



The Ribbon

31 Wheat Road, Sydney

Signage Safety Assessment

Client // Grocon
Office // NSW
Reference // 12S9018500
Date // 23/10/18

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Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
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1. Introduction

1.1 Background

Grocon is proposing to install various signs on the exterior of The Ribbon development that is currently being constructed in Darling Harbour. Several of these signs will be visible to traffic on nearby roads and as such, Grocon has engaged GTA Consultants (GTA) to prepare a signage safety assessment to determine the suitability of the proposals 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.

1.2 Purpose of this Report

This report sets out the signage safety assessment findings for the proposed signage. The following items have been considered:

- i Potential for the sign 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:

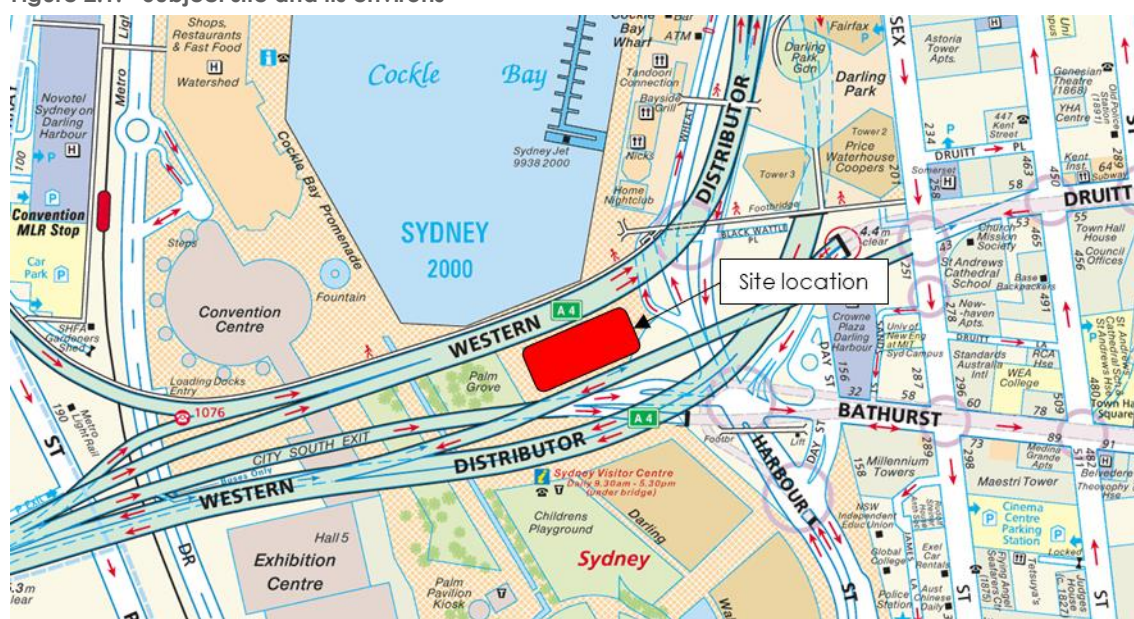
- o an inspection of the site and its surrounds on 11 October 2018
- o Transport Corridor Outdoor Advertising and Signage Guidelines – Assessing Development Applications under SEPP 64, NSW Department of Planning, 2017
- o crash data provided by Roads and Maritime Services
- o Guide to Road Design, Part 3: Geometric Design, Austroads, 2016
- o Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections, Austroads, 2009.

2. Existing Conditions

The subject site is located at 31 Wheat Road, Sydney. Near the site, the eastbound and westbound lanes of the Western Distributor are separated, with The Ribbon development situated between. The eastbound side of the road is configured with four lanes merging into three lanes near the site. There is also an off-ramp from the Western Distributor (to Bathurst Street) that runs along the southern side of the site. The Western Distributor has a posted speed limit of 60 km/h near the site.

The location of the subject site and its surrounding environs is shown in Figure 2.1.

Figure 2.1: Subject site and its environs



Base image source: Sydway Publishing Pty Ltd

2.1 Proposed Signs

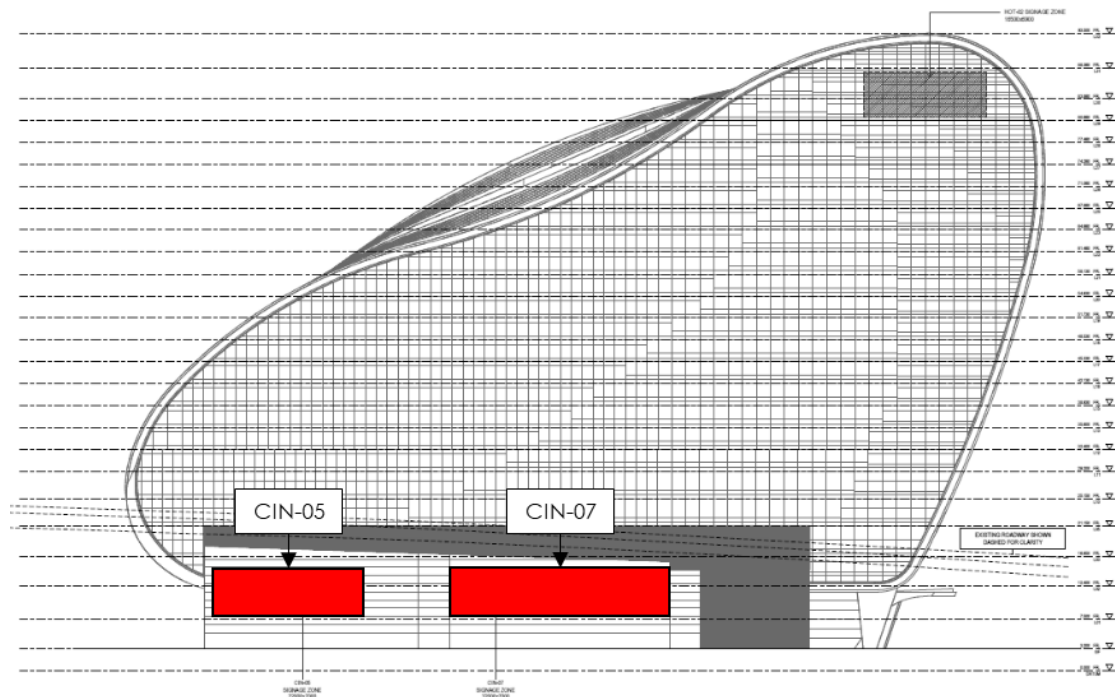
There are several signs proposed to be installed on the exterior of the development, including business identification signs, static advertising signs and a digital scrolling message sign.

A summary of the proposed signs is detailed in Table 2.1, with mark-ups of the proposed locations shown in Figure 2.2 to Figure 2.4.

Table 2.1: Proposed signs

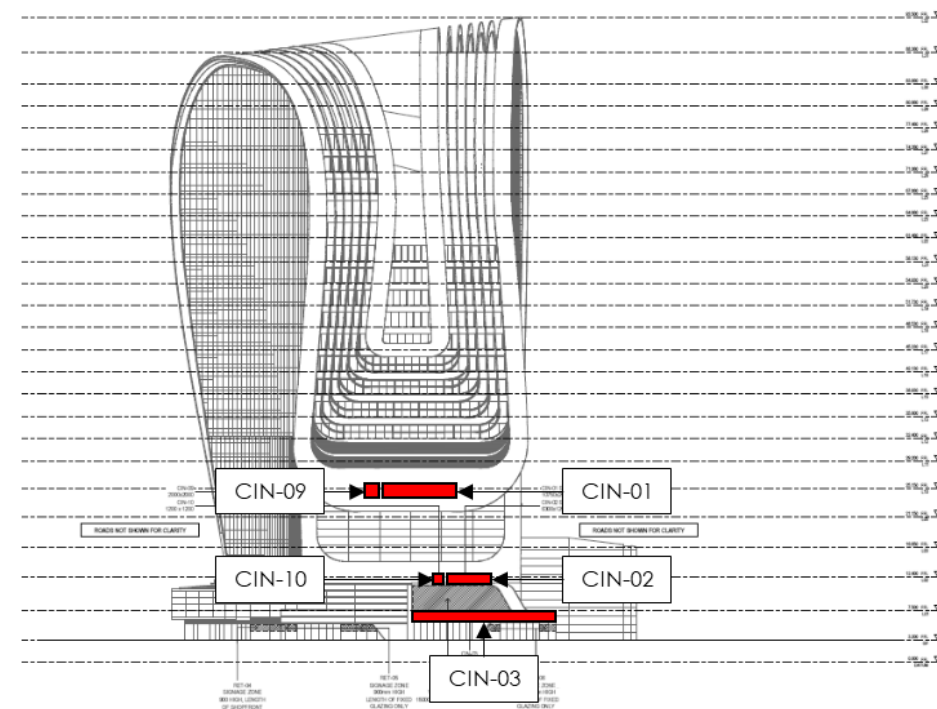
Sign ID	Description	Signage Nature	Size
CIN-01	Business identification sign	Static	10.75m x 2m
CIN-02	Business identification sign	Static	6.3m x 1.2m
CIN-03	Scrolling message sign	Digital	20m x 0.9m
CIN-05	Advertising sign	Static	22m x 7m
CIN-07	Advertising sign	Static	32m x 7m
CIN-08	Business identification sign	Static	2m x 10.75m
CIN-09	Business identification sign	Static	2m x 2m
CIN-10	Business identification sign	Static	1.2m x 1.2m
RET-01	Retail advertising sign	Static	0.9m x (length of shopfront)

Figure 2.2: South elevation



Base image source: Hassell, Project Number A004409, Drawing Number ARC-HSL-DD-1150, dated 14 February 2017

Figure 2.3: West elevation

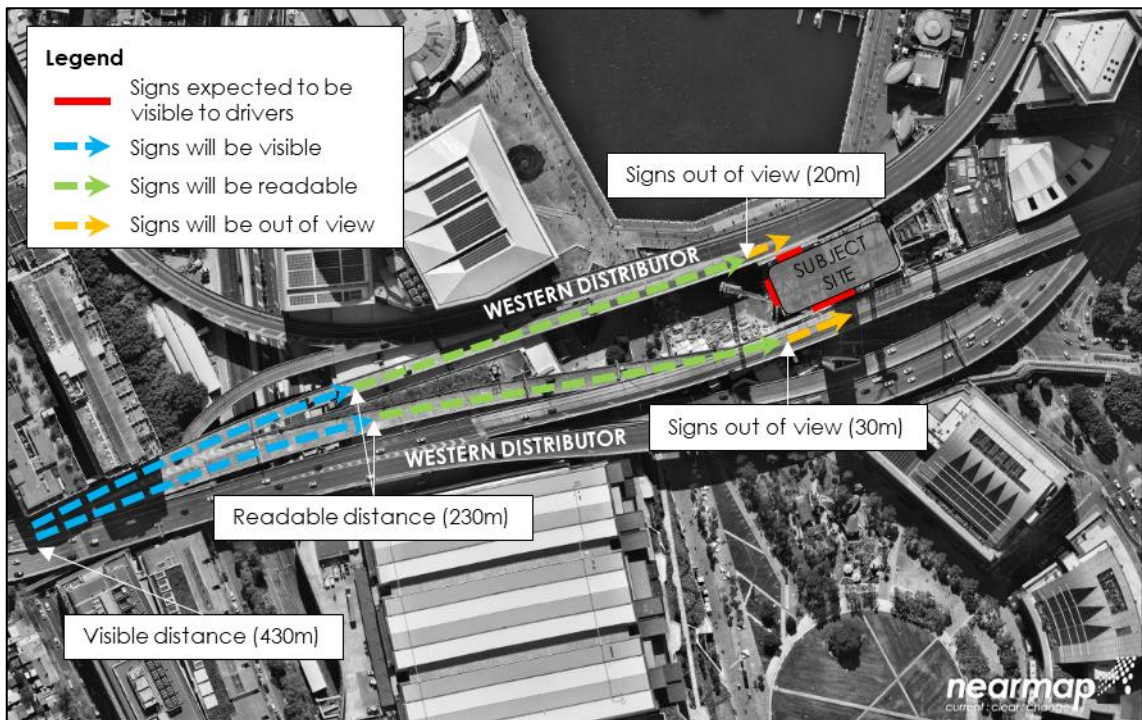


Base image source: Hassell, Project Number A004409, Drawing Number ARC-HSL-DD-1152, dated 14 February 2017

2.2 Sign Exposure

The visible and readable distances for the proposed signs are shown in Figure 2.5.

Figure 2.5: Anticipated signage exposure



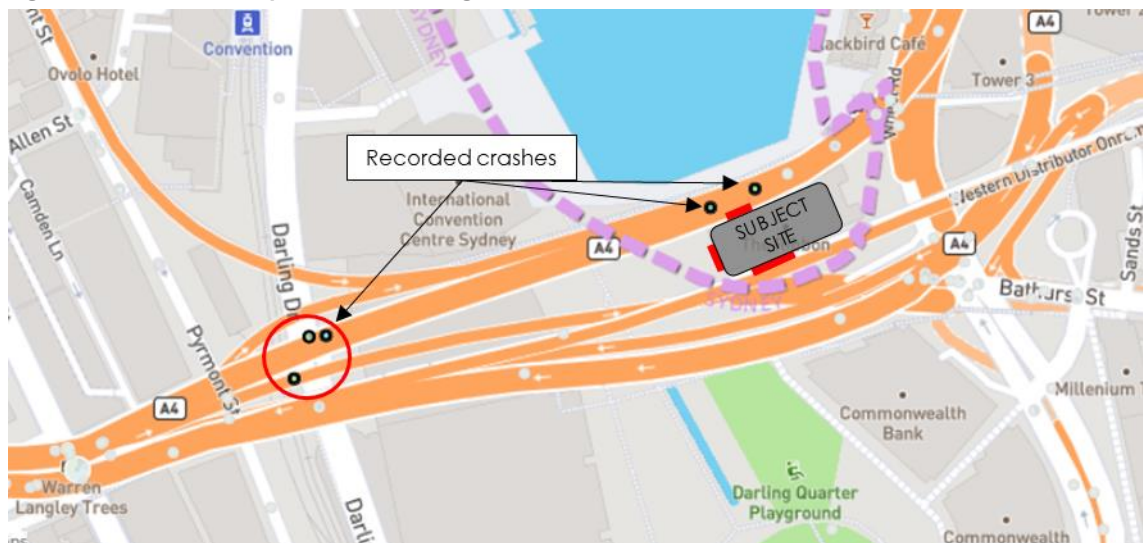
Base image source: Nearmap

2.3 Crash History

Historical crash data was obtained for the six-year period between 2012 and 2017 from the Transport for NSW Centre for Road Safety within the exposure distance of the proposed signs.

The data indicates that a total of six collisions occurred along the Western Distributor on approach to the proposed signs. These crashes were generally classified as typical rear-end crashes or side-swipes. The recorded collisions are shown in Figure 2.6.

Figure 2.6: Crash history data surrounding the site



Given the infrequent occurrence of crashes along the Western Distributor and the low severity of these crashes, the data surrounding the subject site does not present any indication that there is an existing road safety issue or that the proposed signs would have a negative impact on road safety.

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 of the NSW Guidelines.

3.1 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?*

All of the proposed signs would be fixed to the side of the building and therefore would not obstruct the movement of pedestrians, cyclists or drivers.

- 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.*

All of the proposed signs would be fixed to the side of the building and therefore the clear zone requirement is not relevant.

- 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.*

All of the proposed signs would be fixed to the side of the building and therefore the clear zone requirement 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 wind loading requirements will be met in the design of the proposed signs, noting that they are fixed to the side of the building.

Additional road clearance criteria for digital signs:

Digital signs greater or equal to 20sqm must ensure the following clearances:

- a) 2.5m from lowest point of the sign above the road surface if located outside the clear zone
- b) 5.5m from lowest point of the sign above the road surface if located within the clear zone or the deflection zone of a safety barrier, if installed.

If attached to road infrastructure (such as an overpass), the digital sign must be positioned so that no portion of the sign is lower than the minimum vertical clearance under the overpass or supporting structure.

The proposed digital sign (CIN-03) is less than 20 square metres. Notwithstanding this, the proposed sign would be fixed to the building and therefore would not impede pedestrian, cyclist or vehicular movement.

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.

All of the proposed signs would be fixed to the side of the building and would not impede pedestrian and wheel chair access.

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 be fixed to the side of the building and therefore would not obstruct the driver's view of the road.

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

The proposed signs would be fixed to the side of the building and therefore would not obstruct a pedestrian or cyclist's view of the road.

- 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 proposed signs would be fixed to the side of the building and therefore would not impact on the driver's view of the road or its alignment.

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

It is noted that CIN-02, CIN-03, CIN-10 and RET-01 are not expected to be visible from a road. The other proposed business identification signs could not be expected to distract a driver's attention from the road for an extended length of time (CIN-01, CIN-08 and CIN-09). Given that the proposed advertising signs (CIN-05 and CIN-07) are proposed to be parallel to the direction of travel along the Western Distributor off-ramp to Harbour Street (and targeted at Darling Harbour pedestrian activity rather than vehicles), the exposure time of these signs to drivers would be minimal. The static nature of the proposed advertising signs would also reduce the number of drivers viewing the proposed signs.

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 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 the Western Distributor, it is noted that the signs are located to the side of the road and on the side of the building, and therefore cannot interfere with the line-of-sight as relevant to the first two dot points.

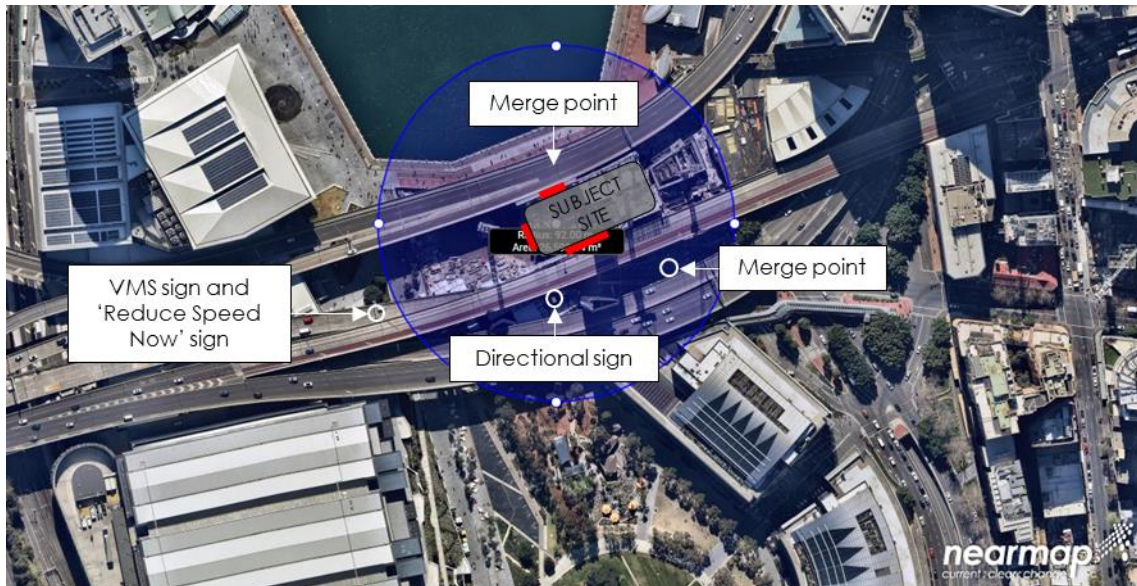
Notwithstanding the above, a posted speed limit of 60km/h (design speed of 70km/h) for traffic has been used to calculate the maximum SSD and ASD. The applicable SSD for the Western Distributor is approximately 92 metres. The SSD would reduce with corresponding speed limit reductions and/ or congestion.

There is a merge point for traffic on the Western Distributor to the north of the site located within the SSD and ASD, however given that the only proposed signs that are expected to be visible to drivers on approach to this location are business identification signs, the proposal is not expected to compromise the safety or function of this merge point.

There is also a diverge point on the Western Distributor off-ramp located within the SSD of the proposed signs. This diverge point is for vehicles turning left onto Harbour Street from the Western Distributor, however this occurs after the signs leave the field of view and therefore is not considered relevant to the assessment of the proposed signs.

There is a Variable Messaging Sign (VMS), 'Reduce Speed Now' sign and directional signage located on the off-ramp from the Western Distributor (the directional signage is within the SSD of the proposed signs, see Figure 3.1). Noting this, only the proposed business identification signs are expected to be visible to drivers on approach to the three traffic signs. As such, the proposed signs are not expected to act as a distraction to drivers viewing these traffic signs.

Figure 3.1: SSD and ASD from proposed signs



Base image source: Nearmap

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 proposed signs are located to the side of the road and on the side of the building, and therefore not anticipated to obstruct the view of the road to drivers. As discussed, it is expected that the business identification signs would be the signs primarily visible to drivers on the Western Distributor, with the advertising signs on the southern side of the building (CIN-05 and CIN-07) being visible to drivers for a brief period of time on the off-ramp to Harbour Street (however at a large horizontal viewing angle).

As such, the VMS, 'Slow Down Now' sign and directional sign on the off-ramp are expected to remain more prominent than the proposed signs and could not be expected to distract the driver at a 'critical time'.

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.

Additional criteria for digital signs:

- a) Sign spacing should limit drivers view to a single sign at any given time with a distance of no less than 150m between signs in any one corridor. Exemptions for low speed, high pedestrian zones or CBD zones will be assessed by RMS as part of their concurrence role.

Further advice is also available from RMS in relation to sign posting in certain locations such as hospitals, regional shopping centres and tourist areas.

No other advertising signage is located in 150 metres of the proposed sign.

3.2 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.*

As discussed, it is expected that the business identification signs would be the signs primarily visible to drivers on the Western Distributor, with the advertising signs on the southern side of the building (CIN-05 and CIN-07) being visible to drivers for a brief period of time on the off-ramp to Harbour Street (however at a large horizontal viewing angle).

As such, the VMS, 'Slow Down Now' sign and directional sign on the off-ramp is expected to remain more prominent than the proposed signs and could not be expected to distract the driver from, obstruct or reduce the visibility or effectiveness of the surrounding traffic signs.

- 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?*

It is assumed that sign content would comply with this criterion so as to not mislead drivers.

Additional criteria for digital signs and moving signs:

- a) *The image must not be capable of being mistaken:*
- i. *for a rail or traffic sign or signal because it has, e.g. 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*
 - ii. *as text providing driving instructions to drivers.*
- b) *The amount of text and information supplied on a sign should be kept to a minimum (e.g. no more than a driver can read at a short glance).*

The proposed digital sign (CIN-03) would not be visible to drivers and therefore it is not considered necessary to meet this requirement. This criterion does not apply to any other proposed signs as they are all static.

Criteria 3.3.2 – Dwell Time and Transition

Signs which change advertising content are more likely to distract a driver than signs with content that is static. In locations where digital and moving signs are assessed to be appropriate, the minimum dwell time and maximum transition time set out in the criteria must be applied. Longer dwell times may be necessary in more complex locations.

Dwell time criteria for digital signs:

- a) *Each advertisement must be displayed in a completely static manner, without any motion, for the approved dwell time as per criterion (b) below.*
- b) *Dwell times for image display must not be less than:*
 - i. *10 seconds for areas where the speed limit is below 80km/h.*
 - ii. *25 seconds for areas where the speed limit is 80km/h and over.*
- c) *Any digital sign that is within 250 metres of a classified road and is visible from a school zone must be switched to a fixed display during school zone hours.*
- d) *Digital signs must not contain animated or video/movie style advertising or messages including live television, satellite, Internet or similar broadcasts.*
- e) *The transition time between messages must be no longer than 0.1 seconds, and in the event of image failure, the default image must be a black screen.*

The proposed digital sign (CIN-03) would not be visible to drivers and therefore it is not considered necessary to meet this requirement. This criterion does not apply to any other proposed signs as they are all static.

Criteria 3.3.3 – Illumination and Reflectance

Illumination and reflectance criteria for non-digital signs:

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 2017].*
- 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:*
 - a. *be shielded so that glare does not extend beyond the sign*
 - b. *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.*

It is assumed that these operational requirements would be met.

Illumination criteria for digital signs:

- a) *Luminance levels must comply with the requirements in Table 6 [in the NSW Guidelines 2017].*
- b) *The images displayed on the sign must not otherwise unreasonably dazzle or distract drivers without limitation to their colouring or contain flickering or flashing content.*

It is assumed that these operational requirements would be met.

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 signage will not incorporate technology which interacts with in-vehicle electronic devices or mobile devices.

- 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 proposed digital sign (CIN-03) would not be visible to drivers and therefore it is not considered necessary to meet this requirement. All other proposed signs are static and therefore this criterion is not applicable for these signs.

4. Conclusion

There is a proposal to install several signs on the new Ribbon development in Darling Harbour. The proposed signs include business identification signs, static advertising signs and a digital scrolling message sign. The primary signs that will be visible to drivers include the business identification signs (CIN-01, CIN-08 and CIN-10) and two of the static advertising signs (CIN-05 and CIN-07). It is not expected that the proposed retail static advertising signs (RET-01), digital scrolling message sign (CIN-03) or two of the business identification signs (CIN-02 and CIN-10) would be visible from the 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, the proposal can be supported on road user safety grounds. Historic crash data in close proximity to the proposed location of the advertising sign does not suggest there is an existing road safety issue at this location.

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