evidence: Traffic and Transportation dated 18 June 2021 at [151].

KiwiRail) are required to address the concerns raised by the Minister of Education.

Property access

- 9.23 Several submitters have raised concerns with respect to property access and safety of the transport network as a result of the infrastructure changes surrounding the Freight Hub.²⁴ The primary focus of the submissions is the impact of the new Perimeter Road on the surrounding road network and the associated infrastructure changes affecting access to property.
- 9.24 The design and construction of infrastructure to be implemented as part of Freight Hub will be undertaken to minimise impacts to property accesses. In that regard, KiwiRail has proposed a condition requiring a Construction Traffic Management Plan ("**CTMP**") to manage and mitigate adverse effects of construction works on property access, traffic safety and efficiency. In my opinion, the preparation of a CTMP will be sufficient to appropriately manage any adverse effects regarding safety and property access.
- 9.25 In regard to Maple Street, the proposed new Perimeter Road has been designed to link into the existing Railway Road on the northern boundary of the Freight Hub Site and will not impact Maple Street directly. The only material change on Maple Street will be the safety benefits at the Maple Street/Railway Road intersection since the proposed new Perimeter Road design will improve the current crest curve south of the intersection and will function with a lower operating speed. It is my opinion that the changes will improve safety at this intersection.
- 9.26 As included in the RNIP condition, all surrounding property accesses directly impacted by the Freight Hub infrastructure changes will be evaluated during the design and construction of the Freight Hub and associated works. Impacted property accesses will be designed in accordance with appropriate standards.
- 9.27 The operations at the Foodstuffs accessways on Roberts Line are not expected to be disrupted by the new Perimeter Road. I acknowledge that there will be an increase in traffic passing the Foodstuffs' site. However, it is my opinion that the reduced speed and changed infrastructure environment will continue to allow for the safe and efficient movement of vehicles into and out of the Foodstuffs' site. I am aware that KiwiRail has been in discussions with

²⁴ Submissions were received by Warren Bradley, Glen & B Karen Woodfield, Rochelle & Rex McGill and Tutaki 2019 Ltd.

Foodstuffs regarding their concerns, and that a design solution is being developed to be shared with Foodstuffs. These discussions are ongoing.

- 9.28 The two properties (422 and 422A Railway Road) that gain access via the Richardsons Line level crossing will in the future gain access via a portion of Sangsters Road which will be formed to intersect with Roberts Line. The formation of this portion of Sangsters Road will be undertaken by KiwiRail, as detailed in the Draft and Indicative Masterplan Cross Sections²⁵ and as provided for in the RNIP and CTMP conditions. I consider that this is an appropriate response to ensure that appropriate alternative access is provided to cater for all traffic movement requirements.
- 9.29 No new or through traffic will occur on Sangsters Road, Clevely Line or Tutaki Road as a result of the Freight Hub. Sangsters Road will not connect between Clevely Line and Roberts Line. Alternative routes via Sangsters Road and Roberts Line have been provided for properties and businesses affected by the closure of the Richardsons Line level crossing.²⁶
- 9.30 In relation to the comment made about the Roberts Line level crossing remaining open, due to the safety risk at this level crossing PNCC has requested that this level crossing be closed, independent of the Freight Hub proposal.
- 9.31 Based on the above, it is my opinion that the adverse traffic effects from the Freight Hub will have a minor effect on the accessibility of the surrounding area.

Closure of Railway Road and Level Crossings

- 9.32 A number of residents and businesses are concerned with the impact of road network changes on daily operations of the surrounding community. The primary network change will be the closure of Railway Road.
- 9.33 The new Perimeter Road is required as a replacement of Railway Road and will provide access to the Freight Hub from the north and west. Its alignment will provide the shortest alternative to the existing alignment of Railway Road. The new Perimeter Road will be constructed before the closure of Railway Road (which is now expressly provided for in the Proposed Conditions) and therefore will not negatively impact on the daily operations of the surrounding

²⁵ <https://storymaps.arcgis.com/stories/e97ac83c3d3049759f754e0e2b64b7e1>

²⁶ Example: Traffic travelling onto Railway Road via the Richardsons Line level crossing will now travel via Roberts Line towards Tremaine Avenue.

community as an earlier closure of Railway Road otherwise would. In addition, the alignment will cause minimal disruptions to the existing road network, as the new Perimeter Road will connect to existing roads at its north and south ends, to Railway Road and Roberts Line respectively.

- 9.34 The redistribution of traffic resulting from the Freight Hub and associated infrastructure changes will be mostly localised, focusing on the primary road network surrounding the Freight Hub Site. Railway Road will have the biggest traffic volume shift onto the new Perimeter Road. SH3, KB Road, Ashhurst Road, Railway Road (south of Roberts Line) Roberts Line, and Richardsons Line will also have an increase in traffic volumes. As demonstrated earlier at paragraphs 7.10 to 7.14, these roads have sufficient capacity to accommodate the changed traffic volumes without lowering existing levels of service.
- 9.35 The Freight Hub is not expected to contribute to traffic increases along Clevely Line, Sangsters Road (north), Parrs Road and Tutaki Road as these roads are not connected to any of the primary traffic routes. A negligible traffic increase is expected along Sangsters Road between Roberts Line and the Richardsons Line level crossing as a result of the 422 and 422A Railway Road. In addition, the Clevely Line level crossing closure will result in less traffic using it.
- 9.36 I acknowledge that the level crossing closures will impact some road users by increasing travel times on select routes. However, as noted in the transport evidence in the Section 42A report, PNCC has written to KiwiRail for approval to close the Roberts Line and Clevely Line level crossings.²⁷ Therefore, the impacts to travel times on existing users from such closings are not directly a result of the Freight Hub Project.
- 9.37 Danelle O'Keeffe and Duane Butts have raised concerns around the suitability of the road network to accommodate heavy vehicle traffic as a result of the level crossing closures. The expected heavy vehicle routes to and from the Freight Hub will utilise roads currently used by heavy vehicles. As analysed by the PNATM (and set out at paragraph 7.14 to my evidence) these roads will have sufficient capacity to accommodate the level of heavy vehicle traffic generated by the Freight Hub.²⁸

²⁷ Section 42A Technical Evidence: Traffic and Transportation, dated 18 June 2021, at [34(e)].

²⁸ This includes consideration of all mitigations outlined in the ITA.

Safety

- 9.38 The safety impact of traffic volume increases on the road network is a concern for a few submitters.
- 9.39 As I have outlined in paragraphs 7.29, 7.30 and 7.31 above, the road safety risk on the surrounding road network is expected to improve or remain unchanged. Although traffic volumes on the road network will increase as a result of the Project, these increases will be supported by the infrastructure upgrades in the area. These upgrades include the speed reduction on the 2.6 km new Perimeter Road (from 100km/h on Railway Road to 80km/h on the Perimeter Road), various intersection upgrades in the vicinity of the Freight Hub and better vulnerable user facilities on the Perimeter Road. In my opinion the upgrades are sufficient to address safety concerns that have been raised by submitters.
- 9.40 In addition, it is my view that the Clevely Line level crossing closure, as now being advanced by PNCC independent of the Freight Hub proposal, will result in increased safety along Sangsters Road. The level crossing closure will convert the current Clevely Line/Sangsters Road intersection into a continuous road and will result in this road being utilised by local residents only. The reduction of through traffic utilising the Clevely Line level crossing will allow Sangsters Road to be safer for cyclists and pedestrians.
- 9.41 Sangsters Road will not be a route utilised by heavy vehicles as Sangsters Road will have no direct link into the Freight Hub or the NEIZ with no connections onto Railway Road or the new Perimeter Road. There are no plans to join the two (northern and southern) portions of Sangsters Road, so there will be no through-traffic use of the road.
- 9.42 On the matter of safety raised in regard to the SH54/Waugh's Road intersection I acknowledge that the intersection currently performs at an unacceptable level of service from a traffic carrying and performance perspective. However, it is not classified as a high-risk location and a CAS search has shown that over the past five years no injury crashes have occurred at this intersection. Notwithstanding that current position, as part of my analysis, detailed in ITA Section 10.1, and included at paragraph 8.2, I have recommended that this intersection be upgraded to a roundabout to improve efficiency and safety.
- 9.43 The Collective risk for roads within the Bunnythorpe township, including Baring Street is low. Although Baring Street will not have an increase in traffic volumes, as highlighted in paragraph 7.30, I undertook a safety risk analysis using Mega Maps and an exceedingly conservative traffic increase of 100%.

The Mega Maps tool showed that the Collective risk for the area will remain low. Therefore, it is my opinion that the transport network surrounding Bunnythorpe School will not experience a reduction in safety as a result of the Freight Hub.

- 9.44 Lastly, Stoney Creek Road is expected to experience an increase in traffic volumes. I acknowledge that a portion of this increase will be a result of the Freight Hub, however, as discussed earlier in paragraph 7.12, the increase in traffic along Stoney Creek Road will mostly be a result of traffic rerouting due to the Roberts Line level crossing closure planned by PNCC.

Active mode safety

- 9.45 Several submitters have raised concerns about impacts to cycle routes and the safety of cyclists in the area with the expected increase in heavy vehicle volumes.²⁹
- 9.46 Regarding the impact to on-road cyclists using Railway Road having to now use other routes, I note that there are currently no pedestrian or cyclist facilities provided on Railway Road or the other rural roads surrounding the proposed Freight Hub Site. For the most part, these roads have limited shoulders, and no footpaths or cycling facilities. In addition, the speeds on these roads are 100km/hr and would usually be considered unsafe for cyclists or pedestrians with no infrastructure to provide refuge from passing vehicles. KiwiRail's First Section 92 Response dated February 2021 shows a footpath along the new Perimeter Road and a potential offline recreational path. In my opinion, these proposed improvements in addition to the lower speed environment will result in a safer and more pleasant experience for vulnerable road users.
- 9.47 In relation to cycling between Palmerston North and Bunnythorpe, the Te Araroa Trail will continue to be the primary route. This route is planned for substantial investment and improvement by PNCC. As set out in Section 10.6 of the ITA the only material impact to the current Te Araroa Trail will be at the crossover at the Campbell Road/KB Road intersection where recommended upgrades (potentially to traffic signals) will improve crossing safety for vulnerable users. Since this trail follows away from the main roads, an increase in heavy vehicles will be physically separated from users. The proposed RNIP captures the timing and integration of path improvements, including the formation, timing and integration of the Te Araroa Trail along Sangsters Road.

²⁹ Submissions were received by Jim Jefferies, Kevin and Yvonne Stafford, Tomas Burleigh Behrens and Matthew McKenzie.

10. RESPONSE TO SECTION 42A REPORT

10.1 I have reviewed the following sections of the Section 42A Report relevant to my evidence:

- (a) Section 42A Technical Evidence: Traffic and Transportation by Harriet Fraser;
- (b) Section 42A Report: Palmerston North City Council Infrastructure Assets by Robert van Bentum; and
- (c) Section 42A Technical Evidence: Planning by Anita Coplestone and Phillip Percy (including the Effects recommendations and summary table).

10.2 The technical evidence by Ms Fraser and Mr van Bentum outlines the following issues:

- (a) sensitivity testing including the PNITI works and the bypasses;
- (b) impacts of the Freight Hub on level crossing safety around Bunnythorpe;
- (c) impact on NEIZ accesses as a result of the Freight Hub;
- (d) impacts of the Freight Hub on active modes;
- (e) construction effects;
- (f) the RNIP;
- (g) the transport effects and PNTAM model; and
- (h) the proposed dedicated freight corridor between the Freight Hub and the NEIZ.

Sensitivity testing

10.3 In terms of testing the proposed PNITI interventions presented in the Council's Traffic and Transportation evidence, I first note that some of the short to medium term interventions have been included in the "Do Minimum".³⁰

³⁰ Upgrades include: Kairanga Bunnythorpe Road/SH54, Kairanga Bunnythorpe Road/SH3, Kairanga Bunnythorpe Road - Road widening between SH3 and Roberts Line

- 10.4 The western and southern bypasses, however, have not been tested due to the lack of detail surrounding these bypasses as discussed in paragraph 5.31. In order for these bypasses to be tested these details would need to be released publicly (which has not occurred). This is echoed by section 238 of the Section 42A Report.³¹ I again confirm that the infrastructure changes as a result of the Freight Hub will not foreclose the ability for the Strategic (PNITI) roading improvements to be delivered in the future, and that a fully integrated roading solution will be the subject of the proposed RNIP.

Level crossing safety around Bunnythorpe

- 10.5 Ms Fraser has raised concerns with the treatment type to improve safety at the Bunnythorpe level crossing.³² As set out in section 10.1 of the ITA, a coordinated traffic signal at the Bunnythorpe node has been tested. This potential solution will increase the safety of crossing pedestrians and cyclists and will allow an initial solution at this intersection before the bypasses of Bunnythorpe are built and can otherwise be addressed through the proposed RNIP.
- 10.6 To further ensure safety at the Bunnythorpe level crossing the proposed conditions require that a Level Crossing Safety Impact Assessment must be undertaken at this level crossing.
- 10.7 As sought by Ms Fraser, ALCAM safety assessments have been completed for the two road level crossings (Waughs Road at Newbury Line and Campbell Road at the Feilding golf course) and the two pedestrian level crossings (Aorangi Marae and Taonui School) to the north of Bunnythorpe. As presented below, the results demonstrate that the train and road changes arising from the Freight Hub will not influence a change in the ALCAM risk. In addition, a further condition is proposed (as set out at Appendix 1 to Ms Bell's evidence) for LCSIA to be undertaken at these level crossings in the future if necessary:
- (a) Waughs Road close to Newbury Line - The ALCAM risk band will remain High;

³¹ Section 42A Report, dated 18 June 2021, at Section 238: *We agree with submitters and Ms Fraser that close coordination of these projects is needed. We appreciate the timing of delivery of the Freight Hub will significantly influence the PNITI programme. With respect to the potential cumulative effects raised by submitters, we recognise the relationship between the projects and the importance of successful and efficient integration between them. However, it is not possible at this stage to assess the cumulative effects of this project with the regional ring road, as that project is not sufficiently advanced in project planning and its effects (cumulative or on their own) cannot be known.*

³² Also referred to as the KB Road level crossing.

- (b) Waughs Road and Campbell Road - The ALCAM risk band will remain High;
- (c) Taonui School - The ALCAM risk band will remain Medium-High; and
- (d) Aorangi Marae - The ALCAM risk band will remain Medium-High.

Impact on accesses

- 10.8 The Section 42A Report requested details around impact of accesses on Railway Road and Roberts Line.
- 10.9 As noted at paragraph 9.28 the access to Roberts Line for 422 and 422A Railway Road will be formed on the unformed portion of Sangsters Road leading to Roberts Line at the southern end as set out in the RNIP conditions.
- 10.10 KiwiRail and Foodstuffs have been engaged in discussions to work through minimising the impact to Foodstuffs. The Roberts Line frontage past the Foodstuffs property (between Railway Road and Richardsons Line) will be subject to a reduced 60kph speed limit as enabled by PNCC's Speed Limit Bylaw, independent of the Freight Hub. This engagement with Foodstuffs is continuing.

Active modes

- 10.11 This brief section relates to the impact the Freight Hub will have on PNCC's plans to formalise the shared path between Feilding and Palmerston North
- 10.12 Responding to Mr van Bentum's comments in regard to the shared path, the construction of the Freight Hub and associated infrastructure will not foreclose the ability of the path to be developed along Sangsters Road.³³ This is set out in the CTMP conditions.
- 10.13 The recreational tracks around the detention ponds being developed as part of the Freight Hub Project will connect into the pedestrian and cycle paths proposed along the Perimeter Road.

³³ Section 42A Technical Evidence Palmerston North City Council infrastructure assets, dated 18 June 2021, at section 6.

Construction effects

- 10.14 This section relates to the impacts of construction of the road network as raised by Ms Fraser. Construction matters are addressed more fully in the evidence of Mr Skelton.
- 10.15 Ms Fraser has requested confirmation:
- (a) that there will be no construction or operational access to the Freight Hub via 9 and 9A Maple Street; and
 - (b) as to whether there will be any temporary or permanent closures of the Maple Street connection to Railway Road.
- 10.16 There will be no access to the Freight Hub via 9 and 9A Maple Street. As per paragraph 9.25 above, Maple Street will also not be impacted by the Perimeter Road and will not be used for construction access purposes. Construction of the Railway Road - Perimeter Road tie in will involve a geometry that improves the sight lines for Maple Street looking south, resulting in increased safety at this intersection. The proposed 80kph speed limit of the Perimeter Road will also facilitate safer operations compared with the 100kph approach of Railway Road currently.
- 10.17 Ms Fraser has also sought confirmation of the access points to the Site for construction purposes. The access points to the Site during construction will be outlined in the Construction Traffic Management Plan as provided for in the Proposed Conditions set out at Appendix 1 to Ms Bell's evidence.

Road Network Integration Plan

- 10.18 In relation to the confirmation of the parties to be consulted with as part of the RNIP, these are set out in the RNIP conditions and involve Palmerston North City Council, Horizons Regional Council, Manawatu District Council and Waka Kotahi NZ Transport Agency. In addition, this condition outlines the process of endorsement.

Transport effects and the PNTAM

- 10.19 Ms Fraser has raised concerns that the transport effects of the Freight Hub on central Bunnythorpe have been underestimated.³⁴ The 2020 actual traffic³⁵ on

³⁴ Section 42A Technical Evidence: Traffic and Transportation, Point 8.

³⁵ Sourced from Palmerston North City Council for 2019 and 2020.

surrounding key roads had a "good match"³⁶ to 2021 forecast volumes, indicating that the model is tracking well when compared to actual. In addition, as outlined in the Stantec Technical Memo dated April 2021 provided to Ms Fraser, use of the PNATM was accepted by PNCC in May 2020, as an appropriate project assessment tool for the Freight Hub.³⁷

- 10.20 I acknowledge that the performance of the road network has been estimated using existing traffic data and best available future information. Due to the advanced nature of the assessment, there is a need to undertake traffic monitoring which is now provided for in the Proposed Conditions.
- 10.21 Ms Fraser has raised comments in relation to the road capacities used in the PNATM. It is my view they are appropriate for testing the impact of the Freight Hub on the network, noting the model has been properly validated and independently reviewed and confirmed as fit for purpose. A specific query has been raised about the Sidra analysis undertaken for the Tremaine Avenue/Milson Line intersection which I reported at Table 5. It has been reassessed using a signal cycle time of two minutes (120seconds). The results show that it remains with an acceptable level of performance at LOS D.

Dedicated Freight Corridor

- 10.22 Regarding the request for a dedicated connection between the NEIZ and the Freight Hub, traffic modelling shows that this is not required from a road capacity perspective in response to the traffic demands of the full Freight Hub and NEIZ developments as the upgraded roading network will have sufficient capacity to accommodate all forecast traffic.
- 10.23 Therefore, from a traffic perspective, I do not consider that a dedicated freight corridor is necessary. That said, should it become a consideration in the future, then appropriate assessment of options can be progressed at the time.

Point 108 of the Section 42A Technical Evidence: Traffic and Transportation "As well as the initial ITA and further information response, Stantec provided me with additional clarification regarding the use of the traffic model. This was provided in a memo dated 30 April 2021. In particular, the memo describes a check of how the 2021 model performs compared with 2020 and 2021 count data collected by Council. Tables 1 and 2 in the memo show a good match between the modelled and observed traffic flows except on the links with the lowest observed flows. I agree that the absolute volume differences are low and the shortfall is likely to have negligible impact on the assessment findings. I note that with all the modelled flows being lower than the observed flows, the indication is that the model is slightly underestimating trips in this part of the network. Again, I consider that the scale of the difference is unlikely to impact on the assessment findings."

³⁷ The Cube model is appropriate but should be updated to reflect the change in land use both from the development and the existing railway land.

11. RESPONSE TO RECOMMENDED CONDITIONS

11.1 I have carefully considered the recommendations in the Section 42A Report in terms of the changes sought to the transport conditions and, in response, a range of amendments have been included in the Proposed Conditions detailed in Appendix 1 to Ms Bell's evidence. By way of summary:

- (a) Level Crossing Safety Impact Assessment – I agree with the Council Officers that two additional level crossings should be included to validate the ALCAM assessments outlined in paragraph 10.17.
- (b) Road Network Integration Plan – I agree that it is appropriate for the RNIP to be reviewed and updated as it is intended to be a living document. I consider that it is appropriate for the timing and frequency of reviews to be outlined in the RNIP. Noting that PNCC will be involved in its preparation (as well as other key stakeholders), I do not consider it appropriate for one party to have a certifying role. I also agree that it is appropriate for the upgrades required to be delivered by KiwiRail to be expressly outlined in the RNIP (as now included in the Proposed Conditions).
- (c) Roading connections and updates – a new condition is proposed to require the construction of the Perimeter Road prior to the closure of Railway Road. I agree that this is an appropriate requirement, but it needs to be qualified by the fact that alternative access (such as may be delivered by the future western and southern bypasses of Bunnythorpe) may be provided, such that the road (or part of it) may not need to be constructed.
- (d) Construction Traffic Management Plan – a number of amendments have been made to incorporate the additional detail and level of specificity that the Council Officers are seeking. In particular, I agree that it is appropriate for there to be a requirement to undertake monitoring of construction traffic and the CTMP should set out the process to identify the locations and frequency of that monitoring.
- (e) Operational Traffic Management Plan – as with the Construction Traffic Management Plan a number of amendments have been made to incorporate the additional detail and level of specificity that the Council Officers are seeking. I agree that a review trigger based on vehicle movements is appropriate and consider that this is most appropriately included in the Operational Traffic Management Plan rather than the RNIP, given that the objective of the Operational

Traffic Management Plan is to manage the traffic generated by the Freight Hub whereas the RNIP is more concerned with integration with the wider network.

11.2 The following recommendation have not been included:

- (a) There is a recommendation relating to modelling and assessment of identified roads and intersections involving Railway Road (south), central Bunnythorpe, SH54/Waugh's Road and Stoney Creek Road.³⁸ Each of these locations has been modelled as part of the assessments brought forward in the ITA, with proposed mitigations as reported and as set out at paragraphs 7.20 and 9.12 of my evidence. In addition, the principles of this recommendation have been incorporated through the OTMP that provides for ongoing performance and safety monitoring for locations to be determined, including through feedback with PNCC and Waka Kotahi. It is expected that the locations identified by PNCC in the recommendation will form part of the overall monitoring and as such I do not consider it necessary for assessment of these locations to be separately conditioned.
- (b) There is a recommendation relating to the integration of the Freight Hub with the NEIZ.³⁹ The future traffic modelling undertaken and reported in the ITA and summarised in my evidence shows that the road network infrastructure will have adequate capacity to accommodate traffic movements between the sites. Again, I anticipate that the OTMP will capture monitoring of the related movements, such that a separate condition is unnecessary in my view.

Mark Georgeson

9 July 2021

³⁸ Point 12 – Section 42A Planning Evidence: Effects and Recommendations Summary Table: KiwiRail Freight Hub Notice of Requirement.

³⁹ Point 22 – Section 42A Planning Evidence: Effects and Recommendations Summary Table: KiwiRail Freight Hub Notice of Requirement.

APPENDIX A

To: Harriet Fraser Traffic Engineering and
Transportation Planning

From: Stantec

Date: April 30, 2021

This Technical Memo relates to transportation matters in respect of KiwiRail Holdings Limited's (KiwiRail) Notice of Requirement (NoR) for the Regional Rail Freight Hub (RFH). It is intended to address residual clarifications of the traffic model adopted for the RFH project.

As you are aware, Stantec adopted and used the Palmerston North Area Traffic Model (PNATM or Model) as the primary assessment tool to inform the transport assessment for the RFH (refer section 8 of the Integrated Transport Assessment dated 23 October 2020 (ITA). Prior to submitting the NoR for the RFH and supporting ITA, Stantec communicated to Palmerston North City Council (PNCC) its intention to adopt the PNATM as the primary assessment tool for transport matters. Based on correspondence in May 2020 it was understood that PNCC agreed the PNATM was an appropriate project assessment tool for the RFH.

This memo explains:

1. the changes that have been made to the PNATM used for the RFH, beyond the programmed roading improvements already documented in Section 7 of the TA.
2. checks that were undertaken to ensure Model accuracy.
3. how heavy vehicle movements are modelled under the PNATM for the RFH.
4. how local intersections near the RFH have been modelled under the PNATM; and
5. how link capacities on key roads surrounding the RFH have been modelled under the PNATM.

Overall, it is considered that the PNATM used as the primary tool for assessing localised effects of the RFH is both reliable and fit for purpose for the reasons outlined below.

1. MODEL CHANGES

The PNATM was developed by Beca in 2014 using 2013 Census land use data for the base year. Forecast models were developed for 2021, 2031 and 2041.

In 2019, Stantec investigated the performance of the Model on behalf of Waka Kotahi NZ Transport Agency to evaluate how well the Model was predicting traffic flows and travel times. The evaluation was undertaken by comparing observed 2018 traffic counts against the modelled outputs for 2013 and 2021 scenarios. It was found that the scenario with the 2021 land use on the 2013 network was tracking well towards the 2021 forecast volumes.

At the same time, the Model road network was updated to reflect recent or under construction network upgrades.

1A. CHANGES TO THE OVERALL MODEL

For the purpose of the RFH investigations, the following changes were made regardless of the 'with' and 'without' hub scenarios.

Tremaine Avenue Rail Freight Site

During the site selection phase of the Regional Freight Hub project, Stantec undertook traffic surveys (September 2019) at four of the main accesses from the existing KiwiRail Hub on Tremaine Avenue. The traffic surveys revealed that the 2021 forecast model was underrepresenting the traffic generated by the existing KiwiRail site (around 4,000 vehicles per day (vpd). As such, the forecasted demand from Zone 42, which represents the existing KiwiRail site in the Model, for 2021, 2031 and 2041, was factored up by 3.5 for each year to represent the existing level of demand more accurately.

Heavy vehicle proportions were also adjusted to match surveyed proportions (further detail on this is provided at 1B below).

North East Industrial Zone (NEIZ)

The traffic demands represented in the PNATM did not accurately reflect the existing conditions. As such, the PNATM used for assessing the effects of the RFH was updated to reflect current and future conditions to improve accuracy and reliability of modelled demand.

The NEIZ is represented by Zone 114 and the NEIZ Extension is represented by Zone 168 in the Model. The original Model allocated all traffic from the NEIZ onto the El Prado Drive / Railway Road intersection and traffic from the NEIZ Extension onto the northern and southern sections of Setters Line. The traffic study undertaken for the NEIZ in 2014¹ estimated that the NEIZ and NEIZ Extension would each generate approximately 13,500 vehicles per day (vpd), resulting in a total traffic demand of 27,000vpd when fully developed.

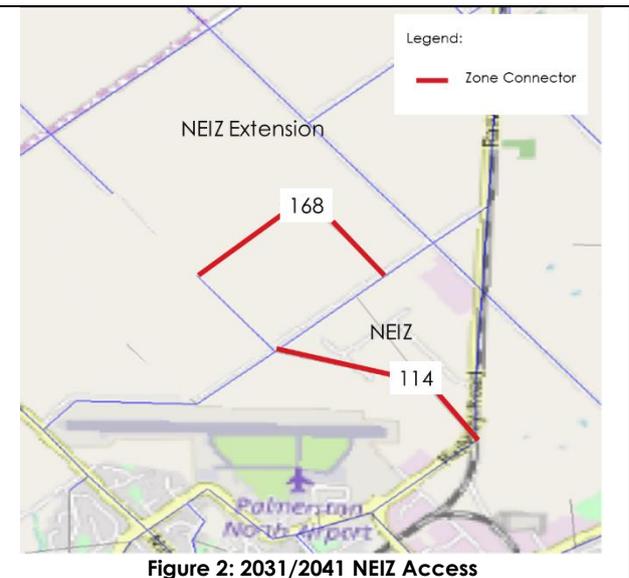
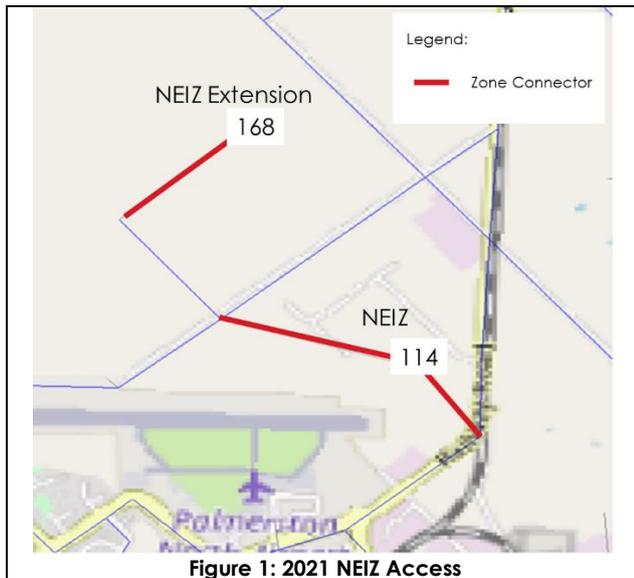
The original model showed traffic flows from Zone 114 to be around 14,000vpd in 2021. These modelled demands did not accurately reflect the existing conditions and is well ahead of what is currently developed. More recent count data from PNCC indicates that the traffic volumes along El Prado Drive are currently around 4,000vpd. As such, the PNATM used to assess transport effects of the RFH has been updated to more accurately reflect the existing and future conditions with respect to demand from the NEIZ and NEIZ Extension. Demand in Zone 114 has been reduced to match observed volumes. No NEIZ Extension is assumed in 2021 so no traffic generation has been included in the Model.

In 2031, it is assumed that the NEIZ will be fully developed and that a third of the NEIZ Extension will be completed. The NEIZ Extension is expected to be fully completed by 2051. The demands in Zones 114 and 168 have been adjusted in the PNATM used to assess transport effects of the RFH to match the aforementioned assumptions taken from the NEIZ Intersection Assessments Report thereby improving the reliability of the Model for the RFH.

Additional connections² have been added to the PNATM used to assess transport effects of the RFH based on the NEIZ Intersection Assessments Report. **Figure 1 and 2** illustrate the modelled access assumptions in 2021 and 2031/2041 for the NEIZ and NEIZ Extension.

¹ Intersections Assessment Report for Plan Change 15E: North East Industrial Zone Extension prepared in October 2014

² New connection to Richardsons Line at Setters Line in 2021. In 2031 additional connections to Richardsons Line from the NEIZ and NEIZ Extension



Infrastructure Upgrades

The following infrastructure improvements have been added to the 2031 and 2041 base year models based on infrastructure works that have been allocated funding in the PNCC 10-year plan³ and Regional Land Transport Plan 2015 - 2025⁴, and the Waka Kotahi National Land Transport Program:⁵

- Kairanga Bunnythorpe Road - Two Roundabouts with SH54 and SH3
- Kairanga Bunnythorpe Road - Road widening between SH3 and Roberts Line
- Kairanga Bunnythorpe Road bridge strengthening and renewal (Jacks Creek and Mangaone Stream)
- Campbell Road Bridge Renewal
- Richardsons Line - Road widening between Milson Line and Roberts Line
- Richardsons Line/Roberts Line intersection upgrade (roundabout)
- New link to NEIZ extension off Richardsons Line and an access into existing NEIZ

The above road upgrades form the do-minimum road network. These upgrades are assumed to be completed before operation of the RFH commences.

Network Changes

The following changes were included in the 2021, 2031 and 2041 base year models as requested by PNCC as part of the Request for Further Information, to reflect the form and function of the road network more accurately:

- Convert Flyers Line to each side of SH3 as access only
- Ban heavy vehicles on the western end of Richardson Line between Setters Line and Milsons Line

1B. CHANGES TO THE 'WITH HUB' MODEL SCENARIOS ONLY

KR Hub Traffic Distribution

The only change to the traffic matrices in the PNATM used to assess transport effects of the RFH has been to the existing Zones 218, 222, 223 and 224 in the areas proposed for the future RFH in the 'With Hub' scenarios. No changes to the traffic matrices have been made to any of the future 'Without Hub' scenarios.

³ <https://www.pncc.govt.nz/media/3131028/10-year-plan-2018-28.pdf>

⁴ <https://www.horizons.govt.nz/HRC/media/Media/Bus-Route-Timetable/Final-RLTP-2015-25.pdf?ext=.pdf>

⁵ <https://www.nzta.govt.nz/planning-and-investment/national-land-transport-programme/2018-21-nltp/regional-summaries/manawatu-whanganui-region/manawatu-whanganui-2018-summary/>

The PNATM has a fixed number of external light and heavy vehicle movements (based on trend growth applied to observed volumes) and so did not respond as expected for the new inter-regional heavy vehicle movements that the RFH will generate. To correct this, heavy vehicle trips to and from the RFH were manually adjusted, as the magnitude of change of activity at the new site is significantly greater and the model does not automatically increase the proportion of external traffic. The proportion of trips to all the external zones (Zones 172-185) were increased (from 15% to 25%) with a corresponding reduction in internal traffic to maintain the same number of trips in/out of the RFH. The proportion of heavy vehicles to/from the RFH travelling north, south, west and east was also altered to reflect a more realistic external distribution, as shown in Figure 6-4 of the ITA.

No changes were made to the distribution of heavy vehicle trips associated with any other sites in the modelled area, apart from the RFH, and no changes were made to the model for light vehicle trip distribution.

Tremaine Avenue Rail Freight Site

It is assumed that after the Existing Freight Hub is relocated, the existing site on Tremaine Avenue will be redeveloped to a mix of commercial, retail and industrial activity. There are many development opportunities for the existing site, however an assumption around trip generation was made to ensure traffic volumes along Tremaine Avenue were not underrepresented in the model when testing future scenarios.

For the purpose of the PNATM for the RFH, it is assumed that the site will generate the same level of traffic as the Existing Freight Hub (i.e., 4,000vpd), with employment equally divided between commercial, retail and industrial activity. The heavy vehicle proportions were adjusted downwards from 20% to 14% to reflect this changed mix of land use.

2. MODEL CHECKS

To review the accuracy of the PNATM used to assess transport effects of the RHF, model checks were undertaken to compare forecast demand against observed traffic counts. PNCC provided traffic count data for a number of points on the network surrounding the RFH site. The most recent 2020 and 2021 counts have been used to compare observed demand on key roads in the surrounding road network to the 2021 forecast model. The location of these counts is shown in **Figure 3**.



Figure 3: Traffic count locations and year

As demonstrated further below, comparison between these counts and the 2021 forecast volumes from the PNATM used to assess transport effects of the RFH show a close match. The volume comparison shows that the modelled counts are mostly within 15% of the observed traffic counts.

The GEH statistic (Geoffrey E. Havers) is a form of Chi-squared statistic that is used to compare observed and modelled counts. This is an internationally used statistic to assess the performance of models in estimating traffic flows. A GEH value will increase as the difference between modelled and observed increases. A GEH less than 5 indicates that the modelled flows compare well against the observed flows and a GEH of more than 10 suggests the modelled flows compares poorly against observed flows. The GEH compared well for almost all links scoring a GEH less than 5.

The traffic comparisons included in **Tables 1** and **2** below for the AM and PM peak hours respectively verify that the network modelled around the RFH does simulate traffic volumes that can be considered 'fit for purpose'. Therefore, the PNATM can be deemed an appropriate test tool to provide reliable outputs for the purpose of the NoR RFH assessment, as assumed from the outset of the study.

Table 1: Forecast vs traffic count volumes - AM Peak

AM PEAK				
Traffic Count Location	Observed	Modelled	Counts vs Model	GEH
Railway Road	740	660	0.88	3
Ashhurst Road	230	190	0.80	3
Stoney Creek Road	200	190	0.96	1
Campbell Road	930	840	0.90	3
Kairanga Bunnythorpe Road	140	80	0.57	6
Roberts Line	80	80	0.95	1
Milson Line	600	510	0.85	4
Tremaine Avenue	1310	1270	0.97	1

Table 2: Forecast vs traffic count volumes - PM Peak

PM PEAK				
Traffic Count Location	Observed	Modelled	Counts vs Model	GEH
Railway Road	910	800	0.87	4
Ashhurst Road	230	230	0.97	1
Stoney Creek Road	250	150	0.59	7
Campbell Road	1080	1030	0.95	2
Kairanga Bunnythorpe Road	180	100	0.56	7
Roberts Line	120	90	0.75	3
Milson Line	720	640	0.89	3
Tremaine Avenue	1300	1270	0.97	1

As shown, all results except Kairanga Bunnythorpe Road and Stoney Creek Road have GEH values less than 5. For Kairanga Bunnythorpe Road and Stoney Creek Road, the modelled volumes are lower than the observed, however the absolute volume differences are low and are assessed to have a negligible impact on the findings and conclusions drawn.

3. MODELLING OF HEAVY VEHICLES

No changes have been made to the PNATM parameters associated with heavy vehicles, as validated during the original model built by Beca.

The Beca heavy vehicle matrices were developed based on Electronic Road User Charges and 2013 traffic counts. Heavy vehicles are modelled as vehicles and not passenger car units (multiple car equivalents), in a manner typical for strategic models in New Zealand.

The route choice for heavy vehicles is based on the time it takes to reach a destination plus a distance weighted parameter depending on the type of road (e.g. collector vs a rural road).

The PNATM has then been used to obtain the traffic flows which were then used to inform the more discrete SIDRA modelling reported in the ITA. SIDRA has allowance for different light and heavy vehicle model parameters including slower acceleration and larger minimum gap requirements.

4. MODELLING OF LOCAL INTERSECTIONS

All local intersections surrounding the RFH have been included and explicitly modelled in the PNATM used to assess transport effects of the RFH. Equations considering the number of lanes available, saturation flows per lane, opposing flows, gap acceptance times, entry widths at roundabouts, and green times at traffic signals, are used in the PNATM to inform intersection performance, and intersection capacities calculated on this basis.

flows. **Figure 4** shows the intersections that have been included in the model and the intersection control assumptions.

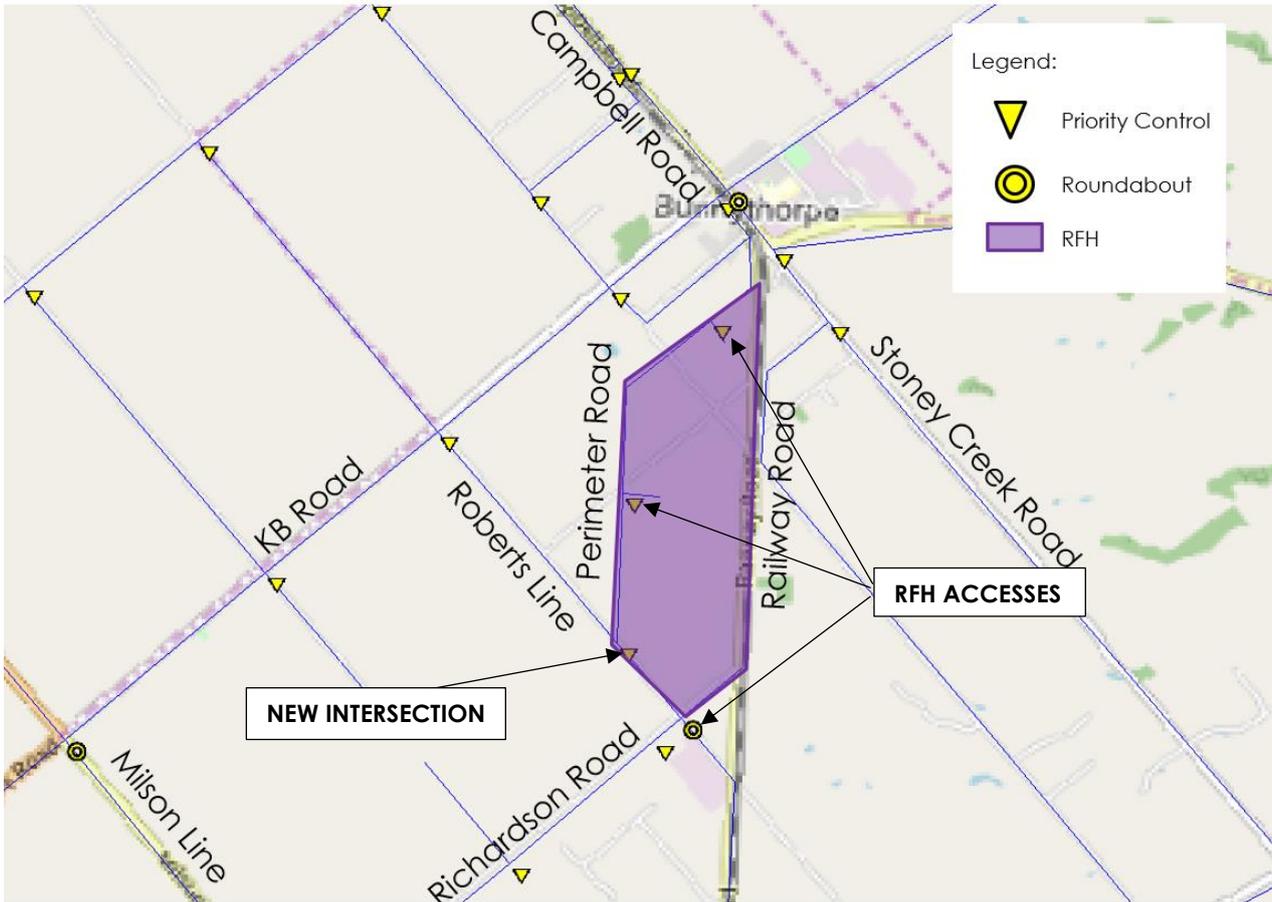


Figure 4: Modelled Network – 2041

The RFH is expected to have three accesses, with two onto the perimeter road and one at the new Roberts Line / Richardsons Line intersection. The two accesses onto the perimeter road have been modelled as a priority T intersection, with a separate left and right turn bay into the RFH. The third access forms the fourth arm of the Roberts Line / Richardsons Line roundabout.

5. LINK CAPACITIES

Modelled link capacities for the road network around the proposed RFH site have been reviewed. From Table 3.1 of the Beca Model Development and Validation Report, Link Types 4 to 11 are relevant, as repeated in **Figure 5** below.

Figure 6 then shows how the surrounding road network has been modelled with the appropriate link capacities as Rural standards.

Table 3-1 Generic Link Type Parameter

No	Type	Typical lane capacity, vph	Typical free speed, kph	Typical Friction Factor, J_A
4	Shopping/Commercial street	600	45	1.8
5	Residential	900	47	1.8
6	Collector	1000	50	1.5
7	Arterial	1250	52	1
8	Rural low standard	1450	54	0.8
9	Rural high standard	1200	85	1.5
10	Rural high HCV flows	1500	100	1.2
11	Expressway	1100	95	1.6

Figure 5: Modelled Link Type⁶

⁶ Palmerston North Area Traffic Model – Model Development and Validation Report, Beca, 15 August 2014

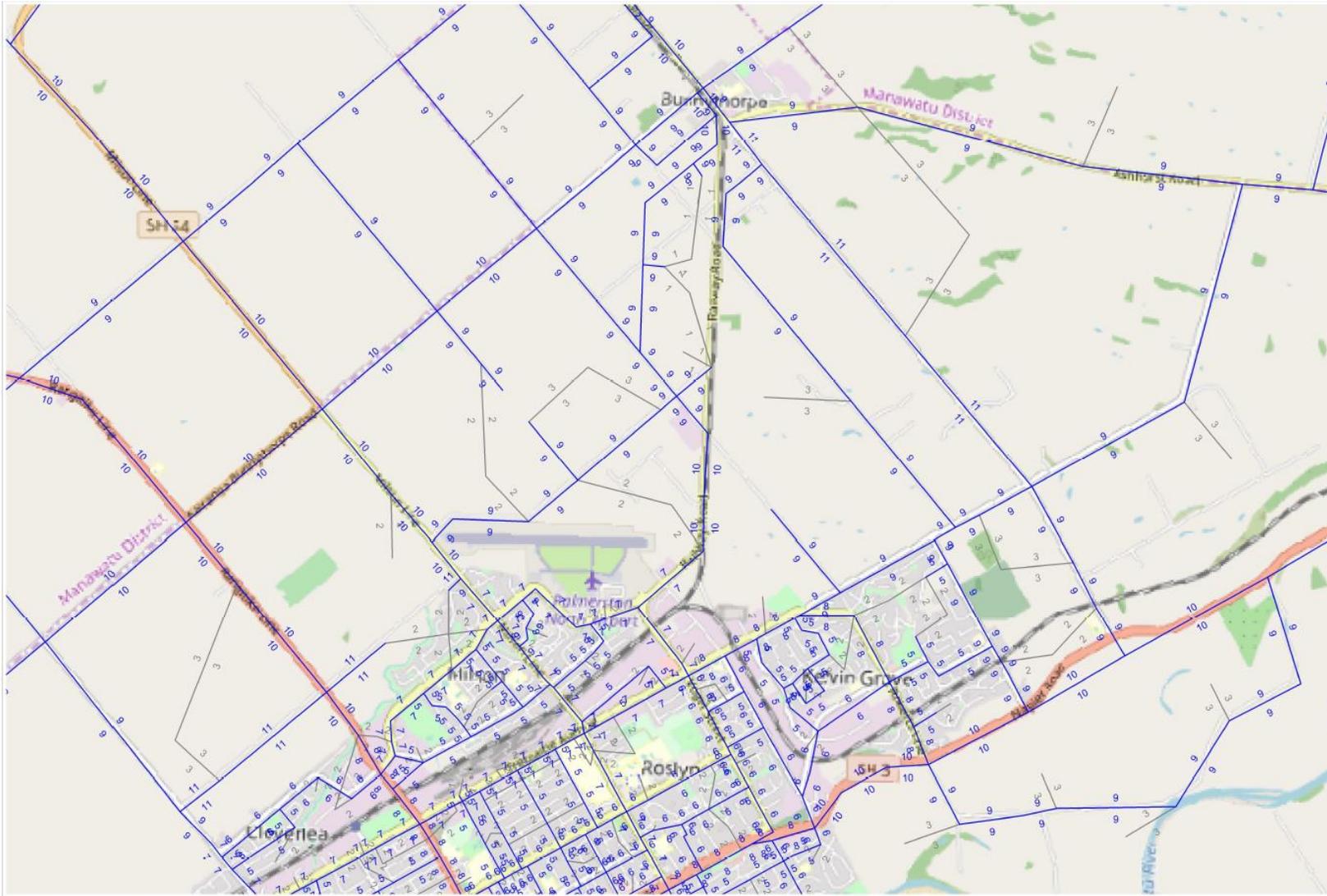


Figure 6: Mapped Link Type

6. CONCLUSION

Based on the information presented in the memo it is clear that the Model suitably represents the existing conditions and is an appropriate tool for assessing future scenarios, demonstrating that the results from the Model can be relied on to inform future decision making.