GTAconsultants

Proposed Static Advertising Signs
Old Windsor Road, Kellyville
Signage Safety Assessment

+Client // NRT Pty Ltd
Office // NSW
Reference // N154810
Date // 13/03/19

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Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	17/07/18	Final	Mackenzie Brinums	Brett Maynard	Brett Maynard	Brett Maynard
B	22/11/18	Updated following comments from Roads and Maritime Services	Mackenzie Brinums	Brett Maynard	Brett Maynard	Brett Maynard
C	14/01/19	Final – Minor updates	Mackenzie Brinums	Brett Maynard	Brett Maynard	Brett Maynard
D	01/03/19	Final – Minor updates	Mackenzie Brinums	Brett Maynard	Brett Maynard	Brett Maynard
E	13/03/19	Final following comments from Roads and Maritime	Mackenzie Brinums	Brett Maynard	Brett Maynard	

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1. Introduction

1.1 Background

NRT Pty Ltd (NRT) is proposing to install new static advertising signs on both the north and south sides of the pedestrian bridge above Old Windsor Road at Kellyville. NRT engaged GTA Consultants (GTA) to prepare a signage safety assessment to determine the suitability of the proposal with respect to road safety.

The assessment has been primarily based on the Transport Corridor Outdoor Advertising and Signage Guidelines, Assessing Development Applications under SEPP 64 (NSW Government Department of Planning, 2017) – herein referred to as the NSW Guidelines. The assessment considers clarification provided by Roads and Maritime Services (Roads and Maritime) regarding application of criteria in the NSW Guidelines related to Stopping Sight Distance and the appropriate parameters for calculating the Stopping Sight Distance specific to the site.

1.2 Purpose of this Report

This report sets out the findings of GTA's signage safety assessment for the proposed installation of static signs.

The following items have been considered in this report:

i Potential for the signage to obstruct a driver, pedestrian or cyclist's view of the road and/ or traffic control devices.
ii Distance from upstream or downstream intersections or other decision points.
iii Potential for the signage to distract at a critical time or for an extended period of time.
iv Location within the carriageway and its potential to be a physical obstruction for vehicles or other road users.
v Location in relation to other signage.

1.3 References

In preparing this report, reference has been made to the following:

- an inspection of the site and its surrounds on 25 June 2018
- Transport Corridor Outdoor Advertising and Signage Guidelines – Assessing Development Applications under SEPP 64, NSW Department of Planning, 2017
- crash data provided by Roads and Maritime Services
- Design Report for North West Rail Link Operations, Trains & Systems, Pedestrian Bridge over Old Windsor Road at Kellyville, prepared by Northwest Rapid Transit, 2017
- Guide to Road Design, Part 3: Geometric Design, Austroads, 2016
- Supplement to Austroads Guide to Road Design Part 3, Roads and Maritime, August 2017
- Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections, Austroads, 2009

1.4 Findings of this Report

The analysis and discussions presented within this report confirm that the proposal can be supported on road user safety grounds. It is GTA's professional view that the signs would not distract drivers and other road users within the SSD of the intersection or physically obstruct a driver's view of the road or other road users.

Historic crash data for the past five years does not indicate an existing road safety issue in the vicinity of the site.

2. Existing Conditions

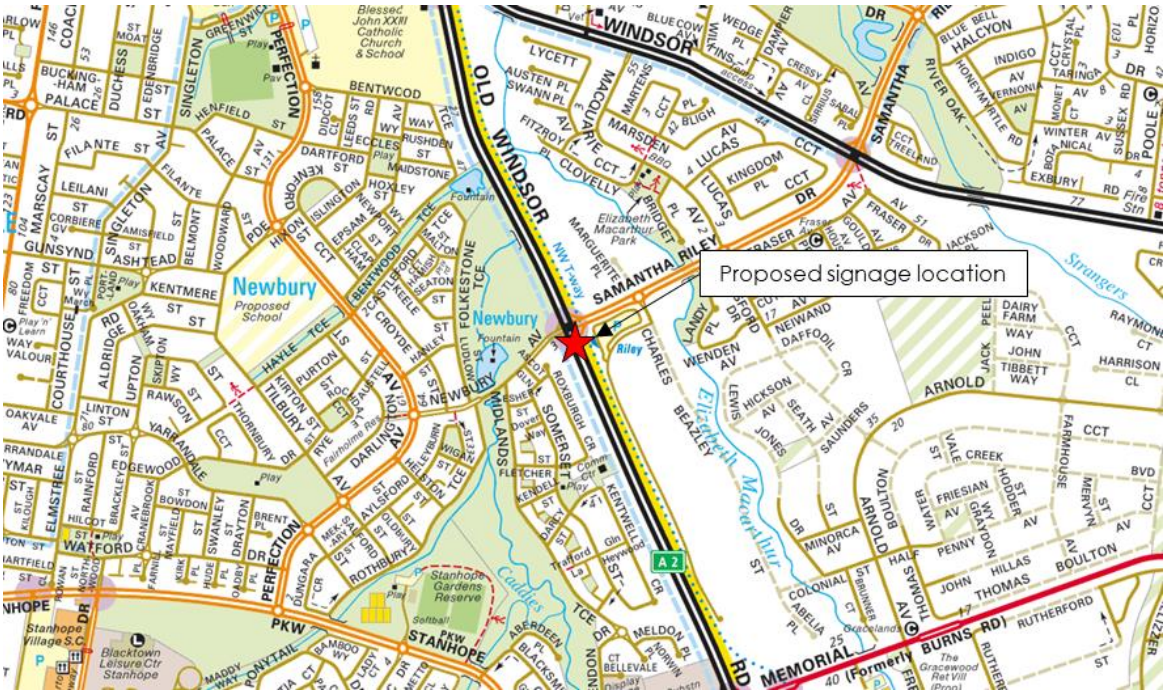
2.1 Location Details

The proposed static signs are to be located on the north and south sides of the pedestrian bridge over Old Windsor Road in Kellyville. The pedestrian bridge has been constructed for the Sydney Metro Northwest project and is located approximately 30 metres south of the signalised Old Windsor Road/ Newbury Avenue/ Samantha Riley Drive intersection.

Near the proposed signs, Old Windsor Road is an 80km/h road and is aligned a north-south direction. It is a two-way road with generally two lanes in each direction, along with turning lanes to Newbury Avenue and Samantha Riley Drive. The Northwest Transitway is also positioned on the eastern side of the road and has a separated carriageway.

The proposed signage location and the surrounding environs are shown in Figure 2.1.

Figure 2.1: Proposed signage location and surrounds



Base image source: Sydway

2.2 Proposed Signs

The proposed signs are each 12.66 metres x 3.35 metres static billboards, equating to a total area of approximately 42.41 square metres.

A photomontage of the proposed northbound facing and the southbound facing signs are shown in Figure 2.2 and Figure 2.3 respectively.

Figure 2.2: Photomontage of the proposed northbound facing sign

Source: Job Number NW-BV-1607, Drawing Number 19117-5/1, dated November 2017

Figure 2.3: Photomontage of the proposed southbound facing sign

Source: Job Number NW-BV-1607, Drawing Number 19117-5/5, dated November 2017

2.3 Sign Exposure

Old Windsor Road has a straight alignment on approach to the proposed signs. The signs are expected to be visible from approximately 430 metres south of the sign and 340 metres north of the sign for northbound and southbound drivers respectively on Old Windsor Road. The proposed signs are expected to become readable from approximately 160 metres away, similar to that of the existing advertising signs attached to the overhead pedestrian bridge further south along Old Windsor Road near Norbrik Drive.

Given the stop line for Samantha Riley Drive is set back from the intersection due to the Northwest Transitway, it is not expected that the southbound facing sign would be visible from this

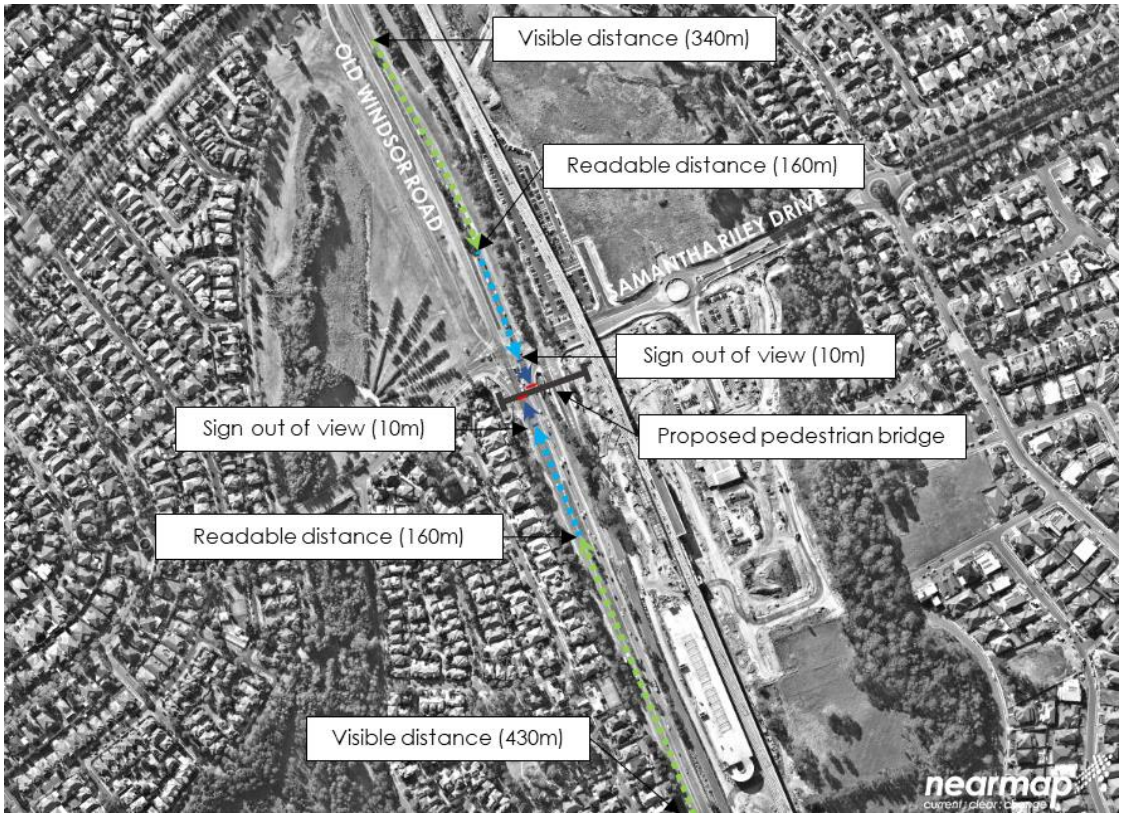
approach. Drivers are expected to only be able to see the southbound facing sign briefly after completing their turn.

On Newbury Avenue, the proposed southbound facing sign is only expected to be visible (albeit at a large horizontal viewing distance) by drivers stopped near the Old Windsor Road intersection. It is not expected that moving drivers would be able to view the sign due to Newbury Avenue being aligned with a right-hand bend on approach to the intersection.

The visible and readable distances for both signs are shown in Figure 2.4.

A driver's view of the northbound and southbound facing signs from their respective readable distances are shown in Figure 2.5 and Figure 2.6, respectively.

Figure 2.4: Anticipated signage exposure



Base image source: Nearmap

Figure 2.5: Northbound drivers' view from 160 metres south of the proposed static sign

Figure 2.6: Southbound drivers' view from 160 metres north of the proposed static sign

2.4 Crash History

Roads and Maritime provided GTA with recorded crash history data along surrounding roads near the pedestrian bridge. The data provided was for the most recent five-year period of available data (January 2012 – December 2016). Detailed GIS analysis was completed for this dataset specifically identifying crashes where the proposed signs are anticipated to be visible, to assess if there is already a road safety issue in the area.

The data indicates that a total of 19 collisions occurred in the visible distance of the proposed signs during the five-year study period. These collisions are shown in Figure 2.7.

Figure 2.7: Relevant crash data surrounding the proposed signs

Figure 2.7 indicates that there is a cluster of crashes at the Old Windsor Road/ Newbury Avenue/ Samantha Riley Drive intersection. Closer analysis indicates there have been 15 crashes at this intersection, with 10 of these crashes (67%) classified as rear-end crashes which are typical in busy urban environments where congestion is common. Two of the crashes (11%) were classified as adjacent crashes while the remaining three crashes were unclassified.

It is important to note that the majority of the crashes at the intersection occurred northbound after the point where the proposed northbound facing sign would leave the field of view. They have remained in the analysis data, however, to assess conditions immediately downstream of the proposed sign.

Considering that a significant proportion of the recorded crashes were rear-end crashes or adjacent crashes (which are typical at major road intersections that are prone to congestion) and there were no other relevant observable trends in terms of crash types or influences, the proposed location for static advertising signs does not present a safety concern.

It should also be noted that internationally, no empirical studies conducted to date have shown a causal link between advertising signage and road safety statistics.

3. Statutory Requirements

This section of the report assesses compliance with the road safety assessment criteria established in the NSW Guidelines. In particular, the guidelines require analysis as to whether the proposal will reduce the safety of:

- any public road
- pedestrians and cyclists
- pedestrians by obscuring sight lines from public areas.

In order to assess any new installation against the above key road safety assessment criteria, a series of detailed criteria are set out in Section 3.2 and Section 3.3, *Sign Location and Design* of the NSW Guidelines.

Sign Location Criteria (NSW Guidelines Section 3.2)

Criteria 3.2.1 - Road Clearance

a) *The advertisement must not create a physical obstruction or hazard. For example:*
   - *Does the sign obstruct the movement of pedestrians or bicycle riders? (e.g. telephone kiosks and other street furniture along roads and footpath areas)?*
   - *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?*
   - *Does the sign protrude laterally into the transport corridor so it could be hit by trucks or wide vehicles?*

Both signs are proposed to be fixed against the side of the overhead pedestrian bridge. The bottom of the signs will not protrude below the bridge. As such, the proposed signs would not create a physical obstruction or hazard.

b) *Where the sign supports are not frangible (breakable), the sign must be placed outside the clear zone in an acceptable location in accordance with Austroads Guide to Road Design (and RMS supplements) or behind an RMS-approved crash barrier.*

Both signs are proposed to be fixed against the side of the overhead pedestrian bridge. Therefore, no additional structure is required that would fall within the clear zone.

c) *Where a sign is proposed within the clear zone but behind an existing RMS-approved crash barrier, all its structures up to 5.8m in height (relative to the road level) are to comply with any applicable lateral clearances specified by Austroads Guide to Road Design (and RMS supplements) with respect to dynamic deflection and working width.*

Given the locations and mounting of the proposed signs, this criterion is not relevant.

d) *All signs that are permitted to hang over roads or footpaths should meet wind loading requirements as specified in AS 1170.1 and AS1170.2. All vertical clearances as specified above are regarded as being the height of the sign when under maximum vertical deflection.*

The proposed signs would be flush-mounted on the overhead pedestrian bridge. The signs would not protrude below the bottom of the pedestrian bridge and therefore the vertical clearance above the road would not be reduced further than that of the bridge. Section 6.13.4 of the Kellyville pedestrian bridge design report (Northwest Rapid Transit, 2017) details that the bridge has been designed to account for wind loads associated with future advertising signage on the side of the bridge. As such, the wind loading requirement would be met.

Additional Road Clearance Criteria for Footpath/ Nature Strips

To ensure adequate clearance for pedestrian and wheel chair access, the sign must be positioned so that an absolute minimum envelope of 900mm x 2000mm of unobstructed clear path of travel is maintained for the entire length of the advertising structure.

Given the location of the proposed signs above the road carriageway, this criterion is not relevant.

Criteria 3.2.2 – Line of Sight

a) *An advertisement must not obstruct the driver's view of the road, particularly of other vehicles, bicycle riders or pedestrians at crossings.*

The proposed signs would not obstruct a driver's view of the road, other vehicles, cyclists and/or pedestrians, with the signs to be elevated above the road and fixed to the pedestrian bridge.

b) *An advertisement must not obstruct a pedestrian or cyclist's view of the road.*

The proposed signs would not obstruct a pedestrian or cyclist's view of the road, with the signs to be elevated above the road and fixed to the pedestrian bridge.

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.*

Old Windsor Road is generally straight in alignment on approach to the proposed signs and therefore the signs would not give visual cues to the driver suggesting a different alignment of the road. Figure 2.5 and Figure 2.6 provide an indication of the driver's view of the road on approach to the proposed northbound and southbound facing signs respectively.

d) *The advertisement should not distract a driver's attention away from the road environment for an extended length of time. For example:*

- *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 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 proposed signs would be fixed on the side of the pedestrian bridge directly above Old Windsor Road and within the direct line-of-sight of drivers. Drivers would therefore not be required to turn their head away from the road to view either sign. Due to the elevation of the signs, the signs would not create headlight reflections in drivers' line-of-sight.

Criteria 3.2.3 – Proximity to Decision Making Points and Conflict Points

a) *The sign should not be located:*

- *less than the safe sight distance from an intersection, merge point, exit ramp, traffic control signal or sharp curves*

- *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*
- *so that it is visible from the stem of a T-intersection.*

The definition of Sight Distance in the *Guide to Road Design, Part 3* (Austroads, 2016) is the distance that must be provided to "enable drivers to perceive and react to any hazardous situation". Sight Distance including Stopping Sight Distance (SSD) and Approach Sight Distance (ASD) for an intersection is dependent on the operating speed of the road, road gradient and other road characteristics.

The application of this definition requires an unobstructed line-of-sight between the road feature, object or hazard and a vehicle located at the relevant minimum sight distance. When considering the SSD and ASD requirements along Old Windsor Road, it is noted that the signs are elevated above the roadway and therefore cannot interfere with the line-of-sight as relevant to the first two dot points of this criterion.

Notwithstanding the above, a design speed of 90km/h has been used to calculate the maximum SSD and ASD. Referencing the *Supplement to Austroads Guide to Road Design Part 3* (Roads and Maritime, August 2017), Roads and Maritime practice is to use a 1.5 second reaction time for speeds of 90km/h and below. Based on this, the applicable SSD for Old Windsor Road is 126 metres. The SSD would reduce with corresponding speed limit reductions and/ or congestion.

Roads and Maritime clarified that application of Criteria 3.2.3 requires SSD to be measured horizontally in the direction of travel back from the stop line. As such, the first two points of Criteria 3.2.3 only apply to the north facing sign given it is located approximately 50 metres from the relevant stop line.

The view of this sign at the SSD from the stop line is shown in Figure 3.1.

Figure 3.1: Southbound drivers' view of the sign at the SSD from the stop line

Although the proposed north facing sign is within the SSD from the intersection, given the static nature of the sign and straight alignment of the road, it would not distract or cause drivers to look away from the road at the critical time of a decision-making point.

Based on the above, the proposed signage would not be expected to affect road safety as a result of its location and proximity to road hazards, intersections and crossings.

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:*
   - *of a road hazard*

- *to an intersection*
- *to a prescribed traffic control device (such as traffic signals, stop or give way signs or warning signs)*
- *to an emergency vehicle access point or Type 2 driveways (wider than 6-9m) or higher.*

A "critical time" is interpreted as a point in time when a driver decision is required, implying that a road safety implication could occur if a driver was distracted at this time.

The signs are proposed to be fixed to the overhead pedestrian bridge and therefore do not obstruct a driver's view of any road hazards, intersections, traffic control devices or accesses.

Criteria 3.2.4 – Sign Spacing

A highly cluttered visual field makes it difficult to locate and prioritise driving-critical information, e.g. regulatory and advisory signs and traffic control devices. The proposed site should be assessed to identify any road safety risk in relation to visual clutter and the proximity to other signs.

There is minimal regulatory and advisory signage on approach to the proposed signs. There is only one directional sign on approach to the northbound sign, providing direction to Riley T-Way Station, which would not be obstructed by the proposal. No other advertising signage is located near the proposed signs.

Sign Design and Operation Criteria (NSW Guidelines Section 3.3)

Criteria 3.3.1 – 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 proposed southbound facing sign is expected to backdrop the overhead primary traffic signal at the Old Windsor Road/ Samantha Riley Driver intersection, however given the static nature of the sign and straight road alignment, the traffic signals would remain more prominent than the sign and the sign would not cause drivers to look away from the road at the critical time of a decision-making point. It is important to note that there are also primary, secondary, overhead secondary and tertiary traffic signals which are visible to southbound drivers in addition to the overhead primary traffic signal.

No other directional signs, traffic control devices, regulatory signs or advisory signs would be backdropped by the proposed signs.

It is noted that there are speed limit signs on approach to both proposed signs along Old Windsor Road and an intersection warning sign on approach to the northbound facing sign, as shown in Figure 3.2 and Figure 3.3. Although these are within the readable distance of the proposed advertising signs, it is not expected that the proposal would reduce the effectiveness of these signs. It is also noted that the speed limit sign is consistent with the speed limit signs along Old Windsor Road prior to and following this point (i.e. no changes in speed limit and therefore this sign is a repeater only).

Figure 3.2: Existing road signs on approach to the proposed northbound facing advertising sign

Base image source: Google Maps

Figure 3.3: Existing road signs on approach to the proposed southbound facing advertising sign

Base image source: Google Maps

As such, the proposed signs would not decrease the effectiveness of surrounding traffic signage or control devices.

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:*

- *Could the advertisement be construed as giving instructions to traffic such as 'Stop', 'Halt' or 'Give Way'?*
- *Does the advertisement imitate a prescribed traffic control device?*
- *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 operator would be responsible for ensuring that the proposed signs comply with this requirement, so as to not mislead drivers.

Criteria 3.3.3 – Illumination and Reflectance

The following criteria apply to non-digital illuminated signs, including conventional billboards illuminated by fluorescent and/or incandescent bulbs whether internally illuminated or lit from the exterior:

a) *Advertisements must comply with the luminance requirements in Table 5 [in the NSW Guidelines].*

b) *For night time use, the sign (whether internally illuminated or lit from its exterior) must not cast a shadow on areas that were previously lit and that have a special lighting requirement, e.g. pedestrian crossings.*

c) *The light sources for illuminated signs must focus solely on the sign and:*

- *be shielded so that glare does not extend beyond the sign*
- *with the exception of back lit neon signs, have no light source visible to passing motorists with a light output greater than that of a 15W fluorescent/LED bulb.*

d) *The level of reflectance of an advertisement, and its content, is not to exceed the 'Minimum coefficients of Luminous intensity per unit area for Class 2A Material', as set out in Australian Standard AS/NZS 1906.1:2007. Flashing illuminated advertisements will not be approved.*

The operator would be responsible for ensuring that the proposed signs comply with this requirement.

Criteria 3.3.4 – Interaction and Sequencing

a) *The advertisement must not incorporate technology which interacts with in-vehicle electronic devices or mobile devices. This includes interactive technology or technology that enables opt-in direction communication with road users.*

It is understood that the proposed signs will not incorporate technology which interacts with in-vehicle electronic devices or mobile devices. The operator would be responsible for ensuring that the proposed signs comply with this requirement.

b) *Message sequencing designed to make a driver anticipate the next message is prohibited across images presented on a single sign and across a series of signs.*

The operator would be responsible for ensuring that the proposed signs comply with this requirement.

4. Conclusion

NRT Pty Ltd proposes to install new static advertising signs on the north and south facing sides of the overhead pedestrian bridge located south of Samantha Riley Drive on Old Windsor Road, Kellyville. The proposed signs would be visible to northbound and southbound traffic along Old Windsor Road.

The proposal has been assessed against the current statutory requirements for outdoor advertising as outlined in the *Transport Corridor Outdoor Advertising and Signage Guidelines, Assessing Development Applications under SEPP 64 (*NSW Government Department of Planning, 2017*)*.

Based on the analysis and discussions presented within this report, it is our professional opinion as road safety experts that the proposal can be supported on road user safety grounds.

Historic crash data for the past five years does not indicate an existing road safety issue in the vicinity of the site and there is no evidence the proposed signage would have any adverse impact on road safety. Further, it is noted that internationally, no empirical studies conducted to date have shown a causal link between advertising signage and road safety statistics.

There are several assessment criteria that relate to the advertising copy and operation of the sign. These are typically included as conditions of approval and the operator would be responsible for ensuring that the proposed signs comply with these conditions.

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