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# Content Management Plan

**FEBRUARY 2017**

## **Digital Signage Display Located at the Waterloo Road Frontage of Macquarie Shopping Centre**

Prepared by  
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Prepared for  
**AMP Capital**

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# 1. INTRODUCTION

This Content Management Plan (CMP) establishes a set of operational and content parameters that will be used by AMP Capital to manage external digital signage that is located at the Waterloo Road frontage of the Macquarie Shopping Centre (MSC). The Plan has been prepared by Urban Concepts in conjunction with AMP Capital Investors Pty Ltd (AMP Capital).

The CMP has regard to the provisions contained in State Environmental Planning Policy No.64 Advertising and Signage (SEPP 64), the Draft SEPP 64 Transport Corridor Advertising and Signage Guidelines 2015 (Draft SEPP 64 Guidelines 2015) and the Australian Standard AS 4282-1997 The Control of the Obtrusive Effects of Outdoor Lighting.

## 1.1. The Role of SEPP No.64 Advertising and Signage

SEPP 64 was gazetted on the 16th March 2001. The policy introduced a comprehensive range of provisions to ensure that advertising and signage is well located, compatible with the desired amenity of an area and is of a high quality and finish. The SEPP does not regulate the content of signs.

The SEPP applies to all signage, advertisements that advertise or promote any goods, services or events and any structure that is used for the display of signage that is permitted under another environmental planning instrument.

Under Clause 4 of SEPP 64 signage is defined as follows:

**Signage** means all signs, notices, devices, representations and advertisements that advertise or promote any goods services or events and any structure or vessel that is principally designed for, or that is used for, the display of signage and includes:

- (a) building identification signs, and
  - (b) business identification signs, and
  - (c) advertisements to which Part 3 applies,
- but does not include traffic signs or traffic control facilities.

The definition of signage pursuant to Part (c) recognises 'advertisements to which Part 3 of SEPP 64 applies'. Part 3 advertisements are those advertisements that display general or third party content. These advertisements are usually displayed on large format advertising structures that are classified as freestanding, wall mount, roof top or bridge mounted advertising structures. The AMP Waterloo Road sign is classified as a freestanding advertising structure and is subject to provisions of Clause 23 of SEPP 64. Clause 23 is reproduced below:

### 23. Freestanding advertisements

- (1) The consent authority may grant consent to the display of a freestanding advertisement only if the advertising structure on which the advertisement is displayed does not protrude above the dominant skyline, including any buildings, structures or tree canopies, when viewed from ground level within a visual catchment of 1 kilometre.
- (2) This clause does not prevent the consent authority, in the case of a freestanding advertisement on land within a rural or non-urban zone, from granting consent to the display of the advertisement under clause 15.

The Waterloo Road digital sign satisfies the provisions of Clause 23 as its height is well below that of the adjacent shopping centre buildings. The sign operates in accordance with a valid and legally binding consent that has been assessed against the relevant provisions of SEPP 64.

As the Waterloo Road sign is over 20 square metres in area and within 250 metres of a classified road (being Waterloo Road) pursuant to Clause 13 of SEPP 64, arrangements will need to be made for the provision of a public benefit to be provided in connection with the display of the advertisement. The concept of public benefits is discussed in greater detail in Section 3 of the CMP.

A major review was undertaken of SEPP 64 by the State Government in 2007. This review led to the gazettal of Amendment No. 2 in August, 2007 and the preparation of Transport Corridor Advertising Signage Guidelines. The 2007 amendments to the SEPP recognised the suitability of transport corridor land for the display of advertising signage.

The Transport Corridor Outdoor Advertising and Signage Guidelines 2007 highlight that *'signage and advertising in urban areas should be restricted to rail corridors, freeways, tollways or classified roads within or adjacent to strategic transport corridors passing through enterprise zones, business development zones, commercial core zones, mixed use zones or industrial zones*. The display of a large format free standing advertising structure at the Waterloo Road frontage of the Macquarie Shopping Centre is an urban context that is recognised under SEPP 64 as being suitable and appropriate for a third party signage display.

In 2015, a further review was undertaken of the SEPP 64 Transport Corridor Guidelines 2007 by the NSW Department of Planning and Environment in conjunction with Transport for NSW and the Outdoor Media Association of Australia. This review led to introduction of the Draft SEPP 64 Guidelines 2015. The aim of 2015 review was to recognise digital technology for signage purposes. The Draft SEPP 64 Guidelines 2015 now incorporate criteria to guide the safe operation of digital LED screens. These criteria relate to traffic safety and illumination. The application of the Draft SEPP 64 Guidelines 2015 for digital technology is discussed in greater detail in Section 3 of the CMP. It is important to recognise that the digital screen fully complies with the digital criteria specified in the Draft SEPP 64 Guidelines 2015. A copy of the illumination and road safety criteria contained in the Guidelines reproduced in Appendix A.

## 1.2. LED Technology and Its Application for Signage

Digital signage is a new technology that is changing the way that businesses interact and market to their customers. Essential to this understanding is the ability to change the content of a digital sign by off-site computer without the need for traditional print media. Accordingly, by adopting digital technology retail entities have the ability to keep their messaging up to date so that their messages stay relevant to a customer base, reflect and reinforce brand and adapt to specific environmental conditions within the retail environment.

Digital screens are not too dissimilar to a regular static sign in terms of the way that content appears on a digital screen. The key difference is the use of technology to change the signage content which is changed more regularly. Each image on a digital screen appears as a static image. The time the static image appears on the screen is called the dwell time. The technology results in a series of static images being displayed that are changed in accordance with a predetermined play cycle and Content Management Plan. The digital screen will not scroll, flash, feature motion pictures or emit intermittent light. Indeed, while these applications are possible with digital technology, the operation of a digital screen in this manner is expressly prohibited under the Draft SEPP 64 Guidelines 2015.

It is important to realise that SEPP 64 and the definition of 'signage' places no restriction on the number of images that can be displayed or how frequently the content of a sign can be changed. This premise is fundamental to the use of a digital screen for signage and underpins the decision by AMP Capital to invest in the technology for its Macquarie Shopping Centre.

The use of digital technology by shopping centre owners makes sound commercial and marketing sense. The move to digital signage is a growing trend in Australian shopping centres with owners such as AMP Capital and Westfield incorporating the technology for both internal and external signage.

Effective content management is critical to the successful integration of digital screens into a retail environment. Research undertaken by digital hardware and software providers confirms that the **'audience of a screen, being pedestrian, motorists and shoppers needs to be provided with fresh content to ensure**

**attraction and interest is maintained. As content is changed by a computer this can be achieved easily and effectively providing businesses with the opportunities to promote their brand through the display of contextually relevant content'. (*Digital Signage Today, White Paper - Content and Content Management for Digital Signage 2010, page 4*).**

## 1.3. The Role of A Content Management Plan

The CMP will be used by AMP Capital to govern how the Waterloo Road digital screen will operate and the indicative copy and content that it will display. The Plan recognises and adheres to the provisions that are contained in SEPP 64, the Draft SEPP 64 Guidelines 2015 and the Australian Standard AS 4282-1997 that relate to general advertisements and digital screens.

The plan is presented in two sections being:

- Operating parameters associated with the digital functionality of the sign and its internal illumination.
- Content parameters that accord with the definition of 'signage' and specifically 'advertising' pursuant to Clause 4 of SEPP 64.

## 2. OPERATIONAL PARAMETERS

Operational parameters govern how the sign operates and include:

- Road Safety
- Hours of illumination
- Illumination levels
- Language requirements
- Dwell times
- Transition times
- Malfunction procedures

The suggested operating parameters prescribed in the CMP have been adopted from the conditions of consent granted by Ryde Council for the digital sign on the 3<sup>rd</sup> June 2013 pursuant to Consent No. LDA 2013/0533, the provisions established in the Draft SEPP 64 Guidelines 2015 for digital signs and the illumination controls contained in AS 4282-1997.

### ROAD SAFETY

- The digital screen will not flash or displayed animated, moving or simulated moving content.
- All content will comply with the RMS Road Safety Advisory Guidelines For Sign Content detailed in Table 5 of the SEPP 64 Transport Corridor Advertising and Signage Guidelines. Table 5 is reproduced in Appendix 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.
- Message sequencing designed to make a driver anticipate the next message is prohibited across images presented on a single sign and across a series of signs.

- The image must not be capable of being mistaken for a prescribed traffic control device or contain text providing instructions to drivers.

## LANGUAGE OF CONTENT

- All content is to be displayed on the digital screen is to be displayed in English. Translations will be considered as long as letters or characters are no larger than the English language letters. Translated text is to be prepared and provided to AMP Capital by a registered translation and interpreter service.

## HOURS OF ILLUMINATION

- The digital screen is only to be illuminated between the hours of 7am and 11pm seven days a week. Outside of these times the screen is to appear as a blank screen.

## DWELL TIME

- The digital screen will operate at a 10 second dwell time. Each static image will appear on the digital screen for a period of 10 seconds before it changes to the next static image. The 10 second dwell time is the current dwell time that applies in NSW under the Draft SEPP 64 Guidelines 2015 for road facing sites with a speed limit of 80 kilometres or lower.

## TRANSITION TIME

- The digital screen will operate at 0.1 second transition time. Each static image will change to the next static image at a transition time of 0.1 second. The 0.1 second transition time is the current transition time that applies in NSW under the Draft SEPP 64 Guidelines 2015 for all road facing sites.

## LUMINANCE AND DIMING LEVELS

Electrolight has assessed the digital screen as being located in a Zone 2 Area under the SEPP 64 Transport Corridor Advertising and Signage Guidelines 2007 and the Draft SEPP 64 Guidelines 2015. The Electrolight Lighting Impact Assessment is reproduced in Appendix C. Electrolight advises that the maximum luminance and dimming levels of the lighting for the digital screen are as detailed in Table 2.1.

**TABLE 2.1 LUMINANCE AND DIMING LEVELS**

LUMINANCE LEVELS FOR DIGITAL SIGNAGE			
Lighting Condition	Maximum Diming Level to achieve compliance #	Maximum Permissible Luminance (cd/m2)	Compliant
Full sun on face of signage	100%	5000	✓
Day Time Luminance	100%	5000	✓
Morning and Evening Twilight and Inclement Weather	14%	700	✓
Night Time Before 10PM	7%	350	✓
Night Time After 10PM	5%	250	✓

# For the basis of this table it is assumed that the dimming level is directly related to the luminance level via a linear relationship.

When commissioned to the maximum dimming levels above, the illuminated signage will comply with the SEPP 64 Transport Corridor Advertising and Signage Guidelines 2007 as amended by the Draft SEPP 64 Guidelines 2015.

The illuminated signage complies with all relevant requirements of AS 4282-1997 Control of the Obtrusive Effects of Outdoor Lighting. In complying with these requirements, the proposed signage will not result in unacceptable glare nor will it adversely impact the safety of pedestrians, residents or vehicular traffic. The proposed signage will not cause any reduction in visual amenity to nearby residences or accommodation.

- The digital screen will operate in accordance with the luminance and dimming levels detailed in Table 2.1. Electrolight advises that the operation of the digital screen at these levels will comply with:
  - SEPP 64.
  - SEPP 64 Transport Corridor Advertising and Signage Guidelines 2007 as amended by the Draft SEPP 64 Guidelines 2015.
  - Relevant Sections of AS 4282-1997 Control of the Obtrusive Effects of Outdoor Lighting.

#### **SAFETY SECURITY AND MALFUNCTION PROCEDURES**

- In the event of a security breach or malfunction to the digital screen will revert to a blank or black screen format.
- A webcam will be positioned onto the signage face so that AMP Capital or its assigned representative can monitor the content display at all times when the screen is operational.

### **3. CONTENT MANAGEMENT PARAMETERS**

Content for a digital screen is managed in a series of automated play loops. Each play loop provides for a series of 10 second dwell time displays. The sourcing and management of content for each play loop will be coordinated by AMP Capital or its assigned representative in accordance with the content management parameters defined in this section. The content that will be uploaded onto a play loop will be consistent with the parameters identified in this section.

#### **3.1. AMP Capital Related Content**

It is proposed that 10% of the content displayed on the digital screen will be managed by AMP Capital and will be used to:

- Promote the competitive advantages of the Macquarie Shopping Centre as a shopping destination. This could include new store openings, valet parking promotion, food court promotion, and family leisure destinations within the centre such as cinemas and the ice-skating rink; and
- Identify the retail tenants of the Macquarie Shopping Centre. There are currently 358 retail and business tenants of the Macquarie Shopping Centre listed in Table 3.1. Each tenant that holds a current and valid lease with AMP Capital could be displayed on the digital screen in a format consistent with their brand.

Examples of AMP Capital related content are displayed at Figures 3.1 to 3.4

#### **3.2. Public Benefit Content**

It is proposed that 5% of the content displayed on the digital screen will be dedicated to the display of public benefit as prescribed under Clause 13 of SEPP 64. This content will be used by Ryde City Council to promote community and civic events or services. This content could also include 'Amber Alert' messaging by emergency service providers. This could include accident information or a missing person display.

The display of advertisements that satisfy the public benefit provisions of SEPP 64 will be dispersed throughout the hours of operation of the sign.



Ryde City Council will supply to AMP Capital the graphic content for its public benefits displays. AMP Capital or its assigned representative will then be upload this content onto the digital platford.

### 3.3. General Advertising Content

It is proposed that 85% of the content displayed on the digital screen will be dedicated to the display of general advertisements and will be sold by AMP's assigned representative for third party advertising.

All advertising content will meet with the following requirements:

- Comply with Commonwealth law and the law of the relevant State or Territory legislation.
- Only promote a legal product or service.
- Comply with all relevant advertising industry codes of practice (and their associated practice notes and guidelines), including the following:
  - Australian Association of National Advertisers (AANA) Code of Ethics;
  - AANA Environmental Claims in Advertising and Marketing Code;
  - AANA Code for Advertising and Marketing Communications to Children;
  - AANA Food and Beverages Advertising and Marketing Communications Code;
  - AANA Best Practice Guideline—Responsible Marketing Communications in the Digital Space;
  - Australian Food and Grocery Council Quick Service Restaurant Initiative;
  - Australian Food and Grocery Council Responsible Children's Marketing Initiative of the Australian Food and Beverage Industry;
  - Australian Quick Service Restaurant Industry Initiative for Responsible Advertising and Marketing to Children;
  - Alcohol Beverages Advertising (and Packaging) Code (ABAC);
  - Outdoor Media Association (OMA) Alcohol Advertising Guidelines;
  - Federal Chamber of Automotive Industries' Voluntary Code of Practice for Motor Vehicle Advertising;
  - Therapeutic Goods Advertising Code; and
  - Weight Management Industry Code of Practice,

General advertising displays will not :

- Depict violence (unless it is justified within the context of the product or service being advertised);
- Be explicit, obscene or offensive, cause offence or be likely to inflame tensions in the community between religious, racial groups or ethnic groups;
- breach any obligations to third parties, such as site owners or installers or raise work health and safety concerns at sites;
- Be misleading or deceptive or likely to mislead or deceive;
- Portray people or depict material in a way which discriminates against or vilifies a person or section

of the community on account of race, ethnicity, nationality, gender, age, sexual preference, religion, disability, mental illness or political belief;

- Employ sexual appeal in a manner which is exploitative and degrading of any individual or group of people;
- Treat sex, sexuality and nudity without sensitivity to the relevant audience;
- Contain strong or offensive language or any language that is likely to denigrate, insult or offend, particularly if combined with sexual images; and
- Normalise, perpetuate or promote unsafe behaviour;
- Depict smoking, cigarettes or illegal drug use (unless the depiction is in the context of a community service or government campaign).

Examples of the general advertising content that could be displayed on the digital screen are included at Figures 3.5 to 3.8

FIGURE 3.1 - MACQUARIE SHOPPING CENTRE PROMOTION



Source: AMP Capital 2015

FIGURE 3.2- MACQUARIE SHOPPING CENTRE PROMOTION



Source: AMP Capital 2015

FIGURE 3.3 - MACQUARIE SHOPPING CENTRE PROMOTION



Source: AMP Capital 2015

FIGURE 3.4- MACQUARIE SHOPPING CENTRE PROMOTION



Source: AMP Capital 2015



FIGURE 3.5 - THIRD PARTY ADVERTISEMENT



Source: AMP Capital 2015

FIGURE 3.6 - THIRD PARTY ADVERTISEMENT



Source: AMP Capital 2015

FIGURE 3.7 - THIRD PARTY ADVERTISEMENT



Source: AMP Capital 2015

FIGURE 3.8 - THIRD PARTY ADVERTISEMENT



Source: AMP Capital 2015

# Appendix A

## Draft SEPP 64 Digital Criteria Guidelines 2015



## 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 20 sq 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: <ul style="list-style-type: none"> <li>(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</li> <li>(ii) as text providing driving instructions to drivers.</li> </ul>		
(d) Dwell times for image display are: <ul style="list-style-type: none"> <li>(i) 10 seconds for areas where the speed limit is below 80 km/h.</li> <li>(ii) 25 seconds for areas where the speed limit is 80km/h and over.</li> </ul>		
(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.		
(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.		
<p>(m) Signs greater than or equal to 20 sq metres must obtain RMS concurrence as per Section 5.2 of these Guidelines AND must ensure the following minimum vertical clearances:</p> <ul style="list-style-type: none"> <li>2.5m from lowest point of the sign above the road surface if located outside the clear zone.</li> <li>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.</li> </ul> <p>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.</p>		
(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 20 sq 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.		

**Table 3: LUMINANCE LEVELS FOR DIGITAL ADVERTISEMENTS**

<p><b>LUMINANCE LEVELS - Luminance</b> means the objective brightness of a surface as measured by a photometer, expressed in candelas per square meter (cd/m<sup>2</sup>). 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:</p>				
<b>Lighting Condition</b>	<b>Zone 1</b>	<b>Zones 2 and 3</b>	<b>Zone 4</b>	
Full Sun on face of Signage	No limit	Maximum Output	Maximum Output	
Day Time Luminance		6000 cd/m <sup>2</sup>	6000 cd/m <sup>2</sup>	
Morning and Evening Twilight and Inclement Weather		700 cd/m <sup>2</sup>	500 cd/m <sup>2</sup>	
Night Time		350 cd/m <sup>2</sup>		

**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 second 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.

# Appendix B

## RMS Road Safety Advisory Guidelines for Sign Content

**TABLE 5 - RTA ROAD SAFETY ADVISORY GUIDELINES FOR SIGN CONTENT**

1. Advertisements must not imitate a traffic control device such as traffic lights;
2. Advertisements must not instruct drivers to perform an action such as 'Stop', 'Halt' or 'Give Way';
3. Advertisements must not invite traffic to move contrary to any traffic control device or turn where there is fast moving traffic;
4. Advertisements must not contain reflectors, which at night could be mistaken for a traffic control device;
5. The permissible level of reflectance of an advertisement also applies to the content of the sign. That is, the level of reflectance is not to exceed the 'Minimum coefficients of Luminous intensity per unit area for Class 2A', set out in Australia Standard SA/NZS 1906.1:2007;
6. Advertisements should not contain messages that are distractive or otherwise inconsistent with road safety;
7. Advertisements should be legible. A clear font at least 150 millimetres high is advisable;
8. Advertisements should not contain large areas of red display if it is to be illuminated. In wet night-time conditions it may cause confusion with traffic control signals or 'stop' or 'tail lights' of moving vehicles;
9. The amount of information supplied on a sign should be minimised so that the time required to read and understand the sign's message is minimised. As a guide, each sign should be restricted to 6 units of information. The summation of units is to be calculated as follows:  
Words of up to 8 letters, inclusive = 1 unit  
Numbers up to 4 digits, inclusive = 0.5 unit  
Numbers of 5-8 digits = 1 unit  
Symbol, picture, logo or abbreviation = 0.5 unit;
10. The proposed advertising message should not spread the message across more than one adjoining point.

# Appendix C

Lighting Impact Assessment prepared by Electrolight

# ELECTRO LIGHT

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2 July 2015  
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## LIGHTING IMPACT ASSESSMENT

### OUTDOOR SIGNAGE AT MACQUARIE SHOPPING CENTRE, NORTH RYDE, NSW

## Lighting Impact Assessment Outdoor Signage at Macquarie Shopping Centre, North Ryde, NSW

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## 1. INTRODUCTION

Electrolight have been appointed by Urban Concepts to undertake a Lighting Impact Assessment on the digital signage installed at Macquarie Shopping Centre, North Ryde. The digital sign is located on the southern elevation of the Macquarie Shopping Centre at the Waterloo Road frontage. The objective of the assessment is to report on compliance with the State Environmental Planning Policy No. 64 – Advertising and Signage (SEPP 64), AS 4282-1997 Control of the Obtrusive Effects of Outdoor Lighting and NSW Transport Corridor Outdoor Advertising and Signage Guidelines (2014 Draft Document).

## 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/m<sup>2</sup>.

(a) Horizontal illuminance (E<sub>h</sub>) The value of illuminance on a designated horizontal plane

(b) Vertical illuminance (E<sub>v</sub>) 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 (E<sub>ve</sub>).

### 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/m<sup>2</sup>) – 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 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.



### 3. SITE DESCRIPTION AND SCOPE

The location of the self-illuminated digital sign is at Macquarie Shopping Centre, North Ryde. The total display area of the sign is approximately 44.8 m2. Refer Appendix A for signage perspective.

The digital signage is illuminated using LEDs installed within the face of the sign. The brightness of the LEDs can be 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 Digital Place Solutions, model number LC-108020/W with performance parameters as outlined in Appendix B.

The sign operates past 10pm and will therefore need to comply with curfewed lighting limits as outlined in AS 4282 Control of the Obtrusive Effects of Outdoor Lighting.

### 4. DESIGN GUIDELINES AND STANDARDS

The Lighting Impact Assessment will review the proposed signage against the follow Criteria, Design Guidelines and Standards.

- State Environmental Planning Policy No. 64 – Advertising & Signage SEPP 64 (Refer Appendix C)
- Transport Corridor Outdoor Advertising & Signage Guidelines 2014 Draft Document \*
- AS 4282-1997 Control of the Obtrusive Effects of Outdoor Lighting. \*\*

\* The draft Transport Corridor Outdoor Advertising and Signage Guideline (2014) reflects the latest position for roadside digital media in NSW as jointly agreed by Outdoor Media Association (OMA) and Transport for NSW (TfNSW).

Preparation of the guidelines were led by Transport for NSW (TfNSW) which consulted with a variety of interested stakeholders including the OMA, TfNSW, Roads and Maritime Services (RMS) and Department of Planning and Environment (DPE).

\*\* Although AS 4282-1997 specifically excludes internally illuminated advertising signs in Section 1.1 Scope (b) the requirements have been considered as if the Standard's requirements had to be met.

## 5. LUMINANCE ASSESSMENT

Based on an assessment of the surrounding area, the sign is classified as being within a Zone 2 Area under the draft Transport Corridor Outdoor Advertising & Signage Guidelines. Zone 2 is described as an area with generally high off-street ambient lighting e.g. major shopping/commercial centres.

The Digital Place Solutions digital signage has a maximum brightness capacity of 5,000 cd/m2, meaning the maximum allowable day time and night time dimming levels to comply with the guideline's luminance requirements for Zone 2 are:

LUMINANCE LEVELS FOR DIGITAL ADVERTISEMENTS			
Lighting Condition	Max Dimming Level to achieve compliance #	Max Permissible Luminance (cd/m2)	Compliant
Full Sun on face of Signage	100%	5000	✓
Day Time Luminance	100%	5000	✓
Morning and Evening Twilight and Inclement Weather	14%	700	✓
Night Time Before 10pm	7%	350	✓
Night Time After 10pm	5%	250	✓

# For the basis of this Report, it is assumed that the dimming level is directly related to the luminance level via a linear relationship.

It is our opinion that a digital advertising sign 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.

The operator of the screen must not exceed the maximum dimming levels above to comply with the draft Transport Corridor Outdoor Advertising & Signage Guidelines. To maintain constant visibility of the signage, the dimming value may increase to the maximum level at certain times of the day (such as in direct sunlight as noted above). This is to compensate for high levels of light striking the front the face of the sign, which would otherwise dull the image and make it difficult to view.

## 6. AS4282 ASSESSMENT

The digital sign has been assessed against AS 4282-1997 Control of the Obtrusive Effects of Outdoor Lighting as outlined in Section 4.

As it is intended that the sign be illuminated after 10pm, the requirements for curfewed operation under the standard will be applied. The sign is located in a mixed residential and commercial area, therefore the maximum illuminance in the vertical plane of habitable rooms for adjacent residential properties is limited to 25 lux before 10pm and 4 lux after 10pm (as outlined in Table 2.1 of AS4282 for curfewed operation). Under the standard, a value of less than 25 lux before 10pm and less than 4 lux after 10pm is deemed to not affect the visual amenity of local residents.

The nearest development with habitable windows facing the sign is the apartment block at 16 Cottonwood Crescent. And as such this development will form the basis of the obtrusive lighting assessment. The sign (and surrounding environment) were modelled in lighting calculation program AGI32 to determine the effect (if any) of the light spill from the sign.

Photometric data for the screens was based on a diffused light panel (approximating a lambertian emitter) with a luminance 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 on habitable windows at 16 Cottonwood Crescent is 3.9 lux after 10pm (curfewed), which is below the allowable maximum of 4 lux. The maximum vertical illuminance on habitable windows at 21 Cottonwood Crescent before 10pm is 5.5 lux, which is below the allowable maximum of 25 lux (pre curfew).

The Threshold Increment was also calculated for traffic on Waterloo Road. The calculation grid was located at 1.5m above ground level, with a minimum approach viewing distance of 250m to the sign, and a windscreen cutoff angle of 20 degrees (as outlined in AS1158). Appendix D shows the 3D lighting model as well as the results of the calculations. The calculation results of the model show that the Threshold Increment does not exceed 5.33% along the approach during pre curfew and post curfew operation (the allowable maximum under the standard is 20%).

The luminous intensity limits nominated in the AS4282-1997 are only applicable to point sources such as floodlights and are therefore not relevant for illuminated signage.

It can therefore be seen that the illuminated signage complies with all relevant requirements of AS 4282-1997 Control of the Obtrusive Effects of Outdoor Lighting.

## 7. SUMMARY

- The sign at Macquarie Shopping Centre, North Ryde, has been assessed as being located in a Zone 2 area under the Transport Corridor Outdoor Advertising & Signage Guidelines 2014 Draft Document
- The maximum luminance and dimming levels of the lighting to the sign are as follows:

LUMINANCE LEVELS FOR DIGITAL ADVERTISEMENTS			
Lighting Condition	Max Dimming Level to achieve compliance #	Max Permissible Luminance (cd/m2)	Compliant
Full Sun on face of Signage	100%	5000	✓
Day Time Luminance	100%	5000	✓
Morning and Evening Twilight and Inclement Weather	14%	700	✓
Night Time Before 10pm	7%	350	✓
Night Time After 10pm	5%	250	✓

# For the basis of this Report, it is assumed that the dimming level is directly related to the luminance level via a linear relationship.

- When commissioned to the maximum dimming levels above, the illuminated signage will comply with the Transport Corridor Outdoor Advertising & Signage Guidelines 2014 Draft Document
- The illuminated signage complies with all relevant requirements of AS 4282-1997 Control of the Obtrusive Effects of Outdoor Lighting. In complying with these requirements, the proposed signage will not result in unacceptable glare nor will it adversely impact the safety of pedestrians, residents or vehicular traffic. The proposed signage will also not cause any reduction in visual amenity to nearby residences or accommodation.

## 8. DESIGN CERTIFICATION

The digital sign at Macquarie Shopping Centre, North Ryde, if commissioned according to this report, will comply with the following criteria, guidelines and standards:

- State Environmental Planning Policy No. 64 – Advertising & Signage SEPP 64 (Refer Appendix D)
- Transport Corridor Outdoor Advertising & Signage Guidelines 2014 Draft Document
- Relevant Sections of AS 4282-1997 Control of the Obtrusive Effects of Outdoor Lighting.



Donn Salisbury MIES  
Director  
Electrolight  
2/07/15

## APPENDIX A DIGITAL SIGNAGE PERSPECTIVE



## APPENDIX B

### DIGITAL SIGNAGE SPECIFICATION



Digital Place Solutions International Pty Limited  
PO Box 285, Kilsbra NSW 2071, Australia  
ACN 164 780 778  
digitalplacesolutions.com

UNLOCKING DIGITAL OPPORTUNITY

#### 1. Light Emitting Diode (LED) Pitch 10mm Full Colour Screen

Model number: **LC-108020/W**

##### Specifications:

Pitch size:	10 mm
System Supplier:	Panasonic
Application:	Outdoor
Screen Size (Width/Height) Meters:	12.8 by 3.2 / 1280 by 320 LED dots
Dimension (Sqm):	40.96
Screen Configuration:	3 in 1 white body SMD LED / 16 modules x 4 modules
Pixel per sqm:	10000
Power Consumption approx. (Kw):	38.4Kw Maximum— Base on 5000 nits full brightness)
Brightness at 6500 deg K (min/Nits):	5,000 Nits
Visible Angle (Horizontal):	+/-80 (Brightness reduced in 50% of full brightness)
Visible Angle (Vertical):	+/-60 (Brightness reduced in 50% of full brightness)
Processing Bit:	16 bit
Grey Scale:	16bit
Dimming Level:	16 levels
Brightness Control (min):	256 levels (Could be decided)
Pixel Configuration:	1R 1G 1B LED SMD
Frames Rate:	60Hz
Colour:	2.81 trillion
Refresh Rate:	4,000Hz
LED Panel Uniformity Adjustment:	Adjustment by software
Lifetime:	100,000 hours (50% brightness)
Gradation:	65,536 Levels
Housing Material:	Aluminium

## APPENDIX C

# State Environmental Planning Policy No. 64 - Advertising and Signage

### Schedule 1 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



-Before 10pm

Calculation Summary				
Label	Description	CalcType	Units	Max
ObtrusiveLight_Tf	Waterloo Road	Obtrusive Light - Tf	%	0.55
ObtrusiveLight_Tf_i	Waterloo Road to carpark	Obtrusive Light - Tf	%	5.33
Residential Development	21 Cottonwood Crescent	Illuminance	Lux	2.9
Residential Development_1	16 Cottonwood Crescent	Illuminance	Lux	5.5

-After 10pm

Calculation Summary				
Label	Description	CalcType	Units	Max
ObtrusiveLight_Tf	Waterloo Road	Obtrusive Light - Tf	%	0.40
ObtrusiveLight_Tf_i	Waterloo Road to carpark	Obtrusive Light - Tf	%	3.80
Residential Development	21 Cottonwood Crescent	Illuminance	Lux	2.1
Residential Development_1	16 Cottonwood Crescent	Illuminance	Lux	3.9

Image: Lighting model - Threshold increment calculations