

Before the Independent Hearings Panel At Masterton

Under the Resource Management Act 1991 (the Act)

In the matter of a request by Welhom Developments Limited to Masterton District Council for a private plan change to the Combined Wairarapa District Plan

Between **Welhom Developments Limited**
Requestor

And **Waka Kotahi NZ Transport Agency**
Submitter

Summary statement of evidence of Glenn Connelly for Waka Kotahi NZ Transport Agency

Dated 10 March 2023

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SUMMARY

- 1 My full name is Glenn Connelly. I am a Senior Road Safety Engineer at Waka Kotahi.
- 2 I have assessed the proposed Plan Change for the use of the 14.7ha site for the residential and composite retirement village scenarios.

INTRODUCTION

- 3 An extensive amount of information has been produced to discuss the traffic and transportation matters. This summary aims to focus on key matters, and addresses matters raised in the hearing thus far, and should be read in conjunction with my full statement of evidence.

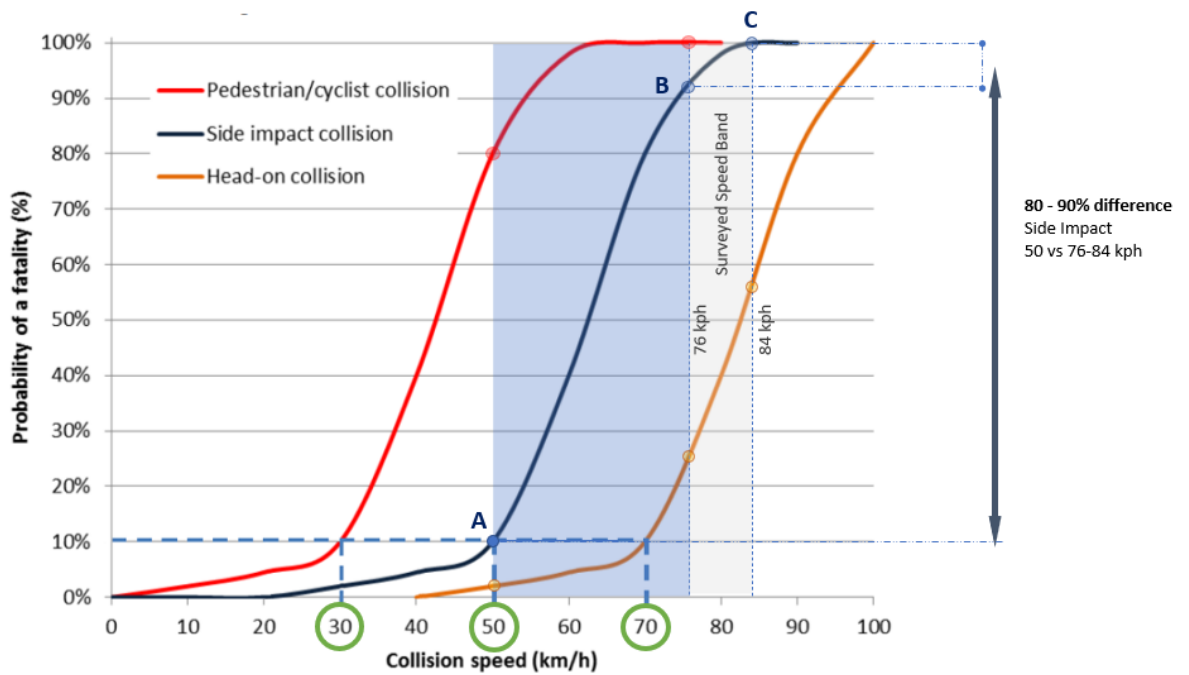
SAFETY

- 4 My primary concern is safe access, for all road users.
- 5 The predominant means of travel to and from the site is likely to be motor vehicles. It is agreed that most drivers will travel to and from Masterton (over 80%). This means there will be a significant number of drivers turning right from Cashmere Oaks Drive, for which there is a significant risk of Death or Serious Injury given the environment and prevailing traffic speeds.
- 6 It is accepted to reduce Death or Serious Injuries (DSI) for side impact crashes (right turns from Cashmere Oaks Drive) collision speeds should be managed to be 50kph or less. The following risk profile¹ is consistent with a Safe System approach that recognises that people are vulnerable in a crash and that the road system should be designed to be forgiving. The graph clearly demonstrates the principle that crash severity rises rapidly for side impact (right turn) crashes with speeds over 50kph. This is demonstrated in Figure 1 with the significant increase in crash risk (steep grade) beyond point A.
- 7 Safe access is achieved in a forgiving system by managing side impact speeds for motorists to 50kph and for vulnerable road users to 30 kph, as demonstrated by the dashed blue lines in Figure 1. An urban roundabout at Cashmere Oaks Drive intersection could achieve this if appropriately designed and integrated.

¹ Austroads – Guide to Road Safety. Part 3: Safe Speed. 2.1.3 Safe System speeds
Figure 2.6: Relationships between a motorised vehicle collision speed and probability of a fatality for different crash configurations

- 8 The chance of fatality for a motorist hit from the side (right turn) for example increases from the indicative 10% at 50kph (Point A) to over 90% for impact speeds of 76 kph (Point B) and 84 kph (Point C); these being the surveyed speeds for north bound and southbound State Highway traffic at the Cashmere Oaks Drive intersection. I note that the crash curves are a tool and the probability figures are not absolute; what is of concern is the shift from the low end of the scale to the upper end.

Figure 1. Relationships between a motorised vehicle collision speed and probability of a fatality for different crash configurations

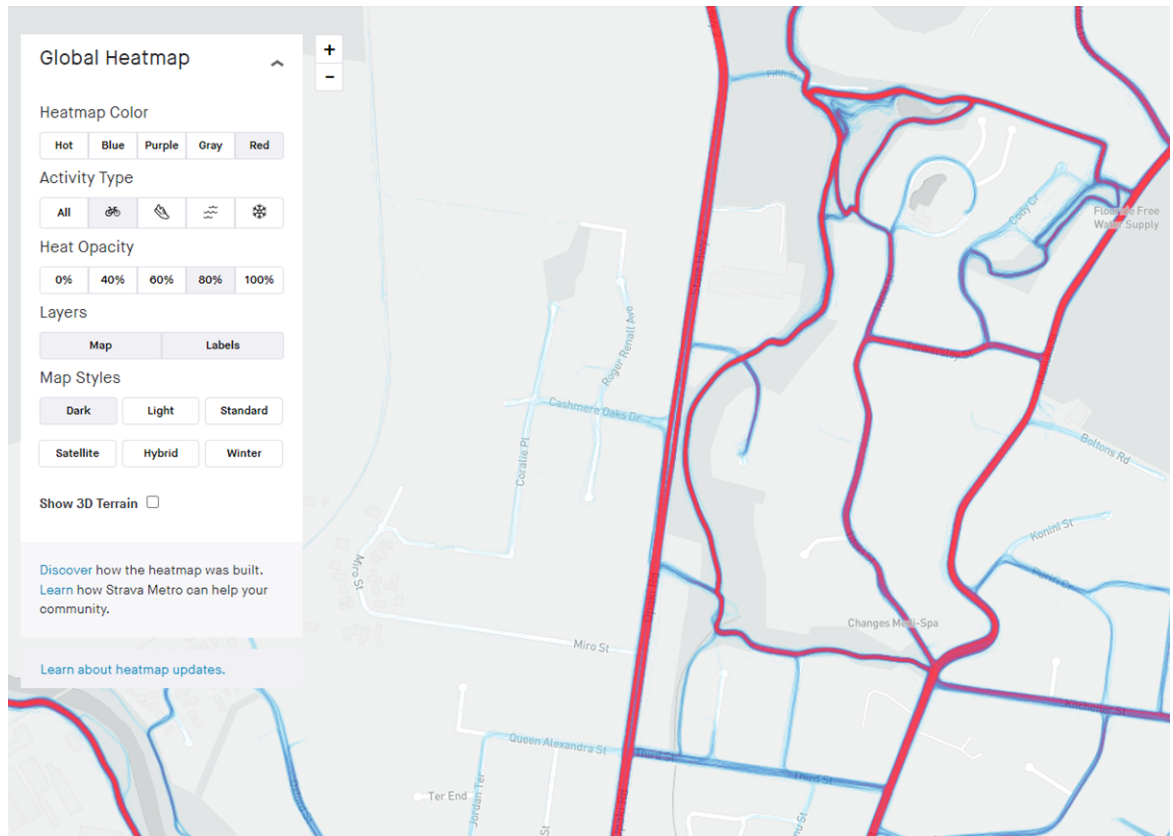


- 9 I am of the view that the absence of crashes is a partly a reflection of the low volumes on Cashmere Oaks Drive (statistical exposure) and potentially good fortune. It cannot be assumed or relied upon that there will be no crashes in the future as volumes increase; the crash modelling reinforces this. Cashmere Oaks Drive is consented for 161 lots plus the suggested 254 residential lots for Scenario 1 could see some 3,600 vehicles per day² using Cashmere Oaks Drive.

² The total 415 lots would generate 3,610 vehicles per day at the surveyed vehicle generation rate.

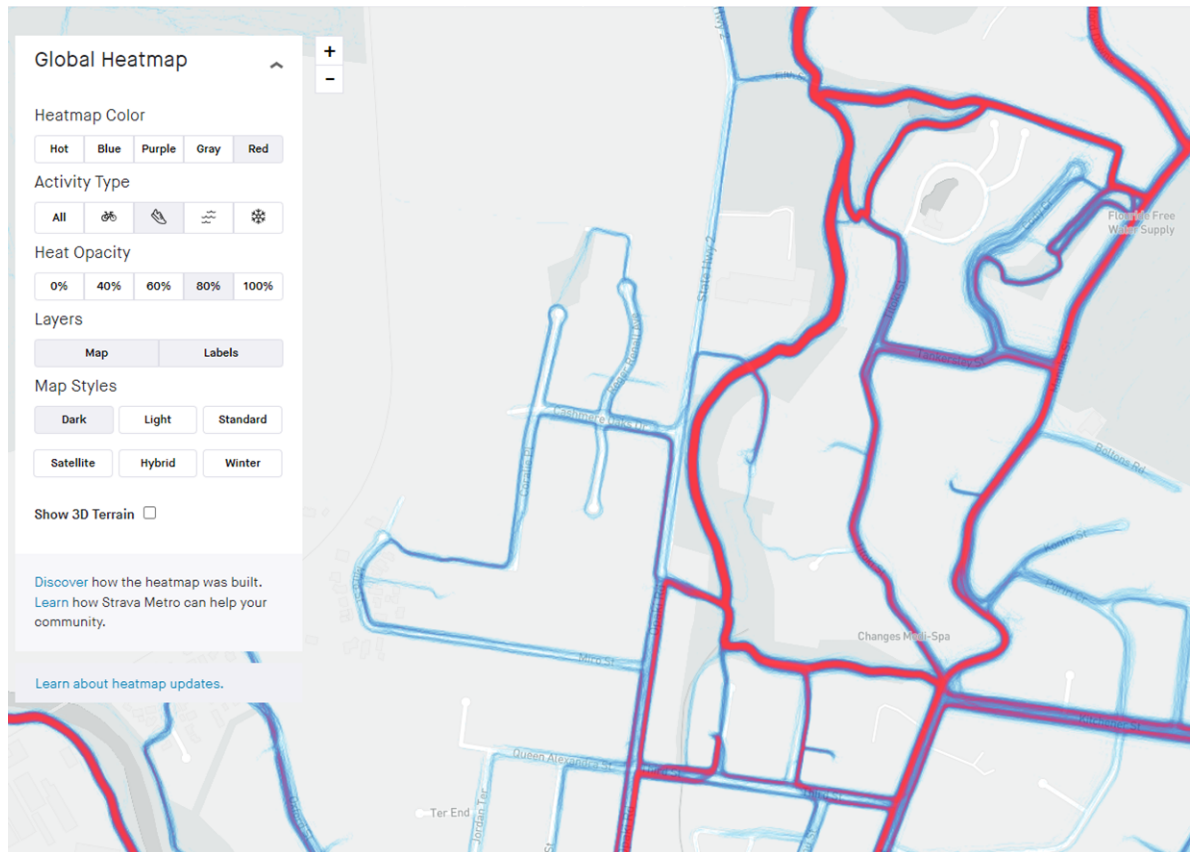
- 10 People make mistakes and crashes will occur, hence the need for a forgiving system for all road users. In addition to the risk for motorists, there are risks for other users, such as cyclists. The survey (Strava) data shows few cyclists from Cashmere Oaks Drive using Miro Street (see Figure 2), noting however that this would not be particularly convenient for existing users. There are cyclists using the Cashmere Oaks Drive intersection and it appears they access the recreational paths on the other (eastern) side of the highway.

Figure 2. Strava Cycling Heatmap



- 11 The risk for pedestrians at the Cashmere Oaks Drive intersection is limited to those who would cross the highway, as the existing footpath network caters for other destinations. The survey (Strava) data for pedestrians shows the Coralie Place link and Miro Street route being used. It also shows pedestrians crossing and walking along the highway to access the facilities on the eastern side of the highway via Opaki Meadows Drive (see Figure 3).

Figure 3. Strava Walk/run Heatmap



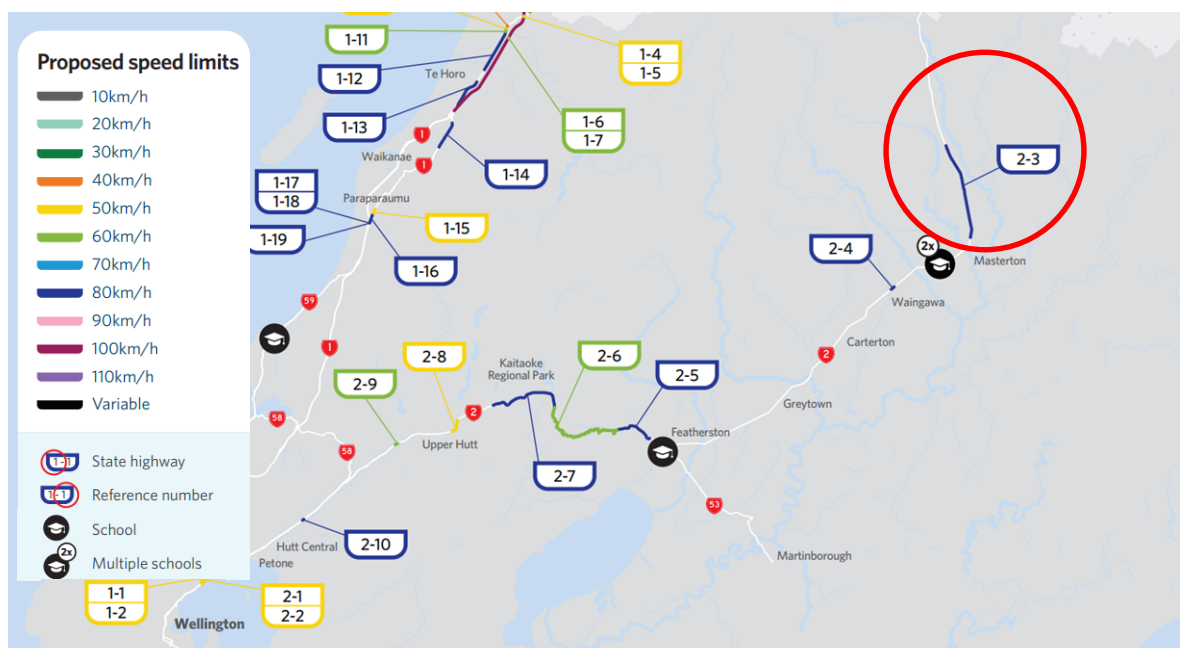
12 The new link to Miro St does provide an alternative, however some cyclists may choose to use the highway and the facilities on the eastern side of the highway will attract more pedestrians and cyclists as development occurs. These effects should not be discounted given the severe consequences should a crash occur (high chance of a DSI)³. The Requestors expert/s suggest it is not appropriate to cross the highway in this location, nonetheless it people are doing this and crossing the highway is likely to increase with development of the site.

³ A very high chance of fatality occurs at collision speeds over 65kph, as per Figure 1 (red pedestrian and cyclist curve).

Lower Speed Limit

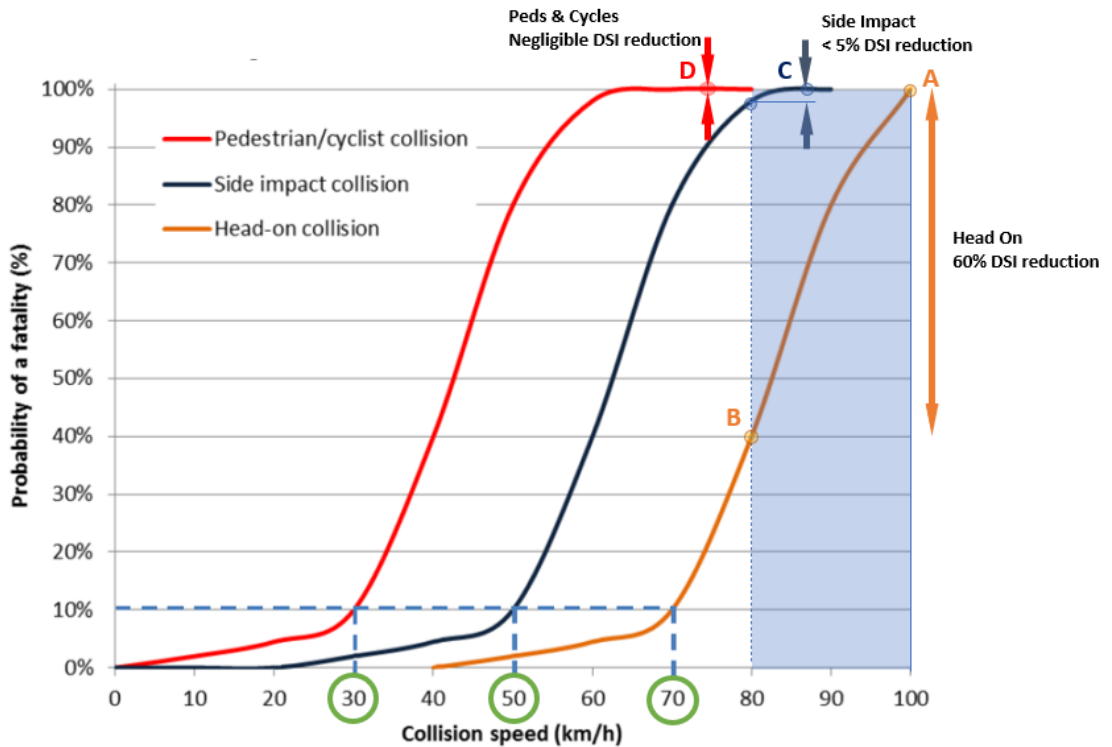
- 13 The Requestors traffic experts state that a lower speed limit is not necessary but would be supported. Furthermore, that this is a matter for the Road Controlling Authority to address.
- 14 Consultation has been completed (ISMP Dec 2022) for the review of the 100kph speed limit from Masterton to some 9km north (see Figure 4), noting this commences at the existing 50kph speed limit.

Figure 4. ISMP Speed Review



- 15 The purpose of this review is to address head on and loss of control crashes which are the main safety concern for DSIs on 100 kph roads. This is demonstrated on the crash risk curves that show a 60% reduction in probability of a fatality for head on crashes when the collision speed reduces from 100 kph to 80 kph (see Figure 5 – Point A to B). The reduction in the probability of a fatality for side impact (right turn) crashes however is small (Figure 5, Point C: less than 5%), and negligible for vulnerable road users ((Figure 5, Point D).

Figure 5. Crash Risk - Reducing Speeds from 100 to 80 kph



- 16 The management of speeds has been reviewed to provide integrated speed management to assist lower the road toll in accordance with international best practice; that is in line with a Safe System approach. This gave rise to the Land Transport: Setting of Speed Limit Rule 2022. The Setting Speed Limit Rule and supporting Speed Management Guide requires speeds limits that are safe and appropriate.
- 17 State Highway 2 near the site, in my opinion, would have a rural appearance to drivers (see Figure 6). The houses in Cashmere Oaks are screened by trees, there are few vehicle crossings, there is no kerb and channel, nor footpath or lighting as is typical of an urban environment.

Figure 6. Hansells Access (Looking South)

Average Speeds	80 kph (southbound) & 82 kph (northbound)
85 th percentile speeds	91 kph (southbound) & 93 kph (northbound)



Source: Google Streetview – December 2022

18 There is a footpath between Cashmere Oaks Drive and Fourth Street, as it transitions into the urban road environment (see Figure 7).

Figure 7. 50kph Threshold / Signs South of Cashmere Oaks Drive (Looking South)

Average Speeds	63 kph (southbound) & 65 kph (northbound)
85 th percentile speeds	74 kph (southbound) & 74 kph (northbound)



Source: Google Streetview – December 2022

Figure 8. Average and 85th percentile speeds



19 Fourth Street provides a clear demarcation for a change in road environment, with houses, vehicle crossings, and urban infrastructure (see Figure 9). Hence the current position of the 50 kph speed limit signs. The large repeated and gated 50 kph signs just south of Fourth St suggesting concerns and issues with elevated driver speeds.

Figure 9. Fourth Street (Looking South)



Source: Google Streetview – December 2022

- 20 SH2 is classed as an interregional connector. These roads provide safe, reliable and efficient movement of people and goods between regions and strategic centres in a rural context⁴. The safe and appropriate speed for which is between 60 and 110km/h. The default safe and appropriate speed limit for an interregional connector is 80kph, and the lower speed limit of 60 kph is not warranted given the amount of access, form and geometry of the road.
- 21 There is the potential for the road to be reclassified as the area and road changes. A peri urban road for example primarily provides access from residential property on the urban fringe, where the predominant adjacent land use is residential, but usually at a lower density than in urban residential locations. The speed limits for these roads would be between 50 and 80kph. Even if the highway were classed peri urban however the Safe and Appropriate Speed would still be 80 kph given the prevailing environment; that is the amount of development directly accessing the road, sufficient lane widths, straight alignment and high level of delineation for example.
- 22 Accordingly, I am of the view that a speed limit lower than 80kph could not readily be achieved in accordance with the Setting Speed Limits Rule, for the current or proposed development.

Intersection Enhancements

- 23 The Requestor's safety experts have suggested that the minor enhancements can be made to the intersection.
- 24 In my view these will have little effect on the fundamental crash risk associated with speeds. I address this in paragraph 106 and 107 of my evidence in chief. This is supported by the views of Mr Landon-Lane who confirm these changes do not affect the modelling. The minor safety enhancements suggested include maintenance matters, and treatments that are more consistent with a rural road environment. The enhancements include nothing that addresses speed which is the primary influence on crash severity as previously discussed. Nor do they support the transition to a lower speed environment, which is integral to providing safe access to the road network.

Safety System Treatment Philosophy

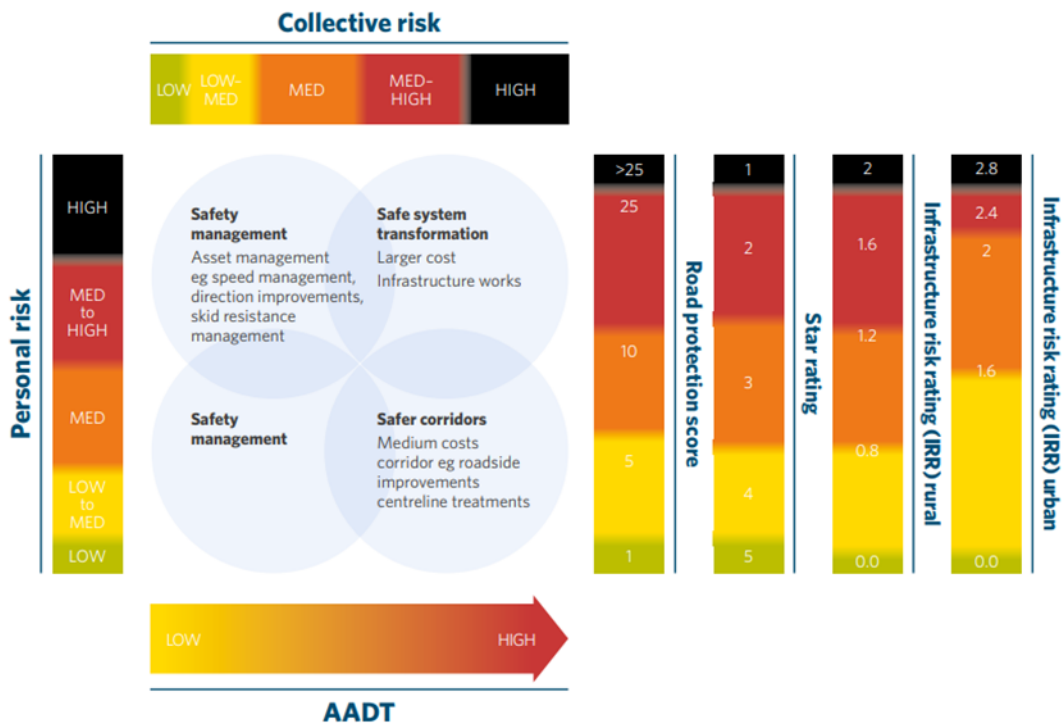
- 25 The Requestor's safety expert/s have stated that under a safe system treatment philosophy, a Safe System Transformation (larger costs infrastructure works) is not

⁴ <https://www.nzta.govt.nz/assets/resources/speed-management-guide-road-to-zero-edition/speed-management-guide-road-to-zero-edition.pdf> Table 3

warranted, given the expected safety performance of the Cashmere Oaks Drive intersection.

- 26 A roundabout is considered in the ‘Standard Safety Intervention Toolkit - Streamlined Investment Pathway’ September 2021. It no longer specifically identifies roundabouts as a safe system transformation treatment (see Figure 10).

Figure 10. Safe System Treatment Philosophy - Standard Safety Intervention Toolkit



- 27 A roundabout has an indicative cost of \$0.5M to \$6M, with my opinion being that the cost of an urban sized roundabout could be at the lower end.
- 28 Furthermore, the Standard Safety Intervention (SSI) criteria for a roundabout are as follows.

Standard Safety Intervention (SSI) criteria

For the project to meet the criteria for the streamlined investment pathway, the total project cost must fall between the applicable cost range and the meet criteria below:

- Intersection collective risk medium-high or greater.
- 3 or more injury crashes in 5 years

- 29 The treatment threshold relates to 3 or more **injury** crashes in a 5 year period, which includes minor injury crashes. This is a much lower threshold than the 3 DSI crashes

suggested by the Requestor's traffic experts. Three right turn injury crashes for example would have an equivalent DSI of 0.96 to 1.11.

30 The Safe System Treatment Philosophy is a reactive tool intended to target road funding where it can have greatest effect at reducing existing DSIs, in line with the GPS and Road Safety Strategy. The thresholds for investment are should not in my opinion be an indication of the acceptance of crash risk and / or road trauma, but a pragmatic indication of finite funding. The Safe System Treatment philosophy is founded on a Safe System approach which indicates that 'a high proportion of death and serious injury crashes occur on roads with no other injuries and that a proactive approach is needed'⁵.

31 The proposed development will generate a substantial amount of traffic and increase the number of crashes at the Cashmere Oaks Drive intersection. There is an inherent risk that a crash could result in severe consequences (death or serious injury) given the prevailing speeds. This in my view is a significant adverse effect that remains to be addressed.

CONTEXT

32 Appendix 1 includes traffic volumes for the wider area including the bypass route (Paierau Road).

CONCLUSION

33 It is accepted that the land use is changing. The plan change in my view does not demonstrate how the development can be safely and effectively integrated into the transport network. There are no current plans for the road environment to change and transition to an urban road environment with lower speeds and safe access. It has not been demonstrated in my opinion that the proposed plan change for urban use of the site can mitigate the adverse effects, particularly as they relate to safe access to the strategic road network for all road users.



Glenn Connelly

10 March 2023

⁵ Guide to Road Safety Part 2: Safe Roads – Reactive and Proactive Road Safety Approaches
https://austroads.com.au/publications/road-safety/agrs02/media/AGRS02-21_Guide_to_Road_Safety_Part_2_Safe_Roads.pdf

Appendix 1 – Traffic Volumes for the Wider Area

Traffic Volumes (Daily - 7 Day Average)⁶



⁶ Source: <https://www.mobileroad.org/> (RCA RAMM Data) with additional counts (marked *) as per my submitted evidence.