

BEFORE THE AUCKLAND COUNCIL

IN THE MATTER of the Resource Management Act 1991 (**the RMA**)

AND

IN THE MATTER A Notice of Requirement by KiwiRail for the Palmerston North Regional Freight Hub Designation.

**STATEMENT OF EVIDENCE OF MICHAEL NIXON FOR
FOODSTUFFS NORTH ISLAND LIMITED (FSNI)**

(TRANSPORT)

23 July 2021

1. INTRODUCTION

- 1.1. My full name is Michael Ian Nixon. I am a transport engineer and am employed as a Principal Transport Consultant at Commute Transportation Consultants Ltd. I have worked at that firm since October 2015.

Qualifications and experience

- 1.2. I am a Chartered Professional Engineer and hold the degree of Bachelor of Engineering (Civil) from the University of Auckland (2001). I am a Chartered Member of Engineering New Zealand (CMEngNZ) and am an International Professional Engineer (IntPE(NZ)).
- 1.3. I have 20 years' experience as a specialist traffic and transportation engineer and I frequently provide advice to private and public-sector clients on a wide range of traffic engineering and transportation planning matters. Prior to joining Commute, I worked at Traffic Design Group (now Stantec) and Flow Transportation Specialists.

Involvement in the project

- 1.4. I was engaged in July 2021 by Foodstuffs North Island Limited ("FSNI") to advise on the transport effects of KiwiRail Limited's ("KiwiRail") proposed designation ("NOR proposal") for a regional freight hub. My work has focussed on the Designation area around the FSNI Distribution Centre at 703 Roberts Line, Milson (the "DC site"), and general changes to transport connectivity affecting DC site operations.
- 1.5. As part of my involvement in the NOR proposal, I have visited the site, reviewed the Integrated Transport Assessment (dated October 2020) and S92 information (dated February 2021) lodged by KiwiRail, reviewed the Palmerston North City Council ("PNCC") transport specialist evidence, and reviewed the PNCC S42 report. I have also reviewed the recent KiwiRail transport evidence dated 9 July 2021.

Purpose and scope of evidence

- 1.6. My evidence is structured in the following way:
- (a) Summary of this evidence (Section 2);
 - (b) Traffic effects on FSNI Distribution Centre as a result of the NOR proposal (Section 3);
 - (c) Comments on the Council's transport specialist evidence (Section 4);
 - (d) Comments on KiwiRail transport evidence (Section 5), and

(e) Conclusions (Section 6).

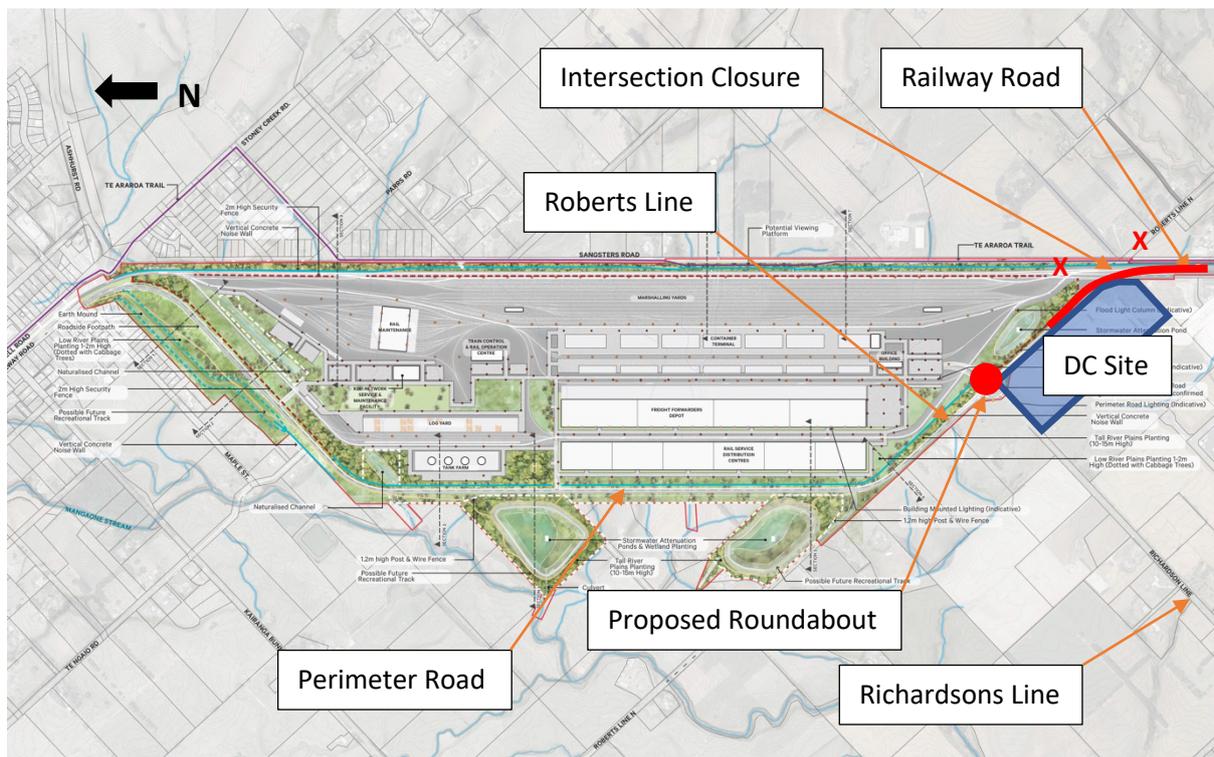
Expert Witness Code of Conduct

1.7. I have read the code of conduct for expert witnesses in the Environment Court practice note 2014. I agree to comply with this code. The evidence in my statement is within my area of expertise, except where I state that I am relying on the evidence of another person. I have not omitted to consider material facts known to me that might detract from the opinions I express.

2. SUMMARY OF EVIDENCE

2.1. Figure 1 shows the NOR proposal¹ and key transport network changes near the DC site. I understand FSNi also own 2 Alderson Drive for future expansion of operations at the DC site.

Figure 1: NOR Proposal



2.2. My concerns with the NOR proposal are focussed on three matters as follows:

¹ Appendices, Regional Freight Hub Section 92 Response – Transport, Stantec, February 2021 Rev 0

- The geometry of the Railway Road to Roberts Line road alignment, specifically the effects on available sight distances at the DC site vehicle crossings (visibility to the east);
- The closure of Railway Road north of Roberts Line and the re-direction of traffic in front of the DC site. I am concerned that with the increase in volumes in front of the DC site, the safe and efficient operation of the DC site vehicle crossings may be compromised;
- The NOR requirement for land to be taken from the DC site to facilitate construction of the Roberts Line/ Richardsons Line roundabout. I am concerned that alternative options to avoid taking land from the DC site have not been fully investigated.

2.3. These matters are discussed further in the following sections.

3. TRAFFIC EFFECTS OF NOR PROPOSAL ON DC SITE

Railway Road/ Roberts Line Intersection Changes and Effects on Sight Distances

3.1. To clarify, I have no concerns with sight distances from the DC site to the west along Roberts Line. My concerns are primarily related to the visibility to the east from the staff car park vehicle crossing, and the truck exit vehicle crossing. Photograph 1 shows the available sight distance to the east from the staff car park vehicle crossing.

Photograph 1: Sight Distance to East from Staff Car Park Vehicle Crossing



- 3.2. As shown in Figure 1, the NOR proposal plans to close Railway Road to the north of Roberts Line, and Roberts Line to the east of Railway Road (including closing the existing level crossing). Essentially, Railway Road south of the intersection will continue into Roberts Line west of the intersection (a mid-block curve will link the two roads and the crossroads intersection will no longer exist).
- 3.3. Sight distance requirements depend on the operating speed of approaching vehicles. As a result, the vehicle speeds approaching the DC site vehicle crossings from the east (from Railway Road) will depend on the geometric design of the new mid-block curve.
- 3.4. I visited the site and noted that a 60 km/hr speed limit exists on Roberts Line in front of the site. I would therefore expect that a curve linking Railway Road (south) to Roberts Line (west) would be designed for 60 km/hr. In accordance with Austroads design guidelines², standard circular curves are calculated based on the formula below:

$$R = \frac{v^2}{(e+f)g} = \frac{V^2}{127(e+f)}$$

where

v = vehicle speed (m/s)

V = vehicle speed (km/h)

R = curve radius (m)

e = pavement superelevation (m/m)

f = side friction factor (between the tyre and the pavement)

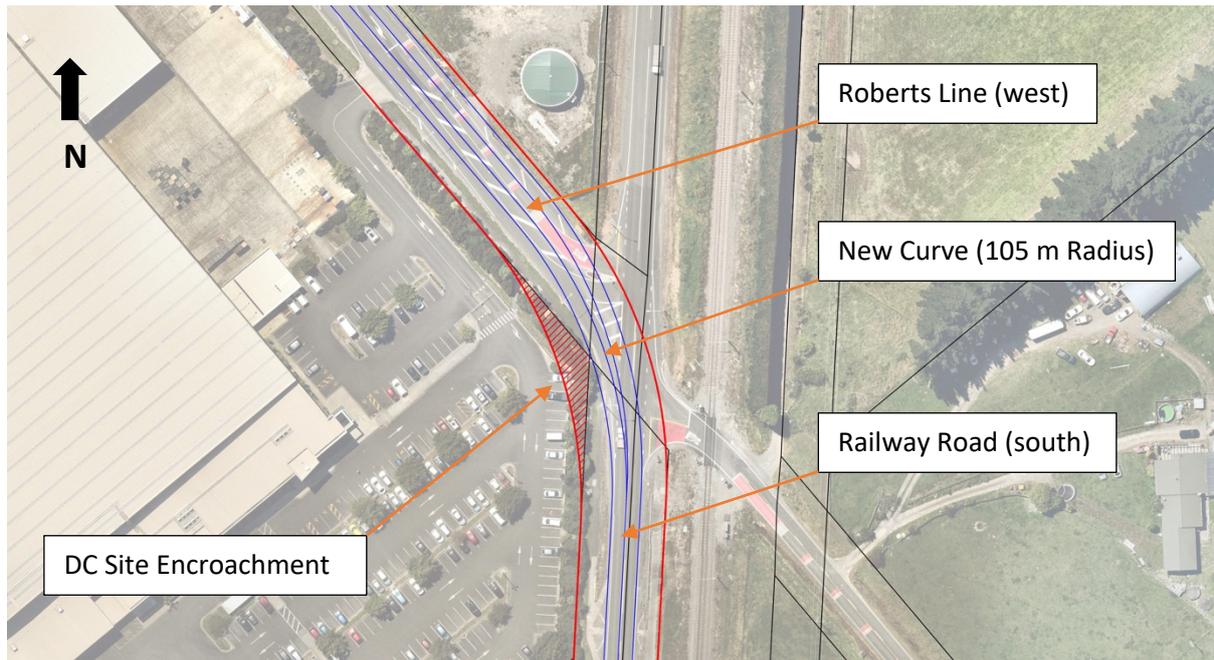
g = acceleration due to gravity (9.81 m/s²).

- 3.5. I have assumed a standard crossfall of 3% (not adverse crossfall) and a speed of 60 km/hr. The friction factor (f) depends on vehicles speeds and for 60 km/hr, a value of 0.24³ is the 'Desirable maximum' for cars and the 'Absolute maximum' for trucks. As such, I consider that an appropriate friction value for assessment purposes. The resultant curve radius from the above values i.e. the indicative curve radius between Railway Road (south) and Roberts Line (west), is 105 m.
- 3.6. I have examined what a 105 m radius curve (measured along the centreline) would look like and this is shown in Figure 2.

² Section 7.4, Austroads Guide to Road Design Part 3: Geometric Design, November 2009

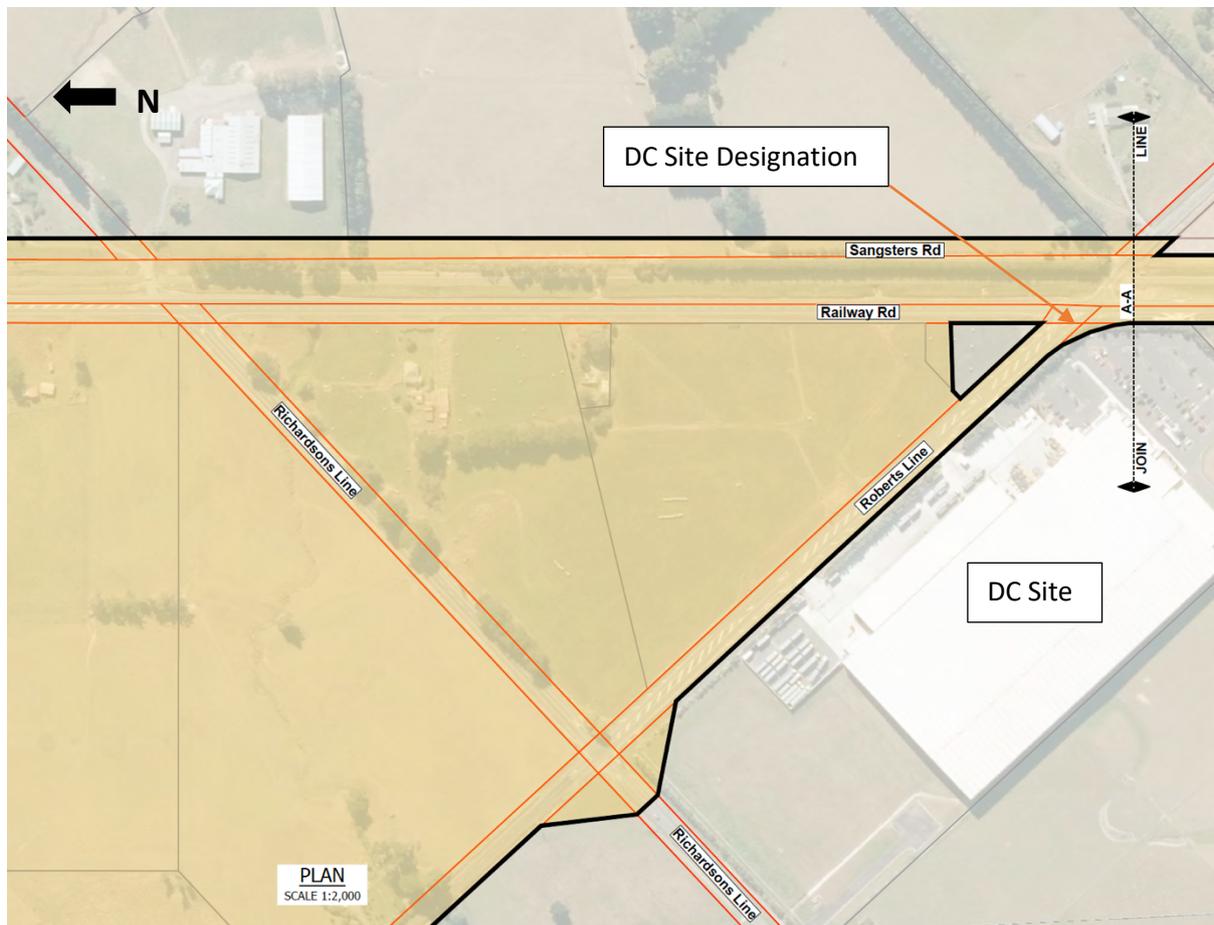
³ Table 7.4, Austroads Guide to Road Design Part 3: Geometric Design, November 2009

Figure 2: Proposed Road Geometry between Railway Road (south) and Roberts Line (west)



3.7. This encroachment is very similar to the NOR proposal shown in Figure 3.

Figure 3: NOR Proposal Designation Extent



- 3.8. As such, I consider that my estimates of curve geometry are similar to that likely estimated in the NOR proposal, and that overall, 60 km/hr is an appropriate speed for assessing sight distance requirements.
- 3.9. The required sight distance for 60 km/hr varies depending on standards used. I typically use RTS-6 and Austroads standards on roads with speed limits less than 70 km/hr (generally RTS-6 for private vehicle crossings and Austroads standards for public road intersections). I have also assessed against PNCC sight distance requirements⁴. The sight distance requirements are summarised in Table 1 below.

Table 1: Sight Distance Requirements

Sight Distance Standard	Sight Distance Requirement (60 km/hr)
RTS-6	115 m (Arterial Road)
Austroads	123 m (SISD)
PNCC	145 m (Major and Minor Arterials)

- 3.10. I consider that the available sight distance from the DC site staff vehicle crossing (the vehicle crossing closest to Railway Road) is 95 m, and as a minimum should provide 115 m. As such, I do not consider adequate sight distance can be provided without further implications to the DC site (such as removal of screening vegetation on Roberts Line and Railway Road, and removal of staff car parking to provide a clear sight line to the east).
- 3.11. Overall, I consider there needs to be greater assessment of sight distances (particularly visibility to the east from the staff access) in order to ensure safe vehicle movements can be provided to and from the DC site. The assessment needs to include identifying, for example, what existing planting needs to be removed on the Railway Road and Roberts Line frontages to achieve required sight lines, and what the implication of reinstating that planting is to the operation of the existing staff car park. I am not satisfied that KiwiRail has presented a design that demonstrates safe sight distances can be provided at the DC site vehicle crossings, nor demonstrated that the NOR designation extent is sufficient to accommodate a safe access solution.

⁴ Section 20 Palmerston North City Council District Plan

Roberts Line Traffic Volumes (between Railway Road and Richardsons Line)

- 3.12. As a result of the closure of Railway Road north of Roberts Line, the north-south arterial route now diverts onto Roberts Line to connect to the Perimeter Road associated with the Regional Freight Hub. It is hard to tell from the information provided (unclear graphics with traffic volume data) but it appears to be that there will be an increase in traffic volumes in front of the DC site by up to 2,500 vpd⁵, in addition to background growth unrelated to the regional freight hub.
- 3.13. I have reviewed the KiwiRail ITA, Section 92 responses and transport evidence, and cannot see any analysis or assessment of the DC site vehicle crossings that will be affected by this increase in traffic volumes. This is critical to understand the effects of the regional freight hub on the DC site.
- 3.14. I measured the time it takes for articulated vehicles to exit the DC site and turn left and right onto Roberts Line. It took semi-trailers approximately 10 seconds to clear the westbound lane on Roberts Line when turning right out of the site. This requires a significant gap in both westbound and eastbound traffic on Roberts Line. This currently works satisfactorily as there are low volumes on Roberts Line but with higher volumes, these movements will become more difficult, and potentially unsafe.
- 3.15. I have compared these observed gap acceptance values against published data⁶, and confirm these gap acceptance values are realistic, and what should be used in any traffic modelling of the DC site vehicle crossings.
- 3.16. Overall, while there is no assessment of the DC site vehicle crossings provided, I consider there is a need for KiwiRail as part of this hearing process to model the two DC site vehicle crossings (the two crossings with exit movements), for a future-year 'Without Freight Hub' scenario and a 'With Freight Hub' scenario to fully understand the effects of the NOR Proposal on the DC site. While, I understand KiwiRail have offered, in good faith, a condition to prepare a "Operational Traffic Management Plan", I am not confident a workable solution can be provided to address safe and efficient access arrangements for the DC site should a problem be identified as part of the OTMP process.

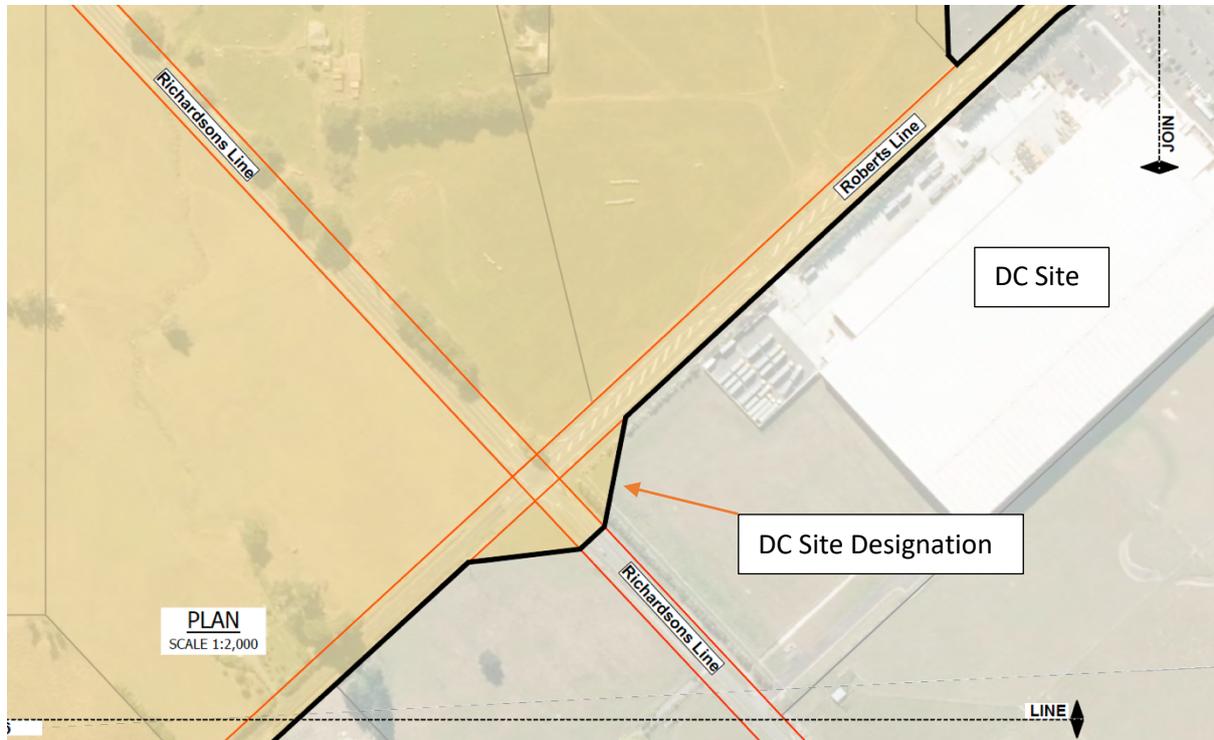
⁵ Table 10-6, Regional Freight Hub, Integrated Transport Assessment, Stantec, 23 October 2020

⁶ Austroads Technical Report, AP-T293-15, Road Design for Heavy Vehicles, May 2015

Roberts Line/ Richardsons Line Roundabout

3.17. The NOR proposal includes designating land over the DC site as per Figure 4 below.

Figure 4: Roberts Line/ Richardsons Line Intersection Designation Extent



3.18. The purpose of the designation at the Roberts Line/ Richardson Line intersection is to accommodate a four-leg roundabout as indicated in the Landscape Plan⁷. I have no fundamental concerns with a roundabout intersection at this location, and it appears, based on the evidence of Ms Fraser⁸ that PNCC are committed to the upgrade of the intersection regardless of the proposed freight hub.

3.19. Regardless of PNCC support of an intersection upgrade, given the designation for the intersection is being sought by KiwiRail, I consider that an alternative roundabout design should have been considered that did not require designating a portion of the DC site i.e. a roundabout that was wholly located within the KiwiRail land proposed for the regional freight hub.

3.20. I have not prepared a detailed design of this alternative roundabout but to illustrate the concept, please refer to the example in Figure 5 overleaf. This example roundabout is located at the intersection of SH26 and SH27 in Tatanui (to the east of Hamilton).

⁷ https://www.pncc.govt.nz/media/3133664/attachment-10-pn-freight-hub_landscapeplan-210212_low-res.pdf

⁸ Paragraph 39c, PNCC S42A Technical Evidence, Traffic and Transportation, Harriet Fraser

Figure 5: Roundabout Example – SH26/ SH27 Roundabout, Tatuani



3.21. As shown above, SH26 runs parallel to the rail line but then deviates away from the rail line to accommodate the roundabout. I am suggesting a similar solution may be able to be found at the regional freight hub by deviating Roberts Line away from the DC site, and into the KiwiRail site, in order to accommodate the roundabout.

4. COUNCIL S42A TRANSPORT EVIDENCE

4.1. I have reviewed the technical evidence of Ms Fraser dated 9 August 2021. I agree with the commentary in Paragraph 80 stating that trucks exiting the DC site can take up to 15 seconds to clear the northbound [eastbound] lane on Roberts Line. I also agree with Paragraph 115 m. regarding potential adverse traffic effects of insufficient sight distance between northbound vehicles on Railway Road and vehicles turning to and from the DC site vehicle crossings.

4.2. Paragraphs 133 and 134 specifically reference the DC site and I note the following comment:

“KiwiRail have yet to demonstrate how the vehicle activity associated with the Foodstuffs operation will be accommodated both during construction and operation of the Freight Hub”

- 4.3. I agree with this comment as while relying on management plans seems reasonable, this assumes that there is a solution ready to hand should adverse traffic effects result from freight hub construction or operation. At this stage, I have not been able to determine what process, and what mitigation measures, are available to preserve safe and efficient access to and from the DC site. Of the two scenarios, I am more concerned about operational effects as I consider construction effects have a greater range of management options available (for example, given the size of the site, construction vehicle movements could be directed to other parts of the site rather than at Roberts Line near the DC site).
- 4.4. In Paragraph 167, Ms Fraser has also identified that there has been no assessment of the safety of the ongoing use of the DC site vehicle crossings. Ms Fraser has correctly noted that the eastern vehicle crossing provides access to the staff car park, the middle crossing is the truck exit and the western crossing is the truck entry.
- 4.5. With respect to sight distance, I differ slightly with her conclusions in that I consider a minimum sight distance of 115 m should be provided for the staff car park vehicle crossing (RTS-6 standards). With respect to the truck exit, I consider the PNCC standard of 145 m is more appropriate (noting that the minimum gap sight distance for articulated trucks would be 167 m⁹).
- 4.6. Overall, I agree with her conclusion in Paragraph 170 that *“KiwiRail needs to demonstrate there is a safe access solution for Foodstuffs, both during construction and operation of the Freight Hub, that meets the particular operational requirements of the business”*.
- 4.7. I agree with Ms Fraser that with respect to construction, there is a need to ensure that should this NOR be accepted, then a CTMP must cover :
- Effects on properties that are likely to have their access affected by construction including the DC site (Paragraph 199 c.)
 - Requirement for the full construction of the Perimeter Road, including connections to Railway Road north and south prior to the closure of Railway Road (Paragraph 199 d.). I would also recommend adding to this that the road must not only be constructed but also open and operating prior to the closure of Railway Road.

⁹ Table 3.5, Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections, August 2009

- 4.8. In addition to the above items, I also recommend that truck access between Railway Road (south of Roberts Line) and Roberts Line (west of Railway Road) must be maintained at all times. This may mean the proposed intersection works are progressed in stages to maintain vehicle movement during the intersection works.
- 4.9. I also agree with Paragraph 251 e. regarding the need to have at least one option for how the DC site vehicle crossings could operate during construction and operation of the freight hub (noting the previous concerns about truck gap acceptance values and right turns onto Roberts Line from the DC site).

5. COMMENTS ON KIWIRAIL EVIDENCE

- 5.1. I have reviewed the transport evidence of Mr Georgeson, and agree with his assessment of the existing road network. I confirm that Roberts Line in front of the DC site is now subject to a 60 km/hr posted speed limit (see Photograph 2 below).

Photograph 2: Roberts Line Posted Speed Limit



- 5.2. Section 8 of Mr Georgeson's evidence outlines the proposed mitigation measures including the RNIP, CTMP and OTMP. As noted earlier in my evidence, while the OTMP is intended to outline the methods that will be undertaken to manage any identified adverse transport effects, it seems as if these methods have not yet been considered.

Without knowing what these methods are, it is difficult to understand what the transport effects of the NOR proposal are on the DC site, and if adverse transport effects eventuate, how they may be dealt with.

- 5.3. I note in Paragraph 8.3, Mr Georgeson refers to “*safety improvements along Roberts Line (Railway Road to Richardsons Line)*” being required. This section of road is the DC site frontage on Roberts Line and again, I am not sure what these safety improvements are, and how they affect the DC site. Further information on the likely or potential safety improvements for this section of road need to be provided by KiwiRail.
- 5.4. Paragraph 9.9 notes that this is a small difference in traffic volumes between Railway Road (without the freight hub) and the Perimeter Road (with the freight hub). While that may be correct, it is important that the Commissioners note that due to the closure of Railway Road, the traffic previously using Railway Road is now diverted past the DC site (so the increase in traffic volumes on the DC site frontage is much larger as a result of the freight hub than without it).

- 5.5. Paragraph 9.27 states that:

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

- 5.6. As noted previously, I consider that the DC site eastern vehicle crossing (staff car park) and middle vehicle crossing (truck exit) need to be modelled for a future year (likely 2031) ‘with Freight Hub’ and ‘without Freight Hub’ scenario, for a weekday morning peak hour and evening peak hour, to understand the effects of the freight hub on the DC site. I am concerned that trucks may not be able to exit the site with appropriate gap acceptance values and this may lead to truck drivers taking smaller gaps in traffic along Roberts Line, resulting in potential car versus truck crashes.
- 5.7. With respect to discussions between KiwiRail and Foodstuffs, I have not been involved in those discussions. I understand however that Foodstuffs are yet to receive any plans showing a ‘design solution’ that addresses their concerns. These discussions have been raised again in Paragraph 10.10 as a means of addressing the impact on accesses

however it is my opinion these impacts should be addressed in the NOR documentation rather than relying on discussions occurring outside of this process.

6. CONCLUSION

- 6.1. There are a number of effects of the NOR proposal on the Foodstuffs DC site, for which there is insufficient assessment or insufficient proposed solutions. In my opinion, either KiwiRail needs to provide further assessments or robust conditions need to be included in the designation to provide certainty for the Foodstuffs ongoing operations.
- 6.2. Firstly, I have concerns over the ability of the designation to enable safe sight distances to be achieved from the Foodstuffs vehicle crossings to the east along Roberts Line (toward Railway Road). I consider that while the designation is likely sufficient to accommodate the physical road changes, it is likely not large enough to include the required sight lines from the DC site vehicle crossings.
- 6.3. Secondly, I consider that there has been no assessment of the performance of the DC site vehicle crossings for the proposed regional freight hub. KiwiRail acknowledge there will be an increase in traffic volumes past the site but this needs to be appropriately quantified and assessed (weekday morning and evening peak hour assessments of the DC site vehicle crossings allowing for trucks with higher gap acceptance values).
- 6.4. Lastly, I consider that the designation extent to include a portion of the DC site should be revisited and an alternative option investigated for a roundabout design that is located on KiwiRail land and does not require a portion of the DC site. I consider an alternative roundabout design could be achieved.
- 6.5. Accordingly, I consider that either the NOR proposal should not be confirmed in the vicinity of the DC site, or that a number of changes to Council's proposed conditions are needed to ensure KiwiRail is required to:
 - ensure appropriate sight distance can be provided from the DC site vehicle crossings, and all effects of achieving this sight distance are fully understood (for example identification of planting to be removed, location of replacement planting, any changes required to staff car park etc).
 - ensure Foodstuffs vehicle crossings can continue to operate safely and efficiently both during construction and operation of the freight hub. While an OTMP is proposed, potential solutions to adverse traffic effects should be identified now as

part of this process to ensure workable solutions are available should these adverse effects eventuate. I do not consider it appropriate to rely on a future document to assess and address traffic effects resulting from the NOR proposal;

- assess and evaluate all intersection options for the Roberts Line/ Richardsons Line roundabout and confirm whether a portion of the DC site is required at all, given the large amount of land available to KiwiRail north of Roberts Line.

Michael Nixon

23 July 2021