Princes Highway, Heathcote

Existing Northbound Static Sign Traffic Safety Assessment

Transport for NSW

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The assessment team has undertaken assessments of similar advertising sign proposals elsewhere in NSW and Australia. In addition to the use of NSW guidelines, our assessments are founded on road safety auditing principles and traffic safety risk assessments. Where a significant change in road safety risk has been identified due to the proposal, potential treatment measures to mitigate the change in risk have been suggested. However, the adoption of any or all the treatment measures does not warrant that the site is absolutely safe from incidents in the future whether they be related or unrelated to the sign.

Document Issue History

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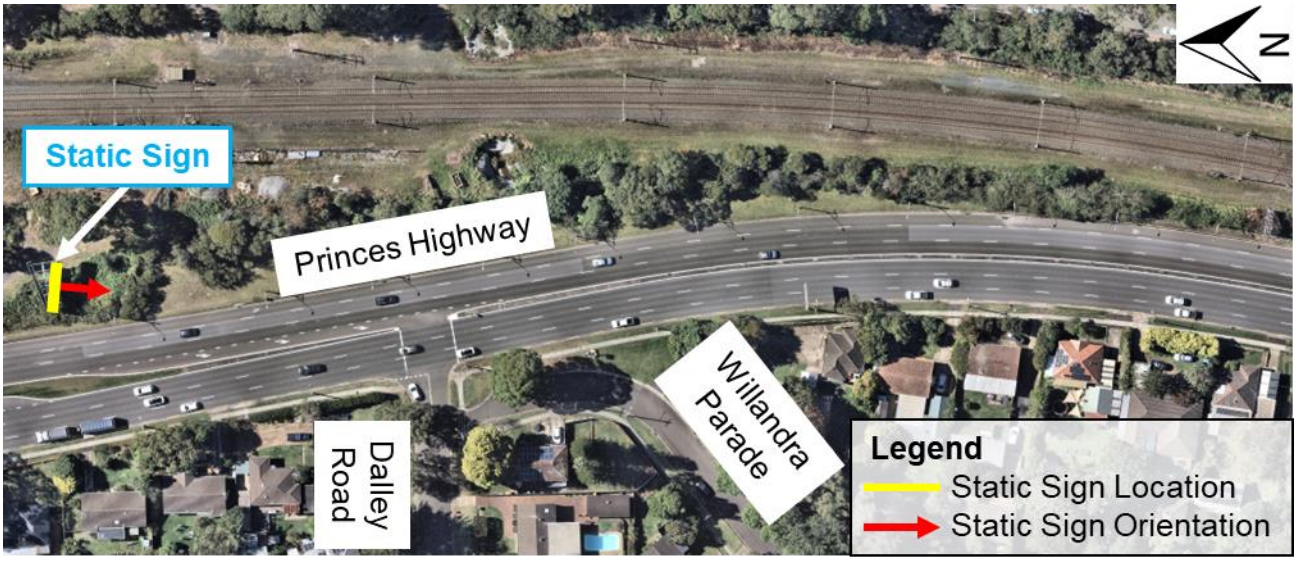
1. INTRODUCTION

1.1 Background

This report has been requested by oOh!media on behalf of TfNSW to enable the ongoing display of an existing static advertising sign. The sign is located on the eastern side of the Princes Highway, approximately 80m north of Dalley Road, in Heathcote as shown in Figure 1.1. The sign faces northbound traffic on the Princes Highway.



Adapted from Nearmap

Figure 1.1: Location of the Existing Static Sign

Bitzios Consulting has been engaged by oOh!media to undertake a traffic safety assessment to accompany the DA. It is understood that no traffic safety assessment was undertaken for the original DA as the sign was installed in 2010 when these assessments were not required.

1.2 Methodology

The process used to assess the impact of the proposal involved:

- A review of the viewing locations and sightlines to the static sign to define the geographical scope of the assessment
- A review of the static sign specifications
- Site inspections during day and night conditions to understand the road user's perspective of the sign, then a driver sightline assessment using images captured from in-vehicle video recordings
- A first-principles safety assessment of the static sign, including reviewing road approaches, driver sightlines, surrounding environment and proximity to traffic decision points
- A review of the most recently available five years of crash data in proximity to the sign
- An assessment of the static sign against:
  - Sutherland Shire Local Environmental Plan (LEP) 2015 and Development Control Plan (DCP) 2015
  - State Environmental Planning Policy (Industry and Employment) 2021 (Industry and Employment SEPP)
  - The Transport for NSW Advertising Sign Safety Assessment Matrix
  - The *Transport Corridor Outdoor Advertising and Signage Guidelines: Assessing development applications under SEPP 64 (Department of Planning and Environment, November 2017) (Signage Guidelines)*.

2. SIGN VIEWING LOCATIONS

2.1 Viewing Approaches

The static sign faces south towards northbound drivers along the Princes Highway. The driver viewing range to the sign from this approach is illustrated in Figure 2.1.

Adapted from Nearmap

Figure 2.1: Driver Viewing Range to the Static Sign

2.2 Driver Views

2.2.1 Princes Highway northbound lane 1

The driver sign views from the Princes Highway northbound lane 1 during the day and night-time periods are shown in Figure 2.2 and Figure 2.3 respectively.

Figure 2.2: Daytime view from the Princes Highway northbound lane 1

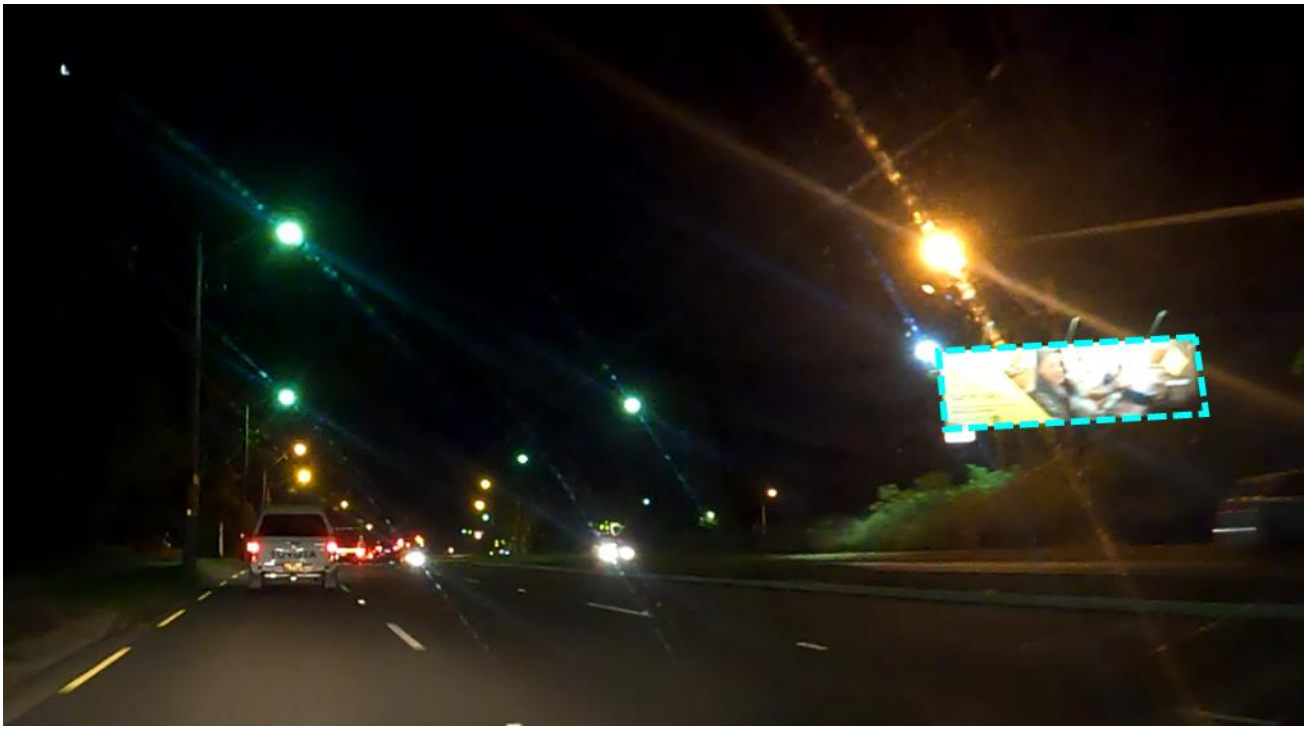


Figure 2.3: Night-time view from the Princes Highway northbound lane 1

2.2.2 Princes Highway northbound lane 3

The driver sign views from the Princes Highway northbound lane 3 during the day and night-time periods are shown in Figure 2.4 and Figure 2.5 respectively.

Figure 2.4: Daytime view from the Princes Highway northbound lane 3

Figure 2.5: Night-time view from the Princes Highway northbound lane 3

3. STATIC SIGN SPECIFICATIONS

The static sign's current specifications and site information are summarised in Table 3.1.

Table 3.1: Specifications and Site Information for the Existing Static Sign

Attribute	Details
Location	Eastern side of the Princes Highway, approximately 80m north of Dalley Road, Heathcote, NSW
Local Government Area	Sutherland Shire
Land use zoning	E3 Productivity Support
Facing direction	South
Type of advertisement/sign	Freestanding advertisement – supersite
Display format	Externally illuminated general advertising
Visual screen size	12.66m x 3.35m = 42.41m^2
Visual screen size greater than 20m^2?	Yes
Visual screen size greater than 45m^2?	No
Structure higher than 8m above the ground?	No
Is the site located within 250m of and visible from a classified road under the *Roads Act 1993*?	Yes
Consent authority	Sutherland Shire Council
Does the sign contain moving parts?	No
Is it a Variable message sign?	No
Does it have any flashing or flickering content?	No

4. SUTHERLAND SHIRE LEP AND DCP PROVISIONS

4.1 Sutherland Shire Local Environmental Plan 2015

Signage is permitted with consent in the land use zone at the proposed sign location (E3 Productivity Support) under the Sutherland Shire LEP 2015.

4.2 Sutherland Shire Development Control Plan 2015

Part 6.4 in Chapter 35 of the Sutherland Shire DCP 2015 only addresses freestanding pole signs that are used for business identification.

5. TRAFFIC SAFETY ASSESSMENT

5.1 Key Assumptions

The assessment of the static sign was undertaken on the basis that:

- It will continue to have the same orientation, height and display size
- The display of content will continue to be static and be externally illuminated
- No change is proposed to the existing structure that supports the static sign (i.e. pole to remain in its current form and function)
- Illumination/lighting levels for the static sign will continue to comply with the *Signage Guidelines* and maintain lighting levels to match the surrounding environment at the site.

5.2 Site Inspections

Site inspections were undertaken on Thursday, 27 April 2023 during day and night-time hours (around 1:15pm and 7:45pm respectively). The weather was clear and traffic conditions were moderate on both occasions. In-vehicle video recordings were taken for further analysis and for use in compiling photo montages of the driver's perspective on the approaches to the site.

The photo montages can be found in **Appendix A**.

5.3 Review of Crash Data

The most recent five years of crash data between January 2017 and December 2021 was obtained from Transport for NSW and used to assess the crash history within the viewing area of the static sign from approximately 200m south along the Princes Highway. Crashes involving vehicles travelling in the direction of and in view of the sign were used for the assessment.

As per Rule 287 (3) of the Australian Road Rules, crashes are only recorded if they are reported to the police and when one of the following occurs:

- Any person is killed or injured
- Drivers involved in the crash do not exchange particulars
- When a vehicle involved in the crash is towed away.

The crash data was provided in the following degree categories:

- **Fatal –** a crash in which at least one person was killed
- **Serious injury –** a crash involving at least one person identified in a police report and matched to a health record indicating a hospital stay due to injuries sustained in a crash, or is identified as an iCare (Lifetime Care) participant AND no one was killed in the crash
- **Moderate injury –** a crash involving at least one person identified in a police report who is matched to a health record that indicates that they were treated at an emergency department but were not admitted for a hospital stay, or is matched to a CTP claim indicating a moderate or higher injury AND no one was killed or seriously injured
- **Minor/Other injury –** a crash involving at least one person identified as an injury in a police report who is not matched to a health record that indicates the level of injury severity, or is matched to a minor injury CTP claim AND no one was killed, seriously injured or moderately injured
- **Non-casualty (towaway) –** a crash in which no one was killed or injured but at least one motor vehicle was towed away.

The crash data was mapped using GIS software and is presented in **Appendix B** along with a detailed record list. The crash maps are presented in terms of severity and type (road user movement describing the first impact of the crash), with a severity summary provided in Table 5.1.

Table 5.1: Crash Severity Summary on Approach to the Site (2017-2021)

Year	Crash Severity					Total
	Fatal	Serious Injury	Moderate Injury	Minor/Other Injury	Non-casualty (towaway)	
2017	-	-	-	-	-	-
2018	-	-	-	-	-	-
2019	-	-	-	-	-	-
2020	-	-	-	-	-	-
2021	-	-	1	-	-	1
Total	**-**	**-**	**1**	**-**	**-**	**1**

As shown in the above table, **only crash was reported between January 2017 and December 2021**. It occurred in August 2021 in daylight and dry road surface conditions, approximately 53m before the sign. The crash was classified as 'pedestrian far side' crash and resulted in moderate injury.

The site is inherently safe, with practically no driving distractions and an exceptionally low cognitive load imposed on drivers.

5.4 Approach Sightline Assessments

5.4.1 Description of Approaches

The northbound approach in proximity to the static sign is described in Table 5.2.

Table 5.2: Approach Attributes – Princes Highway northbound

Attribute	Details
Posted speed limit	70km/h
Decision points within view of the site	Dalley Road T-intersection, approximately 80m before the sign
Approach arrangement	3 lanes (lanes 1 to 3); lane 1 also allows left turns into Dalley Road
Sight length	From 200m south of the sign
Minimum duration of visibility	12 seconds at free-flow speed

5.4.2 Driver Sightline Assessment

Process

In-vehicle observations were undertaken to assess the subject site considering key decision points and the influence on or from traffic control devices. An assessment of still images taken from the driver's perspective with a windscreen-mounted camera is presented in the following section. It should be noted that the assessment was undertaken based on a standard passenger car and as such a driver's eye height may vary for larger and smaller vehicles.

The premise of the assessment is to ensure that the location of the advertising sign maintains a driver's sightline to traffic control devices and is not located as such that it may be confused with or confuse the interpretation of these traffic control devices.

The glance angle away from the forward roadway is also a consideration in relation to when the sign is most likely to be glanced to and how far away the sign glance angle is from the forward roadway.

The driver's cognitive load specific to the driving environment on approach to the sign is also considered. Typically, locations where advertising signs could have a greater influence crash risk are locations where rapid, complex, multi-factor decision making is required.

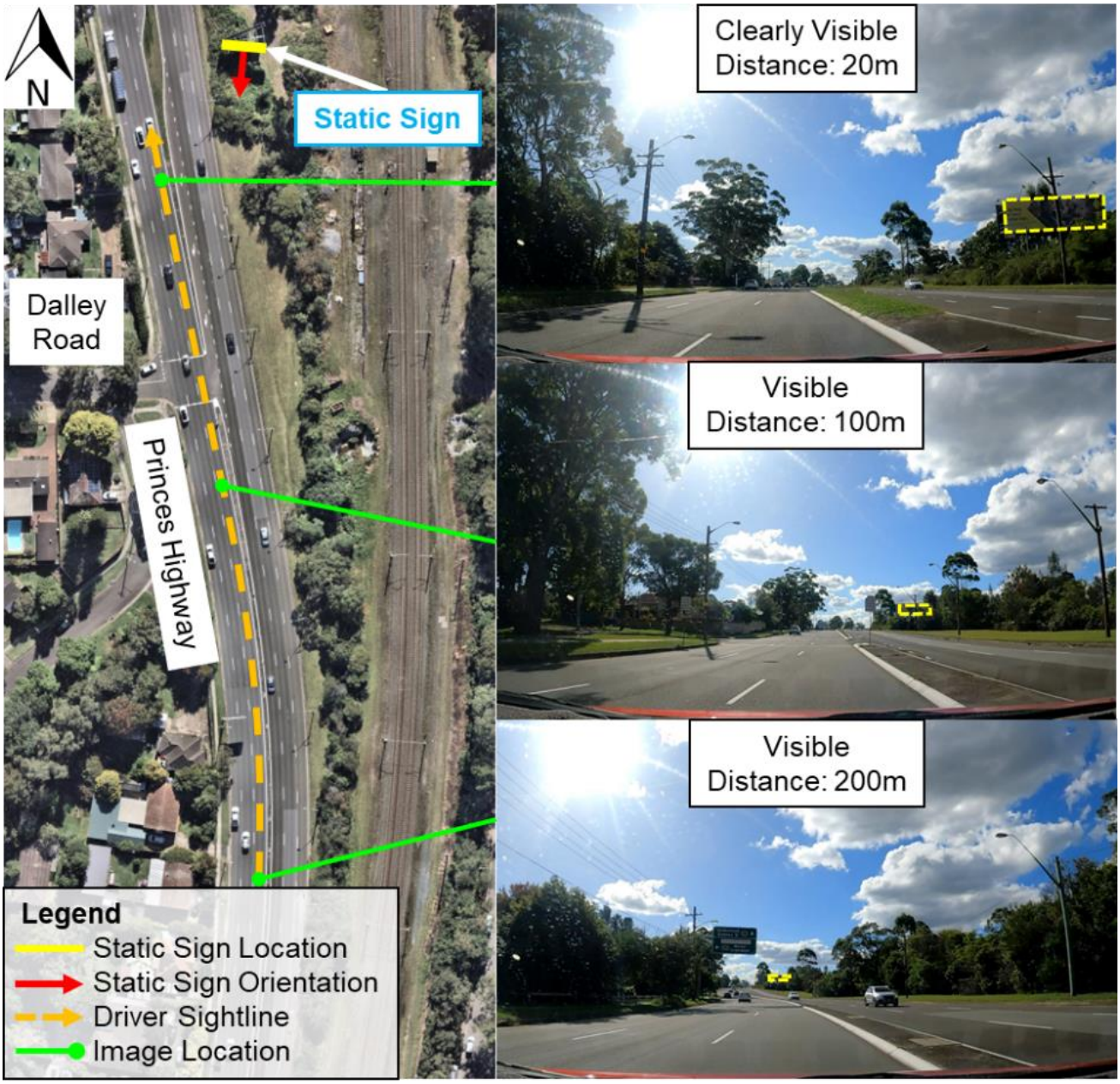
Assessment

The northbound approach along the Princes Highway is slightly uphill with a large-radius convex curve towards the static sign. The sign provides better visibility in lane 3 than in lane 1 due to the curve and presence of overhanging trees and a power pole in front.

The approach to the sign is a location of generally low cognitive load and free-flowing traffic, with the only decision points being the Dalley Road T-intersection (approximately 80m away) (which has 'Do Not Queue Across Intersection signs' and 'Keep Clear' line markings). However, given the proximity of the sign, it is outside the influence zone of the intersection.

The sign is unlikely to noticeably interfere with the effectiveness of the direction sign for the Heathcote Road/Wilson Parade signalised intersection (160m away). It is located 315m before the intersection, which is well in advance for any driver to make a lane choice.

The in-vehicle sightlines from the Princes Highway northbound towards the sign is shown in Figure 5.1. It demonstrates that a driver approaching the sign, who glances towards it, can instantaneously recognise vehicles changing lanes or braking ahead of them as colour changes, light changes and movement changes, all of which would occur in the immediate forward field of view.



**Distances measured in Google Maps.*

Figure 5.1: In-vehicle viewing range and views along the Princes Highway northbound

5.4.3 Night-time Sightline Assessment

The sign as an object is more visually prominent at night when it is lit and therefore has greater conspicuity than in daylight hours. However, there is very little difference in the driver sightline 'range' to the static sign advertising at night compared to in daylight hours. The range over which the advertising content on a static sign can be recognised is dependent on the size of the sign and its distance from the driver's eyes and not its level of illumination.

The only difference at night, in poorly lit urban environments, is that many of the other visual stimuli that can be seen in daylight may not be visible at night, meaning background cognitive load is reduced. On balance, the increased sign conspicuity at night and the reduced cognitive load from the background environment mean that there is a negligible difference in glance distraction consequence when comparing the sign's influence between daylight hours and night-time hours.

5.5 Compliance Assessment

5.5.1 Industry and Employment SEPP Schedule 5

The assessment against Industry and Employment SEPP Schedule 5 is provided in Table 5.3. Whilst the criteria are quite generic, the basis for the responses to each criterion is provided next to them.

Table 5.3: Assessment against Industry and Employment SEPP Schedule 5

Section	Criteria	Response
8. Safety	Would the proposal reduce the safety for any public road?	**No –** The proposal would not reduce the safety to the public road because there are no crash-related risks linked to the static sign apparent in the crash data.
	Would the proposal reduce the safety for pedestrians or bicyclists?	**No –** There are very few on-road cyclists (if any) in this high-speed area, and no off-road pedestrian or cycle paths are provided on the eastern side of the Princes Highway. In any event, the change in traffic safety risks associated with the existing static sign is considered to be negligible.
	Would the proposal reduce the safety for pedestrians, particularly children, by obscuring sightlines from public areas?	

5.5.2 Transport for NSW Advertising Sign Safety Assessment Matrix

Table 5.4 details the assessment against the Transport for NSW Advertising Sign Safety Assessment Matrix.

Table 5.4: Assessment against the Transport for NSW Advertising Sign Assessment Matrix

Consideration	Response	Risk Rating	Risk Level
A. It obscures a view of an object/vehicle/pedestrian that creates a hazard	The sign is located beside all surrounding objects/ vehicles/pedestrians etc. and therefore does not create a hazard.	1	Low
B. Sign positioning relative to travel direction	The sign is positioned within a driver's ordinary field of view and only glance appreciation is required. It will be visually prominent northbound.	2	Low
C. It distracts a driver at a critical time	The sign is located approximately 80m before the Princes Highway/Dalley Road T-intersection (which has 'Do Not Queue Across Intersection' signs and 'Keep Clear' line markings). However, given the proximity of the sign, it is outside the influence zone of the intersection.	1	Low
D. It interferes with the effectiveness and safety of a traffic control device (e.g. traffic signs, traffic signals or other traffic control devices)	The sign is unlikely to noticeably obstruct or interfere with the direction sign for the Heathcote Road/Wilson Parade signalised intersection, located 160m away.	1	Low
E. Sign clutter	No other advertising sign is visible when a driver is in view of the subject sign.	1	Low

5.5.3 Transport Corridor Outdoor Advertising and Signage Guidelines Section 3

Table 5.5 details the assessment against relevant road safety criteria in Section 3 of the *Signage Guidelines*.

Table 5.5: Assessment against relevant Signage Guidelines Road Safety Criteria

Criteria	Response
Road clearance	
a. The advertisement must not create a physical obstruction or hazard. For example: i. Does the sign obstruct the movement of pedestrians or bicycle riders? (e.g. telephone kiosks and other street furniture along roads and footpath areas)? ii. Does the sign protrude below a bridge or other structure so it could be hit by trucks or other tall vehicles? Will the clearance between the road surface and the bottom of the sign meet appropriate road standards for that particular road? iii. Does the sign protrude laterally into the transport corridor so it could be hit by trucks or wide vehicles?	The sign does not obstruct the movement of pedestrians or bicycle riders or protrude laterally into the transport corridor given its location on the roadside.
Line of sight	
To maximise visibility of the road and minimise the time a driver's attention is directed away from the road, the following criteria apply to all advertising signage: **a.** An advertisement must not obstruct the driver's view of the road, particularly of other vehicles, bicycle riders or pedestrians at crossings.	The advertisement does not obstruct the driver's view of the road, other vehicles, bicycle riders or pedestrians at crossings or direct a driver's attention away from the road as it is in their ordinary field of view and is static, meaning it is unlikely to be glanced at more than once.
b. An advertisement must not obstruct a pedestrian or cyclist's view of the road.	The advertisement does not obstruct a pedestrian or cyclist's view of the road given its location on the roadside.
c. The advertisement should not be located in a position that has the potential to give incorrect information on the alignment of the road. In this context, the location and arrangement of signs' structures should not give visual clues to the driver suggesting that the road alignment is different to the actual alignment. An accurate photo-montage should be used to assess this issue.	The advertisement is deemed not to be located in a position that has the potential to give incorrect information on the road alignment. Day and night-time photo montages showing key approaches to the sign are provided in **Appendix A**.
d. The advertisement should not distract a driver's attention away from the road environment for an extended length of time. For example: i. Does the sign obstruct the movement of pedestrians or bicycle riders? (e.g. telephone kiosks and other street furniture along roads and footpath areas)? ii. The sign should not be located in such a way that the driver's head is required to turn away from the road and the components of the traffic stream in order to view its display and/or message. All drivers should still be able to see the road when viewing the sign, as well as the main components of the traffic stream in peripheral view.	The sign is located and orientated so that only glance appreciation is required, meaning drivers would not need to turn their head away from the road ahead in order to view its display and/or message.
e. The sign should be oriented in a manner that does not create headlight reflections in the driver's line of sight. As a guideline, angling a sign five degrees away from right angles to the driver's line of sight can minimise headlight reflections. On a curved road alignment, this should be checked for the distance measured back from the sign that a car would travel in 2.5 seconds at the design speed.	The sign does not create headlight reflections in the driver's line of sight given its raised location on the roadside and it does not tilt down towards them.

Criteria	Response
Proximity to decision making points and conflict points	
a. The sign should not be located: i. less than the safe sight distance from an intersection, merge point, exit ramp, traffic control signal or sharp curves ii. less than the safe stopping sight distance from a marked foot crossing, pedestrian crossing, pedestrian refuge, cycle crossing, cycleway facility or hazard within the road environment iii. so that it is visible from the stem of a T-intersection.	The sign is located approximately 80m before the Princes Highway/Dalley Road T-intersection (which has 'Do Not Queue Across Intersection' signs and 'Keep Clear' line markings). Views to the signs are outside the influence zone of the intersection.
b. The placement of a sign should not distract a driver at a critical time. In particular, signs should not obstruct a driver's view: i. of a road hazard ii. to an intersection iii. to a prescribed traffic control device (such as traffic signals, stop or give way signs or warning signs) iv. to an emergency vehicle access point or Type 2 driveways (wider than 6-9m) or higher.	
Advertising signage and traffic control devices	
a. The advertisement must not distract a driver from, obstruct or reduce the visibility and effectiveness of, directional signs, traffic signals, prescribed traffic control devices, regulatory signs or advisory signs or obscure information about the road alignment.	The advertisement will not distract a driver from or reduce the visibility and effectiveness of any traffic control devices or obscure information about the road alignment given its location on the roadside.
b. The advertisement must not interfere with stopping sight distance for the road's design speed or the effectiveness of a prescribed traffic control device. For example: i. Could the advertisement be construed as giving instructions to traffic such as 'Stop', 'Halt' or 'Give Way'? ii. Does the advertisement imitate a prescribed traffic control device? iii. If the sign is in the vicinity of traffic lights, does the advertisement use red, amber or green circles, octagons, crosses or triangles or shapes or patterns that may result in the advertisement being mistaken for a traffic signal?	The sign will not interfere with the effectiveness of the direction sign for the Heathcote Road/ Wilson Parade signalised intersection (160m away). It is located 315m before the intersection, which is well before the car and truck stopping sight distances of 110m and 125m respectively. Conditions can be imposed by the consent authority to ensure that sign content, design, imagery and messages neither replicate nor can be mistaken for a prescribed traffic control device or instruction to drivers. For example, advertisements must not instruct drivers to perform an action such as 'Stop.'

6. CONCLUSIONS

The key conclusions from the traffic safety assessment to enable the ongoing display of an existing static advertising sign on the eastern side of the Princes Highway, approximately 80m north of Dalley Road, in Heathcote are summarised as follows:

- The sign does not obstruct or interfere with the view of or restrict sight distances to any intersections, traffic control devices, vehicles, pedestrians or cyclists given its location on the roadside
- The sign is not expected to reduce the safety of any vehicle, pedestrian or cyclist movements given its location. It will be located within a driver's ordinary field of view when approaching from the south and a glance to the sign will still permit co-incident recognition of vehicle, pedestrian and cyclist movements in the forward view in a road environment with very few decision points
- A review of available five years of crash data within 200m of the site showed a very low crash rate. The data does not identify an unusually high or inherently high crash risk on approach to the existing static sign that would deem it unsuitable
- Illumination does not increase safety risk as there is no material change in how drivers glance to a lit sign at night vs. an unlit sign during the day, when considering other stimuli in their visual field
- The sign complies with the requirements of the Industry and Employment SEPP, Transport for NSW Advertising Sign Safety Assessment Matrix and *Signage Guidelines*.

Given the above conclusions, the static sign should continue to operate as it currently does.

Appendix A: Photo Montages

1. Princes Highway northbound approach – Lane 1 (Day)

2. Princes Highway northbound approach – Lane 3 (Day)

1. Princes Highway northbound approach – Lane 1 (Night)

2. Princes Highway northbound approach – Lane 3 (Night)

Appendix B: Crash Data


N
Static Sign Location
Legend
Crash Degree
Moderate Injury
Project Title: P6063 oOhmedia Sydney Static Sign TSAs
Site: Princes Highway northbound, Heathcote
Figure Title: Degree of Crashes – 2017 to 2021
Version: 001
Date: 29/05/2023
File Path: P:\P6063 oOhmedia Sydney Static Sign TSAs\Technical\Mapping\Work Spaces\Heathcote - Princes Hwy NB
Dalley Road
Princes Highway
Willandra Parade


N
Static Sign Location
Legend
Crash Type (RUM Code Group)
Pedestrians (on foot or in toy/pram)
Project Title: P6063 oOhmedia Sydney Static Sign TSAs
Site: Princes Highway northbound, Heathcote
Figure Title: Type of Crashes by RUM Code Group – 2017 to 2021
Version: 001
Date: 29/05/2023
File Path: P:\P6063 oOhmedia Sydney Static Sign TSAs\Technical\Mapping\Work Spaces\Heathcote - Princes Hwy NB
Dalley Road
Princes Highway
Willandra Parade

Crash ID	Degree of crash - detailed	RUM - code	RUM - description	Year of crash	Month of crash	Day of week of crash	Time of crash	Surface condition	Weather	Natural lighting	Street of crash	Street type	Distance	Direction	Identifying feature	Identifying feature type	Town	Type of location	Latitude	Longitude	Speeding involved in crash	Fatigue involved in crash	Key Traffic Unit direction of travel
1270529	Moderate Injury	2	Ped far side	2021	August	Tuesday	1530	Dry	Fine	Daylight	PRINCES	HWY	20	North	DALLEY	RD	HEATHCOTE	Divided road	-34.081430	151.010982	No or unknown	No or unknown	North