DRAFT DIGITAL ADVERTISING BILLBOARDS AND ROAD SAFETY GUIDANCE SUBMISSION

13 November | Safety Practitioners Group, a sub-group of the Transportation Group New Zealand

About the Transportation Group

The Transportation Group had its origins in 1955 and was formally made a part of the Institution of Professional Engineers of New Zealand (IPENZ – now known as Engineering New Zealand) in 1972. The group is the leading industry body for transportation professionals with over 1,100 members including tertiary students, the private and public sector.

Our Mission is advancing the knowledge, planning and management of transport in New Zealand. We have subgroups in safety, modelling, and traffic signals. We are associated with the Chartered Institute of Highways and Transportation UK.

More information about the Transportation Group is available online:
https://www.transportationgroup.nz/

About the Safety Practitioners Group

The Safety Practitioners Group is a sub-group of the Engineering NZ Transportation Group. This sub-group has evolved from identifying a gap in our industry technical interest groups for engineers and other practitioners who work in the road safety area. With the ongoing changes in New Zealand's road safety strategy, this sub-group aims to facilitate links between local and central government and the wider industry and share the latest industry guidance, best practice and innovations with our members.

"*Our goal is to promote safe system thinking, increase awareness of the Safety Practitioners' role in the industry, and assist professionals in developing their proficiency in safety best practice*".

We are dedicated to providing an industry led group for Safety Practitioners working within the transport profession in New Zealand.

Introduction

Engineering New Zealand's Transportation Group and the Safety Practitioners Group thank you for the opportunity to provide comment on the Digital Advertising Billboards and Road Safety (DRAFT) document.

Overall, this document provides a strong foundation for evaluating digital advertising billboards, and the Groups welcome this guidance to set out NZTA's policy on digital advertising billboard location, installation and operation within the state highway road reserve or are visible from the state highway.

Our responses to this draft document are set out in the following sections.

Section 4 - Non-static Displays

The policy should take a stronger stance on non-static (i.e. animated/moving) displays. The Traffic Control Devices Manual (Part 3, Section 6.3) states that animated or flashing signs should not be used where the operating speed of the passing traffic is 70km/h or greater. It is recommended that non-static displays should be unequivocally prohibited for all roads no matter their operating speed and location, as there appears to be limitations on this stance for roads under 70km/h.

Section 6 - Digital billboards, human factors & driver behaviour

Section 6.2 requires a strong position on high cognitive load sites such as intersections. Note this is covered in Section 9 but needs to be strengthened in Section 6.2. The point should also be made that the distractive effects of digital billboards can last beyond the eye glances that happen at the billboard, especially if the content is highly salient for an individual (refer to the Mackie evidence cited in the draft document).

Sections 6.2 and 6.4 in the Background need to explicitly acknowledge that research supporting driver abilities to self-regulate is almost silent on the very young (inexperienced) and older (reduced cognitive functions) drivers. These drivers need to influence billboard constraints, as well as, if not more than "typical" experienced middle-aged drivers. The studies quoted in the Background are limited:

- Chan & Singhal (2015) research into driver alertness related to complex environments only relied on "typical" male drivers aged 18-30.
- Decker et al. (2015) notes "specifically, it is largely uncertain how external distraction is affected by the characteristics of drivers (e.g., age)."
- Schagen et al. (2018) only referenced an earlier study (Marciano & Yeshurun, 2012, "Perceptual load in central and peripheral regions and its effects on driving performance: advertising billboards") which was based on university students with 5+ years experience as licensed drivers.
- Young et al. (2017) used 19 fully-licensed drivers aged 22 to 47 years old for their study.

Table 2. Multi-causal factors – the Swiss Cheese model is useful in this context. It should be emphasised that this is why it is difficult to rely on existing Police reported crash data to draw conclusions regarding the influence of digital billboards on distraction and crash risk. In reality, their effects are unlikely to be detected and reported effectively, as other more obvious factors (like failed to give way) will dominate Police reporting. Therefore, until we have a more nuanced understanding of the mechanisms by which digital billboards influence crash risk, we should take a cautious approach based on our knowledge of how they influence driver performance.

In Section 6.4 Paragraph 1, the point about cognitive distraction is very important and not well covered in the literature. Cognitive distraction can happen beyond eye glances and affect risk assessment and reaction times, as referenced in the Mackie evidence cited in the draft document.

Section 7 – Crash risk and speed

Section 7.1 should clarify that crash risk is not just about fatalities but also serious injuries (deaths and serious injuries - DSIs). When considering the AT analysis of Austroads research[1], 10% risk of death at 30 km/h changes to 25% DSI at 30km/h, especially where the Safe System is considering DSIs. The same research found that at 40km/h, this lifted to 32% risk of death, and 58% DSI at 40 km/h.

Professionals should be wary of taking information in Section 7.1, and reverse calculating for lower speeds to try and prove safety at lower speeds. There is some history of this occurring in previous resource consent applications. It is requested a clear and strong statement saying that interpolation below the stated minimum speed cannot be made because we do not know the of the calculations and there cannot derive values less the lowest value stated. The provided assessment for the lowest speed (50km/h) applies to all speeds lower than that value.

Section 7.1.1 Environment Complexity states that the Conference of European Directors of Roads (CEDR) have intersections, motorways and areas with pre-existing billboards that are complex and

[1] Woolley J, Stokes C, Turner B, Jurewicz C. Towards Safe System Infrastructure: A Compendium of Current Knowledge. Austroads Research Report AP-R560-18. https://austroads.com.au/publications/road-safety/ap-r560-18/media/AP-R560-18-Towards_Safe_System_Infrastructure_A_Compendium_of_Current_Knowledge.pdf: Austroads; 2018

demanding and therefore unsuitable for billboards. NZTA policy needs to be consistent in that no digital billboards should be installed at intersections.

In Section 7, the threshold between high speed and low speed environments needs to be adjusted down from ≥80 km/h. It is suggested that the more appropriate threshold is ≥70 km/h. In support of this, we cite the following sources from the consultation document:

- Reference 16 (Divekar et al 2013) on p. 12 defines low speed environments as 50km/h.
- *TCD Manual Part 3* differentiates advertising letter size, consenting, lateral clearance, and animation suitability at ≥ or < 70 km/h.
- Historically (reference Setting of Speed Limits Rule 2003) 60 km/h and lower limits were used in urban environments and 70 km/h and higher limits were used in rural environments.
- *Austroads Guide to Road Design Part 3* defines Low Speed roads as <70 km/hr

Section 9 – Installation requirements

Location

In Section 9.2, two amendments are sought to the bulleted list of features to avoid in locating billboards, as follows:

- "traffic control devices (e.g., signs...)" needs more detail as this would not likely apply to all signs. It is suggested to define specifically as Permanent Warning and Regulatory signs.
- Add “physical features in carriageway (e.g., islands, narrowings, speed humps).” These features require driver attention to manoeuvre around, and are at risk of being collided with when driver attention is diverted by digital billboards (which have been shown to increase erratic driving likelihood).

Any changes in Section 9.2 need to be included in Section 9.6.1 Figure 4.

More strongly worded statements are recommended for where the digital billboards can and cannot be located. For example, it is strongly recommended that digital billboards are not located within sight of regulatory and vulnerable user warning signs.
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The guidance should provide more clarity on what constitutes a safe intersection sight distance (SISD) as applicants could choose to interpret this differently. Consideration should also be given to side road approaches that require an ASD (Approach Sight Distance) calculation.
The policy should unequivocally state that digital billboards facing motorways are not permitted, regardless of the speed category of the road where the digital billboard is located. It should be explicit that any sign facing a motorway should not be approved, even if the sign is on a lower-speed local authority road.

It is acknowledged that there are locations where a static sign is currently located, in an environment deemed unsuitable for digital billboards under this new policy. Often these are in high-risk locations as defined in the policy. It is recommended that the policy should state that existing signs in these locations must not be suitable for converting to digital billboards and must remain as static signs only.

Digital billboard spacing

The minimum distance between digital billboards at a posted speed limit of 50 km/h is 110 metres. This is a welcome and strong position; however the impact will be lost when applicants then defer to local authority District Plans that override NZTA guidance, especially where NZTA choose not to submit as an affected party.

Lighting

It is recommended that a stronger wording be used for bullet points 4 and 5 in Section 9.5, i.e. change “should” to “must”.

Dwell Time

The Policy strongly states that digital billboards should not be installed at intersections, but the draft document then enables an assessment whereby the dwell time and display time could be increased by the very factors that they said no to. This highlights the need to communicate a strong and clear position that where factors listed in Section 9 are present, digital billboards are not permitted. There is no condition that would enable installation with extended times.

The calculation for the dwell time could be clarified, with a suggestion to include stricter requirements for companies with a history of non-compliance as a mitigation measure.

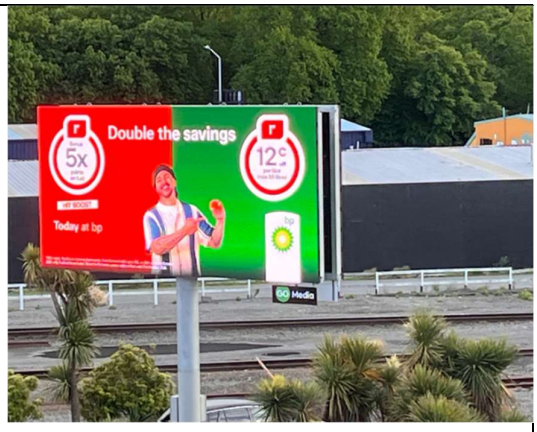
There is a need for clearer compliance monitoring and defined repercussions for not meeting consent conditions (e.g., warnings, temporary sign shutdowns, or cancellation for repeat offenders).

Image Content and Display

Section 9.8.2 - Number of Elements, should reinforce the evidence-based limit on the number of words/elements (e.g., 8-word limit) to minimise distraction.

Refer to images below for clarification, noting these are taken from a billboard in an urban area on a local authority arterial road.

Figure 1 illustrates examples with characters / words / elements on display providing strong messaging that either conforms or is close to the 8-word limit. Note font size below minimum and colour characteristics do not confirm to the guidance on some examples (refer to Section 9.8.4).



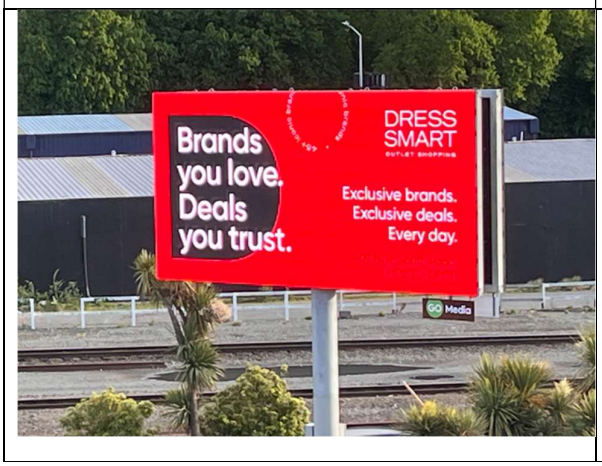


Figure 1: Existing advertising which provides strong messaging that mostly complies with the word limits

However, using the same digital billboard, the advertiser has not complied with the number of element limits as shown in Figure 2.

Figure 2: Examples where the number of elements exceed limits

In Section 9.8.4 Display Characteristics, the following comments have been made:

- Clarify the requirements for colour use (e.g., solid versus gradient colour) and provide guidance on what is acceptable.
- The policy should explicitly prohibit QR codes on digital billboards, as they encourage driver interaction and distraction.

Examples of where QR codes have been used on existing digital billboards are shown in Figure 3.

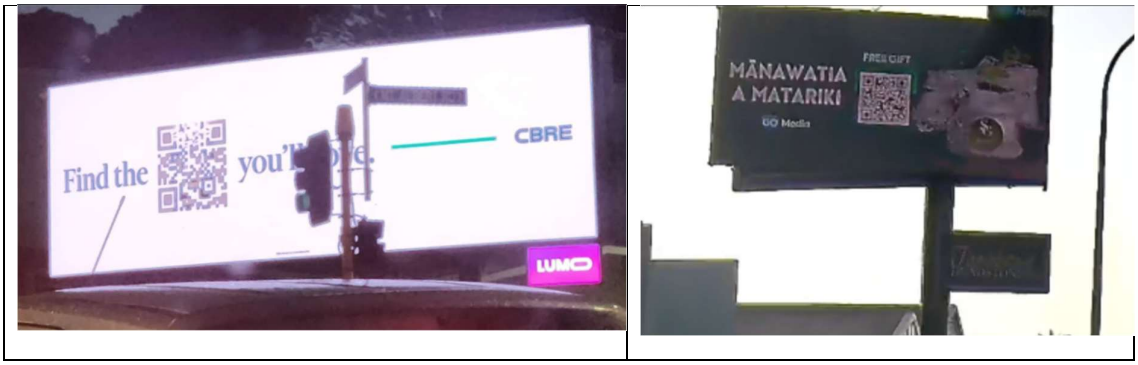


Figure 3: Examples of use of QR codes on existing digital billboards

Compliance Monitoring and Reporting

Our industry has directly observed many instances of non-adherence to consent conditions, as part of our safety assessments in the areas, with little consequence. It is acknowledged that the consenting authorities do ensure that appropriate consent conditions are included where a digital billboard is approved; however, the consenting authority cannot resource regular monitoring of consent conditions.

It is recommended that the document should clarify:

- What qualifies as a “suitably qualified” professional (or professionals) for assessments and reporting, that have appropriate training in safety, human factors and traffic impact assessments.
- The timing of required reports (e.g., within one month of opening).

- The escalation of repercussions for repeated non-compliance. This could include adding a consent condition clarifying repercussions of not meeting consent conditions. E.g. first warning is one month to fix, second might be one month of sign turned off, third might be a year of cancellation. It is the same three or four companies applying for consent so if they don't adhere to this, it could impact other approvals.

Additional Research

Consider reviewing and incorporating recent international research (e.g., studies from Ireland, Iran, Slovakia) and practices from Australian state authorities, who are often at the forefront of these issues. These references are listed below:

- Wang, Yongxiang & Clifford, William & Markham, Charles & Deegan, Catherine. (2021). *Examination of Driver Visual and Cognitive Responses to Billboard Elicited Passive Distraction Using Eye-Fixation Related Potential*. Sensors. 21. 1471.
- Sheykhfard, Abbas & Haghighi, Farshidreza. (2019). *Driver distraction by digital billboards? Structural equation modeling based on naturalistic driving study data: A case study of Iran*. Journal of Safety Research. 72.
- Hudak, Martin & Madleňák, Radovan. (2017). *The Research of Driver Distraction by Visual Smog on Selected Road Stretch in Slovakia*. Procedia Engineering. 178. 472-479.

Policy Strength and Consistency

The policy should take a stronger stance in several areas:

- NZTA state that they will not provide affected party support; however no support will be taken as neutral in Environment Court proceedings. A stronger position is required, either to support, support with conditions, or do not support.
- Where high-risk factors are present (e.g., intersections), the position should be a clear "no," with no conditions allowing installation.
- Avoid "soft" language (e.g., "shall/should" should be "MUST").
- Prevent loopholes where applicants could use increased dwell time to justify installation in otherwise prohibited locations.

Conclusion and Recommendations

The draft document provides a strong foundation to build upon but requires more solid direction and less ambiguity. NZTA should adopt a clear, non-neutral position and ensure that policy language is robust and enforceable. This would make a positive difference when cases end up in the Environment Court.

The feedback emphasises the need for greater clarity, stronger language, explicit prohibitions (especially for high-risk environments and features like QR codes), and a more robust compliance and enforcement framework. We also recommend the policy be more inclusive of vulnerable driver groups and to align with best practices and research, both locally and internationally.

It is important for the whole industry, that the Policy for Digital Advertising Billboards is unambiguous and clear in its intent given that it could be seen as the basis of assessment by all Road Controlling Authorities, i.e. not just NZTA alone, going forward when assessing such applications. In that sense, it should be presented as industry best practice that enables easy assessment in term of District Plans with a key focus on minimising harm in its totality for all road users.

Thank you for your consideration of our group's feedback.

For more information please contact:

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