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| In the matter of | the Resource Management Act 1991 ("the Act") |
| and | of submissions by Waka Kotahi NZ Transport Agency (submitter 275) on Proposed Waimakariri District Plan Review – Hearing Stream 5 |

# Summary of Statement of Evidence of Robert Swears for Waka Kotahi - Transport Engineering


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# 1 Qualifications and Experience

1. My full name is Robert Clive Swears. I prepared a primary statement of transport engineering evidence dated 4 August 2023. This document is a summary of the key points from that statement.

2. I am a Technical Principal (Road Safety and Traffic Engineering) with WSP NZ Ltd where I have been employed for 33 years; working primarily as a road safety and transportation engineer. I have been engaged by Waka Kotahi to provide independent transport engineering expert evidence in relation to the proposed Waimakariri District Plan Review - Hearing Stream 5. I am Chartered Professional Engineer (Transportation) and a Chartered Member of Engineering New Zealand (CMEngNZ). I have the qualifications and experience outlined in my primary statement of evidence. I reaffirm that I have and will continue to abide by the Code of Conduct for Expert Witnesses (2023).

# 2 Summary of Evidence

3. As noted in my primary statement, my evidence considers the matters described below and reaches the conclusions listed:

   (i) Waimakariri District Council seeks to improve road safety within the District.

   (ii) Road user distraction is a factor that contributes to the incidence of crashes. Therefore, increasing distraction for road users increases the potential for crashes to occur.

   (iii) Digital billboards are more likely than not to distract road users.

(iv) The shorter the display time for a digital billboard, the more likely it is that the billboard will distract road users.

(v) It is generally accepted that transition times between messages on a digital billboard should be short.

(vi) Sign design that permits road users to comprehend sign messages requires the content of signs to be appropriately limited. In this statement I have described an objective method for determining the maximum acceptable content.

(vii) In my opinion, the trip generation thresholds described in the Proposed District Plan (PDP), beyond which transportation assessment is required, are higher than desirable and create the potential for confusion. Therefore, I consider the thresholds should be reduced and the District Plan provide a clear and simple method for determining the manner in which a combination of light and heavy vehicles can be converted to equivalent car movements.

## 3 Road Safety Overview (Section 3 of primary statement)

4. Notwithstanding that the definition has been around for some time, a crash can be defined as "[…] a rare, random, multifactor event preceded by a situation in which one or more persons failed to cope with their environment." (Waka Kotahi, 2004).

5. There is not a mathematical equation that determines whether or not a crash will occur. However, if we remove one or more of the factors associated with what would otherwise result in a

multi-factor crash event, then a mistake is not made[1] and a crash that might otherwise occur does not occur. For example, removing a digital billboard (or not permitting one in the first place) from a location where that billboard would otherwise distract a road user and contribute to them making a mistake, eliminates the potential for that crash.

# 4 Signs (Section 4 of primary statement)

## 4.1 SIGN-S3

6. There is sufficient evidence regarding the adverse safety effects of billboards (whether digital or static) that I consider if a Safe System approach is being followed, billboards should not be permitted because of their potential to adversely affect road safety.

7. The comments in my primary statement regarding measures that may reduce the adverse road safety effects associated with billboards should not be interpreted as my endorsement of billboards, but rather they should be taken as suggestions as to how billboards could be accommodated such that the adverse effects are reduced.

8. Unless a road user admits to distraction or the reporting officer (who is usually not a trained crash investigator) completing the TCR enquires as to whether advertising distraction was a factor, it is unlikely that distraction due to advertising signs will be recorded as a factor in the TCR.

[1] Or, if a mistake is made, it does not result in a crash.

9. An important point is that the intended function of advertising billboards (whether static or digital) is for them to be viewed by the target audience; billboards that are visible from roads are intended to be viewed by road users.

10. That is, advertisers want to maximise road user distraction.

11. There is sufficient evidence to indicate that digital billboards distract road users and result in adverse road safety effects. Therefore, on balance, I consider that it is more appropriate to take a conservative approach and recognise the potential for digital billboards to adversely affect road safety.

### 4.2 Duration of Sign Message Display

12. From a road safety perspective, the longer a message is displayed on a digital billboard the better.

13. If digital billboards are to be installed, they should be installed in locations where there are few other distractions for drivers (refer to paragraph 24(ii) of my primary statement).

14. With reference to paragraph 33 of my primary statement, a two-minute dwell time during the day would provide road users with the opportunity to turn away from the billboard and focus on the driving task. Therefore, it does not appear to be unreasonable.

### 4.3 Digital Sign Transition

15. There are various arguments regarding the most appropriate transition time, however, provided the 0.5 seconds to which the Council Officer (Waimakariri, 2023d, 149) refers is a fixed value (that is, the transition time must be 0.5 seconds and nothing

else), I consider that the solution proposed by the Council Officer is reasonable.

16. Notwithstanding the appropriateness of the transition time, I note (and agree with) the Council Officer's conclusion that the transition "[…] shall be via a cross-dissolve [… and that] There shall be no other transitions between still images […]" (Waimakariri, 2023d, page 27).

### 4.4 Sign Content

17. SIGN-P3 (Waimakariri, 2021, Page 2 of 19) refers to "managing the […] content […] of signs" and SIGN-MD1 (Waimakariri, 2021, Page 54 of 86) describes a matter of discretion in relation to "The extent to which a sign's […] content […] and any digital transitions, could adversely affect transport safety, cause confusion, distraction or an obstruction to any road user."

18. I consider that all parties associated with displaying advertising signs in the District (whether static or digital) would have certainty regarding acceptable content for signs if an objective approach for quantifying that content is adopted for the District Plan.

19. A similar approach to the method described in my primary statement is included in the draft version of Part 2 of the Traffic Control Devices (TCD) Manual with which I am involved. Noting that we are not comparing like with like, an objective system for quantifying sign content could be adopted for the Waimakariri District Plan and sign content limited to a maximum of 12 elements.

## 5 Table TRAN-1: High Traffic Generation Thresholds (Section 5 of primary statement)

20. In its further submission, Waka Kotahi (2022) has opposed an increase to traffic generation thresholds as proposed by Woolworths (2021).

21. In my opinion, the thresholds described in Table TRAN-1 are too high and should be reduced, rather than increased as proposed by Woolworths. The other matter that I consider needs to be addressed in relation to Table TRAN-1 is the uncertainty regarding the combinations of traffic generation that constitute high traffic generation.

22. In terms of volume, Table TRAN-1 refers to vehicle movements per day (vmpd) and heavy vehicle movements per day (hvmpd). However, it is not clear whether the thresholds listed in the table define thresholds for vehicles AND heavy vehicles or whether they are the thresholds for vmpd OR hvmpd.

23. I consider that the PDP should base trip generation thresholds on equivalent car movements (ECMs, sometimes referred to as equivalent car units (ECUs)) which is a theoretical basis by which heavy vehicles are regarded as equivalent to a specified number of light vehicles.

24. The PDP does not presently define “equivalent car movement”, therefore, a definition such as the following could be suitable for inclusion in the PDP. “One equivalent car movement (ECM) = 1 car / light vehicle movement, 3 ECM = 1 heavy commercial vehicle movement, 5 ECM = 1 combination heavy commercial vehicle movement (for example, truck and trailer, tractor unit and semitrailer, B-train, et cetera)”.

25. While there is nothing special about a threshold value of 100 equivalent car movements per day, the effects of a land use development that generates fewer than 100 equivalent car movements per day may be more than minor. However, I recognise that there needs to be some sort of threshold below which detailed analysis is not required for a land use activity to be considered acceptable.

26. The thresholds presently described in the PDP (notwithstanding the uncertainty as to what the values actually represent) create significant potential for the effects associated with an activity to be more than minor.

27. In my opinion, the values notified in the PDP are relatively high and are likely to result in more than minor adverse effects arising from some developments where the scale of the activity falls below the thresholds described in the table.

28. On a similar basis to Table TRAN-1 in the PDP (Waimakariri, 2021, page 240/955), I consider there is scope to have different thresholds depending on the type of road to which an activity gains its access, however, I also consider those values should be lower than the ones described in the PDP.

29. An approach such as the one described by the Environment Court (2019) could be adopted for the Waimakariri PDP. The table from the Environment Court decision, which I have included below, has parallels with Table TRAN-1 in the Waimakariri PDP.

*Table 5-1: Trip generation thresholds for transport assessments (source: Environment Court (2019, Appendix A)*

| **Table 8: Type of Assessment of Effects on the Transport Network** | | | | |
|---|---|---|---|---|
| Vehicle Trip Generation | Road Hierarchy | | | |
| | Local | Collector | Arterial | Regional |
| Low (51-100 ECU per day) | n/a | n/a | Traffic Impact Assessment | Traffic Impact Assessment |
| Medium (101-250 ECU per day) | n/a | Traffic Impact Assessment | Traffic Impact Assessment | Integrated Transport Assessment |
| High (>250 ECU per day) | Integrated Transport Assessment | Integrated Transport Assessment | Integrated Transport Assessment | Integrated Transport Assessment |

30. Regardless of whether Waimakariri District Council adopts an approach such as the one described above, I agree with Waka Kotahi that the thresholds presently in the PDP should not be increased. From a transport engineering perspective, I consider the thresholds should be reduced significantly and clarity provided regarding the meaning of the trip generation thresholds.

Robert Swears

23 August 2023

# 6 Appendix A: References

31. I referred to the following sources in this summary of my primary statement of evidence:


- Environment Court, 2019, *In the matter of the Resource Management Act 1991 AND of an appeal under Clause 14 of the First Schedule to the Act BETWEEN New Zealand Transport Agency (ENV-2016-AKL-000117) AND Thames-Coromandel District Council, Consent Order*, 7 October 2019, Environment Court, Auckland.

- Environment Court, 2023, *Practice Note 2023*, Environment Court of New Zealand, Wellington.

- Waimakariri District Council, 2021, *Proposed Waimakariri District Plan*, notified 18 September 2021, [online] https://docs.isoplan.co.nz/pdfs/waimakaririDraft/1/09May2023/merged/fullplan.pdf, Waimakariri District Council.

- Waimakariri District Council, 2023d, *Proposed Waimakariri District Plan, Officer's Report: Ngā tohu - Signs, Section 42a report* (21 July 2023), prepared by Shelley Milosavljevic, Senior Policy Planner, Waimakariri District Council .

- Waka Kotahi, 2004, *A New Zealand guide to the treatment of crash locations*, Waka Kotahi (formerly Land Transport NZ), Wellington [online] https://www.nzta.govt.nz/resources/guide-to-treatment-of-crash-location/ [accessed 27 July 2023]

- Waka Kotahi, 2022, *Form 6, Waka Kotahi NZ Transport Agency further submission on notified proposal for the Proposed Waimakariri District Plan under Clause 8 of Schedule 1 of the*

*Resource Management Act 1991*, 21 November 2022, Waka Kotahi, Christchurch.

Woolworths, 2021, *Submission on a Notified Proposal for Policy Statement Plan, Change or Variation*, submission prepared by Forme Planning Limited.