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Marilyn Burns
Urban Design Planner
City of Launceston
Via email

Dear Marilyn,

134 HOBART ROAD, KINGS MEADOWS – SIGNAGE ASSESSMENT

Further to our recent discussions, I am pleased to provide my assessment of the proposed advertising signage at 134 Hobart Road, Kings Meadows.

The sign is proposed to be 1,536mm high and 3,840mm wide. The sign is electronic and dynamic in nature, with an advertising display that changes over time. The location of the sign is proposed to be at the north-western corner of the signalised intersection of Hobart Road and Opossum Road (within the property boundary of 134 Hobart Road).

Council have raised concerns regarding the potential for the sign to distract motorists from the traffic signals at the signalised intersection. This letter outlines my road safety investigations for the proposed advertising device.

1. Road Safety Performance

The sign is proposed to be located downstream of a signalised intersection on Hobart Road. The road safety performance of this intersection is therefore important in determining the potential road safety implications of the proposed advertising device.

Crash data for the intersection of Hobart Road/ Opossum Road for the most recent five year period (1st January 2012 to 31 December 2016). The crash data is summarised as follows:

- A total of 20 crashes were reported at the intersection during this timeframe.
- Four of these crashes involved injury, 1 involved first aid at the scene, and the balance involved property damage only.
- The dominant crash type was 'right-through' (12 crashes), followed by 'rear-end' (5 crashes).

The crash data is considered reasonably 'typical' of a busy urban signalised intersection. The incidence of four injury crashes in the last five years may be cause for concern however. The road safety performance of the intersection should be monitored over time to ensure that there are not any significant safety deficiencies.

2. Current Research

Two research publications were reviewed in order to gain a thorough understanding of the potential safety implications of the proposed signage. These publications were:

- 'Impact of Roadside Advertising on Road Safety', Austroads, AP-R420-13, January 2013
- 'Safety Impacts of the Emerging Digital Display Technology for Outdoor Advertising Signs', The Veridian Group Inc., Berkeley, California, April 2009

The Austroads Research Report summarises the latest research on roadside signage and road safety, and provides a summary of the guidelines for each State in Australia.

The signage is classified as "Electronically Changing" under the Austroads publication. This publication references the latest research on driver distraction, and road safety relating to roadside advertising and signage.

With reference to the impact on road safety and the placement of advertising signage, the Austroads report states the following in its summary (Section 5.3):

"There is compelling evidence that distraction is a major contributor to crashes. However, studies providing direct evidence that roadside advertising plays a significant role in these distraction based crashes are currently not available. The studies that have been conducted show convincingly that roadside advertising is distracting and that it may lead to poorer vehicle control. However, the evidence is presented only suggestive of, although clearly consistent with, the notion that this in turn results in crashes.

It is also worth noting, on the basis of Klauer et al.'s (2006) results, that while looking at an external object increased the crash risk by nearly four times, less than 1% of all crashes and near crashes were from this source of distraction. A substantial proportion of these external objects would not have been advertising signs. Thus, while it is not possible to tell from the reported results, it is reasonable to conclude that far less than 1% of all crashes and near crashes involved distraction from roadside advertising.

While the Klauer et al. (2006) study may not be representative of all driving events, it does suggest that the contribution of roadside advertising to crashes is likely to be relatively minor. On the other hand, from a Safe System perspective it would be difficult to justify adding any infrastructure to the road environment that could result in increased distraction for drivers. The exception to this may be in the case of very monotonous roads where drivers are likely to suffer the effects of passive fatigue".

The key issues relevant to the proposed signage are summarised as follows:

- Visual clutter (6.2.1). A highly cluttered visual environment makes it difficult to locate and prioritise processing of driving-critical information. Therefore, roadside advertising should not be placed in locations where there are already a number of existing signs and distracting material visible to a driver. The subjective impression that the driving environment is already cluttered is likely to be a good indication that further signage should be avoided.
- Driving Demand (6.2.2). Intersections, decision points and merge points are likely to be demanding of attention for passing motorists. Austroads recommends not placing advertising signage in locations of demanding driving environments.
- Gaze direction offset (6.3.1). Austroads recommends that roadside advertising should not be substantially offset from the travel lane it is desired to be viewed from as this could move gaze away from the forward roadway.
- Crash rate assessment (6.4.1). Black spot locations should not be sites for roadside advertising, especially where crash types are likely to be exacerbated by distraction.
- Risk Assessment (6.4.2). Roads assessed as having an unacceptable risk profile should not be sites for roadside advertising.

In this case, the following points are relevant:

- The sign is proposed to be located in a location where there is a relatively high amount of competing advertising signage and other visual clutter.
- The sign is located immediately behind the traffic signal lantern on the northwest corner of the intersection (for northbound traffic). This location is within direct line of site for motorists to confuse the advertising sign with the operation of the traffic signals (background clutter behind signals – refer to Figure 1).
- The location of the sign does is within the gaze direction offset (ie. motorists are not required to shift their gaze away from the travel lane).
- The crash history of the intersection does may indicate that the site is a 'Black Spot' in accordance with the Nation Building Program, which defines this as "*for individual sites such as intersections, mid-block or short road sections, there should be a history of at least three casualty crashes over a five-year period*". In this case a total of 4 injury crashes have occurred at the intersections in a five year period. Whether the intersection can be treated under the Black Spot Program would require careful assessment (ie. whether the injury crashes can be treated with a specific treatment to reduce these crashes).

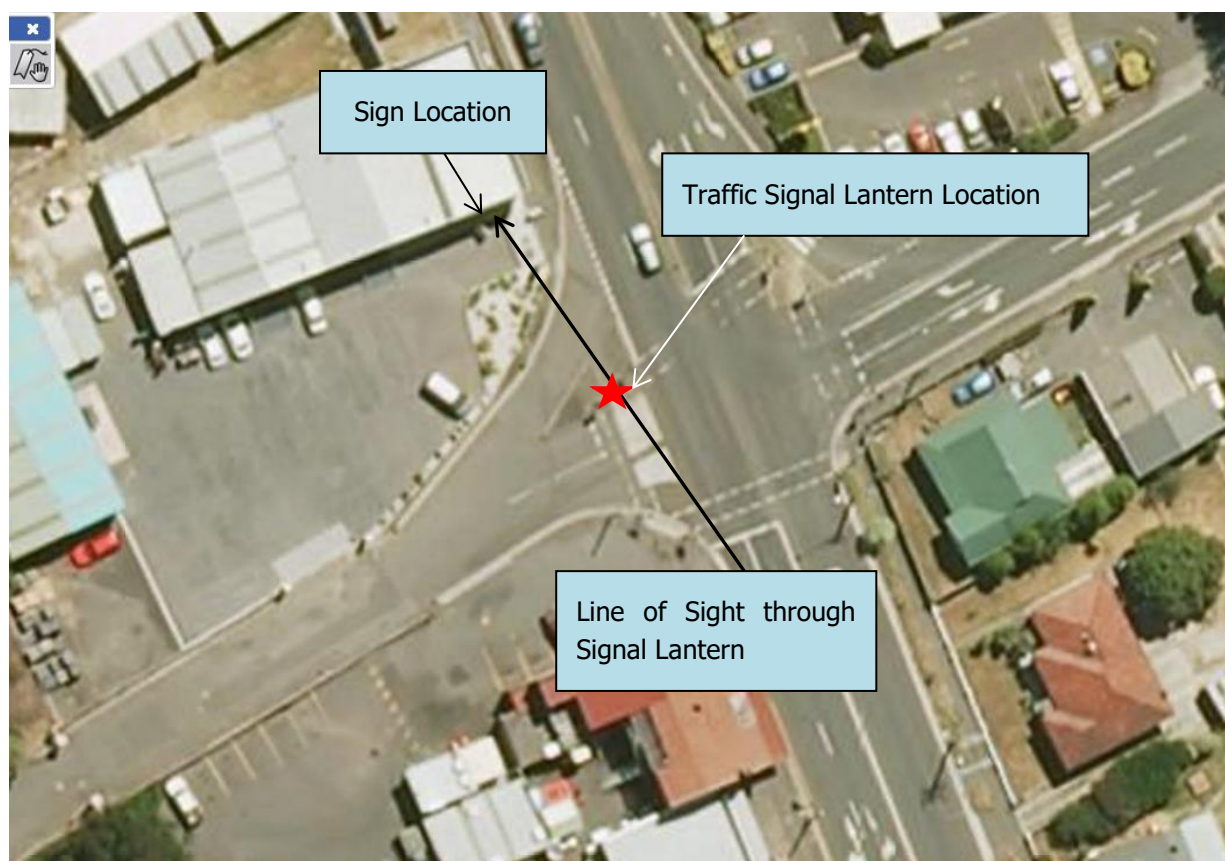
The Berkeley report provided guidance on current advertising signage research from around the world. The section in the Berkeley Report on NSW in Australia outlines recommendations of minimum distances of advertising devices from traffic signals. In this case, the minimum distance to a traffic signal for a roadside urban device is 12 metres. No distances are provided for advertising devices that are placed beyond traffic signals. It appears that advertising devices are of greater concern on the approach to traffic signals (or other traffic control device), but less so beyond the traffic signals.

Advertising devices placed before a traffic control device (such as traffic signals) have the potential to get the attention of motorists before the regulatory device, whereas it is likely

that an advertising device placed after a traffic control device will obtain a motorists attention after the regulatory device resulting in a safer environment overall. In this case, the advertising device is located beyond the traffic signals, and no minimum distance is therefore specified in the report. It must be kept in mind however that the positioning of the sign should not provide too much clutter behind traffic signals, as noted in the Austroads report.

On the northbound approach to the intersection of Opossum Road on Hobart Road, the advertising sign is located approximately 20 metres behind but within the general line of sight through the intersection as shown in Figure 1.

Figure 1 Signage Location & Line of Sight



3. Road Safety Assessment

The Austroads publication (AP-R420-13) provides guidance on the nature and placement of advertising signage. The Austroads guidelines are summarised and discussed in the Table attached.

It can be seen from the attached Table that the proposed advertising device generally complies with the Austroads requirements. The following key points are noted:

- The advertising device is located past the traffic signals and therefore cannot obscure the line of sight of the traffic signals for approaching motorists.
- The location of the advertising device is such that drivers are not required to divert their gaze away from the forward roadway.

- The crash history is reasonably typical of a busy urban arterial road in terms of crash types and frequency. The incidence of injury crashes at the intersection is of concern however and should be investigated further.
- The road environment is relatively cluttered with other advertising devices and signs.

Whilst the proposed signage is placed behind the traffic signals (considered safer than behind signals), it is located in a cluttered urban environment with a crash history that is of concern. On this basis, it may be reasonable to recommend refusal on the grounds of safety.

It is noted however that there are several similar electronically changing signs in the Launceston region, and it may therefore be preferable to impose appropriate conditions of approval to maximise safety. The relevant technical matters associated with the proposed sign are considered in the following sections.

1. Dwell Times

The length of time for which an image is displayed on an electronically changing sign should be as long as possible to reduce the frequency of those sudden environmental changes that can capture attention involuntarily. This is particularly relevant due to the presence of the traffic signals located immediately in front of the proposed signage.

The developer has suggested a dwell time of 8 seconds. This is generally consistent with similar existing examples provided by developer (North Hobart and Launceston Airport with 6 second dwell times).

Austrroads states that dwell time requirements vary from state to state as follows:

- Victoria: "Any one display or set of graphics/text presented on electronic variable message advertising signs must remain static and unchanged for a minimum period of 30 secs".
- Western Australia: "Trivision Signs erected within the boundaries of highways and main roads shall be controlled such that only a single display face should be viewed by motorists travelling at the nominated road speed environment".
- NSW: "Moving signs that face the road reserve and are visible to drivers will only be approved if the driver does not see more than one message in the period of exposure, under normal driving conditions".
- Queensland: "For trivision, VMS and illuminated multiadvertisement scrolling signs, minimum dwell time = ≥ 8 secs".
- Tasmania: No guidance provided.

It can be seen that there is no clear consensus on dwell time between states, presumably because some jurisdictions do not generally approve advertising devices that contain movement or changeable messages. Three jurisdictions indicate required or advisory minimum dwell times, ranging from 2.5 to 30 secs (also depending on sign type – lower dwell times of less than 8 seconds usually relate to text advisory signs, not advertising signs).

The Outdoor Media Association (OMA) recommends that the maximum dwell time for digital billboards should be 8 secs, with reduced times for lower speed environments. Two other

jurisdictions require that the driver does not see more than one message in the period of exposure, under normal driving conditions.

The typical cycle time of the signalised intersection of Hobart Road/ Opossum Road is approximately 60 seconds, therefore a dwell time of 30 seconds would result in motorists seeing only one sign transition per green phase for the northbound approach to the intersection.

On this basis, it is recommended that a dwell time of 30 seconds be a condition of approval. This is consistent with Victorian requirements (noting that Tasmania has adopted many road design requirements from Victoria).

2. Transition Times

The transition time between images should be instantaneous in order to reduce the number of sudden environmental changes that could capture attention.

3. Luminance

Signs that have luminance levels that are high relative to other objects in the environment are likely to gain preferential attention and be particularly good at capturing attention when they change. As a result, digital signs should have luminance levels no greater than any other sign and preferably lower than non-changeable signs.

Appropriate luminance is considered important for the proposed development due to the presence of the traffic signals located immediately in front of the sign.

Victoria recommends that the luminance of electronic variable message advertising signs must be such that it does not give a veiling luminance to the driver of greater than 0.25 cd/m², throughout the driver's approach to the advertising sign.

The developer has indicated that the illumination will be >6000 nits of brightness. This is considered too bright and may reduce the effectiveness of the traffic signal lantern located immediately in front of the sign. Typical maximum levels of 2,900 nits are recommended in shopping and commercial areas.

4. Conclusions

The proposed electronically changing signage is placed behind the traffic signals (considered safer than behind signals), and it is located in a cluttered urban environment with a crash history that is of concern. On this basis, it may be reasonable to recommend refusal on the grounds of safety.

It is noted however that there are several similar electronically changing signs in the Launceston region, and it would therefore be preferable to impose appropriate conditions of approval to maximise safety. The technical requirements of the signage are summarised as follows:

- Dwell time – 30 seconds
- Transition time – instantaneous
- Luminance – 2,900 nits

Please contact me on 0437 366 040 if you require any further information.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Keith Midson', written over a light blue circular stamp.

Keith Midson BE MTraffic MTransport FIEAust CPEng EngExec NER

DIRECTOR
Midson Traffic Pty Ltd

Austrroads Sign Placement Guidance (AP-R420-13), Table 9.2

Sign Placement Criteria	Longitudinal Placement	Lateral Placement	Vertical Placement	Orientation/ Viewing Angle	Sight Distance/ Visibility	Speed Limit/ Speed Criteria	Other
Guidance Recommendations	<p>Advertising devices should not be located in such a way that they might interfere with the effectiveness of a traffic control device (e.g. by restricting sightlines or distracting from traffic control devices via proximity or as a background).</p> <p>Advertising devices should not be located so that they are visible at the approach to, or from, an intersection, pedestrian crossing, tram stop or in any location that is likely to be highly demanding of attention.</p> <p>Only one advertising device should be visible to drivers at any time.</p>	<p>Without conflicting with clear zone requirements (e.g. installation of post in a hazardous location), advertising devices should not be placed such that drivers must divert their gaze away from the forward roadway in order to comprehend the sign message.</p>	<p>Advertising devices should not be placed at a height that coincides with the normal 'hazard viewing window' that drivers scan. That is, they should be elevated above the height of vehicles, pedestrians and traffic control devices, but not so high that they draw the gaze away from the forward roadway.</p>	<p>Advertising devices should be oriented to facilitate legibility from the maximum legibility distance and across the full approach distance.</p>	<p>Advertising devices should be placed so that enough time is available on approach for drivers to comprehend the message. That is, the sight distance must correspond to the required legibility distance.</p>	<p>The speed environment on its own is likely to be less important than the overall risk profile of the road and driving demand characteristic of the road section which should be carefully reviewed.</p>	<p>All installations should consider the overall risk profile of the road environment in question and the driver demand of the road section (e.g. crash history, AusRAP ratings, traffic volume, speed, complexity, clutter). In particular:</p> <ul style="list-style-type: none"> • Black spots and road sections with less than a 3-star rating (AusRAP or equivalent) should be ruled out for advertising device placement • Highly cluttered road environments should be ruled out for advertising device placement • The installation should be reviewed at regular intervals and audited against the guidance principles (because crash rates, traffic volume, the built environment etc. will change over time). • Advertising signs should not be placed on the same posts as traffic control devices.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Comments Relevant to Proposed Signage</p>	<p>The proposed signage is located approximately 20 metres past the traffic signals. The location of the signage does not restrict or interfere with the visibility of the traffic signals, but may distract motorists from the signals.</p>	<p>The proposed advertising device is located in a position that does not require drivers to divert their gaze away from the forward roadway.</p>	<p>The proposed advertising device meets these criteria.</p>	<p>Sign orientation facilitates maximum legibility from the approach direction.</p>	<p>There is sufficient sight distance to comprehend the sign from the legibility distance, although some obstruction from the traffic signals and other advertising signage (on shop awnings on approach to site) is present on the approach.</p>	<p>The posted speed limit is 60-km/h near the proposed advertising device.</p> <p>The presence of the traffic signals reduces the average and 85th percentile speed of vehicles past the sign (deceleration and acceleration effects).</p> <p>The actual speeds past the proposed advertising sign are therefore generally lower than the posted speed limit.</p>	<p>The crash history of the intersection of Hobart Road and Opossum Road is typical of a busy arterial signalised intersection.</p> <p>Four crashes have been recorded in the most recent five year period that involved injury. The site may therefore qualify for remedial treatment under the Federal Government Black Spot program.</p> <p>The road environment is considered moderately 'cluttered' near the proposed advertising device.</p>
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