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Responses to Economic Matters Raised in Section 92 Request for Proposed Regional Freight Hub

Prepared for:
KiwiRail

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1. Introduction

1.1. Context and Purpose of Report

KiwiRail has lodged a Notice of Requirement (NoR) with Palmerston North City Council to construct and operate a regional freight hub in the north eastern reaches of the city. As part of that process, the Council has issued a request for further information under section 92 of the Resource Management Act 1991 (RMA). The purpose of this document is to respond to various economic matters raised in section 92 request.

1.2. Structure of Report

The remainder of this report is structured as follows

- **Section 2** considers the likely economic impacts of freeing-up land at the existing Freight Yard at Tremaine Avenue (s 92 para 121(viii)).
- **Section 3** assesses possible impacts arising from changes in land use due to the NoR (s 92 para 121(ix)).
- **Section 4** estimates the impacts of construction on GDP, incomes, and employment (s 92 para 121(v)).
- **Section 5** considers the flow-on effects of construction impacts on the demand for housing in Palmerston North (s 92 para 121(v)).
- **Section 6** discusses the potential broader strategic/economic impacts of the proposed NoR (s 92 para 121(x)).
- **Section 7** provides a list of references used in this document.

2. Impacts of Freeing Up Land at the Existing Freight Yard Site

2.1. Section 92 Request

This section addresses matters raised in paragraph 121(viii).

2.2. Introduction

The development of the proposed new Regional Freight Hub (RFH) will free-up land at the existing rail hub location located northeast of Tremaine Avenue between Rangitikei Line and Milson Line (existing Freight Yard site). This will have effects on the local land market.

First, the relocation of this facility will release the underlying land from its current use. How the existing Freight Yard site could be redeveloped has not yet been confirmed, however the analysis undertaken in technical response prepared by Mr Paling has considered that the existing Freight Yard site would likely be suitable for a range of light industrial and commercial activities. The redevelopment of the Existing Freight Yard site for such uses has the potential to offset the uptake (or “loss”) of NEIZ land as part of the proposed new designation for the RFH. This, in turn, may help to neutralise the net impacts of the proposal on the city’s supply of industrial land, particularly since the existing facility is zoned industrial and could be subdivided into relatively large lots (if needed), in the same manner as the NEIZ.

Second, there may be broader economic effects if the land freed-up is more or less valuable than other industrial land in the city. If the land freed-up is significantly more valuable than other industrial land nearby, its pending availability for other future industrial uses will confer economic benefits to the city, and vice versa. This is discussed in further detail below.

2.3. Analysis

To examine this possibility, we used Core Logic’s Property Guru tool to compare the land value of properties directly adjacent to the existing Freight Yard site to the land values of other industrial areas nearby. Our working hypothesis was that, if the land directly adjacent to the existing facility is significantly more or less valuable than other nearby industrial land, the same may also be true of the land upon which the existing facility resides.

The two figures below show the areas that we compared for this purpose, where the red outlines in figure 1 represent land directly adjacent to the existing Freight Yard site, while those in figure 2 represent nearby industrial areas used for comparison purposes.

Figure 1: Properties Directly Adjacent to the Existing Freight Yard site (Highlighted in Red Outlines)

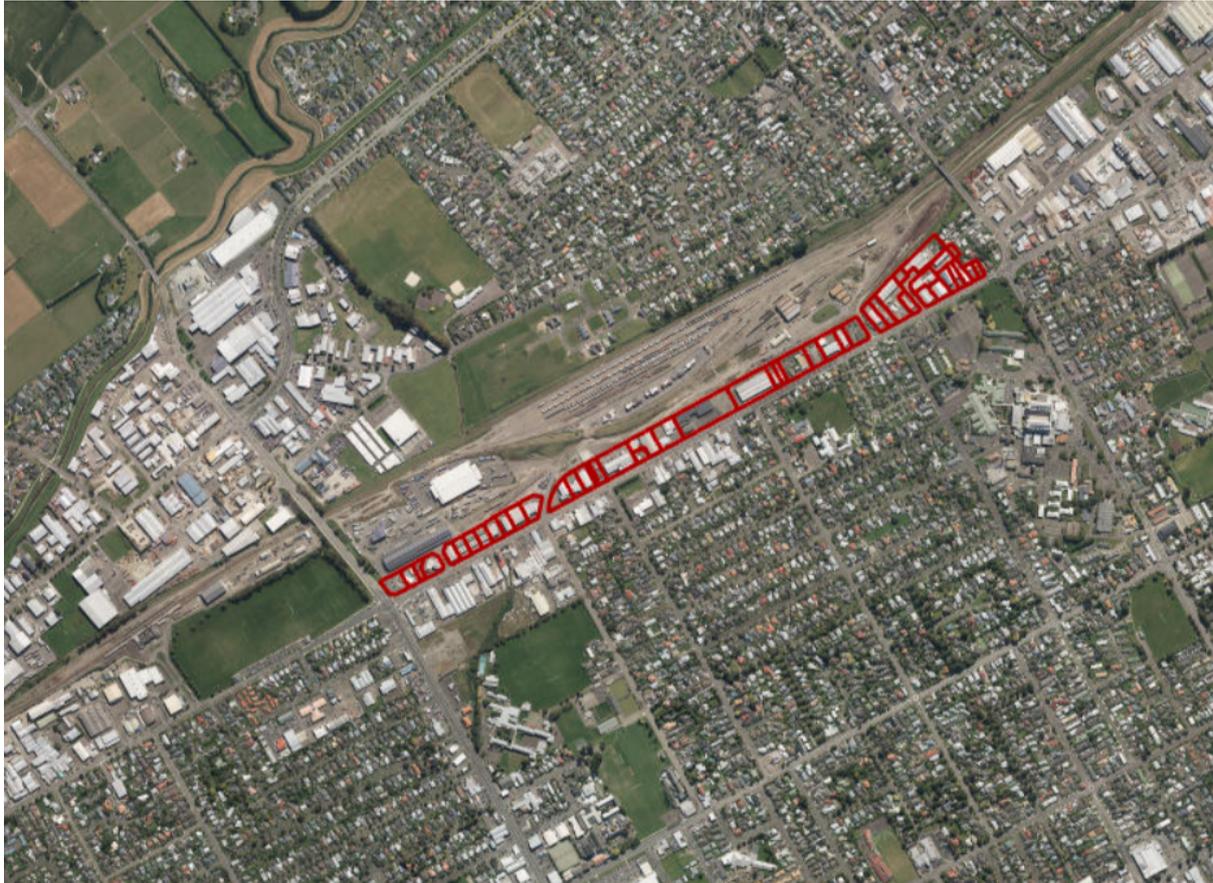


Figure 2: Other Industrial Properties Used for Comparison Purposes



The analysis returned property information for 36 industrial properties directly adjacent to the existing Freight Yard site, and a further 431 other industrial properties located nearby. The

graph below compares the land values of adjacent properties (the red bars) to other industrial properties (the grey bars).

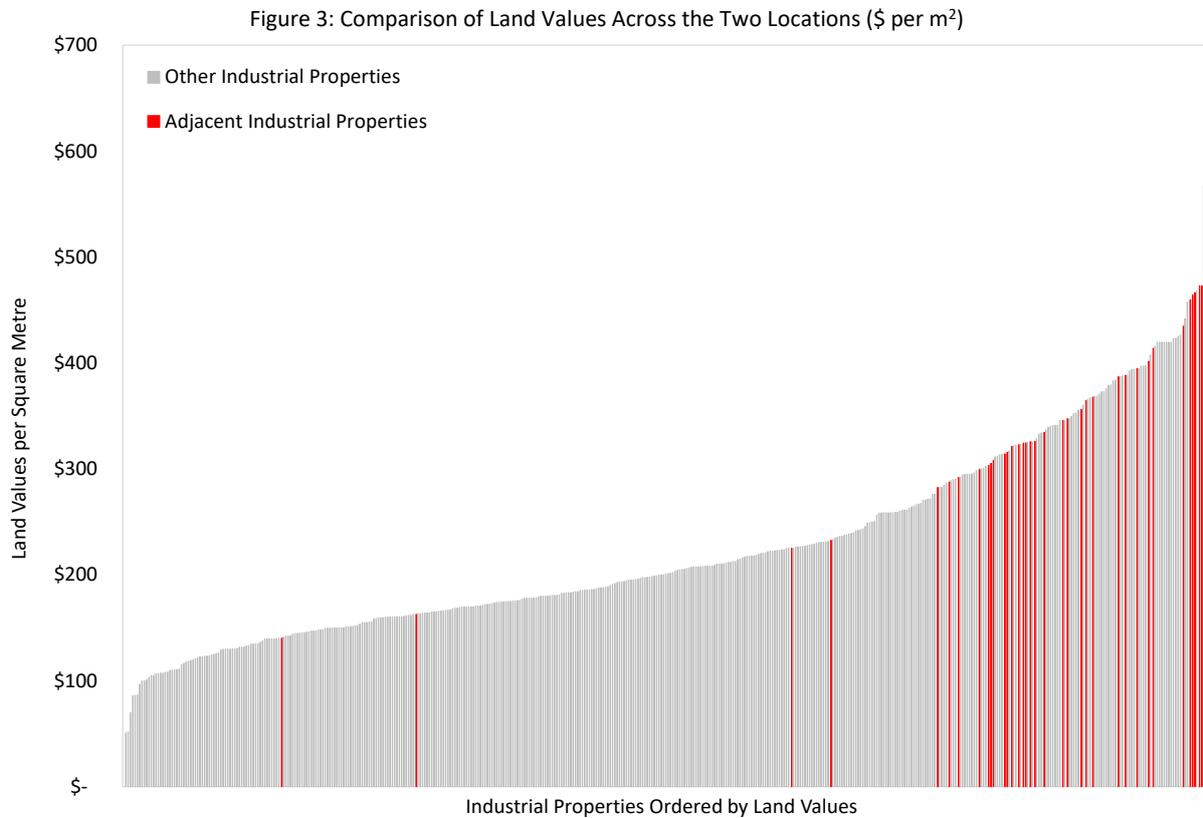


Figure 3 indicates that land directly adjacent to the existing Freight Yard site is significantly more expensive than other industrial land overall, as shown by the cluster of red bars on the righthand side of Figure 3. The average land value for industrial properties adjacent to the existing Freight Yard site is \$341 per square metre, compared to only \$216 for the other areas. In other words, sites directly adjacent to the existing Freight Yard site are worth 57% more per square metre of land than comparable properties nearby.

2.4. Statistical Testing

To formally examine whether this difference in land value was statistically significant, we used an Excel function called the z-test for two means. This is a type of statistical “hypothesis test”, which determines whether the observed variance in average land values represents a fundamental difference between the two datasets, or is merely a statistical anomaly. The strength of the test result is measured by the z-score and its corresponding p-value, which is bound by zero and one. The closer the p-value is to zero, the more certain we can be that the observed difference represents a true divergence in land values, and vice versa.

In general, p-values less than 0.05 indicate strong statistical significance, while values greater than 0.1 indicate that any observed differences are likely to be an anomaly.

The table below shows the outputs of the statistical test, where the z-score is less than negative 9 and the p-values are effectively zero. This value of negative 9 for the z-score means that the probability of these differences being a statistical anomaly (rather than reflecting a true difference in land values) is less than one in a trillion.

Figure 4: Outputs from Statistical Tests

z-Test: Two Sample for Means		
	<i>Other</i>	<i>Adjacent</i>
Mean	216.18	341.23
Known Variance	7,487.00	6,137.00
Observations	431.00	36.00
Hypothesized Mean Difference	-	
z score	- 9.12	
P(Z<=z) one-tail	-	
z Critical one-tail	1.64	
P(Z<=z) two-tail	-	
z Critical two-tail	1.96	

To summarise, our statistical test confirms that the difference in land values between the two locations is extremely statistically significant, and not just a statistical anomaly.

2.5. Summary and Conclusions

The statistical tests cannot, however, tell us *why* these values differ so much. In our view, there are two possible reasons. First, these sites may be more valuable because of their proximity to the existing Freight Yard site. Second, these sites may be more valuable because of other reasons, such as their relatively central location, proximity to residents (i.e. workers), accessibility from Tremaine Avenue, and proximity to the CBD.

We consider it is likely that both factors are at work. Accordingly, it follows, that the construction of the RFH and decommissioning of the existing Freight Yard site will not only free-up relatively valuable industrial land at the existing Freight Yard site, but that the relocation may also positively influence the value of industrial land next to the new location (i.e. the NEIZ).

3. Impacts of Changes in Land Use Due to the NoR

3.1. Section 92 Request

This section addresses matters raised in paragraph 121(ix).

3.2. Introduction

The RFH will span approximately 177 hectares of land between the airport and Bunnythorpe, approximately 127 hectares of which is currently zoned rural, and the remaining 50 hectares of which is zoned NEIZ.

3.3. Analysis

To understand the potential impacts of changes in land use resulting from the proposed NoR, we used Core Logic's Property Guru tool to extract information on the land parcels that comprise it. As Property Guru tool was unable to trace the outline of the proposed NoR with a high degree of precision, the results exclude a few parcels that comprise the NoR, while also including a few that do not. Overall, however, we consider that the results provide a reasonable approximation of the affected area from which to consider any potential effects on land use changes. The figure below shows the area for which property information was extracted. It comprises 52 parcels with a total land area of nearly 159 hectares.

Figure 5: Property Guru Approximation of Land Affected by the Proposed NoR

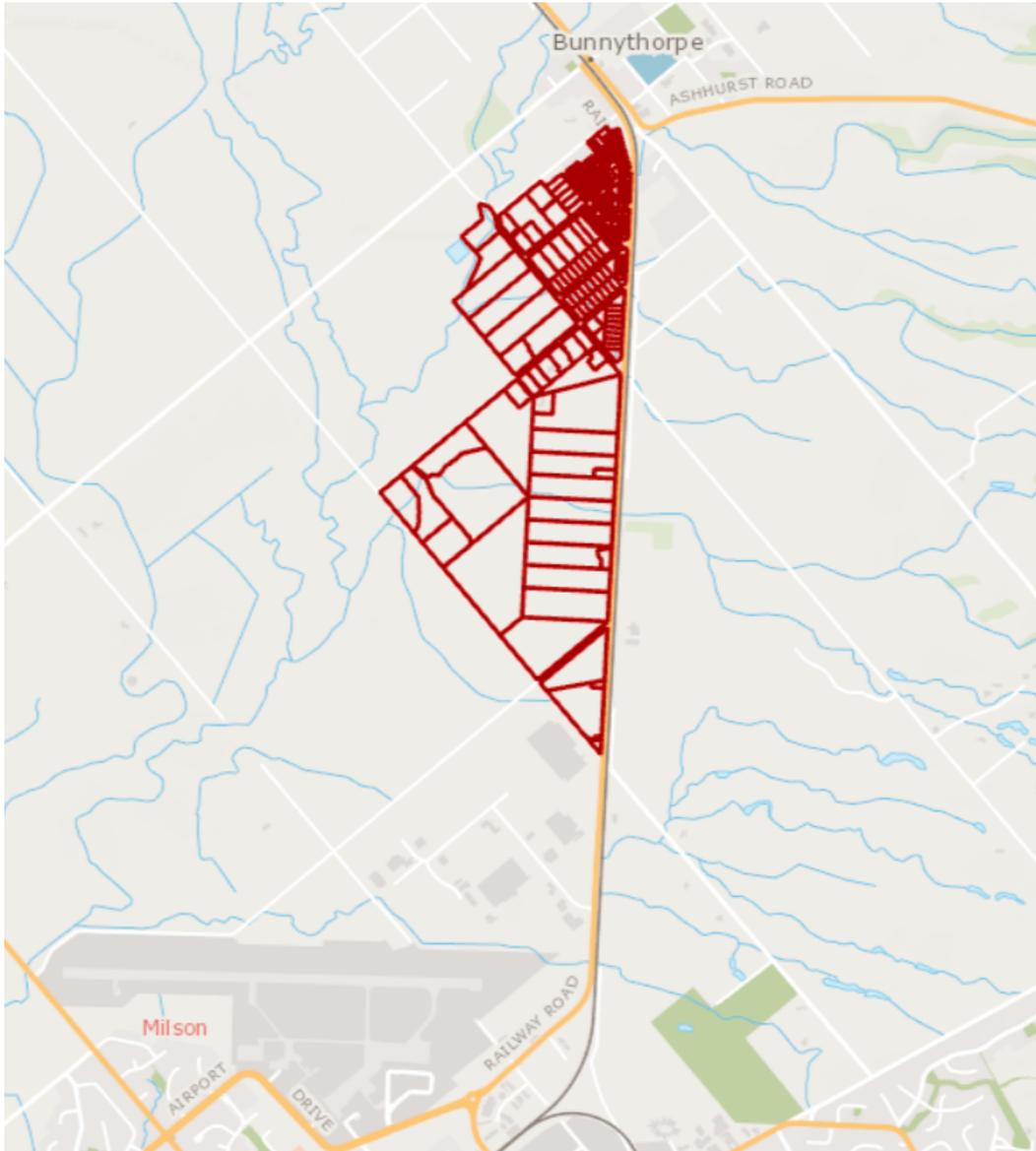


Table 1 summarises the current land uses based on data from Property Guru, along with corresponding land areas and values.

Table 1: Land Uses for Parcels that Approximate the NoR Area

Land Use Types	Number of Properties	Land Area (ha)	Total LV (\$m)	\$/m ² LV
Farming	7	75	\$4.7	\$6
Rural/Lifestyle	19	52	\$5.9	\$11
Residential	18	7	\$2.8	\$43
Vacant Industrial	6	25	\$8.6	\$35
Other	2	1	\$0.5	\$39
Totals	52	159	\$23.0	\$14

Table 1 shows that most of the parcels (71%) that comprise the NoR area are defined as either residential or lifestyle (i.e. rural residential) properties. However, these account for only 37% of the total land area analysed. Farming properties, conversely, account for 13% of land parcels but 47% of land area. The other notable land use is vacant industrial (which represents some of the undeveloped land within the NEIZ), which accounts for just over 10% of parcels but nearly 16% of total land area.

Further, of particular interest here are the land values attached to each land use. These range from \$6 per square metre for farming up to \$43 for residential, with vacant industrial land weighing in at around \$35 per square metre. The overall average is \$14. These figures are quite low overall compared to land prices elsewhere in the city.¹ This suggests that the land that the NoR comprises will not result in significant opportunity costs. This is particularly true for the farming land consumed by the NoR, which Core Logic mostly labels as “uneconomic” due to its evidently marginal nature.

The absence of food production on this land is also material, as it suggests that the loss of the land will not forego important opportunities for local food production.

The other important consideration here is the potential effects of the accelerated uptake of NEIZ land, 50 hectares of which would be consumed by the NoR. According to detailed reporting recently completed by/for the Council under the National Policy Statement on Urban Development Capacity 2016 (NPSUDC), “approximately 150ha of the 212ha of land zoned for large floor-plate development [in the NEIZ] has been developed or has been secured with the intention to develop in the short to medium-term (up to 10 years).”² Accordingly, it concludes, there may be a need to consider the provision of additional land for large-lot industrial sooner than previously anticipated.³

The same report goes on to state:

“One of the drivers for early market interest in securing land in the Extension Area is the announcement of rail access into the area. Rail seems to be a catalyst that is drawing investment interest because of the opportunity for the Extension Area to become a central North Island multi-modal transport and distribution hub that includes convenient access to road, rail and air. Market indications at the end of 2018 are that a number of large sites in the Extension

¹ For example, as shown in the previous section, the average value of land across various industrial areas of the city was \$216/m², which is 15 times higher than the average value for the land notionally affected by the NoR.

² Palmerston North Housing and Business Development Capacity Assessment Report, May 2019.

³ Palmerston North Housing and Business Development Capacity Assessment Report, May 2019 at, paragraph 2.30 on page 12 states “it is likely that capacity issues for large floor-plate industrial land is likely to arise in the next 10-15 years (medium to long-term) rather than beyond the 20-year horizon (long-term) projected in the Capacity Assessment.

Area are now under contract or have been purchased by development interests.”

In other words, the market appears to have started acquiring land in and around the NEIZ extension area in anticipation of an intermodal freight hub because it would create a significant economic anchor towards which complementary activities would naturally gravitate. Therefore, not only would the RFH consume a significant proportion of the city’s current stock of large-lot industrial land, but it has also accelerated the uptake of peripheral land to enable the agglomeration of like-activities. This agglomeration (or clustering) of economic activity, in turn, will generate economic benefits by reducing transport costs and lifting the average productivity of firms (for example, through the sharing of labour, specialised assets, and ideas). Indeed, these agglomeration benefits are the motivating force for compatible/related economic activities willingly collocating with one another all across the world.

As a result, the city will need to start planning for the rezoning of other land to ensure that there is a sufficient supply of large-lot industrial sites to meet requirements over the longer term. We do, however, reiterate that the loss of some NEIZ land to the RFH will be offset, at least partially, by release of land underlying the existing freight yard at Tremaine Avenue. Given the relative proximity of that land to the CBD, it is highly likely to be more valuable than the land consumed by the proposal at the NEIZ.

On the basis that we are not aware of any factors that would preclude the successful identification and rezoning of additional land to offset the increased uptake of NEIZ as a result of the RFH and complementary land uses, it seems unlikely that there will be any adverse economic effect. Conversely, the development of the new RFH in this location will instead give effect to the Council’s stated objective of using “Palmerston North’s central location and access to road, rail and air transport to build a significant future-proofed freight and distribution hub.”⁴

⁴ <https://www.pncc.govt.nz/media/3130972/city-development-2018.pdf>, page 16

4. Employment and other Construction related Impacts

4.1. Section 92 Request

This section addresses matters raised in paragraph 121(v).

4.2. Introduction

The future development of the RFH will cost several hundred million dollars and hence will result in significant economic stimulus for the city, region, and the wider north island economy. For example, the process of planning for, designing, constructing, and fitting out the various buildings and structures that comprise the RFH will draw in workers from many fields and hence create jobs and incomes for numerous workers. For example, the following workers would be required to complete the project, many of which would be city/regional locals:

- architects, planners, lawyers;
- quantity surveyors;
- transport specialists;
- civil and structural engineers;
- site preparation workers;
- building contractors and sub-contractors; and
- plumbers, electricians, glaziers.

To estimate the potential economic impacts associated with the design and construction of the RFH, we used a multiplier analysis. This incorporates detailed matrices called input-output tables, which show how the various sectors of the economy are interrelated. Consequently, they enable the overall impact of the proposal, including its flow on effects, to be estimated.

4.3. Analysis

Because the proposed development is significant in terms of scale and will therefore draw on resources across a broad area for its construction, we selected the north island as the relevant study area. For each major phase in the development process, we then mapped the estimated costs to sectors of the north island economy. Finally, we overlaid the corresponding economic multipliers to derive the estimated impacts on north island GDP, employment, and household incomes. Table 2 presents the results.

Table 2: Estimated Total Economic Impacts of Construction (\$million)

Economic Impact Measures	Direct	Flow-On	Total
GDP \$m	\$300m	\$680m	\$980m
Employment (FTE-years)	2,960	6,230	9,190
Household Incomes \$m	\$185m	\$295m	\$480m

As demonstrated in Table 2, construction of the RFH could generate nearly \$1 billion of GDP for the north island (including \$680 million of flow-on effects), and create employment for nearly 9,200 FTE-years.⁵ In addition, increased employment could boost household incomes by around \$480 million over the construction period.

Since the construction period is expected to last approximately 8 to 10 years, it is helpful to convert these aggregate estimates into annual equivalents. To that end, the table below restates the impacts above on an annual basis assuming a construction period of 10 years.

Table 3: Estimated Annual Economic Impacts of Construction (\$million)

Economic Impact Measures	Direct	Flow-On	Total
GDP \$m	\$30m	\$68m	\$98m
Employment (FTE-years)	296	623	919
Household Incomes \$m	\$18m	\$30m	\$48m

Table 3 shows that construction of the RFH could boost north island GDP by nearly \$100 million per annum for 10 years, create full-time employment for nearly 920 people (again, for 10 years), and boost annual household incomes by \$48 million.

If we assume that half of these north island impacts occur regionally, the RFH could boost regional GDP by nearly \$50 million per annum for 10 years, provide employment for almost 460 people, and lift regional household incomes by \$24 million per annum for 10 years.

This shows that the economic impacts of construction are significant, and represent a material gain to both the regional and wider north island economies.

It is also important to put these economic impacts in the context of the likely effects of several other major projects that are anticipated for the city and region over the next 10 years or so. A list of these other projects (reproduced in Figure 6 below) was compiled by the Council and subsequently outlined in several documents, including a recent report titled Urban Development Capacity Indicators for Palmerston North (July 2020).

⁵ An FTE-year means one full-time equivalent employed for a full year. Hence, 9,200 FTE-years could mean 4,600 people employed for two years, 920 people employed for 10 years, and so on.

Figure 6: Major Projects Planned for the City/Region

Major construction projects			
<p>Major development and construction projects announced for Palmerston North and the Manawatū region amount to more than \$3.0 - \$4.0 billion of construction activity over the period to 2030.</p> <p>Some projects under development do not have final values for the project, such as the construction of the MidCentral critical service block and KiwiRail freight hub, although KiwiRail suggests it might attract \$4 billion in investment to Palmerston North.</p> <p>(Source: Palmerston North City Council)</p>	Development	\$ million	Timing
	Manawatū Gorge	650	start January 2020
	Linton and Ohakea regeneration plan	397	2018 - 2030
	Mercury Energy - Turitea	256	started August 2019
	Massey University capital plan	230	2020 - 2030
	Powerco growth and security projects	150	2017 - 2024
	Hokowhitu campus redevelopment	90 - 135	started late 2019
	P-8A Poseidon aircraft - infrastructure	300	finish by 2023
	NZTA regional roading investment	cost and timing to be confirmed	
	BUPA retirement village	40	started 2017
	KiwiRail regional freight hub	cost and timing to be confirmed	
	MidCentral DHB acute services block	370	timing uncertain
	MidCentral surgical and mental health	57	late 2020/early 2021
	Countdown distribution centre	66	2020 - 2021

This broader list of major projects shows that the RFH will be one of many major initiatives that will significantly bolster local/regional GDP, incomes and employment. Taken as a whole, this forthcoming body of work will create sustained employment for a large and diverse workforce, rather than resulting in only one-off, transient economic effects.

Further, I note that the RFH will have significant employment effects over the longer term due to ongoing operations. According to preliminary analyses performed by KiwiRail, the RFH – and its associated onsite freight partners – could provide full-time employment for more than 1,000 people. This is likely to be conservative however because, as I understand it, these estimates are based on current KiwiRail employment figures from their Tremaine Avenue site. As the RFH grows to reach its long-run operating capacity, the fulltime employment figures are likely to significantly exceed the baseline estimate of 1,000 people.

5. Impacts on Housing Demand

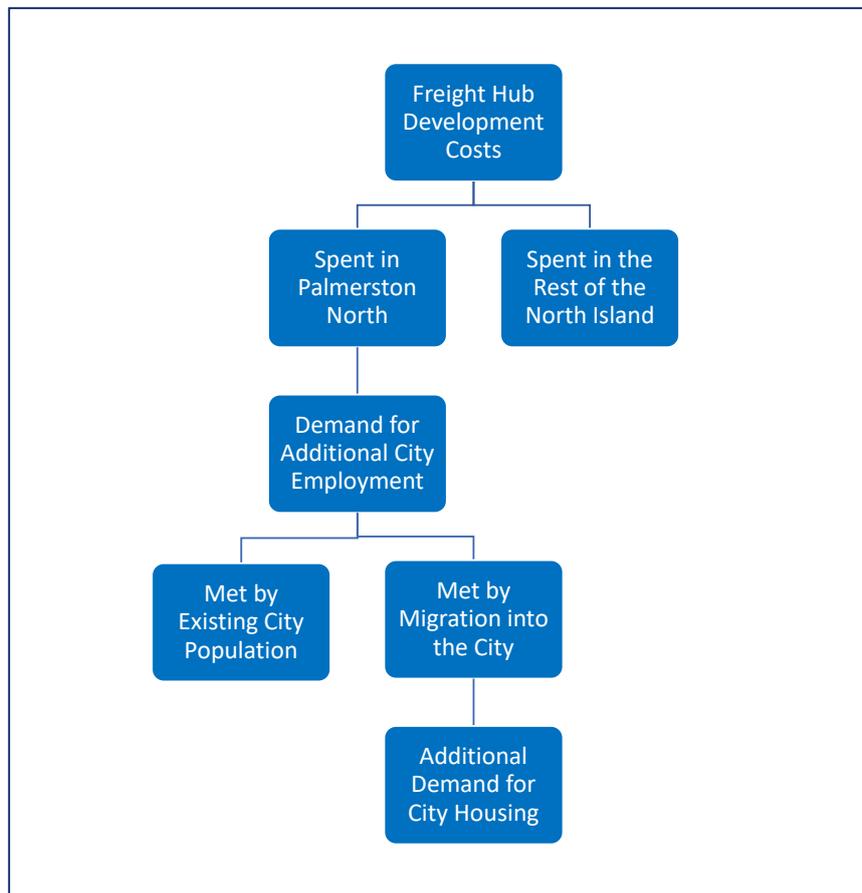
5.1. Section 92 Request

This section addresses matters raised in paragraph 121(v).

5.2. Introduction

The increases in employment associated with the construction of the RFH – and the other major projects identified above – will increase the demand for local housing, and hence potentially place some pressure on the city’s housing market. The diagram below broadly illustrates the general relationship between the estimates of increased employment tabulated above, and the corresponding impacts on the demand for city housing.

Figure 7: Relationship between RFH Costs/Impacts and Local Housing Demand



To summarise, construction of the RFH will increase the demand for employment in the city, some of which will be met by the existing population, and some of which will be met by migration into the city. These workers who are coming to the city, in turn, will need somewhere to live, thereby increasing the demand for city housing.

5.3. Analysis

To estimate the level of this effect, we determined the proportion of RFH construction costs spent in the city, plus the proportion of the resulting increase in local city employment met by migration.

In the absence of any concrete information on the likely share of construction costs spent in the city, and in the interests of adapting a conservative approach, we assumed that a quarter of total construction costs will be spent in Palmerston North, and that half of the resulting increase in city employment will be met by migration. Then, we applied these assumptions to the estimated annual increases in employment during construction shown in Table 3. Under these assumptions, we estimated that construction of the RFH will generate local housing demand for an additional 115 dwellings (over and above the demand that would be anticipated if the RFH was not constructed).

While this might seem like a significant figure in its own right, it needs to be considered in context. Specifically, according to the 2017 Sense Partners household projections for the city, this will equate to only about a quarter of a year's average demand for additional dwellings out to 2043. Those household projections were contained in reporting recently completed under the NPSUDC and are reproduced below.

Table 4: Long-term household projections for Palmerston North

Period ended	Sense Partners (September 2017)			Statistics New Zealand (December 2016)		
	Households	Average annual change		Households	Average annual change	
		Number of households	Rate of change(%)		Number of households	Rate of change(%)
2001	28,000			28,000		
2006	28,900	180	0.6%	28,900	180	0.6%
2013	31,500	371	1.2%	31,500	520	1.2%
2018p	33,000	300	0.9%	33,500	400	1.2%
2023p	35,300	460	1.4%	35,100	320	0.9%
2028p	37,600	460	1.3%	36,600	300	0.8%
2033p	40,000	480	1.2%	37,900	260	0.7%
2038p	42,100	420	1.0%	39,000	220	0.6%
2043p	44,300	440	1.0%			

Source: Statistics New Zealand and Sense Partners

6. Broader Strategic/Economic Effects

6.1. Section 92 Request

This section addresses matters raised in paragraph 121(x).

6.2. Discussion

Until last year, the official New Zealand guidance on evaluating the economic effects of transport projects was contained in Waka Kotahi NZ Transport Agency's highly-detailed economic evaluation manual. However, that was replaced in 2020 by the Monetised Benefit and Cost Manual (MBCM).

The MBCM contains guidelines for evaluating freight projects and outline the relevant benefits and disbenefits for monetisation. It recommends that a full evaluation procedure is followed for projects costing more than \$15 million, with smaller projects subject to a simplified evaluation procedure.

The framework for the evaluation of the RFH involves calculating the benefits and disbenefits of the proposed freight project, and contrasting this with the do-minimum option (where the do-minimum for evaluation of freight services is usually considered a continuation of the current transport networks). In this context, the do-minimum option represents the continuation of existing current services at the existing Freight Yard site at the prevailing level of service.

The benefits and disbenefits outlined for measurement and monetisation are listed below, many of which have already been addressed in the economic assessment that accompanied the Assessment of Environmental Effects, and in other section 92 responses.⁶

- *Impact on social cost and incidence of crashes* - Road traffic reduction resulting from increased rail freight availability could result in a reduction of road crashes, the reduction in road crashes is modelled by using crash rates for freight and other sectors.
- *Impact of air emissions on health* - Reduction in road traffic resulting from increase rail haulage, could be expected to reduce emissions of harmful air pollutants.
- *Impact of noise and vibration on health* – The noise and vibration effects are considered in the Acoustics Assessment.
- *Impact on system reliability* – Travel time impacts need to be estimated for the RFH compared to the current do-minimum option.

⁶ Richard Paling, Analysis of the Potential Economic Development and Wider Economic Impacts of the Proposed New Regional Freight Hub in Palmerston North, October 2020 (Appendix K)

- *Impact on network productivity and utilisation* – Increases in network productivity and utilisation would be increased through the reliable and scheduled nature of the haulage, compared to road haulage which can have disruptions and delays en-route.
- *Impact on greenhouse gas emissions* - For freight rail projects that expect to divert traffic from road, there are significant benefits in road decongestion and reduction in air pollution and greenhouse gas emission.⁷
- *Impact on user experience of the transport system* - Includes the reduction in driver frustration derived from ‘time spent passing’. Improved rail freight options will reduce road congestion and complications arising from road haulage, which improves user experience of the transport system.
- *Wider Economic Benefits (WEBs)* - The wider economic benefits or WEBs are only applied to the most significant infrastructure projects that result in ‘changes in the distribution or density of households and firms within a major metro area, or deliver significant improvements in accessibility between regions’ (page 73, Waka Kotahi, 2020).

As these effects have largely been addressed in other assessments, we focussed on these wider economic benefits in greater detail.

The three traditional WEBs relate to supply-side improvements that lift economic output, for example by increasing the size of the labour force or increasing the productivity of existing firms and workers.

Wider economic impact (productivity)

This kind of supply-side benefit arises in large part from gains associated with agglomeration⁸, as new businesses and industries thrive around the RFH.

The guidelines do note however that the required spatial concentration of economic activity for realising agglomeration benefits is only likely to occur in the major industrial and urban centres of New Zealand. Given that Palmerston North is one of only 13 cities across New Zealand (with the remaining 54 territorial authorities being districts), these effects are likely to be relevant.

As one example, Ports of Auckland recently developed the Waikato Freight Hub in Hamilton to facilitate improved connections with the national supply chain network. Since then, the

⁷ KiwiRail anticipates that the RFH will commence operation in approximately six years and will be fully developed by approximately 2050. The long-term investment of the RFH also aligns with New Zealand’s long-term goals of carbon emission reduction.

⁸ Agglomeration refers to the concentration of economic activity in small geographic areas, which can give rise to several economic benefits. These include information sharing, labour market pooling (and hence better job-candidate matches), higher wages, plus support for improved social and civic opportunities.

surrounding Northgate Business Park has attracted a number of import/export customers due to both its road and rail access.

Intermodal freight terminals are also characterised by full train loads that service many customers, of which each may require their own shipment handling business (Monios, 2018). This is another example of potential benefits arising from the proposal.

Wider economic benefit (employment impacts)

Job creation can be considered a large positive impact of transport investment, with two distinct mechanisms being suggested in the MBCM. The first is the impact on the supply-side, where improved transport options may make it easier for people to get to work. This effect is less relevant for the RFH as the hub services the transport of goods and is not intended to be a transport route for individuals.

However, if the RFH reduces road congestion elsewhere, thereby reducing travel time for employees, then this could affect the supply-side of labour at the margin.

The second employment effect is the impact on the demand side for labour, where both the construction and the ongoing operation of the RFH would employ workers.

In addition to providing employment during the build of the freight hub, the operation of a large freight hub would also create stable long-term employment to the local community, this helps to support local industry in regional areas, creating a thriving economy outside of main urban centres.

Waka Kotahi's Cost and Benefit guidelines do note that; 'However, for long-run transport projects in reasonably well-functioning market economies it seems likely that the labour market will adjust to some 'natural rate' of unemployment which is independent of transport investment.' (page 165, Waka Kotahi, 2020)

An exception for lasting employment effect could be if the RFH increased the demand for exports. In this way, foreigners would be paying for an increase in labour brought about by the increase in demand for New Zealand's products. Reducing the costs of export products through efficiency gains from the RFH, could lead to an increase in demand for exports or an increase in the margin exporters receive for their goods.

Wider economic impact (imperfect competition)

Another mechanism through which the reduction in the cost of transport increases benefits is if it increases the price-cost margin. The average price-cost margin in the New Zealand economy is 20%. A reduction in the cost of transport can increase the price-cost margin creating a benefit to business users of the RFH.

Wider economic impact (regional economic development)

This WEB is largely focused on the impact of a change in tourist numbers, though we could also consider the change in demand for New Zealand exports that might result from a more efficient and lower carbon freight network. Overall, however, this WEB is unlikely to apply in the current context.

In addition to the benefits laid out for monetisation in the Government's guidelines for evaluation of transport projects, there are likely to be significant benefits experienced outside of Palmerston North. One potential benefit is in reducing the congestion in Auckland as a major freight and business hub. Improving the rail links through the North Island to Auckland port reduces the demand for freight movements relying on road transportation.

Overall, around 31% of New Zealand's freight has an origin or destination in Auckland (Paling, 2019). Many regions in the North Island depend on the Auckland transport network to operate effectively. Any delivery delays in Auckland will flow through to operations in these other regions.

All of Ports of Auckland freight hubs are strategically located next to rail. However, the majority of Ports of Auckland trade volumes are distributed via the road network, with only 14.4% of total land-side moves to/from the port being done via rail in 2020 (Ports of Auckland, 2020). This indicates the potential for greater rail freight transport through improved rail connections (Money et al, 2019).

The benefits of Auckland Road decongestion have been estimated to be between 0.9 and 1.1 million dollars per annum (Leung et al, 2017). Auckland city has a high reliance on private vehicle as a mode of transport. The 2013 Census showed only 8.3% of journeys to work in Auckland were made by public transport, while 82.7% were made by private vehicle (Statistics New Zealand, 2017).

The benefits of decongestion include the time-savings impacts on freight and commuters, which benefits both businesses that use freight and/or employ workers who commute, and households that gain time otherwise spent in traffic for other activities. Research has also shown a relationship between congestion and reducing employment growth in cities (Sweet, (2013), Hymel, (2009)).

The proposed RFH may also be the first of many new hubs developed across New Zealand to help strengthen the rail network and encourage a modal shift away from road freight transport. If so, the proposal may have important wider benefits by creating a blueprint for future developments and hence improving the economic efficiency with which the rail network is developed over time.

7. References

Waka Kotahi NZ Transport Agency, Monetised benefits and costs manual (2020) ISBN/ISSN: 978-1-98-856173-8 (online)

Monios, J., & Incentives, P. I. (2018). The Economics of intermodal freight transport. *ResearchGate*. January.

Leung, C., Destremau, K., Pambudi, D., & Bealing, M. (2017). Benefits from Auckland road decongestion

Sweet, M. (2014). Traffic congestion's economic impacts: Evidence from US metropolitan regions. *Urban Studies*, 51(10), 2088-2110

Hymel, K. (2009). Does traffic congestion reduce employment growth?. *Journal of Urban Economics*, 65(2), 127-135.

TfNSW, T. (2018). Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives-June 2018, vol. 2018, State of New South Wales, Sydney. *New South Wales*.

Mallett, W., Sedor, J., & Economics, H. D. (2004). *Freight transportation improvements and the economy* (No. FHWA-HOP-04-005). United States. Federal Highway Administration. Office of Freight Management and Operations.

Money C et al (2019). Economic Analysis of Upper North Island Supply Chain Scenarios, Ministry of Transport.

Paling R et al (2019) National Freight Demand Study 2017/18, Ministry of Transport.

Ports of Auckland, 2020 Annual Report.