

**Before the Hearings Panel
At Waimakariri District Council**

Under the Resource Management Act 1991

In the matter of the Proposed Waimakariri District Plan

Joint Witness Statement – Off-site signs (Transport)

Date: 19 October 2023

INTRODUCTION:

- 1 This Joint Witness Statement (JWS) relates to expert conferencing on off-site signs.
- 2 The following participants were involved in this conferencing and authored this JWS:
 - (a) Shane Binder (Senior Transportation Engineer – Waimakariri District Council); and
 - (b) Robert Swears (Technical Principal – Road Safety and Traffic Engineering - WSP acting on behalf of Waka Kotahi NZ Transport Agency).
- 3 A meeting between the above parties was held on 12 October 2023 at 3:00pm online via MS Teams, and a further discussion was held on 16 October 2023 at 2:00pm online via MS Teams. This JWS has resulted from the meeting and discussion.
- 4 In preparing this statement, the experts have read and understand the Code of Conduct for Expert Witnesses as included in the Environment Court of New Zealand Practice Note 2023¹.

PURPOSE AND SCOPE OF CONFERENCING:

- 5 The conferencing focused on the matter relating to off-site signs identified in Minute 9 (dated 4 September 2023), which requested expert conferencing in relation to traffic impacts, in the context of the Panel’s question:

“Do you consider such a restrictive approach for off-site signs is justified relative to the approach for on-site signs (both of which could be digital signs)?”.

¹ <https://www.environmentcourt.govt.nz/assets/Practice-Note-2023-.pdf>

MATTERS THAT THE EXPERTS AGREE ON:

In general - in relation to advertising signs

- 6 Research evidence indicates that:
- (a) advertising signs are more likely than not to distract road users from paying attention to the driving task;
 - (b) the effects of advertising-based distraction extend beyond the location of the sign as road users process the information presented;
 - (c) the shorter the dwell time of a digital advertising sign (and therefore the greater the potential for a range of messages and the associated transitions to be viewed by each road user), the greater the potential for the sign to distract road users;
 - (d) the more complex (in terms of the number and form of elements) the content of an advertising sign, the greater the potential for the sign to distract road users; and
 - (e) the level of distraction will vary by driver.
- 7 All signs visible from the road should be controlled to minimise the potential for driver distraction.
- 8 All signs visible from the road should be designed and located to optimise road user safety.
- 9 At locations where *demands* on road user attention are greatest, the most significant controls should be applied in relation to signs to minimise additional demands on attention.
- 10 At locations where the *consequences* of road users making mistakes are greatest, the most significant controls should be applied in relation to signs to minimise additional demands on attention.

Off-site signs traffic impacts (relative to on-site signs; both of which can be digital signs)

- 11 The experts agree that both on-site and off-site signs have the potential to distract road users.
- 12 However, the experts understand there is greater potential to control off-site signs than on-site signs. Taking into account the points previously raised in this statement, the experts consider that the controls available through the District Plan should be applied to optimise road user safety in the District.
- 13 The experts note they are not human-factors experts and that aspects of the question, such as those listed below, are best answered by such specialists:
- (a) whether on-site signs and their associated messages would be more likely to be expected by road users (than off-site signs) and therefore cause less distraction;
 - (b) whether off-site directional signs are likely to aid or detract from the driving task;
 - (c) whether off-site directional signs create more or less distraction than general off-site signs; and
 - (d) whether on-site directional signs create more or less distraction than general on-site signs.
- 14 From a road safety perspective, the experts consider it desirable for the District Plan to incorporate provisions that minimise the potential for advertising signs; whether on-site, off-site, static, or digital to be established where they are visible from, and have the potential to adversely affect safety on, District roads.

15 Where advertising signs are permitted, the experts consider it desirable for the District Plan to incorporate provisions that:

(a) require such signs to only be visible to road users at locations where attention demands on road users are least and, therefore, the potential for distraction is reduced;

(b) maximise the dwell time for any digital signs to reduce the potential for road users to view multiple messages and / or transitions between messages; and

(c) place controls on the quantity and legibility of the content of advertising signs to minimise road user distraction associated with viewing and comprehending messages on those signs.

16 The experts view in this regard is based on research evidence that longer dwell times result in lower levels of distraction. Therefore, a longer dwell time, such as 120 seconds, as proposed in notified District Plan, is expected to have fewer adverse road safety effects than a shorter dwell time.

17 Notwithstanding the caveat in this statement in relation to the input of human factors specialists; in response to the question presented in Minute 9 (dated 4 September 2023), the experts consider it desirable for the District Plan to incorporate provisions that minimise the potential for advertising signs to adversely affect road safety on roads within the District. Therefore, the experts agree that a restrictive approach for off-site signs is appropriate and desirable.

MATTERS THAT THE EXPERTS DISAGREE ON:

Off-site signs traffic impacts (relative to on-site signs; both of which can be digital signs)

18 There are no matters of disagreement.

REFERENCES

In relation to paragraph 6 of this statement, one or both of the experts have referred to the following sources:

- Anciaes, P., 2023, Effects of the roadside visual environment on driver wellbeing and behaviour – a systematic review, *Transport Reviews*, Volume 43, Issue 4, 571-598, DOI: 0.1080/01441647.2022.2133189.
- Brome, R., Awad, M., Moacdieh, N., 2021, Roadside digital billboard advertisements: Effects of static, transitioning, and animated designs on drivers' performance and attention, *Transportation Research Part F: Traffic Psychology and Behaviour*, Volume 83, 226-237, DOI: 10.1016/j.trf.2021.10.013.
- Meuleners, L., Roberts, P., Fraser, M., 2020, Identifying the distracting aspects of our electronic advertising billboards: A driving simulation study, *Accident Analysis & Prevention*, Volume 145, September 2020, ScienceDirect, Elsevier.
- Mollu, K., Cornu, J., Brijs, K., Pirdavani, A., Brijs, T., 2018, Driving simulator study on the influence of digital illuminated billboards near pedestrian crossings, *Transportation Research Part F: Traffic Psychology and Behaviour*, Volume 59, Part A, November 2018, Pages 45-56, ScienceDirect, Elsevier.
- Sheykhfard, A., Haghghi, 2020, Driver distraction by digital billboards? Structural equation modeling based on naturalistic driving study data: A case study of Iran, *Journal of Safety Research*, Volume 72, DOI: 10.1016/j.jsr.2019.11.002.
- True Impact Media, 2023a, [online] <https://trueimpactmedia.com/blog/digital-billboard-vs-traditional-billboards/> [accessed 30 July 2023].
- True Impact Media, 2023b, [online] <https://trueimpactmedia.com/blog/5-digital-billboard-best-practices/> [accessed 30 July 2023].

- Wallace, B., 2003, External-To-Vehicle Driver Distraction, Transport Research Planning Group, Scottish Executive Social Research.
- Wang, Y., Clifford, W., Markham, C., Deegan, C., 2021, Examination of Driver Visual and Cognitive Responses to Billboard Elicited Passive Distraction Using Eye-Fixation Related Potential, Sensors 2021, Volume 21, DOI: 10.3390/s21041471.
- Zalesinska, M., 2018, The impact of the luminance, size and location of LED billboards on drivers' visual performance-Laboratory tests, Accident Analysis & Prevention, Volume 117, August 2018, pages 439-448, ScienceDirect, Elsevier.

Date: 19 October 2023

Signatories



Shane Binder (Senior Transportation Engineer - Waimakariri District Council)



Robert Swears (Technical Principal – Road Safety and Traffic Engineering – WSP; acting as expert for Waka Kotahi NZ Transport Agency)