

Appendix D

Technical Assessment - Transport

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David Norman
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Via email: **David.Norman@ghd.com**

Dear David

Te Utanganui, Palmerston North Transportation Advice

Further to your request, I am pleased to provide below transportation advice with regard to the possible future extension of the North East Industrial Zone (NEIZ) in Palmerston North.

1. Existing Transportation Context

The Census area best matched to the existing NEIZ is the Palmerston North Airport Zone (PN Airport Zone) which is the green zone shown in Figure 1 below.

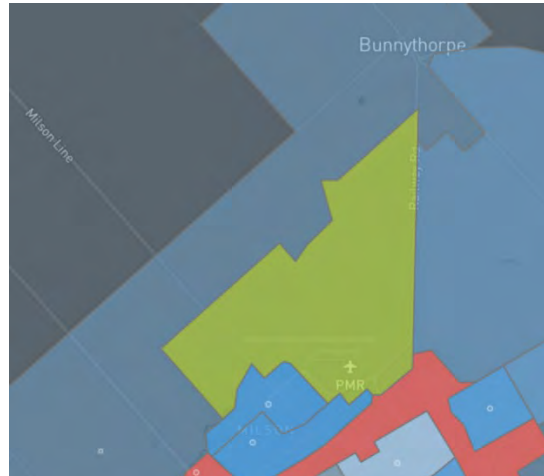


Figure 1: Palmerston North Airport Zone from Census Data (source: Commuter Waka app)

The Commuter Waka App indicates based on the 2018 Census data that some 852 people travelled to the PN Airport Zone for work or education with a further 39 living and working within the zone. People travelled from 49 different areas of the region to access employment in the zone. Based on the Commuter Waka App data, the following distribution of commuter trips is estimated:

- 4% from within the zone
- 66% to/from Palmerston North via Railway Road (south)
- 20% to/from Bunnythorpe/ Feilding via Railway Road (north)
- 6% to/from Roberts Line (south)
- 4% to/from the west via Richardsons Line
- 0% to/from Roberts Line (north).

These access points are shown in Figure 2. Kiwirail and the Council intend to close the Roberts Line rail crossing due to safety concerns. Once it is closed those trips can largely be expected to approach the NEIZ from the south on Railway Road.

The data provided by Freshinfo includes an increase in employment for the NEIZ from 1,127 in 2018 to 1,737 in 2021, an increase of around 54%.

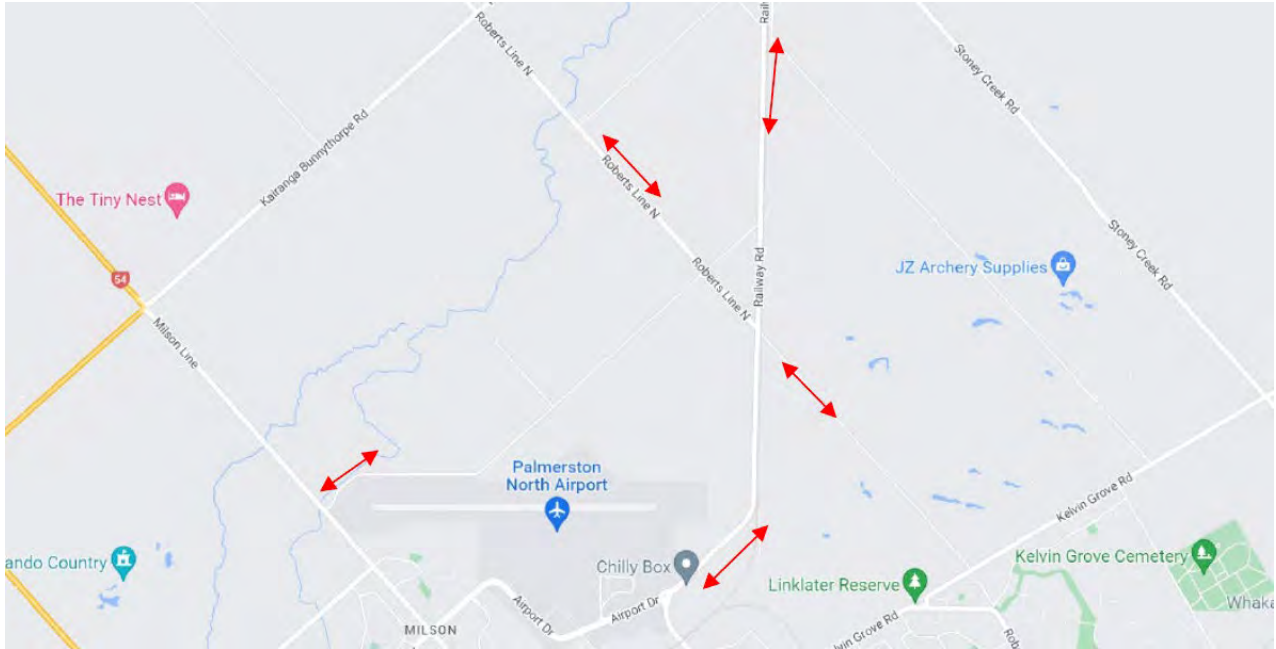


Figure 2: Road Access Points to the NEIZ

The Newbury Zone, which includes Bunnythorpe, had 21 residents travelling to the PN Airport Zone for employment or education. The extent of the Newbury Zone is shown in green in Figure 3. The 2018 Census data includes a resident population of 1,905 people for the zone.

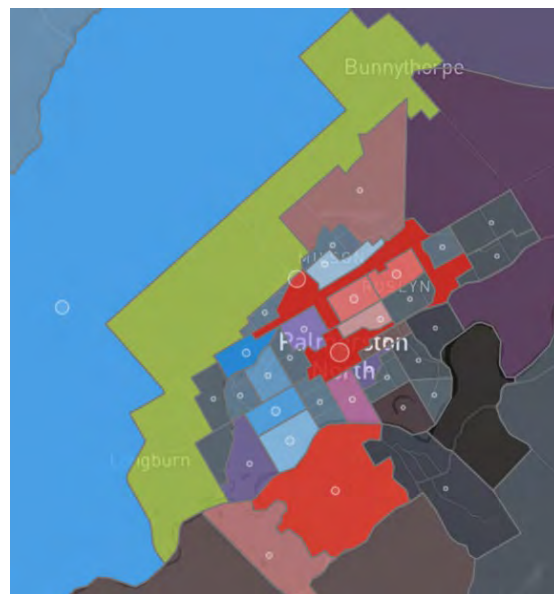


Figure 3: Newbury Zone from Census Data (source: Commuter Waka app)

Figure 4 shows the fatal and serious crashes that have occurred within the road network around the NEIZ over the most recent five year period.

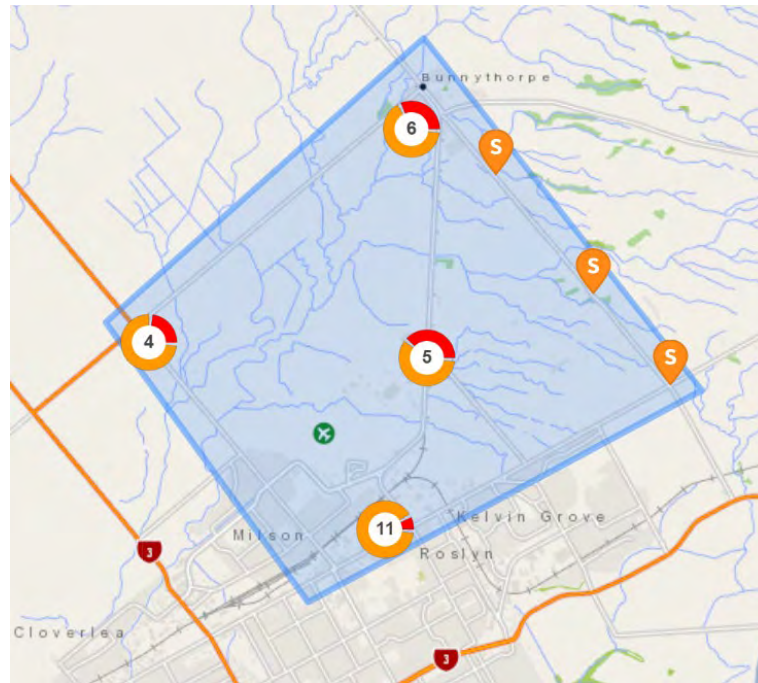


Figure 4: Extract from the Waka Kotahi NZTA Crash Database

As shown there have been 29 reported fatal and serious injury crashes during the most recent five year period. Given the road safety aspirations at a national, regional and local level to reduce serious and fatal injury crashes, with future increases in traffic activity in this area there is going to be a need to not only mitigate any adverse road safety effects but also improve the overall road safety within this part of the transport network.

With regard to the existing level of efficiency of the existing road network, Google Maps has been used to provide indicative travel times to and from the NEIZ at different times of the day. El Prado Drive has been taken as the origin/ destination of NEIZ trips. Travel times have been extracted for the weekday commuter peaks (8.30am and 5.00pm) and midday to reflect inter-peak travel times. The travel times are summarised in Table 1.

Local Area	Route	To NEIZ (El Prado Drive)		From NEIZ (El Prado Drive)	
		Weekday 8.30am	Weekday Midday	Weekday Midday	Weekday 5pm
Cloverlea	Via John F Kennedy Drive	9-14	9-14	12	9-12
	Via Flyers Line & Richardsons Line	10	10	10	10
Sanson	Via Roberts Line (N) & SH3	18-24	20-24	18-24	18-24
	Via Feilding & Bunnythorpe	20-28	22-28	22-28	20-28
Feilding	Via Bunnythorpe	10-14	10-14	12-14	10-18
Bunnythorpe	Via Railway Road	4	4	5	4-6
Kelvin Grove	Via Roberts Line (S)	5-6	6	5-7	5-6
	Via Railway Road (S)	6-9	6-10	6-9	6-10
The Square	Via Main St & Railway Rd (S)	9-16	10-18	10-18	10-18
	Via Rangitikei St & John F Kennedy Drive	10-18	10-20	12-20	10-18

Table 1: Existing Travel Times (minutes) (source: Google Maps)

Variability in the travel times in Table 1 indicates that there is the potential for existing traffic congestion and associated delays on these routes at these times. Particular features to note are:

- for trips to/from the NEIZ and the west (Cloverlea direction), the Flyers Line/ Richardsons Line route is more reliable and likely to be quicker than the John F Kennedy Drive route in both directions, at each of the times included;
- travel times to and from Bunnythorpe are reliable but for origins and destinations further to the north are variable for all routes and times;
- for trips to/from the NEIZ and the east (Kelvin Grove direction), the Roberts Line (S) route is more reliable and quicker than the Railway Road (S) route in both directions, at each of the times included; and
- there is considerable variation in travel times to and from central City (The Square) at each of the times included.

There is a bus service (311) that runs between Feilding and central Palmerston North via the airport. The service goes along Railway Road but does not have any bus stops in the vicinity of the NEIZ apart from at the airport.

Council has developed the Urban Cycle Network Masterplan to improve safety and accessibility for people on bikes. Extracts from the online map (<https://arcg.is/nfOui>) for both the existing cycle facilities and long-term desired cycle provision within the vicinity of the NEIZ are shown in Figures 5 and 6.



Figure 4 – Existing Provision for Cyclists



Figure 5 – Long Term Provision for Cyclists

As shown in Figure 5, there is an intention to improve cycle connections to the NEIZ from nearby parts of the City, including to and from Bunnythorpe.

Consideration of the National, Regional and Local transportation objectives that influence desired outcomes in Palmerston North have been previously set out in a memorandum dated 8 March 2022. The memorandum concluded with the following table summarising considerations for transport matters as the options for Te Utanganui are developed.

Main category	Sub-category
Safety	<p>Are freight movements directed onto the arterial road network?</p> <p>Can freight and cyclist movements be separated along whole routes?</p> <p>Can speed limits be managed to provide for safety of pedestrians and cyclists?</p> <p>Can the transport network contribute to the road safety vision of zero deaths and serious injuries?</p>
Better Travel Options	<p>Can a place and movement approach to the delivery of the transport network be taken?</p> <p>Can integrated networks for each of bus, cycling and walking be provided, connecting with internal destinations and the external transport network?</p> <p>Can the bus and active mode networks deliver a significant uptake in use of each of these modes?</p>
Improving Freight Connections	<p>Are the PNITI projects allowed for including the freight ring road and the second bridge?</p>
Climate Change	<p>Linked to the ability to provide for significant uptake in use of bus, cycling and walking modes.</p>

Table 2: Transportation Considerations for Option Analysis

2. Future Transportation Context

A copy of the NEIZ Structure Plan is included in Figure 6. The desired future roading links within the NEIZ are shown. Richardsons Line (blue line on map) and Setters Line (southernmost green line on map) are currently being upgraded. At this stage, there are no plans for the delivery of the other green roads or the roads shown as yellow dotted lines. These improvements would be triggered by resource consent applications and would be subject to discussions between the applicant and Council. There are no designations in place to secure the delivery of this infrastructure, located within private land.

No upgrades are included for the El Prado Drive intersection with Railway Road in the 10 Year Plan. The need for any upgrade will depend on the rate of development of the NEIZ, increases in traffic flows along Railway Road and whether road connections can be achieved through to Richardsons Line as indicated by the broken yellow lines on the Structure Plan.

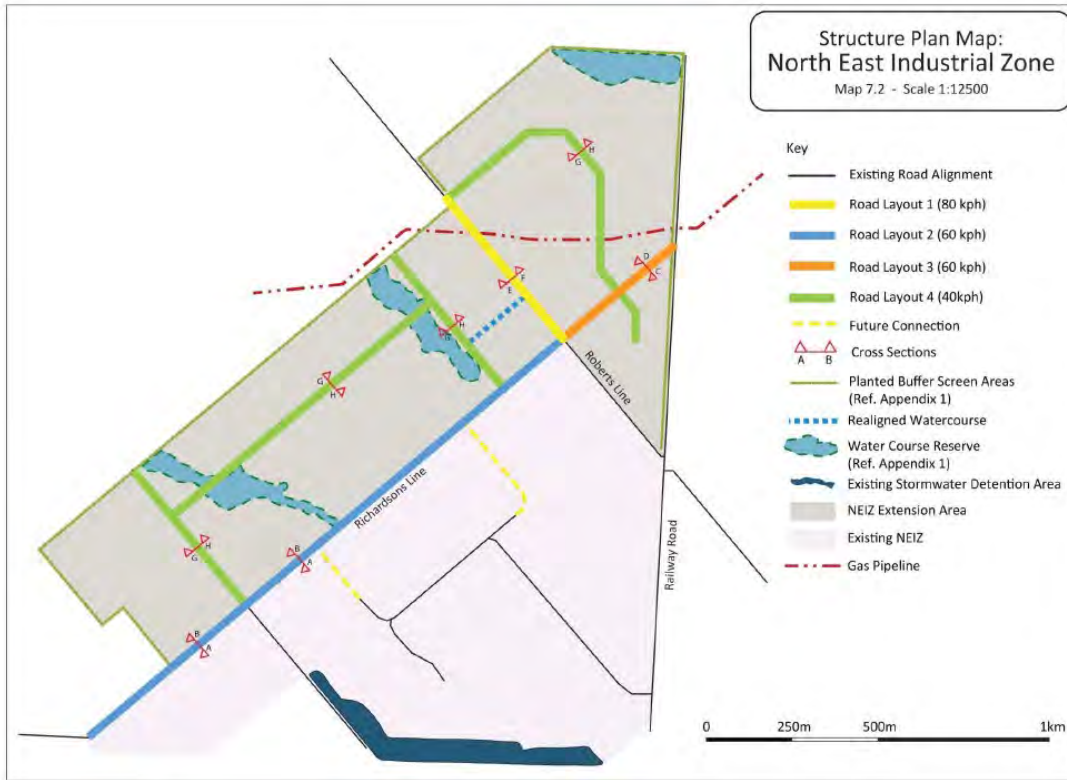


Figure 6: NEIZ Structure Plan Map

As included earlier in this report, Kiwirail and council plan to close both the Clevely Line and Roberts Line rail crossings due to safety concerns.

The PNITI Report prepared by Waka Kotahi includes a suite of programmes divided into short, medium and longer term projects. The works are intended to help manage traffic associated with forecasted regional growth while maintaining efficient freight movements to and from the KiwiRail Freight Hub, North East Industrial Zone and other industrial areas within the city.

The Short Term projects in the vicinity of the NEIZ are shown in Figure 0-1 of the report. An extract is included here as Figure 7.

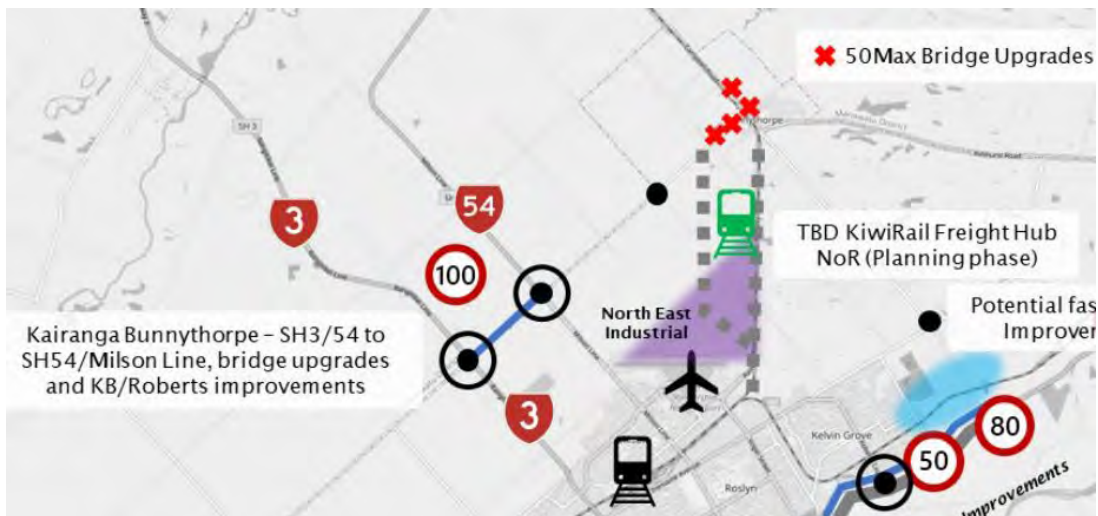


Figure 7: PNITI Short Term Works

The Short Term projects identified in the PNITI Report include bridge and intersection improvements on Kairanga Bunnythorpe Road and a bridge upgrade on Campbell Road. It is understood that these improvements will be made over the next three years.

The Medium Term projects in the vicinity of the NEIZ are shown in Figure 0-2 of the report. An extract is included here as Figure 8.

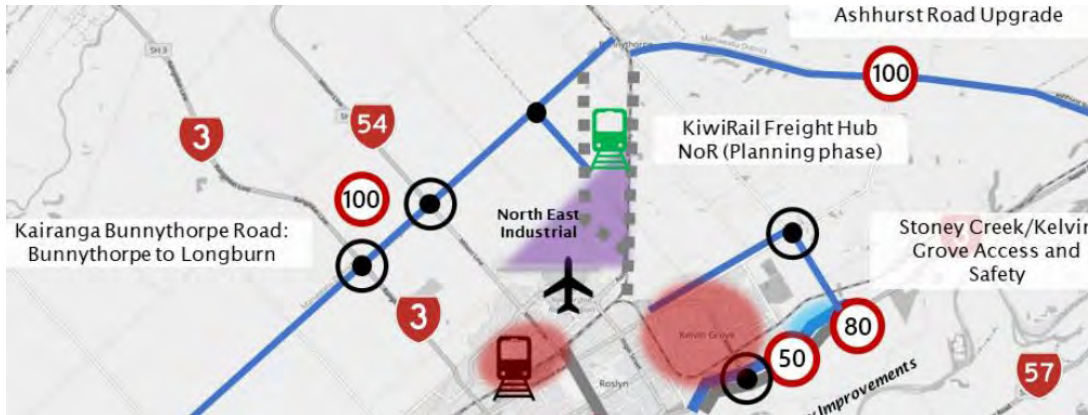


Figure 8: PNITI Medium Term Works

The Medium Term projects include upgrades to the length of Kairanga Bunnythorpe Road and on Roberts Line between the North East Industrial Zone/ Freight Hub and Kairanga Bunnythorpe Road. Upgrades are also shown for Ashhurst Road with no changes included within central Bunnythorpe.

The Longer Term projects in the vicinity of the NEIZ are shown in Figure 0-3 of the report. An extract is included here as Figure 9.



Figure 9: PNITI Longer Term Works

The Longer Term projects include a southern and western bypass of Bunnythorpe, an upgrade to Waughs Road to the north of Bunnythorpe, a cycleway between the southern end of Railway Road and Feilding and a possible upgrade to Stoney Creek Road. The timing of these projects will largely be determined by business case phases. The report indicates that the full programme could potentially be delivered by around 2030.

As set out in the Executive Summary of the Network Options Report, the programme is anticipated to achieve the following:

- reduce freight movements on residential and place-based streets by up to 50%;

- support and enable Urban Cycling Masterplan initiatives;
- reduce the number of congested intersections by 50% and improve journey times on key freight routes by up to 10 minutes;
- reduce deaths and serious injuries by 35-40% across the rural freight network;
- support economic development such as the KiwiRail Freight Hub and North East Industrial Zone; and
- improve safety and access for new housing developments.

With regard to the level of traffic activity associated with the potential Kiwirail Regional Freight Hub, the reporting for the Kiwirail NoR assumed, based on data from 2014, that the existing trip generation for the NEIZ is 4,100vpd with the balance of the NEIZ and the NEIZ extension having the potential to generate some 22,900vpd or 2,290vph. It was assumed that the Freight Hub would generate a total of 12,000vpd being 6,900vpd in addition to what was anticipated as part of the NEIZ extension.

Any future extension of the airport runway would affect the operation of Milson Line and its intersection with Richardsons Line. If Milson Line were to go underneath a runway extension, the management of groundwater and potential floodwater would need to be considered.

At present, the main areas of future likely large-scale residential development in the City are in Whakarongo, Aokautere and Kakatangiata. With the future closure of the Roberts Line and Clevely Line rail crossings and the poor standard of Flygers Line and the western end of Richardsons Line, commuter trips to/from the NEIZ and these residential growth areas are likely to add to the growing pressure on the road network between the NEIZ and central City.

3. Assessment Scenarios

Consideration is now given to the various growth scenarios for industrial land use in the vicinity of the NEIZ.

3.1 High Growth Scenario with New Kiwirail Hub

Given that the Kiwirail Hub potentially occupies most of the land to the north of the existing NEIZ between the railway line and the floodplain, it seems likely that any additional industrial land would need to be located on the eastern side of the railway line. This would trigger the need for a grade-separated road connection either over or under the railway line, to connect the new industrial area into the existing NEIZ. With the crossing needing to be grade-separated (to avoid existing safety concerns with at-grade crossings) it would need to be located to the south of Roberts Line to avoid the Kiwirail land. One option would be to connect into El Prado Drive, although there may be options to the north and south within the area indicated in Figure 10 (red oblong). Also shown within the detail of Figure 10 is the extension of the NEIZ to the east of the rail line (blue triangle). This could extend to the northern side of Roberts Line if needed.

This connection across the rail line would also need to include a through route to Roberts Line (S) to facilitate the distribution of traffic movements to and from Whakarongo and Kelvin Grove, thereby avoiding the already congested area of Railway Road/ Tremaine Avenue to the south of the NEIZ. Similarly given the cumulative traffic activity associated with the take up of the existing NEIZ, the Kiwirail Hub and the additional industrial land to the east of the rail line, the upgrading of the east-west access route along Flygers Line and Richardsons Line (W) to provide a western entry point to the NEIZ will be key. This in turn relies on a connection between Alderson Drive and Richardsons Line. Challenges of upgrading this east-west route include the existing roads being on the edge of the floodplain with Flygers Line in particular being in need of a significant structural upgrade to carry anything other than frontage access traffic. As included earlier, there is also the interaction with the airport runway, if it were ever to be extended.



Figure 10: Potential Future Road Connection across the Rail Line

3.2 High Growth Scenario without New Kiwirail Hub

Without the Kiwirail Hub there would be options to locate additional industrial land either within the Kiwirail designation or on the eastern side of the rail line as previously described. It is considered likely that a grade separated crossing of the rail line would also be needed with this scenario to assist with distributing traffic away from Railway Road to the south of the NEIZ. The difference with this scenario is that the crossing location could be to the north of the Roberts Line intersection with Railway Road with a connection across to Tutaki Road. However a connection to the south of Roberts Line can be expected to have a stronger desire line and level of diversion.

As for the with Kiwirail Hub scenario it is considered likely that the strengthening of a western access point into the NEIZ will be needed, again to help with relieving the pressure on Railway Road to the south of the NEIZ.

3.3 Additional Housing Scenario

Given the existing and forecast increasing traffic pressures with regard to road access to the NEIZ to and from the south, there is merit in the provision of additional housing that would access the NEIZ from the immediate north or east. The floodplain is likely to restrict built development to the immediate west of the NEIZ. The upgrading of an east-west access route via Flyers Line and Richardsons Line (W) will facilitate access between the potential Kakatangiata residential area and the NEIZ without adding pressure to Tremaine Avenue and Railway Road (S). In terms of locating residential development with strong access to the NEIZ, both Bunnythorpe and areas to the east of the rail line (assuming a grade-separated crossing) are preferred.

4. Response to Questions

The following sections set out responses to the questions including in the project briefing material.

4.1 High Growth Scenario with New Kiwirail Hub

Question - Where, relative to the existing NEIZ, would it make sense to put this extra industrial land provision, from the perspective of your specialist expertise and why?

To the east of the rail line. It is understood that the floodplain would likely restrict the provision of additional industrial land to the west of the existing NEIZ and Kiwirail site. Expansion to the east of the rail line would trigger the need for a grade separated crossing of the rail line and a connection through to Roberts Line to assist with efficiently distributing traffic through the road network.

Question - What obstacles would this scale of expansion create/worsen from your specialist perspective and why?

The key challenge is that there is existing traffic congestion on routes to/from the NEIZ and the central City. This will get exacerbated with the take up of existing vacant NEIZ land and then the Kiwirail Hub. Based on existing patterns, most staff working within the zone can be expected to access the area from the south.

Question - How would you mitigate these obstacles?

Facilitate improved trip distribution to/from the NEIZ. This includes a connection across the rail line and into Roberts Line (S), as well as strengthening access to the western side of the NEIZ from Richardsons Line (W) and the provision of an internal link between Alderson Drive and Richardsons Line.

Question - What opportunities would this scale of expansion create in your specialist area of knowledge and why?

The increased industrial activity and associated road freight activity would strengthen the case for the rural freight ring road and the bypassing of Bunnythorpe to the south and west. This infrastructure will provide needed transport safety, efficiency and amenity benefits but can be expected to be costly to deliver.

Similarly the case for providing an improved east-west route closer to the City, primarily for commuter traffic, is strengthened and could contribute to significant relief of congestion on Tremaine Avenue and through existing parallel residential streets.

Question - How would you secure these opportunities?

Seek to designate the key road infrastructure. That is a crossing of the rail line and connection through to Roberts Line and also for the east-west route where works would extend beyond the existing legal road boundaries. Understanding the interaction with any possible extension of the airport runway will also be key.

4.2 High Growth Scenario without New Kiwirail Hub

Question - Where, relative to the existing NEIZ, would it make sense to put this extra industrial land provision, from the perspective of your specialist expertise and why?

Either within the Kiwirail designation or to the east of the rail line. Within the Kiwirail designation, there are strong potential connections with the existing arterial road network and the future rural freight ring road. However as the NEIZ develops, traffic pressures are considered likely to trigger the need for a

crossing of the rail line, in which case there would be an option to develop land to the east of the rail line.

With regard to the remaining questions, the responses are as for the 'with Kiwirail Hub' scenario but with a less urgent timeframe.

4.3 Industrial Land Summary

Returning to the transportation considerations included earlier in Table 2, the alignment with each of these matters is commented on in Table 3.

Transportation Matter	Comment on Alignment
Are freight movements directed onto the arterial road network?	<p>Any expansion of the NEIZ to the north (without Kiwirail Hub) has the potential for direct connection to the arterial network via Railway Road and indirectly to Kairanga Bunnythorpe Road via Roberts Line.</p> <p>In the 'with Kiwirail Hub' scenario and expansion of the NEIZ to the east of the railway line, an arterial connection to Railway Road and Roberts Line (S) would be needed along with the upgrading of Roberts Line (S) to an arterial.</p>
Can freight and cyclist movements be separated along whole routes?	A separated shared path is being progressively implemented along the railway corridor parallel to Railway Road and separated shared paths are being included along the section of Richardsons Line that is being upgraded. The Kiwirail proposal includes a separated shared path along the proposed perimeter road. Consideration would need to be given to safely accommodating cyclists along possible new connections to the east and along Roberts Line (S).
Can speed limits be managed to provide for safety of pedestrians and cyclists?	Given the volumes of traffic and especially freight traffic that can be expected on the roads around the NEIZ, regardless of the speed environment, the aim should be to provide separated paths for cyclists where possible.
Can the transport network contribute to the road safety vision of zero deaths and serious injuries?	As described earlier in this report, there have been a number of serious and fatal crashes within the wider area around the NEIZ over recent years. Any new or upgraded roading infrastructure will need to be designed to actively improve road safety, not just to mitigate effects of additional traffic, in order to reduce the number and severity of crashes.
Can a place and movement approach to the delivery of the transport network be taken?	This principle is key to the PNITI programme and would be expected to also apply to any new or upgraded transport network as part of any expansion to the NEIZ.
Can integrated networks for each of bus, cycling and walking be provided, connecting with internal destinations and the external transport network?	<p>Bus services could readily serve the NEIZ with an existing route passing along Railway Road.</p> <p>Cycling and walking networks are being actively developed in the vicinity of the NEIZ and the Kiwirail proposal includes a shared path around the perimeter road.</p>
Can the bus and active mode networks deliver a significant uptake in use of each of these modes?	Bus and cycling could potentially provide for a proportion of the commuter traffic but the industrial nature of the activities and the origins of many commuter trips from throughout the region will lead to significant additional vehicle movements, including trucks.
Are the PNITI projects allowed for including the freight ring road and the second bridge?	The rural freight ring road along Kairanga Bunnythorpe Road and Ashhurst Road are key to providing for the longer distance inter-regional road freight movements. The longer term southern and western bypasses of Bunnythorpe are key to relieving traffic pressures and improving road safety in central Bunnythorpe.

Table 3: Comment on Strategic Transportation Considerations

As such it is considered that the transport network associated with the expansion of the NEIZ could be upgraded and developed in a way which supported the wider strategic transportation objectives.

4.4 Extra Housing

As included earlier in this assessment, given the existing and forecast increasing traffic pressures with regard to road access to the NEIZ to and from the south, there is merit in the provision of additional housing that would access the NEIZ from the immediate north or east. In either of these locations it will be important for the new residential area to be serviced by buses and to connect in with the cycling network in a manner which allows for public transport and cycling to provide for increased travel mode share for commuter trips to a range of employment locations in the City.

5. Conclusion

Key transport considerations associated with additional development in the vicinity of the existing NEIZ include:

- existing traffic congestion within the road network to the south of the NEIZ;
- future additional traffic growth associated with the uptake of NEIZ land that has yet to be developed;
- potential traffic associated with the Kiwirail Hub;
- traffic that will divert onto Railway Road when the Roberts Line rail crossing is closed;
- the regionwide catchment for employees within the NEIZ;
- the need to improve on road safety and not just mitigate adverse road safety effects as a result of development;
- include provision for employees to access work locations by bus and active mode (most likely cycle);
- as well as existing programmed works and the PNITI projects, new roading infrastructure is likely to be needed to:
 - o link Alderson Drive to Richardsons Line;
 - o upgrade the east-west route along the northern edge of the City on Flyers Line and Richardsons Line;
 - o connect across the rail line and through to Roberts Line (S); and
 - o upgrade Roberts Line (S).

Please do not hesitate to be in touch should you require clarification of any of the above.

Yours faithfully

Harriet Fraser

Harriet Fraser