

IN THE MATTER of the Resource
Management Act 1991

AND

IN THE MATTER of hearing of a submission
and further submission
lodged by the **OUT OF
HOME MEDIA
ASSOCIATION OF
AOTEAROA INC.** in
respect of the 'Signs'
Chapter and the 'Signs'
Design Guide **Proposed
Wellington City District
Plan**

STATEMENT OF EVIDENCE OF BRETT HARRIES

1. INTRODUCTION

1.1 My full name is Brett Harries.

1.2 I am a director of Harries Transportation Engineers Ltd which is a specialist transportation engineering consultancy. Prior to my current role, I was:

- (a) Market Leader - Transport for Stantec (NZ) Limited (2018 to 2022); and
- (b) Traffic engineer and ultimately Managing Director of Traffic Design Group Limited (1982 to 2018).

Qualifications and experience

1.1 I am a New Zealand Chartered Professional Engineer and am registered as an International Professional Engineer / APEC Engineer.

1.2 I hold a Bachelor of Civil Engineering degree from the University of Auckland (1982).

- 1.3 I have 41 years' post graduate professional experience as a practising specialist traffic and transportation engineer.
- 1.4 I am:
- (a) a Fellow of Engineering New Zealand;
 - (b) a Fellow of the Institute of Transportation Engineers (USA);
 - (c) a Life Member of the Association of Consulting and Engineering (NZ); and
 - (d) an Associate Member of the NZ Planning Institute.
- 1.5 Throughout my 41 years as a specialist transport engineer, I have been engaged by both public and private sector clients from throughout New Zealand, Australia and the South Pacific to provide designs, assessments and advice on all manner of traffic engineering and transport planning projects.
- 1.6 As part of this broader experience, I have gained significant experience and expertise in human factors associated with driver behaviour, and the safety-related driver responses to various traffic environments. Much of this expertise has been obtained through my involvement as an expert vehicle crash analyst. I have qualifications in vehicle crash analysis from Northwestern University in Chicago and am one of a small handful of professional engineers in New Zealand that, through qualifications and experience, has been accepted as an expert vehicle crash analyst in the High Court of New Zealand.
- 1.7 I describe this background in crash analysis because it is directly relevant to the assessments I routinely undertake in relation to how drivers might respond to a wide range of visual stimuli that make up the traffic environment, including those that are directly related to the driving task (for example, traffic control devices, other vehicles, etc.), and some of which form parts of the fabric of the wider driving environment (such as surrounding activities,

people, scenery, buildings, and of course advertising signs and billboards).

- 1.8 With regard to my experience that is particular to the assessment of the road safety effects of signs and billboards, I estimate that over the past 12 years I have undertaken or contributed to the formal assessment of over 300 digital signs and billboards throughout New Zealand. Of these, I have been involved in the consenting of, or change of conditions to, at least 20 large-format digital billboards and numerous small-format bus shelter/pedestrian shelter digital signs within Wellington City.
- 1.9 In addition to the assessments undertaken for consenting purposes, I have also been involved in numerous post-consent reviews of road safety performance at operating digital sign and digital billboard sites as part of monitoring conditions of consent.
- 1.10 I have presented evidence on numerous occasions and have a comprehensive understanding of:
 - (a) The potential adverse effects associated with signs / billboards, and in particular understanding the distinction between perceived and actual affects.
 - (b) Consent conditions that are routinely imposed on resource consents for digital billboards.
 - (c) District plan provisions relating to signs / billboards throughout New Zealand.
- 1.11 I maintain my knowledge of the traffic safety implications of digital billboards through ongoing reviews of published papers on the subject; and through regular attendances at international conferences which relate to the matters that potentially influence driver performances or driver behaviours. The latest of these conferences that I attended was the "*5th International Conference on Driver Distraction and Inattention*" held in France in 2021.

1.12 I also participated in a 2012 trial of digital billboard operating characteristics (dwell times, image transition methods and times, and luminance levels) which was held in Auckland during daytime and night-time conditions, and was also attended by various experts from, and consultants representing, Auckland Council, Auckland Transport, and industry representatives.

Purpose of evidence

1.13 In this matter, I have been instructed by Counsel for the Out Of Home Media Association of Aotearoa (**OOHMAA**) to provide traffic engineering and road safety evidence in relation to:

(a) The primary submission (Submission 284) lodged by OOHMAA with the Wellington City Council dated 12 September 2022 (**OOHMAA Submission**) in respect of the Signs provisions of the Proposed Wellington City District Plan (**PDP**); and

(b) The further submission (FS 125) lodged by OOHMAA dated 2 December 2022 (**OOHMAA Further Submission**) in relation to the primary submission of Waka Kotahi New Zealand Transport Agency (**NZTA**) (Submission 370) (**NZTA Submission**).

1.14 The particular parts of the OOHMAA Submission that are addressed in my evidence relate to following proposed sign standards, in respect of which OOHMAA is seeking:

(a) Deletion of standard SIGN-S8.1.e that requires that digital signs must not contain phone numbers, email addresses, web addresses, physical addresses or contact details;

(b) Deletion of standard SIGN-S8.1.f that requires that digital signs must not contain more than 40 characters;

(c) Deletion of standard SIGN-S7.7 that requires minimum separation distances between signs;

- (d) Amendment to standard SIGN-S8.2.b that requires each image on a digital sign to be displayed for a minimum of 15 seconds where adjacent to roads with a speed limit of less than or equal to 80kmh, and 35 seconds where the road has a speed limit of 80kmh or greater, to require each image to be displayed a minimum of 8 seconds in any speed environment;
- (e) Amendment to SIGN-S8.2.d such that it does not preclude the use of a 'dissolve' transition between images displayed on a digital sign; and
- (f) Deletion of standards SIGN-S8.1.f, SIGN-S5.4 and SIGN-S8.1.g that require limits on sign size if facing a state highway, and the preclusion of internally illuminated and digital signs from being located adjacent to a state highway.

1.15 The OOHMAA Further Submission is related to the NZTA Submission. The particular parts of the OOHMAA Further Submission that are addressed in my evidence relate to:

- (a) NZTA Submission points 370.241 to 370.244 in relation to signs that are visible from a state highway;
- (b) NZTA Submission point 370.250 in relation to SIGN-S7 (Traffic Safety), and in particular SIGN-S7.2 which addresses signs within 100m of an intersection;
- (c) NZTA Submission point 370.252 in relation to SIGN-S8.1 (Digital Signs), and in particular:
 - (i) SIGN-S8.1.e - contact information content within images;
 - (ii) SIGN-S8.1.g - visibility of signs from a state highway;
 - (iii) Proposed new standard SIGN-S8.1.i - signs in relation to intersections;

- (iv) Proposed new standard SIGN-S8.1.j – multiple digital billboards in a driver’s field of vision; and
 - (v) Proposed new standard SIGN-S8.1.k – sign visibility from high speed roads.
- (d) NZTA Submission point 370.252 in relation to SIGN-S8.2.b – dwell times.

1.16 I have read the Council’s s42A Report, the OOHMAA and NZTA Submissions, the OOHMAA Further Submission, and the Section 32 analysis prepared by the Council for the Signs provisions.

Scope of evidence

1.17 Prior to addressing the specifics of the traffic engineering and road safety implications of the OOHMAA Submission and Further Submission, my evidence will provide a general overview of the actual road safety implications of digital billboards. I do so by reference to:

- (a) The current state of applicable New Zealand and international research regarding the road safety outcomes of, and the optimum operating characteristics for, digital billboards; and
- (b) The extent to which 12 years of digital billboard operations in New Zealand have actually influenced road safety.

1.18 I consider that provision of this broad outline of how digital billboards influence road safety represents a critical background to the relief sought in the OOHMAA Submission and comments made in OOHMAA’s Further Submission. This is especially so given that, in my opinion, significant portions of the Signs chapter of the PDP, and the NZTA Submission appear to be based more on perception and / or speculation of how digital signs and billboards might influence road safety, rather than drawing upon any actual evidence.

1.19 I note that OOHMAA no longer seeks permitted activity status of billboards, so my evidence does not address that issue.

1.20 My evidence is structured as follows:

- (a) Section 3 provides a summary of the international research basis for the assessment of digital billboards, with a particular focus on the research that is appropriate and relevant to New Zealand conditions;
- (b) Section 4 provides a detailed examination of the actual road safety implications of advertising signs in general, and digital billboards, by reference to the NZTA Crash Analysis System (**CAS**);
- (c) Section 5 provides comments on the traffic engineering and road safety aspects of the OOHMAA Submission in relation to image content (i.e. standards SIGN-S8.1.e and SIGN-S8.1.f);
- (d) Section 6 provides comments on the traffic engineering and road safety aspects of the OOHMAA Submission in relation to separation distances between signs (i.e. standard SIGN-S7.7);
- (e) Section 7 provides comments on the traffic engineering and road safety aspects of the OOHMAA Submission in relation to digital operation (i.e. standards SIGN-S8.2.b and SIGN-S8.2.d);
- (f) Section 8 provides comments on the traffic engineering and road safety aspects of the OOHMAA Submission in relation to signs that are visible from a state highway (i.e. standards SIGN-S1.1.f and SIGN-S5.4 and SIGN-S8.1.g);
- (g) Section 9 provides comments on the traffic engineering and road safety aspects of the OOHMAA Submission in relation to signs that are visible from an intersection (i.e. standard SIGN-S7.2); and

(h) Section 10 provides my conclusions.

1.21 An executive summary of my evidence is provided in Section 2.

Expert Witness Code of Conduct

1.22 Counsel for OOHMAA has provided me with a copy of the Code of Conduct for Expert Witnesses as contained in the Environment Court's 2023 Practice Note. I can confirm that I have read it, and I agreed to comply with it. In particular, I can confirm that this evidence is within my area of expertise, and that I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

2. EXECUTIVE SUMMARY

Background to the road safety effects of digital billboards and digital signs

2.1 Relevant international research, along with 12 years of operational experience of digital billboards in New Zealand, confirms that digital signs and digital billboards do not inherently compromise road safety. There are now around 1,000 digital advertising screens located in towns and cities throughout New Zealand, yet there is not a single recorded crash that has been attributed to a digital billboard, nor a single known billboard site where the presence of the billboard has adversely impacted on road safety patterns in any identifiable manner.

2.2 The vast majority of digital billboards and digital signs in New Zealand operate within an already tightly bound set of well-established operational parameters that have been thoroughly assessed, including as a consequence of post-implementation safety monitoring studies.

2.3 On that basis, I consider that the need for additional novel and/or more onerous controls on digital billboard operations, as have been proposed by the PDP and by NZTA, are both unfounded and

unnecessary to ensure the ongoing management of the road safety effects of digital billboards.

- 2.4 In this regard, it is in my professional opinion that all of the new and/or more onerous controls that have been proposed by the PDP and NZTA as road safety measures, are proposed on the basis of perceptions regarding potential road safety effects, with a complete absence of any foundational evidence.
- 2.5 In other words, the new and/or more onerous controls proposed and requested by the PDP and NZTA have been conceptualised to address perceived adverse traffic safety effects when there is no actual evidence of those effects. With such a large database of existing digital billboards and signs that have operated in New Zealand over a long period of time and which been subject to close scrutiny throughout, there is in my opinion no credible basis for taking the highly precautionary approaches to assessment and management of new digital billboards as the PDP and NZTA propose.

Image content

- 2.6 Good examples of the proposed new standards contained in the PDP or as proposed in the NZTA Submission regarding image content that I consider have no basis in either research or practice comprise:
- (a) SIGN-S8.1.e regarding the inclusion of contact information in an image; and
 - (b) SIGN-S8.1.f regarding the number of characters that are able to be displayed within an image.
 - (c) NZTA submission point 370.252 which seeks the exclusion of logos from digital sign images.
- 2.7 Given the lack of any evidential basis, it is my opinion that if proper thoughtful consideration had been given to each, then it would become clear that they would be not only impracticable but

are unlikely to have any beneficial impact on either driver behaviours or driver performances.

2.8 Accordingly, I confidently support:

- (a) The OOHMAA Submission that the two new controls (SIGN-S8.1.e and SIGN-S8.1.f) be deleted; and
- (b) The OOHMAA Further Submission in opposition to all aspects of the NZTA submission points 370.250 and 370.252.

Sign separations

2.9 Proposed standard SIGN-S7.7 proposes separation distances for various speed environments, which the OOHMAA submission seeks to have deleted.

2.10 For the reason that it is generally impractical to achieve the required sign separations in low speed urban environments (which in my opinion should be consistently referred to as being below 80km/h), I agree in part with the OOHMAA submission relating to separation distances in low speed environments. The Council review of the submission also agrees with this part of the submission.

2.11 For higher speed environments (which in my opinion should be consistently referred to as being 80km/h or higher), I consider it appropriate for the standard to be retained in order to enable case-by-case assessments where signs are located in close proximity to other signs.

Image dwell times

2.12 Proposed standard SIGN-S8.2.b proposes new minimum dwell times for digital billboards being:

- (a) 15 seconds for low speed environments (below 80km/h);
and

- (b) 35 seconds for high speed environments (80km/h or higher).
- 2.13 The proposed low-speed environment dwell time ignores the fact that the vast majority of digital advertising screens in New Zealand currently operate with an 8-second dwell time, and have done so for the past 12 years without any evident road safety issues whatsoever.
- 2.14 No substantive basis has been provided to explain why an 8-second dwell time is now suddenly unacceptable, nor is there any evidence provided as to why 15-seconds is more acceptable. Accordingly, I support the OOHMAA Submission in relation to standard SIGN S8.2.b insofar that I oppose the minimum 15-second dwell as proposed in the PDP for low-speed environments, and instead support a minimum dwell time of 8-seconds.
- 2.15 In terms of high-speed traffic environments, there is currently little available New Zealand operational evidence to assist in determining an appropriate minimum dwell time. However, based on the experience of the Australian main road authorities that either enable or provide digital billboard's within high-speed environments including freeways, it would appear to me that a more appropriate minimum dwell time for Wellington's high speed road environments (i.e. 80km/h or higher) would be 30-seconds, rather than what appears to be an arbitrarily chosen value of 35-seconds.
- 2.16 Also in relation to dwell times, I firmly oppose the NZTA Submission point 370.252 which seeks an addition to standard SIGN-S8.2.b that dwell time be determined so that no more than 5% of drivers are exposed to image changes. This NZTA criterion has no evidential basis, and would result in dwell times that are unusually long and unworkable. I therefore fully support the OOHMAA Further Submission which opposes the NZTA Submission point 370.252.

Image transitions

- 2.17 Proposed standard SIGN-S8.2.d addresses transitions between images on a digital billboard. In the PDP, dissolve transitions were excluded. Both OOHMAA and NZTA submitted that dissolve transitions should not be excluded. Council's reporting planner agrees with the OOHMAA and NZTA submissions on this point.
- 2.18 I also agree, and would simply note that in my opinion, dissolve transitions (preferably 0.5-seconds long), are critical to ensuring the safety of digital billboards, as they avoid the potential that the transitions could catch the involuntary attention of drivers, especially in peripheral vision.

Signs facing a state highway

- 2.19 Proposed standards SIGN-S1.1.f, SIGN-S5.4 and SIGN-S8.1.g address signs that face a state highway. In addressing each of these standards, it is my opinion that distinctions need to be made between:
- (a) Low speed state highways (speed limit below 80km/h) as occurs on the surface street within Wellington City; and
 - (b) High speed state highways (base speed limit 80km/h or higher) such as the Wellington Urban Motorway.
- 2.20 Distinguishing between low-speed and high-speed state highways is, in my opinion, important because it would be illogical to impose additional and/or more onerous constraints on signs adjacent to low-speed state highways than are expected for any other road within Wellington City.
- 2.21 In terms of the relationship between signs and a state highway, I agree with the NZTA Submission points 370.244 and 370.246 insofar that the word 'facing' be replaced with the words 'oriented to be read from'.

- 2.22 In relation to SIGN-S1.1.f and its proposed 5m² sign area for any signs oriented to be read from a state highway, I support the OOHMAA Submission that this control should be deleted (whether on a slow speed or high speed state highway), and I support the OOHMAA Further Submission to NZTA Submission points 370.241 and 370.242.
- 2.23 My reasoning is that the effect of SIGN-S1.1.f is more likely to be counter to its presumed intent. This is simply because a small 5m² sign will be harder for an approaching driver to view the content of (especially from normal approach visibility distances), and in that regard will be potentially more prone to holding a driver's attention than a larger, more readily legible sign.
- 2.24 In relation to SIGN-S5.4 and SIGN-S8.1.g that also relate to signs oriented to be read from a state highway, I partly agree with the OOHMAA Submission that they should not be a blanket standards that apply to all state highways. Rather, it is in my opinion appropriate that a distinction is made between low speed (below 80km/h) and high speed (80km/h or higher) state highways, and that the standards should apply only to high speed state highways, and not to low speed state highways that exist on the surface street network within Wellington City.

3. **RESEARCH BASIS FOR THE ASSESSMENT OF DIGITAL BILLBOARDS**

- 3.1 The purpose of the section is to make some general observations about the local and international research / reports that have frequently been referred to in resource consent applications for billboards (particularly digital billboards) throughout New Zealand.

Research relevance and applicability

- 3.2 The international research that relates to the road safety implications of digital billboards varies significantly in terms of its age, relevance, and the extent that it has been validated to actual

digital billboard operations. This has sometimes led to inconsistent research outcomes and misconceptions by experts.

3.3 However, by focussing more on recent studies that are based on:

- (a) Empirically derived evidence in preference to inferred evidence; and
- (b) More importantly, research that relates to the manner in which digital billboards operate in New Zealand, (i.e., with more comparable and relevant billboard operational characteristics, traffic environments and traffic conditions)

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a clearer picture emerges.

3.4 Some of the key research papers are briefly summarised below.

Relevant international research examples

3.5 An Australian study by Samsa (2015)¹ describes experiments that involved comparative assessments of driver responses to the presence of on-premise advertising signs², static billboards, and digital billboards. The research found that:

"Generally, participants tended to fixate most on the road ahead when driving, which is a positive finding in terms of road safety. There were also no differences in this on-road viewing between the three signage types", [i.e. on-premise advertising signs, standard billboards and digital billboards].

"When participants looked at billboards and on-premise signs, the average fixation durations were all well below 0.75s, which is considered to be the equivalent minimum perception-reaction time to the slowing of a vehicle ahead".

¹ Samsa, C. (2015) "Digital billboards 'down under': are they distracting to drivers and can industry and regulators work together for a successful road safety outcome?" Proceedings of the 2015 Australasian Road Safety Conference 14 – 16 October, Gold Coast, Australia.

² On-premise signs are first-party signs that relate to the activity within the site on which they are located. They predominantly consist of business identification signs.

"In regard to driver performance variables, the data showed no significant differences in average vehicle headway for any of the signage types", and "... the headways found in the present study would have given drivers enough time to detect the slowing of a vehicle in front and respond accordingly".

"... the findings show that digital billboards do not draw drivers' attention away from the road for dangerously long periods of time compared to other signage types, and drivers maintained a safe average vehicle headway in the presence of these signs".

[Underlining is mine.]

- 3.6 The key point to be drawn from Samsa's research is that digital billboards are no more distractive to drivers than any other signage type, and that when glances are made at billboards, these glance durations are below the threshold that would likely result in road safety issues.
- 3.7 Another Australian study by Young *et al* (2015) of Monash University relates to situational awareness.³ That research was related to static image billboards in freeway situations, but is pertinent based on its following conclusions:

"Overall, the driving performance and situation awareness results indicated that drivers were not overly distracted by roadside advertising in the freeway environment, as indicated by a lack of serious driving errors being made in the vicinity of the billboards".

"The billboards examined were a key element of a drivers' situation awareness when driving demand was low, such as when driving on the freeway under free-flowing, low traffic conditions. However, ... when driving demands increased, drivers focused less attention on the billboards".

"These results suggest that drivers can self-regulate their attention to billboards, reducing the attention given to them when required to focus on the immediate driving situation".

³ Young K.L., Stephens A.N., Logan D.B., Lenne M.G. "An On-Road Study of the Effect of Roadside Advertising on Driving Performance and Situation Awareness", Proceedings of the 4th International Driver Distraction and Inattention Conference, Sydney, Australia, 2015.

[Underlining is mine.]

- 3.8 The key point to be taken from Young *et al* (2015) is that as a driving environment becomes more complex, drivers focus more on the driving task and less on the things that are unnecessary to the driving task (such as advertising signs).
- 3.9 Research that is specific to digital billboards was undertaken by Goodsell *et al* (2018) of the Australian Road Research Board (**ARRB**),⁴ and involved an evaluation of the impact on driving performance associated with new digital billboard installations at signalised intersections. This evaluation took the form of a video survey of vehicle control with the aim of assessing the before and after impacts of the digital billboards when they began operation. The concluding paragraph from Goodsell *et al* (2018) is as follows:

"In conclusion, the current evaluation investigated the impact of the presence of digital billboards on vehicle control performance. The sites evaluated were relatively complex signalised intersections. Because of the cognitive demands associated with negotiating a signalised intersection, these are the kinds of sites where it might be expected that drivers would display impairment from distraction. However, there was almost no evidence that the digital billboards at these locations impaired driving performance. Clearly, in real world situations, the impact from the visual distraction from digital billboards is complex, and in some situations such as the installations evaluated here, there can be an apparent positive impact on driving performance from the presence of a digital billboard. If the parameters of how and when this positive impact occurs can be precisely specified, this would prove enormously valuable for all stakeholders."

[Underlining is mine.]

- 3.10 The Goodsell *et al* (2018) research supports other similar research and demonstrates that digital billboards do not cause a reduction

⁴ Goodsell R, Dr Roberts. P "On-Road evaluation of the driving performance impact of digital billboards at Intersections" Project No. PRS17074 – ARRB, (2018).

in driver performance or compromise driver behaviour, either of which could lead to a deterioration in road safety.

3.11 This was further demonstrated in a study by Cunningham *et al* (2016) also of ARRB, which describes a safety evaluation of a digital billboard mounted over the Kwinana Freeway in Perth.⁵ Comparisons were made between the billboard not operating and then operating; and between the billboard site and a matched control site. This evaluation took the form of a video survey of vehicle movement with a view to quantifying driver performance measures including incidents, lateral control⁶, and headway.⁷ The study revealed no incidents in any of the time periods examined; no impact on headway time; and reduced lane drift episodes.

3.12 The discussion from the study included the following extracts:

"There was no evidence that headway time was affected by the illumination of the LFDS [large format digital sign] suggesting that by this measure at least, the LFDS was not having a negative impact on driver behaviour"

"Importantly there was a significant difference in the number of lane drift episodes attributable to the illumination of the LFDS. Unexpectedly, there were less lane drift episodes when the LFDS was illuminated compared to when it was not."

[Underlining is mine.]

Summary of international and domestic research

3.13 Overall, it is my opinion that the body of New Zealand relevant, empirically-based research / analysis that is now emerging is increasingly confirming that digital billboards are:

- (a) Little or no different from any other sort of advertising sign including static billboards and on-premise signs;

⁵ Cunningham, M., Mitchell, B., Roberts, P., "Bull Creek LFDS Evaluation" ARRB contract report for Department of Transport WA, September 2016.

⁶ Lateral control is the ability to stay in-lane.

⁷ Headway is the following distance to the vehicle in front.

- (b) Not inherently distracting to drivers to the extent that they are creating any apparent adverse road safety effects; and
- (c) Not inherently hazardous to the traffic environment, even in complex traffic situations.

4. **EXAMINATION OF ROAD SAFETY EFFECTS FROM CRASH HISTORIES**

- 4.1 I have undertaken a detailed assessment of the CAS crash database for the whole of New Zealand for the 12 years since 2012 that digital advertising screens have been operational which, as previously noted, now numbers around 1,000 digital advertising screens spread throughout most main centres within New Zealand.
- 4.2 This assessment was undertaken on 25 February 2024 by searching on the crash factor "*attention diverted by advertising or signs*".⁸ That search revealed 79 recorded crashes. I note in this regard that this crash factor picks up any crash that is related to distraction by any sort of sign, not just advertising signs. These therefore include traffic signs, road works signs, directional signs, street name signs, and so on.
- 4.3 For each crash identified by CAS, I have examined the relevant NZ Police 'Traffic Crash Report' and associated witness statements and, where necessary, cross-referenced crashes to the (then) existing situation at the crash locations.
- 4.4 The following categories of signs associated with the '*attention diverted by advertising or signs*' crashes were identified:

⁸ CAS crash factor 356.

Category	Nature of sign	No.
Third-party advertising billboards	Digital sign / digital billboard.	0
	Static billboard.	4
Commercial first-party on-premise signs	shops / fuel price board / real estate / roadside stall.	15
Looking for, or at, directional signs	Street name signs / directional signs / motorway gantry signs.	21
Traffic signs	Traffic sign / roadworks traffic management / VMS / digital speed signs / detour sign.	16
Personal / community	Election hoarding / community noticeboard / place identification / protest sign.	7
Inappropriately coded as sign distraction	Looking for or at shops or buildings, a circus blimp, a horse statue, a navigation device, a computer, or no sign evident.	16
Total		79

Table 1: 'Attention diverted by advertising or signs' crashes 2012-2024

- 4.5 Table 1 shows that no crashes involved a digital sign or digital billboard, and only four crashes involved static third-party advertising signs. In my opinion, this clearly demonstrates that the presence of digital signage (and indeed third-party advertising in general), is not currently creating identifiable road safety issues.
- 4.6 To put these sign-related crashes into perspective, during the same 12-year search period there was an overall total of 395,468 recorded crashes in New Zealand.⁹ Even if the combined total of 19 crashes involving some sort of advertising is considered (that is, the four static third-party advertising signs, and the 15 business identification signs), they represent only 0.005% of all crashes - the four static advertising sign crashes represent 0.001% of all crashes.
- 4.7 The same analysis undertaken for in-vehicle distractions (including by passengers, pets, cell phones, navigation devices,

⁹ As interrogated on 25/02/24.

entertainment console, climate controls, food, cigarettes, beverages and other objects), revealed 16,124 crashes. This represents a ratio of 849 in-vehicle distraction crashes to every one advertising sign / business identification sign related crash.

- 4.8 To put the four static advertising sign-related crashes into perspective, the data shows that a driver is 63 times more likely to have a crash due to a wheel coming off the vehicle being driven than due to an advertising sign.
- 4.9 Some of the research suggests¹⁰ that the presence of digital billboards assists to enhance a driver's situational awareness, i.e., assists drivers to maintain engagement and remain looking at the road ahead instead of being either distracted by elements within the vehicle or being inattentive due to mind wandering.
- 4.10 To that extent, there may be a net road safety advantage to enabling the presence of well-placed roadside digital billboards as a means of off-setting inattention or mind-wandering.
- 4.11 A commonly posited perception raised by opposing 'experts' is that drivers might, in reporting on crashes, be unwilling to admit to, or are unaware of, being distracted by signs in general, and digital billboards in particular. However, there is no reason why drivers who have been involved in a crash would not want to point to distraction by a billboard, any more or less than they would point to distraction by any other element of the traffic environment, or elements internal to the vehicle.
- 4.12 I also note in this regard that research from Queens University in Ireland found that while distraction due to objects inside the vehicle (particularly the use of cell phones and in-car technology) are under-reported and hence under-represented as a crash factor, no such difference was found with regard to outside the vehicle distraction.¹¹ This further supports the analysis of

¹⁰ Including Young *et al* (2015), Goodsell *et al* (2018), and Cunningham *et al* (2016).

¹¹ Regev S, Rolison JJ, Feeney A, Moutari S "Driver distraction is an under-reported cause of road accidents: An examination of discrepancy between police officers' views and

individual crash records as providing a useful tool to understand the potential impact of advertising signs on driver attention and safety.

- 4.13 The lack of crashes related to digital billboards is also evident when a broader examination of crash histories is undertaken (usually in relation to post-implementation monitoring conditions related to consented digital billboards). Such studies often look beyond individual crash causes, to determine whether there have been any identifiable changes to general crash patterns or crash numbers at individual digital billboard sites.
- 4.14 Monitoring studies that I have been involved with, and those that I am aware of that have been undertaken by others, have demonstrated that even when examinations are made that look beyond the face of the crash records to overall influences, it has been consistently found that there are no identifiable road safety impacts due to the establishment of digital billboards, nor any evidence of systematic increases in crash rates due to the presence of digital billboards.
- 4.15 Clearly, digital signs and billboards are not a new phenomenon - we now have a significant database of them to examine and therefore have the advantage of being able to directly observe, measure and evaluate their actual effects. The short point is that digital advertising signs and billboards are not featuring at all in the crash statistics, and numerous monitoring studies of their operations have revealed no adverse changes to overall crash numbers, crash patterns, or crash severities. Accordingly, it is in my opinion unjustifiable to unnecessarily impose additional and/or more onerous controls if those controls lack an evidential or analytic basis, but are instead predicated on perceptions or assumptions regarding digital billboard effects.

road accident reports", Queen's University, Belfast, presented at Fifth International Conference on Driver Distraction and Inattention, (2017).

5. **STANDARDS RELATING TO IMAGE CONTENT**

5.1 The purpose of this section is to address OOHMAA's concerns in relation to image content.

Standard SIGN-S8.1.e - Contact details

5.2 Standard SIGN-S8.1.e as proposed in the PDP, and which the OOHMAA Submission seeks to have deleted, is as follows:

Digital signs must not:

e. Contain phone numbers, email addresses, web addresses, physical addresses or contact details;

5.3 The reason provided by Council for not supporting the deletion of standard SIGN-S8.1.e is:

293. In response to Go Media [236.32], Lumo Digital Outdoor Limited [285.33, 285.34, 285.35, and 285.36], and OOHMAA [284.33, 284.34, 284.35, and 284.36], I disagree with removing SIGN-S8.1.e-g. These matters are necessary for managing the adverse traffic safety effects of digital signs. I consider that any sign which proposes to breach these matters can apply for a resource consent as a restricted discretionary activity. This is the appropriate avenue of determining if the traffic safety effects can be mitigated for a specific location and design of sign.

5.4 The Council response suggests, without providing any substantiating evidence, that the inclusion of phone numbers, email addresses, web addresses, physical addresses or contact details (which I will collectively refer to as 'contact information') on digital signs produces adverse traffic safety effects.

5.5 From my involvement in the consenting of digital billboards and my broader knowledge of the out-of-home advertising industry, I estimate that more than 95% of the existing digital billboards that operate in New Zealand do so without any explicit restriction on the display of contact information. Despite the lack of control on the display of contact information on the vast majority of digital

signs in New Zealand, no identifiable adverse road safety effects have resulted, (as I have detailed in my paragraphs 4.1 to 4.15 above).

5.6 When considering the possibility of a driver being potentially distracted by contact information, it is important to understand that, as with any other item that is supplementary to the main message within an image, contact information is typically not intended for passing drivers. This is primarily for two reasons:

(a) Detailed information cannot be readily read and assimilated during the brief glances that drivers are able to give to billboard images (being up to an average of about 0.75 seconds as I have referred to in paragraphs 3.5 and 3.6 above and paragraphs 5.17 and 5.18 below); and

(b) In practice, drivers will have neither the opportunity nor practical ability to perceive the contact details and to do anything about them (such as to get out a pencil and paper to write them down, or to get out a device to photograph them), during the process of driving past the billboard. Attempting to do so would be virtually impossible in terms of the brief opportunity available and the required complexity of the task.

5.7 Rather, such detail within an image is primarily intended for either passengers within the vehicle or passing pedestrians.

5.8 It is for these reasons that there is generally little or no practical road safety concern about the display of contact information. There is certainly no indication from studies of driver behaviours and/or crash data adjacent to signs (such as the one shown below) to in any way suggest that drivers are attempting to read or record contact information within an image at the expense of the driving task.

5.9 In relation to this standard, I also note that the NZTA Submission point 370.252 seeks retention of, but an amendment to the

standard so that it also includes 'logos' in the SIGN-S8.1.e list of items that a digital sign might display. In the context of an advertisement, it would in my opinion be generally impossible to define what is or is not a logo. For instance, would the golden arches be precluded from an advertisement for McDonalds?

- 5.10 Overall, and for the reason that standard SIGN-S8.1.e has no sound technical or evidentiary basis, I support the OOHMAA Submission that it should be deleted; and I disagree both with the Council's recommendation in relation to the retention of this standard, and with NZTA Submission point 370.252.

Standard SIGN-S8.1.f - number of characters

- 5.11 Standard SIGN-S8.1.f as proposed in the PDP, and which the OOHMAA Submission seeks to have deleted, is as follows:

Digital signs must not:

f. Contain more than 40 characters;

- 5.12 The reason provided by Council for not supporting the deletion of standard SIGN-S8.1.f is captured by the reason I have already referred to in paragraph 5.3 above. As with contact information, the Council response suggests, without substantiating evidence, that the inclusion of more than 40 characters within a digital sign image produces adverse traffic safety effects.
- 5.13 As with contact information, I estimate that more than 95% of the existing digital billboards that operate in New Zealand do so without any restriction on the number of characters that are potentially able to be displayed; and yet no identifiable adverse road safety effects have become apparent as a result.
- 5.14 I am unaware of any technical or evidential basis that supports a control on the number of characters, although I am aware that the previous addendum to NZTA's "Traffic Control Devices Manual Part 3" (**TCDM3 Addendum**) that was released in March 2022 but which was withdrawn by NZTA several months later, did refer to a

limit of 40 characters for each line of text within images on billboards in speed environments of 70km/h or less, (and not 40 characters in total as SIGN-S8.1.f seeks). It is worth noting however, that one of the reasons that the TCDM3 Addendum was withdrawn was because of criticisms regarding the lack of credible justification for many of its recommendations, this being one of them.

- 5.15 One of the justifications posited by the TCDM3 Addendum to support a limit on characters per line of text was that the more a driver has to 'read' within an image, the longer that driver will take to complete that reading task, which (the TCDM3 Addendum posits) could cause an unsafe distraction.
- 5.16 As noted, the difficulty with this assumption is that it has no basis in fact. There is no known evidence or research that demonstrates that the presence of 40 or more characters with an image (whether digitally displayed or otherwise) produces longer glance durations.
- 5.17 Rather, the Samsa, C. (2015) research regarding glance durations (as referred to in paragraphs 3.5 and 3.6 above) demonstrates that glance durations to all types of signs, i.e., digital, static and business identification, were found to consistently average about 0.75 seconds. This duration is well below the 'rule-of-thumb' two-second glance duration that is considered necessary to become a potential hazard to safe driving.
- 5.18 The implication of the Samsa research is that drivers may be willing to allow themselves up to 0.75 seconds to glance at a sign regardless of its nature or content, and if more text is provided than can be comfortably scanned within that 0.75 second glance duration, then in all likelihood that text will simply be ignored by the driver.
- 5.19 Aside from the withdrawn TCDM3 Addendum, I am unaware of any evidence that supports the proposition that having "too many"

characters within an image causes driver behaviours to change to the extent that it has any discernible negative impact on road safety. There is certainly nothing at all in practice to suggest that crashes are being caused by signs that show 'too many' characters, or any other indication that text content is resulting in road safety concerns.

5.20 Aside from the complete lack of any credible cause-and-effect relationship between character numbers and road safety, I am also concerned about the practicality of interpreting the standard. For example, it is quite unclear as to whether or not the character count would include:

- (a) Punctuation;
- (b) Text within product labels; and
- (c) Text with legal disclaimers and terms and conditions that are often required to be provided at the foot of an advertisement as the 'small print', but which would never be expected to be read and absorbed by passing road users.

5.21 Accordingly, for the reason that I have expressed, I consider that standard SIGN-S8.1.f has no sound technical or evidentiary basis as a result of which I disagree with the Council's recommendation in relation to the retention of this standard, and I agree with the OOHMAA Submission that it should be deleted.

6. **STANDARD RELATING TO SIGN SEPARATIONS**

Standard SIGN-S7.7 – Minimum separation distances

6.1 Standard SIGN-S7.7 as proposed in the PDP, and which the OOHMAA Submission sought to have deleted, is as follows:

All signs within 10m of a legal road must comply with the minimum setback distances from other signs in Table 12 – SIGN: Minimum Separation Distances from Other Signs below.

Table 12 – SIGN: Minimum separation distances from other signs

Speed limit of road (KM/H)	Minimum separation distance (m)
0-70	50
71-80	100
>80	200

- 6.2 Council supports the deletion of a minimum separation distance standard applying to signs in 0-70kmh speed zones, but does not support the deletion of this standard for higher speed zones, for the following reason:

272. I agree in part with Lumo Digital Outdoor Limited [285.31 and 285.32], OOHMAA [284.31 and 284.32], and Restaurant Brands Limited [349.52] regarding the minimum separation distances of signs. I consider that signs within a 0-70km speed area do not need to have a minimum separation distance. I consider that the other traffic safety standards will ensure traffic safety and that requiring signs to be 50m apart on a 0-70kmh speed zone would result in many signs requiring resource consent. I therefore recommend removing the control for areas in a speed limit of 0-70kmh.

- 6.3 I agree with the Council response that the separation requirement for lower speed environments (below 80 km/h, which is in effect 0-70km/h) can be deleted. Support for this approach is provided within the NZTA “Traffic Control Devices Manual Part 3” (**TCDM3**) which provides recommendations (as guidance) on minimum distances between adjacent roadside advertising signs¹². The guidance it provides for low speed environments is generally consistent with that proposed in Table 12 of the PDP, but it qualifies its recommended spacings with an acknowledgement

¹² TCDM3 Section 5.4, Table 5.3

that in lower speed urban areas achieving the separations may simply be impracticable. It states:

The spacing is based on the time taken for a road user to read and assimilate signs of the maximum recommended complexity. They may not be achievable in many circumstances, such as those in lower speed, urban areas (eg 60km/h or less).

- 6.4 I also agree with the evidence of Mr. Blomfield¹³ that in higher speed environments (80km/h or higher), it is appropriate for the standard to be retained in order to enable a case-by-case assessment where signs are located in close proximity to other signs.

7. **STANDARDS RELATING TO DIGITAL OPERATION**

- 7.1 The purpose of this section is to address OOHMAA's concerns in relation to standards proposed relating to the operation of digital billboards.

Standard SIGN-S8.2.b – Minimum dwell times for digital images

- 7.2 As proposed, standard SIGN-S8.2.b would state as follows:

2 Each image on a digital sign shall:

...

b. Be displayed for a minimum of 15 seconds for roads with posted speed limits of less than and equal to 80km/h and a minimum of 35 seconds for roads with a posted speed limit of greater than 80km/h

- 7.3 The OOHMAA Submission seeks to amend the standard to require a minimum dwell time of 8-seconds on all roads.
- 7.4 The Council response did not support the OOHMAA Submission for the following reasons:

287. In response to Go Media [236.32 and 236.33], Lumo Digital Outdoor Limited

¹³ Evidence of Anthony Blomfield, paragraph 6.21

[285.37], and OOHMAA [284.37], I disagree with the requested amendment to dwell times. The dwell times as notified are based on traffic safety. Dwell times which are too quick can cause unnecessary distraction to drivers. In addition, I consider that 35 seconds is a sufficient time to display a message on a sign and still allow for movement between multiple signs.

- 7.5 The essence of the Council response to the submission appears to be the perception that a dwell time of 8-seconds is “too quick”, and “can cause unnecessary distraction to drivers”.
- 7.6 No supporting evidence is provided to substantiate these contentions.
- 7.7 I estimate that 90% or more of all digital billboards within an urban context in New Zealand operate with 8-second dwell times. I also estimate that this same proportion also applies to the digital signs and digital billboards that currently operate in Wellington. There is, therefore, a substantial database of experience from which the actual road safety effects of digital billboards that operate with 8-second dwell times can be assessed.
- 7.8 Significantly, and as previously described, despite the 8-second operation of a large number of digital billboards over a long period of time, not one digital billboard has been implicated to a recorded crash.
- 7.9 The 8-second dwell time that is most commonly applied to digital billboards originated from 2012 practical trials that were undertaken jointly by Auckland Council, Auckland Transport, billboard operators and consultants. This involved a group of specialists from a range of disciplines, (including road safety specialists), who together tested, measured, and assessed various display characteristics in both daytime and night-time conditions.
- 7.10 One of the key intentions of those trials was the identification of practicable and appropriate operational characteristics that could be incorporated into the first iteration of the “Proposed Auckland

Unitary Plan” (2013) and the Auckland Council / AT “Signage Bylaw 2015”. Based on the trial, which was informed, and now consistently supported, by international experience, the minimum image dwell time of 8-seconds was identified, along with related operational characteristic of 0.5-second dissolve transitions.

7.11 Since then, digital billboards that operate with 8-second dwell times (and 0.5-second dissolve transitions) have been widely utilised, observed and evaluated. In short, there has been no identifiable situation where road user behaviours or performances have been discernibly adversely affected, or road safety in any other way compromised, by the presence of those digital billboards.

7.12 The New Zealand-based practical trials are supported by international research and experience. For example, a study published by Goodsell *et al* from ARRB¹⁴ involved an evaluation of the impact on driving performance of new digital billboard installations at two traffic signalised intersections in Queensland. The study is relevant to this assessment of dwell time because at each of the two digital billboard sites that were evaluated in detail, six different dwell times were examined, being 8, 10, 16, 20, 24 and 30 seconds.

7.13 An extract from its findings is provided as follows:

“Contrary to a hypothesis that digital billboards at demanding locations will inevitably create enough distraction to negatively affect vehicle control performance, the current evaluation found that, at all dwell times, vehicle lateral control performance either improved or was unaffected by the digital billboard’s presence”

[The underlining is mine.]

7.14 An occasionally posited perception regarding dwell times is that drivers should see no more than one image change when

¹⁴ Goodsell R, Dr Roberts. P (2018) “On-Road evaluation of the driving performance impact of digital billboards at Intersections” Project No. PRS17074 – ARRB.

approaching a billboard, as it would reduce safety if a driver was exposed to more than one image change. The reality, however, is that there is no evidential basis for that perception.

7.15 The predominant application of 0.5-second dissolve transitions, along with controls on both day and night-time luminance levels (regardless of dwell time duration), ensures subtle transitions that do not catch the involuntary attention of drivers and therefore do not give cause for drivers to be distracted by an image change. Drivers simply do not intently hold their stare at a billboard as a consequence of, or in anticipation of seeing, an image change.

7.16 Based on these points, I consider that the proposed adoption of an 8-second minimum dwell time, particularly within low-speed environments (i.e., below 80km/h), is entirely appropriate and acceptable from both traffic operations and road safety perspectives. It:

- (a) Is fully supported by research and practical trials;
- (b) Is consistent with industry best practice in New Zealand; and
- (c) Demonstrably ensures that appropriate levels of road safety can be maintained.

7.17 Accordingly, I disagree with the Council reporting officer's recommendation that an appropriate minimum dwell time for low-speed environments should be 15 seconds. Rather, based on a technical evaluation of all the available experience and research evidence, I agree with the OOHMAA Submission and am of the firm opinion that an appropriate minimum dwell time for low-speed environments is 8-seconds.

7.18 In terms of high-speed traffic environments, there is currently little available New Zealand operational evidence to assist in determining an appropriate minimum dwell time. I do note, however, that there are several Australian main road authorities

(including Transport for New South Wales, Queensland Department of Transport and Main Roads, and VicRoads) that specify minimum dwell times of either 25-seconds or 30-seconds for higher speed environments. I also note that those authorities have considerable experience in the operation of digital billboards within high-speed arterial road environments including freeways. On the basis of their experience, it would appear to me that a more appropriate minimum dwell time for Wellington's high-speed road environments (80km/h or higher) would be 30-seconds, rather than what appears to be an arbitrarily chosen value of 35-seconds in the PDP. I therefore agree in part with the OOHMAA Submission and recommend a modification to SIGN-S8.2b to provide for a dwell time of 30-seconds on high-speed roads (i.e. with a base speed limit of 80km/h or higher).

- 7.19 Further, I firmly oppose the NZTA submission point 370.252 which seeks an addition to standard SIGN-S8.2.b that dwell time be determined so that no more than 5% of drivers are exposed to image changes. The additional NZTA criterion has no evidential or practical basis, and appears to be predicated on the assumption that image changes are hazardously distracting, whereas the evidence confirms that if 0.5-second dissolve transitions are applied, they are not.
- 7.20 If dwell times in high-speed environments were determined as suggested in the NZTA Submission, then the result would be bizarrely long and unworkable dwell times. For example, in an 80km/h speed environment where TCDM3 recommends a minimum advance sight distance of 175m, application of the NZTA criterion would result in a calculated dwell time of over 1½ minutes, which in my opinion is grossly and unnecessarily excessive.
- 7.21 Accordingly, I fully support the OOHMAA Further Submission which opposes the NZTA Submission point 370.252.

Standard SIGN-S8.2.d – Transitions between images

7.22 Standard SIGN-S8.2.d is as follows:

2. Each image on a digital sign shall:

d. Transition to another image without flashing, blinking, fading, scrolling, or dissolving.

7.23 The OOHMAA Submission seeks to amend the standard to delete the word 'dissolving' from the list of transitions that should not occur. The Council response was to support the OOHMAA Submission for the following reason:

289. In response to Lumo Digital Outdoor Limited [285.38] and OOHMAA [284.38] regarding the preclusion of a 'dissolve' transition. I agree that the standard should not preclude this. Dissolving between images is appropriate and is unlikely to cause any greater traffic safety effects than not allowing images to dissolve. I recommend this preclusion is deleted from the standard.

7.24 While there is now no contention between OOHMAA and Council in relation to deletion of the preclusion of dissolve transitions, I would simply take the opportunity to affirm the importance of enabling dissolve transitions. Along with the controls on luminance (per SIGN-S8.4), dissolve transitions are particularly important to the safe performance of digital billboards, as they ensure that drivers do not have attention involuntarily drawn to the billboard (particularly in peripheral vision) during image transitions, as might otherwise potentially occur with more sudden transitions.

7.25 In my opinion, standards SIGN-S8.2.c and SIGN-S8.2.d should be combined and amended to read:

2 Each image on a digital sign shall:

c. Transition to another image within 0.1 to 0.5 seconds by way of a cross-dissolve without

flashing, blinking, fading or scrolling.

8. **STANDARDS RELATING TO SIGNS THAT ARE VISIBLE FROM A STATE HIGHWAY – SIGN-S1.1.f, SIGN-S5.4 AND SIGN-S8.1.g**

8.1 Standard SIGN-S1.1.f proposes a specific constraint on the size of signs that face a state highway which the OOHMAA Submission seeks to have deleted.

8.2 SIGN-S1.1.f is as follows:

1. The following maximum sign areas for any sign must be complied with:

f. Signs facing the State Highway Network:

i. The area of a single sign must not exceed 5m².

8.3 Standard SIGN-S5.4 has a specific constraint on the internal illumination of signs located on a building or structure where the sign faces or is visible from a state highway or state highway intersection. The OOHMAA Submission seeks to have this standard deleted. The standard is as follows:

4. Where the sign is facing the state highway network, or is visible from any intersection with the state highway, the sign must not be internally illuminated.

8.4 Standard SIGN-S8.1.g has a specific constraint on the placement of digital signs adjacent to a state highway. The OOHMAA Submission seeks to have this standard deleted. The standard is as follows:

1. Digital signs must not:

g. Be located adjacent to a state highway

8.5 The reasons provided by Council for not supporting the deletion of standards SIGN-S1.1.f, SIGN-S5.4 and SIGN-S8.1.g are:

215. In relation to increasing the sign size for signs facing the state highway network, I disagree. Any sign proposed to be larger than 5m² can be applied for as a restricted discretionary activity at which point the specific adverse effects on traffic safety in particular can be

assessed. 5m2 was landed on after consultations with Waka Kotahi, who have noted their support for this size.

216. *In response to Lumo Outdoor Digital Limited [285.28] and OOHMAA [284.28], I disagree that there is no rationale for applying different standards to signs facing the state highway network. The State Highway network is a critical piece of roading infrastructure that features a higher volume of traffic and generally higher operating speeds than any other road within Wellington. Therefore, I consider that traffic safety is necessary to consider.*

...

258. *With regards to Go Media [236.29], Lumo Digital Outdoor Limited [285.30], and OOHMAA [284.30], I disagree with removing the control on illuminated signs on the State Highway. This was intended to manage safety effects and was drafted in consultation with Waka Kotahi in the drafting stage of the Chapter. I note that signs can still be externally illuminated and that if there is a proposal for an internally illuminated, then a resource consent can be applied for as a restricted discretionary activity.*

...

293. *In response to Go Media [236.32], Lumo Digital Outdoor Limited [285.33, 285.34, 285.35, and 285.36], and OOHMAA [284.33, 284.34, 284.35, and 284.36], I disagree with removing SIGN-S8.1.e-g. These matters are necessary for managing the adverse traffic safety effects of digital signs. I consider that any sign which proposes to breach these matters can apply for a resource consent as a restricted discretionary activity. This is the appropriate avenue of determining if the traffic safety effects can be mitigated for a specific location and design of sign.*

- 8.6 At a fundamental technical level, the agency that controls a road should not be relevant when assessing the potential traffic operations and / or road safety effects of signs. Where there is perhaps a distinction, is between low-speed state highways (i.e. with speed limits of below 80km/h such as occurs within Wellington's surface street network), and high-speed roads (with base speed limits of 80km/h or higher such as occurs on the Wellington Urban Motorway).
- 8.7 In this regard, it would in my opinion be inappropriate and illogical to impose additional and/or more onerous constraints on signs adjacent to low-speed state highways than are expected for any other road within Wellington City.
- 8.8 In other words, the function and use of a road should not be relevant to the need to ensure that appropriate levels of road safety are achieved. Considerable comfort can be taken in this regard from the excellent road safety performance of all sign types, including digital signage, throughout Wellington City, and including the state highways within the City.
- 8.9 As discussed previously with regard to dwell time, the smaller number of larger signs and/or digital signs that are adjacent to high-speed roads may warrant a higher level of caution, and hence closer scrutiny as part of a restricted discretionary activity assessment.
- 8.10 Having said that, however, regardless of whether considering a low-speed or high-speed state highway, it makes little sense to impose a restriction on sign size to 5m², as an advertising sign of such a small area would more likely compromise road safety by making screen content more difficult to view and assimilate.
- 8.11 The inevitable outcome of significantly constraining approach legibility would be directly contrary to the presumed intent of the control, which is to enhance rather than compromise road safety.

When considered thoughtfully, the 5m² restriction on sign size makes no practical sense from a road safety perspective.

8.12 Further, signage that 'faces' a state highway is an imprecise description of the relationship between a sign and a road, as it may capture signs that are unintentionally aligned toward a state highway, and/or too far from the state highway to ever attract the interest of state highway users, and which accordingly do not warrant the imposition of more onerous standards. Rather, the intent of the standards should be more appropriately confined to signs that are 'oriented to be read from' the state highway. In this regard I agree with the NZTA Submission 370.242 as it relates to the more precise description of the relationship between a sign and a state highway.

8.13 I would also note that my comments in relation to SIGN-S1.1.f equally apply to the OOHMAA Further Submission in relation to SIGN-S2.1.e which addresses a maximum total area of signs per site.

8.14 Accordingly:

(a) I disagree with Council's recommendation to retain SIGN-S1.1.f, and I agree with the OOHMAA Submission that it should be deleted. Consequently, I also support OOHMAA's Further Submission to the NZTA primary submission points 370.241 to 370.244 as relates to the maximum allowable area of signage per both SIGN-S1.1.f and SIGN-S2.1.e.

(b) I agree in part with both the Council recommendation and the OOHMAA Submission in relation to SIGN-S5.4 insofar that I recommend a modification to the standard as below. I also oppose the NZTA submission point 370.246 in this regard.

4. ~~Where the sign is facing the~~ oriented to be read from a state highway that operates with a base speed limit of more than 80km/h network, or is from any intersection with a

~~state highway~~, the sign must not be internally illuminated.

- (c) I partly agree with both the Council recommendations and the OOHMAA Submission in relation to SIGN-S8.1.g insofar that I recommend a modification to the standard as below. I also oppose the NZTA submission point 370.252 in this regard.

1. Digital signs must not:

g. ~~Be located adjacent to~~ oriented to be read from a state highway that operates with a base speed limit of 80km/h or higher.

9. **STANDARDS RELATING TO SIGNS THAT ARE VISIBLE FROM AN INTERSECTION– SIGN-S7.2**

- 9.1 Standard SIGN-S7.2 as proposed in the PDP reads as follows:

2. *Where any sign is located within 100m of an intersection and visible from a legal road, the sign must only contain static messaging and images.*

- 9.2 The OOHMAA Submission seeks an addition to the standard to clarify that the standard refers to all types of sign, including digital signs, as follows:

2. *Where any sign is located within 100m of an intersection and visible from a legal road, the sign, including the operation of any electronic display, must only contain static messaging and images.*

- 9.3 I support this OOHMAA submission, on the basis that any sign that displays images that are not static, (i.e. images that display either full motion video, animation, or other dynamic effects such as scrolling), will potentially require more assessment and/or management if located within 100m of an intersection.

- 9.4 In the NZTA Submission, however, (submission point 370.250), a modification to the standard that in my opinion completely changes its meaning is sought as follows:

2. *Where any sign is located within 100m of an intersection and visible oriented to be read from a legal road, the sign must not be digital ~~only contain static messaging and images.~~*

- 9.5 In my opinion, this NZTA modification is both unjustified and would be impracticable.
- 9.6 It is unjustified because there is no evidence at all that I am aware of to suggest that the placement of a digital sign within 100m of an intersection produces any adverse traffic operations or road safety effects. I estimate that greater than 95% of all digital signs in New Zealand are within 100m of an intersection, yet (as I have previously described), none have resulted in any adverse effect.
- 9.7 This is supported by the research I have cited, and in particular the research by Goodsell *et al* of the Australian Road Research Board (paragraphs 3.9 and 3.10 above), where before-and-after studies of driver behaviours, driver performances, and road safety were examined as a result of the introduction of digital billboards at complex signalised intersections, and no adverse effects were identified.
- 9.8 The impracticality of the NZTA modification arises as a consequence of the fact that most block lengths in Wellington City, and certainly those within the business zoned areas of the City, are almost invariably less than 200m in length, which means that there would be very few locations on any road that are not within 100m of an intersection. In other words, the practical impact of the NZTA modification would essentially be a ban on digital billboards anywhere within the city. I therefore support the OOHMAA Further Submission, and firmly oppose the NZTA Submission in relation to the NZTA submission point 370.250.

10. **SUMMARY AND CONCLUSIONS**

10.1 My evidence has addressed the traffic engineering and road safety issues relevant to OOHMAA's Submission and Further Submission in relation to the Signs provisions of the PDP. In particular, my evidence has primarily addressed the standards related to:

- (a) Image content including:
 - (i) the display of contact information,
 - (ii) the number of characters that may be included, and
- (b) The separation distances between signs.
- (c) The display dwell times and the means of transition between of digital images.
- (d) Signs that face a state highway.
- (e) Sign in relation to intersections.

10.2 In my opinion, the new and/or more onerous standards relating to signs that are proposed in both the PDP and in the NZTA submission appear to be based primarily on perceptions regarding the safety implications of digital billboards and digital signs, and are distinctly absent of any supporting probative evidence to either demonstrate why the changes are required, or how they might improve road safety.

10.3 The evidence I have provided has instead drawn upon the actual road safety implications of signs in New Zealand, (particularly digital signs and digital billboards), based on the combined inputs of relevant research and measured road safety performances. This has enabled me to objectively assess the various PDP changes that are proposed.

10.4 From those assessments, I have been able to conclude as follows:

- (a) For the reasons explained in paragraphs 5.2 to 5.10, I support the OOHMAA Submission in relation to the recommended deletion of SIGN-S8.2.e (contact information), and I oppose the NZTA submission point 370.252.
- (b) For the reasons explained in paragraphs 5.11 to 5.21, I support the OOHMAA Submission in relation to the recommended deletion of SIGN-S8.2.f (number of characters), and I oppose the NZTA submission point 370.252.
- (c) For the reasons explained in paragraphs 6.3 to 6.4, I support in part the OOHMAA Submission and I support the Council recommendation in relation to the separation distances between signs such that the requirement for separation within low speed environments (below 80km/h) be deleted as being impractical to achieve in most urban environments; but that the separation distances for higher speed environments (80km/h or higher) be retained to enable case-by-case assessments to be made.
- (d) For the reasons explained in paragraphs 7.2 to 7.21, I support in part the OOHMAA Submission in relation to modification of SIGN-S8.2.b (dwell times). I recommend the provision of minimum dwell times of 8-seconds on low-speed roads, and 30-seconds on high-speed roads. On these points, I firmly oppose the NZTA submission point 370.252.
- (e) For the reasons explained in paragraphs 7.22 to 7.25, I support the OOHMAA Submission and the Council Planner's recommendation in relation to modification of SIGN-S8.2.d (image transitions) to enable dissolve transitions to occur. I further recommend a modification and combination of SIGN-S8.2.c and SIGN-S8.2.d as per paragraph 7.25 of my

evidence which in my opinion clarifies the intent of the standard.

- (f) For the reasons explained in paragraphs 8.1 to 8.13 in relation to signs that are visible from a state highway:
 - (i) I support the OOHMAA Submission in relation to the recommended deletion of SIGN-S1.1.f (size of signs facing a state highway), and I oppose the NZTA submission point 370.244.
 - (ii) I support in part the OOHMAA Submission in relation to SIGN-S5.4 (illumination of signs facing a state highway), and I recommend a modification to that standard. I also oppose the NZTA submission point 370.246 in this regard.
 - (iii) I support in part the OOHMAA Submission in relation to SIGN-S8.1.g (placement of signs facing a state highway), and I recommend a modification to that standard. I also oppose the NZTA submission point 370.252 in this regard.
- (g) For the reasons explained in paragraphs 9.1 to 9.8, I support the OOHMAA Submission in relation to modification of SIGN-S7.2 (signs in relation to intersections) to enable clarification of the intent of the standard. I also oppose the NZTA submission point 370.250 in this regard, as the modification it proposes materially changes the intent of the standard.

Brett Harries

5 March 2024