Bayside Council
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NOTICE

Bayside Local Planning Panel – Planning Proposal

will be held in the Committee Room, Botany Town Hall
Corner of Edward Street and Botany Road, Botany
on **Tuesday 5 December 2023** at **4:00PM**
to consider items outside the public meeting
in accordance with the Operational Procedures

Members of the public do not have the opportunity to speak on these items.

ON-SITE INSPECTIONS

On-site inspections are undertaken beforehand.

AGENDA

1 ACKNOWLEDGEMENT OF COUNTRY

Bayside Council acknowledges traditional custodians: the Gadigal and Bidjigal people of the Eora nation, and pays respects to Elders past, present and emerging. The people of the Eora nation, their spirits and ancestors will always remain with our waterways and the land, our Mother Earth.

2 APOLOGIES

3 DISCLOSURES OF INTEREST

4 MINUTES OF PREVIOUS MEETINGS

Nil

5 REPORTS – PLANNING PROPOSALS

5.1 Planning Proposal - Pedestrian Bridge Signage (Existing), Wentworth Avenue, Eastlakes.....2

6 REPORTS – DEVELOPMENT APPLICATIONS

Nil

Meredith Wallace
General Manager

Bayside Local Planning Panel - Other Applications

5/12/2023

Item No	5.1
Subject	**Planning Proposal - Pedestrian Bridge Signage (Existing), Wentworth Avenue, Eastlakes**
Report by	Peter Barber, Director City Futures
File	SF23/7011

Summary

On 29 June 2023, the proponent submitted to Bayside Council a Planning Proposal for the inclusion of signage as an Additional Permitted Use (APU) on the pedestrian bridge over Wentworth Avenue, Eastlakes.

The Planning Proposal seeks to amend the *Bayside Local Environmental Plan 2021* as follows:

- Introduce new Additional Permitted Use in Schedule 1 which enables signage as a permissible use; and
- Amend the Additional Permitted Uses Map, Sheet APU_011 to identify where the proposed APU applies.

As part of the land is Council owned, the Planning Proposal is subject to an Independent Planning Consultant assessment. This assessment and report was carried out by The Planning Studio.

The form and content of the Planning Proposal complies with Section 3.33 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *LEP Making Guidelines* (NSW Department of Planning and Environment, August 2023).

It is recommended that the Planning Proposal be supported.

Report Recommendation

1 That the Bayside Local Planning Panel recommend to Council that pursuant to s3.33 of the *Environmental Planning and Assessment Act 1979,* the draft Planning Proposal for the land occupied by the existing pedestrian bridge over Wentworth Avenue (limited to the road reserve), Eastlakes, be submitted to the Department of Planning and Environment for a Gateway determination; and

2 That Bayside Local Planning Panel recommend to Council that following receipt of a Gateway Determination, public exhibition be undertaken and a submissions report be presented to Council.

Background

Applicant:

- Outdoor Systems Pty Limited

Owner:

- Bayside Council (Wentworth Avenue and airspace above).
- Sydney Water Corporation (golf course)

Site Description:

- Lot Description: ROAD R8292F. The golf course either side of the pedestrian bridge is formally described as Lot 1 DP 1144655.
- Address: R8292 Pedestrian Bridge over Wentworth Avenue, Eastlakes. Note that some of the Planning Proposal documentation may reference the suburb as Pagewood, as the bridge is located on the suburb boundary. Council's property information system confirms the suburb is Eastlakes.
- Zoning: SP2 Infrastructure Classified Road.

Figure 1: Subject Site (Source: Visual Assessment Report, Urbis, 2023)

Site Context

The subject site is limited to the land occupied by the pedestrian bridge over Wentworth Avenue at Eastlakes, within the Bayside Local Government Area. The bridge provides access between two sections of the Eastlakes Golf Course and is only accessible to those using the Golf Course. There are currently two (2) digital signage panels affixed to either side of the bridge, one facing north-west and the other facing south-east.

The immediate surroundings of the site are the Eastlakes Golf Course, and the Wentworth Avenue road corridor. Either side of Wentworth Avenue has significant vegetation and trees, which strongly defines the road corridor.

Further south, south-west and south-east of the site are low density residential dwellings. There are no residential dwellings within the immediate vicinity of the site. Further to the north, east and west of the site is the Golf Course and associated waterbodies. Wentworth Avenue and the M1 Motorway intersect the northern part of the golf course.

Existing Planning Controls

Under the *Bayside Local Environmental Plan 2021* (BLEP 2021) the site is currently zoned SP2 Infrastructure (Classified Road). The only permissible uses on this site are:

> *Aquaculture; Roads; The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose.*

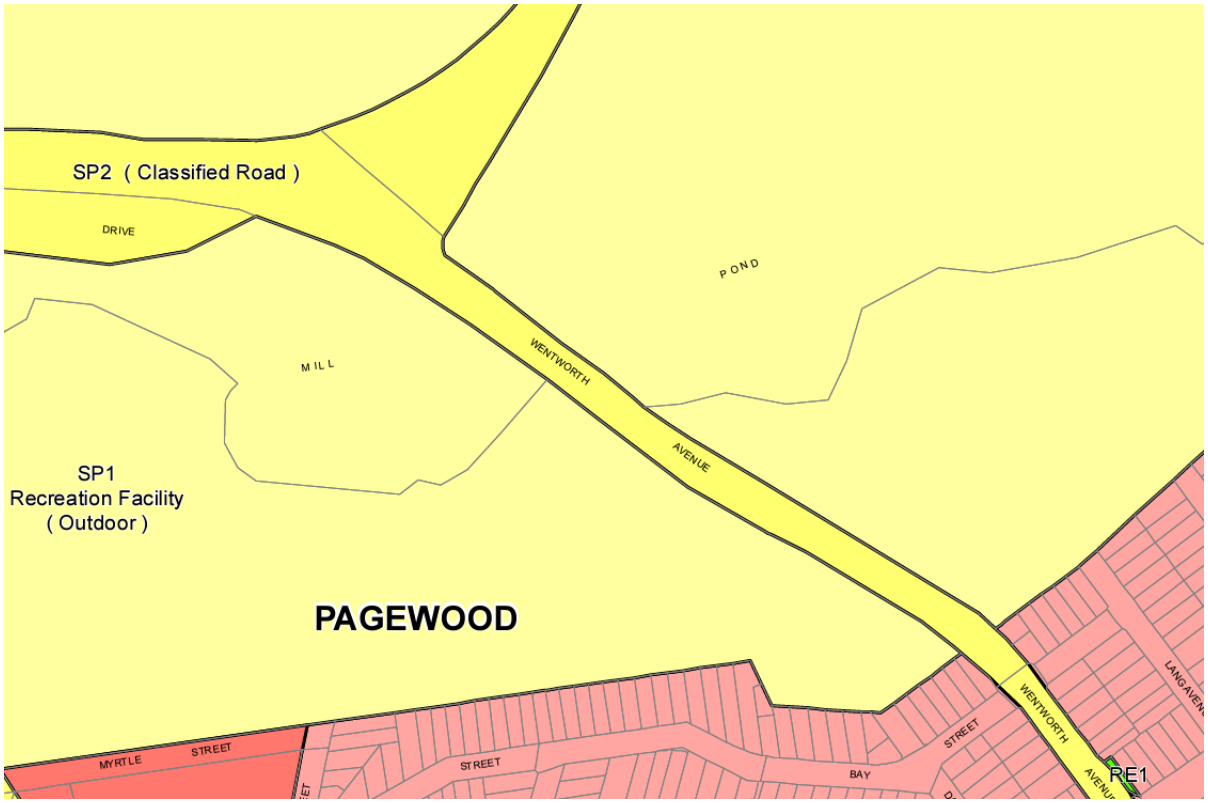

Figure 2: Zoning Map, Bayside Local Environmental Plan 2021

With regards to built form controls under the BLEP 2021, the site is not identified as having a maximum building height or Floor Space Ratio. The subject site is not listed as an item of environmental heritage under Schedule 5 of BLEP 2021, however, the site is in the general vicinity of the Botany Water Reserves, which are listed as part of State Heritage Landscape Item Botany Water Reserves, Item no. 160.

Figure 3: Heritage Map (green denotes Landscape Heritage Items), Bayside Local Environmental Plan 2021

The adjoining land is also recognised as being environmentally significant and is mapped as Wetland, Stream Order 2, and Terrestrial Biodiversity.

Figure 4: Stream Order Map (blue denotes Stream Order 2), Bayside Local Environmental Plan 2021

Figure 5: Wetland Map (light blue denotes wetland), Bayside Local Environmental Plan 2021

Figure 6: Terrestrial Biodiversity Map (green denotes Biodiversity), Bayside Local Environmental Plan 2021

Draft Planning Proposal Summary

The objective of the Planning Proposal (PP) is to amend the BLEP 2021 to include an 'Additional Permitted Use' within Schedule 1 of the BLEP 2021 to make signage a permissible use on the subject site.

The Wentworth Avenue bridge has existing digital signage panels on each side of the bridge. The advertising signage was originally approved through a Land and Environment Court appeal in 2006, when it was a permissible use within the relevant zoning at the time.

In 2016, the land was zoned SP2 Infrastructure under the Botany Bay LEP 2013 and Council approved the conversion of the advertising signs to digital panels on the basis that the signage benefitted from existing use rights. This existing consent either has expired, or is expected to expire, in the short term.

Under the current zoning, advertising signage is a prohibited use and any subsequent Development Applications to extend the current use would not be permissible. Accordingly, the proponent has lodged a Planning Proposal with Council to expand the permissible uses to include signage.

Assessment of Draft Planning Proposal

Environmental Planning and Assessment Act 1979 (EP&A Act)

The Department of Planning and Environment's (DPE) publication *'Local Environmental Plan Making Guideline'* – issued under s3.33 (3) of the EP&A Act – provides guidance and information on the process for preparing Planning Proposals. The assessment of the submitted draft PP has been undertaken in accordance with the latest version of this guide (dated August 2023).

Part 3, page 72 of The Guide clearly states that:

> *Strategic Merit means a proposal has alignment with the NSW strategic planning framework and government priority.*
>
> *The planning proposal must demonstrate how the proposed amended or principal LEP will give effect to the strategic planning framework to then ensure that the proposal has strategic merit.*
>
> *Any planning proposal that seeks to address this criteria or a government priority needs to be supported with clear and appropriate technical studies and justification.*
>
> *It is encouraged that where a planning proposal fails to adequately demonstrate strategic merit the relevant PPA is unlikely to progress the proposal, despite any site-specific merit it may have.*

Strategic Merit of Planning Proposals

Section 9.1 Local Planning Directions Issued by the Minister

Section 9.1(2) Local Planning Directions issued by the Minister (s.9.1 directions) set out what a Relevant Planning Authority (RPA) must do if a s.9.1 direction applies to a Planning Proposal and provides details on how inconsistencies with the terms of a direction *may* be justified.

An assessment of the draft Planning Proposal against the applicable s.9.1 directions is provided in **Table 1** below:

Table 1: Draft Planning Proposal consistency with relevant s9.1(2) Local Planning Directions (latest version issued on 21 September 2023)

Local Planning Direction	Draft Planning Proposal consistency with terms of direction	Consistent: Yes/ No (If No, is the inconsistency adequately justified?)
3.2 Heritage Conservation	The objective of this direction is to conserve items, areas, objects and places of environmental heritage significance and indigenous heritage significance. Whilst the site is not heritage listed, this direction is relevant as it adjoins a state listed heritage item. The proposal has adequately demonstrated that the proposed amendment is unlikely to impact on the adjoining heritage items. This is detailed later in the report.	**Yes**
4.2 Coastal Management	The objective of this direction is to protect and manage coastal areas of NSW. The planning proposal site is above a road corridor adjacent to the Mill Stream and Botany Wetlands Open Space Corridor, however, due to the nature of the requested amendment and likely outcomes, the Planning Proposal is not contrary to the objectives of the Ministerial Direction.	**Yes**

State Environmental Planning Policies (SEPPs)

An assessment of the draft Planning Proposal against the relevant SEPPs is provided in **Table 2**, below.

Table 2: Relevant State Environmental Planning Policies

Name of SEPP	Compliance of draft Planning Proposal with SEPP	Complies Yes/ No
State Environmental Planning Policy (Resilience and Hazards) 2021	The SEPP covers coastal management and hazardous or offensive development. Whilst the site is adjacent to the Mill Stream and Botany Wetlands Open Space Corridor, given the nature of the proposed amendment, it is unlikely that future development will conflict with provisions of the SEPP.	**Yes, subject to assessment of future Development Applications.**
State Environmental Planning Policy (Industry and Employment) 2021	Chapter 3 of the SEPP relates to Advertising and Signage which is relevant for the Planning Proposal. The Planning Proposal is accompanied by several specialist reports including traffic safety, visual impact and heritage which have demonstrated that the impacts of future development as permitted by the proposed development will likely be acceptable, subject to detailed assessment of future Development Applications.	**Yes, subject to assessment of future Development Applications.**
State Environmental Planning Policy (Transport and Infrastructure) 2021	Given the sites location above Wentworth Ave, it is likely that future applications will need to be referred to Transport for NSW. The Planning Proposal is accompanied by a Traffic and Road Safety Assessment and Lighting Impact Assessment which considers the proposal against key parts of the SEPP and supporting guidelines.	**Yes, subject to assessment of future**

Name of SEPP	Compliance of draft Planning Proposal with SEPP	Complies Yes/ No
	These reports have identified that future development is capable of complying with these requirements subject to future Development Applications and further assessment.	**Development Applications.**

There are no other SEPPs applicable to the draft Planning Proposal.

Strategic Planning Framework – Regional and District

Regional, sub-regional and district plans and strategies include outcomes and specific actions for a range of different matters including housing and employment targets, and identify regionally important natural resources, transport networks and social infrastructure.

An assessment of the draft Planning Proposal's consistency with the strategic planning framework is provided in **Table 3**, below.

Table 3: Strategic Planning Framework

Directions, priorities, objectives and actions	Draft Planning Proposal consistency with Strategic Plan	Consistent Yes/ No
Regional Plans – The Greater Sydney Region Plan – A Metropolis of Three Cities		
The Greater Sydney Region Plan: *A Metropolis of Three Cities* (Region Plan) was released in March 2018. An assessment of the draft PP against the objectives of the Region Plan has been carried and the following fundamental inconsistencies have been identified:		
Objective 13: Environmental heritage is identified, conserved and enhanced. *Strategy 13.1 managing and monitoring the cumulative impact of development on the heritage values and character of places.*	The initial planning proposal as submitted did not consider the potential impacts of the proposed land use on the scenic values of the heritage listed Botany Water Reserves or Botany Wetlands. Following a request for further information from Council, the proposal has been updated to adequately address these items. The Planning Proposal considers the impact of the proposed amendments to the BLEP 2021. The supporting Statement of Heritage Impact identifies that *'The continued use of the advertising signage would not engender a negative impact on the heritage values or character of the heritage landscape. The proximity of the signage to the reserves has been identified, and it is the opinion of Heritage 21 that the continued use of such signage respects the heritage values of the place. The impact of the billboards is mitigated and managed by the surrounding landscapes shielding the view of the signs from the golf course and the nearby reserves.'*. In support of the above, the Planning Proposal is also accompanied by a Visual Impact Assessment, which provides a detailed assessment of the visual impact of the proposed amendment. The Visual Impact Assessment and supplementary report identify that the signage is sufficiently distanced and screened by intervening topography from the heritage item to an extent that the visual landscape and scenic quality of the items will not be adversely affected.	Yes

Directions, priorities, objectives and actions	Draft Planning Proposal consistency with Strategic Plan	Consistent Yes/ No
	Accordingly, it is considered that the Planning Proposal has appropriately considered this objective and ensures that the proposed amendment will not have an unacceptable level of impact on heritage values and character of places surrounding the subject site.	
Objective 28: Scenic and Cultural Landscapes are protected. *Strategy 28.1: Identify and protect scenic and cultural landscapes.* *Strategy 28.2: Enhance and protect views of scenic and cultural landscapes from the public realm*	As detailed above, the proposal is supported by a Heritage Impact Statement and a Visual Impact Assessment that sufficiently details that the proposal will not have an unacceptable impact on the views of scenic and cultural landscapes.	Yes
District Plan - Eastern City District Plan (ECDP)		
The Eastern City District Plan (ECDP) is a guide for implementing the Region Plan. An assessment of the draft PP against the priorities of the ECDP has been carried and the following is identified:		
Planning Priority E6 Creating and renewing great places and local centres and respecting the District's heritage and corresponding Action 20.C of the Eastern City District Plan.	The initial Planning Proposal as submitted did not consider the potential impacts of the proposed land use on the scenic values of the heritage listed Botany Water Reserves or Botany Wetlands. Following a request for further information from Council the proposal has been updated to adequately address these items. The proponent has submitted supporting supplementary reports which now appropriately considers the impact of the proposed amendments to the BLEP 2021. The supporting Statement of Heritage Impact identifies that *'The continued use of the advertising signage would not engender a negative impact on the heritage values or character of the heritage landscape. The proximity of the signage to the reserves has been identified, and it is the opinion of Heritage 21 that the continued use of such signage respects the heritage values of the place. The impact of the billboards is mitigated and managed by the surrounding landscapes shielding the view of the signs from the golf course and the nearby reserves.'.* Accordingly, it is considered that the Planning Proposal has appropriately considered this objective and ensures that the proposed amendment will not have an unacceptable level of impact on heritage values and character of places surrounding the subject site.	Yes
Planning Priority E15 Protecting and enhancing bushland and biodiversity *Objective 27: Biodiversity is protected, urban bushland and remnant vegetation is enhanced.*	The Ecological Assessment submitted as part of the revised Planning Proposal confirms that areas of biodiversity value in the adjacent land would not be impacted by the ongoing operation and maintenance of the signs. The submitted revised Planning Proposal also identifies that *'The continued use of the advertising signage would not engender a negative impact on the heritage values or character of the heritage landscape. The proximity of the signage to the reserves has been identified, and it is the opinion of Heritage 21 that the continued use of such signage respects the heritage values of the place. The*	Yes

Directions, priorities, objectives and actions	Draft Planning Proposal consistency with Strategic Plan	Consistent Yes/ No
Action 62: Protect and enhance biodiversity by: managing urban development and urban bushland to reduce edge-effect impacts. *Planning Priority E16 Protecting and enhancing scenic and cultural landscapes* *Objective 28: Scenic and cultural landscapes are protected.* *Action 64: Enhance and protect views of scenic and cultural landscapes from the public realm.*	*impact of the billboards is mitigated and managed by the surrounding landscapes shielding the view of the signs from the golf course and the nearby reserves.'* In support of the above, the Planning Proposal is also accompanied by a Visual Impact Assessment, which provides a detailed assessment of the visual impact of the proposed amendment. The Visual Impact Assessment and supplementary report identify that the signage is sufficiently distanced and screened by intervening topography from the heritage item to an extent that the visual landscape and scenic quality of the items will not be adversely affected. Accordingly, it is considered that the Planning Proposal has appropriately considered the objectives and ensures that the proposed amendment will not have an unacceptable level of impact on biodiversity, heritage values and scenic and cultural landscapes surrounding the subject site.	

Strategic Planning Framework – Local

Bayside Local Strategic Planning Statement (LSPS)

Council's LSPS sets the 20-year vision for the Bayside LGA, including identifying the special character and values to be preserved and how change will be managed. The LSPS explains how Council is implementing the planning priorities and actions in the relevant district plan, in conjunction with its Community Strategic Plan.

The draft PP is assessed against the following relevant Planning Priorities identified in the Bayside LSPS, as noted in **Table 4**, below:

Table 4: Bayside LSPS

Bayside Planning Priority	Action	Draft Planning Proposal consistency
Bayside Planning Priority 9: Manage and enhance the distinctive character of the LGA through good quality urban design, respect for existing character and enhancement of the public realm	*9.1 Council will encourage good built form outcomes through Design Excellence Competitions, Design Excellence Guidelines and Design Review Panel.* *9.2 Update planning controls for Bayside DCP 2020 to give clearer guidance to applicants and their architects about Council's expectations for high standards of design.*	The proposal achieves consistency with this priority by updating the existing planning framework through formalising the existing use and supporting the application of a standard DA assessment process to future DAs for the proposed use. This ensures that Council's rigorous DA assessment process will continue to apply to the site, ensuring good built form outcomes.
Bayside Planning Priority 11: Develop clear and appropriate controls for development of	*11.3 Council will protect, celebrate and promote*	Whilst the proposal is adjacent to heritage significant items, it has demonstrated that the development will not unreasonably impact the heritage significant items.

heritage items, adjoining sites and within conservation areas.	*Bayside's rich cultural heritage.*	
Bayside Planning Priority 22 Protect and enhance scenic and cultural landscapes	*22.1 Review the existing provisions relating to scenic and cultural landscape protection and consider the inclusion of a local provision in the Bayside LEP 2020.*	The submitted revised Planning Proposal identifies that *'The continued use of the advertising signage would not engender a negative impact on the heritage values or character of the heritage landscape. The proximity of the signage to the reserves has been identified, and it is the opinion of Heritage 21 that the continued use of such signage respects the heritage values of the place. The impact of the billboards is mitigated and managed by the surrounding landscapes shielding the view of the signs from the golf course and the nearby reserves.'.* In support of the above, the Planning Proposal is also accompanied by a Visual Impact Assessment, which provides a detailed assessment of the visual impact of the proposed amendment. The Visual Impact Assessment and supplementary report identify that the signage is sufficiently distanced and screened by intervening topography from the heritage item to an extent that the visual landscape and scenic quality of the items will not be adversely affected. Accordingly, it is considered that the Planning Proposal has appropriately considered this objective and ensures that the proposed amendment will not have an unacceptable level of impact on heritage values and the character of places surrounding the subject site.

Bayside Community Strategic Plan 2032

Noting the nature of the proposed amendment to the BLEP 2021, the proposed additional land use is not inconsistent with any of the objectives and associated strategic directions in the Bayside Community Strategic Plan 2032.

Local Plans

Bayside Local Environmental Plan 2021 (BLEP 2021)

The proposed amendments will only seek to include an additional permitted land use on the subject site, with the rest of the BLEP 2021 continuing to apply. Whilst it is noted that any subsequent application for signage would be subject to assessment as a Development Application, below is a preliminary consideration of the proposed amendment and relationship to relevant sections of the BLEP 2021.

Table 5: BLEP 2021

Control	Objective	Consistency
4.3 Height of Building	(a) to ensure that building height is consistent with the desired future character of an area, (b) to minimise visual impact of new development, disruption of views, loss of privacy and loss of solar access to existing development, (c) to nominate heights that will provide an appropriate transition in built form and land use intensity.	The site is not subject to a maximum building height. The proposal does not seek to amend the current building height provisions as they apply to the site. Given that the signage would be limited to being erected on the existing bridge, it is not considered that any maximum building height would be required.
4.4 Floor Space Ratio	(a) to establish standards for the maximum development density and intensity of land use, (b) to ensure buildings are compatible with the bulk and scale of the existing and desired future character of the locality, (c) to minimise adverse environmental effects on the use or enjoyment of adjoining properties and the public domain, (d) to maintain an appropriate visual relationship between new development and the existing character of areas or locations that are not undergoing or likely to undergo a substantial transformation, (e) to ensure buildings do not adversely affect the streetscape, skyline or landscape when viewed from adjoining roads and other public places such as parks and community facilities	The site is not subject to a maximum floor space ratio. The proposal would seek to permit signage on the subject site. This would not constitute gross floor area and therefore would not need to be addressed by this clause.
5.10 Heritage conservation	(a) to conserve the environmental heritage of Bayside, (b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views, (c) to conserve archaeological sites, (d) to conserve Aboriginal objects and Aboriginal places of heritage significance	Noting that the site is in the vicinity of existing heritage items, this provision would require future consent items to consider the heritage impacts of future development. The proposal has been accompanied by a Statement of Heritage Impact which identifies that any future development would be unlikely to result in unacceptable impacts on the surrounding heritage items. This report has been reviewed independently and has been updated in response to further considerations identified by the peer reviewer. These matters have now been addressed. Impacts on the adjacent heritage item would need to be

Control	Objective	Consistency
		considered as part of any subsequent DA assessment, however, it is likely that these matters would be able to be addressed as part of this process.
6.4 Terrestrial Biodiversity	(a) protecting native fauna and flora and the ecological processes necessary for their continued existence, and (b) encouraging the recovery and conservation of native fauna and flora and their habitats, and (c) protecting, restoring and enhancing biodiversity corridors	The subject land is partially identified as 'Biodiversity' and accordingly, this clause applies. Noting that the subject land currently contains existing signage, and that any such signage would be attached to the existing bridge, it is unlikely that future DAs would not be able to unreasonably address the objectives and requirements of this clause.
6.5 Riparian land, wetlands and waterways	(a) water quality within waterways, (b) the stability of the beds and banks of waterways, (c) native flora and fauna and their habitats, (d) ecological processes within waterways and riparian lands, (e) scenic and cultural heritage values of waterways and riparian lands.	The subject land is adjacent to land identified as 'Wetland' and is within 20m of a 'Stream Order 2', and accordingly this clause applies. Noting that the subject land currently contains existing signage, and that any such signage would be attached to the existing bridge, it is unlikely that future DAs would not be able to unreasonably address the objectives and requirements of this clause.

Bayside Development Control Plan 2022 (BDCP 2022)

The proposal seeks the inclusion of an additional land use for signage on the subject land. Future DAs for the subject land are unlikely to be inconsistent with the requirements of the BBDCP 2013.

It is noted that the BDCP 2022 includes a specific section for signage, however, this only applies to land zoned as Business Centres (B1, B2, B3, B4 zones), Employment Zones (B5, B7, IN1, IN2), Residential Zones (R2, R3, R4), Private Recreation Zone (RE2) and the Working Waterways Zone (W3). Therefore, it would not apply to the subject site.

Other Considerations

Traffic

The proposal is supported by a Traffic and Road Safety Assessment. This report has been peer reviewed, and identified that:

> *"The application has been assessed in accordance with the Transport Corridor Outdoor Advertising and Signage Guidelines – Assessing Development Applications under SEPP*

64 (TCOASG). There are no issues identified of a traffic or transport nature that would preclude the approval of the Planning Proposal.

Notwithstanding this, any future development application would need to consider in greater detail the following matters:

- *Development of an agreed vegetation management plan.*
- *That there are no tunnelling effects, passive surveillance or pedestrians' "views" related impacts associated with movements across the bridge, as a result of the signage elements in accordance with the requirements of the TCOASG.*

In addition to the above, Bayside Council may need to consider further:

- *Whether the DCP controls surrounding item 3.16.2 C2 regarding the permissibility of enabling signs to operate between 10pm and 6am are appropriate for this site.*
- *Confirm that the existing signs have been installed to include a 'fall arrest' system."*

Given the above, it is considered that the proposal has adequately considered the potential traffic impacts of the proposal and that these potential impacts are acceptable. It is noted that the matters raised in the peer review would need to be further considered as part of any subsequent Development Application for the proposed use.

Heritage Impact

The proposal was supported by a Statement of Heritage Impact. This report was peer reviewed and it was identified that the proposal needed to consider the broader scenic qualities of the adjacent heritage item. In response, the proponent submitted a revised Statement of Heritage Impact which concluded that:

"… The proposed development complies with pertinent heritage controls and would engender neutral impact on the heritage significance of the subject site and heritage items in the vicinity."

The revised Statement of Heritage Impact has been reviewed and it is considered that the proposal adequately considers the adjacent heritage items.

Lighting Impact

The current signage on the site is an electronic sign. Any future signage is also likely to be similarly illuminated and as such, the proposal is accompanied by a Lighting Impact Assessment. The Lighting Impact Assessment was initially reviewed by the independent Planning Consultant, who identified some inconsistencies with the report which required it to be updated. This report has since been updated to address the issues raised.

The revised report details requirements that future illuminated signage would need to adhere to including:

- *State Environmental Planning Policy (Industry and Employment) 2021*
- *Transport Corridor Outdoor Advertising & Signage Guidelines 2017*
- AS 4282-2019 *Control of the Obtrusive Effects of Outdoor Lighting*.
- *CASA Manual of Standards Part 139 (Aerodromes)* - Section 9.143 and 9.144

Noting that these requirements would need to be taken into account as part of any subsequent DAs for the proposed use, it is considered that the proposal has adequately assessed the likely lighting impacts of future development. As such, it is considered that the proposed amendment would be unlikely to result in a development which would have unacceptable light impacts on surrounding receivers.

Visual Impact

The proposal is accompanied by a Visual Impact Assessment which considers the impacts of the proposed additional land use. The initial Visual Impact Assessment identified that the signage would have minimal impact on views, however it relied primarily on the retention of existing trees and landscaping. Following a review of the proposal by the independent Planning Consultant, the Visual Impact Assessment has been updated to consider if significant tree loss occurred.

The revised Visual Impact Assessment concludes that:

- *Existing visibility to the signs is predominantly constrained to the road corridor and or close elevated locations within adjacent golf courses.*
- *Removal or significant pruning of trees within the road reserve of Wentworth Avenue will increase potential visibility across immediate areas of the Lakes and to a lesser extent East Lakes golf course.*
- *Assuming total tree removal, the blocking effects of topography, vegetation and built forms beyond and either side of the road corridor will continue to screen the proposal from more distant view locations within surrounding golf courses.*
- *Trees along the southern side of Wentworth Avenue are setback from the carriageway by up to 7.5 metres, adjacent to a cycle way and in our opinion are unlikely to be trimmed to an extent that would increase visibility. Further, given the setback, it is unlikely that trees would be removed to manage overhanging vegetation or, for example, to facilitate road widening.*
- *Vegetation is similarly set back along the northern side of the carriage however to a more limited extent. Given the continuous canopy it is unlikely that trimming of isolated overhanging trees would significantly increase visibility to the signs.*
- *Potential view impacts for golf course users are unlikely to be direct or clear (free of any screening effects) would be short term and from moving, viewing situations and as such do not attract any 'weight' in terms of significance.*
- *If visible in more distant locations such as the Lakes Golf Club building and surrounding areas north of Mills Stream, the proposal will be difficult to discern given the spatial separation afforded by the golf course, wetlands, intervening built form including roadways and golf course vegetation.*
- *The proposal does not impact on any documented views or heritage values as outlined in the Heritage Impact Statement provided by Heritage 21 or the amended HIS issued in October 2023. Based on views captured from historically open areas within East lakes Golf course, we conclude that the signs are sufficiently distanced and screened by intervening topography from the heritage item to an extent that the visual landscape and scenic quality of the items will not be adversely affected*
- *This statement remains valid should some or all of the vegetation along both sides of Wentworth Avenue be removed. The screening effects of vegetation within adjoin parts East Lakes and The Lakes golf courses combined with underlying topography (local ridgelines and knolls) will further reduce future potential views creates through streetscape vegetation removal.*
- *In our opinion, any increased potential visibility of the signs due to the removal of vegetation would generate low visual effects and negligible or visual impact overall.*

- *The Planning Proposal, in relation to continuing use of the digital signs, is supported on visual impacts grounds.*

Given the above, it is considered that the proposed additional land use is unlikely to result in unacceptable visual impacts, subject to further detailed assessment of any future Development Application.

Conclusion

As detailed in the above, the proposed amendment to the *Bayside Local Environmental Plan* 2021 for the inclusion of an additional permitted use in Schedule 1 for the use of the subject land as 'signage' has been prepared in accordance with S.3.33 of the *Environmental Planning & Assessment Act 1979* and the relevant guidelines prepared by the NSW Department of Planning & Environment including the *Local Environmental Plan Making Guideline August 2023*.

The PP provides justification for the proposed amendment to BLEP and is considered to have site specific merit. Further it does not conflict with any strategic planning objectives, plans or policies applicable to the site.

The PP is a necessary response in order to achieve the intended outcomes of the proposal in response to the zoning of the site, which currently prohibits signage, and the provisions of *State Environmental Planning Policy (Industry and Employment) 2021*.

It is therefore recommended that the Bayside Local Planning Panel recommend to Council that pursuant to s3.33 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) the draft Planning Proposal Amendment to *Bayside Local Environmental Plan 2021* Wentworth Avenue, Eastlakes be submitted to the Department of Planning and Environment for a Gateway Determination.

Attachments

1 Draft Planning Proposal Report ⇩
2 Statement of Heritage Impact ⇩
3 Lighting Impact Assessment ⇩
4 Visual Impact Assessment ⇩
5 Traffic & Safety Assessment Report ⇩
6 Ecological Inspection Report ⇩
7 Bridge Detail Survey ⇩

PLANSIGHT PTY LTD
Town Planners

PLANNING PROPOSAL

Amendment to Bayside Local Environmental Plan 2021
Wentworth Avenue Eastlakes

Additional Permitted Use to allow Signage

Planning Proposal to amend Bayside LEP 2021 to enable signage as a Schedule 1 additional permitted use

Wentworth Avenue Eastlakes, Pedestrian Bridge linking Eastlakes Golf Course prepared for

Outdoor Systems

C.F. Blyth RPIA, Director

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Appendix 1: Scoping Proposal Advice, Bayside Council 13 March 2023

1.0 Introduction

1.1 Background

The NSW Land & Environment Court upheld appeal No.11019 of 2006 that proposed the erection of a bridge and associated advertising signage at Eastlakes Golf Course, Wentworth Avenue Eastlakes (Original Consent). The Original Consent was granted on 30th November 2006.

A Section 96 modification application was submitted to Bayside Council (**Council**) in 2016 to modify the approved signage to accommodate digital LED panels and approved by Council on 27 October 2016. The consent was activated and LED panels were erected on either side of the bridge as per the S.96 approval.

There has been some debate between the Proponent and Council as to whether the Original Consent ceased 15 years after the date on which it was granted (being 29 November 2021) by virtue of the former the *State Environmental Planning Policy No.64 Advertising and Signage*, or, whether the Original Consent ceases on 31 December 2025 by virtue of Condition of Consent 22(a). 13 imposed on the Original Consent.

Irrespective of the date on which the Original Consent ceases or ceased, the ongoing use of the advertising signage will require an amendment to the LEP, either presently or prior to December 2025, to render the signage use permissible at the site.

1.2 Zoning History

The Wentworth Avenue bridge has digital signage panels erected on each side of the structure. When originally approved at appeal in 2006 the signage was permissible in the applicable zoning. When a conversion to digital panels was approved in 2016 by Council, the site was zoned SP2 Infrastructure in the Botany Bay LEP 2013 and signage of the type in existence was not a permissible use. It was accepted however by Council, that the signage benefitted from Existing Use Rights and a modification to the existing consent was approved.

The site is zoned now zoned SP2 Infrastructure (Classified Road) in Bayside LEP 2021 (BLEP). Signage of the type in existence on the bridge remains a use that is not permissible in the zone. Chapter 3 Advertising and Signage of State Environmental Planning Policy (Industry and Employment) 2021 provides at Cl.3.12 Duration of Consents that a consent granted under the Part ceases to be in force 15 years after the date on which it becomes effective.

Given that the Original Consent was issued on 30th November 2006, and on one view, may have expired 15 years after the date on which it became effective under S.83, it may be the case that the consent expired on 29th of November 2021.

In the alternative, if it is the case that the Original Consent does not expire until 31 December 2025, an amendment to the BLEP will be required to make the use of the signage permissible after that date.

1.3 Pre Lodgement Consultation

As required by the NSW Department of Planning and Environment document "Planning Proposals, A Guide to preparing planning proposals", a pre lodgement meeting was held with representative of Council's strategic Panning Branch on 9th March 2023 to respond to the scoping proposal previously submitted and discuss the intent of the Planning Proposal (PP) and what specialist consultant reports may be required in support.

Council staff were generally in support of the PP and the manner in which that was proposed to amend BLEP by including provisions within Schedule 1 of the LEP that would make the signage a permissible use on the subject site. A copy of the Scoping Proposal Advice is enclosed at Appendix 1.

The site specific nature of the proposal and the fact that the desired result was already in place pursuant to a S.96 approval dating from 2016 was noted as being significant, along with the fact that any impacts related to the operation of the signage can be factually documented through an analysis of the history of since issue of the S.96 approval.

Required specialist studies were noted as:

- *Traffic & Road Safety Assessment*
- *Visual Impact Assessment Report*
- *Lighting Impact*
- *Heritage Impact*
- *Illumination impacts on the local environment and/or biodiversity*

Subsequent to issue of advice from Council dated 13 March 2023 listing amongst other things the above studies, the applicant has been advised that the requirement to submit an illumination report relating to impacts on the local environment and/or biodiversity has been withdrawn.

In response to a request for further information dated 13th October 2023 the above studies with the exception of the Traffic & Road Safety Assessment have been expanded. In addition an ecological assessment report prepared by Lesryk Environmental Pty Ltd has been prepared.

2.0 Site Location & Context

The site of the proposal is the pedestrian golf course access bridge erected over Wentworth Avenue at Eastlakes, formerly described as part Lot 1 in DP 1144655.

Fig 1. Aerial photograph of site location

The context of the site is the road corridor of Wentworth Avenue beyond which in either direction north and south lies Eastlakes Golf Course. The sides of the road are lined with vegetation.

The closest residential land is located approximately 250m to the south east. Due to the location of the signage within the road corridor, the physical separation distance, roadside vegetation and the orientation of the houses, residential land use is not part of the immediate site context.

3.0 Objectives and Intended Outcome

The objective of the proposal is to amend BLEP by including an 'additional permitted use' provision within Schedule 1 of the BLEP that would make Signage a permissible use on the subject site.

The use sought is already in place and has a history of approvals explained in Section 1.0 of this report. The necessity for the PP has arisen due to the change of zoning that has occurred over time since the original consent dating from 2006 and the interrelationship with State Environmental Planning Policy (Industry and Employment) 2021.

The existing signage panels would remain in position in the exact format they currently adopt. No change to the manner in which the digital panels operate is proposed. After a successful amendment to the BLEP a fresh development application would be submitted which would seek consent for the continued use of the bridge for the subject signage panels subject to State Environmental Planning Policy (Industry and Employment) 2021 and the Transport Corridor Outdoor Advertising Guidelines, November 2017.

The proposal is not considered significant in the strategic context as signage has constituted part of the existing environment since it was erected pursuant to the Original Consent in 2006 and modified to digital panels via a S.96 approval in 2016 . Accordingly as an enabling amendment and subject to the issue of a fresh development consent no physical or other environmental change will result.

Subsequent to the making of an amendment to the BLEP, a development application will follow for the use of the bridge to carry the digital panels and upon an approval being issued the provisions of Cl.3.12 Duration of Consents in Chapter 3 *State Environmental Planning Policy (Industry and Employment) 2021* will apply.

This clause applies a 15 year life for any consent issued pursuant to that Part. At Part (2) of Clause 3.12 the consent authority may apply a period less than 15 years only if-

(a) before the commencement of this Part, the consent authority had adopted a policy of granting consents in relation to applications to display advertisements for a lesser period and the duration of the consent specified by the consent authority is consistent with that policy, or

(b) the area in which the advertisement is to be displayed is undergoing change in accordance with an environmental planning instrument that aims to change the nature and character of development and, in the opinion of the consent authority, the proposed advertisement would be inconsistent with that change, or

(c) the specification of a lesser period is required by another provision of this Chapter.

These existing provisions of the SEPP allow for the consideration of strategic matters in the assessment of a development application for signage.

4.0 Explanation of Provisions

The PP seeks to include an Additional Permitted Use (APU) in Schedule 1 of Bayside Local environmental Plan to facilitate use of the subject land for Signage.

It is proposed that the following amendment be made to the LEP:

1. Amend Schedule 1 of the LEP to include the following additional permitted use

Use of certain land at Wentworth Avenue Eastlakes

(1) This clause applies to the following land:
part Lot 1 in DP 1144655
(2) Development for the purpose of ***signage*** *is permitted with development consent*

2. Amend the Additional Permitted Uses map, Sheet APU_011, that accompanies Bayside LEP 2021 to identify where the proposed APU applies.

The PP is supported due to the fact that the intended use is already in existence and has a history of approval. No alteration or change to the manner in which the use operates is proposed to occur. The use has operated without adverse environmental impact since its commencement.

5.0 Justification of Strategic and Site Specific Merit

The Environmental Planning and Assessment Act 1979 (the EP&A Act) and the Environmental Planning and Assessment Regulation 2000 (EPA Reg.) provide for the following amongst other matters:

- *Provisions concerning the rezoning of land;*
- *requirements for preparation of a local environmental study as part of a rezoning process;*
- *matters to have regard to in the determination of a development application;*
- *approval permits etc necessary under other legislation from obtained from various authorities*

This PP has been prepared in accordance with the requirements set out in Section 3.33 of the EP&A Act in that it explains the intended outcomes of the proposed instrument. It also provides justification and an environmental analysis of the proposal.

5.1 Need for Proposal

The PP is not the result of a strategic study or report. The PP is a necessary response in order to enable the continuation of the use of the site for Signage as an additional permitted use. It is a response to the zoning of the site which currently prohibits signage and the provisions of State Environmental Planning Policy (Industry and Employment) 2021.

As such a PP is the most appropriate way to achieve the inclusion of signage as a permitted land use on the identified site.

5.2 Relationship to Strategic Planning Framework

5.2.1 Consistency with Objectives and Actions within Regional Strategies

- A Metropolis of Three Cities: The Greater Sydney Region Plan

The plan, prepared by the greater City Commission, sets a 40 year vision until 2056 and is to transform Sydney to a metropolis of three cities :

• *the Western Parkland City*
• *the Central River City*
• *the Eastern Harbour City.*

It seeks to create places where people can access employment, education health services and great places within 30 minutes of home.

The site would fall within the Eastern Harbor City and there are ten directions across the whole metropolis that concern infrastructure and collaboration, liveability, productivity and sustainability. Strategic objectives have been set for each of the 10 identified directions.

Specific objectives within the Plan that may be related to the subject site of the APU include the following landscape and scenic related issues:

Objective 13: Environmental heritage is identified, conserved and enhanced Strategy 13.1*managing and monitoring the cumulative impact of development on the heritage values and character of places.*

These objectives and strategies have been assessed by Heritage 21 in the accompanying Statement of heritage Impact and the following is concluded:

"The request for additional information received by the client from Bayside Council on 13 October 2023 (PP-2023/31) outlined the following

> Noting that the subject site is adjoined by a state and locally listed heritage item, which is recognised for its notable scenery, the Planning Proposal will need to address Objective 13 of the Greater Sydney Region Plan, and the associated Strategy 13.1 which identifies a need to manage and monitor the cumulative impact of development on the heritage values and character of places. This will also require consideration of Planning Priority E6 Creating and renewing great places and local centres and respecting the District's heritage and corresponding Action 20.C of the Eastern City District Plan.

As previously mentioned, the planning proposal would not involve new development in the vicinity of the locally-listed and state-listed "Botany water reserves", The proposal seeks to continue the use of the advertising displayed on the Eastlakes Golf Club Pedestrian Footbridge, which is sufficiently sheltered from the golf course and associated reserves. The continues use of the advertising signage would not engender a negative impact on the heritage values or character of the heritage landscape. The proximity of the signage to the reserves has been identified, and it is the opinion of Heritage 21 that the continued use of such signage respects the heritage values of the place. The impact of the billboards is mitigated and managed by the surrounding landscapes shielding the view of the signs from the golf course and the nearby reserves."

Objective 28: Scenic and Cultural Landscapes are protected *Strategy 28.1: Identify and protect scenic and cultural landscapes* *Strategy 28.2: Enhance and protect views of scenic and cultural landscapes from the public realm*

These objectives and strategies have been assessed by Urbis in the accompanying Visual Assessment report and the following is concluded:

"The introduction of additional permitted use to allow for future signage at the site, consistent with the existing, will have no adverse impact on the ability to protect scenic and cultural landscapes within the visual catchment.

The immediate visual context of the site is heavily influenced by the road corridor and the presence of the golf course on either side of Wentworth Avenue. The golf course setting is not highly visible in views from Wentworth Avenue due to roadside vegetation, which provides continuous screening of the golf course.

As such its scenic quality and character do not influence the visual character of the Wentworth Avenue.

Views to the site from the public realm are highly constrained by vegetation and topography concentrated along the road corridor. Oblique views that include part of the adjacent golf course and features are visible intermittently from within the road corridor, in isolated, oblique, and highly constrained views. The proposal is consistent with the existing and desired future character of the visual catchment.

Given the intended outcome of the Planning Proposal is to allow for future signage consistent with the existing, the result of any approval would have a neutral effect on view compositions and the existing visual context. Future signage would remain visually compatible with the context and character of this part of the Bayside LGA."

(source: Urbis Visual Assessment Report digital Signage Wentworth Avenue Pagewood 10 May 2023)

As a site specific PP and bearing in mind the APU sought for the site is already in existence the proposal does not conflict with any of the strategies and objectives covered by the plan.

- Eastern City District Plan

The Plan covers Bayside, Burwood, City of Canada Bay, City of Sydney, Inner West, Randwick, Strathfield, Waverley and Woollahra local government areas and is a 20 year plan operating at district level that encompasses the priorities and actions to implement the Greater Sydney Regional Plan, A Metropolis of three Cities.

The District Plan sets out planning priorities for each of the identified strategies of Infrastructure and collaboration, liveability, productivity and sustainability. Priorities for Implementation are also set.

Again as a site specific PP concerning an APU the proposal does not conflict with any to the stated planning priorities or give rise to any issue with a strategic context. Considerations

related to the impact of the PP relate to its immediate context are appropriately addressed in the accompanying expert consultant reports.

It is noted that the Eastlakes Golf Course adjacent to the bridge and road corridor is part of open space network identified as the Mill Stream and Botany wetlands Open Space Corridor at Table 5 Page 110 of the Plan.

Relevant issues in the District Plan include:

Planning Priority E6 Creating and renewing great places and local centres, and respecting the District's heritage and corresponding Action 20.C of the *Eastern City District Plan*.

As is the case in relation to the Greater Sydney Region Plan, Heritage 21 has considered this priority and action and has reached the same conclusion:

"The request for additional information received by the client from Bayside Council on 13 October 2023 (PP-2023/31) outlined the following

> Noting that the subject site is adjoined by a state and locally listed heritage item, which is recognised for its notable scenery, the Planning Proposal will need to address Objective 13 of the Greater Sydney Region Plan, and the associated Strategy 13.1 which identifies a need to manage and monitor the cumulative impact of development on the heritage values and character of places. This will also require consideration of Planning Priority E6 Creating and renewing great places and local centres and respecting the District's heritage and corresponding Action 20.C of the Eastern City District Plan.

As previously mentioned, the planning proposal would not involve new development in the vicinity of the locally-listed and state-listed "Botany water reserves", The proposal seeks to continue the use of the advertising displayed on the Eastlakes Golf Club Pedestrian Footbridge, which is sufficiently sheltered from the golf course and associated reserves. The continues use of the advertising signage would not engender a negative impact on the heritage values or character of the heritage landscape. The proximity of the signage to the reserves has been identified, and it is the opinion of Heritage 21 that the continued use of such signage respects the heritage values of the place. The impact of the billboards is mitigated and managed by the surrounding landscapes shielding the view of the signs from the golf course and the nearby reserves."

Planning Priority E16 Protecting and enhancing scenic and cultural landscapes *Objective 28: Scenic and cultural landscapes are protected* *Action 64: Enhance and protect views of scenic and cultural landscapes from the public realm.*

These matters have been assessed by Urbis in the accompanying Visual Assessment report prepared by Urbis and the following is concluded:

"The introduction of additional permitted use to allow for future signage at the site, consistent with the existing, will have no adverse impact on the ability to protect scenic and cultural landscapes within the visual catchment.

The immediate visual context of the site is heavily influenced by the road corridor and the presence of the golf course on either side of Wentworth Avenue. The golf course setting is not highly visible in views from Wentworth Avenue due to roadside vegetation, which provides continuous screening of the golf course.

As such its scenic quality and character do not influence the visual character of the Wentworth Avenue. Views to the site from the public realm are highly constrained by vegetation and topography concentrated along the road corridor. Oblique views that include part of the adjacent golf course and features are visible
intermittently from within the road corridor, in isolated, oblique, and highly constrained views. The proposal is consistent with the existing and desired future character of the visual catchment.

Given the intended outcome of the Planning Proposal is to allow for future signage consistent with the existing, the result of any approval would have a neutral effect on view compositions and the existing visual context. Future signage would remain visually compatible with the context and character of this part of the Bayside LGA."

(source: Urbis Visual Assessment Report digital Signage Wentworth Avenue Pagewood 10 May 2023)

Given that the PP is for an additional permitted use being existing signage erected on a bridge over the road corridor, it raises no issues for the visual catchment, heritage, open space corridor nor any endangered community which may be evident within the adjacent open space.

5.2.2 Consistency with Council's Community Strategic Plan or other Local Strategic Plan

5.2.2.1 Bayside Local Strategic Planning Statement (LSPS) March 2020

Council's Strategic Planning Statement is also based upon the planning priorities of Infrastructure and collaboration, liveability, productivity and sustainability and presents a vision until 2036. At page 7 of the plan, its purpose is stated:

"…….the Bayside LSPS focuses on the vision and priorities for land use and is implemented mainly through a Local Environmental Plan (LEP). It will also inform other planning tools, such as:

- *Development control plans – that provide the detailed controls for development.*
- *Development contribution plans – to ensure that local facilities are provided as the community's needs change and grow."*

It will also inform the preparation of other plans such as town centre master plans and public domain plans."

Relevant priorities in the LSPS include:

Bayside Planning Priority 9: Manage and enhance the distinctive character of the LGA through good quality urban design, respect for existing character and enhancement of the public realm

This priority has been assessed by Urbis in the accompanying Visual Assessment report and the following is concluded:

Consistency with Plans :

"The Planning Proposal has no significant impact on the distinctive character of this part of the Bayside LGA. The predominant visual character of road carriageway and streetscape vegetation will remain unaffected and any change to the character of the public realm would be imperceptible.

Further there are no residential dwellings located within the immediate visual catchment of the site. The closest private domain views would likely be from residential dwellings within Eastlakes that back onto the golf course along Bay Street and Cowper Avenue (approximately 155m south-west). Existing topography and vegetation would significantly limit any potential direct views to the proposed signs from residences.

As such, the introduction of an additional permitted use under Schedule 1 of the LEP allowing for signage as a permissible use on the site would have no adverse impact on public domain views and is consistent with the goals of Bayside Planning Priority 9, as part of the Future Bayside Local Strategic Planning Statement."

(source: Urbis Visual Assessment Report digital Signage Wentworth Avenue Pagewood 10 May 2023)

Bayside Planning Priority 11: Develop clear and appropriate controls for development of heritage items, adjoining sites and within conservation areas.

The site of the APU is adjacent to a heritage item noted as Botany Water Reserves. The accompanying Statement of Heritage impact prepared by Heritage 21 concludes:

"Heritage 21 is therefore confident that the proposed development complies with pertinent heritage controls and would engender neutral impact on the heritage significance of the subject site and heritage items in the vicinity. We therefore recommend that Bayside Council view the application favourably heritage grounds."

(Source heritage 21 Statement of Heritage Impact, Proposed Planning Proposal at Eastlakes Golf Club Pedestrian Footbridge Job 9892 May 2023)

***Bayside Planning Priority 19**: Protect and improve the health of Bayside's waterways and biodiversity.*

The site of the APU is noted as being within the Mill Stream and Botany wetlands Open Space Corridor.

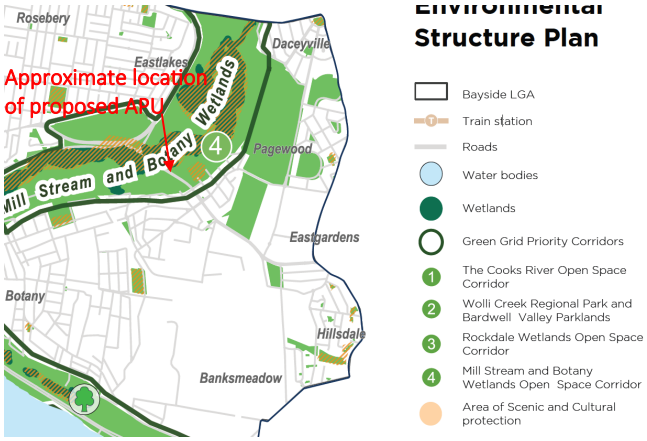

Fig 2. Site of APU (Bayside Council LSPS 2020)

The actual bridge upon which the signage is located is outside of the wetland areas and well removed from any area of high ecological value. Referencing the structure plan at Page 31 of the LSPS, the site of the APU is clearly within "road" as mapped in the Plan, reproduced on the page above.

Given the location of the PP within and above a road corridor and the fact of its existence, the proposal raises no issue in relation to the Environmental structure Plan and associated objectives and planning priority 19 set out in the LSPS.

5.2.2.2 Bayside Community Strategic Plan 2032

The Bayside Community Strategic Plan 2018 - 2023 (CSP) identifies the community's main priorities and expectations for the future and ways to achieve these goals. The CSP includes a range of Guiding Principles related to social justice, resilient cities, and good governance.

A range of outcomes and strategies are provided which relate to the social, environmental and economic, health, sustainability and prosperity of the Bayside LGA.

The PP being an APU is not inconsistent with any of the objectives and associated strategic directions in the CSP, noting that there are no themes within the CSP that relate directly to signage or any specific association with the subject site.

5.2.3 Consistency with State Environmental Planning Policies

An assessment of relevant SEPPs against the planning proposal is following Table 1:

Table 1: Relevant State Environmental Planning Policies

SEPP	Relevance	Consistency and Implications
State Environmental Planning Policy (Resilience and Hazards) 2021	The SEPP covers coastal management and hazardous or offensive development. As an APU whilst the site is adjacent to the Mill Stream and Botany wetlands Open space Corridor, given its existence and the fact that no work is to be carried out, the proposal will not conflict with any provision of the SEPP.	Nothing in this Planning Proposal impacts on the operation of this SEPP or conflicts with its provisions.
State Environmental Planning Policy (Industry and Employment) 2021	Chapter 3 concerns Advertising and Signage. The PP as an APU which is already in existence has been assessed as appropriate pursuant to the SEPP and its predecessor SEPP 64 Advertising and Signage. The accompanying specialist reports covering visual impact, traffic, illumination and heritage address relevant environmental impact of the proposal including the provisions of the SEPP and the Transport Corridor Guidelines and find the proposal to be complying.	Nothing in this Planning Proposal impacts on the operation of this SEPP or conflicts with its provisions.
State Environmental Planning Policy (Transport and Infrastructure) 2021	Pursuant to Chapter 3, the SEPP may require a signage development application to be referred to TfNSW owing to the traffic volume on Wentworth Avenue. The more detailed considerations of State Environmental Planning Policy (Industry and Employment) 2021 and the Transport Corridor Guidelines addressed in the accompanying traffic and road safety assessment, determine that the PP is appropriate and complying.	Nothing in this Planning Proposal impacts on the operation of this SEPP or conflicts with its provisions.

5.2.4 Consistency with Section 9.1 Ministerial Directions for Local Plan Making

An assessment of relevant Section 9.1 Directions against the planning proposal is provided in Table 2 below.

Table 2: Relevant Section 9.1 Ministerial Directions

Ministerial Direction	Objectives	Consistency and Implementation
Focus area 3: Biodiversity and Conservation		
3.2 Heritage Conservation	The objective of this direction is to conserve items, areas, objects and places of environmental heritage significance and indigenous heritage significance.	The site is situated within the vicinity of the heritage item known as Botany water reserves in BLEP 2021. As an APU proposal (no rezoning proposed) and as it exists with no further work to be carried out, nothing in the PP is contrary to the objectives of the Ministerial Direction.
Focus area 4: Resilience and Hazards		
4.2 Coastal Management	The objective of this direction is to protect and manage coastal areas of NSW.	The PP site is above a road corridor adjacent to the Mill Stream and Botany wetlands Open space Corridor, however as an APU (no rezoning proposed) and as it exists with no further work to be carried out, nothing in the PP is contrary to the objectives of the Ministerial Direction.

5.2.5 Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected because of the proposal?

The proposal does not entail any work or development that would affect any endangered community or habitat. Notwithstanding that an additional report has been prepared by Lesryk Environmental Pty Ltd to determine whether any areas of critical habitat or features of the signage could be utilised by a threatened species, population or ecological community.

The investigation concluded

"The areas of Biodiversity Values that were mapped (Figure 1) in the adjacent land would not be impacted by the ongoing operation and maintenance of the signs. Additionally the installation work for these signs was undertaken within the road corridor of Wentworth Avenue, therefore not impacting these areas. To permit the initial installation work, and the ongoing operation/maintenance, no vegetation was/is required to be cleared.

The signs, once installed did not present any additional barriers to the flying or movement patterns of flying species such as microbats or birds.

The installation of the two advertisement signs onto the pedestrian footbridge that spans Wentworth Avenue, Eastlake would not have had any adverse ecological impacts on any

areas of critical habitat or features that could be utilised by a threatened species, population or ecological community
(source: Lesryk Environmental Ecological Assessment – Existing Advertising Signs, Wentworth Avenue, Eastlake 24 October 2023)

5.2.6 Consistency with Bayside LEP 2021

Simply, it *might* be put that the use of the site for signage is not consistent with the BLEP 2021 in as much as signage if the type proposed is not permitted use in the applicable SP2 Infrastructure zoning. Signage has however been permissible in the past under previous planning instruments or with the benefit of existing use rights.

Consequently the use of the site for signage has previously been found to be appropriate and consents and approvals have been duly granted. The PP proposes no additional works to what were approved in the S.96 modification approved by Council on 27 October 2016.

The PP seeks to add signage on this site as an APU pursuant to the LEP and enable the use to continue with consent. A further development application would be made for the use after the successful resolution of the PP.

The PP does not conflict with any state, regional or local planning strategy and notably the provisions of SEPP (industry and Employment) 2021 require such an evaluation to be carried out at Cl.3.12 where a lesser duration than 15 years may be applied to a consent subject to strategic considerations.

As regards the balance of provisions in the BLEP 2021 such as heritage conservation at Cl.5.10 and Riparian land, wetlands and waterways the proposal remains consistent.

5.2.7 Consistency with Bayside Development Control Plan 2023

It is noted that the DCP was adopted after the scoping proposal meeting on 9th March 2023 and is effective from 10 April 2023.

The consistency of the proposal with the provisions of the DCP needs to be approached similarly to the Bayside LEP 2021 in the realisation that the current zoning does not permit signage but that there are previous consents and modification approvals granted by the Council and the Land & Environment Court when the signage was permissible in the zone or when the land had the benefit of existing use rights.

Section 3.16 of the DCP relates to Signs and Advertising. At the outset the DCP amongst other things acknowledges:

"These provisions are to be applied in conjunction with an assessment of any proposed signage under State Environmental Planning Policy (Industry and Employment) 2021."

As such given the history of approvals, the lack of environmental impact and the existence of the use, the planning proposal is assessed as consistent with the provisions of S.3.16 of the DCP.

In relation to other provisions of the DCP that may be determined as relevant, consistency can also be established in relation to the following sections:

3.2 Design Excellence, noting the site specific design of the bridge, the simple elegant lines of the LEP panels and minor visual impact;
3.4 Heritage, noting the lack of impact on the adjacent heritage item;
3.5 Transport, Parking an Access, noting the positive traffic safety history of the site;
3.7 Landscaping, Private Open Space and Biodiversity, noting as a proposal for an APU, the lack of impact on any public open space, wetland or threatened community;

5.3 Environmental, Social and Economic Impact

5.3.1 Traffic and Road safety Impact

The PP has been subject to a detailed Traffic & Road Safety Assessment prepared by Traffic & Safety Solutions (Appendix 1).

The report carries out a thorough assessment of the proposal and its history of operation since the panels were implemented on site in 2017. The assessment covers the performance of the signage in relation to:

- The Transport Corridor Outdoor Advertising and Signage Guidelines – Assessing Development Applications under SEPP 64 (November 2017)
- An analysis of the crash history of the roads in the relevant local road network;
- Referencing an earlier audit prepared by McLaren Traffic Engineering.

The assessment concludes:

"This traffic and road safety assessment for the existing digital signs has been shown to comply with the road safety criteria specified in the Department of Planning and Environment's 'TRANSPORT CORRIDOR OUTDOOR ADVERTISING AND SIGNAGE GUIDELINES – ASSESSING DEVELOPMENT APPLICATIONS UNDER SEPP 64 (NOVEMBER 2017)'.

The analysis of the crash history of the roads from where the proposed digital LED sign will be visible from indicates that there have been only 3 crashes occurring within the study area in the most recent 5 year period. Of these 3 crashes, only 1 crash is considered to be a crash where the sign would be potentially visible to the driver. This equates to a very low crash rate and considering that the existing signs has been in operation during since 2017,

there are no indications in the crash history that the road safety has reduced by the installation of these signs.

This is also supported by the concluding statement in the Road Safety Audits prepared by McLaren Traffic Engineering:

'The brief provided has been examined and the site inspected both during clear daylight and night periods to determine the safety impacts of the subject digital signage.
This road safety audit has found no adverse impact on road safety associated with the subject and operational digital advertising sign.'

Based on the findings of this traffic and road safety assessment report it is our professional opinion that the proposed digital LED sign can be recommended for approval." (source: Traffic & Road Safety Assessment Existing Digital Advertising Sign Wentworth Avenue Pagewood NSW 2035 Traffic & Safety Solutions 4/4/2023)

5.3.2 Visual Impact assessment

A comprehensive Visual Assessment Report (VAR) has been carried out by Urbis (Appendix 2). The assessment covers the provisions of SEPP (Industry & Employment) 2021 including an assessment of the Schedule 5 Assessment Criteria, the Transport Corridor Outdoor Advertising & Signage Guidelines 2017, land use compatibility and visual compatibility.

The report also references strategic documents such as The Greater Sydney regional Plan, Eastern City District Plan and Bayside Local Planning Statement. It also includes as an appendix, an earlier visual assessment prepared by Dr Ricard Lamb dated 12 November 2021. The VAR concludes:

"▪ This report concurs with and supports the findings of Dr Richard Lamb in the Visual Impact Assessment for the site prepared in November 2021 and has been reviewed to inform this Addendum Report.
▪ The visual catchment of the site is limited in length and highly constrained by existing topography and vegetation focused north-west and south-east along the road corridor.
▪ Parts of the site may be visible in intermittent, oblique, and heavily filtered views from adjacent sections of the golf course; however, views are limited, highly constrained and do not adversely affect the visual amenity of the surrounding area.
▪ Views to the site and Planning Proposal are predominantly from within the road corridor, from moving viewing situations, experienced for short periods of time.
▪ There are no residential dwellings located in the immediate visual context of the site and a low or less risk of impacting private domain views. The proposal has high visual compatibility with the existing and future desired character of Wentworth Avenue.
▪ The proposal will not create adverse visual impacts on the heritage context of the site.

▪ Subsequent to the planning proposal approval no additional visual clutter would eventuate, given the replacement of existing signage of the same size and in the same location as is existing
▪ The proposal is consistent with the relevant State and local strategic planning policies regarding visual impact.

Urbis support the planning proposal on visual impacts grounds and urge Council to approve the proposal." (source: Urbis Visual Assessment Report digital Signage Wentworth Avenue Pagewood 10 May 2023)

5.3.3 Heritage Impact Assessment

Heritage 21 has prepared the accompanying Statement of Heritage Impact. The heritage impact summary states as follows:

"7.1.1 Aspects of the proposal which respect or enhance the heritage significance of the subject site, and heritage items in the vicinity:

- *The planning proposal would allow the subject site to continue to be used for advertising signage.*
- *The planning proposal would seek to utilise the existing signage and would not seek to modify or include additional signage.*
- *The proposal would not seek to modify to alter fabric listed under Schedule 5 of the Bayside LEP 2021;*
- *The pedestrian bridge is located in an isolated position , away from structures and buildings listed as heritage significant within the 'Botany water reserves' heritage curtilage and would thus engender minimal impact to heritage significant views to these structures.*
- *The proposal would not alter or impact significant natural elements of the adjoining "Botany water reserves", including the Sydney Freshwater Wetlands, the Eastern Suburbs Banksia Scrub, animal species and their habitats, as well as other features of the landscaping." (Source heritage 21 Statement of Heritage Impact, Proposed Planning Proposal at Eastlakes Golf Club Pedestrian Footbridge Job 9892 May 2023)*

The assessment finds no aspect of the PP as being detrimental to heritage conservation and goes on to conclude:

"Heritage 21 is therefore confident that the proposed development complies with pertinent heritage controls and would engender neutral impact on the heritage significance of the subject site and heritage items in the vicinity. We therefore recommend that Bayside Council view the application favourably heritage grounds." (Source heritage 21 Statement of Heritage Impact, Proposed Planning Proposal at Eastlakes Golf Club Pedestrian Footbridge Job 9892 May 2023)

5.3.4 Illumination Assessment

Electro Light has prepared a detailed Lighting Impact Assessment of the signage panels. The assessment provides and illumination assessment pursuant to the relevant design guidelines and Australian Standards. A design certification is also provided.

The assessment has found that the existing panels are operating in accordance with and in compliance with relevant Australian Standards. In summary the assessment states:

7. SUMMARY

- The existing double sided signage (Sign 1 & Sign 2) installed at the pedestrian bridge over Wentworth Ave, Pagewood, NSW, shall be commissioned on site to yield the following maximum luminances:

LUMINANCE LEVELS FOR DIGITAL ADVERTISEMENTS		
Lighting Condition	Max Permissible Luminance (cd/m2)	Compliant
Full Sun on face of Signage	No Limit	✓
Day Time Luminance (typical sunny day)	6000	✓
Morning and Evening Twilight and Overcast Weather	700	✓
Night Time	350	✓

- The signage operator must ensure that the average luminance difference between successive images does not exceed 30% to ensure compliance with AS4282. The dwell time shall be 10 seconds or greater.
- The existing double sided signage (Sign 1 & Sign 2) has been found to comply with all relevant requirements of AS 4282-2019 Control of the Obtrusive Effects of Outdoor Lighting
- The existing double sided signage (Sign 1 & Sign 2) digital signage complies with CASA Manual of Standards Part 139 - Aerodromes - Section 9.21
- In complying with the above requirements, the existing double sided signage (Sign 1 & Sign 2) should not result in unacceptable glare nor should it adversely impact the safety of pedestrians, residents or vehicular traffic. Additionally, the signage should not cause any reduction in visual amenity to nearby residences or accommodation.

(Source: Electro Light , Lighting Impact Assessment- Outdoor Signage at the pedestrian bridge over Wentworth Avenue Pagewood NSW 28th April 20234, Ref: 3048.1)

5.3.5 Social and Economic Impacts

The PP is not supported by a social or an economic impact assessment, however it is unlikely to result in adverse social or economic impacts. The proposed APU will facilitate continued use of the signage panels enabling appropriate advertising to appear on the site subject to submission of a development application after finalisation of the proposal. It will

thus have a positive economic impact from the point of view of the owner and operator of the bridge and signage infrastructure and advertisers utilising the sign.

An additional public benefit will result subject to satisfaction of Cl3.1 Aims, objectives etc, of State Environmental Planning Policy (Industry and Employment) 2021 which includes at aim (e) the following:

(e) to ensure that public benefits may be derived from advertising in and adjacent to transport corridors.

A variety of strategies is available to ensure that a public benefit results in such circumstances. The Transport Corridor Outdoor Advertising and Signage Guidelines 2017 at Chapter 4 sets out the public benefit test and explores a range of what might be appropriate public benefits, which includes:

- *improved traffic safety (road, rail, bicycle and pedestrian)*
- *improved public transport services*
- *improved public amenity within, or adjacent to, the transport corridor*
- *support school safety infrastructure and programs*
- *other appropriate community benefits such as free advertising time to promote a service, tourism in the locality, community information, or emergency messages.*

Positive social impact is thus a likely outcome upon successful agreement between an applicant and the consent authority.

5.4 State and Commonwealth Interests

5.4.1 Adequacy of Public Infrastructure

The site is fully serviced with infrastructure for utilities necessary to ensure the proper operation of the signage. The signage has been able to operate effectively since its commissioning and no additional infrastructure is required to ensure continued operation.

Transport for NSW (TfNSW), NSW Heritage and SACL(Sydney Airport) will be consulted and indeed preliminary consultation has occurred (see following).

6.0 Community Consultation

Community consultation will be undertaken as per the conditions of a Gateway determination. Council would ensure the exhibition of the Planning Proposal for a period in accordance with their notification procedures.

The consultation strategy for this Planning Proposal would include:

- Notification in locally circulated newspapers;
- Web based notification via Council's website and application tracker;

In order to focus relevant consideration Bayside Council has carried out preliminary consultation after submission of the Planning Proposal Scoping Proposal with:

- Transport for NSW (TfNSW)
- NSW Heritage
- SACL(Sydney Airport)

Should a Gateway determination be made the PP would be referred to these authorities. The responses received in the preliminary consultation are summarised below:

External	
Agency	**Comment**
Transport for NSW (TfNSW)	The following comments were provided by TfNSW: *The Proposal relates to existing digital signage on both sides of the Eastlakes Golf Course bridge over Wentworth Avenue in Pagewood. Wentworth Avenue is a SP2 Infrastructure (Classified Road) zone and the existing signage is not a permissible use in the zone in the BLEP 2021. The Proposal therefore seeks to amend BLEP 2021 by including an 'additional permitted use' provision within Schedule 1 of the BLEP 2021 that would make 'Advertising Signage' a permissible use on the subject site.* *Considering the above, TfNSW in-principle has no objection subject to the review of detailed technical reports during the statutory stakeholder consultation for the Proposal.* *Please note that the comments provided are of a preliminary nature. They are not to be interpreted as binding upon TfNSW and may change following review of the formal planning proposal in the future, should Council be supportive of the draft planning proposal.*
Heritage NSW	The following comments were provided by Heritage NSW: *Based on the information provided, we understood that there are no identified impacts on:*

	• *Aboriginal objects or places protected under the National Parks and Wildlife Act 1974, and/or* • *State Heritage Register items or historic archaeology protected under the Heritage Act 1977.*
SACL	SACL have raised no issues with the proposal.
Internal	
Council's Environment Officer	To minimise impacts on the local environment and/or biodiversity, the planning proposal should address the following: • Consider the *Australian Government National Light Pollution Guidelines for Wildlife* (January 2020) • All lighting must comply with *AS/NZS 4282:2019 Obtrusive Effects of Outdoor Lighting* which addresses impact of light pollution on biodiversity. • All lighting must comply with *AS 4282-1997 Control of the obtrusive effects of outdoor lighting.* • To avoid harmful effects on insects, microbats and birds, proposal must not use bright 'blue-white' LED lighting. • To avoid unintended harmful effects on wildlife, choose lighting options with little or no short wavelength (400-500 nanometres). • To protect amenity of the surrounding area, lighting must be designed to ensure no adverse impact on the amenity of the surrounding area by light overspill.

As noted in Section 1.3 of this report, the internal response noted above from Council's Environmental Officer requiring a wildlife and biodiversity impact report is understood to be no longer required.

7.0 Mapping

The following maps from the BLEP are required to be amended to achieve the intent of the Planning Proposal:

Additional Permitted Uses Map

- APU_011

8.0 Project Timeline

The Relevant Planning Authority charged with assessment and determination of the PP has discretion to determine the project. That fact that the proposal is for an additional permitted use which is already in existence is of specific note in this proposal.

The information set out in the PP report has been assembled in order to present any possible impacts and to provide justification in support of the PP to aid determination. The following timeline is suggested in accordance with Table 4 of the guideline.

STAGE	DATE
Submission of draft Planning Proposal	June 2023
Review by Council consultants	September – mid October 2023
Response to initial review	Late October 2023
Council decision	November 2023
Referral of Planning Proposal to Department of Planning & Environment for Gateway determination	November 2023
Gateway determination	January 2023
Pre-exhibition preparation and review	February 2023
Commencement and completion of public exhibition period	March 2023
Consideration of submissions	March/April 2023
Post-exhibition review and additional studies	Early April 2023
Submission to the Department for finalisation	Mid-April 2023
Gazettal of LEP amendment	June 2024

9.0 Conclusion

This Planning Proposal seeks an amendment to Bayside Local Environmental Plan 2021. The PP seeks to permit an additional permitted use in Schedule 1 for the use of Lot 1 in DP 1240836 as 'signage'.

The PP is a necessary response in order to enable the continuation of the use of the site. It is a response to the zoning of the site which currently prohibits signage and the provisions of State Environmental Planning Policy (Industry and Employment) 2021.

The Planning Proposal has been prepared in accordance with S.3.33 of the Environmental Planning & Assessment Act 1979 and the relevant guidelines prepared by the NSW Department of Planning Industry & Environment including the Local Environmental Plan Making Guideline September 2022.

The PP provides justification for the proposed amendment to BLEP and is considered to have site specific merit being an APU. Further it does not conflict with any strategic planning objectives, plans or policies applicable to the site.

It is therefore recommended that Bayside City Council resolves to support and forward this Planning Proposal to the Department of Planning and Environment for Gateway determination in accordance with the Environmental Planning and Assessment Act 1979.

C.F.Blyth RPIA Director
Plansight Pty Ltd
Docs/PPReport-Digital Signage Wentworth Avenue Eastlakes

APPENDIX 1

Bayside Council
Serving Our Community

13 March 2023

Our Ref: 23/63993
Our Contact: Ana Trifunovska

Chris Blyth
Director – Plansight Pty ltd

Dear Mr Blyth,

Re: Scoping Proposal Advice – Potential Draft Planning Proposal at Wentworth Avenue Eastlakes – Advertising Signage

I refer to the meeting held on 9 March 2023 to discuss the Scoping Proposal for a potential draft Planning Proposal at Wentworth Avenue Eastlakes.

Attached is preliminary advice in response to the Scoping Proposal, which includes information obtained from referrals to relevant public agencies, and technical experts within Council.

The advice provided is preliminary in nature, in response to the submitted information with the Scoping Proposal. Comments provided are not interpreted as binding upon Council, and may change following review of the formal lodgement of a draft Planning Proposal to Council.

We trust this information will be of assistance if you proceed to the stage of submitting a draft Planning Proposal.

Yours sincerely

Maritza Abra
Acting Manager Strategic Planning

Postal address
PO Box 21, Rockdale NSW 2216
ABN 80 690 785 443

Bayside Customer Service Centres
Rockdale Library, 444-446 Princes Highway, Rockdale
Westfield Eastgardens, 152 Bunnerong Road, Eastgardens

E council@bayside.nsw.gov.au
W www.bayside.nsw.gov.au
T 1300 581 299 | 02 9562 1666

SCOPING PROPOSAL ADVICE

Pedestrian Bridge – Advertising Signage over Wentworth Avenue, Eastlakes

Meeting:	9 March 2023, 10.00 -10.30am
Site:	Pedestrian Bridge over Wentworth Avenue, Eastlakes adjoining Eastlakes Golf Club
Present:	Josh Ford, Ana Trifunovska – Bayside Council
	Chris Blyth – Plansight Pty Ltd

The Proposal

Construction of a pedestrian and service bridge and associated advertising signage at the subject site was considered at NSW Land and Environment Court proceedings in 2006. The appeal was upheld on 30 November 2006, however, the conditions of consent and subsequent applications state that the signage is limited to an expiry date.

In order to continue to use of the existing advertising signs, Scoping Proposal advice is sought as advertising signage is a prohibited use within the SP2 Infrastructure zone under the Bayside Local Environmental Plan 2021 (BLEP 2021).

The objective of the potential draft Planning Proposal at Wentworth Avenue, Eastlakes is to add a Clause under Schedule 1 Additional Permitted Uses of the BLEP 2021, that will permit signage.

Strategic Merit

Based on the information provided in the Scoping Proposal, the proposal does not appear to undermine strategic merit in the locality (as outlined in the strategic planning framework), as the proposal for land use permissibility is largely a site-specific matter.

To determine whether a draft Planning Proposal should be supported, Council will only be able to progress a draft Planning Proposal if it is consistent with:

- Part 3 – Justification of strategic and site-specific merit, as outlined in the Department of Planning and Environment's (DPE) Local Environmental Plan Making Guideline (September 2022).

Under the guidelines, the key assessment criteria for whether a draft Planning Proposal has strategic merit include:

- Whether the proposal gives effect to the relevant regional plan, the relevant district plan and any corridor or precinct plans applying to the site.
- Whether the proposal demonstrates consistency with the relevant LSPS that has been endorsed by DPE.
- Responds to a change in circumstances that has not been recognised by the existing planning framework.

In addition, any proposal that seeks to address this criteria needs to be supported with clear and appropriate technical studies and justification.

The proposal must have regard to the following planning documents:

- Regional Plans – A Metropolis of Three Cities: The Greater Sydney Region Plan
- District Plans – Eastern City District Plan
- Bayside Local Strategic Planning Statement (LSPS)
- Bayside Community Strategic Plan 2032
- Relevant SEPPs – including SEPP (Transport and Infrastructure) 2021 and associated Transport Corridor Outdoor Advertising and Signage Guidelines 2017
- Relevant Ministerial Directions
- Bayside LEP 2021
- Botany Bay DCP 2013

Site-Specific Merit

To determine whether a proposal should be supported and whether it has site-specific merit, Council will only be able to progress a draft Planning Proposal if it is consistent with:

- Part 3 – Justification of strategic and site-specific merit, as outlined in the DPE's Local Environmental Plan Making Guideline (*September 2022*).

Under the Guidelines, the draft Planning Proposal must be able to identify the potential environmental, social and economic impacts of the proposal, and outline proposed mitigation measures and justification. The draft Planning Proposal is to be able to demonstrate that the proposal is suitable for the site, and the site is suitable for the resultant development.

To enable Council to carry out a proper assessment of your proposal, the following technical information is required (if the proposal proceeds to lodgement):

- Planning Proposal report (prepared in accordance with DPE's LEP Plan Making Guideline – *September 2022*);
- Supporting technical documents including:
    - Traffic Impact Assessment (including information on crash and accident history)
    - Visual Impact Assessment
    - Lighting Impact Assessment (including any impacts on fauna)
    - Statement of Heritage Impact

Nomination of Category

Under the LEP Guidelines (September 2022) it is classified as a ***Standard*** Planning Proposal.

Bayside Council's Schedule of Fees and Charges 2022-2023 (applicable until 30 June 2023) identify the following fees for a Standard Planning Proposal:

- *Minor Planning Proposals (up to 2,000 sqm) – Stage 1* - ***$45,110.00***

Authority/Agency Consultation

The Scoping Proposal was referred to the following agencies:

- Transport for NSW (TfNSW)
- NSW Heritage
- SACL (Sydney Airport)

Council has received responses from all referral agencies. In addition, referral responses have been provided by Council's Environment and Resilience team. A summary of the feedback is included in **Appendix 1**.

The agencies that Council would anticipate referral to - if a Gateway determination was to be issued – are as listed above, in addition to any agencies not listed above that may otherwise be identified in the conditions in a future Gateway Determination.

Planning Proposal Process

The following summary outlines the steps (generally) involved in making an amendment to the Bayside LEP 2021:

1. Draft Planning Proposal lodged
2. Detailed assessment of draft Planning Proposal
3. Draft Planning Proposal considered by:
    - Bayside Local Planning Panel
    - City Planning and Environment Committee
4. Council resolves to prepare a Planning Proposal (initial endorsement by Council)
5. Planning Proposal referred to the Department of Planning and Environment requesting Gateway Determination to proceed to exhibition.
6. Planning Proposal and any additional studies/information prepared and exhibited.
7. Public exhibition
8. Planning Proposal considered by City Planning and Environment Committee
9. Final endorsement by Council
10. Amendment to the BLEP 2021 is formally made upon notification.

Appendix 1 – Referral Responses

External	
Agency	**Comment**
Transport for NSW (TfNSW)	The following comments were provided by TfNSW: *The Proposal relates to existing digital signage on both sides of the Eastlakes Golf Course bridge over Wentworth Avenue in Pagewood. Wentworth Avenue is a SP2 Infrastructure (Classified Road) zone and the existing signage is not a permissible use in the zone in the BLEP 2021. The Proposal therefore seeks to amend BLEP 2021 by including an 'additional permitted use' provision within Schedule 1 of the BLEP 2021 that would make 'Advertising Signage' a permissible use on the subject site.* *Considering the above, TfNSW in-principle has no objection subject to the review of detailed technical reports during the statutory stakeholder consultation for the Proposal.* *Please note that the comments provided are of a preliminary nature. They are not to be interpreted as binding upon TfNSW and may change following review of the formal planning proposal in the future, should Council be supportive of the draft planning proposal.*
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STATEMENT OF HERITAGE IMPACT

Proposed Planning Proposal at

Eastlakes Golf Club Pedestrian Footbridge

Job No. 10125
October 2023

Heritage 21
CULTURAL BUILT HERITAGE IN THE 21ST CENTURY

RAPPOPORT PTY LTD ©
CONSERVATION ARCHITECTS AND HERITAGE CONSULTANTS
Suite 48, 20-28 Maddox Street, Alexandria, NSW 2015
(02) 9519 2521
info@heritage21.com.au

Heritage Impact Statements	Conservation Management Plans	On-site Conservation Architects
Photographic Archival Recordings	Interpretation Strategies	Expert Heritage Advice
Fabric Analyses	Heritage Approvals & Reports	Schedules of Conservation Work

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Acknowledgement of Country

Heritage 21 wishes to acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and community. We pay our respects to them and their cultures and to elders both past and present.

Cover page: Subject site at Wentworth Avenue, from the south side of Wentworth Avenue, facing east (Source: Heritage 21, 21 April 2023).

The following table forms part of the quality management control undertaken by Heritage 21 regarding the monitoring of its intellectual property as issued.

Issue	Description	Date	Written by	Reviewed by	Issued by
1	Draft report (D1) issued for comment (Job 9892)	26.04.2023	KT	AP	KT
2	Report issued (RI) for submission (Job 9892)	03.05.2023	KT	-	KT
3	Draft report (D2) issued for comment (Job 10125)	20.10.2023	SA	AP	SA
4	Report issued (RI2) for submission (Job 10125)	20.10.2023	SA	-	SA
5	Report issued (RI3) for submission (Job 10125)	24.10.2023	SA	-	SA

1.0 INTRODUCTION

1.1 Background

This Statement of Heritage Impact ("SOHI" or "report") has been prepared on behalf of Outdoor Systems who have engaged Heritage 21 to submit a Statement of Heritage Impact in the context of a planning proposal for the continued display of signage at the subject site. This report has been amended to respond to a request for additional information received by the client from Bayside Council on 13 October 2023 (PP-2023/3/1).

1.2 Site Identification

The Eastlakes Golf Club pedestrian footbridge ("subject site") is located at Wentworth Avenue, which falls within the boundaries of the Bayside Local Government Area ("LGA") and it comprises (formerly described as part of) Lot 1, DP 1144655. As depicted in Figure 1 below, the site of the signage which is a part of the proposed planning proposal is located on this pedestrian footbridge above Wentworth Avenue in the southern part of Eastlakes Golf Club's course. The setting and topography of the site will be more fully described in Section 3.0 below.

Figure 1. Aerial view of the site, which is indicated by the red arrow (Source: NSW Spatial Services, "SIX Maps," accessed 17 April 2023, http://maps.six.nsw.gov.au/, annotated by Heritage 21).

1.3 Heritage Context

1.3.1 Heritage Listings

The subject site **is not** listed as an item of environmental heritage under Schedule 5 of the *Bayside Local Environmental Plan 2021* ("BLEP"). It also **is not** listed on the NSW State Heritage Register, the National Heritage List, the Commonwealth Heritage List, the National Trust Register (NSW), or the former Register of the National Estate.[1]

Figure 2. Detail from Heritage Map HER_011. The site is outlined in blue and landscape heritage items shaded green (Source: NSW Legislation Online, https://www.legislation.nsw.gov.au/maps, annotated by Heritage 21).

1.3.2 Heritage Items in the Vicinity

As depicted in Figure 2 above, the subject site is situated within the general vicinity of the following heritage item listed under Schedule 5 of the BLEP 2021, the State Heritage Register and the Sydney Water Section 170 Register. The details of the listings are as follows:

Item/HCA Name	Address	Significance	Item Number
Botany water reserves	About 200ha between Mascot and Botany extending from the northern shore of Botany Bay to Gardeners Road including the Lakes and Eastlakes Golf Courses and Mill and Engine Ponds	State	I160 (LEP)

[1] The Register of the National Estate ceased as a statutory heritage list in 2007, but it continues to exist as an inventory of Australian heritage places.

Botany water reserves	1024 Botany Road	State	01317 (SHR)
Botany Wetlands	58 Southern Cross Drive, Wentworth Avenue and Heffron Road, Botany, Pagewood, Eastlakes and Kensington	State	4570025 (s.170)

The subject site is adjacent to or within the visual catchment of Item I160 (Botany water reserves). Accordingly, the discussion in Section 6.0 of this SOHI of the potential heritage impact of the proposal on heritage items in the vicinity is limited to Item I160.

1.4 Purpose

The subject site is located in the vicinity of a heritage item which is listed under Schedule 5 of the BLEP 2021. Sections 5.10(4) and 5.10(5) of the BLEP 2021 require Bayside Council to assess the potential heritage impact of non-exempt development, such as the potential future development of the site (refer to Section 5.0), on the heritage significance of the abovementioned heritage item and, also, to assess the extent (whether negative, neutral or positive) to which the proposal would impact the heritage significance of that heritage item. This assessment is carried out in Section 6.0 below.

Accordingly, this SOHI provides the necessary information for Council to make an assessment of the proposal on heritage grounds.

1.5 Methodology

The methodology used in this SOHI is consistent with *Statements of Heritage Impact* (1996) and *Assessing Heritage Significance* (2001) published by the Heritage Division of the NSW Office of Environment and Heritage and has been prepared in accordance with the principles contained in the most recent edition of *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* (2013).

1.6 Authors

This Statement of Heritage Impact ("SOHI" or "report") has been prepared by Kieran Moss and Sandra Saravolac, reviewed by Ankita Powale and overseen by Paul Rappoport, of Heritage 21, Heritage Consultants.

1.7 Limitations

- This SOHI is based upon an assessment of the heritage issues only and does not purport to have reviewed or in any way endorsed decisions or proposals of a planning or compliance nature. It is assumed that compliance with non-heritage aspects of Council's planning instruments, the BCA and any issues related to services, contamination, structural integrity, legal matters or any other non-heritage matter is assessed by others.
- This SOHI essentially relies on secondary sources. Primary research has not necessarily been included in this report, other than the general assessment of the physical evidence on site.
- It is beyond the scope of this report to address Indigenous associations with the subject site.
- It is beyond the scope of this report to locate or assess potential or known archaeological sub-surface deposits on the subject site or elsewhere.
- It is beyond the scope of this report to assess items of movable heritage.
- Any specifics regarding views should be assessed by a view expert. Heritage 21 does not consider itself to be a view expert and any comments in this report are opinion based.
- Heritage 21 has only assessed aspects of the subject site that were visually apparent and not blocked or closed or to which access was not given or was barred, obstructed or unsafe on the day of the arranged inspection.

1.8 Copyright

2.0 HISTORICAL CONTEXT

2.1 Local History

The local history section of this report has been extracted from the site listing information on the NSW Heritage Inventory:

> *The "Eora people" was the name given to the coastal Aborigines around Sydney. Central Sydney is therefore often referred to as "Eora Country". Within the City of Sydney local government area, the traditional owners are the Cadigal and Wangal bands of the Eora. There is no written record of the name of the language spoken and currently there are debates as whether the coastal peoples spoke a separate language "Eora" or whether this was actually a dialect of the Dharug language. Remnant bushland in places like Blackwattle Bay retain elements of traditional plant, bird and animal life, including fish and rock oysters (Anita Heiss, "Aboriginal People and Place", Barani: Indigenous History of Sydney City http://www.cityofsydney.nsw.gov.au/barani).*
>
> *With the invasion of the Sydney region, the Cadigal and Wangal people were decimated but there are descendants still living in Sydney today. All cities include many immigrants in their population. Aboriginal people from across the state have been attracted to suburbs such as Pyrmont, Balmain, Rozelle, Glebe and Redfern since the 1930s. Changes in government legislation in the 1960s provided freedom of movement enabling more Aboriginal people to choose to live in Sydney (Anita Heiss, "Aboriginal People and Place", Barani: Indigenous History of Sydney City http://www.cityofsydney.nsw.gov.au/barani).*
>
> *Contact period:*
> *On 29 April 1770 Captain James Cook made his first landfall in Australia at Botany Bay. His ship the Endeavour's botanist, Sir Joseph Banks, and his Swedish assistant, Daniel Solander, spent several days ashore collecting vast numbers of previously unknown plants. Cook was in two minds about a suitable name for the Bay - his journal first refers to it as Stingray's Harbour, then as Botanist Bay, then both were crossed out and the present Botany Bay inserted, no doubt because of Banks and Solander's work. Since its name comes from the Bay on which it stands, Botany can well claim to have the oldest (English) place name in Australia (Pollen, 1988, pp.35-6).*
>
> *Cook's recommendation and Banks' enthusiasm were largely responsible for the British Government's decision to found a penal settlement at Botany Bay. When Governor Phillip arrived in mid-summer in 1788 however, he found the harbour shallow and exposed, and the shore swampy and lacking sources of fresh water. As a result the First Fleet sailed on to Port Jackson, finding a more suitable site for settlement at Sydney Cove (ibid, 1988, 35-6).*

Botany was first planned as an agricultural district, and the principal industry was to be market gardening. Instead it became an industrial area, boasting a fellmonger's yard and a slaughter works. As early as 1809, Mr E Redmond came to settle in the district, but the first important developer was Simeon Lord (1771-1840), who built a fulling mill in 1815 on the site that later became that of the old water works. In 1823 he received a grant of 600 acres, followed by further grants. Part of the estate was subdivided by 1887. Lord, the 'merchant prince of Botany Bay', manufactured fine wool cloth, and was also one of the merchants instrumental in the founding of Sydney Hospital. He gave land for the sites of 2 early churches in Botany, and Lord Street is named after him. Banksia Street, Sir Joseph Banks Park and Booralee Park all commemorate those early days (ibid, 1988, 35-6).

Following European colonisation the first substantial interventions in the area occurred in 1815 when enterprising merchant Simeon Lord had a dam constructed west of the present Botany Road to establish the colony's first woollen mill. A second dam was constructed near the present Engine House ruins for a flour mill (refer to 1869 Water Commission Plan). This mill continued operating until about 1847 while the textile factory was closed by about 1856.

From 13 July, 1855 the City Council began resuming land around, and including, the Botany wetlands for the city's main water supply scheme - the first time land resumptions were made for this purpose. (The land was transferred to the Water Board in 1888). Of this land, about 75 acres of Lord's estate was resumed which included his house (demolished in the 1930s though the site of which is in the vicinity of the present heliport), the mill sites, various cottages and the earthworks associated with Lord's mill dams. The southern end of the wetlands retains archaeological evidence of Lord's industrial complex, which may still provide new information about this significant early colonial character (Sydney Water, 2010).

The initial water supply scheme of the mid-1850s, by City Engineer WB Rider, was abandoned with the appointment of Edward Bell to the position. Bell's new water supply system included a sand-cast iron main, to pipe water from the engine house at Botany Wetlands to the Crown Street (Surry Hills) Reservoir. This was completed in 1859 and is the oldest water main in the state (Sydney Water 2010). The surviving Engine House and chimney date from the implementation, in the late 1850s, of Bell's scheme.

The stone retaining walls for the Engine Pond and outlet sluice probably date from 1870s work on the Engine Pond augmentation. Between 1866 and the mid-1870s six dams were constructed, and reconstructed for various reasons, from the Mill Pond to Gardeners Road using piling of sheet timber facing filled with sand forming a core of a turfed bank. In 1859 a 30" sand-cast iron main was completed between the Engine House and the Crown Street reservoir. The pipes were made in Scotland in 1856 and machined with such remarkably fine tolerance that, of the total length of 4 miles (6.4 km), the outside diameter varied by only 6mm and allowed the pipes to be laid without jointing material. Part of this easement coincides with the present study area in the vicinity of the Engine House (Sydney Water).

Drawing on a 1982 thesis of Margaret Simpson, the Thorp et al study indicates that about 80 trees - "Norfolk Pines, Moreton Bay Figs, Weeping Figs, Sweet Scented Pines and Stone Pines" - were planted along the access road from Botany and elsewhere on the site in 1869. Works for the augmentation of water storage at Botany continued throughout the 1870s including the addition of water stored in the Bunnerong Dam (1876-1877) by way of a pipe to the No 4 Pond. The then Bunnerong Road was moved and ran along the top of this dam wall.

These works were fed by the many springs in the area. In 1886, the last year of full pumping, 1864 million gallons of water were supplied to Sydney from these works. Although the scheme was Sydney's major source of water for 30 years, it did not supply the Botany area and local residents depended on natural sources and tanks (ibid, 1988, 35-6).

As Sydney's third water supply, it supported Sydney's expansion for most of the latter 19th century. As with its predecessors, it relied on aquifers to supply water (Sydney Water, 2010).

By the early 1880s the Upper Nepean Scheme was well underway and in November 1886 the Nepean-supplied water effectively ended the general supply of Sydney's water from the Botany system. Even intermittent emergency use of the system ceased by 1893 so that the Engine House machinery was finally decommissioned with pumping equipment and boilers sold at auction in 1896. In 1894 various local industrial uses - such as wool scourers and tanners - were permitted to return to the wetland vicinity through leases until 1947.

By November 1888, most of Sydney's water was coming from the Nepean system, although Botany Swamps topped up water supplies during water shortages, until 1893 (Sydney Water, 2010).

While these major improvement programs for Sydney's water supply were being put into place it also became clear - chiefly from an increasingly polluted harbour - that substantial works were needed to deal with the sewage of Sydney and its immediate suburbs. After the Board of Water Supply and Sewerage was formed in 1888 the basis of what is presently Sydney's largest sewerage system was commenced. As part of its responsibilities the new Board assumed control of various recent works of the Public Works Department, one of which was the first of the new sewer mains from the City to the Botany Sewage Farm established about 1886. Another main was added in 1898 which linked various western suburbs to the Sewage Farm. However by the turn of the century the usefulness of the Farm was fast diminishing such that the southern and western sewerage systems were amalgamated and extended, from 1909, to a new ocean outfall at Malabar while the much expanded Botany Sewage Farm was closed. This work - known as the Southern and Western Sewer Ocean Outfall System or, usually, SWSOOS No 1 - was completed in 1916 under the direction of Chief Engineer EM de Burgh.

Further growth of Sydney's suburbs and resultant extensions to this sewerage network necessitated an augmentation of the system, by duplication known as SWSOOS No 2, during 1936 to 1941. Both mains were required to cross the Cooks River by inverted syphons. The current SWSOOS network represents Sydney's largest sewerage system and envelops mains that were constructed from the 1880s through the 1890s, 1900s, 1910s to 1940s. Other individually significant components of the SWSOOS network that occur in the vicinity of the present site include the twin major inverted syphons and syphonic overflows (now under Sydney Airport)(part of ID No SW 33?) and the 1896 sewer vent at West Botany Street, Arncliffe (ID No SW 31 - SHI 4571725).

Within the site the existing engine house chimney was retired for water supply use in 1888, left unused for 28 years then, after being shortened, re-used as a vent in 1916 as part of the work for the new SWSOOS. Various buildings, associated with the new sewerage system, were added to the west. During the 1940s the chimney was further truncated to its present height along with the diversion of the mouth of the Cooks River into Botany Bay and substantial filling of the Engine and Mill Ponds as part of a major expansion and upgrade of airport facilities. From the 1970s a greater appreciation of the special historical and environmental values of the place was apparent through the commissioning of a range of studies to record and assess its significance. However further incursions continued with the 1988 construction of Southern Cross Drive through the middle of the Engine Pond, reclamation by the DMR and more recent works associated with the pre-Olympics upgrade of the airport.

The Lakes Golf Club (1928):
In 1928 construction of a clubhouse near Gardeners Road was commenced for the Lakes Golf Club with the course - to the west and north of the chain of ponds - opening in 1930.

About 1960 the Eastlakes Golf Club was established with an 18-hole course on the eastern and southern side of the ponds. The neighbouring course to the northeast, the Australian Golf Club, was established in 1904 and in the same year it was host for the first Australian open golf title which was won by Michael Scott. Both the Lakes and Australian golf courses have been consistently ranked in the top five golf courses in New South Wales for many years.

The Lakes Golf Club practice precinct (east of the club house):
The practice precinct was excavated on a number of occasions from 1928 to 1970. In the early 1970s the south-eastern area of this land was bulldozed and redeveloped as part of the overall golf course design as a direct result of the state government requiring some of the golf course land to constuct Southern Cross Drive. This included extensive excavation of the area of the practice precinct of the golf course. In the mid-1970s some of the practice precinct area formed part of the tennis court construction which required bulldoxing the area to prepare the ground for new tennis courts. This was conducted as part of construction of the golf course clubhouse (Kirkman, 2016, 4).

In the early 2000s the practice precicent was renovated as part of a plan to improve course facilities for practice, and to have the course fit with the natural contours and appearance of the sandy dunes and lakes that dominate its site. This included extensive distubrance of the practice precinct area. In 2005 a new club house was built and this resulted in removal of the tennis courts. The practice precinct and some of the driving range tee was bulldozed to remove the tennis courts and then construct the practice chipping area (ibid, 2016, 4-5).

From 2007-09 the entire Lakes Golf Course underwent a comprehensive renovation which included extensive construction works to the south-western section of the practice precinct area. This involved use of a bulldozer and other construction equipment to construct the 10th tees and the area in front of them. This included the small ridge between the driving range tee and the front of the current 10th hole tees (ibid, 2016, 4).[2]

2.2 Site Specific History

Historical aerial photography available from 1943 indicates that the area containing the subject site remained relatively undeveloped during the early history of the site (refer to Figure 3 to Figure 8 below). The open spaces adjacent to the subject site were progressively developed as a golf course from 1928 and is evident in the historic photography included below.

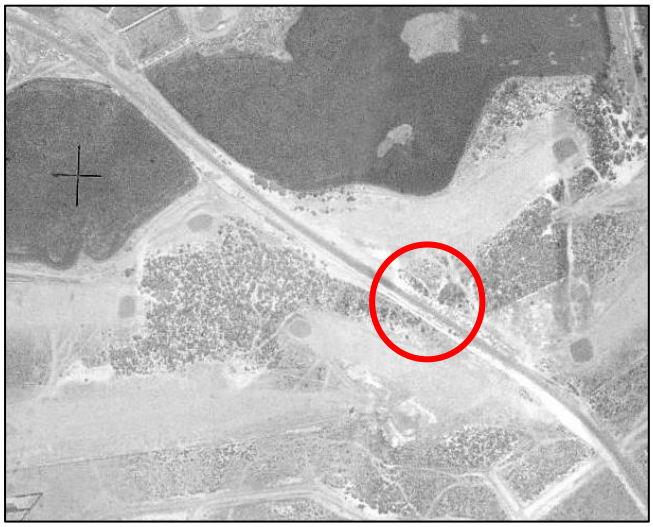

Figure 3. Excerpt from 1943 aerial photography, showing that the subject site remained relatively undeveloped during this period. The red circle indicates the approximate location of the subject site (Source: NSW Historical Imagery, accessed 17 April 2023, https://portal.spatial.nsw.gov.au/portal/apps/webappviewer/index.html?id=f7c215b873864d44bccddda8075238cb, annotated by Heritage 21).

[2] Heritage NSW, "Botany water reserves," State Heritage Inventory, Heritage Item ID: 5051418, accessed 18 April 2023, https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5051418.

Figure 4. Excerpt from 1955 aerial photography, showing that the subject site remained relatively undeveloped during this period. The red circle indicates the approximate location of the subject site (Source: NSW Historical Imagery, accessed 17 April 2023, https://portal.spatial.nsw.gov.au/portal/apps/webappviewer/index.html?id=f7c215b873864d44bccddda8075238cb, annotated by Heritage 21).

Figure 5. Excerpt from 1971 aerial photography, showing that the subject site remained relatively undeveloped during this period. The red circle indicates the approximate location of the subject site (Source: NSW Historical Imagery, accessed 17 April 2023, https://portal.spatial.nsw.gov.au/portal/apps/webappviewer/index.html?id=f7c215b873864d44bccddda8075238cb, annotated by Heritage 21).

Figure 6. Excerpt from 1982 aerial photography, showing that the subject site remained relatively undeveloped during this period. The red circle indicates the approximate location of the subject site (Source: NSW Historical Imagery, accessed 17 April 2023, https://portal.spatial.nsw.gov.au/portal/apps/webappviewer/index.html?id=f7c215b873864d44bccddda8075238cb, annotated by Heritage 21).

Figure 7. Excerpt from 1991 aerial photography, showing that the subject site remained relatively undeveloped during this period. The red circle indicates the approximate location of the subject site (Source: NSW Historical Imagery, accessed 17 April 2023, https://portal.spatial.nsw.gov.au/portal/apps/webappviewer/index.html?id=f7c215b873864d44bccddda8075238cb, annotated by Heritage 21).

Figure 8. Excerpt from 1991 aerial photography, showing that the subject site remained relatively undeveloped during this period. The red circle indicates the approximate location of the subject site (Source: NSW Historical Imagery, accessed 17 April 2023, https://portal.spatial.nsw.gov.au/portal/apps/webappviewer/index.html?id=f7c215b873864d44bccddda8075238cb, annotated by Heritage 21).

In 2005 a DA was approved for the construction of a new pedestrian access bridge over Wentworth Avenue to provide access between the main Eastlakes Golf Course and its southern holes. This DA included the erection of two illuminated advertising signage panels.[3] Historical photography from 2007 shows that the pedestrian footbridge had not yet been constructed. Streetview photography from 2009 shows that the subject pedestrian footbridge had been constructed (see Figure 9 and Figure 10 below). The subject footbridge has remained largely unchanged since its construction, with the bulk of modifications being made to the advertising signage.

[3] Bayside Council, "DA Tracker," Development Application Number: 2005/123, https://eplanning.bayside.nsw.gov.au/ePlanning/Pages/XC.Track/SearchApplication.aspx?as=n; Bayside Council, "DA Tracker," Development Application Number: 2005/123/A, https://eplanning.bayside.nsw.gov.au/ePlanning/Pages/XC.Track/SearchApplication.aspx?as=n.

Figure 9. Excerpt from Google Streetview dated November 2007. Note that the existing pedestrian footbridge had not been constructed during this period (Source: Google Maps, accessed 17 April 2023, https://www.google.com/maps).

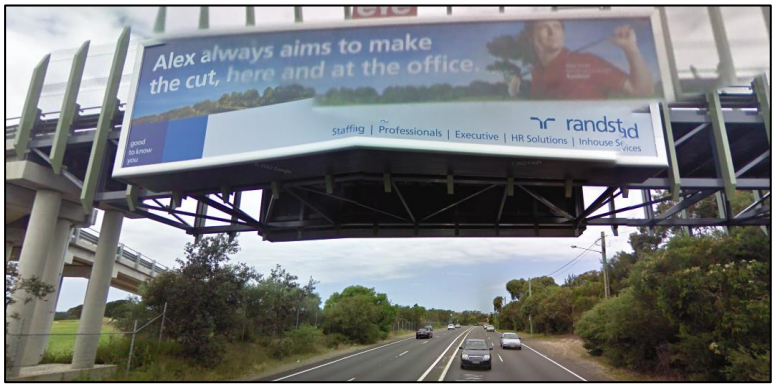

Figure 10. Excerpt from Google Streetview dated November 2009. Note that the existing pedestrian footbridge had been constructed by this time (Source: Google Maps, accessed 17 April 2023, https://www.google.com/maps).

3.0 PHYSICAL EVIDENCE

3.1 The Setting

The subject site is located at Lot 1, DP 1144655, which is located along Wentworth Avenue on the southern part of the Eastlakes Golf Club course. The portion of Wentworth Avenue in proximity to the subject site features a gentle slope downhill from the east to the west. Wentworth Avenue is a major thoroughfare and is a two-lane road. Both sides of the avenue feature mature trees and plantings, obscuring views to the Eastlakes Golf Course which is located on either side sides of the road. The south side of Wentworth Avenue features a shared pedestrian and cycle path, decorated with a green verge.

3.2 Physical Description

The subject site consists of a pedestrian footbridge crossing over Wentworth Avenue. Constructed with a metal truss and concrete support structure, the pedestrian bridge features two illuminated advertising billboards on its east and west elevations. The bridge features decorative metal ribs over the metal truss. The bridge provides access between the northern and southern portions of the Eastlakes Golf Club courses and does not provide pedestrian access to Wentworth Avenue. The subject site is adjacent to the state-listed "Botany water reserves", sufficiently distanced from the heritage item to not alter the landscaping, wildlife, and other important natural elements. The surrounding sloped landscaping on either side of the highway largely shields the bridge and advertisement billboards from the view of the reserves and the golf course.

3.3 Condition and Integrity

The current form of the pedestrian footbridge has retained the legibility of the original scale and character of the pedestrian bridge. The site appears to be in a good condition and the fabric has remained relatively unchanged since its original construction. The existing illuminated signage appears to be in a good condition.

3.4 Images

The following photographs have been taken by Heritage 21 at the site inspection undertaken on 15 November 2021, unless stated otherwise.

Figure 11. Exterior view of the east side of the pedestrian footbridge. Taken from the south side of Wentworth Avenue, facing north.

Figure 12. Exterior view of the east side of the pedestrian footbridge and Wentworth Avenue below. Taken from the south side of Wentworth Avenue, facing north-west.

Figure 13. Exterior view of the underside of the pedestrian footbridge. Taken from the south side of Wentworth Avenue, facing north-east.

Figure 14. Exterior view of the west side of the pedestrian footbridge. Taken from the south side of Wentworth Avenue, facing east.

Figure 15. Exterior view of the west side of the pedestrian footbridge and Wentworth Avenue below. Taken from the south side of Wentworth Avenue, facing east.

4.0 HERITAGE SIGNIFICANCE

In order to assess the impact of the proposed works on the heritage significance of the subject site and heritage item in the vicinity of the site, it is necessary to first ascertain the heritage significance of these places. Accordingly, Statements of Significance for the subject site (refer to Section 4.2.1), and item I160 (refer to Section 4.1.1) are provided below. The significance of these places, will form part of our considerations in the assessment of heritage impact, undertaken in Section 6.0 below.

4.1 Established Significance

4.1.1 Botany water reserves (Item I160)

The following Statement of Significance is available for the site on the State Heritage Inventory:

> *Botany Water Reserve holds considerable value for Sydney and NSW because it contains the only remaining major components - substantial layout and other important physical evidence from the 1850s through to the 1870s - of the unique water supply system that supported the expansion of the Sydney metropolis for most of the latter half of the 19th century, representing Sydney's third main water supply system since colonisation; and on account of the surviving remnants of the early 19th century industries associated with the prominent emancipist merchant Simeon Lord. The site includes land which, in 1855, was the subject of the first resumptions for the purpose of a water supply system by a government in Australia. Part of the original 1850s sand-cast iron water supply pipe remains within the site representing a remnant of the State's oldest main.*
>
> *This extant remnant of the water supply system also has high collective value as important evidence likewise remains of the two principal Sydney water supply systems (The Tank Stream and Busby's Bore) that predated the Botany system along with those superseding it (The Upper Canal and regional dam systems).*
>
> *The open space areas encompassed by the item include two regionally rare and distinct remnant vegetation communities known as Sydney Freshwater Wetlands and Eastern Suburbs Banksia Scrub that are both potentially of State significance and are the subject of separate listings as an Endangered Ecological Community under the NSW Threatened Species Conservation Act 1995. The wetlands also have recognised regional ecological value as native animal habitat and movement corridors, and may include animal species of conservation significance.*
>
> *The item is of regional environmental importance as a major recharge source for the Sydney basin aquifer.*
>
> *It likely holds special interest as a landmark cultural and recreational landscape for the regional community.*

It also has regional importance on account of the substantial infrastructure it contains of the 1910s Southern and Western Suburbs Ocean Outfall Sewer System (SWSOOS No 1) - since augmented during 1936-1941 by SWSOOS No 2 - representing one of the first major separate sewers in Sydney as well as incorporating new ventilation technologies. This infrastructure includes use of the former Engine House chimney as a sewer vent, the viaduct to carry the vent pipe, Sewage Pumping Station No 38 of 1916 near the Engine House ruins and part of the SWSOOS Nos 1 and 2 mains. The overall SWSOOS network remains Sydney's largest sewer system.[4]

4.2 The Subject Site

4.2.1 Assessment of Significance

In order to make an assessment of whether the proposed development to the subject site would have either a negative, neutral or positive impact upon the significance of the subject place, it is necessary first to ascertain the significance of the subject site. The assessment is based upon criteria specified by the NSW Office of Environment and Heritage.[5]

Criterion	Assessment
A. Historical Significance *An item is important in the course, or pattern, of NSW's (or the local area's) cultural or natural history.*	The subject pedestrian footbridge was most likely constructed between 2007 and 2009 and has functioned as a pedestrian footbridge for pedestrians travelling between different sections of the Eastlakes Golf Course since its construction. The footbridge is not associated with the historic development of the heritage listed "Botany water reserves" site and was constructed to provide amenity for the Eastlakes Golf Course patrons. As such, Heritage 21 is of the opinion that the site **does not** meet the criterion for historical significance at the state or local level.
B. Associative Significance *An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's (or the local area's) cultural or natural history.*	There is no known significant human occupation or any event, person or group of importance associated with the footbridge since its construction. As such, the Heritage 21 is of the opinion that the site **does not** meet the criterion for associative significance at the state or local level.
C. Aesthetic Significance *An item is important in demonstrating aesthetic characteristics and/or high degree of creative or technical achievement in NSW (or the local area).*	The pedestrian footbridge was designed and constructed for the purpose of improving access for the Eastlakes Gold Club patrons to the southern portion of the golf course. As such, the design of the footbridge is relatively simple and does not present itself as a landmark project or exemplary work by a renowned architect.

[4] Heritage NSW, "Botany water reserves," State Heritage Inventory, Heritage Item ID: 5051418, accessed 18 April 2023, https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=5051418.
[5] NSW Heritage Office, "Statements of Heritage Impact," in *NSW Heritage Manual* (Paramatta: Department of Planning and Environment, 1996).

Criterion	Assessment
	As such, Heritage 21 is of the opinion that the site **does not** meet the criterion for aesthetic significance at the state or local level.
D. Social Significance *An item has a strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons.*	To our knowledge, the subject site has no known association with an identifiable group in the area or was used by a particular community for social, cultural or spiritual purposes. As such, Heritage 21 is of the opinion that the site **does not** meet the criterion for social significance at the state or local level.
E. Technical/Research Significance *An item has potential to yield information that will contribute to an understanding of NSW's (or the local area's) cultural or natural history.*	There is no evidence to suggest that the footbridge demonstrates construction techniques other than those commonly employed at the time. As such, Heritage 21 is of the opinion that the site **does not** meet the criterion for technical/research significance at the state or local level.
F. Rarity *An item possesses uncommon, rare or endangered aspects of NSW's (or the local area's) cultural or natural history.*	Pedestrian bridges built in the early 21st century are not currently rare in Sydney and there are numerous examples in the Sydney area. As such, Heritage 21 is of the opinion that the subject site **does not** meet the criterion for rarity at the state or local level.
G. Representativeness *An item is important in demonstrating the principal characteristics of a class of NSW's (or the local area's) cultural or natural places or cultural or natural environments.*	The site was most likely constructed between 2007 and 2009 and has functioned as a pedestrian footbridge for traffic travelling between different sections of the Eastlakes Golf Course since its construction. The footbridge is not associated with the historic development of the heritage listed "Botany water reserves" and does not feature an architectural design that is representative of pedestrian footbridges throughout Sydney. As such, Heritage 21 is of the opinion that the site **does not** meet the criterion for representativeness at the state or local level.

Notwithstanding the historical development of the subject site, there is no evidence to suggest that the existing structure located at Wentworth Avenue, constructed between 2007 and 2009, demonstrates any of the criteria against which heritage significance is assessed.

5.0 WORKS PROPOSED

5.1 Proposal Description

The planning proposal would request the following amendments to the *Bayside Local Environmental Plan 2021*:

- To add a Clause under Schedule 1 Additional Permitted Uses of the BLEP 2021, that will permit signage.

5.2 Drawings

Our assessment of the proposal is based on the following drawings by Harrison Friedman & Associated Pty Ltd dated 14 March 2023 and received by Heritage 21 on 11 April 2023. These are reproduced below for reference only; the full set of drawings accompanying the development application should be referred to for any details.

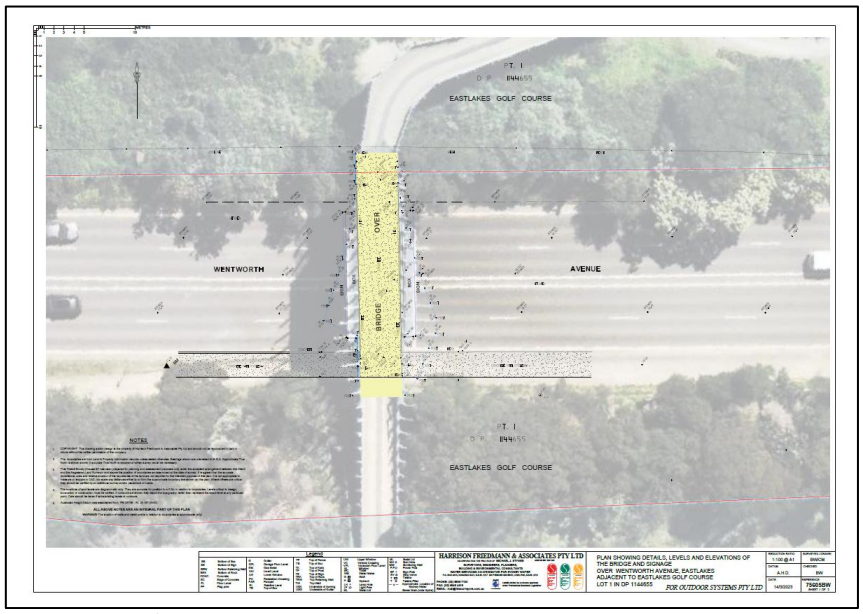

Figure 16. Existing Site Plan.

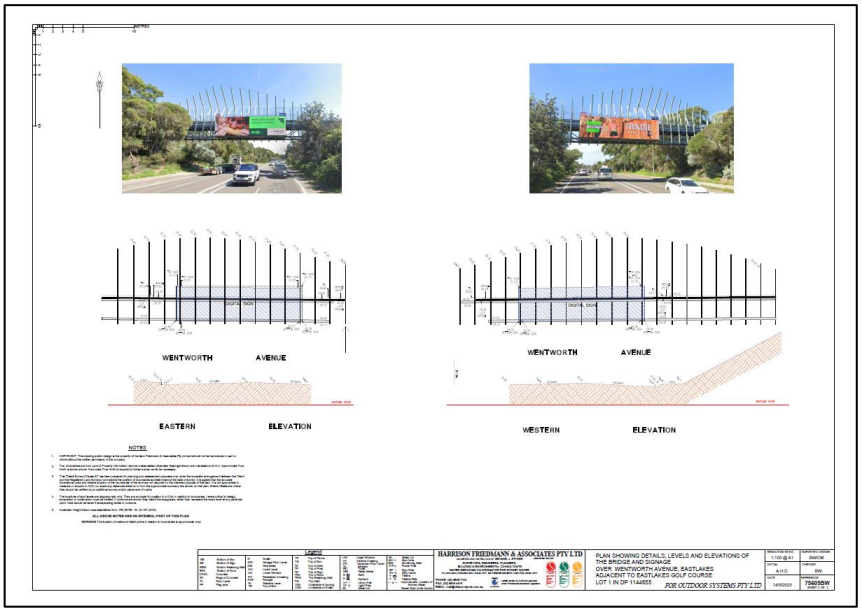

Figure 17. Existing East and West Elevations

6.0 ASSESSMENT OF HERITAGE IMPACT

6.1 Heritage Management Framework

Below we outline the heritage-related statutory and non-statutory constraints applicable to the subject site including the objectives, controls and considerations which are relevant to the planning proposal as described in Section 5.0 above. These constraints and requirements form the basis of this Heritage Impact Assessment.

6.1.1 Bayside Local Environmental Plan 2021

The statutory heritage conservation requirements contained in Section 5.10 of the *Bayside Local Environmental Plan* (BLEP) *2021* are pertinent to any heritage impact assessment for future development on the subject site. The relevant clauses for the site and proposal are outlined below:

(1) Objectives

(2) Requirement for consent

(4) Effect of proposed development on heritage significance

(5) Heritage assessment

6.1.2 Bayside Development Control Plan 2023

Our assessment of heritage impact also considers the heritage-related sections of the Bayside Development Control Plan (BDCP) 2023 that are pertinent to the subject site and planning proposal. These include:

3 General Development Provisions

3.4 Heritage

3.4.1 Heritage Overview – General

3.4.5 Development adjoining or in close proximity to Heritage Items

3.16 Signs and Advertising

3.16.1 General

3.16.2 Illuminated and Animated Signage

3.16.3 Signage Types

3.16.8 Advertising and Advertising Structures

6.1.3 Local Environmental Plan Making Guideline – September 2023

Our assessment of heritage impact considers the heritage-related sections of the Local Environmental Plan Making Guideline 2023 that are pertinent to the subject site and the planning proposal. These include:

Section 2: The Planning Proposal

Planning Proposal Preparation

Part 3 – Justification of strategic and site-specific merit

6.1.4 Greater Sydney Region Plan & Eastern City District Plan – June 2018

Our assessment of heritage impact considers Objective 13 of the Greater Sydney Region Plan, and Planning Priority E6 of the Eastern City District Plan, both updated in June 2018, that are pertinent to the subject site and the planning proposal. These are outlined below:

Objective 13: Environmental heritage is identified, conserved and enhanced

Strategy 13.1 – Identify, conserve and enhance environmental heritage by:

- *managing and monitoring the cumulative impact of development on the heritage values and character of places*

Planning Priority E6: Creating and renewing great places and local centre, and respecting the District's heritage

Action 20.C – Identify, conserve and enhance environmental heritage by:

- *managing and monitoring the cumulative impact of development on the heritage values and character of places*

6.1.5 NSW Office of Environment & Heritage guidelines

In its guidelines for the preparation of Statements of Heritage Impact, the NSW Office of Environment & Heritage provides a list of considerations in the form of questions aiming at directing and triggering heritage impact assessments. These are divided in sections to match the different types of proposals that may occur on a heritage item, item in a heritage conservation area or in the vicinity of heritage items. Below are listed the considerations which are most relevant to the planning proposal as outlined in Section 5.0 of this report.

New signage

- *How has the impact of the new signage on the significance of the heritage item been minimised?*

- *Have alternative signage forms been considered (e.g. free-standing)? Why were these alternatives rejected?*
- *Is the signage in accordance with required local planning provisions?*
- *Will the signage visually dominate or obscure the heritage item or streetscape of a heritage area?*
- *Can the signage be externally illuminated rather than internally illuminated?*

Works adjacent to a heritage item or within the heritage conservation area (listed on an LEP)

- *Will the proposed works affect the heritage significance of the adjacent heritage item or the heritage conservation area?*
- *Will the proposed works affect views to, and from, the heritage item? If yes, how will the impact be mitigated?*
- *Will the proposed works impact on the integrity or the streetscape of the heritage conservation area?*

6.2 Heritage Impact Assessment

Below we assess the impact that the planning proposal would have upon the subject site, and the heritage item in the vicinity. This assessment is based upon the Historical Context (refer to Section 2.0), the Physical Evidence (refer to Section 3.0), Heritage Significance (refer to Section 4.0) the Proposal (refer to Section 5.0), a review of the Heritage Management Framework (refer to Section 6.1) and the impact of the proposal on the relevant heritage item situated in the vicinity of the site (refer to Sections 1.3 and 3.4).

6.2.1 Impact Assessment against the BLEP 2021

The statutory heritage conservation requirements contained in Section 5.10 of the *Bayside LEP 2021* are pertinent to any heritage impact assessment for future development on the subject site. We assess the proposal against the relevant clauses below.

CLAUSE	ASSESSMENT
(1) Objectives	The proposal does not entail any work to sites and places listed as heritage items under Schedule 5 of the *Bayside LEP 2021.* However, the site is located in the vicinity of the "Botany water reserves", which is listed under Schedule 5 of the BLEP 2021. It is our general assessment that the planning proposal to add a Clause under Schedule 1 Additional Permitted Uses of the BLEP 2021, that will permit signage on the site would not engender a negative impact on the heritage significance of the subject site. The existing signage would continue to be used and would not result in the alteration or modification of existing fabric. The planning proposal would similarly not engender a negative impact to the adjacent "Botany water reserves" heritage item, its contributory fabric and general setting.
(2) Requirement for consent	This Planning Proposal is lodged to Council to gain consent for the works proposed in the vicinity of heritage items listed under Schedule 5 of the *Bayside LEP 2021.*
(4) Effect of proposed development on heritage significance	This Statement of Heritage Impact accompanies the Planning Proposal in order to enable Bayside Council, as the consent authority, to ascertain the extent to which the proposal would affect the heritage significance of the heritage items located in the vicinity of the site.
(5) Heritage assessment	

6.2.2 Impact Assessment Against the BDCP 2023

The proposed planning proposal at the subject site would seek to add a Clause under Schedule 1 Additional Permitted Uses of the BLEP 2021 that will permit signage. Heritage 21 is of the opinion that the planning proposal would not engender a negative impact to the heritage significance of the nearby "Botany water reserves" heritage item listed under Schedule 5 of the BLEP 2021. The existing pedestrian bridge features two digital advertising billboards on its east and west facades. The planning proposal would seek to make use of these existing advertising billboards instead of

introducing additional advertising to the subject site. The pedestrian bridge also has an established history of featuring advertising on its facades since its construction between 2007 and 2009.

The planning proposal would similarly not engender a negative heritage impact to the nearby "Botany water reserves" heritage item. The pedestrian bridge is located in an isolated position, away from structures and buildings listed as heritage significant within the 'Botany water reserves" heritage curtilage and would thus engender minimal impact to heritage significant views afforded to these structures. The continued use of signage would also not engender a negative heritage impact on nearby landscaping of the "Botany water reserves", vegetation or animal species of said reserves.

The "Botany water reserves" has state significance for providing evidence of two early Sydney water systems that precedes The Upper Canal and dam systems. The heritage item includes rare vegetation communities, the Sydney Freshwater Wetlands and the Eastern Suburbs Banksia Scrub, both identified as an Endangered Ecological Community. Heritage 21 understands that these elements of the heritage item are important to the historical development of water supply systems in the local area, as well as conserving local animal habitats and species. The proposed planning proposal aims to facilitate the continued use of existing digital billboard advertising on the Eastlakes Golf Club pedestrian footbridge, which is sufficiently distanced from the heritage item to ensure that the proposal would not negatively impact the heritage significance of the reserves.

The subject site has established a precedent of advertisement signage since its construction between 2007 and 2009. As such, the planning proposal to permit signage on the subject site would not engender a negative impact to the heritage significance of the nearby "Botany water reserves".

6.2.3 Impact Assessment against the Local Environmental Plan Making Guideline – September 2023

The planning proposal would seek to add a Clause under Schedule 1 Additional Permitted Uses of the BLEP 2021 that will permit signage within the subject site. Heritage 21 notes that the proposal would seek to continue to use the existing digital advertising billboards on the pedestrian bridge. As per Section 1.3 and 5.0 of this report, the planning proposal would not seek to make any alterations or additions to a heritage item listed under Schedule 5 of the BLEP 2021. The planning proposal would be in the vicinity of the "Botany water reserves" heritage item. However, the advertising signage would not engender a negative impact to the heritage significance of the nearby heritage item, nor any associated buildings, structures, landscaping, vegetation, wildlife, or water supply systems. As such, Heritage 21 is of the opinion that the planning proposal to the subject site would not engender a negative heritage outcome for the nearby "Botany water reserves", nor would the proposal result in a visually intrusive or dominant element that obstructs views to the nearby heritage item. The existing advertising signage is integrated into the pedestrian bridge structure and the planning proposal would continue the use of these advertising billboards, which have been utilised since its original construction between 2007 and 2009.

6.2.4 Impact Assessment Against the Greater Sydney Region Plan & Eastern City District Plan – June 2018

The request for additional information received by the client from Bayside Council on 13 October 2023 (PP-2023/3/1) outlined the following:

> *Noting that the subject site is adjoined by a state and locally listed heritage item, which is recognised for its notable scenery, the Planning Proposal will need to address Objective 13 of the Greater Sydney Region Plan, and the associated Strategy 13.1 which identifies a need to manage and monitor the cumulative impact of development on the heritage values and character of places. This will also require consideration of Planning Priority E6 Creating and renewing great places and local centres, and respecting the District's heritage and corresponding Action 20.C of the Eastern City District Plan.*

As previously mentioned, the proposed planning proposal would not involve new development in the vicinity of the locally-listed and state-listed "Botany water reserves". The proposal seeks to continue the use of the advertising displayed on the Eastlakes Golf Club Pedestrian Footbridge, which is sufficiently sheltered from the golf course and associated reserves. The continued use of advertising signage would not engender a negative impact on the heritage values or character of the heritage landscape. The proximity of the signage to the reserves has been identified, and it is the opinion of Heritage 21 that the continued use of such signage respects the heritage values of the place. The impact of the billboards is mitigated and managed by the surrounding landscape, shielding the view of the signs from the golf course and the nearby reserves.

6.2.5 Impact Assessment Against the NSW Office of Environment & Heritage guidelines

As acknowledged in Section 6.1.3, the NSW Office of Environment & Heritage has identified a list of considerations in the form of questions aiming at directing and triggering heritage impact assessment. Below, we assess the proposal against the most pertinent of these questions.

Question	Assessment
New signage	
How has the impact of the new signage on the significance of the heritage item been minimised?	The planning proposal would seek to continue to utilise the existing digital advertising billboards. As such, the proposal would engender no negative impact to the nearby "Botany water reserves" and its associated buildings and structures. The landscaping and setting of the heritage item would not be negatively impacted by the continued use of signage on the pedestrian footbridge.
Have alternative signage forms been considered (e.g. free standing)? Why were these alternatives rejected?	The existing digital billboards were recently constructed to replace the previous static signs. These digital billboards occupy a smaller surface area than the previous static signs. As such, Heritage 21 is of the opinion that the exiting billboards provide a more sympathetic signage solution, which reduces its potential

	impact to the heritage significance of the nearby "Botany water reserves".
Is the signage in accordance with required local planning provisions?	As addressed above, the planning proposal seeks to introduce a Clause under Schedule 1 Additional Permitted Uses of the BLEP 2021 to permit the continued use of signage on the pedestrian footbridge. The advertising billboards located in the vicinity of the "Botany water reserves" would not visually dominate the heritage item and would continue the existing display of signage that has been on site since its construction.
Will the signage visually dominate or obscure the heritage item or streetscape of a heritage area?	The existing signage and pedestrian bridge are largely separated from any nearby heritage significant buildings, structures and landscaping located within the curtilage of the "Botany water reserves". As such, Heritage 21 is of the opinion that the signage would not visually dominate the heritage item.
Can the sign be externally illuminated rather than internally illuminated?	No, the planning proposal would seek to continue the use of the existing digital advertising billboards and would not seek to modify or remove the existing signage. As noted in the responses above, Heritage 21 is of the opinion that the digital signage would engender no negative heritage impact to the heritage significance of the "Botany water reserves" due to the location of the subject pedestrian bridge far away from any heritage significant structures, buildings, landscaping, native wildlife, and water supply systems.
Works adjacent to a heritage item or within the heritage conservation area (listed on an LEP)	
Will the proposed works affect the heritage significance of the adjacent heritage item or the heritage conservation area?	The planning proposal does not seek to alter the footbridge or conduct new works on site. The site is, however, located in the vicinity of the "Botany Water reserves", and as such the impact to the heritage item must be assessed. The continued use of the signage would not affect the heritage significance of the adjacent heritage item as it is sufficiently distanced from the reserves to not alter the landscaping, wildlife, or important elements of the "Botany Water reserves".
Will the proposed works affect views to, and from, the heritage item? If yes, how will the impact be mitigated?	The continued display of advertisement signage on the footbridge would be largely sheltered by trees on either side of the highway. The southern boundary of the highway features a dramatic slope down to the road and the northern boundary features mature trees along the highway, shielding the view of the signage from both sides of the reserves. As such, views to the signage from the golf course would be mitigated by the surrounding landscape. Views to the heritage item would not be affected.

Will the proposed works impact on the integrity or the streetscape of the heritage conservation area?	Not applicable, the site is not located within a heritage conservation area.

7.0 CONCLUSION & RECOMMENDATIONS

7.1 Impact Summary

The NSW Office of Environment & Heritage's guidelines require the following aspects of the proposal to be summarised.[6]

7.1.1 Aspects of the proposal which respect or enhance heritage significance

In our view, the following aspects of the planning proposal would respect the heritage significance of the subject site, and heritage items in the vicinity:

- The planning proposal would allow the subject site to continue to be used for advertising signage.
- The planning proposal would seek to utilise the existing signage and would not seek to modify or include additional signage.
- The proposal would not seek to modify or alter fabric listed under Schedule 5 of the Bayside LEP 2021.
- The pedestrian bridge is located in an isolated position, away from structures, buildings and landscaping listed as heritage significant within the 'Botany water reserves" heritage curtilage and would thus engender minimal impact to heritage significant views afforded to these structures and associated landscaping.
- The proposal would not alter or impact significant natural elements of the adjoining "Botany Water reserves", including the Sydney Freshwater Wetlands, the Eastern Suburbs Banksia Scrub, animal species and their habitats, as well as other features of the landscaping.

7.1.2 Aspects of the proposal which could have detrimental impact on heritage significance

In our view, there are no aspects of the proposal which could be detrimental to the significance of the subject site, and heritage items in the vicinity. The neutral impacts of the proposal have been addressed above in Section 7.1.1.

7.1.3 Sympathetic alternative solutions which have been considered and discounted

Heritage 21 was not involved in the design process of the proposed development. Notwithstanding, no solutions of greater sympathy with the significance of the subject site, heritage conservation area or heritage items in the vicinity are known to us.

[6] NSW Heritage Office, "Statements of Heritage Impact."

7.2 General Conclusion

Heritage 21 is therefore confident that the proposed development complies with pertinent heritage controls and would engender neutral impact on the heritage significance of the subject site and heritage items in the vicinity. We therefore recommend that Bayside Council view the application favourably on heritage grounds.

8.0 SOURCES

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Outdoor Systems

LIGHTING IMPACT ASSESSMENT -
OUTDOOR SIGNAGE AT THE PEDESTRIAN BRIDGE OVER WENTWORTH AVE, PAGEWOOD, NSW

26th October 2023
Ref: 3048

Lighting Impact Assessment

Outdoor Signage at the Pedestrian Bridge over Wentworth Ave, Pagewood, NSW

DATE	REV	COMMENT	PREPARED BY	CHECKED BY
26/10/23	REV C	For Information	DSM	RS

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1. INTRODUCTION

Electrolight have been appointed by Outdoor Systems to undertake a Lighting Impact Assessment to accompany a planning proposal to amend the Bayside Local Environmental Plan 2021 (BLEP 2021) to permit the continued use of the existing double sided digital signage ("Sign 1" & "Sign 2") installed at the Pedestrian Bridge over Wentworth Ave, Pagewood, NSW.

The existing digital advertising signs were approved in 2017 (DA05-123/02) by Bayside Council with concurrence provided by Roads and Maritime Services (RMS is now part of TfNSW). The signs were installed in July 2017. RMS's concurrence is for the sign to operate until 31st December 2025, however the Council DA approval for the sign is for the sign to operate until 29th November 2021.

Since the approval in 2017, Bayside Council have adopted the Bayside Local Environment Plan 2021 (BLEP 2021) and of particular note, it prohibits advertising signage land use within land zoned SP2 Infrastructure.

Council have advised Outdoor Systems that a planning proposal will be required to amend BLEP 2021 to add a Clause under Schedule 1 Additional Permitted Uses of the BLEP 2021, that will permit advertising signage.

The purpose of this report is to provide the details of the Lighting Impact assessment that has been undertaken for the existing digital signs, with reference to criteria specified in the State Environmental Planning Policy (Industry and Employment) 2021, NSW Transport Corridor Outdoor Advertising and Signage Guidelines, AS4282-2019 Control of the Obtrusive Effects of Outdoor Lighting and CASA Manual of Standards Part 139 (Aerodromes) - Section 9.143 and 9.144.

2. DEFINITIONS

2.1 Illuminance

The physical measure of illumination is illuminance. It is the luminous flux arriving at a surface divided by the area of the illuminated surface. Unit: lux (lx); 1 lx = 1 lm/m2.

(a) Horizontal illuminance (Eh) The value of illuminance on a designated horizontal plane

(b) Vertical illuminance (Ev) The value of illuminance on a designated vertical plane

Where the vertical illuminance is considered in the situation of potentially obtrusive light at a property boundary it is referred to as environmental vertical illuminance (Eve).

2.2 Luminance

The physical quantity corresponding to the brightness of a surface (e.g. a lamp, luminaire or reflecting material such as the road surface) when viewed from a specified direction. SI Unit: candela per square metre (cd/m2) – also referred to as "nits".

2.3 Luminous Intensity

The concentration of luminous flux emitted in a specified direction. Unit: candela (cd).

2.4 Obtrusive Light

Spill Light which, because of quantitative, directional or spectral attributes in a given context, gives rise to annoyance, discomfort, distraction or a reduction in the ability to see essential information.

2.5 Threshold Increment

The measure of disability glare expressed as the percentage increase in contrast required between a standard object and its background (the carriageway) for it to be seen equally as well with the source of glare present as with it absent, derived in the specified manner. This metric is directly related to Veiling Luminance.

NOTE: The required value is a maximum for compliance of the lighting scheme.

2.6 AGI32 Light Simulation Software

AGI32 (by U.S. company Lighting Analysts) is an industry standard lighting simulation software package that can accurately model and predict the amount of light reaching a designated surface or workplane. AGi32 is a has been independently tested against the International Commission On Illumination (CIE) benchmark, CIE 171:2006, Test Cases to Assess the Accuracy of Lighting Computer Programs.

2.7 Upward Light Ratio (ULR)

The ratio between the luminuous flux emitted above the horizontal plane to the total flux emitted by a light source. The ULR is used as a measure to limit direct spill light to the sky.

2.8 Flashing Light

A rhythmic light in which every appearance of light (flash) is of the same duration and, except possibly for rhythms with rapid rates of flashing, the total duration of light in a period is clearly shorter than the total duration of darkness (source: International Commission on Illumination CIE).

3. SITE DESCRIPTION AND SCOPE

The existing double sided digital signage (Sign 1 & Sign 2) is located on the north and south faces of the pedestrian bridge (for the Golf Coarse) over Wentworth Ave, Pagewood, NSW. Sign 1 is oriented towards the northbound direction of Wentworth Ave traffic, and Sign 2 is oriented towards the southbound direction of Wentworth Ave traffic. The total active display (illuminated) area of each sign is 42m2. The existing digital signage operates 24 hours a day. Refer Appendix A for the signage location plan and elevations.

The existing digital signage is illuminated using LEDs installed within the front face. The brightness of the LEDs is controlled to provide upper and lower thresholds as required as well as automatically via a local light sensor to adjust to ambient lighting conditions.

The manufacturer of the digital signage is noted as Prismaflex model type P10 with performance parameters as outlined in Appendix B. The signage includes baffles which mitigate upward waste light, resulting in an Upward Light Ratio (ULR) of less than 50%.

4. DESIGN GUIDELINES AND STANDARDS

The Lighting Impact Assessment will review the digital signage against the following Criteria, Design Guidelines and Standards*:

- State Environmental Planning Policy (Industry and Employment) 2021 (Refer Appendix C)
- Transport Corridor Outdoor Advertising & Signage Guidelines 2017
- AS 4282-2019 Control of the Obtrusive Effects of Outdoor Lighting.
- CASA Manual of Standards Part 139 (Aerodromes) - Section 9.143 and 9.144 (Refer Appendix F).

5. LUMINANCE ASSESSMENT

AS4282 Assessment

The maximum permissible night time luminance of the signage is determined by the existing lighting environment of its surroundings. AS4282 outlines maximum average luminances for different Environmental Zones as shown in Table 1 below:

TABLE 1 - MAXIMUM NIGHT TIME AVERAGE LUMINANCE FOR SIGNAGE

Environmental Zone	Description	Max Average Luminance (cd/m2)
A4	High district brightness e.g. Town and city centres, commercial areas, and residential areas abutting commercial areas	350
A3	Medium district brightness e.g. suburban areas in towns and cities	250
A2	Low district brightness e.g. sparsely inhabited rural and semi-rural areas	150
A1	Dark e.g. relatively uninhabited rural areas. No Road Lighting	0.1
A0	Intrinsically Dark e.g. Major Optical Observatories. No Road Lighting	0.1

Note: Where the signage is viewed against a predominantly dark background (e.g. night sky) then the maximum applicable environmental Zone is A2

Based on an assessment of the surrounding environment, the existing signage (Sign 1 & Sign 2) is located within Environmental Zone A3 under AS4282, therefore the maximum night time luminance is 250 cd/m2.

Transport Corridor Assessment

The Transport Corridor Outdoor Advertising & Signage Guidelines outlines lighting requirements for illuminated advertising signage along or adjacent to classified transport corridors. AS4282 does not include limits for daytime operation of illuminated signage. However, the Transport Corridor Outdoor Advertising & Signage Guidelines outlines maximum permissible luminance limits for various lighting conditions, including daytime. Under the Guidelines, the signage is classified as being within Zone 3, which is described as an area with medium off-street ambient lighting, e.g. some small to medium shopping/commercial centres. The maximum luminances for the various lighting conditions of the digital signage within Zone 3 is 6000 cd/m2 during daytime (typical sunny days), 700 cd/m2 during twilight and inclement weather, and 350 cd/m2 during night time. The images displayed on the signage will not contain flickering or flashing content and the luminance of the signage complies with the Threshold Increment limits of AS4282 (refer Section 6), meaning it will not “dazzle” drivers with unacceptable glare.

* There is no requirement in the Guidelines and Standards listed to assess and/or compare the lighting impact of the proposed signage luminance outlined in this report against the existing signage luminance. Conformance of the proposed signage luminance to the criteria outlined in the Guidelines and Standards is sufficient to demonstrate that there are no unacceptable amenity or safety impacts.

LUMINANCE LIMITS - SUMMARY

Table 2 outlines the maximum luminance levels for signage to comply with AS4282 and the Transport Corridor Outdoor Advertising & Signage Guidelines for the various lighting conditions listed below:

TABLE 2 - LUMINANCE LEVELS FOR DIGITAL ADVERTISEMENTS		
Lighting Condition	Max Permissible Luminance (cd/m2)#	Compliant
Full Sun on face of Signage	No Limit	✓
Day Time Luminance (typical sunny day)	6000	✓
Morning and Evening Twilight and Overcast Weather	700	✓
Night time	250	✓

The signage is to be dimmed on site to ensure the maximum luminance nominated above is not exceeded.

It is our opinion that signage that is illuminated to the maximum luminances outlined above would be visually consistent with the existing ambient lighting and suitable for the local area. A more detailed night time lighting assessment is provided in Section 6.0.

CASA Part 139 MOS Assessment

The digital signage consists of red green and blue LED light sources and is able to display content of various colours. The signage displays a static image for a period of 10 seconds (known as dwell time). The transition between images is less than 0.1 seconds. The dwell time is a significant period (in order for the viewer to comprehend the images shown), meaning the changes in colour from the variable content of the signage are not described as being rapid. As the total duration that the content is displayed is significantly longer than the total time of darkness during the transition time, the signage is not defined as being a flashing light source (refer "Flashing Light" definition in Section 2). However as the signage displays multiple light colours emitting from a single source, the operator must notify CASA in writing of any proposals to use any lighting installation within the aerodrome boundary - refer Section 5 of Section 9.143 and 9.144. This assessment forms part of the notification by the operator for the intent to extend the operation of the existing signage within the Aerodrome.

In addition to the above requirements, the CASA Manual of Standards Part 139 (Aerodromes) Manual of Standards 2019 - Section 9.144 has maximum light intensity limits spanning across four different Zones (A,B,C & D) which are determined by proximity to the runway and its approaches.

Zone	Max Intensity at 3 degrees above horizontal
Zone A	0 cd
Zone B	50 cd
Zone C	150 cd
Zone D	450 cd

The digital signage location was assessed against the three runways at Sydney Airport (16R/34L, 16L/34R and 07/26) to determine the applicable Zone limits (refer Appendix F). It can be seen that Runway 16R/34L has no Zone limits, Runway 16L/34R has no limits and Runway 07/26 is in Zone C. The signage must therefore comply with the Zone C limits, with a maximum intensity of 150 cd above 3 degrees.

Based on the luminance limit of 250 cd/m2 for the signage and using conservative photometric data from a signage manufacturer with similar performance characteristics, the estimated maximum intensity is 25 cd at 3 degrees which is below the Zone C limits as outlined by CASA Manual of Standards. Therefore an average luminance of 250 cd/m2 for the signage will comply with a maximum intensity of 150 cd above 3 degrees.

6. AS4282 ASSESSMENT

The existing signage (Sign 1 & Sign 2) has been assessed against AS 4282-2019 Control of the Obtrusive Effects of Outdoor Lighting as outlined in Section 4.

AS4282 provides limits for different obtrusive factors associated with dark hours (night time) operation of outdoor lighting systems. Two sets of limiting values for spill light are given based on whether the lighting is operating before a curfew (known as "pre-curfew" operation) or operating after a curfew (known as post-curfew or curfewed operation). Pre-curfew spill lighting limits are higher than post-curfew values, on the understanding that spill light is more obtrusive late at night when residents are trying to sleep. Under AS4282, the post-curfew period is taken to be between 11pm and 6am daily. As it is intended that the digital signage be illuminated all night, the assessment will review the proposed signage under the more stringent post-curfew limits.

Illuminance Assessment

The AS4282 assessment includes a review of nearby residential dwellings and calculation of the amount of illuminance (measured in Lux) that the properties are likely to receive from the signage during night time operation.

The acceptable level of illuminance will in part be determined by the night time lighting environment around the dwellings. AS4282 categorises the night time environment into different zones with maximum lighting limits as shown in Table 3 below:

TABLE 3 - MAXIMUM VALUES OF LIGHT TECHNICAL PARAMETERS

Environmental Zone	Max Vertical Illuminance (lx)		Description
	Pre-curfew	Post-curfew	
A0	0	0	Intrinsically Dark e.g. Major Optical Observatories. No Road Lighting
A1	2	0.1	Dark e.g. relatively uninhabited rural areas. No Road Lighting
A2	5	1	Low district brightness e.g. sparsely inhabited rural and semi-rural areas
A3	10	2	Medium district brightness e.g. suburban areas in towns and cities
A4	25	5	High district brightness e.g. Town and city centres, commercial areas, and residential areas abutting commercial areas

Based on an assessment of the surrounding areas, the nearest dwellings with potential views to the signage are at the following locations:

Address	Zone
156 Bay St	A3
158 Bay St	A3
160 Bay St	A3
162 Bay St	A3

Address	Zone
164 Bay St	A3
166 Bay St	A3
168 Bay St	A3
170 Bay St	A3

NOTE: Refer to Appendix D for details of calculation grid locations

As such, the dwellings above will form the focus of the illuminance assessment.

The proposed signage (Sign 1 & Sign 2) and surrounding environment was modeled in lighting calculation program AGI32 to determine the effect (if any) of the light spill from the signage. Photometric data was based on a digital sign of similar performance characteristics with luminances corresponding to the night time limit outlined in Section 5 Appendix D shows the lighting model and the results of the calculations.

It can be seen from the lighting model that the maximum vertical illuminance to dwellings in Zone A3 is 0.1 lux at 162 Bay St, 164 Bay St, 166 Bay St, 168 Bay St and 170 Bay St. The illuminance level above complies with the maximum AS4282 limits outlined in Table 3.

Threshold Increment Assessment

The Threshold Increment was also calculated for the traffic approaches on Wentworth Ave (northbound) and Wentworth Ave (southbound). The calculation grids were located at 1.5m above ground level, with an approach viewing distance of between 5m to 200m from the sign. The calculation results show that the Threshold Increment does not exceed 13.02% for any traffic approach (the allowable maximum under the standard is 20%).

Luminous Intensity

The luminous intensity limits nominated in the standard are not applicable for internally illuminated signage.

Additional Requirements:

The signage operator must ensure that the average luminance difference between successive images does not exceed 30% to ensure compliance with AS4282. The dwell time shall be 10 seconds or greater.

Summary

It can therefore be seen that the existing digital signage complies with all relevant requirements of AS 4282-2019 Control of the Obtrusive Effects of Outdoor Lighting.

7. SEPP ASSESSMENT

Table 4 below outlines the illumination assessment criteria from the State Environmental Planning Policy (Industry and Employment) 2021 Schedule 5 - Clause 7 Illumination. In addition to the criteria, responses have been included demonstrating that the signage is in compliance.

TABLE 4
7. ILLUMINATION ASSESSMENT CRITERIA

Assessment Criteria	Response	Compliant?
Would illumination result in unacceptable glare?	The signage complies with the Threshold Increment limits of AS4282:2019, demonstrating that the illumination will not cause unacceptable glare.	✓
Would illumination affect safety for pedestrians, vehicles or aircraft?	The signage complies with the Threshold Increment limits of AS4282:2019, demonstrating that the illumination will not cause unacceptable glare to vehicles or pedestrians. The signage also complies with the relevant CASA MOS 139 Requirements for aircraft. As a result the signage will not affect the safety of pedestrians, vehicles or aircraft.	✓
Would illumination detract from the amenity of any residence or other form of accommodation?	The signage, when installed according to this report, complies with the illuminance (spill lighting) limits of AS4282:2019, demonstrating that the illumination will not detract form the amenity of any residence or other form of accommodation	✓
Can the intensity of the illumination be adjusted, if necessary?	The signage is dimmable and when designed according to this report, includes a light sensor to the signage that automatically adjusts the brightness of the advertising display to prevailing light conditions. The signage can also be controlled by a timer.	✓
Is the illumination subject to a curfew?	The signage, when operated according to this report, complies with the limits required during curfewed operation under AS4282 (nominally between the hours of 11pm and 6am). This means that a curfew is not required.	N/A

8. SUMMARY

- The existing double sided signage (Sign 1 & Sign 2) installed at the Pedestrian Bridge over Wentworth Ave, Pagewood, NSW, shall be commissioned on site to yield the following maximum luminances:

LUMINANCE LEVELS FOR DIGITAL ADVERTISEMENTS		
Lighting Condition	Max Permissible Luminance (cd/m2)	Compliant
Full Sun on face of Signage	No Limit	✓
Day Time Luminance (typical sunny day)	6000	✓
Morning and Evening Twilight and Overcast Weather	700	✓
Night Time	250	✓

- The signage operator must ensure that the average luminance difference between successive images does not exceed 30% to ensure compliance with AS4282. The dwell time shall be 10 seconds or greater.
- The existing double sided signage (Sign 1 & Sign 2) has been found to comply with all relevant requirements of AS 4282-2019 Control of the Obtrusive Effects of Outdoor Lighting
- The existing double sided signage (Sign 1 & Sign 2) digital signage complies with CASA Manual of Standards Part 139 - Aerodromes - Section 9.21
- In complying with the above requirements, the existing double sided signage (Sign 1 & Sign 2) shall not result in unacceptable glare nor should it adversely impact the safety of pedestrians, residents or vehicular traffic. Additionally, the signage shall not cause any unacceptable amenity impacts to nearby residences or accommodation

9. DESIGN CERTIFICATION

The existing double sided signage (Sign 1 & Sign 2) installed at the pedestrian bridge over Wentworth Ave, Pagewood, NSW, if commissioned according to this report, complies with the following criteria, guidelines and standards:

- State Environmental Planning Policy (Industry and Employment) 2021 (Refer Appendix C)
- Transport Corridor Outdoor Advertising & Signage Guidelines 2017
- AS 4282-2019 Control of the Obtrusive Effects of Outdoor Lighting.
- CASA Manual of Standards Part 139 (Aerodromes) - Section 9.143 and 9.144 (Refer Appendix F).

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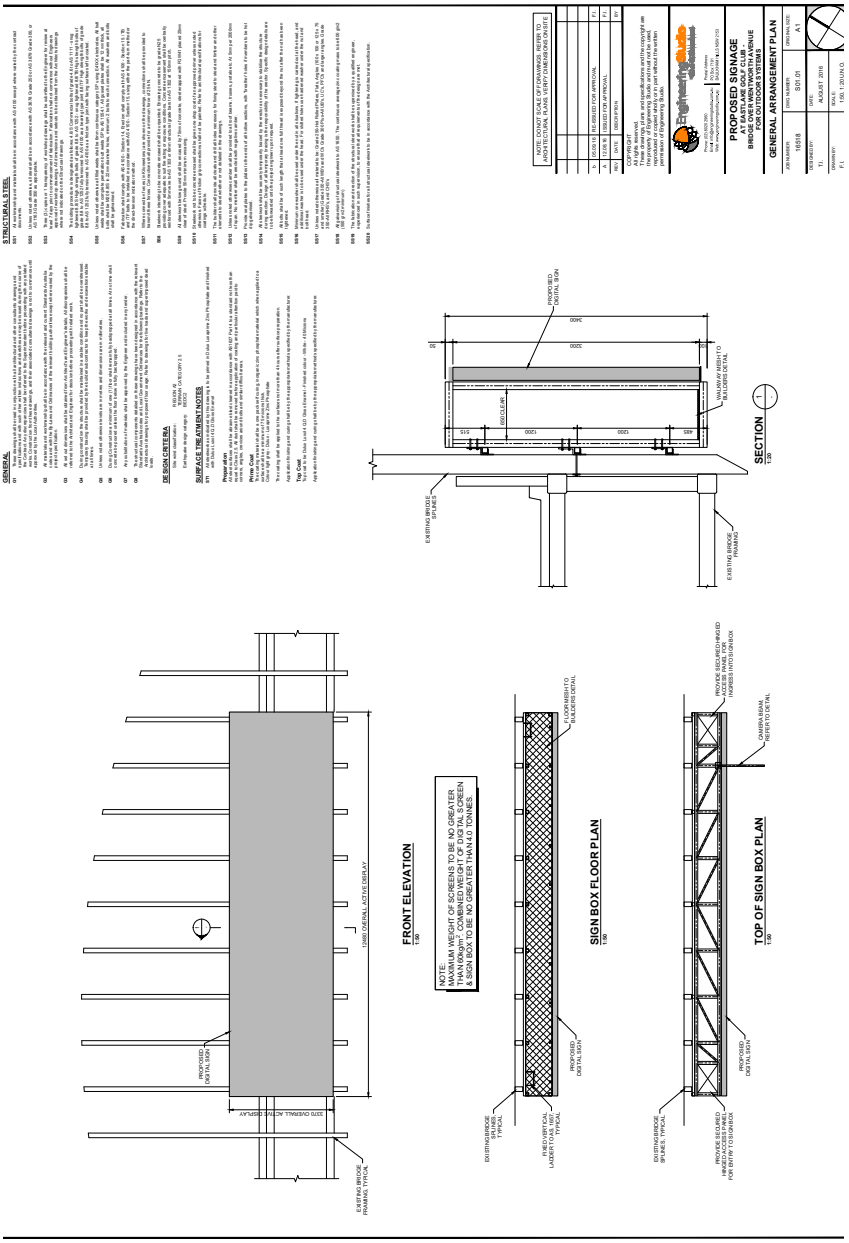
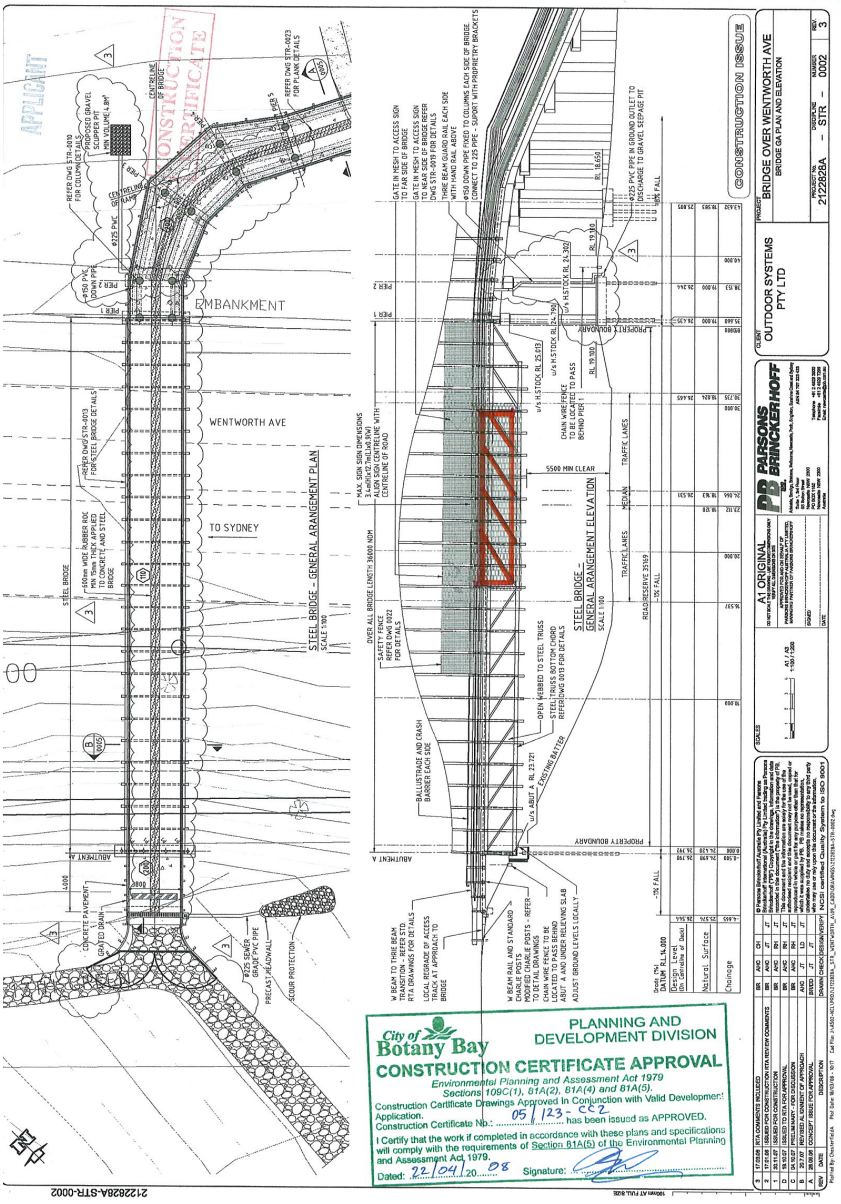
APPENDIX A
SIGNAGE LOCATION PLAN

APPENDIX A
SIGNAGE LOCATION PLAN



APPENDIX A

SIGNAGE LOCATION PLAN



APPENDIX B
DIGITAL SIGNAGE SPECIFICATION

RoHS COMPLIANT EMC

- **Led features P10 SMD CREE lamps (BBM range) :**

Pitch (mm)	10mm
LED supplier /Type/Code	**Cree3435**
LED technology	SMD
LED configuration	3 in 1 SMD
Pixel density / sqm	10 000
Colours	280 trillion
Total number of pixels	396 800
Contrast	6000:1
Ave Consumption over 24 hours ave content/sqm	194
Max Power consumption full white @ 6000cd (W/sqm)	645
Max Power consumption ave content @ 6000cd (W/sqm)	296
Lifespan, 50% brightness at end	100 000 hours
Viewing angle horizontal	140°
Viewing angle vertical	140°
Luminosity	Double Light sensor included
Connectivity	LAN or 3G Cellular Router
Outdoor	IP 67 front, IP 67 back
Control system	BBM

PRISMAFLEX INTERNATIONAL

APPENDIX C

State Environmental Planning Policy (Industry and Employment) 2021

Schedule 5 Assessment criteria

(Clauses 8, 13 and 17)

1. Character of the area

- Is the proposal compatible with the existing or desired future character of the area or locality in which it is proposed to be located?
- Is the proposal consistent with a particular theme for outdoor advertising in the area or locality?

2. Special areas

- Does the proposal detract from the amenity or visual quality of any environmentally sensitive areas, heritage areas, natural or other conservation areas, open space areas, waterways, rural landscapes or residential areas?

3. Views and vistas

- Does the proposal obscure or compromise important views?
- Does the proposal dominate the skyline and reduce the quality of vistas?
- Does the proposal respect the viewing rights of other advertisers?
-

4. Streetscape, setting or landscape

- Is the scale, proportion and form of the proposal appropriate for the streetscape, setting or landscape?
- Does the proposal contribute to the visual interest of the streetscape, setting or landscape?
- Does the proposal reduce clutter by rationalising and simplifying existing advertising?
- Does the proposal screen unsightliness?
- Does the proposal protrude above buildings, structures or tree canopies in the area or locality?
- Does the proposal require ongoing vegetation management?

5. Site and building

- Is the proposal compatible with the scale, proportion and other characteristics of the site or building, or both, on which the proposed signage is to be located?
- Does the proposal respect important features of the site or building, or both?
- Does the proposal show innovation and imagination in its relationship to the site or building, or both?

6. Associated devices and logos with advertisements and advertising structures

- Have any safety devices, platforms, lighting devices or logos been designed as an integral part of the signage or structure on which it is to be displayed?

7. Illumination

- Would illumination result in unacceptable glare?
- Would illumination affect safety for pedestrians, vehicles or aircraft?
- Would illumination detract from the amenity of any residence or other form of accommodation?
- Can the intensity of the illumination be adjusted, if necessary?
- Is the illumination subject to a curfew?

8. Safety

- Would the proposal reduce the safety for any public road?
- Would the proposal reduce the safety for pedestrians or bicyclists?
- Would the proposal reduce the safety for pedestrians, particularly children, by obscuring sightlines from public areas?

APPENDIX D

OBTRUSIVE LIGHTING CALCULATIONS

Calculation Summary			
Project: Obtrusive			
Label	CalcType	Units	Max
156 Bay St Ill Seg1	Obtrusive - Ill	Lux	0.0
156 Bay St Ill Seg2	Obtrusive - Ill	Lux	0.0
158 Bay St Ill Seg1	Obtrusive - Ill	Lux	0.0
158 Bay St Ill Seg2	Obtrusive - Ill	Lux	0.0
160 Bay St Ill Seg1	Obtrusive - Ill	Lux	0.0
160 Bay St Ill Seg2	Obtrusive - Ill	Lux	0.0
162 Bay St Ill Seg1	Obtrusive - Ill	Lux	0.1
162 Bay St Ill Seg2	Obtrusive - Ill	Lux	0.0
164 Bay St Ill Seg1	Obtrusive - Ill	Lux	0.1
164 Bay St Ill Seg2	Obtrusive - Ill	Lux	0.0
166 Bay St Ill Seg1	Obtrusive - Ill	Lux	0.1
166 Bay St Ill Seg2	Obtrusive - Ill	Lux	0.0
168 Bay St Ill Seg1	Obtrusive - Ill	Lux	0.1
168 Bay St Ill Seg2	Obtrusive - Ill	Lux	0.0
170 Bay St Ill Seg1	Obtrusive - Ill	Lux	0.1
170 Bay St Ill Seg2	Obtrusive - Ill	Lux	0.0

APPENDIX D

THRESHOLD INCREMENT CALCULATIONS

Calculation Summary			
Project: Ti			
Label	CalcType	Units	Max
Wentworth Ave (northbound)	Obtrusive - TI	%	12.28
Wentworth Ave (southbound)	Obtrusive - TI	%	13.02

APPENDIX D

OBTRUSIVE LIGHTING AND THRESHOLD INCREMENT CALCULATIONS

Obtrusive Light - Compliance Report
AS/NZS 4282:2019, A3 - Medium District Brightness, Curfew
Filename: 3048.1 Wentworth Ave rev B
26/10/2023 10:16:09 AM

Illuminance
Maximum Allowable Value: 2 Lux

Calculations Tested (16):

Calculation Label	Test Results	Max. Illum.
156 Bay St_Ill_Seg1	**PASS**	0.0
156 Bay St_Ill_Seg2	**PASS**	0.0
158 Bay St_Ill_Seg1	**PASS**	0.0
158 Bay St_Ill_Seg2	**PASS**	0.0
160 Bay St_Ill_Seg1	**PASS**	0.0
160 Bay St_Ill_Seg2	**PASS**	0.0
162 Bay St_Ill_Seg1	**PASS**	0.1
162 Bay St_Ill_Seg2	**PASS**	0.0
164 Bay St_Ill_Seg1	**PASS**	0.1
164 Bay St_Ill_Seg2	**PASS**	0.0
166 Bay St_Ill_Seg1	**PASS**	0.1
166 Bay St_Ill_Seg2	**PASS**	0.0
168 Bay St_Ill_Seg1	**PASS**	0.1
168 Bay St_Ill_Seg2	**PASS**	0.0
170 Bay St_Ill_Seg1	**PASS**	0.1
170 Bay St_Ill_Seg2	**PASS**	0.0

Threshold Increment (TI)
Maximum Allowable Value: 20 %

Calculations Tested (2):

Calculation Label	Adaptation Luminance	Test Results
Wentworth Ave (northbound)	5	**PASS**
Wentworth Ave (southbound)	5	**PASS**

APPENDIX E

CASA MANUAL OF STANDARDS PART 139 – AERODROMES

9.142 Movement area guidance signs

For a movement area guidance sign (MAGS):

(a) the sign must be legible at all times; and

(b) any lamp unserviceability in a sign must be fixed as soon as possible.

Note 1 No specific standard is specified for a critical number of unserviceable lamps in an illuminated MAGS. The key requirement is the legibility of the sign inscription at all times.

Note 2 The failure of MAGS illumination is not subject to notification by NOTAM.

9.143 Other lighting on the aerodrome

(1) This section applies only to lights that are not otherwise provided as visual aids to aircraft under the other provisions of this MOS.

(2) The following requirements must be complied with:

(a) an aerodrome operator must notify CASA in writing as soon as possible after becoming aware that a person is installing or proposing to install, or is using or is proposing to use, any installation, equipment or laser, outside the aerodrome boundary, that has or may have lighting or lighting intensity greater than that specified in Figure 9.144 (2);

(b) CASA must:

(i) consider whether the notification identifies a risk to the safety of aviation; and

(ii) if necessary, issue directions for action to mitigate the risk.

Note For directions, see regulation 94 of CAR, and regulation 11.245 of CASR.

(3) An aerodrome operator must immediately notify CASA in writing if the operator proposes to install or use any installation, equipment or laser, inside the aerodrome boundary, that has or may have lighting or lighting intensity greater than that specified in Figure 9.144 (2).

(4) An aerodrome operator must not proceed with the installation or use of any installation, equipment or laser mentioned in subsection (3) until CASA has assessed, and approved in writing, the proposed lighting intensity of the installation, equipment or laser.

(5) An aerodrome operator must immediately notify CASA in writing of any proposals to install or use any installation, equipment or laser within the aerodrome boundary which will have any of the following kinds of lighting:

(a) multiple light colours emitting from a single source;

(b) rapid changes in light colour;

(c) flashing lights.

Note Coloured lights, flashing lights or lasers may cause a hazard to aircraft operations irrespective of their intensity.

(6) An aerodrome operator must not proceed with any proposal mentioned in subsection (5) until CASA has assessed, and approved in writing, the lighting intensity proposed for the installation, equipment or laser.

(7) Subsections (3), (5) and (6) do not apply to the following:

(a) visual aids required for aircraft operations;

(b) signalling equipment;

(c) visual aids required for road safety.

(8) An aerodrome operator must immediately notify CASA in writing of any proposals for equipment or lighting installation within the aerodrome boundary which would reflect sunlight, including solar panels, mirrors or reflective building cladding.

(9) An aerodrome operator must not proceed with any proposal mentioned in subsection (8) unless CASA has determined, in writing, that it will not cause a hazard to aircraft operations.

(10) CASA may direct the aerodrome operator, in writing, that an installation, equipment, laser or reflective source within the aerodrome boundary must be modified, shielded, or extinguished to ensure aviation safety.

Note Certain lights might cause confusion, distraction or glare to pilots in the air. Ground lights may cause confusion or distraction by reason of their colour, position, pattern or intensity of light emission above the horizontal plane. Under regulation 94 of the CAR, CASA may issue notices about dangerous lights and it is an offence to fail to comply with any directions in a notice.

9.144 Lights — requirements for zones

(1) This section does not apply to the lights mentioned in paragraphs 9.143 (7) (a), (b) and (c).

(2) Lights installed at an aerodrome must comply with the zone requirements as shown in Figure 9.144 (2).

APPENDIX E

CASA MANUAL OF STANDARDS PART 139 – AERODROMES

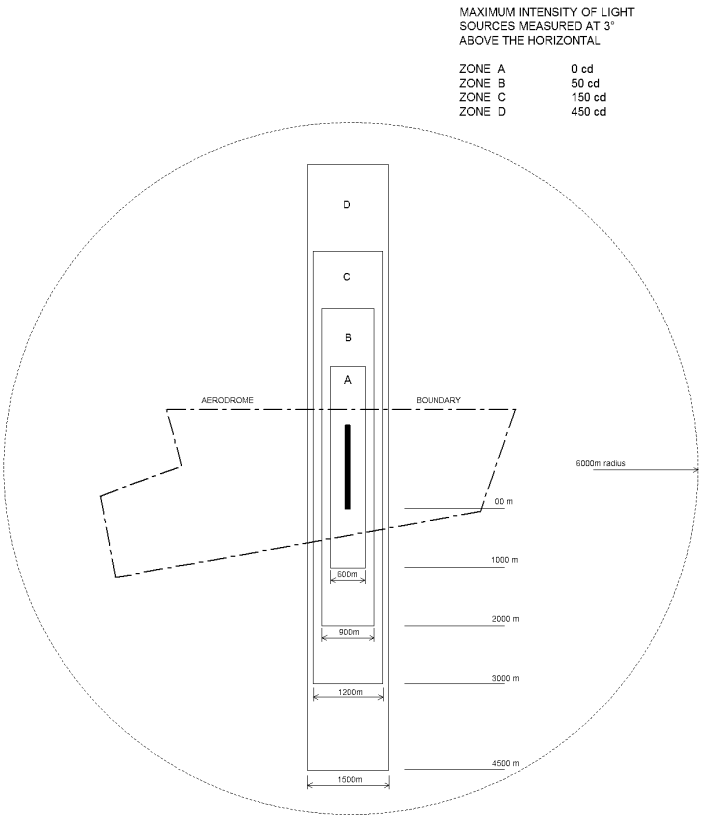


Figure 9.144 (2) Zone requirements for lighting (shows matters)

Note In many cases the polar diagrams published by manufacturers do not show sufficient detail in the sector near the horizontal and further information may need to be requested.

For installations where the light fitting does not meet the zone requirements, a screen may be used to limit light emission to zero above the horizontal.

APPENDIX F

Image: Luminous Intensity Limits for Runway 16R/34L

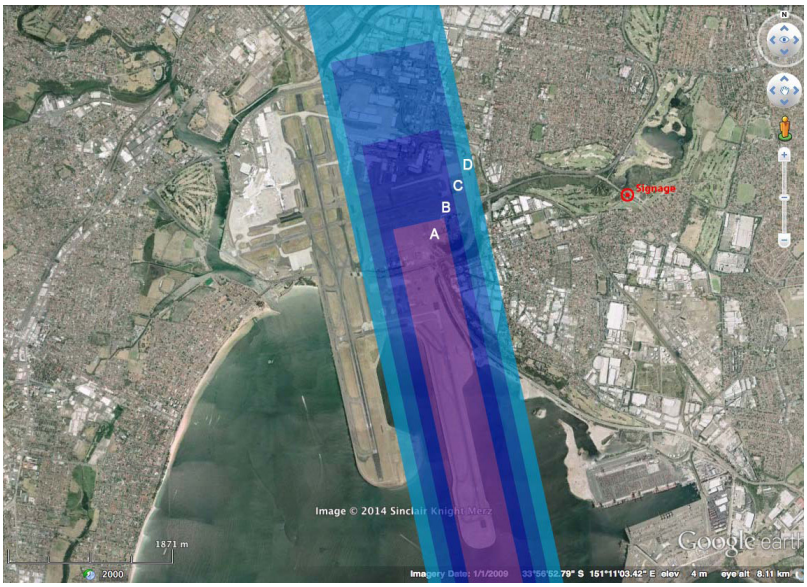


Image: Luminous Intensity Limits for Runway 16L/34R

APPENDIX F

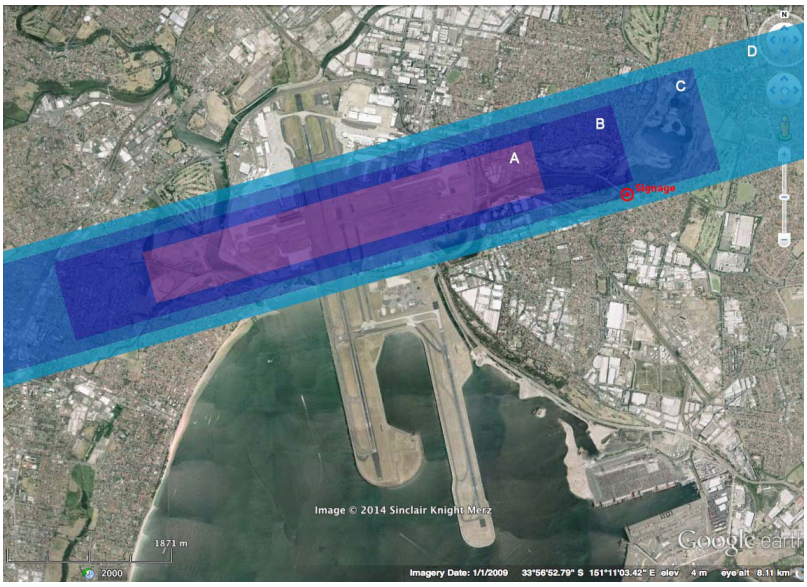


Image: Luminous Intensity Limits for Runway 07/25

URBIS

ANGEL PLACE
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SYDNEY NSW 2000

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Urbis Pty Ltd
ABN 50 105 256 228

26th October 2023

Bayside Council
council@bayside.nsw.gov.au
PO Box 21 Rockdale
NSW 2216

To whom it may concern,

VISUAL IMPACT ASSESSMENT RESPONSE TO COUNCIL RFI REFERENCE NO. PP-2023/3/1

1. INTRODUCTION & PURPOSE OF THIS LETTER

Urbis have been engaged by Outdoor Systems to provide further information regarding the visual effects and impacts associated with two (2) existing identical LED digital signs installed to either side of the pedestrian bridge over Wentworth Avenue, Pagewood (the site).

This letter responds to Bayside Council's Request for Information regarding a planning proposal for Wentworth Avenue Eastlakes Advertising Signage, dated 13 October 2023. Matters cited as requiring further investigation in relation to visual impacts are reproduced from Council's RFI below:

3. Visual Impact

The submitted Visual Impact Assessment considers the impact of the proposed signage on the surrounding area and covers the key relevant considerations. However, much of the justification within the assessment relies on the existing mature and semi mature planting along either side of Wentworth Avenue being retained. Noting that the existing landscaping may be subject to removal or extensive trimming to ensure no overhanging of the road or may be impacted by adverse weather conditions, further consideration of impacts of loss of vegetation on the visual impact is required.

2. RELEVANT BACKGROUND

Urbis previously prepared a Visual Assessment Report (VAR), dated 10 May 2023, which was submitted to Bayside Council as part of the Planning Proposal, seeking additional permitted use for the site under Schedule 1 of the BLEP 2021 to facilitate the ongoing and future use of signage that is in-situ.

The site is zoned SP2 infrastructure (Classified Road) under the Bayside Local Environmental Plan 2021 (BLEP 2021). The existing configuration includes one (1) digital sign affixed to either side of the bridge, one facing north-west and one facing south-east. Currently, signage of this type is not a permissible use within the zoning and is now the subject of the aforementioned Draft Planning Proposal.

The Planning Proposal is to facilitate ongoing use and occupation of the signage which has operated at the site for a number of years, prior to changes made to the Waverley LEP 2012 which no longer cite signage as a permissible use.

Presence of Streetscape Vegetation

The immediate visual context of the site includes the westbound (south side) and eastbound (north side) of Wentworth Avenue, and adjoining sections of Eastlakes Golf Course. The road corridor is characterised by continuous vegetation and tree canopy along both sides where existing vegetation is set back from the southern lane of the west bound carriageway by between 5 and 7.5 metres, south of a shared bike and pedestrian route.

This vegetation is unlikely to be affected by pruning or removal given its wide spatial setback from the carriageway. We note further that based on an analysis of aerial imagery no vegetation appears to overhang the shared pedestrian and bike path with the exception of 4 trees near the south end of the golf course. None of the canopy appears to overhang any part of the road carriage itself. It is logical to assume in our opinion, that no tree removal or pruning would be likely to occur on the southern side of Wentworth Avenue along the extent of the subject site.

3. OUR UNDERSTANDING OF COUNCIL'S REQUEST

We understand Council has requested consideration of Visual Impacts in the event that the existing trees are either removed, extensively trimmed, or impacted by adverse weather conditions such that they no longer provide visual blocking or screening of the road corridor and signs.

The key purpose of this advice is to understand the potential extent of additional visual effects and any resultant impacts of the signs across their visual catchments, in the unlikely event that streetscape vegetation within the Wentworth Road corridor, was removed, thinned or trimmed.

Visual impacts were determined in the previous VAR based on the assumption that existing signage would be a permissible use, and that visibility to either sign would be constrained by existing mature vegetation along both sides of the road corridor and in addition, by stands of trees that define fariways within surrounding golf course areas.

In order to determine visibility to the proposal without vegetation, we have relied on GIS modelling prepared by Urbis, to understand the localised topography, and LiDar data to overlay the height of vegetation along the roadside and within the surround golf course areas. The data has been combined to graphically represent, landforms and vegetation including high points, open wetlands, and local knolls in relation to the roadway, pedestrian bridge, and proposed signage. Graphics have been supplemented by fieldwork observations including photography from view locations that demonstrate the existing visibility of the proposal from surrounding locations.

Prior to undertaking fieldwork, Urbis undertook a review of the Heritage Impact Statement for the site prepared by Heritage 21 dated May 2023. Urbis inspected and documented views from East Lakes Golf Course close the site, which were identified as open areas in historical aerial imagery from 1943 and 1955. These areas have been in place and open since during the early development the early development of the golf course in 1928. Given the East Lakes Golf Course is part of a State listed heritage item, these historical locations were used as a basis to understand past visibility to the road and to the approximate location of the bridge and signs. These areas are identified and mapped at Figure 1. We note that the heritage or cultural significance of these locations has not be verified.

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Limitations

- View shed maps included below at figures 8 and 9 are based on topography only as per the Digital Elevation Model (DEM) as sourced from NSW Government spatial services and does not include elements such as built form, trees, elevated roads.
- The maps show areas from which any part of the upper edge/top of the signs are visible from available ground level viewing locations, at a standing height of 1.6m above natural ground level, as defined by the DEM.
- The view shed map does not relate to how much of the sign would be visible from these locations, as the extent of visibility as indicated does not distinguish between partial, minor, or heavily filtered and screened views. In reality, the world visibility to the sign (s) is much more constrained. For example, from Southern Cross Drive to the north, no views to any part of the sign are likely to be available, limited by changes in road level, the presence of intervening infrastructure, built forms and existing vegetation across the landscape and alongside the road corridor. Views to parts of the sign may be available through gaps in vegetation from moving viewing situations.
- View shed mapping without trees (Figure 9) shows the potential visual catchment without street vegetation along both sides of Wentworth Avenue and trees within adjacent golf courses, and therefore over-states the potential extent of visibility, given it relates to total tree removal.
- Viewshed mapping is a conservative representation of visibility, in that due to a number of variables the potential catchment (without vegetation) would be significantly less than what is indicated by the viewshed maps in Figures 8 and 9.
- In addition, regular pruning of tree canopy or the removal of individual trees which may overhang the north side of Wentworth Drive, is unlikely to make any significant difference to the overall screening effects of what is essentially continuous tree canopy.

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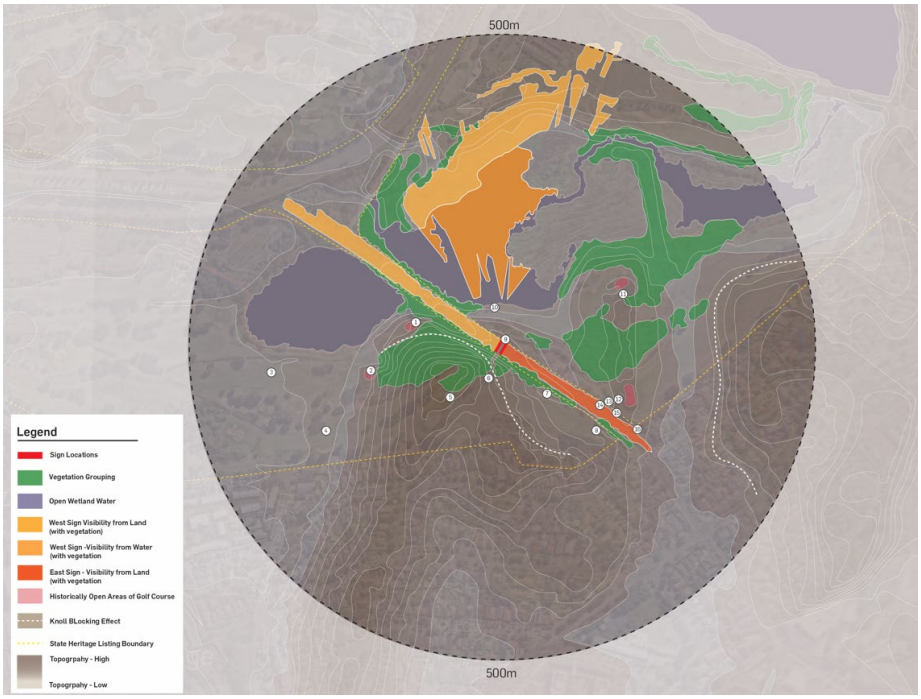

Figure 1 **Existing Visibility**

Graphic representation of existing visibility, including existing stands of vegetation, intervening ridgelines, and knolls etc, and view places inspected by Urbis. Note the visual catchment of the north sign (dark orange) expands across the northern water body (Mills Stream).

Source: Urbis

URBIS

Figure 2 View place 8, west of sign.

Source: Urbis

Figure 3 View place 9, east of pedestrian bridge.

Source: Urbis

Figure 4 View place 10.

Source: Urbis

Figure 5 Vegetation setback, view south-west

Source: Urbis

Figure 6 Vegetation setback, view south-west from Bridge).

Figure 7 Vegetation setback, view south-west from Bridge).

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4. VISUAL CATCHMENT

Figure 6 View shed mapping showing potential visibility of the proposal with vegetation.

Source: Urbis

4.1. VISIBILITY WITH VEGETATION

- The northern and southern sides of Wentworth Avenue are lined with semi-mature trees, which are set back from the carriageway and adjoin existing dense planting within the golf course. The **trees combined**, create significant blocking effects, and reduce the potential visual catchment to less than 400m of the road carriageway. It is most unlikely, in our opinion, that even with some pruning or tree removal along Wentworth Avenue, that the existing combined, vegetative screening effects would be significantly reduced to an extent that increases potential visibility to the signs.
- The visual catchment of the east facing sign is constrained to the road corridor, east of the pedestrian bridge to approximately Bay Street to the south-east.
- The visual catchment of the west facing sign is constrained to the road corridor, west of the pedestrian bridge to approximately Southern Cross Drive to the north-west.
- Visibility to the west facing sign from the land is limited only to the highest parts of the privately operated Lakes Golf Course and club building.
- Visibility to the west facing sign from the water is limited to the wetlands that adjoin Lakes Golf Course to the south, known as Mill Steam, north of Wentworth Avenue.

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- There is no visibility to the site beyond the road corridor from the south and east due to blocking effects of local knolls.

4.2. VISIBILITY WITHOUT VEGETATION

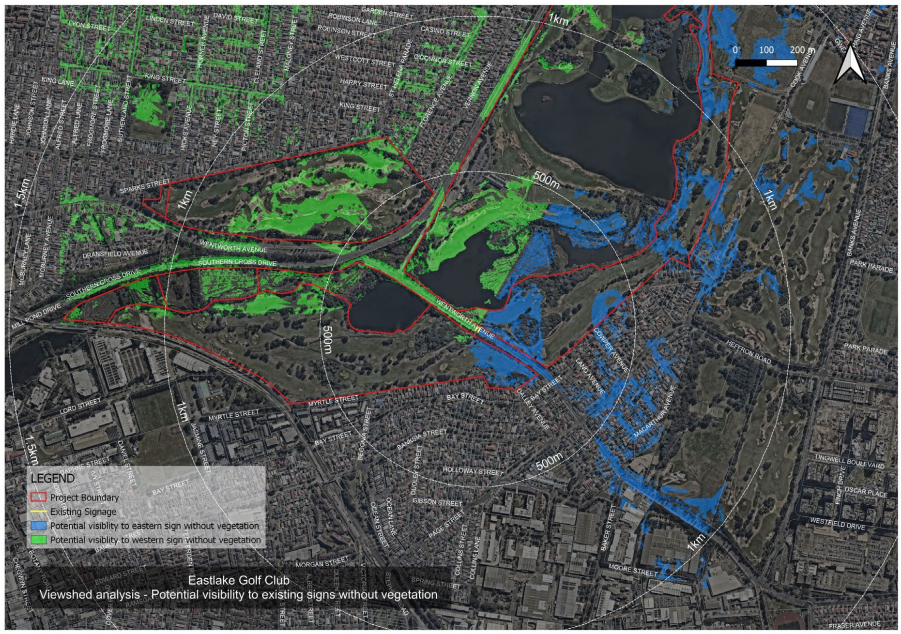

Figure 9 View shed mapping showing potential visibility of the proposal without roadside and golf course vegetation.

Source: Urbis

The removal of all existing vegetation along either side of Wentworth Avenue and within both golf courses would increase the availability of potential views to the signs. Potential visibility as shown should be considered in the context of the limitations stated above, in that visibility could mean to a minor or negligible extent of the sign and does not interpret blocking effects of intervening built form and vegetation within golf courses, which significantly contribute to blocking effects.

East Facing Sign

- The view shed map in Figure 9 is a worst-case scenario, assuming no trees exist within 500m of either sign. Visibility to the sign is predominantly from the north and north-east, within a 500m catchment.
- Visibility to the sign is available from within the road corridor, for a distance of approximately 300m, east of the pedestrian bridge to Bay Street.

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- Similarly, there is visibility to the sign from a limited area of golf course for a distance of approximately 300m east along either side of the road.
- Beyond 500m, visibility to any part of the sign is limited to isolated high points within surrounding golf course areas to the north and north-east, and some residential street locations to the south-east.

West Facing Sign

- Visibility to the sign is predominantly from the north and north-west, within a 1km catchment.
- Visibility to the sign is available from within the road corridor, west of the pedestrian bridge for a distance of approximately 450m, west of the pedestrian bridge to Southern Cross Drive.
- Visibility to sign is available from the adjacent wetlands north-west and south-west of Wentworth Avenue.
- Visibility to the sign north of Wentworth Avenue extends north into surrounding golf course areas for a distance of approximately 450m.
- Beyond 500m visibility to the sign is limited to elevated viewing locations within surrounding golf course areas to the north and north-west, some isolated residential street locations, and potentially some locations moving west along Southern Cross Drive.

5. CONCLUSIONS

- Existing visibility to the signs is predominantly constrained to the road corridor and or close elevated locations within adjacent golf courses.
- Removal or significant pruning of trees within the road reserve of Wentworth Avenue will increase potential visibility across immediate areas of the Lakes and to a lesser extent East Lakes golf course.
- Assuming total tree removal, the blocking effects of topography, vegetation and built forms beyond and either side of the road corridor will continue to screen the proposal from more distant view locations within surrounding golf courses.
- Trees along the southern side of Wentworth Avenue are setback from the carriageway by up to 7.5 metres, adjacent to a cycle way and in our opinion are unlikely to be trimmed to an extent that would increase visibility. Further, given the setback, it is unlikely that trees would be removed to manage overhanging vegetation or, for example, to facilitate road widening.
- Vegetation is similarly set back along the northern side of the carriage however to a more limited extent. Given the continuous canopy it is unlikely that trimming of isolated overhanging trees would significantly increase visibility to the signs.
- Potential view impacts for golf course users are unlikely to be direct or clear (free of any screening effects) would be short term and from moving, viewing situations and as such do not attract any ‘weight’ in terms of significance.
- If visible in more distant locations such as the Lakes Golf Club building and surrounding areas north of Mills Stream, the proposal will be difficult to discern given the spatial separation afforded by the golf course, wetlands, intervening built form including roadways and golf course vegetation.

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- The proposal does not impact on any documented views or heritage values as outlined in the Heritage Impact Statement provided by Heritage 21 or the amended HIS issued in October 2023. Based on views captured from historically open areas within East lakes Golf course, we conclude that the signs are sufficiently distanced and screened by intervening topography from the heritage item to an extent that the visual landscape and scenic quality of the items will not be adversely affected.
- This statement remains valid should some or all of the vegetation along both sides of Wentworth Avenue be removed. The screening effects of vegetation within adjoin parts East Lakes and The Lakes golf courses combined with underlying topography (local ridgelines and knolls) will further reduce future potential views creates through streetscape vegetation removal.
- In our opinion, any increased potential visibility of the signs due to the removal of vegetation would generate low visual effects and negligible or visual impact overall.
- The planning proposal in relation to continuing use of the digital signs, is supported on visual impacts grounds.

Yours sincerely,

Jane Maze-Riley
Director

OUTDOOR SYSTEMS

TRAFFIC & ROAD SAFETY ASSESSMENT

Existing Digital Advertising Sign

Wentworth Avenue

Pagewood NSW 2035

Traffic & Safety SOLUTIONS PTY LTD

ACN: 610 453 319 ABN: 69 610 453 319

trafficandsafetysolutions@gmail.com

Revision	Details	Date	Author
A	Report	04/04/2023	NP

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1 INTRODUCTION

1.1 BACKGROUND & REPORT PURPOSE

Traffic and Safety Solutions Pty Ltd has been commissioned by Outdoor Systems to undertake a Traffic & Road Safety Assessment to accompany a planning proposal to amend the Bayside Local Environmental Plan 2021 (BLEP 2021) to permit the continued use of the existing digital advertising signs installed on the bridge over Wentworth Avenue that links both sides of the Lakes Golf Course. The existing signs are visible to eastbound and westbound traffic in Wentworth Avenue, Pagewood.

The existing digital advertising signs were approved in 2017 (DA05-123/02) by Bayside Council with concurrence provided by Roads and Maritime Services (RMS)[1]. The signs were installed in July 2017.

RMS's concurrence is for the sign to operate until 31st December 2025, however the Council DA approval for the sign is for the sign to operate until 29th November 2021.

Since the approval in 2017, Bayside Council have adopted the Bayside Local Environment Plan 2021 (BLEP 2021) and of particular note, prohibits advertising signage land use within land zoned SP2 Infrastructure.

Council have advised Outdoor Systems that a planning proposal will be required to amend BLEP 2021 to add a Clause under Schedule 1 Additional Permitted Uses of the BLEP 2021, that will permit advertising signage.

The purpose of this report is to provide the details of the Traffic and Road Safety assessment that has been undertaken for the existing digital signs, with reference to the criteria specified in the '*NSW PLANNING AND ENVIRONMENT DEPARTMENT OF PLANNING TRANSPORT CORRIDOR OUTDOOR ADVERTISING AND SIGNAGE GUIDELINES – ASSESSING DEVELOPMENT APPLICATIONS UNDER SEPP 64 (NOVEMBER 2017)*' hereon referred to as the guidelines.

[1] It should be noted that RMS is now part of Transport for NSW (TfNSW).

1.2 STUDY METHODOLOGY

This report has been based upon the following sources:

- site observations and inspections,
- a review of the visibility of the location of the existing digital sign from a driver's perspective (dash camera images) from both the eastbound and westbound road approaches to the sign,
- analysis of the crash data obtained from TfNSW for the 5 year period (01 January 2016 to 31 December 2020) in the vicinity of the site (Appendix A),
- Austroads Guide to Road Design (Part 3 – Geometric Road Design-Edition 3.4 February 2021) hereon referred to as AGRRD,
- The following Road Safety Audits (RSA) prepared by McLaren Traffic Engineering:
  - Stage 2 Concept Design RSA dated 15th July 2016,
  - Stage 4 6 Week Post Opening RSA dated 24th August 2017, and
  - Stage 6 18 month Post Opening Audit dated 28th September 2018. (Appendix B)
- OMA Evidence and Research Summary Paper Impacts of Digital Billboards on Driver Behaviour (Appendix C).

2 PROPOSED DEVELOPMENT

2.1 SITE DESCRIPTION

The site is located in Wentworth Avenue, Pagewood approximately midway Southern Cross Drive and Bay Street.

The existing digital signs are installed on the bridge over Wentworth Avenue that links both sides of the Lakes Golf Course.

The signs are visible to eastbound and westbound traffic in Wentworth Avenue, Pagewood.

The aerial photo provided in figure 2.1 and the locality map provided in figure 2.2 show the location of site in the context of the surrounding road network.

FIGURE 2.1: SITE LOCATION – WENTWORTH AVENUE, PAGEWOOD
SOURCE: SIX MAPS

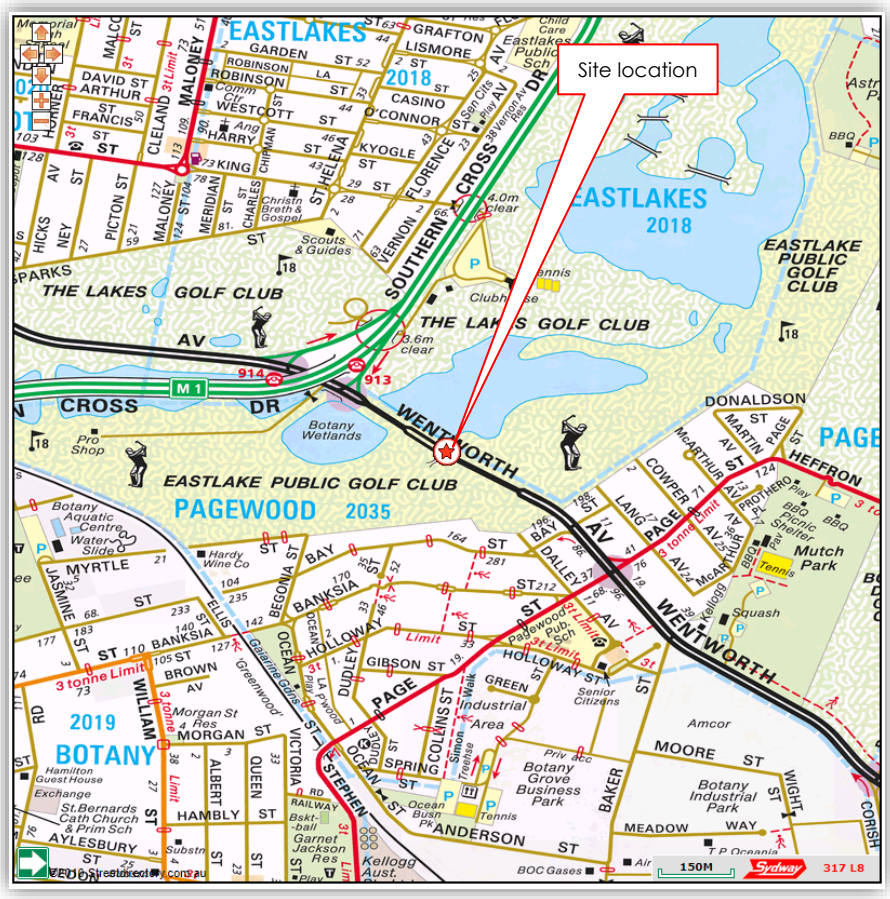

FIGURE 2.2: LOCALITY MAP – ROAD NETWORK SURROUNDING THE SITE LOCATION
SOURCE: STREET-DIRECTORY.COM.AU

2.2 ROAD NETWORK

A description of the roads that the sign is visible from is provided in Table 2.1 below.

Road Name	No of lanes	Road Type	Road Authority	Speed Limit
Wentworth Avenue (visible from both approaches)	2 lanes in each direction	State	TfNSW	70km/h

TABLE 2.1: ROAD NETWORK DETAILS

2.3 PROPOSED DEVELOPMENT DESCRIPTION

The planning proposal seeks to amend the BLEP 2021 to add a Clause under Schedule 1 Additional Permitted Uses of the BLEP 2021, that will permit advertising signage.

The existing digital signs are proposed to operate in the same manner and dwell time that was previously approved in 2017 and does not involve any changes to the existing digital signs in any form.

The size of the existing sign is 12.48m x 3.25m = 40.46m^2.

The existing digital sign will operate with the previously approved dwell time of 10 seconds which is consistent with the 'guidelines' for a speed zone under 80km/h and similar to other approved digital signs on other state roads. There are no changes proposed to the dwell time.

Figure 2.3 shows the photograph of the existing digital sign that is proposed to continue to operate.

FIGURE 2.3: WESTERN ELEVATION - VISIBLE TO EASTBOUND TRAFFIC IN WENTWORTH AVENUE
SOURCE: GOOGLE STREET VIEW

FIGURE 2.4: EASTERN ELEVATION - VISIBLE TO WESTBOUND TRAFFIC IN WENTWORTH AVENUE
SOURCE: GOOGLE STREET VIEW

Section 3.5.1 of the guidelines refers to the road safety review of signs over 20m^2:

'A road safety check which focuses on the effects of the placement and operation of signs over 20sqm must be carried out in accordance with Part 3 of the RMS Guidelines for Road Safety Audit Practices after a 12-month period of operation but within 18 months of the signs installation. A road safety check must be carried out by an independent road safety auditor who did not contribute to the original application documentation. A copy of the report is to be provided to RMS and any safety concerns identified by the auditor relating to the operation or installation of the sign must be rectified by the applicant.'

In accordance with section 3.5.1 the following Road Safety Audits (RSA) prepared by McLaren Traffic Engineering:

- Stage 2 Concept Design RSA dated 15th July 2016,
- Stage 4 6 Week Post Opening RSA dated 24th August 2017, and
- Stage 6 18 month Post Opening Audit dated 28th September 2018.

The installation of the signs has not impacted on road safety as indicated in the RSA's concluding statement:

'The brief provided has been examined and the site inspected both during clear daylight and night periods to determine the safety impacts of the subject digital signage.

This road safety audit has found no adverse impact on road safety associated with the subject and operational digital advertising sign.'

3 ROAD SAFETY ASSESSMENT

3.1 STOPPING SIGHT DISTANCE - AUSTROADS

Section 3.2.3 of the guidelines relates to the proximity to decision making points and conflict points. The guidelines state that the sign should not be located:

- less than the safe sight distance from an intersection, merge point, exit ramp, exit ramp, traffic control signal or sharp curves,
- less than the safe stopping distance from a marked foot crossing, pedestrian crossing, pedestrian refuge, cycleway crossing, cycleway facility or hazard within the road environment,
- so that it is visible from the stem of a T-intersection.

The provision of stopping sight distance is a mandatory design condition for all roads and intersections. The definition of stopping sight distance as described in Austroads Guide to Road Design Part 3 is illustrated in figure 3.1.

Stopping sight distance (SSD) is the distance to enable a normally alert driver, travelling at design speed on wet pavement, to perceive, react and brake to stop before reaching a hazard on the road ahead.

Stopping sight distance is calculated using the following:

- driver reaction time (figure 3.2),
- design speed (figure 3.3), and
- grade corrections (figure 3.3).

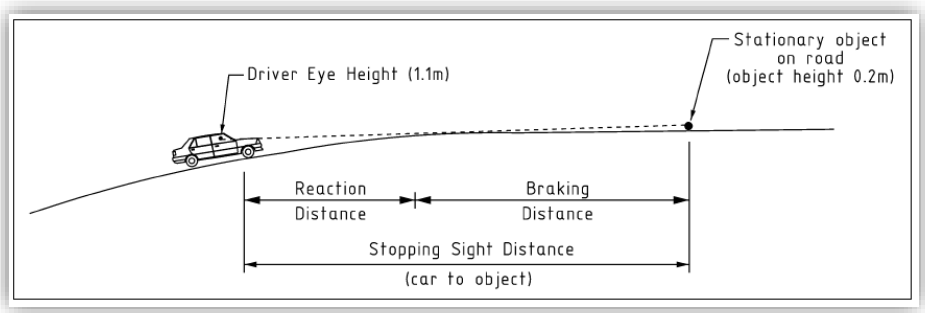

FIGURE 3.1: STOPPING SIGHT DISTANCE DEFINITION
SOURCE: AUSTROADS GUIDE TO ROAD DESIGN – PART 3 (FIGURE 5.2)

Reaction time R_T (s)	Typical road conditions	Typical use
2.5	• Unalerted driving conditions due to the road only having isolated geometric features to maintain driver interest • Areas with high driver workload/complex decisions • High speed roads with long distances between towns.	Absolute minimum value for high speed roads with unalerted driving conditions. General minimum value for: • high speed rural freeways • high speed rural intersections • isolated alignment features.
2.0	• Higher speed urban areas • Few intersections • Alerted driving situations in rural areas • High speed roads in urban areas comprising numerous intersections or interchanges where the majority of driver trips are of relatively short length.	Absolute minimum value for the road conditions listed in this row. General minimum value for most road types, including those with alert driving conditions.
1.5[1]	Alert driving conditions e.g.: • high expectancy of stopping due to traffic signals • consistently tight alignments for example, mountainous roads • restricted low speed urban areas • built-up areas – high traffic volumes • interchange ramps when sighting over or around barriers.	Absolute minimum value. Only used in very constrained situations where drivers will be alert. Can be considered only where the maximum operating speed is ≤ 90 km/h. Should not be used where other design minima have been used.

FIGURE 3.2: DRIVER REACTION TIME CRITERIA
SOURCE: AUSTROADS GUIDE TO ROAD DESIGN – PART 3 (TABLE 5.2)

Design speed (km/h)	Absolute minimum values Only for specific road types and situations[1] based on $d = 0.46$[2],[3]			Desirable minimum values for all road types based on $d = 0.36$			Values for major highways and freeways in flat terrain[7] based on $d = 0.26$	
	$R_T = 1.5$ s[4]	$R_T = 2.0$ s[4]	$R_T = 2.5$ s	$R_T = 1.5$ s[4]	$R_T = 2.0$ s[4]	$R_T = 2.5$ s	$R_T = 2.0$ s	$R_T = 2.5$ s
40	30	36	–	34	40	45	–	–
50	42	49	–	48	55	62	–	–
60	56	64	–	64	73	81	–	–
70	71	81	–	83	92	102	113	123
80	88	99	–	103	114	126	141	152
90	107	119	132	126	139	151	173	185
100	–	141	155	–	165	179	207	221
110	–	165	180	–	193	209	244	260
120	–	190	207	–	224	241	285	301
130	–	217	235	–	257	275	328	346
Corrections due to grade [5] [6]	**–8**	**–6**	**–4**	**–2**	**2**	**4**	**6**	**8**
40	5	3	2	1	–1	–2	–2	–3
50	8	5	3	2	–1	–3	–4	–5
60	11	8	5	2	–2	–4	–6	–7
70	15	11	7	3	–3	–5	–8	–10
80	20	14	9	4	–4	–7	–10	–13
90	25	18	11	5	–5	–9	–13	–16
100	31	22	14	6	–6	–11	–16	–20
110	38	26	17	8	–7	–13	–19	–24
120	45	31	20	9	–8	–16	–22	–29
130	53	37	23	11	–10	–18	–26	–34

FIGURE 3.3: STOPPING SIGHT DISTANCE CRITERIA
SOURCE: AUSTROADS GUIDE TO ROAD DESIGN – PART 3 (TABLE 5.4)

The above parameters have been used to determine the stopping sight distance for the signs in Wentworth Avenue and is summarised in Table 3.1.

Road Name	Driver Reaction Time (R_T)	Design Speed	Grade %	Grade Correction	Stopping Sight Distance
Wentworth Avenue (both EB & WB)	1.5s	70km/h	-0%	+0m	83m

TABLE 3.1: STOPPING SIGHT DISTANCE SUMMARY
SOURCE: AUSTROADS

3.2 VISIBILITY OF THE PROPOSED DIGITAL LED SIGN

Section 1.6.4 of the guideline's states that:

'*Accurate perspective photo-montages of the proposed digital LED sign, at human eye level from the driver's perspective, taken from critical viewing points in advance of the sign in each approach direction are required.*'

A site inspection was conducted on 03/11/2021 and dashcam images were taken to present a driver's perspective of the existing digital sign from different approach distances as shown in the following photographs.

FIGURE 3.4: DASHCAM IMAGE – LANE 1 WENTWORTH AVENUE WB 150M EAST OF SIGN PHOTOGRAPH TAKEN 03/11/2021

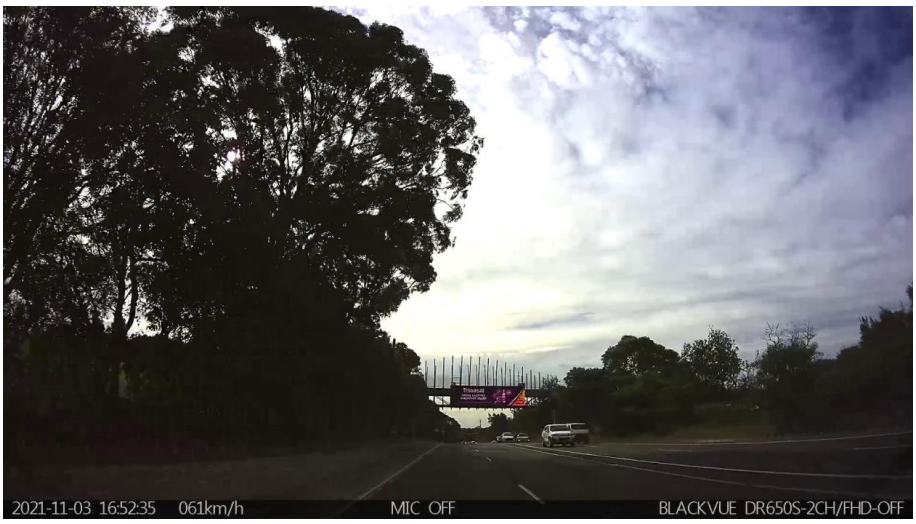

FIGURE 3.5: DASHCAM IMAGE – LANE 1 WENTWORTH AVENUE WB 85M EAST OF SIGN PHOTOGRAPH TAKEN 03/11/2021

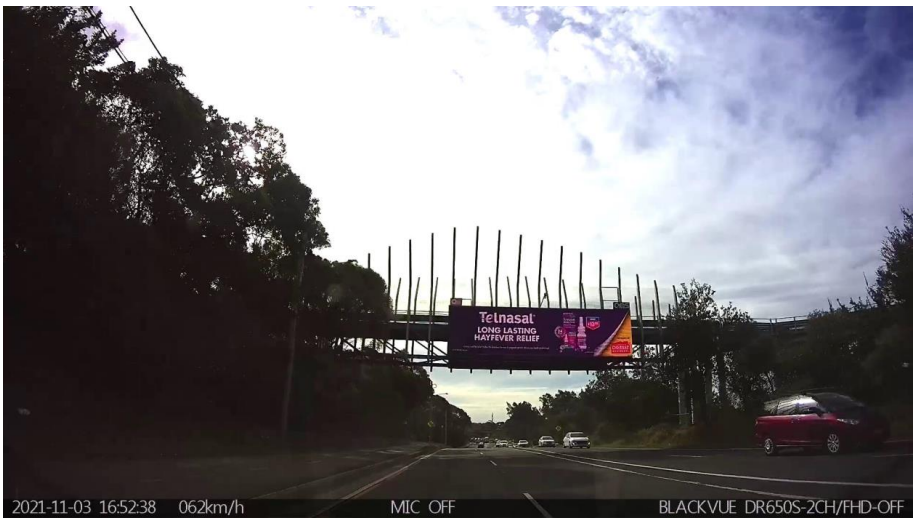

FIGURE 3.6: DASHCAM IMAGE – LANE 1 WENTWORTH AVENUE WB 30M EAST OF SIGN PHOTOGRAPH TAKEN 03/11/2021

FIGURE 3.7: DASHCAM IMAGE – LANE 2 WENTWORTH AVENUE WB 150M EAST OF SIGN PHOTOGRAPH TAKEN 03/11/2021

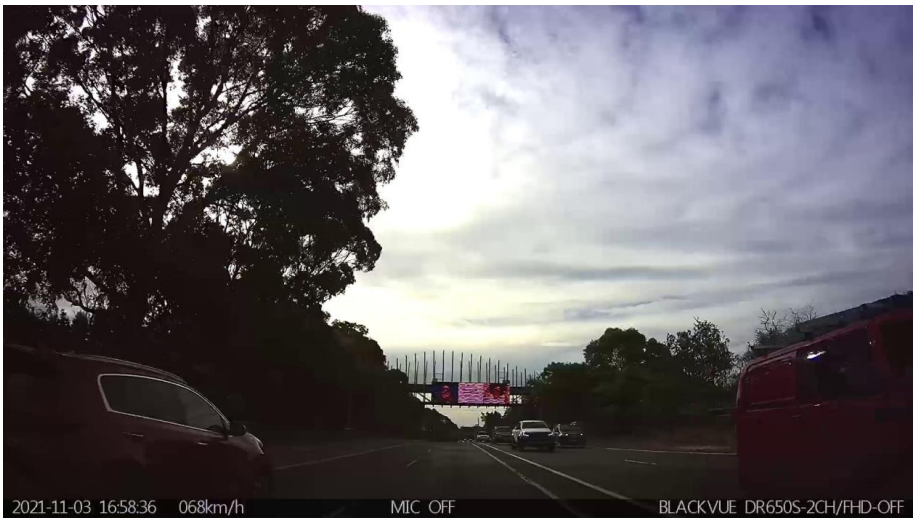

FIGURE 3.8: DASHCAM IMAGE – LANE 2 WENTWORTH AVENUE WB 85M EAST OF SIGN PHOTOGRAPH TAKEN 03/11/2021

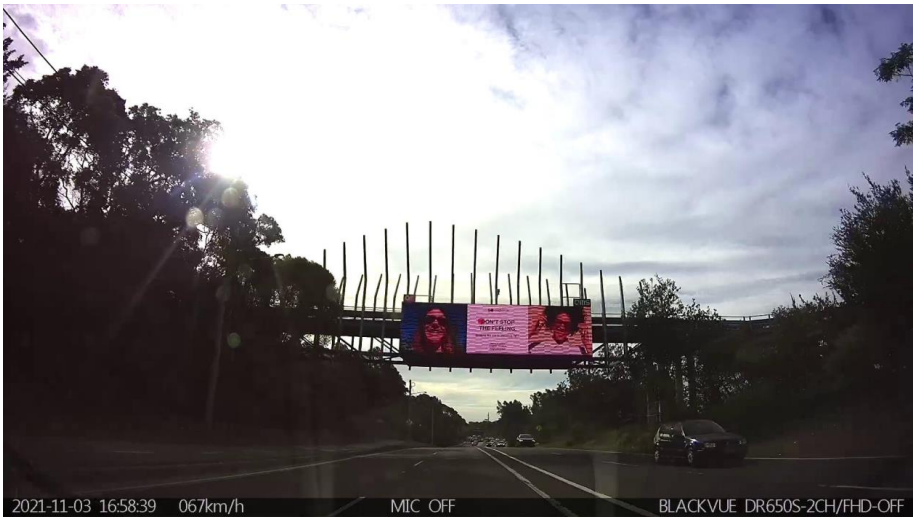

FIGURE 3.9: DASHCAM IMAGE – LANE 2 WENTWORTH AVENUE WB 30M EAST OF SIGN PHOTOGRAPH TAKEN 03/11/2021

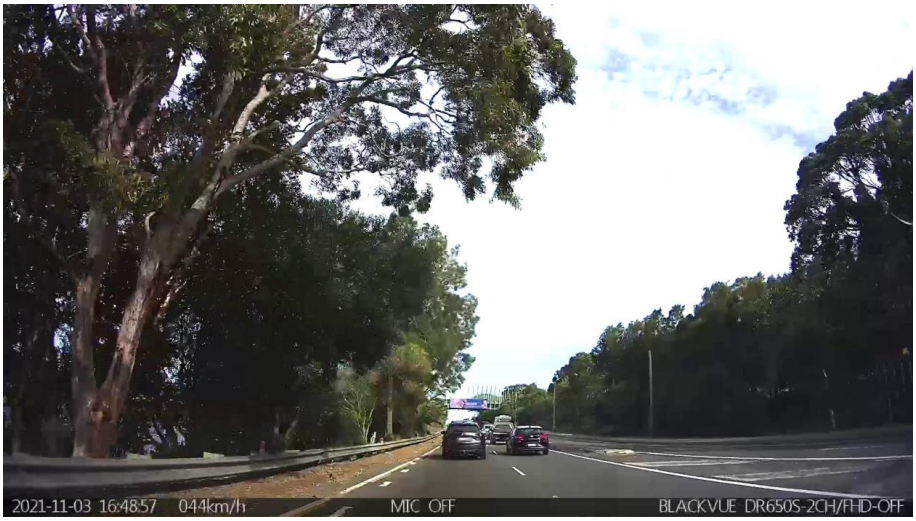

FIGURE 3.10: DASHCAM IMAGE – LANE 1 WENTWORTH AVENUE EB 150M EAST OF SIGN PHOTOGRAPH TAKEN 03/11/2021

FIGURE 3.11: DASHCAM IMAGE – LANE 1 WENTWORTH AVENUE EB 85M EAST OF SIGN PHOTOGRAPH TAKEN 03/11/2021

FIGURE 3.12: DASHCAM IMAGE – LANE 1 WENTWORTH AVENUE EB 30M EAST OF SIGN PHOTOGRAPH TAKEN 03/11/2021

FIGURE 3.13: DASHCAM IMAGE – LANE 2 WENTWORTH AVENUE EB 150M EAST OF SIGN PHOTOGRAPH TAKEN 03/11/2021

FIGURE 3.14: DASHCAM IMAGE – LANE 2 WENTWORTH AVENUE EB 85M EAST OF SIGN PHOTOGRAPH TAKEN 03/11/2021

FIGURE 3.15: DASHCAM IMAGE – LANE 2 WENTWORTH AVENUE EB 30M EAST OF SIGN PHOTOGRAPH TAKEN 03/11/2021

The photographs above demonstrate that at the approach distances shown including at the stopping sight distance, the visibility of the existing digital signs from the driver's perspective in Wentworth Avenue does not create a distraction to a driver.

3.3 CRASH DATA ANALYSIS

As part of this traffic and road safety assessment the crash data for 5-year period (01 January 2016 to 31 December 2020) for eastbound and westbound traffic within 200m of the existing signs, has been sourced from TfNSW to determine if there are any crash problems that have arisen since the installation of the digital sign in July 2017.

The area that the crash data was sourced for is shown in figure 3.16.

A detailed crash report and summary crash report for the crash data within the study area is provided in Appendix A.

FIGURE 3.16: CRASH DATA AREA
MAP SOURCE: GOOGLE MAPS

Analysis of the summary crash report for crashes that have occurred in the study area shown in figure 3.16 indicates that of the 3 reported crashes within the study area between 1st January 2016 and 31st December 2020, only one of these crashes was in a location where the digital sign may have been visible to the driver.

This crash did not involve any casualties. It is important to note also that the crash occurred at around midnight and the details of the driver at fault is not recorded which indicates that the driver may have not stopped to give details and that there may have been other contributing factors involved.

The crash data clearly indicates that the installation of the digital signs have not increased crashes and supports the conclusions of the road safety audit.

4 SEPP64 ASSESSMENT

4.1 COMPLIANCE WITH SECTION 2 OF GUIDELINES

Section 2.5.8 of the guidelines outlines the digital sign criteria that is used in the assessment of digital advertising signs which is provided below.

(a) Each advertisement must be displayed in a completely static manner, without any motion, for the approved dwell time as per criterion (d) below.

The proposed advertisements can be considered to be essentially static signs for the 10 second dwell time that uses digital LED technology to allow advertisements to be easily changed.

(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.

Each individual proposed advertisement will not relate or sequence to the subsequent advertisement and therefore driver will not to be required to anticipate the next advertisement.

(c) The image must not be capable of being mistaken:
(i) For a prescribed traffic control device because it has, for example, red, amber or green circles, octagons, crosses or triangles or shapes or patterns that may result in the advertisement being mistaken for a prescribed traffic control device,
(ii) as text providing driving instructions to drivers.

The digital signs will not display advertisements that imitate traffic control devices.

(d) Dwell times for image display are:
(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.

The posted speed limit of Wentworth Avenue is 70km/h, and the existing and proposed dwell time is 10 seconds. The dwell time therefore complies with the requirements for posted speed limit of below 80km/h.

(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 transition time for the existing digital signs is no longer than 0.1 seconds. In the event of failure, the default image shows a black screen.

(f) Luminance levels must comply with the requirements in Section 3 of the guide.

The location of the existing digital signs is considered to be in Zone 3. The luminance specification for the proposed digital screen are as follows:

Lighting Condition	Max Permissible Luminance (cd/m^2)
Full sun on face of sign	No Limit
Day time luminance (typical sunny day)	6000
Morning and evening (twilight and overcast weather)	700
Night time	350

(g) 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.

The proposed advertisements will not contain images that will distract drivers. The digital sign is essentially a static sign and will not contain elements that scroll, flicker, flash or contain any form of moving content during the display of each sign.

(h) The amount of text and information supplied on a sign should be kept to a minimum (for example no more than a driver can read at a short glance).

It is known that advertisements that contain substantial amounts of text are not effective and therefore text will be kept to a minimum and the emphasis being on still photographs.

(i) Any 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.

The signs are not located where they could be visible from a school zone.

(j) Each sign proposal must be assessed on a case by case basis including replacement of an existing fixed, scrolling or tri-vision sign with a digital sign and in the instance of a sign being visible from each direction, both directions for each location must be assessed on their own merits.

The signs are visible to both eastbound and westbound traffic in Wentworth Avenue as per the assessment carried out in section 3 of this report.

(k) At any time, including where the speed limit in the area of the sign is changed, if detrimental effect is identified on road safety post installation of a digital sign, RMS reserves the right to re-assess the site using an independent RMS-accredited road safety auditor. Any safety issues identified by the auditor and options for rectifying the issues are to be discussed between RMS and the sign owner and operator.

Noted.

(l) Sign spacing should limit driver's view to a single sign at any given time with a distance of no less than 150 metres 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.

The assessment carried out in section 3 demonstrates that the existing signs are not located within 150m of any other sign or within the same view of any other sign.

(m) Signs greater than or equal to 20sq metres must obtain RMS concurrence AND must ensure the following minimum vertical clearances;
(i) 2.5m from lowest point of the sign above the road surface if located outside the clear zone.
(ii) 5.5m from lowest point of the sign above the road surface if located within the clear zone (including shoulders and traffic lanes) or the deflection zone of a safety barrier if a safety barrier is installed. If attached to road infrastructure (such as an overpass), the sign must be located so that no portion of the advertising sign is lower than the minimum vertical clearance under the overpass or supporting structure at the corresponding location.

The existing signs are 40.46m^2 each and therefore TfNSW concurrence will be required. It should be noted that the existing TfNSW concurrence permits the sign to be operational until 31/12/2025. The existing digital signs are installed on the existing bridge over Wentworth Avenue that links both sides of the Lakes Golf Course, approximately 6m above the ground and outside the clear zone.

(n) An electronic log of a signs activity must be maintained by the operator for the duration of the development consent and be available to the consent authority and/or RMS to allow a review of the signs activity in case of a complaint.

The electronic log for the existing digital signs will be continued and is available to the Consent Authority and/or TfNSW in case of a complaint.

(o) A road safety check which focuses on the effects of the placement and operation of all signs over 20sqm must be carried out in accordance with Part 3 of the RMS Guidelines for Road Safety Audit Practices after a 12-month period of operation but within 18 months of the signs installation. The road safety check must be carried out by an independent RMS-accredited road safety auditor who did not contribute to the original application documentation. A copy of the report is to be provided to RMS and any safety concerns identified by the auditor relating to the operation or installation of the sign must be rectified by the applicant. In cases where the applicant is the RMS, the report is to be provided to the Department of Planning and Environment's as well.

In accordance with section 3.5.1 the following Road Safety Audits (RSA) prepared by McLaren Traffic Engineering:

- Stage 2 Concept Design RSA dated 15th July 2016,
- Stage 4 6 Week Post Opening RSA dated 24th August 2017, and
- Stage 6 18 month Post Opening Audit dated 28th September 2018.

The installation of the signs has not impacted on road safety as indicated in the RSA's concluding statement:

'The brief provided has been examined and the site inspected both during clear daylight and night periods to determine the safety impacts of the subject digital signage.

This road safety audit has found no adverse impact on road safety associated with the subject and operational digital advertising sign.'

4.2 COMPLIANCE WITH SECTION 3 OF GUIDELINES

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 existing digital signs are installed on the existing bridge over Wentworth Avenue that links both sides of the Lakes Golf Course, approximately 6m above the ground, outside the clear zone and are clear of pedestrian and cycle paths. The signs are wholly contained on the bridge.

(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.

The existing digital signs are installed on the existing bridge over Wentworth Avenue that links both sides of the Lakes Golf Course, approximately 6m above the ground, outside the clear zone and are clear of pedestrian and cycle paths. The signs are wholly contained on the bridge.

(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.

Not applicable as the signs are installed outside the clearzone.

(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.
Additional 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.

The existing digital signs are installed on the existing bridge over Wentworth Avenue that links both sides of the Lakes Golf Course, approximately 6m above the ground and outside the clear zone

LINE OF SITE

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

The existing digital sign are installed on the existing bridge over Wentworth Avenue that links both sides of the Lakes Golf Course, approximately 6m above the ground and do not obstruct the drivers view of the road to

vehicles or pedestrians. Refer to section 3 of this report which outlines the road safety assessment undertaken in relation to stopping sight distance in accordance with Austroads.

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

The existing digital signs are installed on the existing bridge over Wentworth Avenue that links both sides of the Lakes Golf Course, approximately 6m above the ground and do not obstruct the view of pedestrians or cyclists.

(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 photomontage should be used to assess this issue.

Section 3.2 of this report provides photos that provides a driver's perspective of the signs from various approach distances. The advertisements will not contain any messages that depict a road alignment or any traffic device.

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

Section 3.2 of this report provides photographs taken from the driver's perspective to the existing digital signs. The location of the digital signs from is in the main view of the traffic stream and does not interfere with the ability of

the driver to see the road ahead or interfere with the visibility of the traffic signals.

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 signs are located outside the stopping sight distance to any decision making point.

(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.

Section 3.2 of this report provides photographs taken from the driver's perspective of the location of the existing digital signs. The photographs show that the location of the signs does not interfere with the visibility of the traffic signals and therefore is not considered to distract from the ability for a driver to view the traffic signals and stop if required.

SIGN SPACING

(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.

The assessment carried out in section 3 demonstrates that the existing signs are not located within 150m of any other sign or within the same view of any other sign.

SIGN DESIGN AND OPERATION CRITERIA

(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.

Section 3.2 of this report provides photographs taken from the driver's perspective of the location of the existing digital signs. The photographs show that the location of the signs does not reduce visibility of the road alignment or the visibility of the traffic signals and therefore is not considered to distract from the ability for a driver to view the traffic signals and stop if required.

(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?

There are no traffic control devices with 200m of the existing signs. The advertisements will not contain any messages that depict road alignment, any traffic device, traffic signal nor use text to provide instruction to drivers.

Additional criteria for digital 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.

The advertisements will not contain any messages that depict road alignment, any traffic device, traffic signal nor use text to provide instruction 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).

From experience, advertisements that contain substantial amounts of text are not effective and therefore text will be kept to a minimum and the emphasis being on still photographs and illustrations.

DWELL TIME AND TRANSITION TIME

(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.

The posted speed limit of Wentworth Avenue is 70km/h, and the existing and proposed dwell time is 10 seconds. The dwell time therefore complies with the requirements for posted speed limit of below 80km/h.

(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.

The signs are not located where they could be visible from a school zone.

(d) Digital signs must not contain animated or video/movie style advertising or messages including live television, satellite, Internet or similar broadcasts.

The advertisements for the digital signs will only contain only still images.

(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 transition time for the existing digital signs is no longer than 0.1 seconds. In the event of failure, the default image shows a black screen.

ILLUMINATION AND REFLECTANCE

(a) Luminance levels must comply with the requirements in the table below.

Lighting condition	Zone 1 (cd/sqm)	Zones 2 and 3 (cd/sqm)	Zone 4 (cd/sqm)
Full sun on face of signage	No limit	No limit	No limit
Daytime luminance		6000	6000
Morning and evening twilight and inclement weather	700	700	500
Nighttime	350	350	200

The location of the proposed digital LED sign is considered to be in Zone 3. The luminance specification for the proposed digital screen are as follows:

Lighting Condition	Max Permissible Luminance (cd/m^2)
Full sun on face of sign	No Limit
Day time luminance (typical sunny day)	6000
Morning and evening (twilight and overcast weather)	700
Night time	350

(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.

The proposed advertisements will not contain any flickering or flashing content and the luminance levels will in accordance with levels permissible for zone 3 and will not distract or dazzle drivers.

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.

The existing digital signs are not capable of communicating or interacting with road users.

(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.

Each individual advertisement will not relate or sequence to the subsequent advertisement and therefore driver will not to be required to anticipate the next advertisement.

ROAD SAFETY REVIEW OF NEW OR MODIFIED SIGNS

RMS may review the crash history of any new or modified advertising signs after a three-year period to determine whether the sign has had an adverse effect on road safety. If RMS is of the opinion that a sign is a traffic hazard, RMS may direct the owner or occupier of the land on which the sign is situated or the person who erected the sign to screen, modify or remove the sign, regardless of whether or not the sign is the subject of a development consent under the Act or a consent under the Roads Act 1993.

Noted.

ROAD SAFETY REVIEW OF DIGITAL SIGNS

At any time, including where the speed limit in the area of the sign is changed, if a detrimental effect is identified on road safety post installation of a digital sign, RMS reserves the right to re-assess the site using an independent RMS-accredited road safety auditor. Any safety issues identified by the auditor and options for rectifying the issues are to be discussed between RMS and the sign owner and operator.
An electronic log of a digital sign's operational activity must be maintained by the operator for the duration of the development

consent and be available to the consent authority and/or RMS to allow a review of the sign's activity in case of a complaint.

Noted. The electronic log for the existing digital signs will be continued and is available to the Consent Authority and/or TfNSW in case of a complaint.

5 RESEARCH AND ROAD SAFETY STUDIES ON THE IMPACTS OF DIGITAL ADVERTISING ON DRIVERS

There is a common misconception that digital advertising signs increase driver distraction and reduce road safety. There have been many studies to determine the impact that of digital advertising on driver behaviour and attention. Th findings of the studies do not support this theory.

The OMA Evidence and Research Paper - Impacts of Digital Billboards on Driver Behaviour provided in Appendix C, provides a summary of the studies. The findings of these studies are summarised below.

1. The study by Klauer in 2006 on eye fixation found that:
- total eyes-off-road durations of greater than 2 seconds significantly increased individual near-crash/crash risk whereas eyeglance durations less than 2 seconds did not significantly increase risk relative to normal, baseline driving.

2. A 2012 study by FHA on driver distraction found that:
- drivers were more likely to glance at digital billboards for a slightly longer time than static billboards (average 0.335s). However, it concluded that there was no evidence indicating that (digital billboards) are associated with long glances away from the road that may reflect an increase in risk.

3. A study by Tantala and Tantala in 2010 regarding crash data study found:
- that the difference in crash data before and after the conversion was not statistically significant.
- the total number of accidents was approximately equivalent to what would have been expected with or without the introduction of the digital billboard meaning that the conversion to digital had no impact on the crash rates.

4. Monash University studies conducted in 2015 concluded that:
- there was not any difference in the impact of digital and static billboards.
- there was no difference in steering variation, variability of speed and the mean and variation of braking in the presence of billboards.

5. A study by Eyetracker in 2014 found that:

- while digital signage attracted more fixations than static signage, there was no difference in duration of these fixations and all fixations were under 2 seconds. As noted by the study by Klauer in 2006, this is the generally agreed amount of time fixations are required to be before they are considered distracting.
- there were far more fixations on traffic and on-premises signs than on roadside advertising signage.

6. A study by Carolyn Samsa in 2015 found that:
- the presence of billboards does not significantly affect the percentage of time drivers devoted to glancing at the forward roadway.
- digital billboards, were not more distracting than other types of signage.
- digital billboards do not draw drivers' attention away from the road for dangerously long periods of time.
- drivers maintained safe average headway in the presence of digital billboards.

7. OMA commissioned the Australian Road Research Board to observe driver behaviour in the presence of a digital billboard when that billboard was both on and off and at various dwell times. That study found that:
- at all dwell times vehicle lateral control performance either improved or was unaffected by the digital billboard's presence.
- results for stopping over the line where this performance indicator improved at all but one dwell time.

The above studies indicate that the documented evidence from many different driver behaviour studies undertaken both locally and worldwide do not support the perception that digital advertising signs increase driver distraction.

6 SUMMARY AND CONCLUSION

This traffic and road safety assessment for the existing digital signs has been shown to comply with the road safety criteria specified in the Department of Planning and Environment's 'TRANSPORT CORRIDOR OUTDOOR ADVERTISING AND SIGNAGE GUIDELINES – ASSESSING DEVELOPMENT APPLICATIONS UNDER SEPP 64 (NOVEMBER 2017)'.

The analysis of the crash history of the roads from where the proposed digital LED sign will be visible from indicates that there have been only 3 crashes occurring within the study area in the most recent 5 year period. Of these 3 crashes, only 1 crash is considered to be a crash where the sign would be potentially visible to the driver. This equates to a very low crash rate and considering that the existing signs has been in operation during since 2017, there are no indications in the crash history that the road safety has reduced by the installation of these signs.

This is also supported by the concluding statement in the Road Safety Audits prepared by McLaren Traffic Engineering:

'The brief provided has been examined and the site inspected both during clear daylight and night periods to determine the safety impacts of the subject digital signage.

This road safety audit has found no adverse impact on road safety associated with the subject and operational digital advertising sign.'

Based on the findings of this traffic and road safety assessment report it is our professional opinion that the proposed digital LED sign can be recommended for approval.

Navin Prasad (Bachelor of Engineering Technology – Civil Engineering)
Director
Traffic & Safety Solutions PTY LTD

APPENDIX A – TFNSW CRASH DATA


Crashes on Wentworth Avenue, Pagewood -
200m both sides of Pedestrian Bridge
from 01 Jan 2016 to 31 Dec 2020
N
Crash Severity
Fatal
Serious Injury
Moderate Injury
Minor/Other Injury
Non-casualty (towaway)
0 25 50 100 Meters
© Department of Finance, Services & Innovation 2018

2 casualties from **3** crashes

Summary crash report

Date of crash: 18/07/2017 – 26/09/2020

Summary

Year	# Crashes	# Casualties
2017	1	1
2018	1	1
2020	1	

Degree of crash - detailed	# Crashes	% of Total
Serious Injury	1	33.3%
Moderate Injury	1	33.3%
Non-casualty (towaway)	1	33.3%

Degree of casualty - detailed	# Casualties	% of Total
Seriously Injured	1	50.0%
Moderately Injured	1	50.0%

Road user class	# Casualties	# Casualties without safety device	% Casualties by class without safety device
Motor vehicle driver	1		
Motorcycle rider	1		
Total	**2**		

Crashes with speeding involved		Crashes with fatigue involved	
1	33.3%	0	0.0%

Without safety device includes: Belt fitted but not worn, No restraint fitted to position OR No helmet worn

Crash

Type of crash	# Crashes	% of Total
Car crash	2	66.7 %
Motorcycle crash	1	33.3 %

RUM group	# Crashes	% of Total
Vehicles from same direction	1	33.3%
Off path, on straight	1	33.3%
Off path, on curve	1	33.3%

-Type of crash categories are not mutually exclusive and should not be summed
-Bus crash includes Light bus or Heavy bus
-Heavy truck crash includes Heavy rigid or Articulated truck
-Heavy vehicle crash includes Heavy truck or Heavy bus

Collision type	# Crashes	% of Total
Multi vehicle	1	33.3%
Single vehicle	2	66.7%

Road

Type of location group	# Crashes	% of Total
Non-intersection locations	3	100.0%

Intersection locations include crashes up to 10 metres from an intersection

Speed limit	# Crashes	% of Total
70 km/h	3	100.0%

Road classification (admin)	# Crashes	% of Total
State	3	100.0%

Road classification (legal)	# Crashes	% of Total
Other classified road	3	100.0%

Surface condition	# Crashes	% of Total
Dry	3	100.0%

Data source	# Crashes	% of Total
Police investigated	3	100.0%

When

One-hour intervals	# Crashes	% of Total
08:00 - 08:59	1	33.3%
12:00 - 12:59	1	33.3%
23:00 - Midnight	1	33.3%

Day of week	# Crashes	% of Total
Tuesday	1	33.3%
Thursday	1	33.3%
Saturday	1	33.3%

Public holiday period	# Crashes	% of Total

Weekend crashes		Weekday crashes	
1	33.3%	2	66.7%

School holiday period	# Crashes	% of Total
End term 3	1	33.3%

School travel time	# Crashes	% of Total
Yes	1	33.3%
No	2	66.7%

School zone active	# Crashes	% of Total
Not a school zone	3	100.0%

Weather and lighting

Weather	# Crashes	% of Total
Fine	3	100.0%

Natural lighting	# Crashes	% of Total
Daylight	2	66.7%
Darkness	1	33.3%

Street lighting	# Crashes	% of Total
On	1	33.3%
Off	1	33.3%
Nil	1	33.3%

Dataset filters: Crashes on Wentworth Avenue (200m either side of the Pedestrian Bridge), Pagewood from 01 Jan 2016 to 31 Dec 2020

Note: Crash self reporting, including self reported injuries began in Oct 2014. Trends from 2014 are expected to vary from previous years. More unknowns are expected in self reported data.

Generated: 12/11/2021 11:31

Detailed Crash Report

TfNSW Region / LGA / Town / Street	Crash ID	Data Source	Date of crash	Day of Week	Time	Distance	Direction	ID Feature	Location type	Alignment	Weather	Surface condition	Speed limit	TU Type	TU Direction	TU Manoeuvre	Age / Gender	Road User Class	Degree of casualty	Degree of crash	Killed	Serious Injury	Moderate Injury	Minor Other Injury	Uncategorised Injury	Crash Factor
Greater Sydney Bayside EASTLAKES WENTWORTH AVE	1250540		E283396598					RUM: 30 Rear end					No. of TUs involved: 2													
														CAR	W in WENTWORTH AVE	Proceeding in lane	Unk U	MV driv.	N							
		P	26/09/20	Sat	2350	300 m	W	BAY ST	Div	Str	Fine	Dry	70	CAR	W in WENTWORTH AVE	Proceeding in lane	63 F	MV driv.	N	NC	0	0	0	0	0	
	1172925		E68177975					RUM: 81 Off left/rt bnd=>obj					No. of TUs involved: 1			Fence										
		P	01/02/18	Thu	0850	1 km	W	BANKS AVE	Div	Cur	Fine	Dry	70	CAR	E in WENTWORTH AVE	Proceeding in lane	20 M	MV driv.	S	SC	0	1	0	0	0	S
Greater Sydney Bayside PAGEWOOD WENTWORTH AVE	1146198		E64746835					RUM: 74 On road-out of cont.					No. of TUs involved: 1													
		P	18/07/17	Tue	1238	100 m	E	SOUTHERN CROSS DR	2-way	Str	Fine	Dry	70	M/C	W in WENTWORTH AVE	Proceeding in lane	50 M	MC rider	M	MC	0	0	1	0	0	

Report Totals

Crashes: 3 Fatal Crashes (FC): 0 Serious Injury Crashes (SC): 1 Moderate Injury Crashes (MC): 1 Minor/Other Injury Crashes (OC): 0 Uncategorised Injury Crashes (UC): 0 Non-Casualty Crashes (NC): 1

Killed (K): 0 Seriously Injured (S): 1 Moderately Injured (M): 1 Minor/Other Injured (O): 0 Uncategorised Injured (U): 0 Not Injured (N): 2

Report Filters

Dataset Filters

Crashes on Wentworth Avenue (200m either side of the Pedestrian Bridge), Pagewood from 01 Jan 2016 to 31 Dec 2020

Crash self reporting, including self reported injuries began in Oct 2014. Trends from 2014 are expected to vary from previous years. More unknowns are expected in self reported data.

APPENDIX B – ROAD SAFETY AUDITS

STAGE 2 CONCEPT DESIGN ROAD SAFETY AUDIT OF

PROPOSED CONVERSION OF EXISTING ROADSIDE SIGNAGE TO DIGITAL

AT WENTWORTH AVENUE GOLF COURSE OVERBRIDGE, EASTLAKES

Address: Shop 7, 720 Old Princes Highway Sutherland NSW 2232
Postal: P.O Box 66 Sutherland NSW 1499

Telephone: +61 2 8355 2440
Fax: +61 2 9521 7199
Web: www.mclarentraffic.com.au
Email: admin@mclarentraffic.com.au

Division of RAMTRANS Australia ABN: 45067491678

Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

16330.01FB - 15 July 2016

Development Type:	**Proposed Conversion of Existing Roadside Signage to Digital**
Site Address:	**Wentworth Avenue & Wentworth Avenue Overpass, Eastlakes**
Prepared for:	**Outdoor Systems**
Document reference:	**16330.01FB**

Status	Issue	Prepared By	Checked By	Date
Draft	A	TH	CM	24th June 2016
Draft	B	TH	CM	27th June 2016
Draft	C	TH	CM	29th June 2016
Draft	D	TH	CM	5th July 2016
Final	A	TH	CM	5th July 2016
Final	B	TH	CM	15th July 2016

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1 PROJECT OVERVIEW

1.1 Inception

Project	Proposed Conversion of Existing Roadside Signage to Digital at Wentworth Avenue Golf Course Overbridge, Eastlakes
Audit Reference	16330.01FB
Audit Stage	Stage 2 Concept Design
Client	Outdoor Systems
Project Manager/Lead Auditor	Craig M^{C}Laren
Audit Team	• Lead Auditor Mr Craig M^{C}Laren (Level 3) Road Safety Auditor Identification 02-0263 • Team Member Mr Thomas Heal (Level 1) Road Safety Auditor
Initial Meeting	N/a
Any previous audit conducted	No

1.2 Reference Materials

The following plans / information were reviewed as part of this concept design audit:

1. *Email from Andrew Tyquin dated 10 June 2016 and attachment.*

The Detailed Design RSA review of the intersection has been undertaken with due consideration to the following documents:

1. *"Road Safety Audit", AUSTROADS Publication No. AP-30/94, SAA HB43-1994.*
2. *"Road Safety Audit", AUSTROADS Publication No. AP-G30/02, SAI/NZS HB43-2001.*
3. *Guide to Road Safety Part 6: Road Safety Audit AUSTROADS Publication No. AGRS06/09*
4. *NSW Transport Roads & Traffic Authority Guidelines for Road Safety Audit Practices July 2011*
5. *State Environmental Planning Policy No 64--Advertising And Signage February 2014*
6. *Draft 2015 Transport Outdoor Advertising and Signage Guidelines NSW Dept. Planning and Environment December 2015 (Digital Guidelines)*
7. *Transport Corridor Outdoor Advertising And Signage Guidelines, Assessing Development Applications Under Sepp 64, NSW Department of Planning July 2007*
8. *Impact of Roadside Advertising on Road Safety, AUSTROADS Publication AP-R420-13, January 2013*

2 INTRODUCTION

2.1 Description

Mr Craig M^{C}Laren, an accredited Level 3 Road Safety Auditor with *M^{C}Laren Traffic Engineering,* was commissioned in June 2016 by Outdoor Systems to undertake a Stage 2 Concept Design Road Safety Audit of the Proposed Conversion of Existing Roadside Signage to Digital at Wentworth Avenue Golf Course Overbridge, Eastlakes.

The proposed design includes the replacement of advertising signage on the east and west facing sides of the existing Wentworth Avenue Golf Course Overbridge, visible to eastbound and westbound traffic streams travelling on Wentworth Avenue. No other alterations to the road environment are proposed. The email brief is provided in **Annexure A** for reference.

2.2 Purpose

The brief for the Stage 2 Concept Design Road Safety Audit is to:

- Identify relevant risks to all road users with respect to the proposed signage.
- Identify potential hazards due to obstruction of driver sight lines, driver distraction, conflict with road signage / controls or vehicle headlight reflection with respect to the proposed signage.
- Identify potential risks with regards to the potential characteristics of signage;
- Identify potential hazards introduced by proposed roadside furniture including sign supports, poles and other rigid (and non-rigid) street furniture.

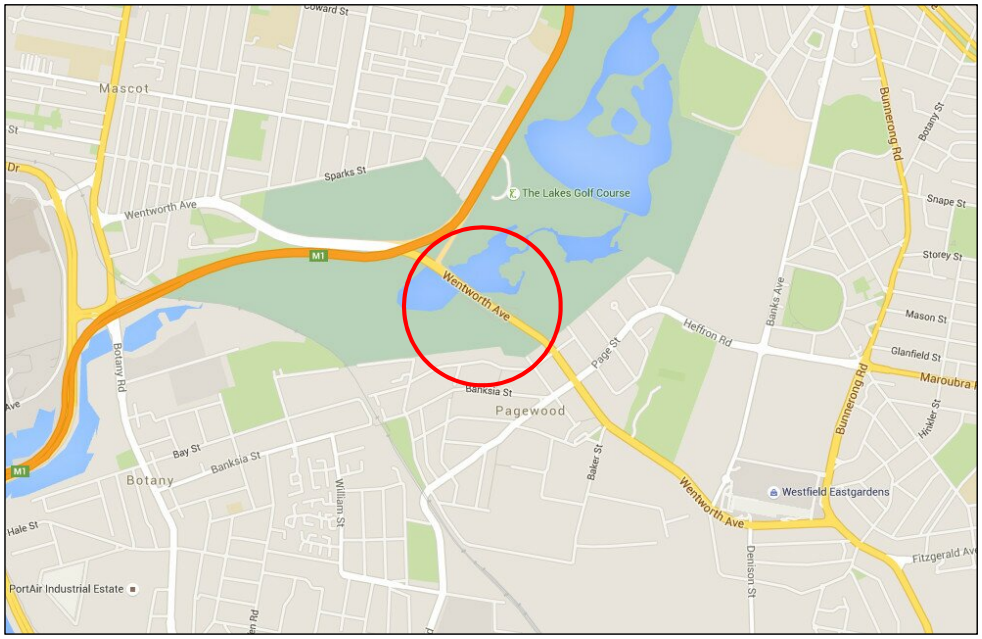
2.3 Existing Site Location & Facilities

The Stage 2 Audit is for the signage proposed on the overhead bridge located 450m to the east of the Southern Cross Drive overpass intersection on Wentworth Avenue, Eastlakes. The general area covered under this audit is shown in **Figure 1** and **Figure 2** below, whereby the extent of works depicted in these figures is for illustrative purposes only and does not reflect the actual limit of works.

The existing signage on the overpass is static and of 12.66m width and 3.34m height and is shown in **Figure 3** (east facing) and **Figure 4** (west facing) for reference. Both existing signs are illuminated during night hours.

Site Location

FIGURE 1: SITE CONTEXT – AERIAL PHOTO



Site Location

FIGURE 2: SITE CONTEXT – STREET MAP

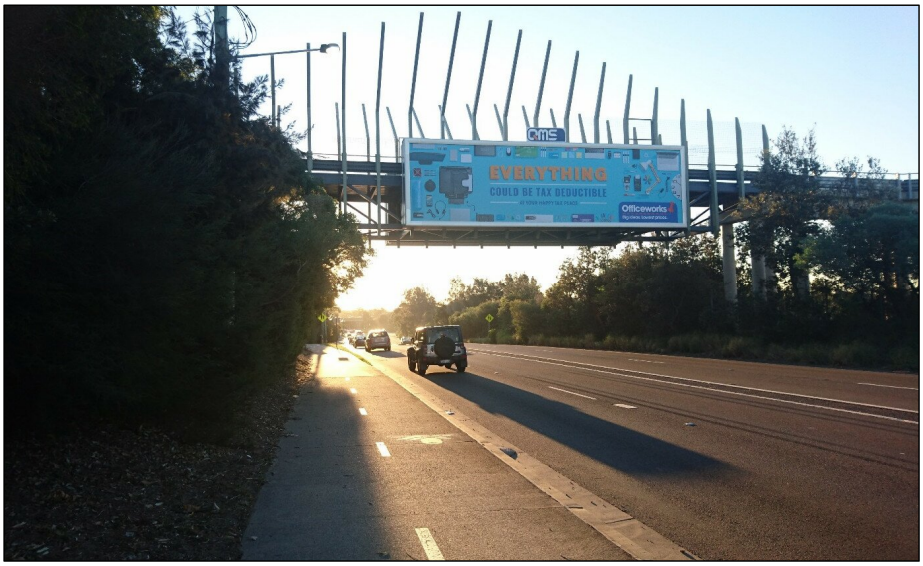


FIGURE 3: EXISTING EAST-FACING SIGNAGE

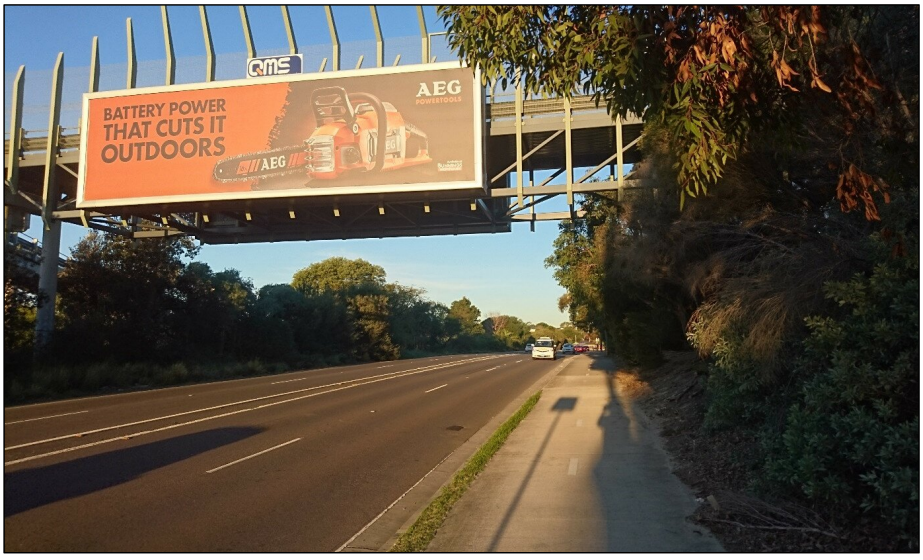


FIGURE 4: EXISTING WEST-FACING SIGNAGE

Currently Wentworth Avenue is signposted as 70km/h with approximately 16m width facilitating two traffic lanes in both directions and a separate shared pedestrian / cycling path of approximately 3m width along the southern side of the road. “Pedestrian Symbolic” signage was noted on both approaches to the overpass, however there is no pedestrian crossing. The Wentworth Avenue Overpass is a pedestrian bridge passing over Wentworth Avenue used by the public, golfers, golf course staff and their equipment from the Eastlake Golf Club.

The intersection layout is shown diagrammatically in **Figure 5**.

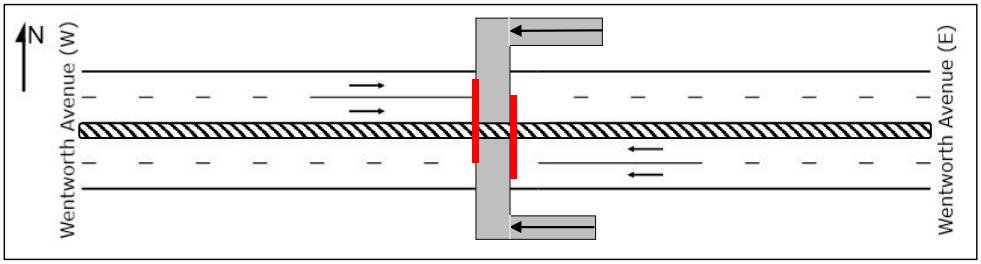


FIGURE 5: WENTWORTH AVENUE LAYOUT

2.4 Proposed Works/Upgrade

As shown, the proposed digital signage is to replace the existing static signage on the both sides of the overpass, visible to eastbound and westbound traffic along Wentworth Avenue.

Each of the proposed digital LED signs is 12.48m width by 3.2m height with a total area of 39.94m^2, and will operate in both daytime and night-time hours. Each existing advertising sign is 12.66m X 3.4m with an area of 43m^2.

The design of the signs will be in accordance with the digital sign criteria given in the *Draft 2015 Transport Outdoor Advertising and Signage Guidelines*, with the relevant extracts reproduced in **Annexure B** for reference.

3 ROAD SAFETY AUDIT PROCEDURE

3.1 Brief Description

In general, the *Stage 2 Concept Design Road Safety Audit (RSA)* concentrates on the existing road layout including the geometric design, traffic signage, traffic signal sequence, roadside furniture and line marking. The Stage 2 RSA identifies the potential safety hazards resulting from the implementation of roadside signage.

The Audit is to identify a broad range of potential safety hazards with respect to the above road features; identify the impacts to the safety of all road users of possible signage design features; improve safety of identified risks as a result of the overall audit findings.

The brief for the *Stage 2 Concept Design Road Safety Audit* is to:

- Identify relevant risks to all road users with respect to the proposed signage locations;
- Evaluate the road safety impacts of proposed sign features such as size and type;
- Provide findings which can be used in the development of detailed sign design to minimise safety impacts.

Following the subject *Stage 2 Concept Design RSA*, a *Stage 4 Pre-Opening Road Safety Audit* will be undertaken, which involves the assessment and reporting of the safety impacts of specific design features on the road environment once the signage has been implemented.

3.2 Site Inspection

The site was inspected during daylight and night hours on Monday 13th June 2016 and again during night hours on Tuesday 29th June 2016; the purpose of the site inspection is to observe the existing site from the perspective of all road users in order to identify current conditions and possible future impacts of the proposed signage.

4 SAFETY AUDIT FINDINGS & RECOMMENDATIONS

Section 4.1 documents the general findings of the specialised road safety audit. The audit brief and the CV's of the auditors are presented in **Annexure A** and **Annexure C** respectively.

This audit seeks to identify potential hazards and risks to road users that could arise from implementation of signage in the proposed location, including identification of impacts of design features including but not limited to signage height, width, angle and colours.

A *Stage 2 Concept Design Road Safety Audit* presents findings based on the preliminary sign design and identifies features that may be relevant during the detailed design stage. The findings of the report should be taken into consideration by the designer to achieve the best outcome in terms of road safety.

Any further Road Safety Audit assessments at later stages are to be undertaken in accordance with the checklists outlined in Schedule 1 of *SEPP 64 Advertising and Signage* and Section 11 of *Austroads Part 6: Road Safety Audit*.

4.1 General Findings

The following sub-sections provide general issues as identified by the Auditing team.

4.1.1 Conflict with Traffic Signals

The placement of the signage is such that it is directly behind the west-facing traffic signals, approximately 300m away, for eastbound vehicles in the median lane at the Wentworth Avenue / Southern Cross Drive off-ramp junction, as shown in **Figure 6** & **Figure 7**.

The existing, static signage is lit and does not appear similar to the traffic signal lights, however any signage in the subject location (static or digital), *if displaying primarily red, green or amber colours which is strictly contrary to the signage relevant controls and guidelines and is not proposed*, could be mistaken for a traffic signal lamp and cause drivers to fail to stop or brake unexpectedly, raising the risk of "right near" collisions and rear-end collisions respectively.

It has been indicated by the proponent that the future signage design will conform to the criteria included in the *Draft 2015 Transport Outdoor Advertising and Signage Guidelines,* in terms of the sign's contents, brightness, refresh time and reflectiveness and as a result there will be *no impact on road safety* resulting from the proposed digital signage.

FIGURE 6: SIGNAGE FROM WENTWORTH AVE / SOUTHERN CROSS DRIVE JUNCTION – DAYTIME

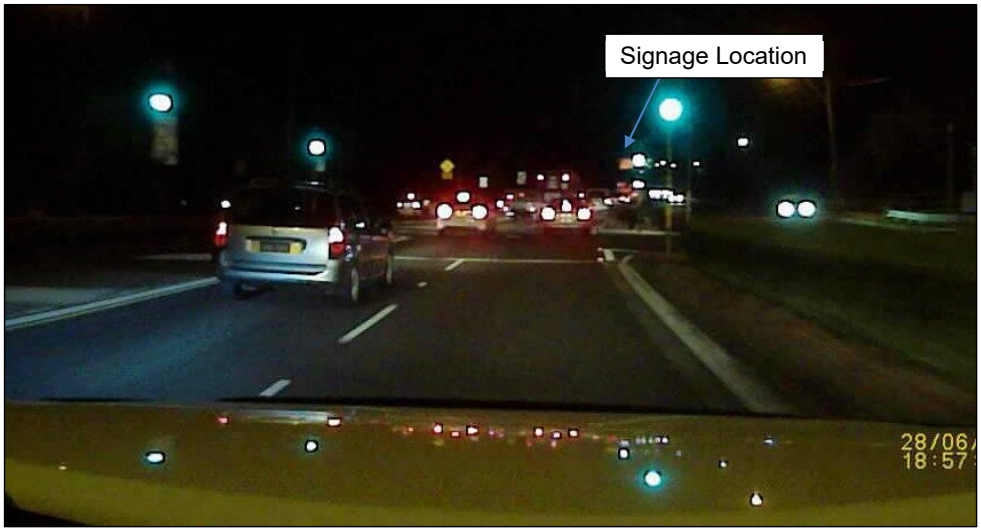


FIGURE 7: SIGNAGE FROM WENTWORTH AVENUE / SOUTHERN CROSS DRIVE JUNCTION – NIGHT TIME

4.1.2 Driver Distraction

Both the existing east-facing and west-facing signage is lit during night hours and the conversion to digital signage will not introduce a new feature to the road landscape. It is considered that there will be no unacceptable impact to road safety if the sign's contents, brightness, refresh time, dwell time and reflectiveness conform to the relevant standards and guidelines which can be expected. A *Stage 4 Pre-Opening* RSA will be undertaken to verify that this is the case.

5 CONCLUDING STATEMENT

The brief reproduced in **Annexure A** has been examined and the site inspected both during clear daylight and night periods to best determine the design features and site characteristics that could affect road safety.

The road safety audit findings are contained in **Section 4** of this report.

The design factors mentioned in this audit are based upon the independent opinions and judgements of the authors. It should be noted, however, that it is ultimately the responsibility of the Project Manager to determine how best to respond to identified road safety issues.

Craig McLaren
(RMS Accredited Level 3 Road Safety Auditor) 15 July 2016.

Thomas Heal
(RMS Accredited Level 1 Road Safety Auditor) 15 July 2016.

ANNEXURE A: EMAIL BRIEF
(SHEET 1 OF 2)

6/17/2016 Gmail - Eastlake, Wentworth Ave - Road Safety Report

Gmail Craig McLaren

Eastlake, Wentworth Ave - Road Safety Report
4 messages

Andrew Tyquin Fri, Jun 10, 2016 at 10:27 AM

Hi Craig

As discussed we are going to convert the existing static advertising signs on the bridge, to digital and require safety report to address any road safety impact.

The existing signs are 12.66m x 3.34m each and the digital LED signs will be 12.48m x 3.2m (W x H) ;Total sqm: 39,94 sqm

Would it be possible to have you report by the 26th June or earlier as we want to get the Sec96 application to Botany C asap.

Let me know if there is anything you need?

Regards

Andrew Tyquin

OUTDOOR SYSTEMS

www.outdoorsystems.com.au

ANNEXURE A: EMAIL BRIEF
(SHEET 2 OF 2)

ANNEXURE B: DIGITAL SIGN CRITERIA
(SHEET 1 OF 3)

2.5.8 Digital signs

In addition to meeting the relevant SEPP 64 assessment criteria, design, road safety and any public benefit test requirements under the Guidelines, the consent authority must be satisfied that the digital sign meets the following criteria:

Criteria	Applies to signs less than 20sq metres	Applies to signs greater than or equal to 20sq metres
(a) Each advertisement must be displayed in a completely static manner, without any motion, for the approved dwell time as per criterion (d) below.	✓	✓
(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.	✓	✓
(c) The image must not be capable of being mistaken: (i) For a prescribed traffic control device because it has, for example, red, amber or green circles, octagons, crosses or triangles or shapes or patterns that may result in the advertisement being mistaken for a prescribed traffic control device, or (ii) as text providing driving instructions to drivers.	✓	✓
(d) Dwell times for image display are: (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.	✓	✓
(e) The transition time between messages must be no longer than 0.1 seconds.	✓	✓
(f) Luminance levels must comply with the requirements in Table 3 below.	✓	✓
(g) 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.	✓	✓
(h) The amount of text and information supplied on a sign should be kept to a minimum (for example no more than a driver can read at a short glance). Text should preferably be displayed in the same font and size. Table 6 in Section 3 of these Guidelines provides further guidance.	✓	✓
(i) Any 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.	✓	✓
(j) Each sign proposal must be assessed on a case by case basis including replacement of an existing fixed, scrolling or tri-vision sign with a digital sign and in the instance of a sign being visible from each direction, both directions for each location must be assessed on their own merits.	✓	✓

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ANNEXURE B: DIGITAL SIGN CRITERIA
(SHEET 2 OF 3)

Criteria	Applies to signs less than 20sq metres	Applies to signs greater than or equal to 20sq metres
(k) At any time, including where the speed limit in the area of the sign is changed, if detrimental effect is identified on road safety post installation of a digital sign, RMS reserves the right to re-assess the site which may result in a change to the dwell time or removal of the sign.	✓	✓
(l) Sign spacing should limit drivers view to a single sign at any given time with a distance of no less than 150 metres 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.		✓
(m) Signs greater than or equal to 20sq metres must obtain RMS concurrence AND must ensure the following minimum vertical clearances; • 2.5m from lowest point of the sign above the road surface if located outside the clear zone. • 5.5m from lowest point of the sign above the road surface if located within the clear zone (including shoulders and traffic lanes) or the deflection zone of a safety barrier if a safety barrier is installed. If attached to Road Infrastructure (e.g. Overpass), the sign must be located so that no portion of the advertising sign is lower than the minimum vertical clearance under the overpass or supporting structure at the corresponding location.		✓
(n) An electronic log of a signs activity must be maintained by the operator for the duration of the development consent and be available to the consent authority and/or RMS to allow a review of the signs activity in case of a complaint.		✓
(o) A road safety check which focuses on the effects of the placement and operation of all signs over 20sq metres must be carried out in accordance with Part 3 of the RMS Guidelines for Road Safety Audit Practices after a 12 month period of operation but within 18 months of the signs installation. The road safety check must be carried out by an independent RMS accredited road safety auditor. A copy of the report is to be provided to RMS and any safety concerns identified by the auditor relating to the operation or installation of the sign must be rectified by the applicant.		✓

Transport Corridor Outdoor Advertising and Signage Guidelines – November 2015 23

ANNEXURE B: DIGITAL SIGN CRITERIA
(SHEET 3 OF 3)

Table 3: LUMINANCE LEVELS FOR DIGITAL ADVERTISEMENTS

LUMINANCE LEVELS – Luminance means the objective brightness of a surface as measured by a photometer, expressed in candelas per square meter (cd/m2). Levels differ as digital signs will appear brighter when light levels in the area are low. Luminance levels should comply with Australian Standard AS4282 Control of the Obtrusive Effects of Outdoor Lighting which recommends the following levels:

Lighting Condition	*Zone 1*	*Zones 2 and 3*	*Zone 4*
Full Sun on face of Signage	No limit	Maximum Output	Maximum Output
Day Time Luminance		6000 cd/m2	6000 cd/m2
Morning and Evening Twilight and Inclement Weather		700 cd/m2	500 cd/m2
Night Time		350 cd/m2	
Night Time		350 cd/m2	

Zone 1 covers areas with generally very high off-street ambient lighting e.g. display centres similar to Kings Cross, central city locations

Zone 2 covers areas with generally high off-street ambient lighting e.g. some major shopping/commercial centres with a significant number of off-street illuminated advertising devices and lights.

Zone 3 covers areas with generally medium off-street ambient lighting e.g. small to medium shopping/ commercial centres.

Zone 4 covers areas with generally low levels of off-street ambient lighting e.g. most rural areas, many residential areas.

2.5.9 Moving Signs

Moving or mechanical signs display images which change through movement of the sign structure only, for example, scrolling or trivision signs.

In addition to meeting the relevant SEPP 64 assessment criteria, design, road safety and public benefit test requirements under these Guidelines, moving signs that face the road reserve and are visible to drivers will also be required to meet the following criteria:

(a) The display must be completely static from its first appearance to the commencement of a change to another display;

(b) Dwell times for image display are to be a total of 10 seconds which includes 3 seconds to scroll.

(c) The image must not be capable of being mistaken:

(i) for a rail or traffic sign or signal because it has, for example, 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, or

(ii) as text providing driving instructions to drivers.

(d) Light levels are to be consistent with Section 3.2.5 and Table 5 of these Guidelines.

2.5.10 Video and animated electronic signs

Video and animated electronic signs containing animated or video/movie style advertising or messages including; live television, satellite, internet or similar broadcast; either permanent or portable; that face the road reserve and are visible to drivers are prohibited.

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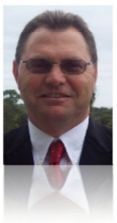
ANNEXURE C: CIRRICULUM VITAE
(SHEET 1 OF 2)

Craig McLaren (Director)



Craig is an acknowledged traffic consultant since the company inception in 1995. The company's primary function has been to serve both the public and private sectors focusing on traffic impact assessments, transport planning, special event transport planning, local area traffic management, road safety and expert evidence at Land and Environment Court, Supreme Court and the Commission of Inquiry.

Qualifications

Bachelor of Civil Engineering, UNSW, 1985

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Accredited Level 3 Road Safety Auditor, 1998

Traffic Control Plan Certifier (Orange Card), 2012

Affiliations:

Member, Australian Institute of Traffic Planning and Management - AITPM

Member, Institute of Transportation Engineers USA (Australian Branch) – ITE

Experience:

MCLAREN TRAFFIC ENGINEERING

1995 to date:

Director and experienced traffic engineer responsible for the conduct of all facets of traffic impact assessment ranging from report preparation, design advice and giving evidence at the Land and Environment Court.

SINCLAIR KNIGHT MERZ

1994 to 1995:

Executive Traffic Engineer. Responsible for the conduct of all facets of traffic impact assessment ranging from report preparation, design advice and giving evidence at the Land and Environment Court.

TRANSPORTATION PLANNING WORKSHOP

1989 to 1994:

Senior Associate. Responsible for the conduct of a vast number of traffic impact assessment report and gained invaluable experience in giving expert evidence before the Land and Environment Court.

ROADS AND TRAFFIC AUTHORITY, NSW

1988 to 1989:

Traffic Engineer, Traffic Engineering Section, involved in traffic/transport research, policy development and assisting councils in the application of the Authority's guidelines.

OVE ARUP TRANSPORTATION PLANNING

1985 to 1988:

Traffic Engineer. Involved in the preparation of traffic impact reports for a wide range of projects.

GUTTERIDGE HASKINS & DAVEY

1980 to 1982:

Trainee Civil Engineer. Involved in assisting with road and subdivision design and field surveying.

Papers at Conferences

"Safe & Liveable Communities, Can You Have Both?" Georgia Institute of Transportation Engineers, St Simons Island, Georgia USA July 1999.

ANNEXURE C: CIRRICULUM VITAE
(SHEET 2 OF 2)

Thomas Heal (Traffic Engineer)

Thomas is a graduate traffic engineer with experience in consulting with the public and private sectors on matters of transport planning, traffic impact assessment, road & car park design and road safety auditing.

Qualifications

Bachelor of Civil Engineering, University of Sydney, 2015

IPWEA Accredited Level 1 Road Safety Auditor, 2015

Papers/Theses

"Optimising the Design Methods for the Configuration of Anchor Bolts in Steel Column Base Plate Connections", Undergraduate Thesis at University of Sydney, 2014.

Experience:

McLAREN TRAFFIC ENGINEERING

2015 to date:

Undergraduate Intern and Graduate Traffic Engineer engaged in traffic and transport planning, traffic impact assessment, road safety auditing and provision of detailed design advice. Assisted in the preparation of reports and expert evidence to the Land and Environment Court.

Curriculum Vitae December 2015

6-WEEK POST-OPENING ROAD SAFETY AUDIT OF

DIGITAL ROAD SIGNAGE

AT WENTWORTH AVENUE GOLF COURSE OVERBRIDGE, EASTLAKES

Address: Shop 7, 720 Old Princes Highway Sutherland NSW 2232
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Telephone: +61 2 8355 2440
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Web: www.mclarentraffic.com.au
Email: admin@mclarentraffic.com.au

Division of RAMTRANS Australia ABN: 45067491678

Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

17401.01FA - 24th August 2017

Development Type:	**Proposed Conversion of Existing Roadside Signage to Digital**
Site Address:	**Wentworth Avenue & Wentworth Avenue Overpass, Eastlakes**
Prepared for:	**Outdoor Systems**
Document reference:	**17401.01FA**

Status	Issue	Prepared By	Checked By	Date
Draft	A	TH/MM	CM	24th August 2017
Final	A	MM	CM	24th August 2017

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1 PROJECT OVERVIEW

1.1 Inception

Project	Digital Road Signage at Wentworth Avenue Golf Course Overbridge, Eastlakes
Audit Reference	17401.01FA
Audit Stage	6-week Post-Opening
Client	Outdoor Systems
Project Manager	Outdoor Systems
Audit Team	• Lead Auditor Mr Craig M^{C}Laren (Level 3) Road Safety Auditor ID: 02-0263 • Team Member Mr Thomas Heal (Level 1) Road Safety Auditor ID: 02-1075 • Team Member Mr Matthew McCarthy (Level 1) Road Safety Auditor ID: 02-1197
Initial Meeting	N/a
Any previous audit conducted	No

1.2 Reference Materials

The 6-week post-opening Road Safety Audit of the signage has been undertaken with due consideration to the following documents:

1. *"Road Safety Audit", AUSTROADS Publication No. AP-30/94, SAA HB43-1994.*
2. *"Road Safety Audit", AUSTROADS Publication No. AP-G30/02, SAI/NZS HB43-2001.*
3. *Guide to Road Safety Part 6: Road Safety Audit AUSTROADS Publication No. AGRS06/09*
4. *NSW Transport Roads & Traffic Authority Guidelines for Road Safety Audit Practices July 2011*
5. *State Environmental Planning Policy No 64--Advertising And Signage February 2014*
6. *Draft 2015 Transport Outdoor Advertising and Signage Guidelines NSW Dept. Planning and Environment December 2015 (Digital Guidelines)*
7. *Transport Corridor Outdoor Advertising And Signage Guidelines, Assessing Development Applications Under Sepp 64, NSW Department of Planning July 2007*
8. *Impact of Roadside Advertising on Road Safety, AUSTROADS Publication AP-R420-13, January 2013*

2 INTRODUCTION

2.1 Description

Mr Craig M^{C}Laren, an accredited Level 3 Road Safety Auditor with *M^{C}Laren Traffic Engineering,* was commissioned in June 2017 by Outdoor Systems to undertake a 6-Week Post-Opening Road Safety Audit of the Digital Road Signage at Wentworth Avenue Golf Course Overbridge, Eastlakes.

The signage is positioned on both the east and west facing sides of the existing Wentworth Avenue Golf Course Overbridge, visible to eastbound and westbound traffic streams travelling on Wentworth Avenue. No other alterations to the road environment will be examined as part of this Audit.

2.2 Purpose

The brief for the 6-Week Post-Opening Road Safety Audit is to:

- Identify relevant risks to all road users with respect to the signage;
- Identify potential hazards due to obstruction of driver sight lines, driver distraction, conflict with road signage / controls or vehicle headlight reflection with respect to the signage.
- Identify potential risks with regards to the digital characteristics of the signage;
- Identify potential hazards introduced by roadside furniture including sign supports, poles and other rigid (and non-rigid) street furniture.

It should be noted that while it is preferred that a Pre-Opening audit be undertaken to identify any risks prior to the opening of road facilities to the public, in some situations it is not feasible or justified to isolate the road environment to undertake a pre-opening audit. As such, an audit conducted 6-weeks after the date that the signage first became operational is considered to achieve the same objectives without undue risk to road users.

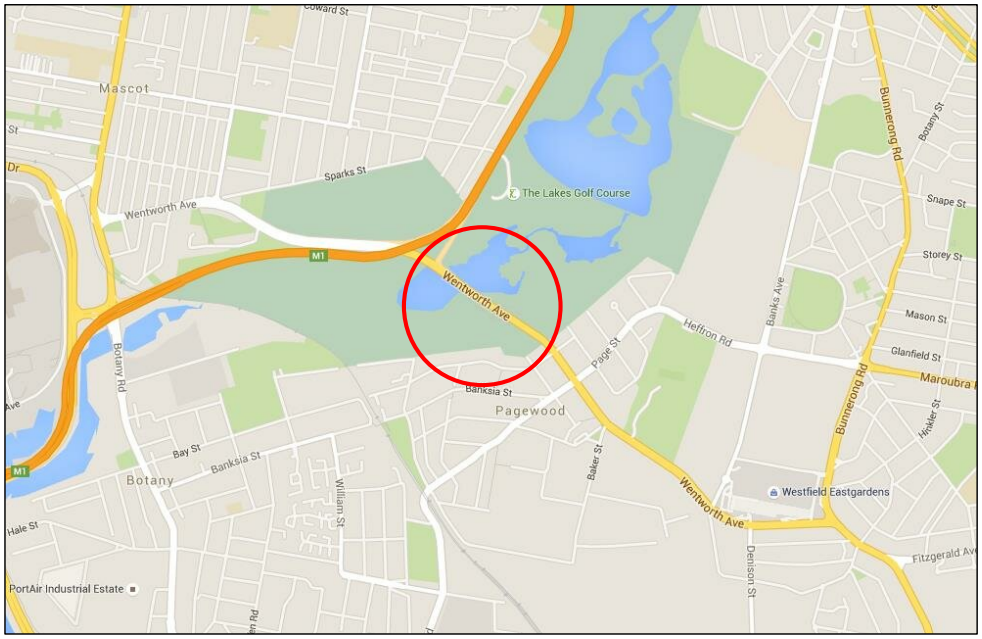
2.3 Existing Site Location & Facilities

The road safety audit examines the digital signage on the overhead bridge located 450m to the east of the Southern Cross Drive overpass intersection on Wentworth Avenue, Eastlakes. The general area covered under this audit is shown in **Figure 1** and **Figure 2** below, whereby the extent of works depicted in these figures is for illustrative purposes only and does not reflect the actual limit of the Audit.

The digital signage on the overpass has a dwell time of 10 seconds and has physical dimensions of 12.48m width x 3.2m height and is shown in **Figure 3** (east facing) and **Figure 4** (west facing) for reference. Both signs operate in both day and night hours.

Site Location

FIGURE 1: SITE CONTEXT – AERIAL PHOTO



Site Location

FIGURE 2: SITE CONTEXT – STREET MAP

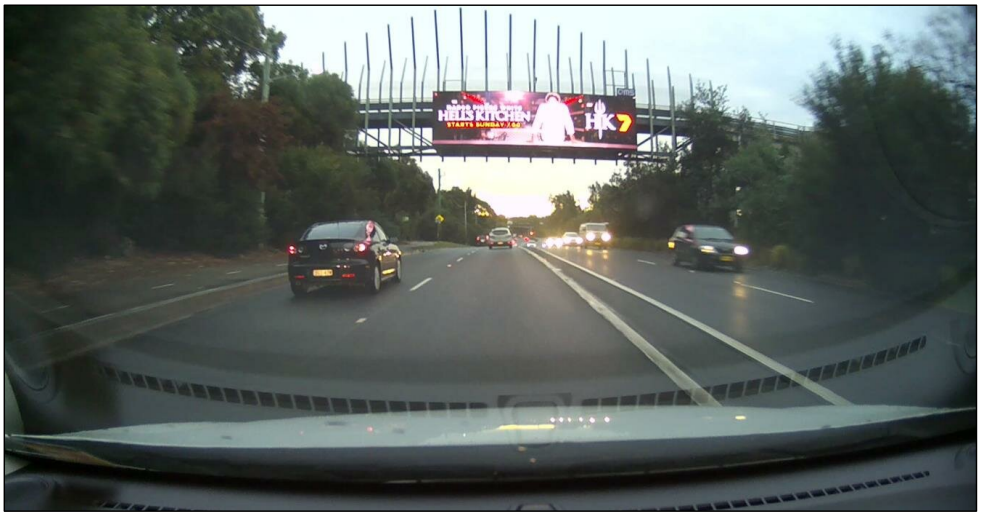


FIGURE 3: EXISTING EAST-FACING SIGNAGE

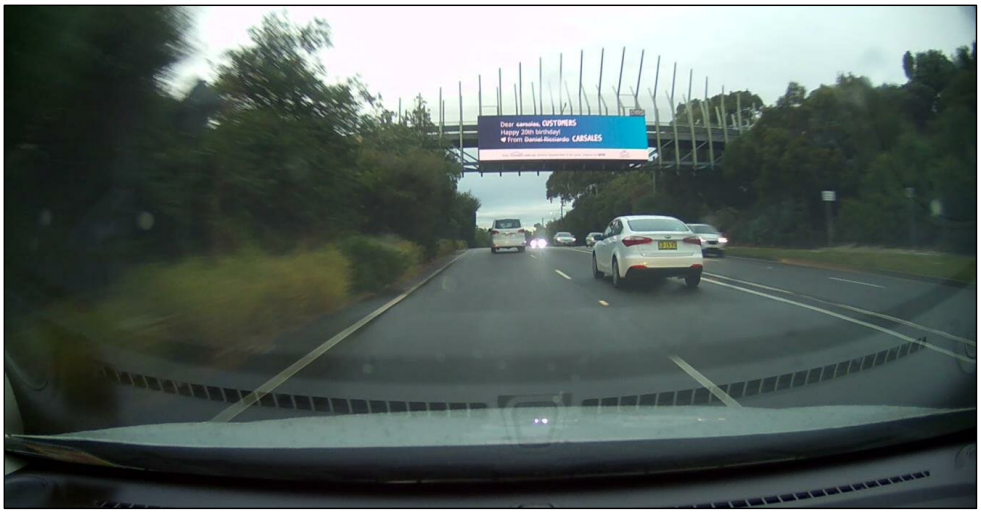
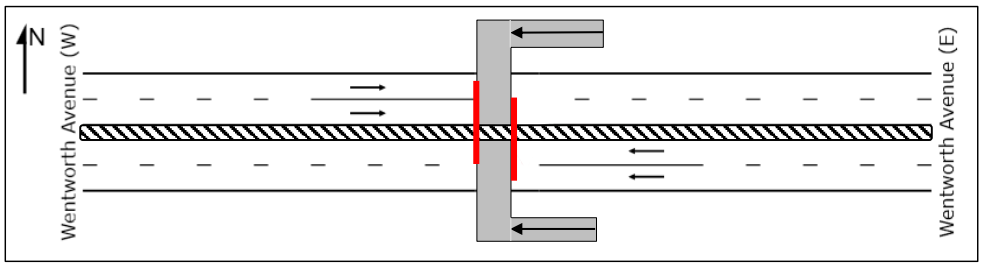


FIGURE 4: EXISTING WEST-FACING SIGNAGE

Currently Wentworth Avenue has a posted speed limit of 70km/h with a carriageway width of approximately 16m facilitating two movement traffic lanes in both directions and a separate shared pedestrian / cycle path of approximately 3m width along the southern side of the road. “Pedestrian Symbolic” signage (Sign Reference R3-1) was noted on both approaches to the overpass, however there is no pedestrian crossing. The Wentworth Avenue Overpass is a pedestrian bridge passing over Wentworth Avenue used by the public, golfers, golf course staff and their equipment from the Eastlake Golf Club.

The overpass and signage layout is shown diagrammatically in **Figure 3**.



Approximate Signage Location

FIGURE 3: WENTWORTH AVENUE LAYOUT

3 ROAD SAFETY AUDIT PROCEDURE

3.1 Brief Description

In general, a Stage 4 Pre-Opening (or 6-week Post-Opening) Road Safety Audit concentrates on the existing road layout including the geometric design, traffic signage, traffic signal sequence, roadside furniture and line marking. This Stage 4 RSA assesses whether any safety hazards arise from the implementation of roadside digital signage.

It should be noted that while it is preferred that a Pre-Opening audit be undertaken to identify any risks prior to the opening of road facilities to the public, in some situations it is not feasible or justified to isolate the road environment to undertake a pre-opening audit. As such, an audit conducted 6-weeks after the date that the signage first became operational is considered to achieve the same objectives without undue risk to road users.

The Audit is to identify a broad range of potential safety hazards with respect to the above road features, identify the impacts to the safety of all road users of signage design features and improve safety of identified risks as a result of the overall audit findings.

The brief for the Stage 4 Pre-Opening (or 6-week Post-Opening) Road Safety Audit is to:

- Identify relevant risks to all road users with respect to the signage;
- Identify potential hazards due to obstruction of driver sight lines, driver distraction, conflict with road signage / controls or vehicle headlight reflection with respect to the signage.
- Identify potential risks with regards to the digital characteristics of the signage;
- Identify potential hazards introduced by roadside furniture including sign supports, poles and other rigid (and non-rigid) street furniture.

Following the subject *Stage 4 Pre-Opening Road Safety (or 6-week Post-Opening) Audit,* an *18-Month Finalisation Road Safety Audit* will be undertaken, which involves the assessment and reporting of the safety impacts of specific design features on the road environment once the signage has been implemented and road users have had time to acclimatise to its presence.

3.2 Site Inspection

The site was inspected during daylight and night hours on Monday 31st August 2017. The purpose of the site inspection is to observe the existing site from the perspective of all road users in order to identify current conditions and possible future impacts of the signage display.

4 SAFETY AUDIT FINDINGS & RECOMMENDATIONS

Section 4.1 documents the general findings of the specialised road safety audit. The audit brief and the CV's of the auditors are presented in **Annexure A** and **Annexure B** respectively.

This audit seeks to identify potential hazards and risks to road users that could arise from signage in the identified location, including identification of impacts of design features including but not limited to signage height, width, angle and colours.

A *Stage 4 Pre-Opening RSA* presents findings based on the placement and operation of the sign. The findings of the report should be taken into consideration by the operator to achieve the best outcome in terms of road safety.

This Road Safety Audit assessment has been undertaken in accordance with the checklists contained in **Annexure B** which is extracted from "*Transport Corridor Outdoor Advertising and Signage Guidelines – November 2015*".

4.1 General Findings

The following sub-sections provide general issues as identified by the Auditing team.

4.1.1 Conflict with Traffic Signals

The placement of the signage is such that it is directly behind the west-facing traffic signals, approximately 300m away, for eastbound vehicles in the median lane at the Wentworth Avenue / Southern Cross Drive off-ramp junction, as shown in **Figure 6** & **Figure 7**.

The signage is well lit and does not appear similar to the traffic signal lights, particularly considering the shape of the sign (long, rectangular). However, the digital signage does emit light (projected rather than reflected as is the case with a static, lit sign). This is particularly well illustrated in **Figure 7**, although it should be noted that the display of the sign appeared blue to the driver rather than almost green as it appears in the image, which distinguished the sign from the traffic signal lamp. Any signage in the subject location (static or digital), *if displaying primarily red, green or amber colours which is strictly contrary to the signage relevant controls and guidelines and should not be displayed*, as it could be mistaken for a traffic signal lamp and cause drivers to fail to stop or brake unexpectedly, raising the risk of "right near" collisions and rear-end collisions respectively.

The design of the sign, in terms of the sign's contents, brightness, refresh time and reflectiveness appear to be consistent with the tabulated criteria contained on pages 22 to 24 of the *Draft 2015 Transport Outdoor Advertising and Signage Guidelines* (refer to **Annexure B** for extract*).* This ensures that the content displayed on the sign is consistent with the aforementioned document such that, the signage does not adversely impact road safety.

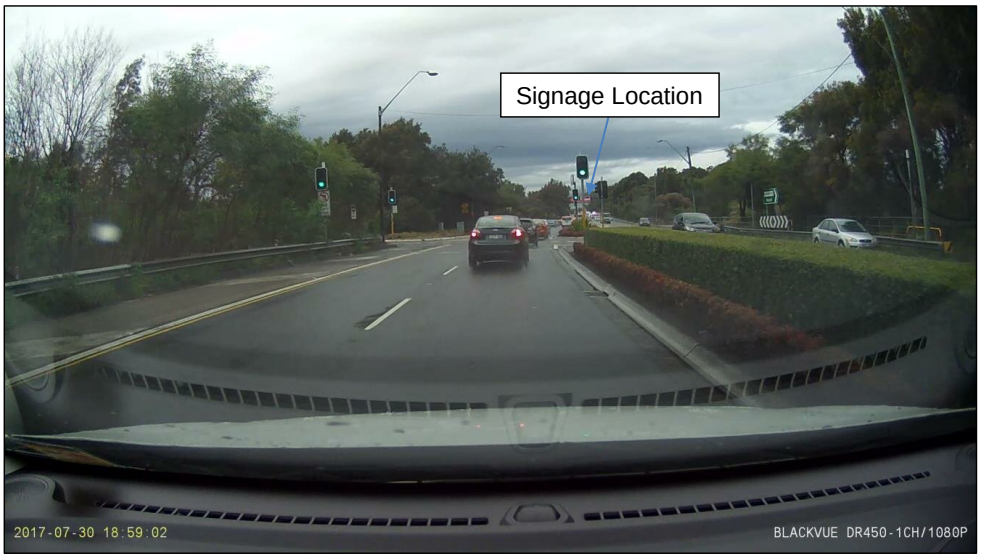


FIGURE 6: SIGNAGE FROM WENTWORTH AVE / SOUTHERN CROSS DRIVE JUNCTION – DAYTIME

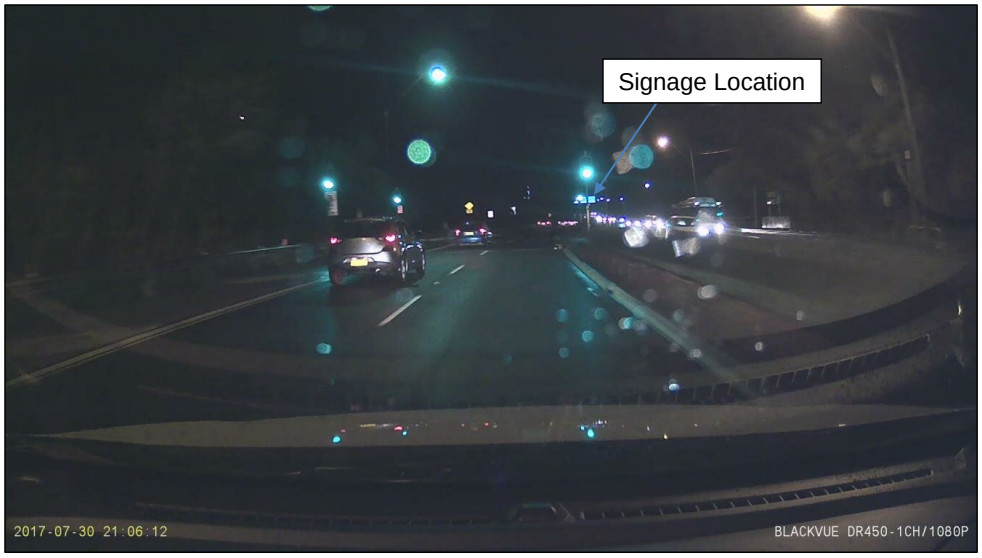


FIGURE 7: SIGNAGE FROM WENTWORTH AVENUE / SOUTHERN CROSS DRIVE JUNCTION – NIGHT TIME

4.1.2 Driver Distraction

Both the existing east-facing and west-facing signage is lit during night hours but is not of a level of brightness that makes the sign dazzling (too bright) or difficult to read (too dark). The sign is not distracting when transitioning from one image to another, given that the change is instantaneous and the driver of the vehicle during the audit observed that on several occasions the change in image was not noticed immediately. It is considered, therefore, that the sign does not have an unacceptable impact on road safety.

5 CONCLUDING STATEMENT

The brief provided has been examined and the site inspected both during clear daylight and night periods to determine the safety impacts of the subject digital signage.

This road safety audit has found no adverse impact on road safety associated with the subject and operational digital advertising sign. The road safety audit inspection details and findings are contained in **Section 4** of this report.

It should be noted that the road safety audit findings are based upon the independent opinions and judgements of the authors. It should be noted, however, that in the event that potential road safety issues are identified within the audit findings, then it is ultimately the responsibility of the Project Manager to determine how best to respond to identified road safety issues.

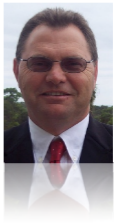
Craig McLaren
(RMS Accredited Level 3 Road Safety Auditor) 24th August 2017.

Thomas Heal
(RMS Accredited Level 1 Road Safety Auditor) 24th August 2017.

Matthew McCarthy
(RMS Accredited Level 1 Road Safety Auditor) 24th August 2017.

ANNEXURE A: CIRRICULUM VITAE
(SHEET 1 OF 3)

Craig McLaren (Director)



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Qualifications

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1980 to 1982:

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Papers at Conferences

"Safe & Liveable Communities, Can You Have Both?" Georgia Institute of Transportation Engineers, St Simons Island, Georgia USA July 1999.

ANNEXURE A: CIRRICULUM VITAE
(SHEET 2 OF 3)

Thomas Heal (Traffic Engineer)

Thomas is a graduate traffic engineer with experience in consulting with the public and private sectors on matters of transport planning, traffic impact assessment, road & car park design and road safety auditing.

Qualifications

Bachelor of Civil Engineering, University of Sydney, 2015

IPWEA Accredited Level 1 Road Safety Auditor, 2015

Papers/Theses

"Optimising the Design Methods for the Configuration of Anchor Bolts in Steel Column Base Plate Connections", Undergraduate Thesis at University of Sydney, 2014.

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McLAREN TRAFFIC ENGINEERING

2015 to date:

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Curriculum Vitae December 2015

ANNEXURE A: CIRRICULUM VITAE
(SHEET 3 of 3)

Matthew McCarthy (Traffic Engineer)

Qualifications

Bachelor of Civil Engineering,
University of New South Wales Australia
2013

Masters of Engineering Science (Civil)
Majoring in Transport Engineering
University of New South Wales Australia
2015

RMS Accredited level 1 Road Safety Auditor

Experience

MCLAREN TRAFFIC ENGINEERING
2016 to date

Graduate Traffic Engineer for the preparation and review of traffic impact assessments for a wide range of land uses and scales. Duites also include traffic modelling and analysis, preparation of road safety audits, engaged in traffic and transport planning, and provision of detailed design advice for small and large scale developments as well as liaising with clients and team members on projects.

Skills

- AutoCAD 2016, including vehicle tracking
- Sidra Intersection Modelling 7.0
- Invarian Rapid Plan
- Aimsun

McLaren Traffic Engineering
Shop 7, 716-720 Old Princes Hwy, Sutherland NSW 2232
Ph 61-2-8355-2440

1

ANNEXURE B: DIGITAL SIGN CRITERIA
(SHEET 1 OF 3)

2.5.8 Digital signs

In addition to meeting the relevant SEPP 64 assessment criteria, design, road safety and any public benefit test requirements under the Guidelines, the consent authority must be satisfied that the digital sign meets the following criteria:

Criteria	Applies to signs less than 20sq metres	Applies to signs greater than or equal to 20sq metres
(a) Each advertisement must be displayed in a completely static manner, without any motion, for the approved dwell time as per criterion (d) below.	✓	✓
(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.	✓	✓
(c) The image must not be capable of being mistaken: (i) For a prescribed traffic control device because it has, for example, red, amber or green circles, octagons, crosses or triangles or shapes or patterns that may result in the advertisement being mistaken for a prescribed traffic control device, or (ii) as text providing driving instructions to drivers.	✓	✓
(d) Dwell times for image display are: (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.	✓	✓
(e) The transition time between messages must be no longer than 0.1 seconds.	✓	✓
(f) Luminance levels must comply with the requirements in Table 3 below.	✓	✓
(g) 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.	✓	✓
(h) The amount of text and information supplied on a sign should be kept to a minimum (for example no more than a driver can read at a short glance). Text should preferably be displayed in the same font and size. Table 6 in Section 3 of these Guidelines provides further guidance.	✓	✓
(i) Any 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.	✓	✓
(j) Each sign proposal must be assessed on a case by case basis including replacement of an existing fixed, scrolling or tri-vision sign with a digital sign and in the instance of a sign being visible from each direction, both directions for each location must be assessed on their own merits.	✓	✓

22 Transport Corridor Outdoor Advertising and Signage Guidelines – November 2015

ANNEXURE B: DIGITAL SIGN CRITERIA
(SHEET 2 OF 3)

Criteria	Applies to signs less than 20sq metres	Applies to signs greater than or equal to 20sq metres
(k) At any time, including where the speed limit in the area of the sign is changed, if detrimental effect is identified on road safety post installation of a digital sign, RMS reserves the right to re-assess the site which may result in a change to the dwell time or removal of the sign.	✓	✓
(l) Sign spacing should limit drivers view to a single sign at any given time with a distance of no less than 150 metres 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.		✓
(m) Signs greater than or equal to 20sq metres must obtain RMS concurrence AND must ensure the following minimum vertical clearances; • 2.5m from lowest point of the sign above the road surface if located outside the clear zone. • 5.5m from lowest point of the sign above the road surface if located within the clear zone (including shoulders and traffic lanes) or the deflection zone of a safety barrier if a safety barrier is installed. If attached to Road Infrastructure (e.g. Overpass), the sign must be located so that no portion of the advertising sign is lower than the minimum vertical clearance under the overpass or supporting structure at the corresponding location.		✓
(n) An electronic log of a signs activity must be maintained by the operator for the duration of the development consent and be available to the consent authority and/or RMS to allow a review of the signs activity in case of a complaint.		✓
(o) A road safety check which focuses on the effects of the placement and operation of all signs over 20sq metres must be carried out in accordance with Part 3 of the RMS Guidelines for Road Safety Audit Practices after a 12 month period of operation but within 18 months of the signs installation. The road safety check must be carried out by an independent RMS accredited road safety auditor. A copy of the report is to be provided to RMS and any safety concerns identified by the auditor relating to the operation or installation of the sign must be rectified by the applicant.		✓

Transport Corridor Outdoor Advertising and Signage Guidelines – November 2015 23

ANNEXURE B: DIGITAL SIGN CRITERIA
(SHEET 3 OF 3)

Table 3: LUMINANCE LEVELS FOR DIGITAL ADVERTISEMENTS

LUMINANCE LEVELS – Luminance means the objective brightness of a surface as measured by a photometer, expressed in candelas per square meter (cd/m2). Levels differ as digital signs will appear brighter when light levels in the area are low. Luminance levels should comply with Australian Standard AS4282 Control of the Obtrusive Effects of Outdoor Lighting which recommends the following levels:

Lighting Condition	*Zone 1*	*Zones 2 and 3*	*Zone 4*
Full Sun on face of Signage	No limit	Maximum Output	Maximum Output
Day Time Luminance		6000 cd/m2	6000 cd/m2
Morning and Evening Twilight and Inclement Weather		700 cd/m2	500 cd/m2
Night Time		350 cd/m2	
Night Time		350 cd/m2	

Zone 1 covers areas with generally very high off-street ambient lighting e.g. display centres similar to Kings Cross, central city locations

Zone 2 covers areas with generally high off-street ambient lighting e.g. some major shopping/commercial centres with a significant number of off-street illuminated advertising devices and lights.

Zone 3 covers areas with generally medium off-street ambient lighting e.g. small to medium shopping/ commercial centres.

Zone 4 covers areas with generally low levels of off-street ambient lighting e.g. most rural areas, many residential areas.

2.5.9 Moving Signs

Moving or mechanical signs display images which change through movement of the sign structure only, for example, scrolling or trivision signs.

In addition to meeting the relevant SEPP 64 assessment criteria, design, road safety and public benefit test requirements under these Guidelines, moving signs that face the road reserve and are visible to drivers will also be required to meet the following criteria:

(a) The display must be completely static from its first appearance to the commencement of a change to another display;

(b) Dwell times for image display are to be a total of 10 seconds which includes 3 seconds to scroll.

(c) The image must not be capable of being mistaken:

  (i) for a rail or traffic sign or signal because it has, for example, 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, or

  (ii) as text providing driving instructions to drivers.

(d) Light levels are to be consistent with Section 3.2.5 and Table 5 of these Guidelines.

2.5.10 Video and animated electronic signs

Video and animated electronic signs containing animated or video/movie style advertising or messages including; live television, satellite, internet or similar broadcast; either permanent or portable; that face the road reserve and are visible to drivers are prohibited.

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18-MONTH POST-OPENING ROAD SAFETY AUDIT OF DIGITAL ROAD SIGNAGE AT WENTWORTH AVENUE GOLF COURSE OVERBRIDGE, EASTLAKES

Address: Shop 7, 720 Old Princes Highway Sutherland NSW 2232
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Division of RAMTRANS Australia ABN: 45067491678

Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

17401.02FA - 24 September 2018

Development Type:	**Proposed Conversion of Existing Roadside Signage to Digital**
Site Address:	**Wentworth Avenue & Wentworth Avenue Overpass, Eastlakes**
Prepared for:	**Outdoor Systems**
Document reference:	**17401.02FA**

Status	Issue	Prepared By	Checked By	Date
Draft	A	ME	TH	24 September 2018
Final	A	TH		24 September 2018

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1 PROJECT OVERVIEW

1.1 Inception

Project	Digital Road Signage at Wentworth Avenue Golf Course Overbridge, Eastlakes
Audit Reference	17401.02DA
Audit Stage	18-Month Post-Opening
Client	Outdoor Systems
Project Manager	Outdoor Systems
Audit Team	• Lead Auditor Mr Craig M^{C}Laren (Level 3) Road Safety Auditor ID: 02-0263 • Team Member Mr Thomas Heal (Level 1) Road Safety Auditor ID: 02-1075
Initial Meeting	N/a
Any previous audit conducted	No

1.2 Reference Materials

The 18-month post-opening Road Safety Audit of the signage has been undertaken with due consideration to the following documents:

1. *"Road Safety Audit", AUSTROADS Publication No. AP-30/94, SAA HB43-1994.*
2. *"Road Safety Audit", AUSTROADS Publication No. AP-G30/02, SAI/NZS HB43-2001.*
3. *Guide to Road Safety Part 6: Road Safety Audit AUSTROADS Publication No. AGRS06/09*
4. *NSW Transport Roads & Traffic Authority Guidelines for Road Safety Audit Practices July 2011*
5. *State Environmental Planning Policy No 64--Advertising And Signage February 2014*
6. *Transport Corridor Outdoor Advertising and Signage Guidelines Department of Planning and Environment November 2017*
7. *Impact of Roadside Advertising on Road Safety, AUSTROADS Publication AP-R420-13, January 2013*

2 INTRODUCTION

2.1 Description

Mr Craig M^{C}Laren, an accredited Level 3 Road Safety Auditor with *M^{C}Laren Traffic Engineering,* was commissioned in June 2017 by Outdoor Systems to undertake an 18-Month Post-Opening Road Safety Audit of the Digital Road Signage at Wentworth Avenue Golf Course Overbridge, Eastlakes. This road safety audit has been completed subsequent to a 6-week post-opening audit which was undertaken by *M^{C}Laren Traffic Engineering*, report reference *17401.01FA* dated 24 August 2017.

The signage is positioned on both the east and west facing sides of the existing Wentworth Avenue Golf Course Overbridge, visible to eastbound and westbound traffic streams travelling on Wentworth Avenue. No other alterations to the road environment will be examined as part of this Audit.

2.2 Purpose

The brief for the 18-Month Post-Opening Road Safety Audit is to:

- Identify relevant risks to all road users with respect to the signage;
- Identify potential hazards due to obstruction of driver sight lines, driver distraction, conflict with road signage / controls or vehicle headlight reflection with respect to the signage.
- Identify potential risks with regards to the digital characteristics of the signage;
- Identify potential hazards introduced by roadside furniture including sign supports, poles and other rigid (and non-rigid) street furniture.

This 18-month audit was undertaken after a 6-week audit, to ensure continued safety of road operations in the area due to the installation of the digital signage on both sides of the overhead bridge along Wentworth Avenue, Eastlakes.

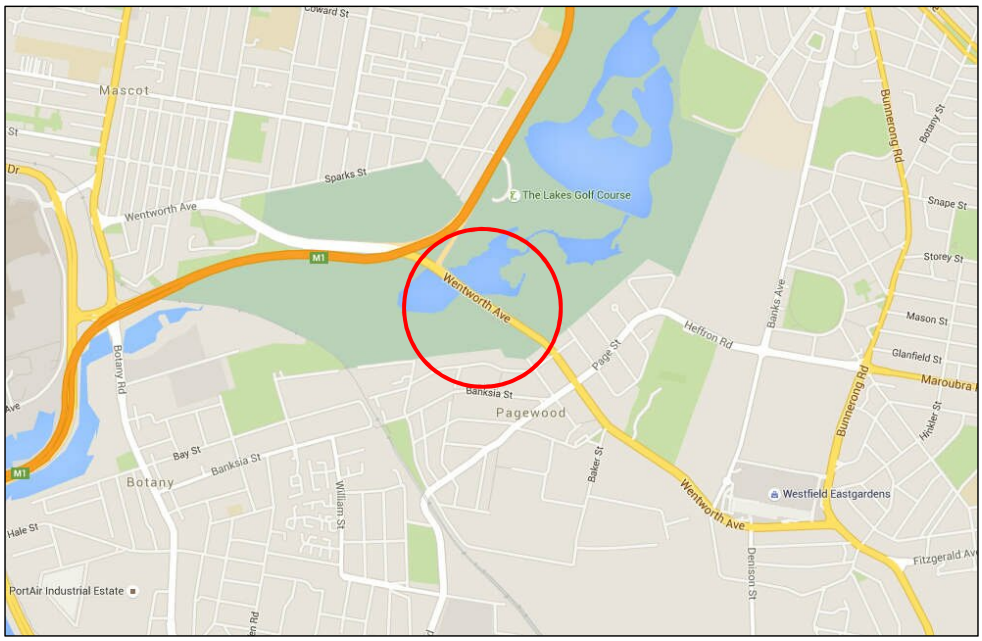
2.3 Existing Site Location & Facilities

The road safety audit examines the digital signage on the overhead bridge located 450m to the east of the Southern Cross Drive overpass intersection on Wentworth Avenue, Eastlakes. The general area covered under this audit is shown in **Figure 1** and **Figure 2** below, whereby the extent of works depicted in these figures is for illustrative purposes only and does not reflect the actual limit of the Audit.

The digital signage on the overpass has a dwell time of 10 seconds and has physical dimensions of 12.48m width x 3.2m height and is shown in **Figure 3** (east facing) and **Figure 4** (west facing) for reference. Both signs operate in both day and night hours.

Site Location

FIGURE 1: SITE CONTEXT – AERIAL PHOTO



Site Location

FIGURE 2: SITE CONTEXT – STREET MAP

FIGURE 3: EXISTING EAST-FACING SIGNAGE

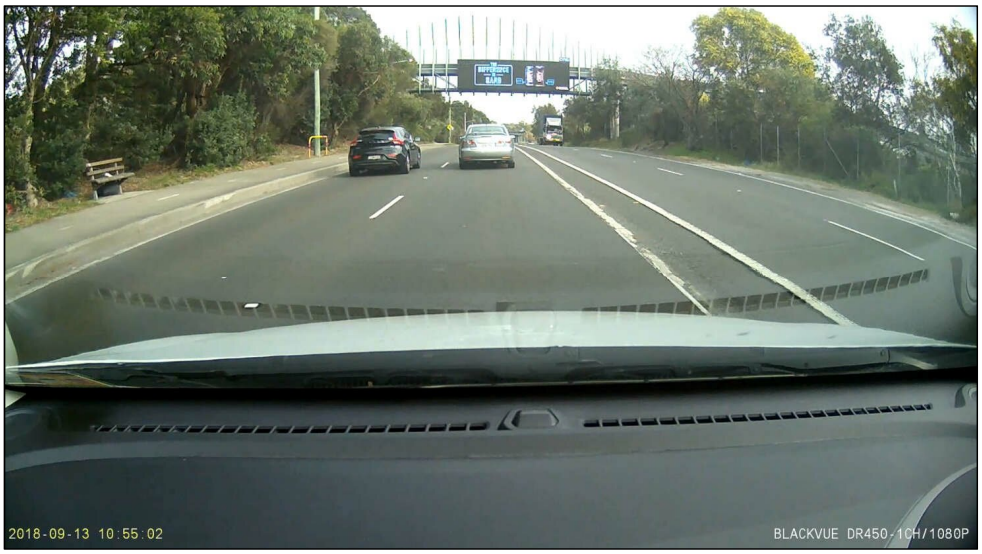
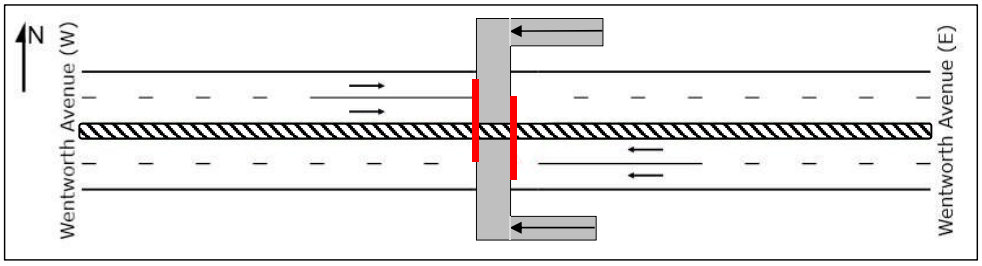


FIGURE 4: EXISTING WEST-FACING SIGNAGE

Currently Wentworth Avenue has a posted speed limit of 70km/h with a carriageway width of approximately 16m facilitating two movement traffic lanes in both directions and a separate shared pedestrian / cycle path of approximately 3m width along the southern side of the road. “Pedestrian Symbolic” signage (Sign Reference R3-1) was noted on both approaches to the overpass, however there is no pedestrian crossing. The Wentworth Avenue Overpass is a pedestrian bridge passing over Wentworth Avenue used by the public, golfers, golf course staff and their equipment from the Eastlake Golf Club.

The overpass and signage layout is shown diagrammatically in **Figure 3**.



Approximate Signage Location

FIGURE 3: WENTWORTH AVENUE LAYOUT

3 ROAD SAFETY AUDIT PROCEDURE

3.1 Brief Description

In general, a Stage 6 Existing Road (or 18-month Post-Opening) Road Safety Audit concentrates on the existing road layout including the geometric design, traffic signage, traffic signal sequence, roadside furniture and line marking. This Stage 6 RSA assesses whether any safety hazards arise from the implementation of roadside digital signage.

The Audit is to identify a broad range of potential safety hazards with respect to the above road features, identify the impacts to the safety of all road users of signage design features and improve safety of identified risks as a result of the overall audit findings.

The brief for the Stage 6 Existing Road (or 18-month Post-Opening) Road Safety Audit is to:

- Identify relevant risks to all road users with respect to the signage;
- Identify potential hazards due to obstruction of driver sight lines, driver distraction, conflict with road signage / controls or vehicle headlight reflection with respect to the signage.
- Identify potential risks with regards to the digital characteristics of the signage;
- Identify potential hazards introduced by roadside furniture including sign supports, poles and other rigid (and non-rigid) street furniture.

3.2 Site Inspection

The site was inspected during daylight and night hours on Monday 31st August 2017 for the 6-week post-opening audit and on Thursday 13th September 2018 to inform this 18-month post-opening audit. The purpose of the site inspection is to observe the existing site from the perspective of all road users in order to identify current conditions and possible future impacts of the signage display.

4 SAFETY AUDIT FINDINGS & RECOMMENDATIONS

Section 4.1 documents the general findings of the specialised road safety audit. The audit brief and the CV's of the auditors are presented in **Annexure A** and **Annexure B** respectively.

This audit seeks to identify potential hazards and risks to road users that could arise from signage in the identified location, including identification of impacts of design features including but not limited to signage height, width, angle and colours.

A *Stage 6 Existing Road RSA* presents findings based on the placement and operation of the sign. The findings of the report should be taken into consideration by the operator to achieve the best outcome in terms of road safety.

This Road Safety Audit assessment has been undertaken in accordance with the checklists contained in **Annexure B** which is extracted from *"Transport Corridor Outdoor Advertising and Signage Guidelines Department of Planning and Environment November 2017"*.

4.1 General Findings

The following sub-sections provide general issues as identified by the Auditing team.

4.1.1 Conflict with Traffic Signals

The placement of the signage is such that it is directly behind the west-facing traffic signals, approximately 300m away, for eastbound vehicles in the median lane at the Wentworth Avenue / Southern Cross Drive off-ramp junction, as shown in **Figure 6** & **Figure 7**.

The signage is well lit and does not appear similar to the traffic signal lights, particularly considering the shape of the sign (long, rectangular). However, the digital signage does emit light (projected rather than reflected as is the case with a static, lit sign). This is particularly well illustrated in **Figure 7**. Any signage in the subject location (static or digital), *if displaying primarily red, green or amber colours which is strictly contrary to the signage relevant controls and guidelines and should not be displayed*, as it could be mistaken for a traffic signal lamp and cause drivers to fail to stop or brake unexpectedly, raising the risk of "right near" collisions and rear-end collisions respectively.

The design of the sign, in terms of the sign's contents, brightness, refresh time and reflectiveness appear to be consistent with the tabulated criteria contained on pages 22 to 24 of the *Draft 2015 Transport Outdoor Advertising and Signage Guidelines* (refer to **Annexure B** for extract*)*. This ensures that the content displayed on the sign is consistent with the aforementioned document such that the signage does not adversely impact road safety.

FIGURE 6: SIGNAGE FROM WENTWORTH AVE / SOUTHERN CROSS DRIVE JUNCTION – DAYTIME

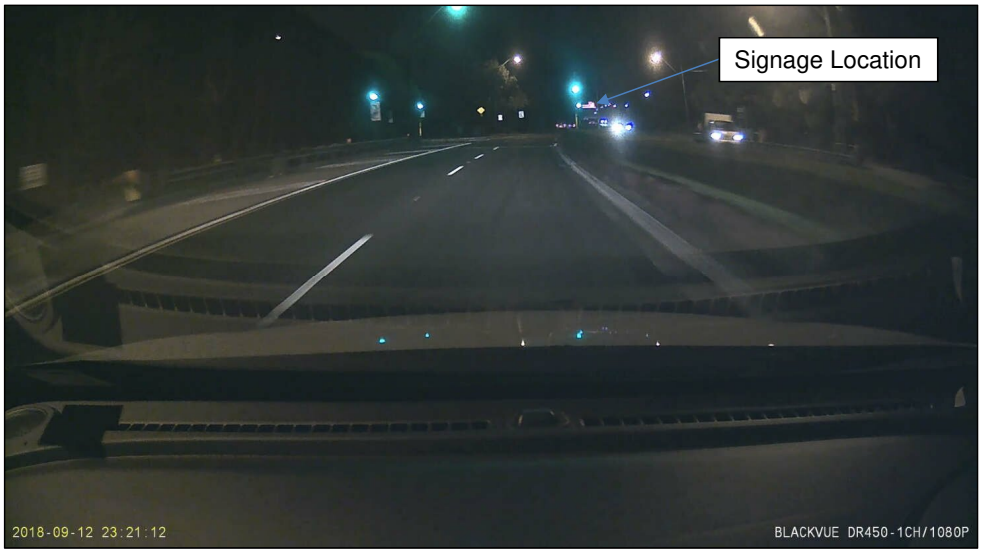


FIGURE 7: SIGNAGE FROM WENTWORTH AVENUE / SOUTHERN CROSS DRIVE JUNCTION – NIGHT TIME

4.1.2 Driver Distraction

Both the existing east-facing and west-facing signage is lit during night hours but is not of a level of brightness that makes the sign dazzling (too bright) or difficult to read (too dark). The sign is not distracting when transitioning from one image to another, given that the change is instantaneous and the driver of the vehicle during the audit observed that on several occasions the change in image was not noticed immediately. It is considered, therefore, that the sign does not have an unacceptable impact on road safety.

4.1.3 Signage Defect

It was noticed at the time of the 18-month inspection that a portion of the west-facing sign in the top left corner was inoperable and was completely blacked out. This sign outage did not cause any road safety issues and if the sign was operating as expected (i.e. fully illuminated) no road safety issues would result.

5 CONCLUDING STATEMENT

The brief provided has been examined and the site inspected both during clear daylight and night periods to determine the safety impacts of the subject digital signage.

This road safety audit has found no adverse impact on road safety associated with the subject and operational digital advertising sign. The road safety audit inspection details and findings are contained in **Section 4** of this report.

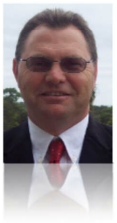
It should be noted that the road safety audit findings are based upon the independent opinions and judgements of the authors. It should be noted, however, that in the event that potential road safety issues are identified within the audit findings, then it is ultimately the responsibility of the Project Manager to determine how best to respond to identified road safety issues.

Craig M^{C}Laren
(RMS Accredited Level 3 Road Safety Auditor) 24 September 2018.

Thomas Steal
(RMS Accredited Level 1 Road Safety Auditor) 24 September 2018.

ANNEXURE A: CIRRICULUM VITAE
(SHEET 1 OF 2)

Craig McLaren (Director)



Craig is an acknowledged traffic consultant since the company inception in 1995. The company's primary function has been to serve both the public and private sectors focusing on traffic impact assessments, transport planning, special event transport planning, local area traffic management, road safety and expert evidence at Land and Environment Court, Supreme Court and the Commission of Inquiry.

Qualifications

Bachelor of Civil Engineering, UNSW, 1985

Graduate Diploma in Traffic Engineering, University of New South Wales, 1991

Accredited Level 3 Road Safety Auditor, 1998

Traffic Control Plan Certifier (Orange Card), 2012

Affiliations:

Member, Australian Institute of Traffic Planning and Management - AITPM

Member, Institute of Transportation Engineers USA (Australian Branch) – ITE

Experience:

MCLAREN TRAFFIC ENGINEERING

1995 to date:

Director and experienced traffic engineer responsible for the conduct of all facets of traffic impact assessment ranging from report preparation, design advice and giving evidence at the Land and Environment Court.

SINCLAIR KNIGHT MERZ

1994 to 1995:

Executive Traffic Engineer. Responsible for the conduct of all facets of traffic impact assessment ranging from report preparation, design advice and giving evidence at the Land and Environment Court.

TRANSPORTATION PLANNING WORKSHOP

1989 to 1994:

Senior Associate. Responsible for the conduct of a vast number of traffic impact assessment report and gained invaluable experience in giving expert evidence before the Land and Environment Court.

ROADS AND TRAFFIC AUTHORITY, NSW

1988 to 1989:

Traffic Engineer, Traffic Engineering Section, involved in traffic/transport research, policy development and assisting councils in the application of the Authority's guidelines.

OVE ARUP TRANSPORTATION PLANNING

1985 to 1988:

Traffic Engineer. Involved in the preparation of traffic impact reports for a wide range of projects.

GUTTERIDGE HASKINS & DAVEY

1980 to 1982:

Trainee Civil Engineer. Involved in assisting with road and subdivision design and field surveying.

Papers at Conferences

"Safe & Liveable Communities, Can You Have Both?" Georgia Institute of Transportation Engineers, St Simons Island, Georgia USA July 1999.

ANNEXURE A: CIRRICULUM VITAE
(SHEET 2 OF 2)

Thomas Steal (Senior Traffic Engineer)

Experienced traffic engineer with extensive experience in consulting with the public and private sectors on matters of transport planning, construction traffic management, traffic impact assessment, road & car park design and road safety auditing.

Appears regularly to represent applicants at Joint Regional Planning Panel and Planning Assessment Commission Meetings to provide expert comments on the traffic, parking and safety impacts of developments.

Has appeared on numerous occasions as an Expert Witness before the Land and Environment Court, representing both Councils and Developers on a range of development types.

Qualifications

Bachelor of Civil Engineering, University of Sydney, 2015

IPWEA Accredited Level 1 Road Safety Auditor, 2015

RMS Accredited Work Zone Traffic Management Plan Designer and Inspector

Experience:

McLAREN TRAFFIC ENGINEERING

2015 to date, roles including:

- Road Safety Auditing
- Concept Road and Parking Design
- Development of Traffic Engineering Methodology
- Construction Traffic Management Plans
- Expert Witness
- Transport Planning
- Traffic Impact Assessment
- SIDRA and Aimsun Modelling
- Expert Advice at Public Meetings

Significant Projects and Matters:

Woolooware Bay Town Centre incl. ~800 Residential Units and Shopping Centre;

Rezoning for up to 3500 Residental Lots in Wallalong;

New Public School in Cecil Park for 630 children;

New Private Hospital in Terrey Hills;

Conservatorium and Planetarium in Orange;

Road Safety Audits of Digital Signage throughout the Ryde Local Government Area;

Various Audits of Roads, Intersections and Bicycle Paths in Bega Shire

Aged Care Development in Sans Souci (provided evidence for Hearing);

Proposed Expansion of Church in Cecil Park (provided evidence for Hearing)

Curriculum Vitae August 2018

ANNEXURE B: DIGITAL SIGN CRITERIA
(SHEET 1 OF 3)

2.5.8 Digital signs

In addition to meeting the relevant SEPP 64 assessment criteria, design, road safety and any public benefit test requirements under the Guidelines, the consent authority must be satisfied that the digital sign meets the following criteria:

Criteria	Applies to signs less than 20sq metres	Applies to signs greater than or equal to 20sq metres
(a) Each advertisement must be displayed in a completely static manner, without any motion, for the approved dwell time as per criterion (d) below.	✓	✓
(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.	✓	✓
(c) The image must not be capable of being mistaken: (i) For a prescribed traffic control device because it has, for example, red, amber or green circles, octagons, crosses or triangles or shapes or patterns that may result in the advertisement being mistaken for a prescribed traffic control device, or (ii) as text providing driving instructions to drivers.	✓	✓
(d) Dwell times for image display are: (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.	✓	✓
(e) The transition time between messages must be no longer than 0.1 seconds.	✓	✓
(f) Luminance levels must comply with the requirements in Table 3 below.	✓	✓
(g) 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.	✓	✓
(h) The amount of text and information supplied on a sign should be kept to a minimum (for example no more than a driver can read at a short glance). Text should preferably be displayed in the same font and size. Table 6 in Section 3 of these Guidelines provides further guidance.	✓	✓
(i) Any 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.	✓	✓
(j) Each sign proposal must be assessed on a case by case basis including replacement of an existing fixed, scrolling or tri-vision sign with a digital sign and in the instance of a sign being visible from each direction, both directions for each location must be assessed on their own merits.	✓	✓

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ANNEXURE B: DIGITAL SIGN CRITERIA
(SHEET 2 OF 3)

Criteria	Applies to signs less than 20sq metres	Applies to signs greater than or equal to 20sq metres
(k) At any time, including where the speed limit in the area of the sign is changed, if detrimental effect is identified on road safety post installation of a digital sign, RMS reserves the right to re-assess the site which may result in a change to the dwell time or removal of the sign.	✓	✓
(l) Sign spacing should limit drivers view to a single sign at any given time with a distance of no less than 150 metres 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.		✓
(m) Signs greater than or equal to 20sq metres must obtain RMS concurrence AND must ensure the following minimum vertical clearances; • 2.5m from lowest point of the sign above the road surface if located outside the clear zone. • 5.5m from lowest point of the sign above the road surface if located within the clear zone (including shoulders and traffic lanes) or the deflection zone of a safety barrier if a safety barrier is installed. If attached to Road Infrastructure (e.g. Overpass), the sign must be located so that no portion of the advertising sign is lower than the minimum vertical clearance under the overpass or supporting structure at the corresponding location.		✓
(n) An electronic log of a signs activity must be maintained by the operator for the duration of the development consent and be available to the consent authority and/or RMS to allow a review of the signs activity in case of a complaint.		✓
(o) A road safety check which focuses on the effects of the placement and operation of all signs over 20sq metres must be carried out in accordance with Part 3 of the RMS Guidelines for Road Safety Audit Practices after a 12 month period of operation but within 18 months of the signs installation. The road safety check must be carried out by an independent RMS accredited road safety auditor. A copy of the report is to be provided to RMS and any safety concerns identified by the auditor relating to the operation or installation of the sign must be rectified by the applicant.		✓

Transport Corridor Outdoor Advertising and Signage Guidelines – November 2015 23

ANNEXURE B: DIGITAL SIGN CRITERIA
(SHEET 3 OF 3)

Table 3: LUMINANCE LEVELS FOR DIGITAL ADVERTISEMENTS

LUMINANCE LEVELS – Luminance means the objective brightness of a surface as measured by a photometer, expressed in candelas per square meter (cd/m2). Levels differ as digital signs will appear brighter when light levels in the area are low. Luminance levels should comply with Australian Standard AS4282 Control of the Obtrusive Effects of Outdoor Lighting which recommends the following levels:

Lighting Condition	*Zone 1*	*Zones 2 and 3*	*Zone 4*
Full Sun on face of Signage	No limit	Maximum Output	Maximum Output
Day Time Luminance		6000 cd/m2	6000 cd/m2
Morning and Evening Twilight and Inclement Weather		700 cd/m2	500 cd/m2
Night Time		350 cd/m2	
Night Time		350 cd/m2	

Zone 1 covers areas with generally very high off-street ambient lighting e.g. display centres similar to Kings Cross, central city locations

Zone 2 covers areas with generally high off-street ambient lighting e.g. some major shopping/commercial centres with a significant number of off-street illuminated advertising devices and lights.

Zone 3 covers areas with generally medium off-street ambient lighting e.g. small to medium shopping/ commercial centres.

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2.5.9 Moving Signs

Moving or mechanical signs display images which change through movement of the sign structure only, for example, scrolling or trivision signs.

In addition to meeting the relevant SEPP 64 assessment criteria, design, road safety and public benefit test requirements under these Guidelines, moving signs that face the road reserve and are visible to drivers will also be required to meet the following criteria:

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(c) The image must not be capable of being mistaken:

(i) for a rail or traffic sign or signal because it has, for example, 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, or

(ii) as text providing driving instructions to drivers.

(d) Light levels are to be consistent with Section 3.2.5 and Table 5 of these Guidelines.

2.5.10 Video and animated electronic signs

Video and animated electronic signs containing animated or video/movie style advertising or messages including; live television, satellite, internet or similar broadcast; either permanent or portable; that face the road reserve and are visible to drivers are prohibited.

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APPENDIX C –DIGITAL SIGN RESEARCH

Impacts of Digital Billboards on Driver Behaviour

Evidence and Research

Introduction

There is an overarching assumption that billboards at the roadside should, by their very nature, be distracting as they are designed to get the attention of those passing by (Roberts, Boddington and Rodwell 2013, 10). This assumption has driven much of the state and federal legislation and regulation regarding Out of Home (OOH) advertising at the roadside.

This paper demonstrates that although thought on this matter can be divergent, in-field, real world studies show that the supposed distraction provided by OOH advertising does not eventuate.

About OOH Advertising and the OMA

OMA members advertise third party products on digital and traditional signs across a variety of OOH formats and locations, including airports; buses; bus, train and tram stations; office buildings and lifts; pedestrian bridges; shopping centres; taxis; trains; trams and street furniture.

OMA members make significant economic contributions to government and the community, contributing close to $647 million to Australia's GDP and supporting approximately 4,500 jobs. Most OMA members are Australian owned and operated, with profits going back to the Australian economy. The industry also provides a revenue stream to government and private landholders alike, returning 50% of revenue in rent and taxes.

In 2019, OMA members donated $87 million in media services and advertising placement to over 230 community groups and charities.

The industry also delivers essential services and savings. The OOH advertising industry built and, now cleans and maintains $352 million of public infrastructure across Australia. The over 17,000 pieces of public infrastructure delivered by the OOH advertising industry make our cities more user-friendly. The industry also invests in innovation and provides digital utility such as Wi-Fi and wayfinding services.

Types of roadside OOH

Billboards

OOH advertising is varied; however, the most obvious example of roadside advertising is the billboard.

Typically, billboards are either attached to another structure like a building or are free standing. They come in many sizes with the most common being 18m^2 or 42.41m^2. Billboards also fall into two main display types – static or digital. Static billboards are poster like and semi-permanently affixed to the billboard structure requiring manpower to manually erect advertisements. Digital billboards are made of LED screens which display content digitally. Digital billboards can display multiple different pieces of content and can be updated remotely.

Other types of roadside advertising

Roadside advertising consists of more than just billboards with bus and tram shelters, pay phones and kiosks.

On premise advertising

On premise advertising are any signs that are attached to a business premises for the specific purpose of advertising that business or its products. It includes in store/window posters, A frame signs, awning signage and business signage. On premise advertising is not considered OOH as it is generally treated differently in legislation.

What is distracted driving?

Regan et al note in their taxonomy of driver distraction that "there is increasing evidence that driver distraction and driver inattention are major contributing factors in car and truck crashes and incidents" (Regan, Hallett and Gordon 2011, 1771). However, what research about roadside advertising attempts to uncover is whether billboards are, in fact, distracting.

Noting that distraction is just a form of driver inattention (Regan, Hallett and Gordon 2011, 1780), the taxonomy notes that driver distraction is "the diversion of attention away from activities critical for safe driving toward a competing activity, which may result in insufficient or no attention to activities critical for safe driving" (Regan, Hallett and Gordon 2011, 1776). This is important to note because the research outlined in this paper suggests that activities that are required for safe operation of the vehicle take precedent over other activities like looking at billboards for any period of time that is significant.

To determine how distracting a behaviour is, studies tend to use the amount of time something is looked at, known as a fixation. Many studies have sought to determine how long a fixation is required to be to be distracting however the work of Klauer is most often quoted. In that research, it was found that "total eyes-off-road durations of greater than 2 seconds significantly increased individual near-crash/crash risk whereas eyeglance durations less than
2 seconds did not significantly increase risk relative to normal, baseline driving" (Klauer, et al. 2006, xi).

Driver attention around billboards

The key question asked in the research is whether any advertising at the roadside is distracting to drivers.

In this regard, there is a significant divergence of academic thought. For example, where one study found that "high levels of visual and cognitive demand can result in a greater level of lane deviation and shorter headways" (Samsa 2015, 2) others found only minor differences in speed and lane deviation (Samsa 2015, 2). Some studies, in fact, did not find any significant changes in regards to speed, lateral placement of the vehicle or headway at any stage when drivers were passing digital billboards on a motorway (Samsa 2015, 2).

A 2011 study in the US initially made the proposition that the presence of OOH advertising at the roadside "distracted eye movements from the road ahead and delayed responses to road signs" (Edquist, et al. 2011, 624). However, this makes a large assumption about the impact of short glances and, as noted above, glance duration is an important factor in determining how distracting something might be.

Further, research demonstrates that mental load is also an important factor in considering whether something is distracting or not. In a large study by the US Federal Highway Administration (FHA) it was noted that "gaze allocation is principally controlled by the requirements of the task" (W. A. Perez, M. Bertola, et al. 2012, 55).

In that study, conducted in field, it was found that drivers gazed away from the forward roadway, even when there weren't billboards present (W. A. Perez, M. Bertola, et al. 2012, 54). Ultimately, that study found that there were no fixations of more than 2 seconds were observed for either digital or static billboards (Ibid).

This means that drivers self-regulate their attention depending on the cognitive load required, prioritising driving and safety tasks over outside distractions.

This was confirmed in a 2015 study by Monash University which found that "current driving demands appeared to be influencing whether and how much attention drivers paid to the billboards, rather than the billboards influencing driver behaviour" (Stephens, et al. 2015, viii).

In the Edquist study, where assumptions were made about the power of roadside advertising to distract, the authors themselves noted that their simulation involved a low cognitive load and driving environment "in which drivers were able to devote their attention to the forward roadway 56% of the time" (Edquist, et al. 2011, 625). This was compared to the Klauer study where participants were only able to devote their attention to the forward roadway 47% of the time (Edquist, et al. 2011, 625). The Edquist study concludes that "this may have lessened the effects of the billboards in distracting attention from the forward roadway" (Edquist, et al. 2011, 625).

This was also demonstrated in a study where drivers were asked to recall billboards, they had seen during an in field study. It was found that there was stronger recall for any particular billboard when the driving demand was low (Young, et al. 2015, 9). The researchers concluded that this confirmed "a form of driver self-regulation, whereby drivers are capable of adapting their visual and cognitive attention in relation to billboards, paying more attention to them when driving is less demanding and paying less attention when demand increases" (Young, et al. 2015, 9).

Is digital more distracting than static?

According to the 2012 FHA study, drivers were more likely to glance at digital billboards for a slightly longer time than static billboards (average 0.335) (W. A. Perez, M. Bertola, et al. 2012, 54). However, it concluded that there was no "evidence indicating that (digital billboards) are associated with long glances away from the road that may reflect an increase in risk" (W. A. Perez, M. Bertola, et al. 2012, 54).

This can be seen evidenced in a crash data study comparing crash data before and after a billboard was converted to digital. This study found that the difference in crash data before and after the conversion was not statistically significant (Tantala and Tantala 2010, 40). The same report shows that the total number of accidents is approximately equivalent to what would have been expected with or without the introduction of the digital billboard (Tantala and Tantala 2010, 40) meaning that the conversion to digital had no impact on the crash rates.

This study also concluded that there was no difference in crash data for a billboard with a 6 second dwell time versus a billboard with an 8-10 second dwell time (Tantala and Tantala 2010, 24).

These results have been replicated in a number of Australian studies such as two Monash University studies conducted in 2015 where one concluded that there was not any difference in the impact of

digital and static billboards (Stephens, et al. 2015, viii) and the other found that there was no difference in steering variation (Young, et al. 2015, 6), variability of speed and the mean and variation of braking (Young, et al. 2015, 5) in the presence of billboards.

The OMA's research

Because the research in this area is so varied, many of which were and because the real world implications of simulator studies are not always clear, the OMA has commissioned several pieces of research.

First a 2014 study by eyetracker found that while digital signage attracted more fixations than static signage, there was no difference in duration of these fixations and all fixations were under 2 seconds. (Vu, Zhang and Brawn 2014, 5). As noted previously, this is the generally agreed amount of time fixations are required to be before they are considered distracting.

Equally that study found that there were far more fixations on traffic and on-premise signs than on roadside advertising signage (Vu, Zhang and Brawn 2014, 45).

Next, Carolyn Samsa was commissioned to study driver's visual behaviour in both on road and simulated environments concluding that the presence of billboards do not "significantly affect the percentage of time drivers devoted to glancing at the forward roadway" (Samsa 2015, 2).

Ultimately, that research found that digital billboards, were not more distracting than other types of signage and that "digital billboards do not draw drivers' attention away from the road for dangerously long periods of time" (Samsa 2015, 10). It also concluded that drivers maintained safe average headway in the presence of digital billboards (Samsa 2015, 10).

Although it was noted that there was some lane deviation observed, Samsa concluded that there was no currently accepted definition as to how much lateral deviation is considered dangerous and could lead to lane departures (Samsa 2015, 7).

Finally, the OMA worked with the Australian Road Research Board to observe driver behaviour in the presence of a digital billboard when that billboard was both on and off and at various dwell times. That study found that at all dwell times "vehicle lateral control performance either improved or was unaffected by the digital billboards presence" (Goodsell and Roberts 2018, 19). The research also found similar results for stopping over the line where this performance indicator improved at all but one dwell time (Goodsell and Roberts 2018, 19).

Future research options

The OMA is committed to further research in the area of road safety in the presence of OOH advertising. The OMA is currently working with state governments around Australia on cooperative research into crash and driver performance around digital signage.

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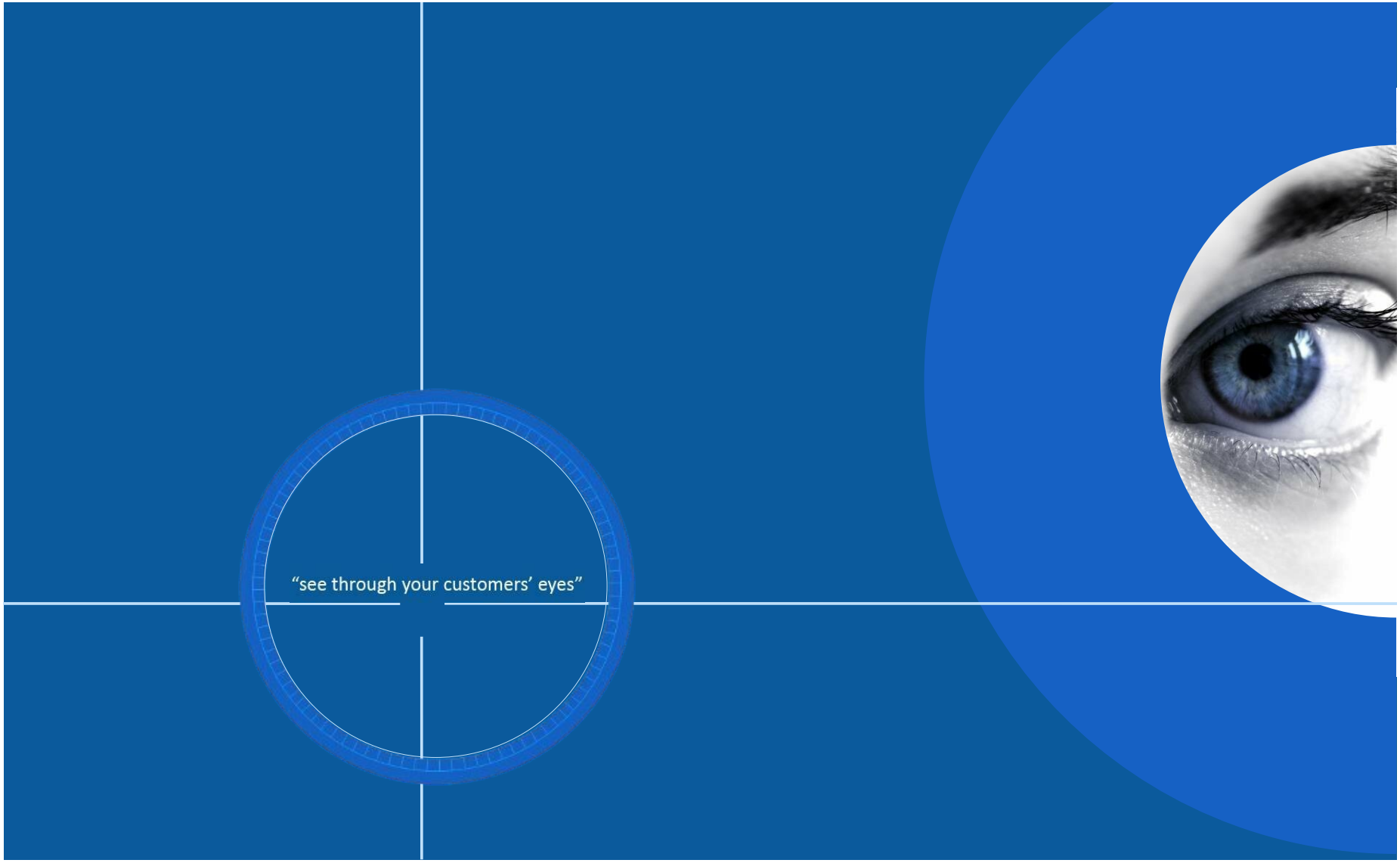
Young, L Kristie, Amanda N Stephens, B David Logan, and Michael G Lenne. 2015. "An On-Road Study of the Effect of Roadside Advertising on Driving Performance and Situation Awareness." *4th International Driver Distraction and Inattention Conference.* Sydney, NSW: Monash University Accident Research Centre.

eyetracker



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Eyetracker Report:

Outdoor Media Association: Driver Attention Study

OMA: Driver Attention Study

Prepared for:

Grant Guesdon

Emma Luttrell

Charmaine Moldrich

Prepared by:

Dr Luke Vu

Linda Zhang

Dr Peter Brawn

February 2014

OUTDOOR MEDIA ASSOCIATION

eyetracker

Report Overview

1. Key Findings
2. Background and Objectives
3. Methodology
4. Detailed Results:
    - Viewing Behaviour
    - Driver Performance
5. Qualitative Assessment of Effective Signage
6. References
7. Appendix - Additional Results

Key Findings

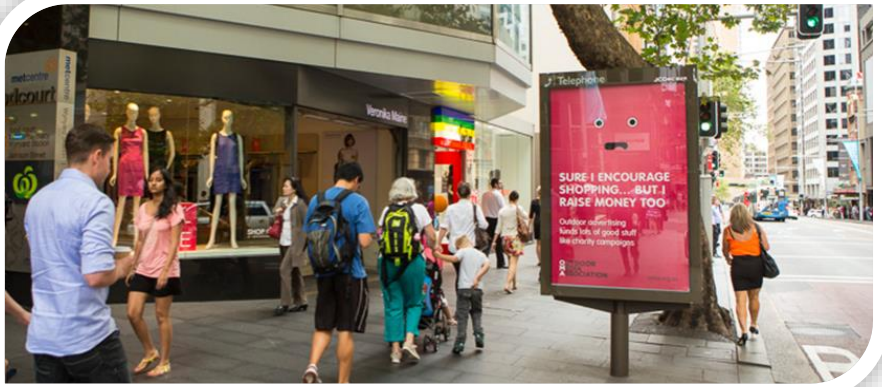
- There are mixed findings when comparing 3rd party to on-premise signage for both viewing behaviour and driver performance:
  - Significant differences were found between 3rd party and on-premise signage for some measures of viewing behaviour and driver performance. While some of these results suggest an adverse impact on driver behaviour, the practical significance of these small effects remain to be interpreted in the context of driver safety.
  - Analysis of 3rd party signage showed that there were no differences in viewing behaviour and driver performance between digital and static signage.
- Fixation analysis revealed that, on average, digital signage attracted more fixations than static signage. However, there was no difference in the duration of these fixations between these two types of signage. All fixations on digital signage observed in this study were under 2000ms.
- An encouraging finding for out-of-home media effectiveness is that a significant proportion of fixations were found to be under 200ms (approximately 50% of all fixations), ‘hits’ which are currently being excluded within MOVE.

1. Background and Objectives

Background – Existing Driver Attention Research

Research on the impact of advertising signs on driver attention is inconclusive. There are methodological issues with a large number of available research papers e.g. they are mostly laboratory or simulator-based. Until recently, eye tracking technology constraints have meant that conducting live or on-road studies was not possible.

Background – Research Into Digital Advertising



In addition, there has been a lack of research into the effects of digital advertising signage specifically. Regulation against digital advertising has been based on the argument that the dynamic nature of digital advertising is more likely to distract drivers by capturing their attention (e.g. due to motion and abrupt visual onsets).

It has also been argued that digital advertising signage is likely to attract longer fixations (where a person's eye movement pauses on a specific place or object) resulting in a driver's attention being 'off-road'.

Research Objectives

Project Aim:

- Explore the relationship between drivers' viewing behaviour towards outdoor advertising signs and their subsequent driving performance, in a live, real world environment.

Research Questions:

- Does viewing behaviour and driver performance differ significantly in the presence of 3rd party compared to on-premise signage?
- Does viewing behaviour and driver performance differ significantly in the presence of digital compared to static signage?

eyetracker

2. Methodology

Participant Recruitment Criteria

- A total of 29 participants were included in the study.
- There was a roughly equal split between male and female.
- Participants were aged 25-54 years and held a valid Queensland driving license. They each had a minimum of five years driving experience.
- Participants had normal or corrected to normal eyesight.
- Participants were naïve as to the purpose of the study.
- Participants were unfamiliar with the chosen route. This was defined as “live outside the area by more than 10km, never driven route or have not driven route in the last 6 months”.
- Participants were pre-recruited via a screener for the above characteristics and paid an incentive for taking part in a 2 hour session.

Session Format

- Participants were met at the Zillmere IAG car park and given instructions regarding the session requirements. Participants were given the opportunity to withdraw from the study at any time.
- Participants were fitted with the eye tracking glasses and an individual calibration procedure was conducted to ensure accurate Point of Gaze (POG) recording.
- Following the instructions and calibration procedure, participants were required to drive a practice route of the Zillmere area. This 20 minute practice drive allowed participants to get used to wearing the eye tracking glasses and become familiar with driving the test vehicle.
- A facilitator was present in the front passenger seat of the vehicle to provide instructions and route guidance where required. A technician was also present in the rear passenger seat to supervise the use of the eye tracker.
- Following the practice drive, participants drove the test route. The entire drive took approximately 90 minutes, depending on traffic.
- Finally, participants completed a 10 minute survey to record their demographic information.

Technology – ASL Mobile Eye XG

We used mobile eye tracking technology to capture natural viewing behaviour while driving.

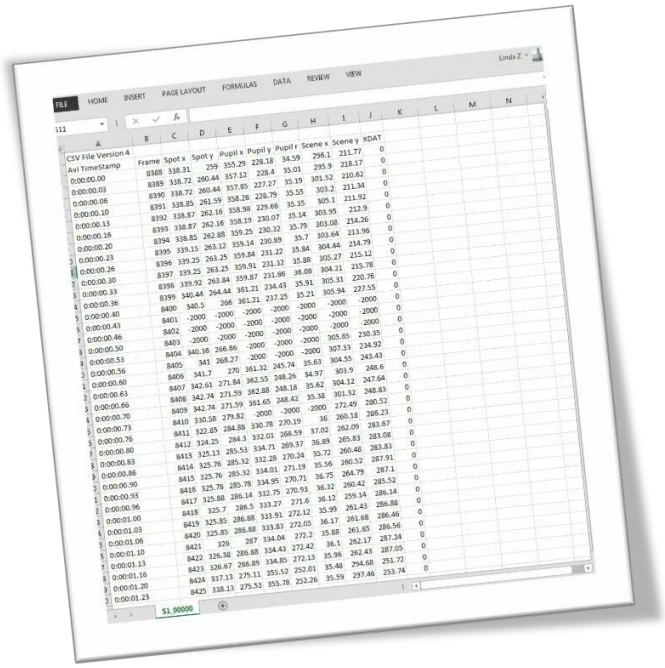
The benefits of using the Mobile Eye XG include:

- High definition recording
- Lightweight & portable
- Wireless transmission
- Unobstructed peripheral vision
- Works in outdoor lighting conditions
- Shatterproof safety frames
- Samples at 30hz

Technology – ASL Mobile Eye XG

The outputs from the Mobile Eye XG eye tracker include a video with the participant's point of gaze (POG) cross-hair and a corresponding data file. These outputs were generated for each participant and analysed offline.

*Sample compressed eye tracking video footage**



Sample data file

*Video download link: https://www.dropbox.com/s/3mzb2eau0x3l0v8/S3%20Sample%20Output.avi

Technology – The Instrumented Vehicle

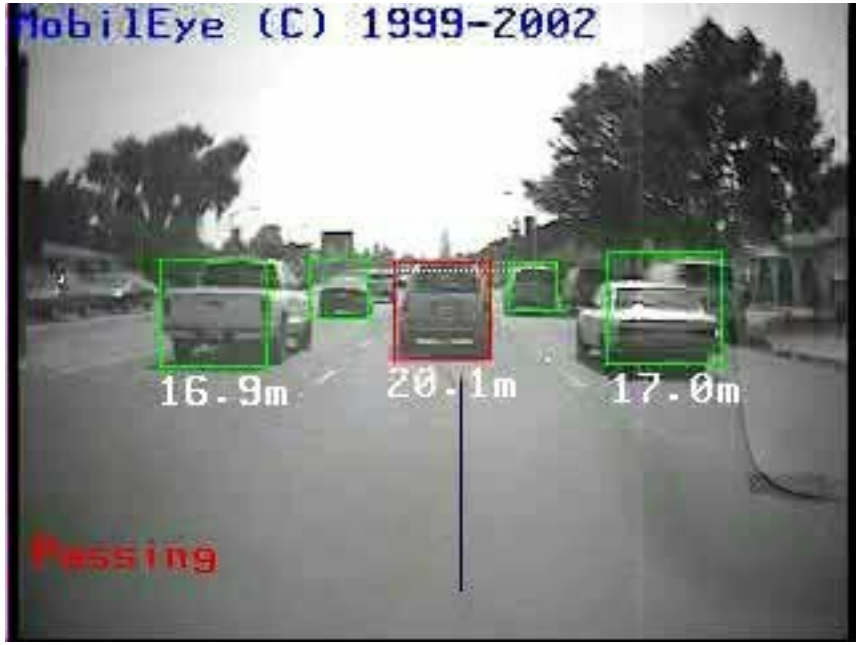
A white 2010 Toyota Corolla sedan with automatic transmission was used as the test vehicle. The vehicle was fitted with the Mobileye collision warning technology and the RaceLogic VBOX performance measurement system.

Cameras were included in the wing mirror to record lane position and behind the rear view mirror to record vehicle headway. A roof-mounted sensor provided GPS location information.

The data from the different technologies was integrated and recorded within the VBOX system that was installed within the passenger glove compartment.

Technology – Mobileye Technology

The Mobileye collision warning system detects lane (lateral deviation) position and vehicle headway. The system was customised so that the raw data was recorded and subsequently synchronised with the eye tracking and GPS data.



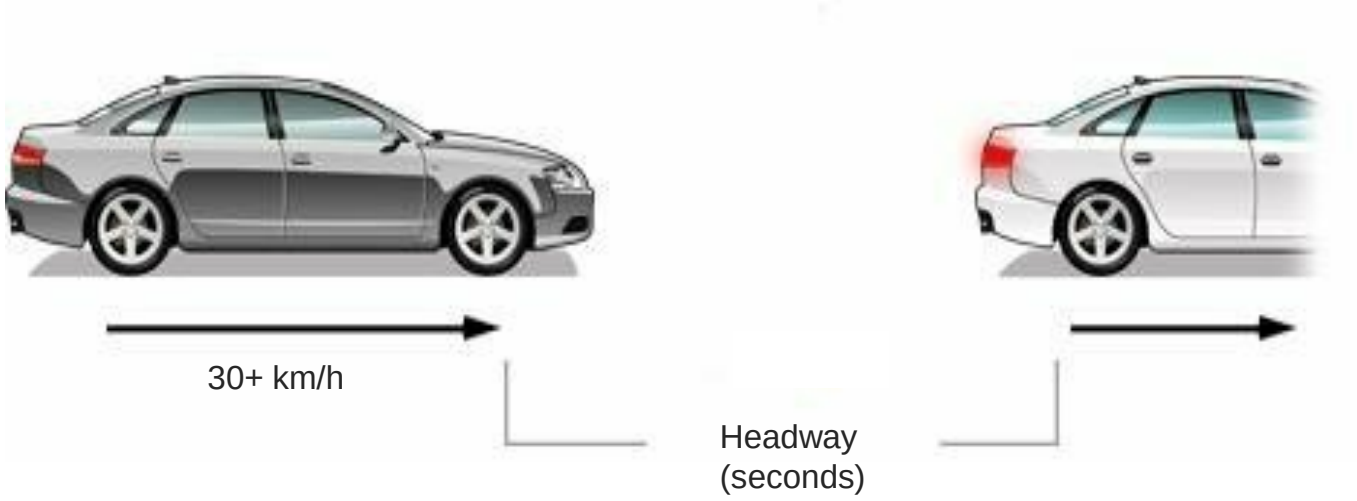
Video download link: https://www.dropbox.com/s/1ezvf98l80d04g9/acc24-46.mpeg

Driver Performance – Headway

Headway is one way of measuring driver performance. In this study, we analysed headway in two different ways:

1. Average headway is the average distance between the test vehicle and the vehicle ahead. Poor driver performance could be defined when average headway falls below a certain threshold.

2. Standard deviation of headway represents how well a driver maintains a constant headway with the vehicle ahead. For example, high deviation of headway could indicate that the driver is failing to adjust to traffic conditions.



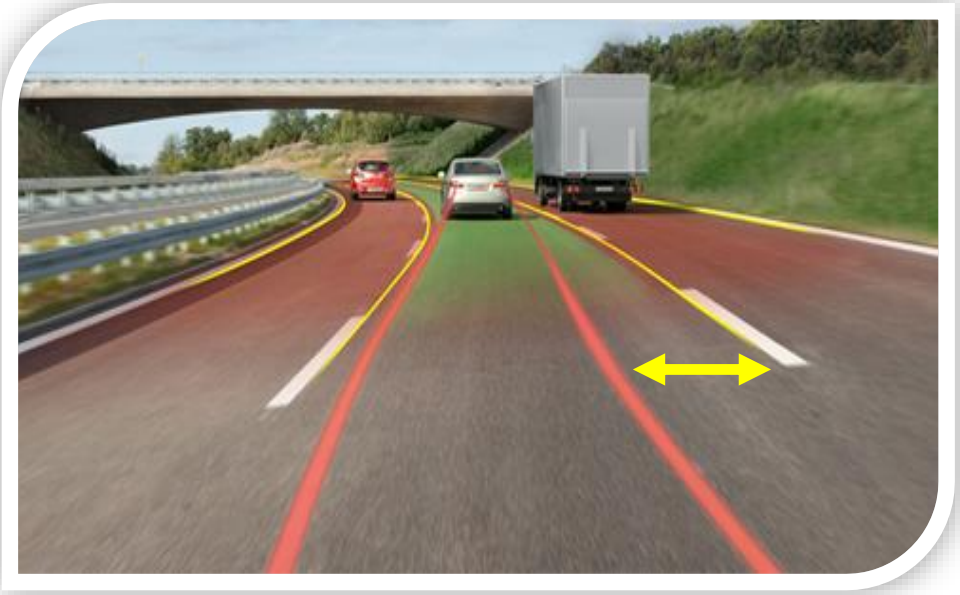
http://www.euroncap.com/results/aeb/testresults.aspx

Driver Performance – Lane Deviation

Lane deviation is the standard deviation of lane position (lateral position). Standard deviation of the right lane position was selected as the primary measure due to the following:

1. Greater frequency and visibility of right lane markings and;

2. Tendency for Australian drivers to use right-lane markings preferentially for lane keeping.



http://www.bosch-automotivetechnology.com/media/db_application/stage_components/safety/spurhalteassistent.jpg

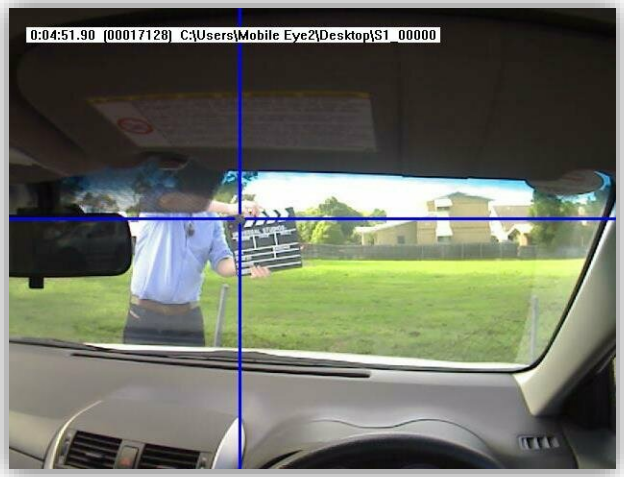
Driver Performance – Lane Deviation

Sample screenshot outputs from VBOX showing headway and lane position

Technology – Synchronising the Data Streams

The eye tracking system and collision warning system had independent clocks which meant that each data stream was recorded with independent timestamps.

In order to synchronise the data streams, we used a clapper board. By recording this event in both camera sources, we were able to synchronise timestamps with the UTC (Coordinated Universal Time) clock used within the VBOX system.



Frame from Mobile Eye XG

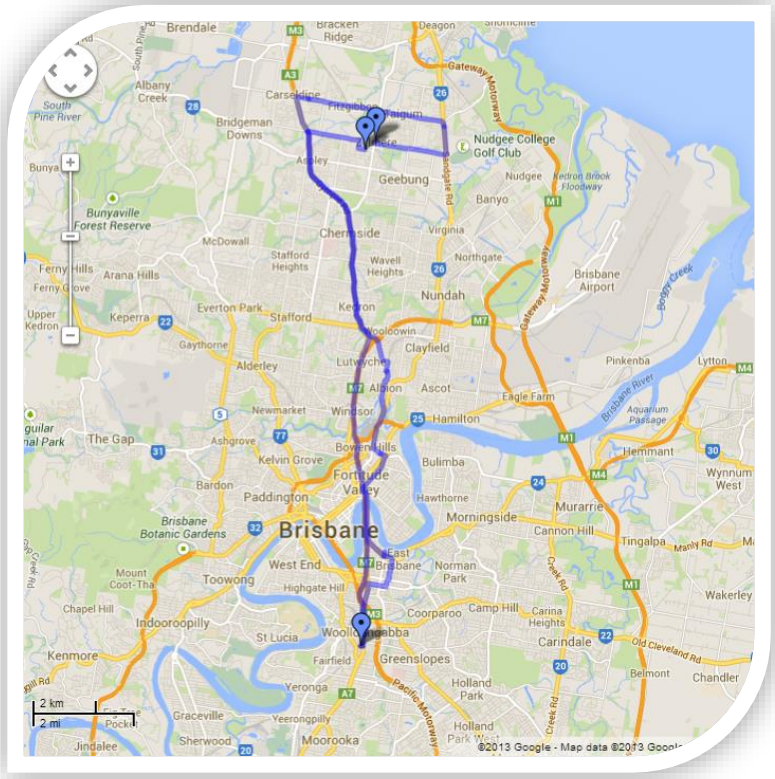
Synchronised frame from VBOX

Fieldwork Location and Driving Route

The fieldwork was conducted in Brisbane where a number of digital billboards are located within the CBD.

A route was selected that included digital, static and on-premise signage in areas of high and low density.

The route started in Zilmere, continued south through the CBD as far as Woolloongabba, before returning to Zilmere. The total driving time was approximately 2 hours (including a practice drive).



The Brisbane Driving Route

Segmenting the Driving Route

In order to answer our research questions, a number of segments of the overall route were identified for comparison.

We identified segments of the route that contained digital signage to compare against those that included static signage. We also identified segments that included on-premise signage as an additional comparison group. It is important to note that digital and static segments also contained on-premise signage.

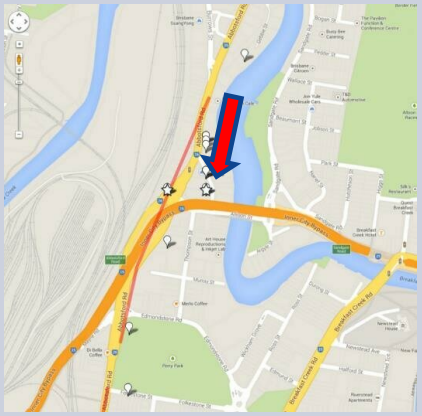
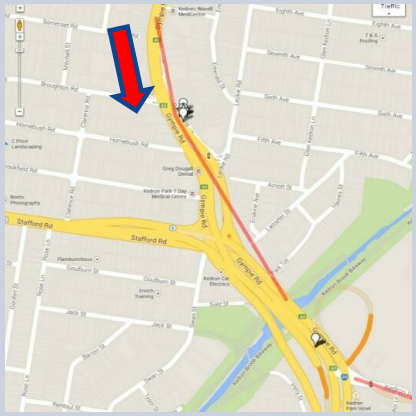
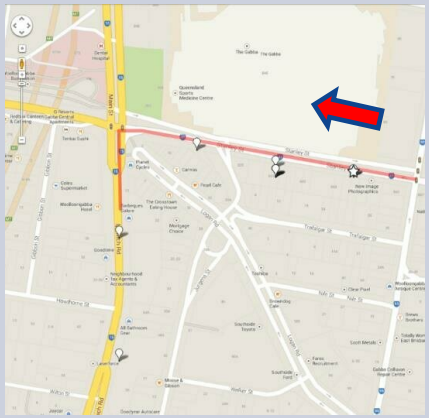
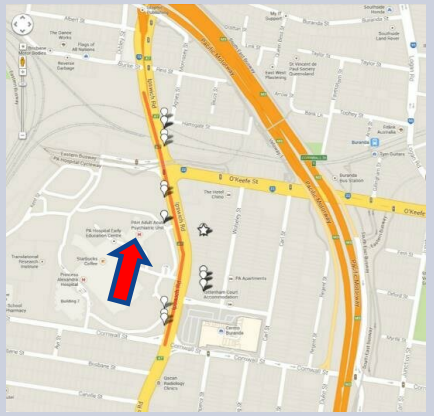
In addition, the digital, static and on-premise segments were further classified as ‘heavy’ or ‘light’ in signage density. This results in a total of eight route segments which were labelled according to the following table.

	Digital Signage		Static Signage	On-premise Signage
Heavy Density	Segment 2	Segment 3	Segment 5	Segment 6
Light Density	Segment 1	Segment 4	Segment 7	Segment 8

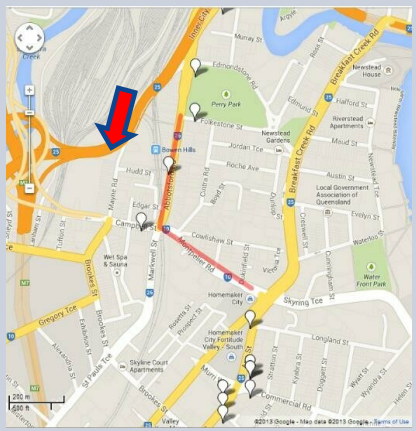
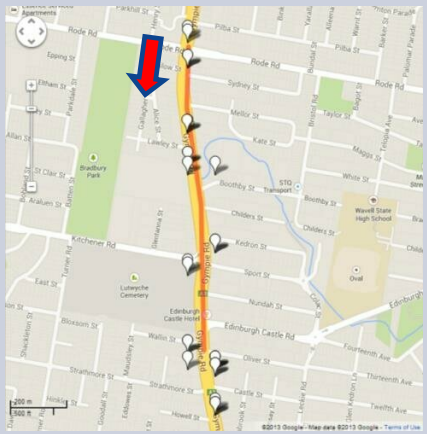
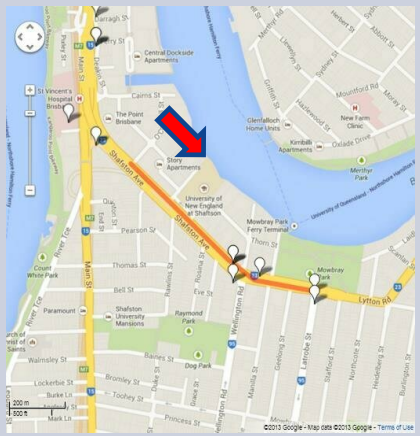
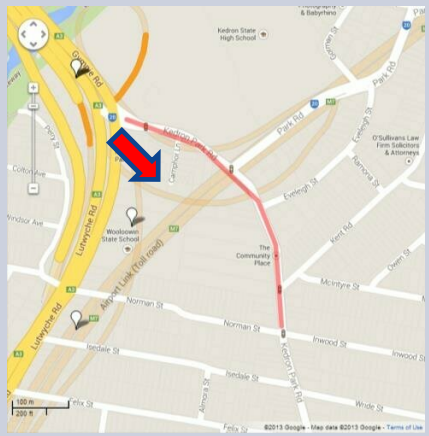
Segmenting the Driving Route - Digital Segments

Digital Signage 1	Digital Signage 2	Digital Signage 3	Digital Signage 4
			
Digital – Light Density	Digital – Heavy Density	Digital – Heavy Density	Digital – Light Density

Maps of Route – Digital Segments

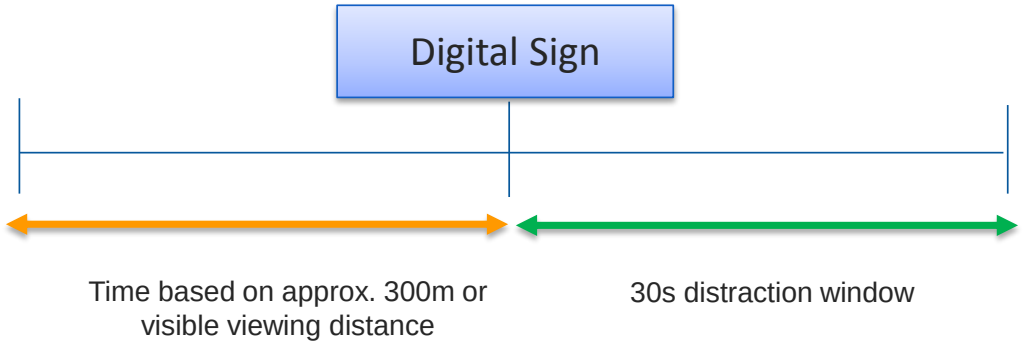
Segment 1	Segment 2	Segment 3	Segment 4
			
Digital – Light Density	Digital – Heavy Density	Digital – Heavy Density	Digital – Light Density
Abbotsford Rd	Gympie Rd	Stanley St (Gabba)	Ipswich Rd

Maps of Route – Comparison Segments

Segment 5	Segment 6	Segment 7	Segment 8
			
Static – Heavy Density	On-premise – Heavy Density	Static – Light Density	On-premise – Light Density
Abbotsford Rd / Montpelier Rd	Gympie Rd	Shafston Ave	Kedron Park Rd

Route Segmentation – Time Duration

The time duration of the digital segments (1-4) were determined by the following criteria:



The time duration of the comparison segments (6-8) were determined by the following criteria:

	Static	On-premise
Heavy Density	(5) Average of digital heavy segments	(6) Average of digital heavy segments
Light Density	(7) Average of digital light segments	(8) Average of digital light segments

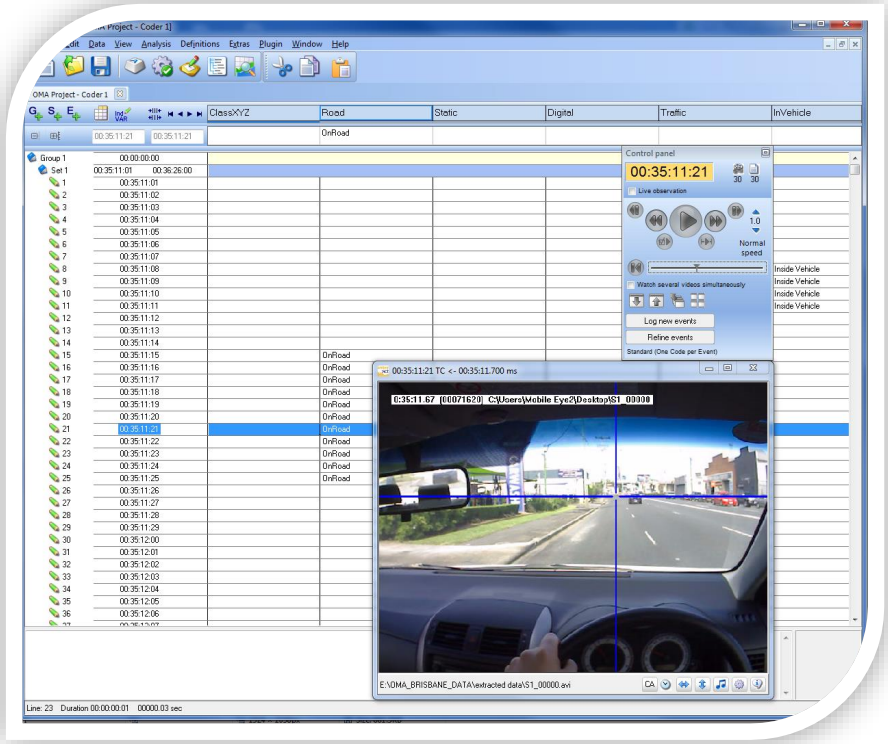
Eye Tracking Data Coding

One of the challenges with analysing mobile eye tracking video is that each participant's recorded footage is dynamic and unique. This means that it is difficult to use eye tracking analysis software which allows Areas of Interest (AOIs) to be overlaid on scene elements and regions.

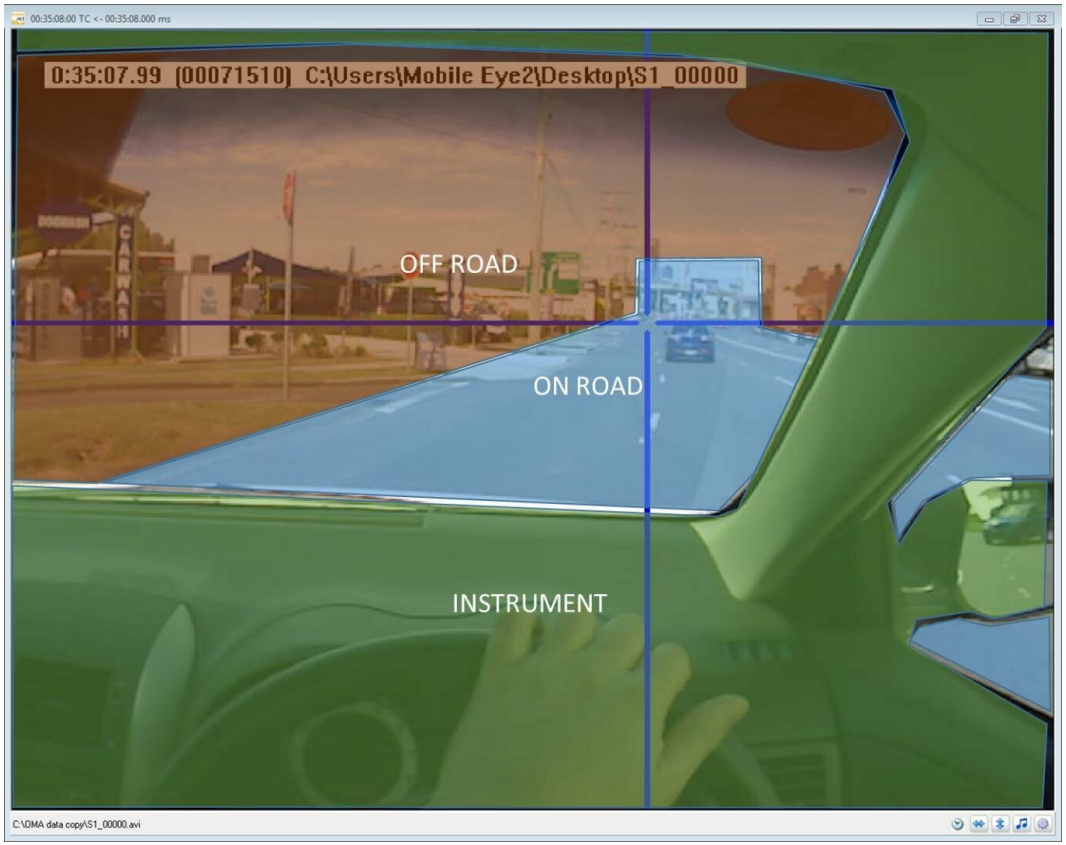
As a result, an observational encoding approach was taken, using specialist behavioural encoding software (Mangold Interact).

To reduce any bias in the analysis, two highly trained naïve encoders analysed the footage frame-by-frame based on an agreed coding scheme.

All analyses were conducted to meet academic publication standards.

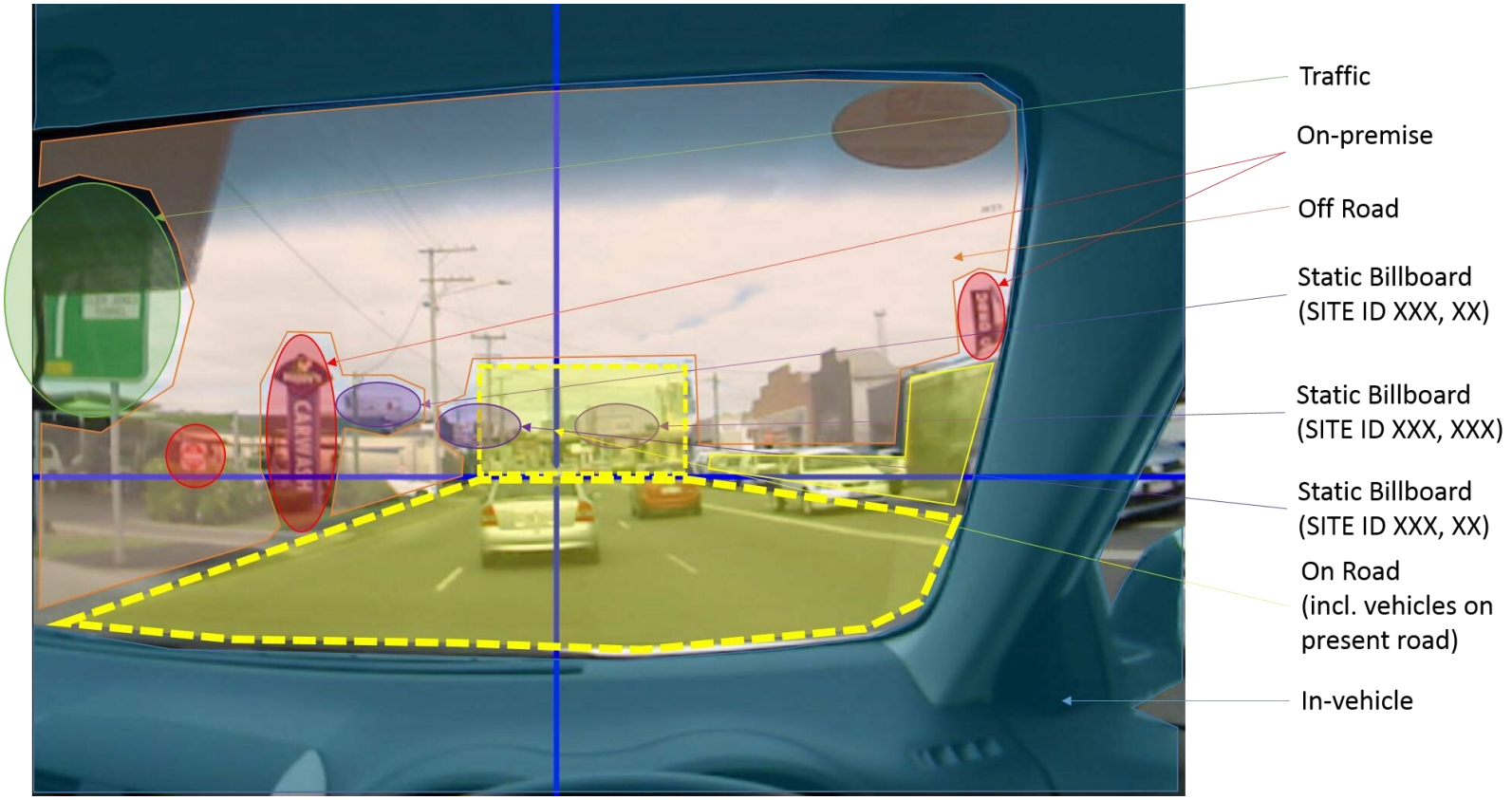


Coding Schemes – Macro Level



At a macro level, we designated areas of the scene to be **ON-ROAD** and **OFF-ROAD**.

Coding Schemes – Micro Level



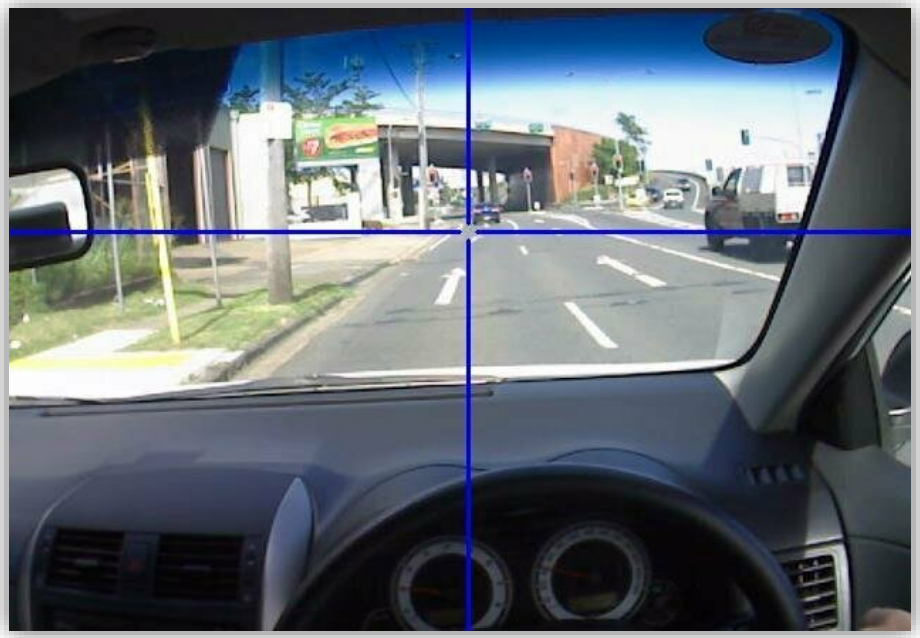
At a micro level, the coding scheme captures the different types of signage viewed.

Visual Behaviour – Dwell Times

Dwell time is the total time spent looking at a particular category. That is, we analysed the point of gaze (POG) crosshair for every single frame. This is the most granular analysis of the eye tracking data possible.

For dwell time analysis, the coding categories were grouped to either On-road or Off-road viewing behaviour:

On-road	Off-road
On-road	Digital
Box On-road	Static
Traffic Signs	On-premise
Inside Vehicle	Off-road



Visual Behaviour – Fixations

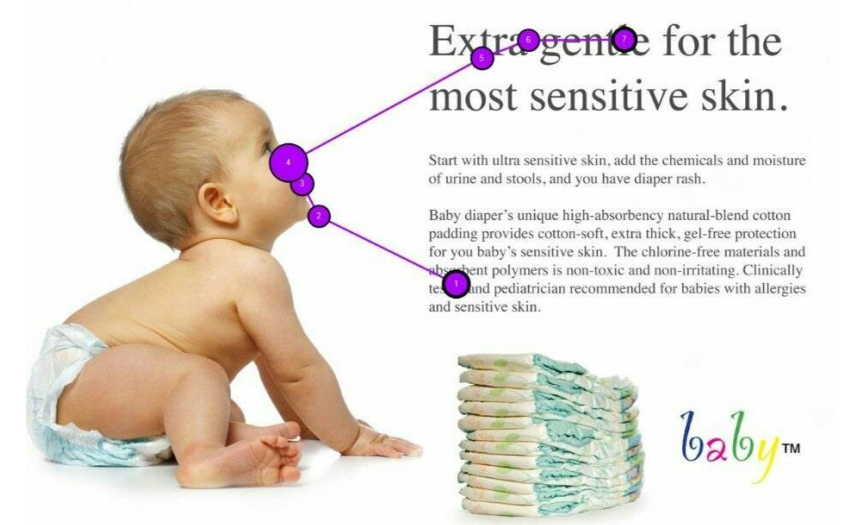
Broadly speaking, eye tracking data can be divided into two components:

1. Eye movements (sometimes referred to saccades)
2. Fixations

Fixation is the maintenance of visual gaze on a specific region or object in the visual field.

Fixation data is highly correlated with the allocation of attention. In fact, there is evidence that when our eyes are moving, our entire visual system is 'switched off' (saccadic suppression).

Therefore, it is conventional to use fixations to analyse attention allocated to signs.



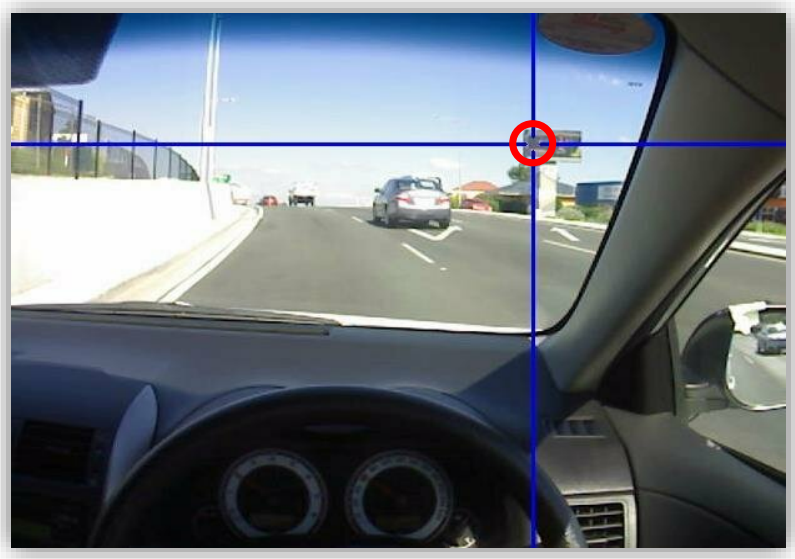
http://alexwhite.org/2011/10/you-look-where-they-look-research-on-design/

Classification of Fixations

In order to determine what constitutes a fixation, certain parameters must be established based on the time spent in a defined region e.g. it has been conventional to consider eye dwells on something for 200ms or longer to be classified as a fixation.

More recently, it has been suggested that fixations shorter than 200ms are possible. For this study, we set our threshold at 100ms (or 3 frames).

The first parse of the data involved a frame-by-frame classification of the point of gaze (POG) data. A second parse involved matching the classified data to a fixation file, that was generated via ASL Results analysis software using pre-determined parameters.



Sample screenshot of fixation on sign

Inter-Rater Reliability (IRR)

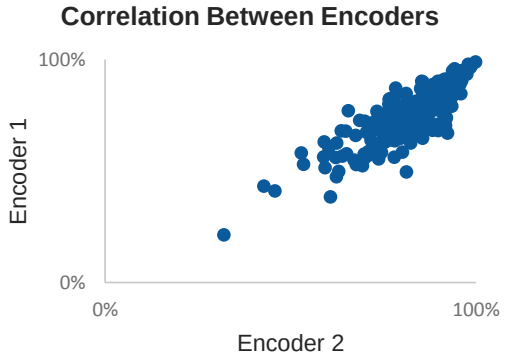
A potential issue with using observational encoding (involving human judgement calls) is the potential for divergent classifications.

The accepted way to quantify the degree of convergence/divergence between the two encoders is the calculation of inter-reliability (IRR). IRR demonstrates the consistency among observational ratings provided by multiple coders.

Two methods were used to show that encoders were scoring consistently:

1. The Kappa statistic was calculated based on the fixation analysis. It was found that encoders were in substantial agreement with each other (K = .689, p<.001 for comparison, K = .65 in Hanowski, R.J., et al (2006)).

2. The Intra-class Correlation statistic was calculated based on the on-road dwell times. It was also found here that encoders were consistent with each other (r = .812, p<.001 for comparison, r = .86 in Hanowski, R.J., et al (2006)).



Statistical Corrections

Statistical corrections are typically required from more recent studies involving multiple comparisons.

We have applied a conservative criteria to what is considered ‘statistically significant’ to the following four comparisons (α=0.05/4):

Comparisons
3rd Party vs On-premise
Digital v Static
Digital v On-premise
Static v On-premise

Our conservative correction is the Bonferroni correction procedure (Dunn, 1961), where α is adjusted based on the number of comparisons (i.e. k=4 in the current study). This procedure has also been used in similar driver studies such as Crandall et al. (2006).

After corrections, some comparisons of interest were not significant. This may not be the case if the OMA decides to apply a different correction procedure. Uncorrected results are also disclosed for reference purposes.

Note: In some of the analyses, participants were excluded where there was insufficient data in every condition for comparison.

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3. Detailed Results

Comparing 3rd Party and On-premise Signage

Does viewing behaviour differ significantly in the presence of 3rd party compared to on-premise signage?

To answer this question, we used the following metrics:

- Total dwell time on-road (%)
- Fixation duration (ms)

Does driver performance differ significantly in the presence of 3rd party compared to on-premise signage?

To answer this question, we used the following metrics:

- Vehicle headway (s)
- Lane deviation (m)

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Driver Attention

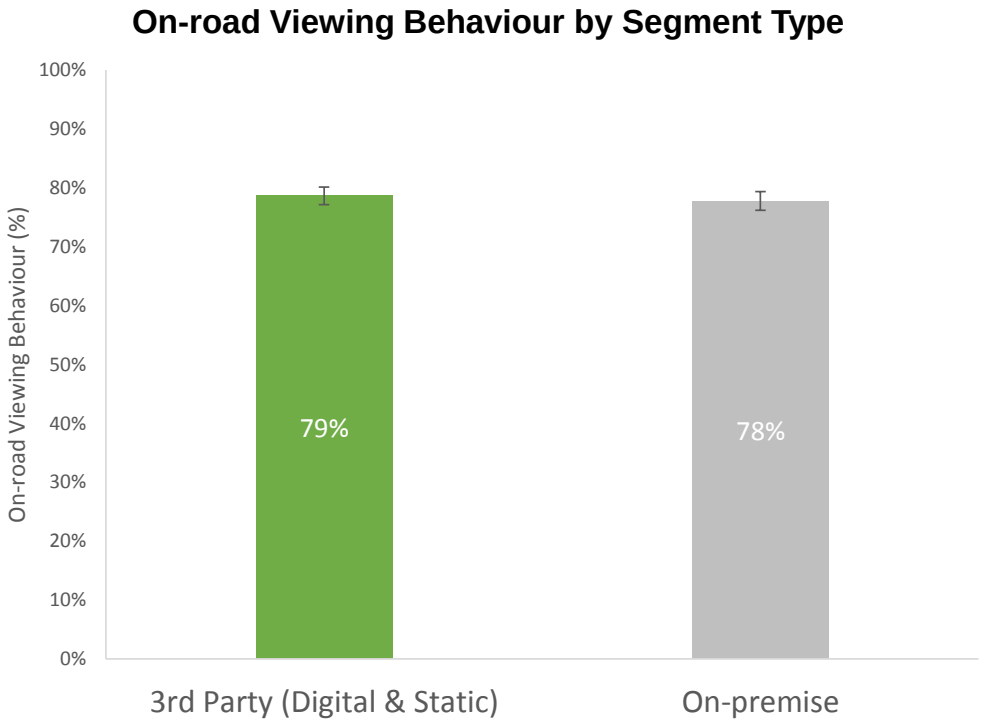
Dwell Time Analysis by Segment Type

Does on-road viewing differ significantly in the presence of 3rd party compared to on-premise signage?

Discussion:

This graph shows the percentage time spent looking on-road in the presence of different sign types. It can be seen that there is no statistically significant difference in on-road viewing behaviour between the two conditions.

There is no evidence to suggest drivers spend less time with their eyes on-road in the presence of 3rd party compared to on-premise signage.



Comparison	Statistics	Corrected (α=0.0125)	Uncorrected (α=0.05)
3rd Party v On-premise	F(1,26)=0.808, p=.377	Not Significant	Not Significant

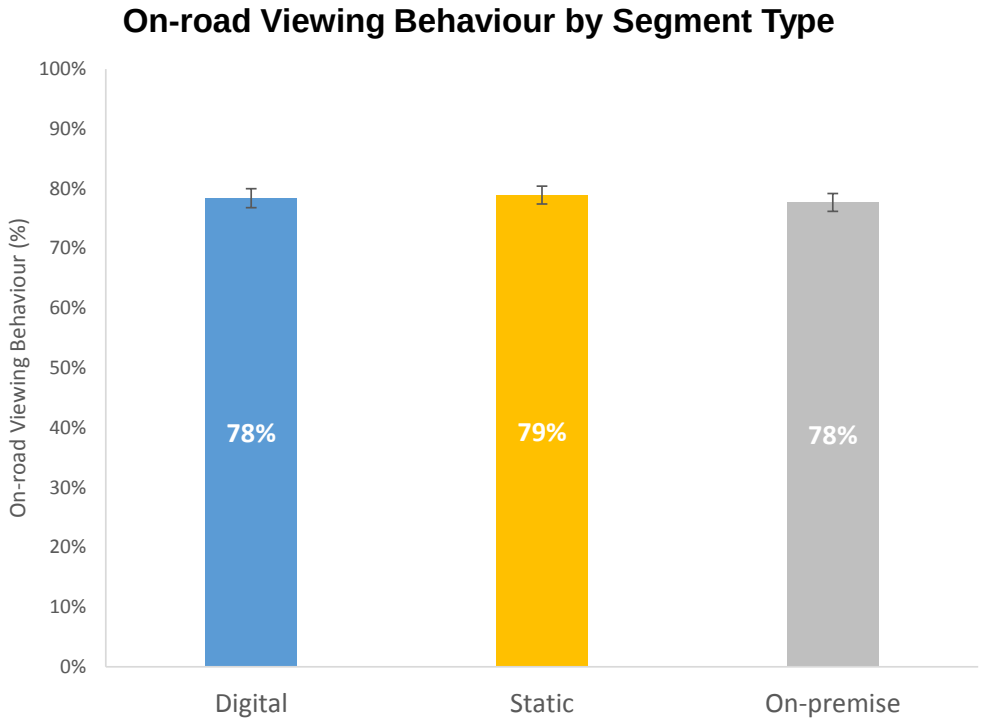
Dwell Time Analysis by Segment Type

Does on-road viewing differ significantly in the presence of digital compared to static signage?

Discussion:

This graph shows the percentage time spent looking on-road in the presence of different sign types. It can be seen that there is no statistically significant difference in on-road viewing behaviour between the three conditions.

There is no evidence to suggest drivers spend less time with their eyes on-road in the presence of digital or static signage when compared to on-premise signage, or with each other.



Comparison	Statistics	Corrected (α=0.0125)	Uncorrected (α=0.05)
Digital v Static	F(1,26)=.095, p=.760	Not Significant	Not Significant
Digital v On-premise	F(1,26)=.383, p=.541	Not Significant	Not Significant
Static v On-premise	F(1,26)=.692, p=.413	Not Significant	Not Significant

Preliminary Fixation Analysis by Sign Type

Does average fixation duration differ between signage types?

Discussion:

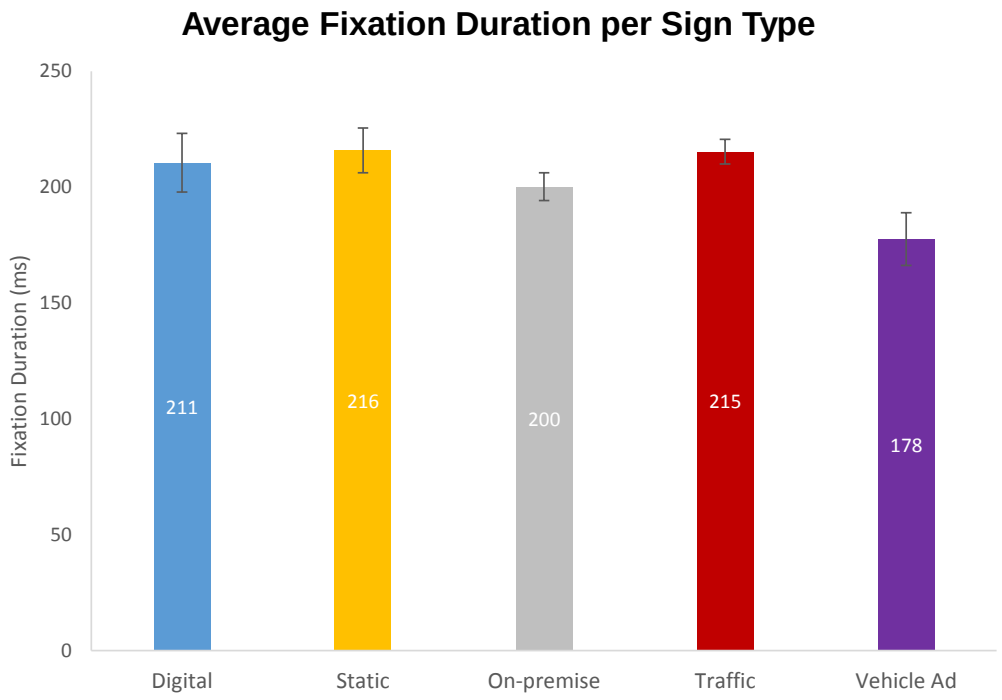
This graph shows the average fixation duration for different sign types.

Based on the preliminary fixation data* there were no differences in fixation duration between digital, static and on-premise signs.

Fixation data is also shown for traffic and vehicle ads for reference purposes only.**

*Fixation classifications that were mutually agreed between the two encoders.

**Comparisons involving traffic and vehicle ads were excluded to maximise statistical power.



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Fixation Classification Adjustment

Where divergent classifications between encoders occurred, a ‘sign priority’ approach was adopted where disputed fixations were reclassified based on their ranking in the table below:

Ranking	Sign Classification
1	Disputed Digital signs
2	Disputed Static signs
3	Disputed Traffic signs
4	Disputed On-premise
5	Disputed Vehicle Ads
6	On / Off-road / Inside Vehicle

For example, if one encoder classified a fixation as On-road and another classified it as static sign. The fixation will be reclassified as a static sign.

Fixations were classified in this way in order to guard against the possibility of a reviewer suggesting that we selectively disregarded fixations that were classified as on signs by either encoder. For example, it could be suggested that long fixations that would have contributed to a higher average fixation duration may have been disregarded.

Ultimately, this approach ensures that we do not underestimate hits on 3rd party signs, which reflects a conservative position when subjected to peer review.

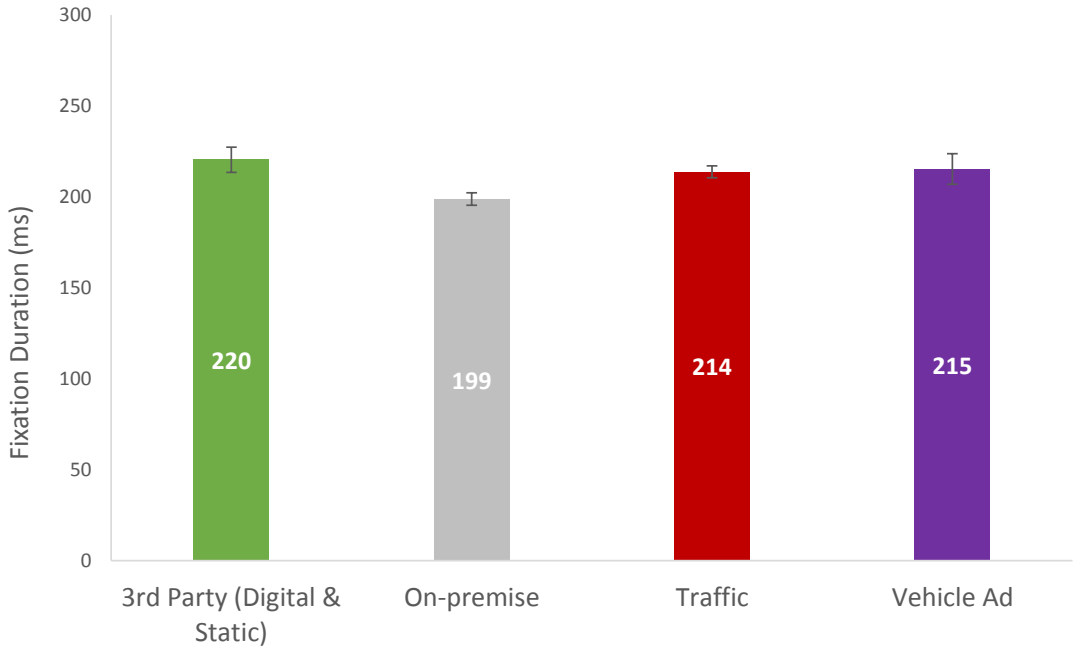
Average Fixation Analysis by Sign Type

Does average fixation duration differ significantly between 3rd party and on-premise signage?

Discussion:

This graph shows the average fixation duration for different signage types. The results show that while fixation duration on 3rd party signage was on average longer, this difference is not statistically significant when using the Bonferroni correction.

Average Fixation Duration per Sign Type*



Comparison	Statistics	Corrected (α=0.0125)	Uncorrected (α=0.05)
3rd Party v On-premise	F(1,1550)=4.809, p=.029	Not Significant	Significant

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*Based on fixation data adjusted for 'sign priority'

Average Fixation Analysis by Sign Type

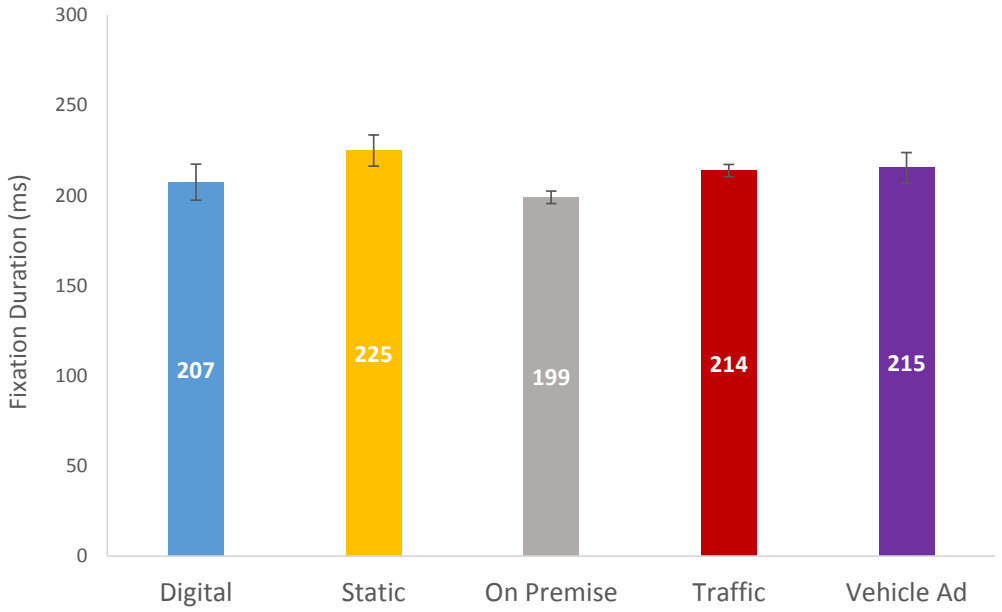
Does average fixation duration differ significantly between digital and static signage?

Discussion:

This graph shows the average fixation duration for different sign types. The results show that there is no statistically significant difference in average fixation duration between digital and static signage.

However, the results indicate that fixations on static signage were on average longer than fixations on on-premise signage. This difference was statistically significant.

Average Fixation Duration per Sign Type*



Comparison	Statistics	Corrected (α=0.0125)	Uncorrected (α=0.05)
Digital v Static	F(1,568)=1.780, p=.183	Not Significant	Not Significant
Digital v On-premise	F(1, 1125) = .490 p=.485	Not Significant	Not Significant
Static v On-premise	F(1,1407)=10.847, p<.001	Significant	Significant

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*Based on fixation data adjusted for 'sign priority'

Median Fixation Analysis by Sign Type

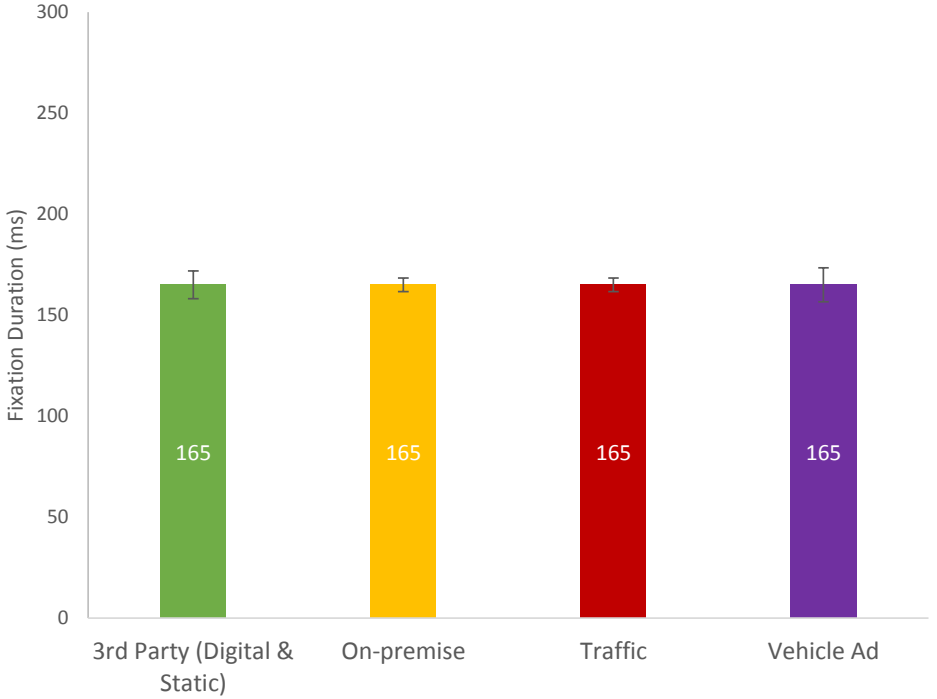
Does median fixation duration differ between signage types?

Discussion:

Typically, median scores are also used to report fixation durations because it is arguably a better measure of central tendency than a mean average score when the data is positively skewed.

Visual inspection of the median clearly shows there are no differences between all sign types.

Median Fixation Duration per Sign Type*



*Based on fixation data adjusted for 'sign priority'

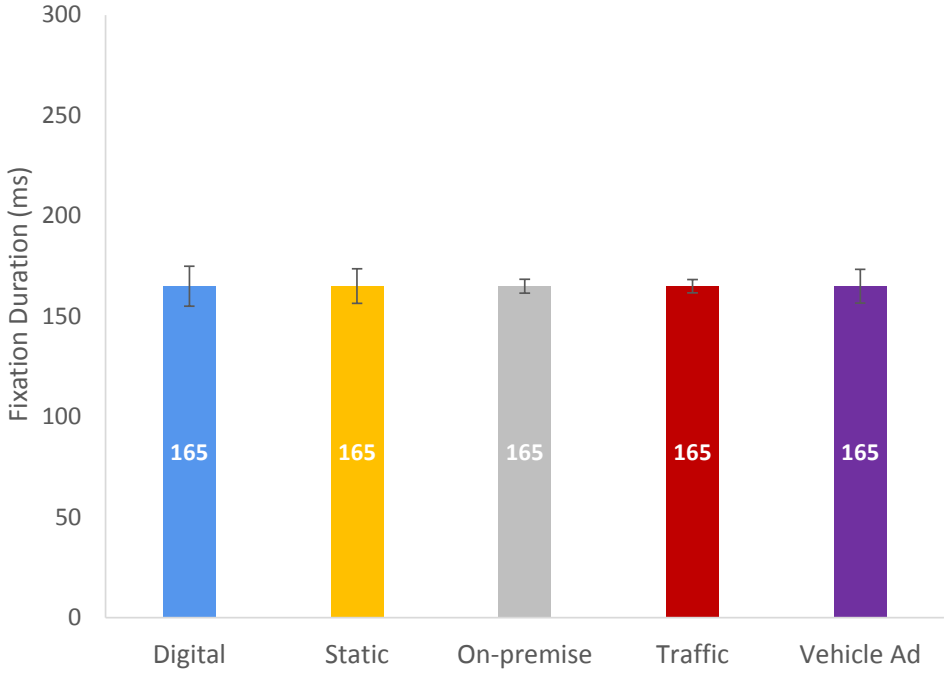
Median Fixation Analysis by Sign Type

Does median fixation duration differ between signage types?

Discussion:

Visual inspection of the median clearly shows there are no differences between all sign types, including between digital and static signage.

Median Fixation Duration per Sign Type*



*Based on fixation data adjusted for 'sign priority'

Fixation Count Analysis by Sign Type

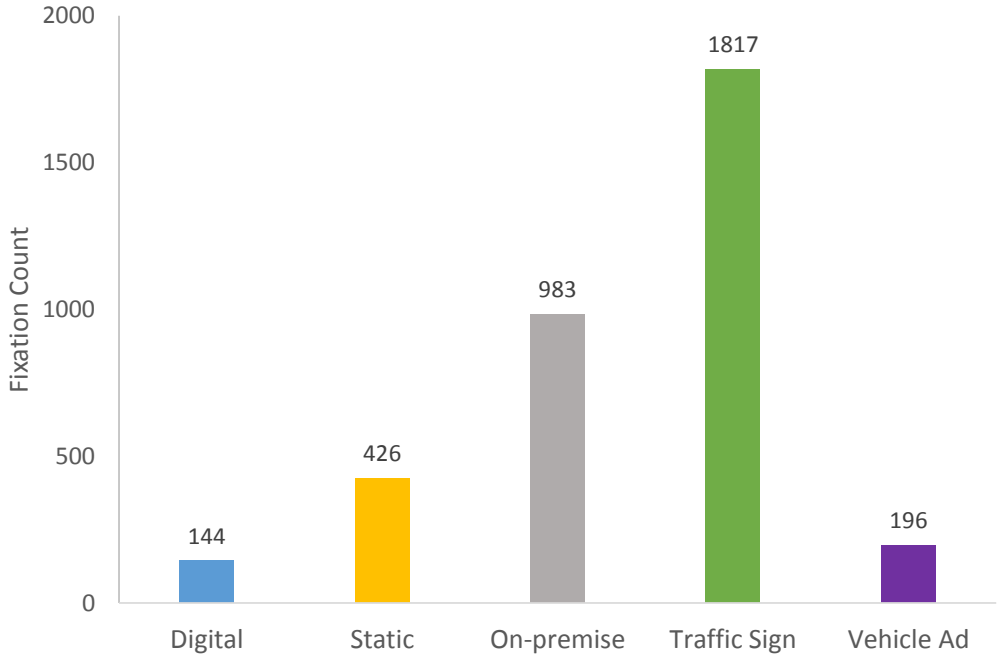
What sign type attracts the most fixations?

Discussion:

This graph shows the breakdown of all fixation counts across sign types.

It can be seen that there are far greater hits on traffic and on-premise signage when compared to 3rd party signage.

Fixation Count by Signage Type*



*Based on fixation data adjusted for 'sign priority'

Fixation Count Analysis by Sign Type

Does digital attract more fixations than static?

Discussion:

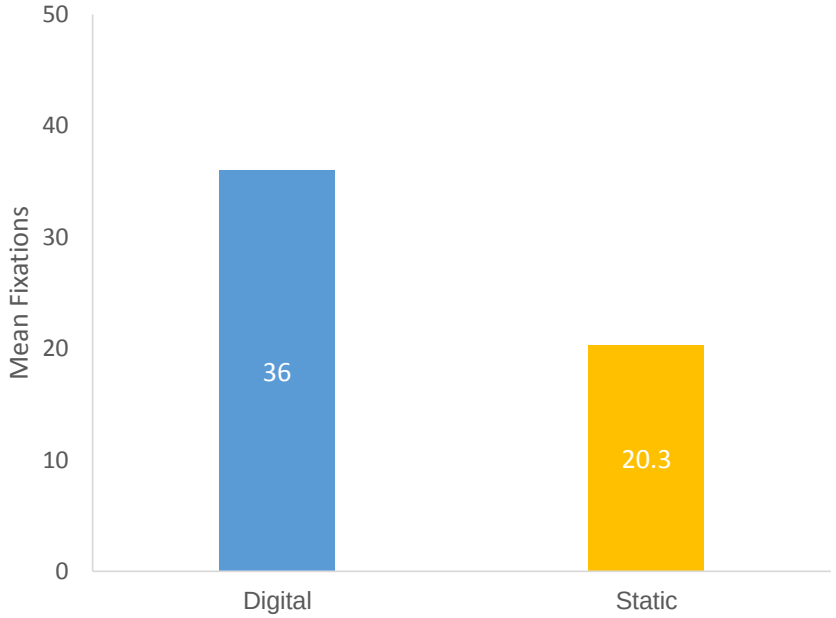
Whilst the absolute fixation count on static is greater than digital, there were five times more static signs compared to digital signs. Therefore, fixation counts were adjusted for the frequency of sign type.

The average fixation per sign type:

- Mean fixations per digital sign: 144/4 = 36.0
- Mean fixations per static sign: 426/21 = 20.3

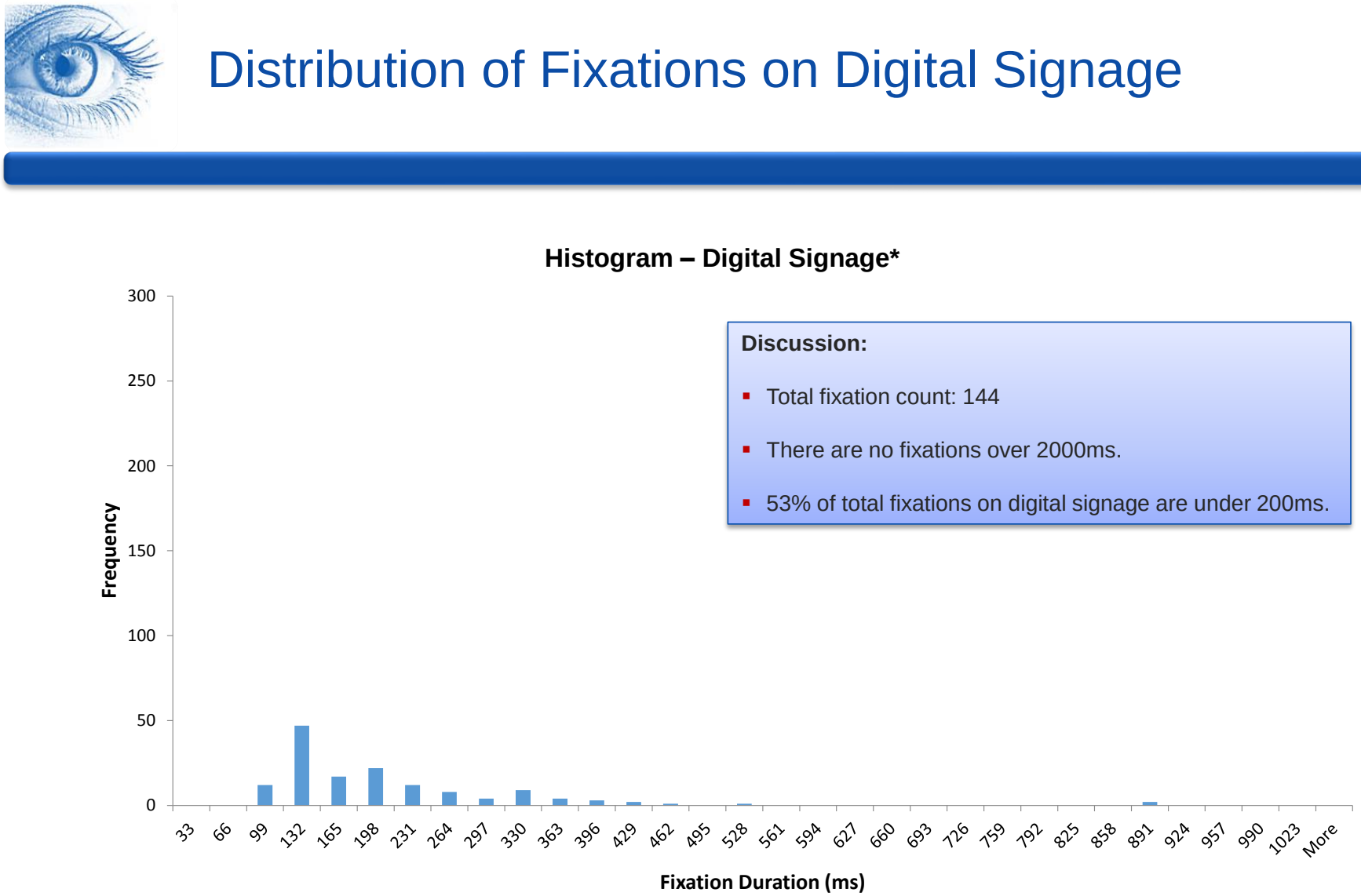
This analysis suggests that digital signs attract more fixations than static signs.

Mean Fixations per Digital and Static Sign*



*Based on fixation data adjusted for 'sign priority'

Distribution of Fixations on Digital Signage



Discussion:

- Total fixation count: 144
- There are no fixations over 2000ms.
- 53% of total fixations on digital signage are under 200ms.

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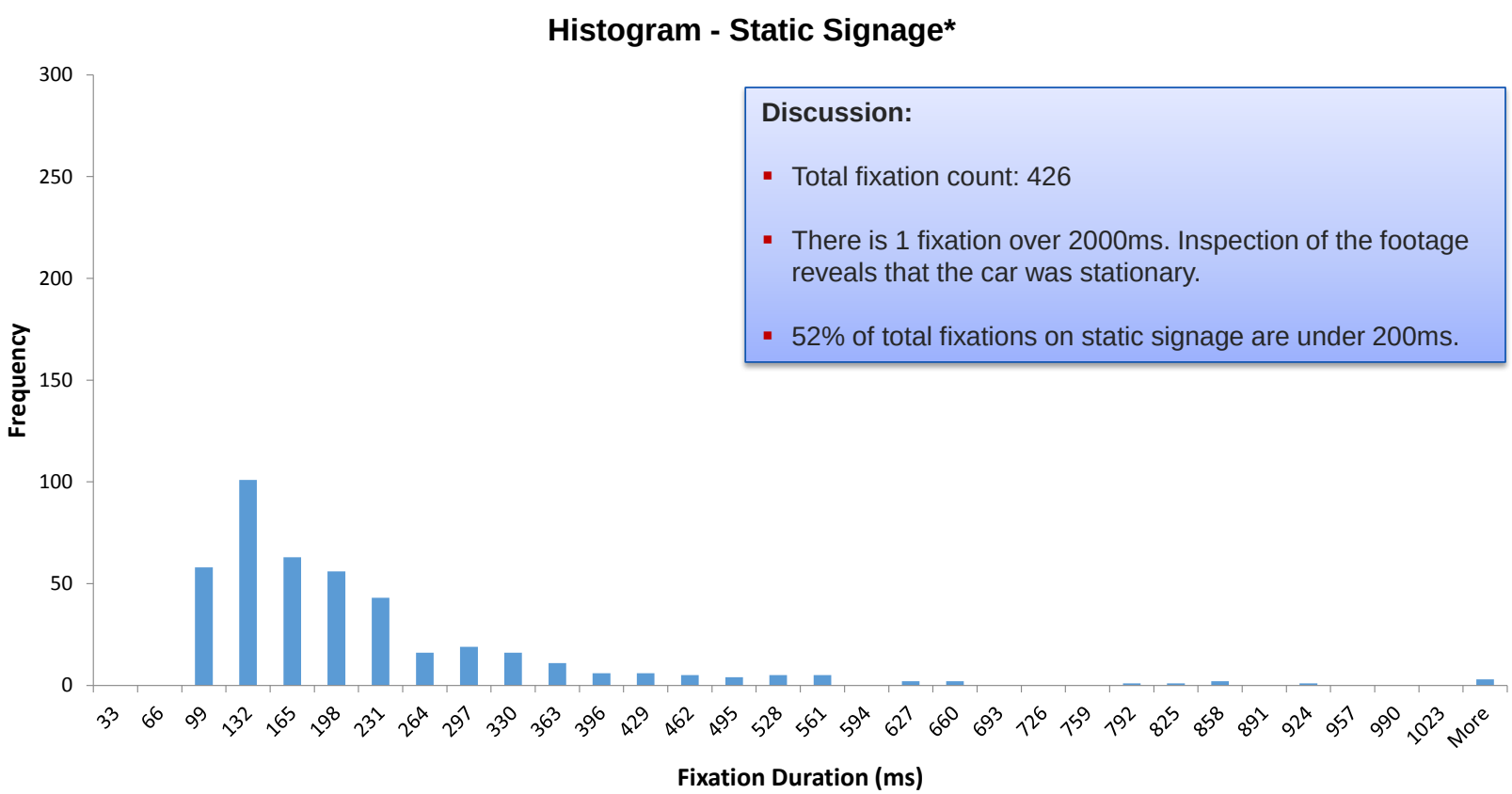
*Based on fixation data adjusted for 'sign priority'

Distribution of Fixations on Static Signage



Discussion:

- Total fixation count: 426
- There is 1 fixation over 2000ms. Inspection of the footage reveals that the car was stationary.
- 52% of total fixations on static signage are under 200ms.

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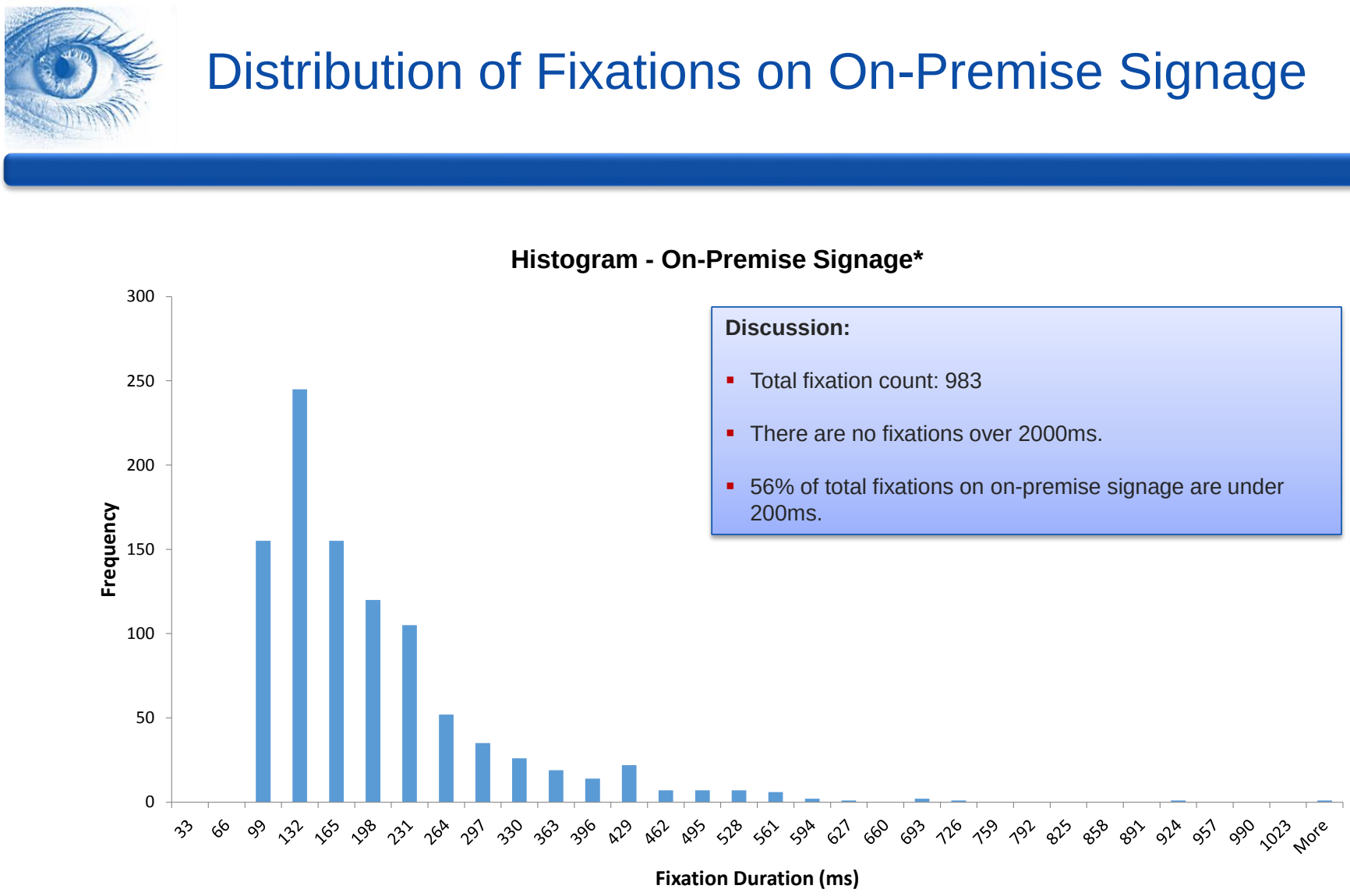
*Based on fixation data adjusted for 'sign priority'

Distribution of Fixations on On-Premise Signage



Discussion:

- Total fixation count: 983
- There are no fixations over 2000ms.
- 56% of total fixations on on-premise signage are under 200ms.

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*Based on fixation data adjusted for 'sign priority'

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Driver Performance

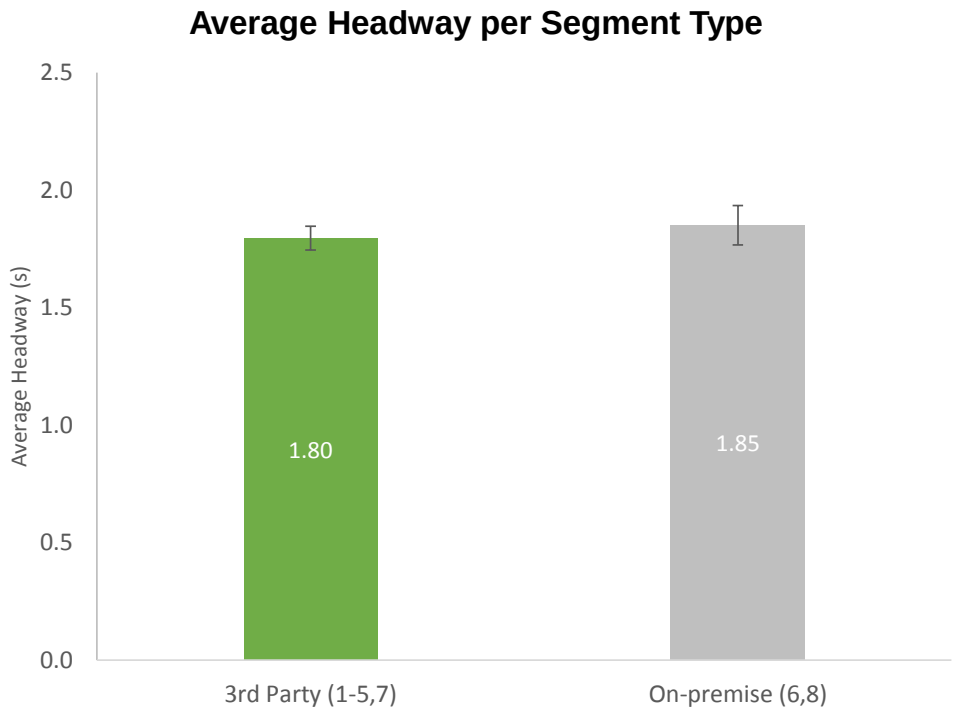
Average Headway Analysis by Segment Type

Does average headway differ significantly in the presence of 3rd party compared to on-premise signage?

Discussion:

This graph shows the average vehicle headway in seconds in the presence of different sign types. While vehicle headway appears to be shorter for 3rd party compared to on-premise signage, this is not a statistically significant result.

There is no evidence to suggest that driver performance is impacted in the presence of 3rd party compared to on-premise signage as measured by vehicle headway.



Comparison	Statistics	Corrected (α=0.0125)	Uncorrected (α=0.05)
3rd Party v On-premise	F(1,20)=.335, p=.569	Not Significant	Not Significant

Average Headway Analysis by Segment Type

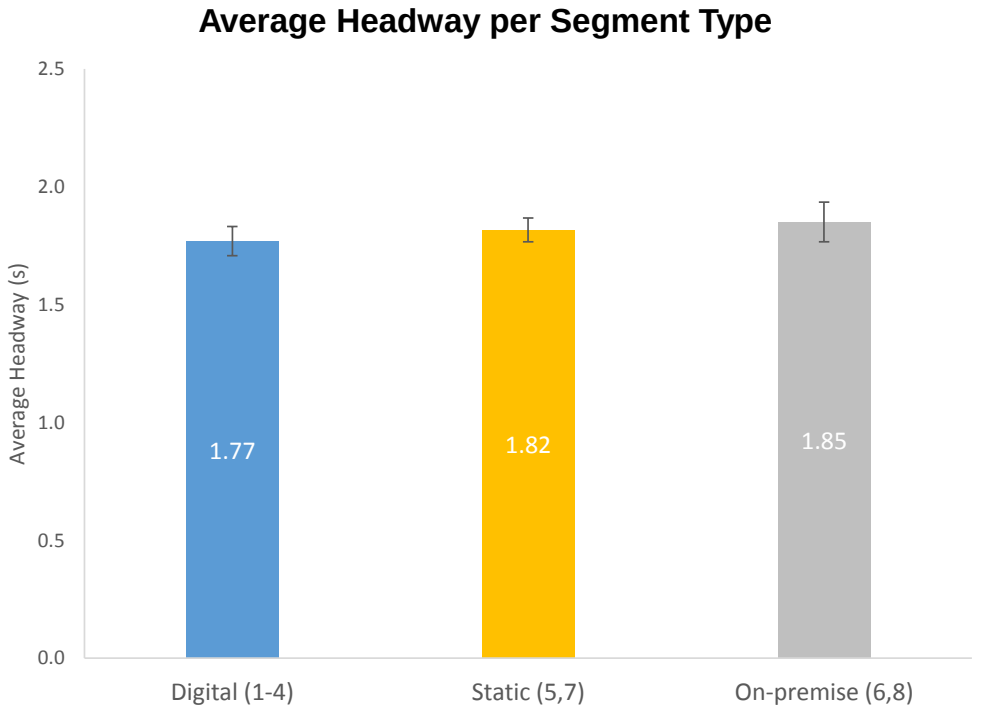
Does average headway differ significantly in the presence of digital and static signage compared to on-premise signage?

Discussion:

While this graph shows decreased average headway for digital compared to static signage, this difference is not significant.

Similarly, while vehicle headway appears to be shorter for both digital and static compared to on-premise, this is also not a statistically significant result.

Therefore, there is no evidence to suggest that the presence of digital or static signage impacts driver performance compared to on-premise signage as measured by vehicle headway.



Comparison	Statistics	Corrected (α=0.0125)	Uncorrected (α=0.05)
Digital v Static	F(1,20)=.636, p=.435	Not Significant	Not Significant
Digital v On-premise	F(1,20)=.544, p=.469	Not Significant	Not Significant
Static v On-premise	F(1,20)=.121, p=.732	Not Significant	Not Significant

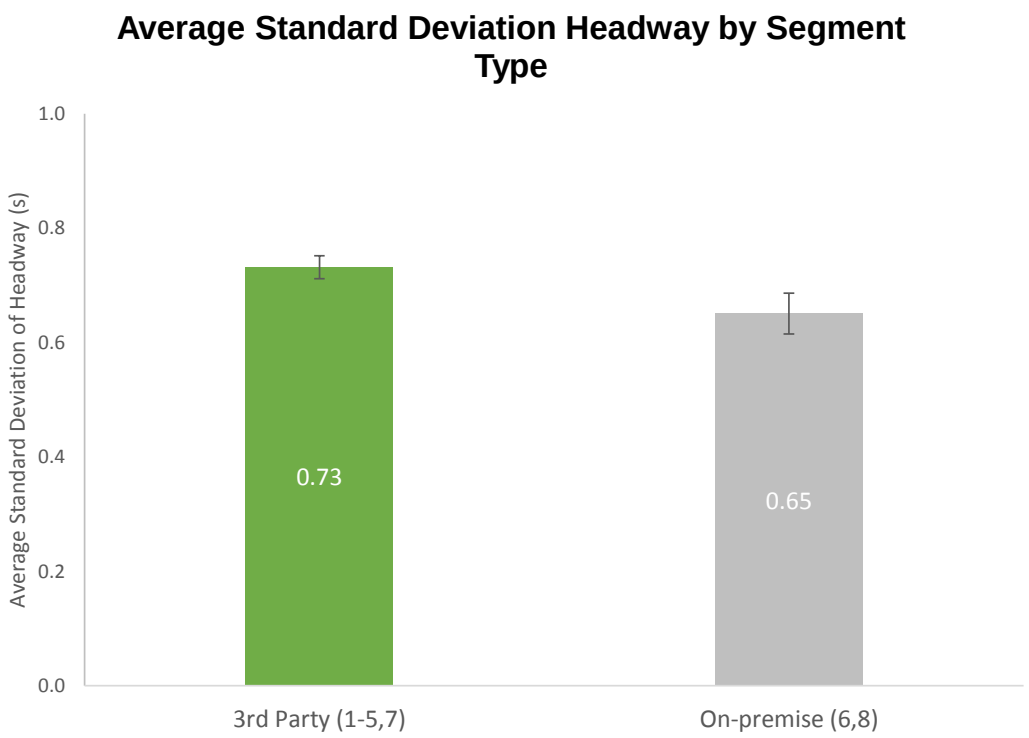
Headway Deviation Analysis by Segment Type

Does average standard deviation of headway differ significantly in the presence of 3rd party compared to on-premise signage?

Discussion:

This graph shows the average standard deviation of vehicle headway in seconds in the presence of different sign types.

Headway deviation is larger in the presence of 3rd party compared to on-premise signage. However, this difference was not statistically significant when using the Bonferroni correction.



Comparison	Statistics	Corrected (α=0.0125)	Uncorrected (α=0.05)
3rd Party v On-premise	F(1,26)=6.323,.p=.018	Not Significant	Significant

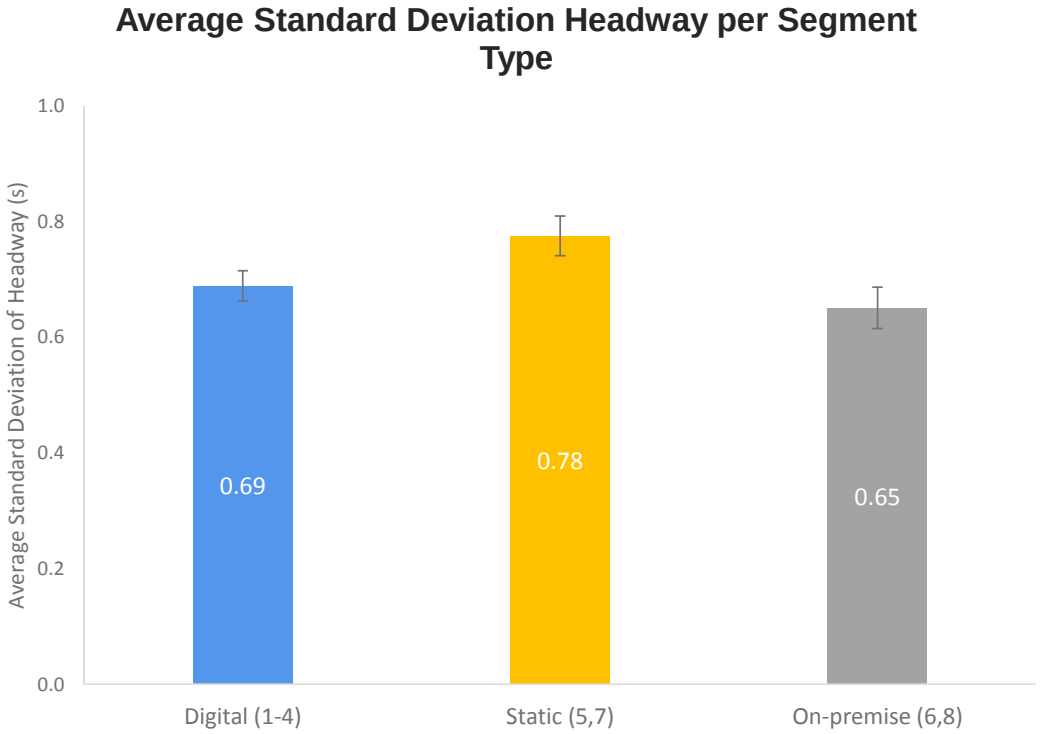
Headway Deviation Analysis by Segment Type

Does average standard deviation of headway differ significantly in the presence of digital and static signage compared on-premise signage?

Discussion:

While this graph shows decreased average standard deviation of headway for digital compared to static signage, this difference is not significant.

However, the results also show that average standard deviation of headway is greater in the presence of static compared to on-premise signage. This difference was statistically significant.



Comparison	Statistics	Corrected (α=0.0125)	Uncorrected (α=0.05)
Digital v Static	F(1,26)=3.651, p=.067	Not Significant	Not Significant
Digital v On-premise	F(1,26)=.715, p=.406	Not Significant	Not Significant
Static v On-premise	F(1,26)=12.776, p<.001	Significant	Significant

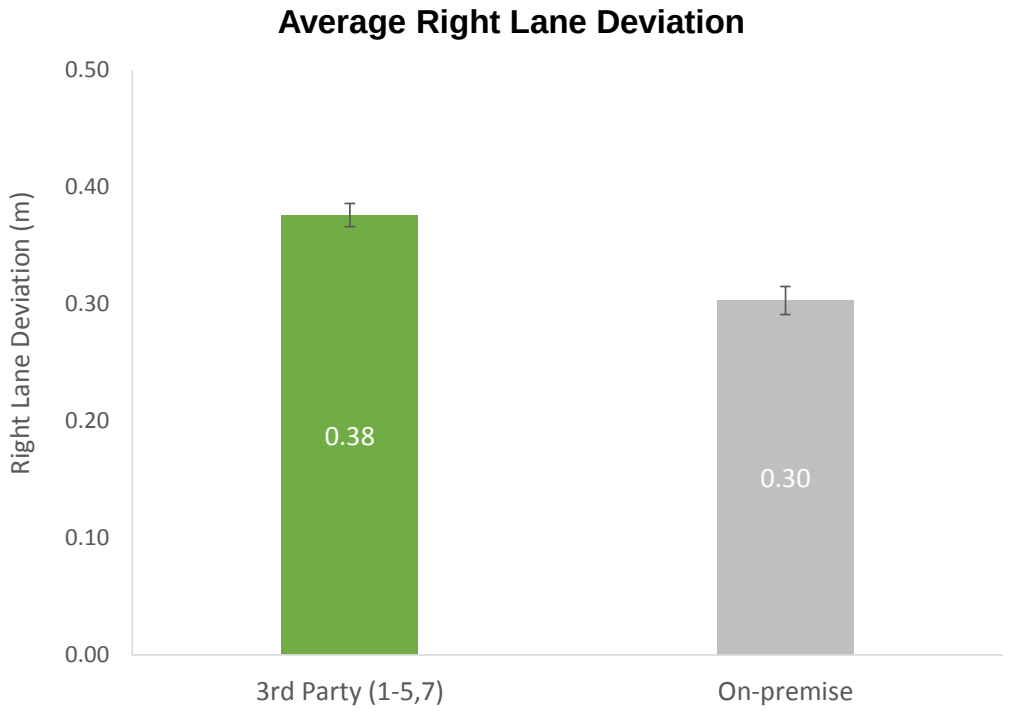
Lane Deviation Analysis by Segment Type

Does average lane deviation differ significantly in the presence of 3rd party compared to on-premise signage?

Discussion:

This graph shows the average lane deviation in metres in the presence of different sign types.

Lane deviation was greater in the presence of 3rd party compared to on-premise signage. This result was statistically significant.



Comparison	Statistics	Corrected (α=0.0125)	Uncorrected (α=0.05)
3rd Party v On-premise	F(1,27)=23.846, p<.001	Significant	Significant

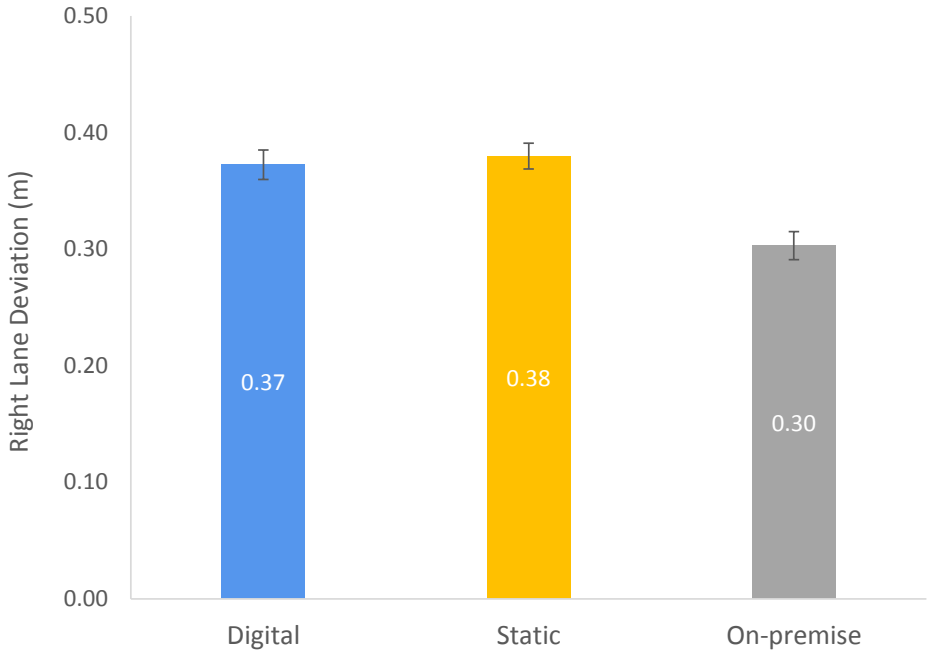
Lane Deviation Analysis by Segment Type

Does average lane deviation differ significantly in the presence of digital and static signage when compared to on-premise signage?

Discussion:

While there was no difference in average lane deviation in the presence of digital compared to static signage, lane deviation was greater in the presence of both digital and static signage when compared to on-premise signage.

Average Right Lane Deviation by Segment Type



Comparison	Statistics	Corrected (α=0.0125)	Uncorrected (α=0.05)
Digital v Static	F(1,27)=.333, p=.569	Not Significant	Not Significant
Digital v On-premise	F(1,27)=14.917, p<.001	Significant	Significant
Static v On-premise	F(1,27)=28.183, p<.001	Significant	Significant

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5. Qualitative Assessment of Effective Signage

Qualitative Assessment of Effective Signage

Evaluation of the most effective signs indicated four rules of thumb:

Left, high and centre

The most effective signs tend to be positioned left of the road, above street level and central from the driver's point of view.

Easy driving encourages viewing

Signs tend to be looked at more in road conditions that require less attentional demands on the driver.

For example, predictability of traffic conditions and greater perceived hazards may take up attentional resources that could otherwise be allocated to signs.

Leverage existing navigation signs

High performing signs were also found to be directly above navigation signs.

Signs placed in the vicinity of navigation signs take advantage of intentional fixations and parafoveal vision.

Drivers in traffic look for longer

Signs placed in proximity to traffic lights take advantage of stationary or slow moving traffic.

Note: ad placement must also take into account effective communication distance. That is, smaller street furniture would need to be placed closer to a traffic light than a static billboard in order for it to be effective.

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7. References

References

- Crundall, D., Van Loon, E., & Underwood, G. (2006). Attraction and distraction of attention with roadside advertisements. *Accident Analysis & Prevention*,*38*(4), 671-677.

- Dunn, O. J. (1961). Multiple comparisons among means. Journal of the American Statistical Association, 56(293), 52-64.

- Hanowski, R. J., Olson, R. L., Hickman, J. S., & Dingus, T. A. (2006). *The 100-Car Naturalistic Driving Study: A Descriptive Analysis of Light Vehicle-Heavy Vehicle Interactions from the Light Vehicle Driver's Perspective, Data Analysis Results* (No. FMCSA-RRR-06-004).

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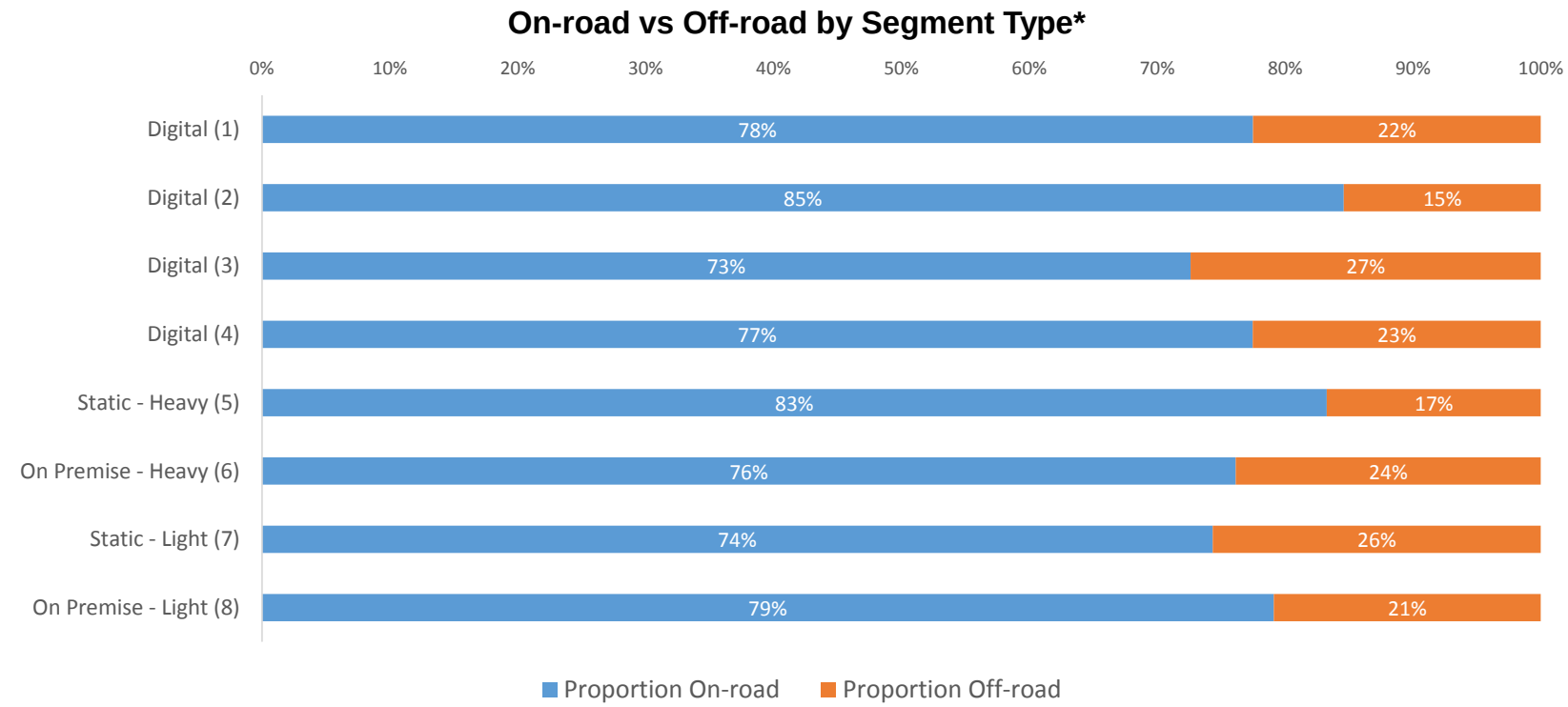
8. Appendix - Additional Results

On-Road vs Off-Road Viewing Across Segments



*The graph shows the dwell times aggregated across both encoders.

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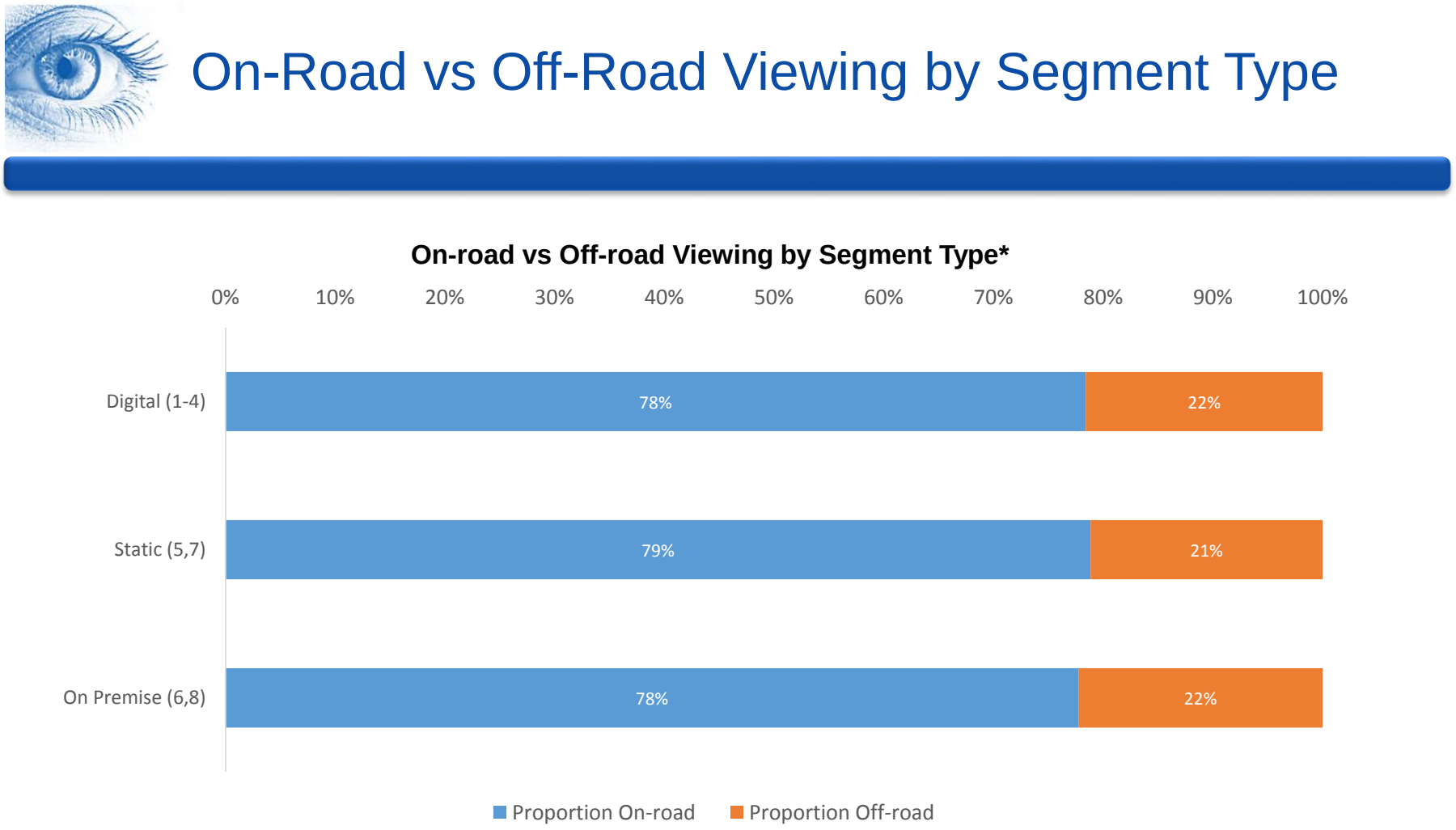
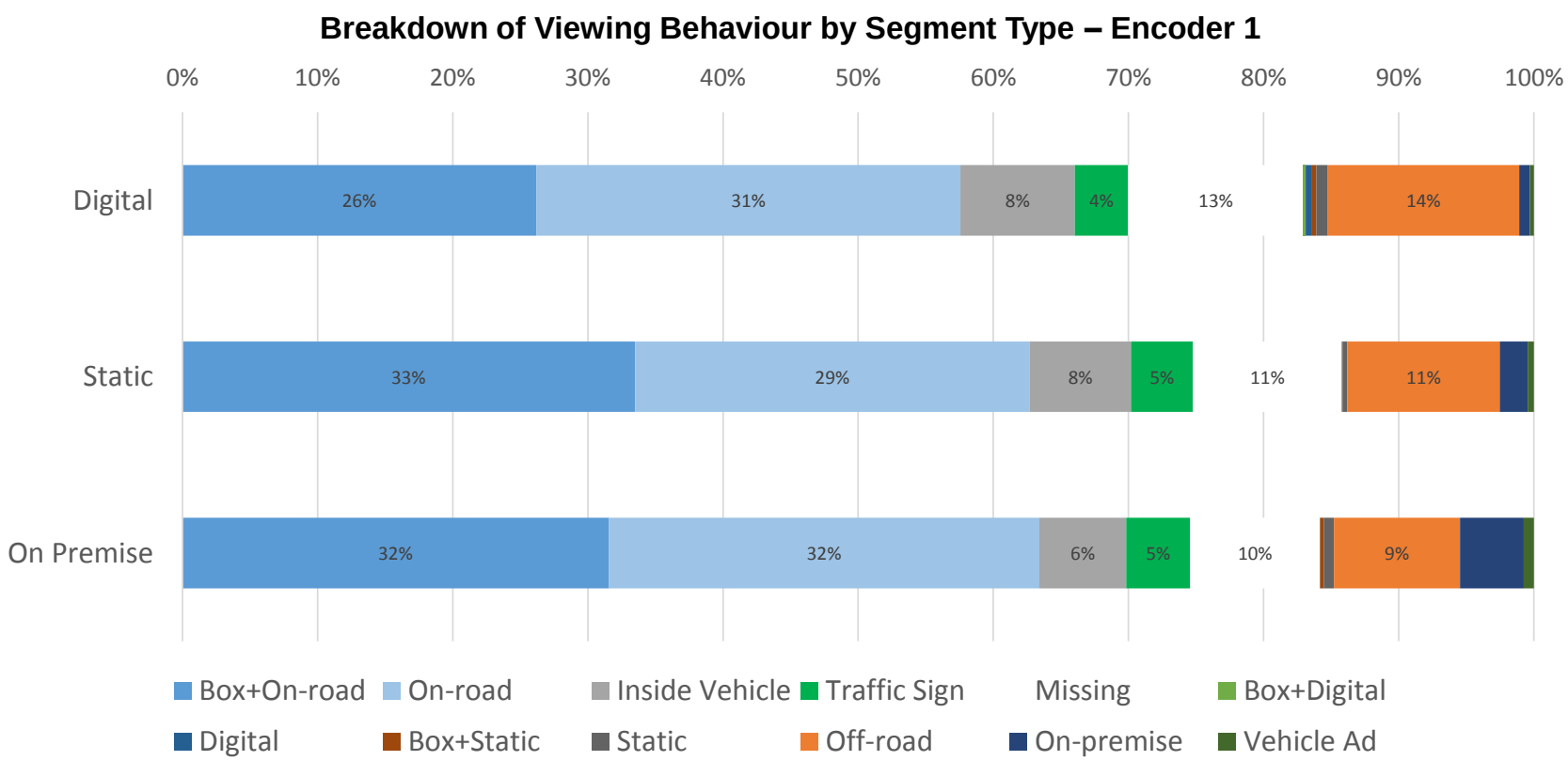
On-Road vs Off-Road Viewing by Segment Type

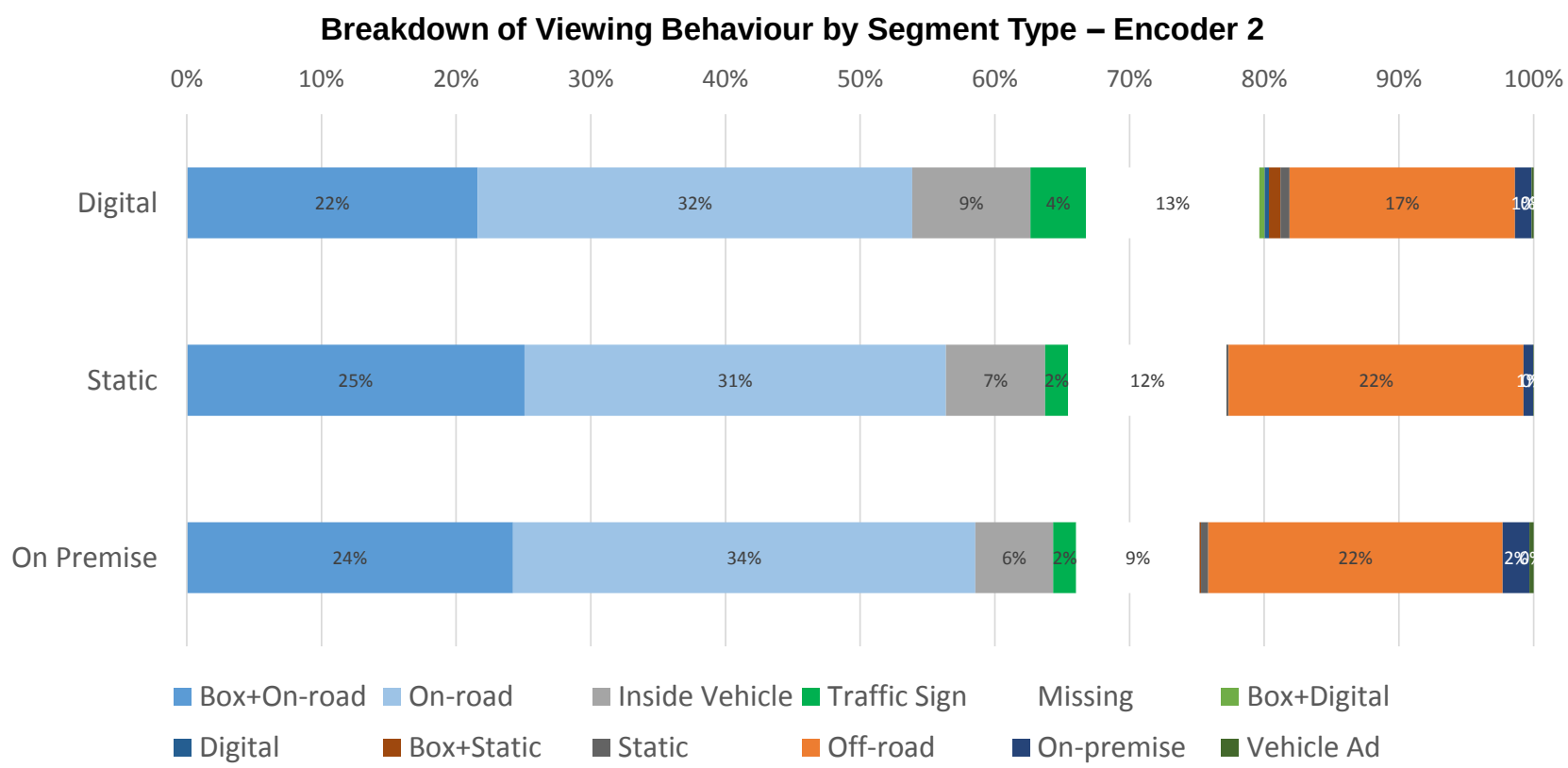


*The graph shows the dwell times aggregated across both encoders.

Breakdown of Viewing Behaviour by Segment Type



Breakdown of Viewing Behaviour by Segment Type



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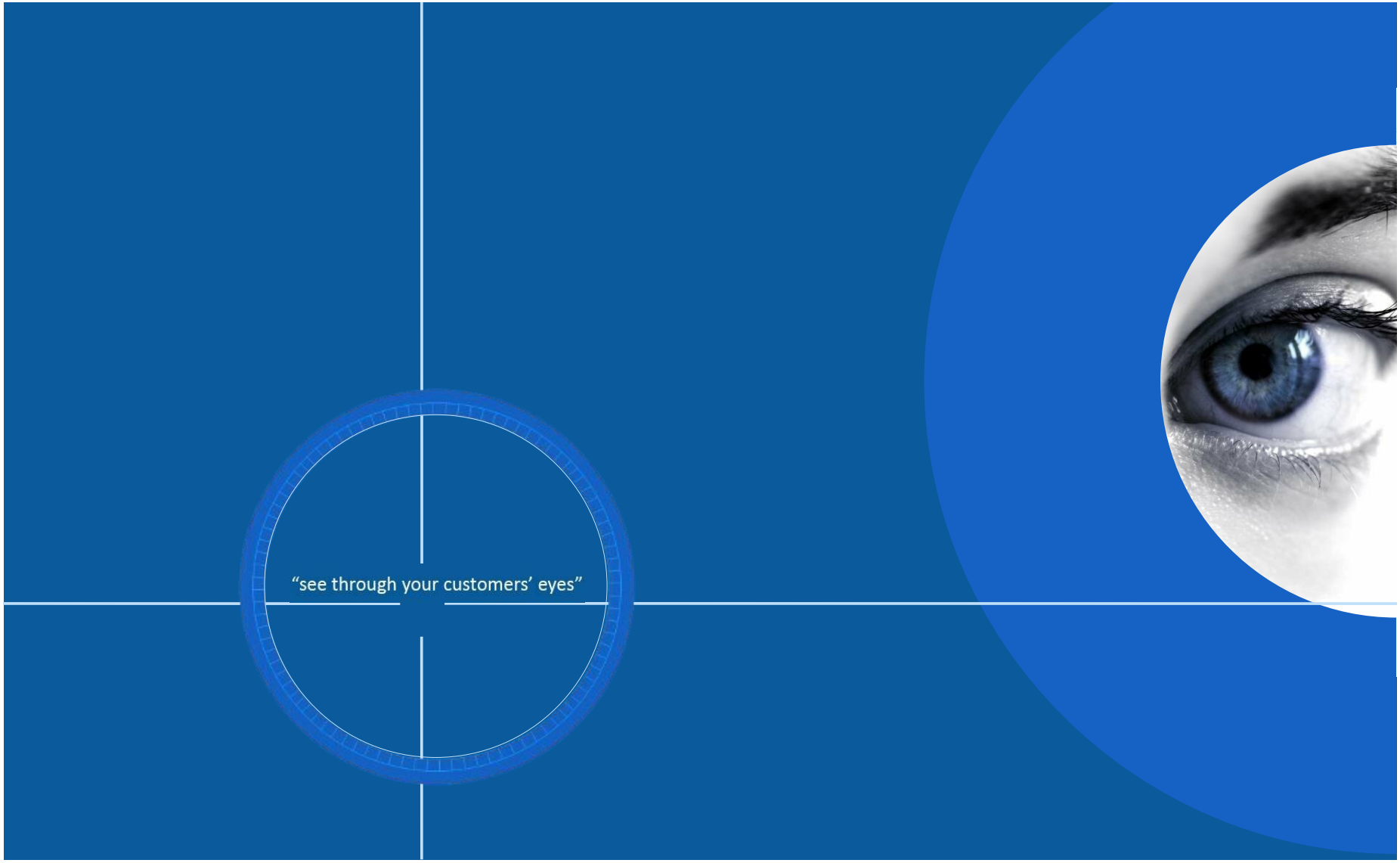

Mr Andrew Tyquin
Managing Director
Outdoor Systems
PO Box 919
Sylvania Southgate NSW 2224

24 October 2023

Dear Andrew,

Ecological Assessment – Existing Advertising Signs, Wentworth Avenue, Eastlake

At the request of Outdoor Systems an ecological inspection has been undertaken on the two existing advertising signs present on the pedestrian footbridge that passes over Wentworth Avenue, Eastlake. The inspection was conducted by Mr Harry Engel (B. Mar. Sc) on 17 October 2023 between the hours of 10.00 and 10.30 am. The inspection was carried out on foot, with each sign viewed from both the ground, and the footbridge itself, (to assist with the inspections, binoculars were used as needed).

We note that when onsite:

1. Each sign was inspected, this conducted in the company of a representative of Outdoor Systems.
2. The signs were already installed, therefore a precautionary approach to the structure of the footbridge, and the method of their installation adopted.

The objective of the inspection of the advertisement signs was to target any areas of critical habitat or features that could be utilised by a threatened species, population or ecological community.

The potential environmental impacts that were identified prior to the site were: any impact to threatened Yangochiroptera (microbat) roosting/foraging habitat, and areas of Biodiversity Values that are present within proximity of the signs.

Inspection of the footbridge and signs did not identify:

- any cavities suitable for use by microbats
- bird nests
- dreys (indicative of the presence of the Common Ringtail Possum *Pseudocheirus peregrinus*)
- white wash, characteristic guano or other signs of fauna occupation.

The areas of Biodiversity Values that were mapped (Figure 1) in the adjacent land would not be impacted by the ongoing operation and maintenance of the signs. Additionally the installation work for these signs was undertaken within the road corridor of Wentworth

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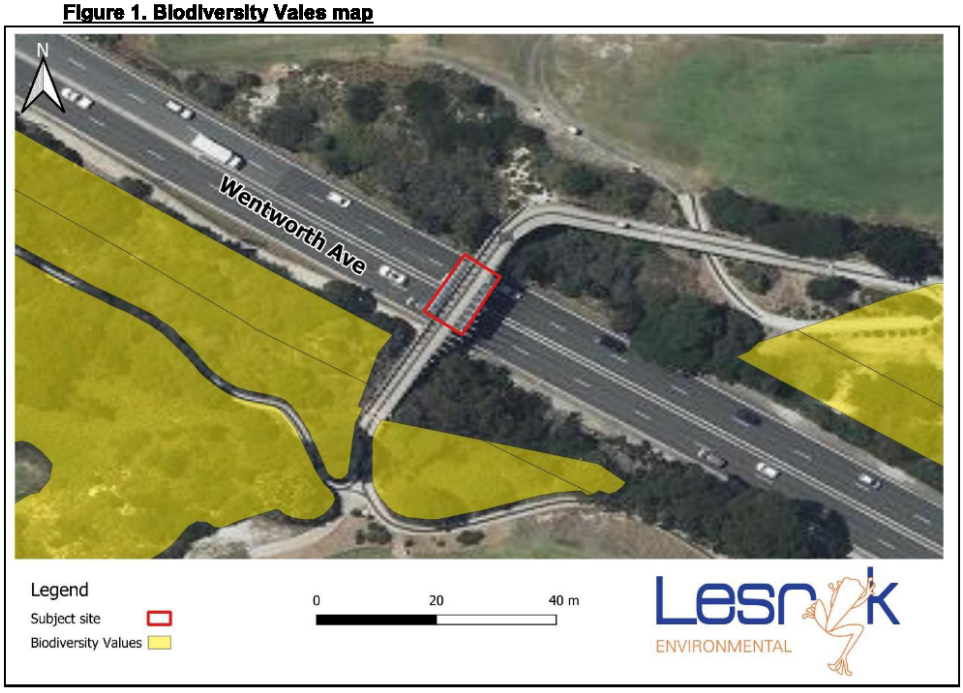
PO Box 3001
Bundeena NSW 2230

E admin@lesryk.com.au
M 0408 258 129
W lesryk.com.au

Figure 1. Biodiversity Vales map



Avenue, therefore not impacting these areas. To permit the initial installation work, and the ongoing operation/maintenance, no vegetation was/is required to be cleared.

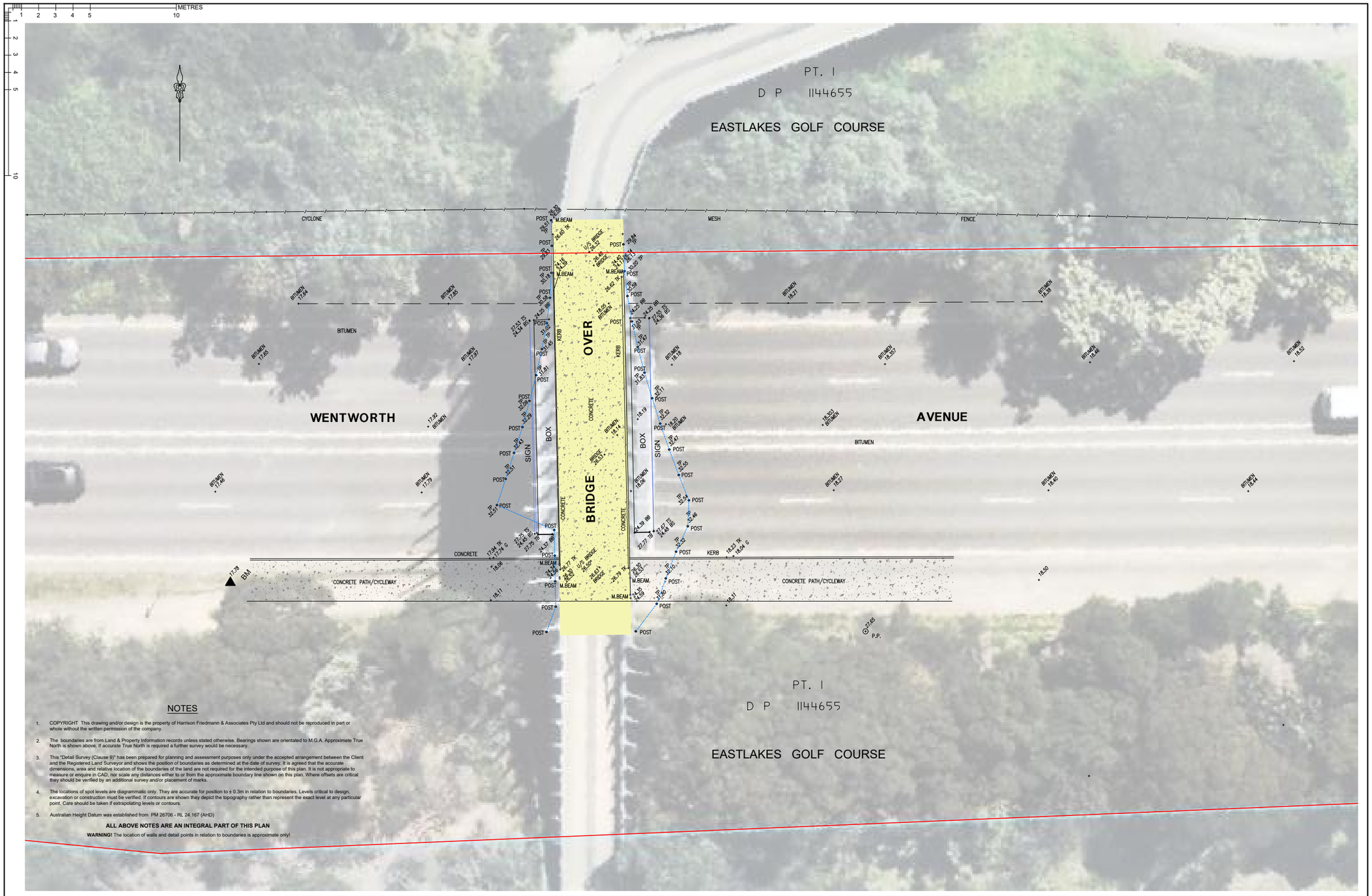
The signs, once installed did not present any additional barriers to the flying or movement patterns of flying species such as microbats or birds.

The installation of the two advertisement signs onto the pedestrian footbridge that spans Wentworth Avenue, Eastlake would not have had any adverse ecological impacts on any areas of critical habitat or features that could be utilised by a threatened species, population or ecological community.

If you require any further information on this matter, please contact the under signed on either

Yours sincerely,

Harry Engel
Ecologist



NOTES

1. COPYRIGHT This drawing and/or design is the property of Harrison Friedmann & Associates Pty Ltd and should not be reproduced in part or whole without the written permission of the company.
2. The boundaries are from Land & Property Information records unless stated otherwise. Bearings shown are orientated to M.G.A. Approximate True North is shown above. If accurate True North is required a further survey would be necessary.
3. This "Detail Survey (Clause 9)" has been prepared for planning and assessment purposes only under the accepted arrangement between the Client and the Registered Land Surveyor and shows the position of boundaries as determined at the date of survey. It is agreed that the accurate dimensions, area and relative location of the boundaries of the land are not required for the intended purpose of this plan. It is not appropriate to measure or enquire in CAD, nor scale any distances either to or from the approximate boundary line shown on this plan. Where offsets are critical they should be verified by an additional survey and/or placement of marks.
4. The locations of spot levels are diagrammatic only. They are accurate for position to ± 0.3m in relation to boundaries. Levels critical to design, excavation or construction must be verified. If contours are shown they depict the topography rather than represent the exact level at any particular point. Care should be taken if extrapolating levels or contours.
5. Australian Height Datum was established from PM 26706 - RL 24.167 (AHD)

ALL ABOVE NOTES ARE AN INTEGRAL PART OF THIS PLAN

WARNING! The location of walls and detail points in relation to boundaries is approximate only!

Legend

BB	Bottom of Box	G	Gutter	TF	Top of Fence	UW	Upper Window	ML	Metal Lid
BS	Bottom of Sign	GFL	Garage Floor Level	TB	Top of Box	VC	Vehicle Crossing	MH	Man Hole
BRW	Bottom Retaining Wall	GM	Gas Meter	TK	Top of Kerb	VFL	Verandah Floor Level	MW	Monitoring Well
BRK	Bottom of Rock	INV	Invert Level	TP	Top of Post	W	Window	P.P	Power Pole
CONC	Concrete	LW	Lower Window	TS	Top of Sign	WC	Toilet	SP	Sign Pole
EC	Edge of Concrete	PC	Pedestrian Crossing	TRK	Top of Rock	WM	Water Meter	SV	Stop Valve
FL	Floor Level	PAR	Parapet	TRW	Top Retaining Wall	G	GAS	T	Telstra
FP	Flag pole	RL	Relative Level	TW	Top Wall	H	Hydrant	T	Telstra Pillar
		TB	Top of Box	USA	Underside of Awning	LH	Lamp Hole	— G —	Approximate Location of Sydney Water Sewer Main (vide Hydra)
				USG	Underside of Gutter	LP	Light Pole		
						ML	Metal Lid		

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PLAN SHOWING DETAILS, LEVELS AND ELEVATIONS OF THE BRIDGE AND SIGNAGE OVER WENTWORTH AVENUE, EASTLAKES ADJACENT TO EASTLAKES GOLF COURSE
LOT 1 IN DP 1144655
FOR OUTDOOR SYSTEMS PTY LTD

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DATE	REFERENCE
14/3/2023	**75605BW** SHEET 1 OF 2