BEFORE INDEPENDENT HEARINGS COMMISSIONERS

UNDER	the Resource Management Act 1991 (RMA)
IN THE MATTER	of notices of requirement under section 168 of the RMA for the construction, operation, maintenance and improvement of approximately 11.5km of new State Highway between Ashhurst and Woodville.
BY	**NZ TRANSPORT AGENCY** Requiring Authority

ADDENDUM TO EVIDENCE OF MARK AARON READ
ON BEHALF OF PALMERSTON NORTH CITY COUNCIL

1 APRIL 2019

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1. INTRODUCTION

1.1 My full name is Mark Aaron Read.

1.2 I submitted a statement of expert evidence on behalf of Palmerston North City Council dated 15 March 2019.

1.3 I have the qualifications and experience set out in my original evidence.

1.4 I repeat the confirmation that I have read the Code of Conduct for expert witnesses and that my evidence has been prepared in compliance with that Code.

1.5 In this addendum I respond to:

(a) Points made in the 25 March 2019 addendum evidence of David Dunlop on behalf of the New Zealand Transport Agency.

(b) The updated Road Safety Audit provided 25 March 2019 and includes Designer and Safety Engineer responses and Client decisions.

2. RESPONSE TO COMMENTS MADE BY DAVID DUNLOP

2.1 My evidence of 15 March 2019 focused on the consideration of safety for vulnerable road users on the project route and nearby parallel routes (Saddle Road and Pahiatua Track). In particular it considered what is safe provision for cyclists would be for the project, based on the Safe System approach.

2.2 At paragraph 15 Mr Dunlop states that my evidence is primarily about the potential opportunity associated with the Project. I disagree with this statement, and consider that the focus of my evidence is the potential safety implications for vulnerable road users. I consider a separated facility to be safe provision for vulnerable road users, based on an assessment of safety for these users against the Safe System approach and best practice.

2.3 Paragraphs 16 – 18 of Mr Dunlop's addendum discuss the figure comparing cyclist crashes by shoulder width which I provided as Appendix B of my original evidence

(i.e. the figure reproduced from Safer Journeys for People Who Cycle). Mr Dunlop considers that based on this figure, once shoulders become "bigger than" one metre there is not a significant reduction in crashes depending on the size of the shoulder.

2.4 I agree that the figure shows more fatal and serious injury cyclist crashes have occurred when the road shoulder width was less than 1 metre than when it is more than. Care should be taken interpreting this figure as it provides total crash numbers rather than rates or frequencies. There will be other factors such as the lengths of rural roads that have the various shoulder widths. When considering New Zealand's rural road network as a whole, I expect there would be a far greater total road length with less than 1.0m shoulder width than the total road length with more than 1.0m shoulder width. This could result in more crashes recorded for these types of roads.

2.5 At Paragraph 20 Mr Dunlop states he considers it is unlikely that the speed limit on the Saddle Road would change following the completion of the Project. I maintain that it can not be certain that the speed limit on the Saddle Road will remain at 60km/h after the Project is open to traffic and the Saddle road returns to be a secondary route.

2.6 Even if the speed limit remains lower, drivers will travel at speeds they deem appropriate for the road environment and conditions. With fewer vehicles on the road, I anticipate this would be a median speed in the vicinity of 80km/h. Though vehicles would not be achieving this through the most difficult sections of the road.

2.7 At paragraph 24 Mr Dunlop states the road safety audit recommends actions to be considered. I understand that the road safety audit makes recommendations, and it is up to the client to accept, reject or progress something in between. In this situation however, a significant risk has been identified and the response has been to widen the shoulder by 0.5m. I consider that this response falls short of best practice.

2.8 I consider that the Transport Agency has not provided either of the recommendations identified in the road safety audit. In my view the Project design continues to fall short of the intent of the safety audit recommendation and therefore the Safe System approach.

2.9 Paragraphs 25 – 27 of Mr Dunlop's addendum discuss his view of the impact the two roundabouts will have on cyclists. One of the benefits Mr Dunlop discusses is that they will provide a transition from a high-quality, high-speed road environment to a lower quality environment where cyclists will be more at risk. I agree with the point Mr Dunlop has made, however in my view it will not translate to any benefit to cyclists on the Project. As per my original evidence, while the roundabouts may moderate speeds of approach vehicles to the new alignment, for the majority of the approximately 11km between the two intersections, vehicles will be travelling at their free-flow speed.

2.10 I understand that the Transport Agency has committed to providing cycling facilities separate to the roundabouts. For this reason, in my view the intersection type is somewhat irrelevant to cyclist safety as it would be expected vulnerable road users would utilise these safer off-road facilities.

2.11 At paragraph 31 Mr Dunlop discusses the relevance of the various Austroads guidance discussed in my original evidence. In my view, the guidance I referenced in my original evidence from Section 4.8.7 of Austroads Guide to Road Design is relevant for consideration. I have provided the two relevant Austroads sections in **Appendix A**. Table 4.18 is referenced as the appropriate width for sealed shoulders. It provides a desirable minimum width of 2.5m with an acceptable range of 2.0 – 3.0m. Table 4.18 also includes the following note which matches the guidance provided in Section 4.8.7.

> *Physical separation including safety barriers are essential on urban roads that have a posted speed limit >80 km/h.*

2.12 In my view, this best practice guidance recommends physical separation in high speed environments, which the Project route will be.

2.13 At paragraphs 32 and 37 Mr Dunlop states that his understanding is that the crawler lane would be marked and signed as a slow vehicle lane in accordance with best practice, and general traffic would be encouraged to keep right. In my view, if there are to be two lanes in each direction for any distance more than a few hundred metres, as is currently proposed, these should be marked as passing lanes where vehicles not passing would be expected to keep left. However, even if the approach

outlined by Mr Dunlop is taken, there is still potential for vehicles to travel at a relatively high speed in the left hand (crawler) lane. I therefore consider it appropriate to consider vehicle speeds of up to the design speed in the left-hand lane.

3. RESPONSE TO ROAD SAFETY AUDIT SAFETY ENGINEER RESPONSE

3.1 The Transport Agency has provided the Concept Design Road Safety Audit with Designer and Safety Engineer responses and the Client Decision to the hearings panel. Section 2.2.10 of the road safety audit identified the safety risk associated with the provision for cyclists on the Project. The Safety Engineer comment includes the statement "*The Agency's cycling specialists acknowledge that the driver for the widths indicated in the Austroads Guides are for higher volumes of 'concerned' cyclists.*" I am not aware of the origin of this statement and whether it is a true reflection of how the best practice guidance is expected to be applied. In my view, this position is not reflected in the relevant best practice guidance, or any of the Transport Agency supplementary guidance.

Mark Aaron Read
1 April 2019

4.8.7 Exclusive Bicycle Lanes

An exclusive bicycle lane is a lane created using pavement markings and signs. Figure 4.35 shows an example of an exclusive bicycle lane passing through an intersection. If space is not available for a protected bicycle lane, an exclusive bicycle lane is often the preferred treatment. In general, it is located at the left side of a road.

Motor traffic is generally prohibited by traffic regulations from travelling in exclusive bicycle lanes except to access property or to turn at intersections. Similarly, parking in exclusive bicycle lanes is prohibited. In some cases, exclusive bicycle lanes may only operate at certain times of the day, in which case the lane may be available for parking or as a travel lane at other times.

Figure 4.35: Exclusive bicycle lane

Note: Green coloured surface treatments should only be used to increase driver and cyclist awareness of a bicycle lane, and to discourage drivers from encroaching into a bicycle lane. The treatment should be used sparingly to maintain its effectiveness.

The width adopted for exclusive bicycle lanes will vary depending on the number of cyclists, the speed of motor traffic, the volume of large vehicles and the ability to make space available given the needs of other road user groups, physical constraints and budgetary constraints. Exclusive bicycle lanes should be provided on both sides of the road where possible so that use is in the same direction as motor vehicle traffic.

Table 4.18 shows the minimum bicycle lane widths for urban roads posted at various speeds. It should be noted that urban roads with a posted speed greater than 80 km/h (e.g. 100 km/h) will usually be a freeway or expressway that carries a high volume of high speed traffic. In this case it is essential that cyclists are provided with facilities that comply with Safe System principles, namely physically separated bicycle lanes or paths that are protected by safety barriers, and grade separations or controlled crossings at interchanges.

Depending on the practice of the road agency and the site conditions, the channel may not be included as part of the bicycle lane width. This is due to potential safety concerns, including:

- edge drop-off between the pavement and channel surfaces, particularly when open graded friction course (OGFC) is used
- hazards in and adjacent to the kerb and channel such as the surface condition of the channel and drainage pit entrances
- the likelihood of the bicycle pedals striking the kerb.

Table 4.18: Exclusive bicycle lane dimensions in urban areas

Speed limit[1] (km/h)	Lane width [2] (m)		
	60	**80**	**100[3]**
Desirable minimum	1.5	2.0	2.5
Acceptable range	1.2–2.5	1.8–2.7	2.0–3.0

1. The posted or general speed limit is used, unless 85th percentile speed is known and is significantly higher.
2. The width of the lane is normally measured from the face of the adjacent left hand kerb. The width of road gutters/channels (comprising a different surface medium) should be less than 0.4 m where minimum dimensions are used. The figures in the table presume that surface conditions are to be of the highest standard. Where there are poor surface conditions (see the *Guide to Road Design Part 6A: Pedestrian and Cyclist Paths* (Austroads 2009a), Appendix B) over a section of road adjacent to the gutter, then the width of the exclusive bicycle lane should be measured from the outside edge of that section.
3. Physical separation including safety barriers are essential on urban roads that have a posted speed limit > 80 km/h.

4.8.9 Sealed Shoulders

Where a road is unkerbed and provision for cyclists is required, a smooth sealed shoulder is the preferred treatment. Although warrants do not exist specifically for the provision of sealed shoulders for cyclists there are many instances on rural roads where the sealing of shoulders is justified specifically to make roads safer for cycling. Table 4.4 provides

guidance as to the appropriate shoulder width to be provided generally for reasons other than cycling. However, where the shoulder is available for use by cyclists, Table 4.18 (for exclusive bicycle lanes in urban areas) should be used as a guide to the appropriate width of sealed shoulders.

Widths required for sealed shoulders for bicycle usage are generally the same as those required for exclusive bicycle lanes (refer Section 4.8.7). Provision for cyclists should be maintained through intersections, past driveways, and at those locations where the road is kerbed along lengths of road otherwise treated with sealed shoulders. Where a chip seal is used to seal the shoulders, consideration should be given to the use of a maximum size 10 mm stone to provide a smoother and less abrasive riding surface for cyclists.