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Gawk
Ref: 3124.51

LIGHTING IMPACT ASSESSMENT OUTDOOR SIGNAGE AT 4-6 BREAKWATER RD, BELMONT

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9/7/26	REV A	For Information	NL	RS

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1. INTRODUCTION

Electrolight have been appointed by Gawk to undertake a Lighting Impact Assessment on the proposed illuminated signage to be installed at 4-6 Breakwater Rd, Belmont (**proposed signage**). The proposed scope of the assessment includes the following signage only:

- Sign 1 - Existing John Deer Pylon Signage (relocated)
- Sign 2 - Pylon mounted Digital signage (new)

The objective of the assessment is to report on compliance with the Department of Transport and Planning Requirements and Guidelines for Illuminated Outdoor Advertising Signage.

2. DEFINITIONS

2.1 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”.

2.2 Luminous Intensity

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

2.3 Threshold Increment

The measure of disability glare expressed as the percentage increase in luminance contrast threshold required between an object and its background for it to be seen equally well with a source of glare present.

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

2.4 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 proposed signage is located at 4-6 Breakwater Rd, Belmont, Victoria. Sign 1 is an existing double sided illuminated pylon signage that is being relocated to the south western corner of the site. Face A of Sign 1 is oriented towards the eastbound traffic on Breakwater Rd and Face B of Sign 1 is oriented towards the westbound traffic on Breakwater Rd. Sign 2 is a new pylon mounted digital sign located adjacent to the southern and eastern property boundary. Sign 2 is oriented towards the westbound traffic on Breakwater Rd. Refer to Appendix A for proposed signage location plan, elevations and photomontages.

The proposed signage is located in a commercial area with street lighting. The night time lighting conditions are best categorised as "High District Brightness" as defined in the Department of Transport and Planning Requirements and Guidelines for Illuminated Outdoor Advertising Signage, equivalent to Environmental Zone "A4" of AS4282:2023.

Sign 1 is internally illuminated by light sources of unknown specification. For the purpose of this report, the luminance of Sign 1 is not to exceed the limits shown in Section 5 of this report. Sign 1 is static and does not include dynamic content. Sign 1 has an Upward Light Ratio (ULR_i) of not more than 0.5. For the purposes of this assessment it has been assumed Sign 1 operates all night and is switched off during the day.

Sign 2 is a digital sign and is illuminated using LEDs installed within the front face. The brightness of the LEDs shall 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 dwell time of the content displayed shall not be less than 30 seconds. The digital signage is to operate between 4am and 11:59pm and be switched off all other times.

For the purpose of this report the proposed specification of the proposed digital signage (Sign 2) is as outlined in Appendix B. Alternative digital sign manufacturers may be used for this installation as long as they have equivalent lighting and performance characteristics and are commissioned as described in this report.

4. DESIGN GUIDELINES AND STANDARDS

The Lighting Impact Assessment will review the proposed signage (Sign 1 and Sign 2) against the following Criteria, Design Guidelines and Standards.

- Department of Transport and Planning Requirements and Guidelines for Illuminated Outdoor Advertising Signage 4th October 2023 (**DTP Guidelines**)

5. LUMINANCE ASSESSMENT

DTP Guidelines Assessment - Sign 1 & Sign 2

The DTP Guidelines outlines maximum permissible luminance limits for various lighting conditions as per Table 1 below:

TABLE 1 - ILLUMINATED OUTDOOR ADVERTISING SIGNAGE						
Lighting Condition	CATEGORY A MAXIMUM VALUES OF LIGHT TECHNICAL PARAMETERS			CATEGORY B MAXIMUM VALUES OF LIGHT TECHNICAL PARAMETERS		
	Max Average Luminance (cd/m2)	Threshold Increment Note 1		Max Average Luminance (cd/m2)	Threshold Increment Note 1	
		Max %	Adaptation Luminance		Max %	Adaptation Luminance
Full sun on face of signage	No limit	-	-	No limit	-	-
Daytime Luminance	6000	-	-	4000	-	-
Morning and evening twilight and overcast weather (see Note 2)	700	-	-	400	-	-
Night Time - High District Brightness	350	20%	5	200	15%	5
Night Time - Medium District Brightness	250	20%	1	150	15%	1
Night Time - Low District Brightness	150	20%	0.25	Not Permitted	N/A	N/A

Note 1: Threshold increment as defined and calculated in AS4282

Note 2: Twilight is defined as the period when the sun is below the horizon but light from the sun is still indirectly visible. When the sun is 18 degrees or more below the horizon, the amount of visible light is very low and this is defined as Night time.

Based on an assessment of the surrounding environment, the proposed signage (Sign 1 & Sign 2) are located within a High District Brightness Area (refer Section 3). Sign 1 is classified as “Category B” illuminated advertising signage, therefore the maximum permissible luminance under the guidelines is: unlimited (maximum brightness) when full sun strikes the face of the sign, 4000 cd/m2 during normal daytime operation, 400 cd/m2 during twilight and overcast weather and 200 cd/m2 during night time. Sign 2 is classified as “Category A” illuminated advertising signage, therefore the maximum permissible luminance under the guidelines is: unlimited (maximum brightness) when full sun strikes the face of the sign, 6000 cd/m2 during normal daytime operation, 700 cd/m2 during twilight and overcast weather and 350 cd/m2 during night time.

Luminance Assessment Summary

Tables 2 and 3 outline the maximum luminance levels for the signage to comply with the DTP Guidelines for the various lighting conditions listed below:

TABLE 2 - LUMINANCE LEVELS FOR ILLUMINATED SIGNAGE (SIGN 1 - FACE A and FACE B)		
Lighting Condition	Max Permissible Luminance (cd/m2)	Compliant
Daytime	N/A - OFF	✓
Night Time	200	✓

TABLE 3 - MAXIMUM LUMINANCE LEVELS FOR DIGITAL ADVERTISEMENTS (SIGN 2)		
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	✓

If the signage is operated in accordance with the above, then it will comply with the Luminance requirements of the DTP Guidelines.

6. THRESHOLD INCREMENT ASSESSMENT

Threshold Increment Assessment

Sign 1 and Sign 2 (and surrounding environment) were modelled in lighting calculation program AGI32 to determine the effect (if any) of the light spill from the signage on vehicular traffic. Photometric data for Sign 1 was based on a diffused light panel (approximating a lambertian emitter) with the maximum luminance corresponding to the relevant night time limit outlined in Table 2 of Section 5. Photometric data for Sign 2 was provided by the manufacturer* with the maximum luminance corresponding to the night time limit outlined in Table 3 of Section 5.

The Threshold Increment was calculated for Barwon Heads Rd (northbound), Barwon Heads Rd left turn to Breakwater Rd (westbound), Breakwater Rd (both eastbound and westbound directions) and Breakwater Rd right turn to Barwon Heads Rd (northbound). The calculation grids were located at 1.5m above ground level with an approach viewing distance of between 10m to 200m from the signage and a windscreen cut-off angle of 20 degrees (as outlined in AS1158). The calculation results show that the Threshold Increment does not exceed 7.09% for any traffic approach (the allowable maximum under the standard is 20%).

Summary

It can therefore be seen that the proposed signage (Sign 1 and Sign 2) complies with the Threshold Increment requirements of the DTP Guidelines.

* Electrolight takes no responsibility for the accuracy of third party provided photometric data.

7. SUMMARY

- The proposed signage (Sign 1 & Sign 2) to be installed at 4-6 Breakwater Rd, Belmont, shall be commissioned on site to yield the following maximum luminances:

COMPLYING LUMINANCE LEVELS FOR ILLUMINATED SIGNAGE (SIGN 1 - FACE A & FACE B)		
Lighting Condition	Max Permissible Luminance (cd/m ²)	Compliant
Daytime	N/A - OFF	✓
Night Time	200	✓

COMPLYING LUMINANCE LEVELS FOR DIGITAL ADVERTISEMENTS (SIGN 2)		
Lighting Condition	Max Permissible Luminance (cd/m ²)	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 proposed signage (Sign 1 & Sign 2) to be installed at 4-6 Breakwater Rd, Belmont, has been assessed and complies with the requirements of the DTP Guidelines (when commissioned to the maximum luminance levels above).
- In complying with the above requirements, the proposed signage (Sign 1 & Sign 2) shall not result in unacceptable glare nor shall it adversely impact the safety of pedestrians or vehicular traffic.

8. DESIGN CERTIFICATION

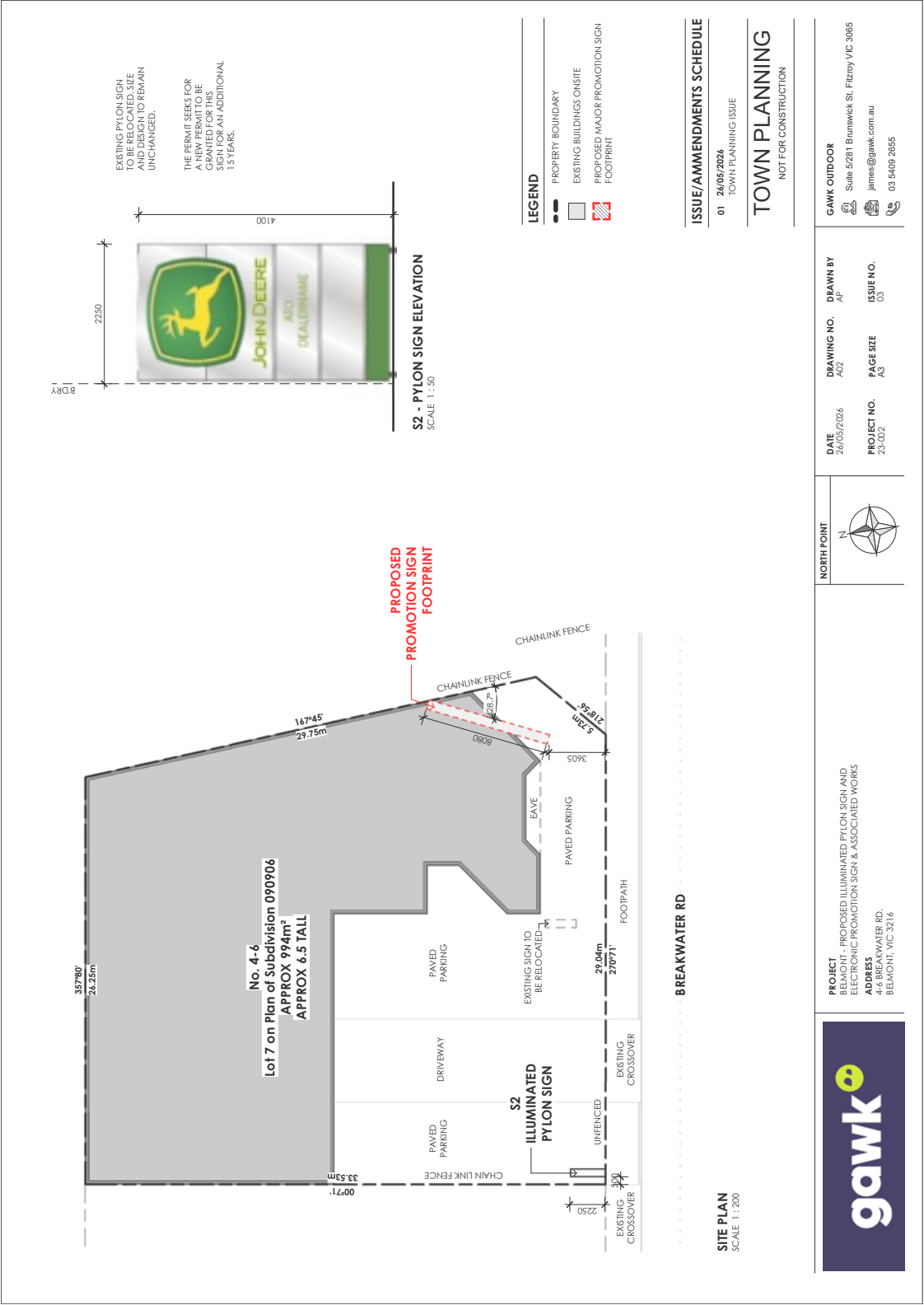
The proposed signage (Sign 1 & Sign 2) to be installed at 4-6 Breakwater Rd, Belmont, if commissioned according to this report, complies with the following criteria, guidelines and standards:

- Department of Transport Requirements and Guidelines for Illuminated Outdoor Advertising Signage 4th October 2023

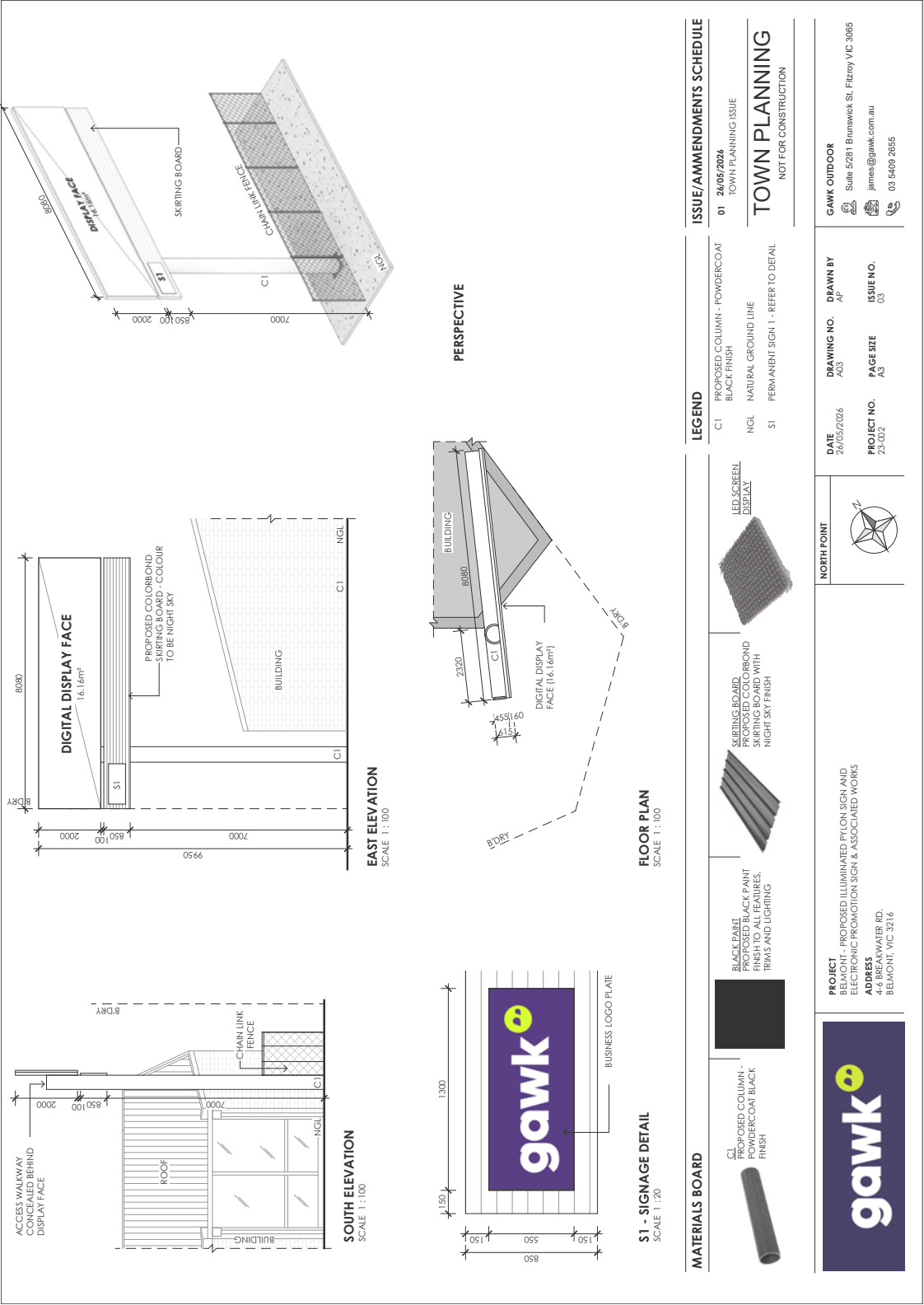
M.Des.Sc(Illumination) B.Eng (Elec)
Registered Professional Engineer - Victoria (AMR Ref)

Senior Lighting Designer
Electrolight Sydney
9/7/26

APPENDIX A
PROPOSED SIGNAGE LOCATION, ELEVATIONS & PHOTOMONTAGES



APPENDIX A
PROPOSED SIGNAGE LOCATION, ELEVATIONS & PHOTOMONTAGES



APPENDIX A
PROPOSED SIGNAGE LOCATION, ELEVATIONS & PHOTOMONTAGES



EXISTING PERSPECTIVE VIEW #01 - WESTBOUND TRAFFIC



PERSPECTIVE VIEW REFERENCE
SCALE 1 : 1000

PROPOSED PERSPECTIVE VIEW #01 - WESTBOUND TRAFFIC



PROPOSED PERSPECTIVE VIEW #01 - WESTBOUND TRAFFIC

GENERAL NOTES

PROPOSED PERSPECTIVE VIEW IS AN ARTIST'S IMPRESSION OF THE PROPOSAL ONLY. SIZE AND SCALE ARE REFERENCED ON THE FLOOR PLANS AND ELEVATIONS.

ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE SUPPLIED TOWN PLANNING REPORT

REFER TO THE TOWN PLANNING REPORT FOR THE WRITTEN STATEMENT REGARDING THE METHODOLOGY DURING THE PREPARATION OF PERSPECTIVE VIEWS

LEGEND

PERSPECTIVE VIEW - LOCATION IN WHICH PHOTOGRAPHIC VIEWS WERE TAKEN

➡ #00

ISSUE/AMMENDMENTS SCHEDULE

01	26/05/2026	TOWN PLANNING ISSUE
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TOWN PLANNING

NOT FOR CONSTRUCTION

PROJECT

BELMONT - PROPOSED ILLUMINATED PYLON SIGN AND ELECTRONIC PROMOTION SIGN & ASSOCIATED WORKS

ADDRESS

4-6 BREAKWATER RD,
BELMONT, VIC 3216



NORTH POINT

DATE

26/05/2026

PROJECT NO.

23-002

DRAWING NO.

A04

PAGE SIZE

A3

ISSUE NO.

03

DRAWN BY

AP

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APPENDIX B
DIGITAL SIGNAGE SPECIFICATION

Big Screen Video

Big Screen Video

Display Specifications

Product Specifications	
Active Screen Size (WxH)	8mW x 2.08mH
Active Screen Size (Sqm)	16.64sqm
Matrix Size (WxH)	800 x 208
Aspect Ratio	3.85:1
Display Weight	965.12kg
Display Weight per Sqm	58kg
Total Avg. Power Consumed	1.5kW
Total Max. Power Consumed	3.83kW
Max. Power Consumption per Sqm	0.23kW/m²
Current Draw	16.64 amps max load*
Mains Recommendation	Single phase at 25 amps per phase

*doesn't allow for in-rush current

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Big Screen Video

Big Screen Video

10mm Display Specifications

Product Specifications	Ultra Power Saving
Physical Pitch	10mm, physical
Pixel Density	10,000 pixel/sqm
Pixel Configuration	SMD LED
Module Dimensions	320mm x 160mm
Module Resolution	32 x 16 pixels
Cabinet Material	Steel
Viewing Angle	H110 Deg./V60 Deg.
Best Viewing Distance	10+m
Maintenance	Front Access
Protection Degree	IP65 Front, IP54 Rear

Product Specifications	
Panel Net Weight	approx. 58kg/sqm
Gray Scale	16-bit color processing depth
Refresh Rate	3840+ Hz
Display Control	Synchronous control
Power Supply	220V, 50Hz
Operation Temp.	-20° ~60°
Display Dimming	Auto/Manual, 8~256 Levels
Signal Transfer	Text, image, graphics animations, video
Power Consumption (Max. Avg.)	0.23kw/sqm; 0.1kw/sqm
Lifetime	100,000hrs
Luminance	7000 nits

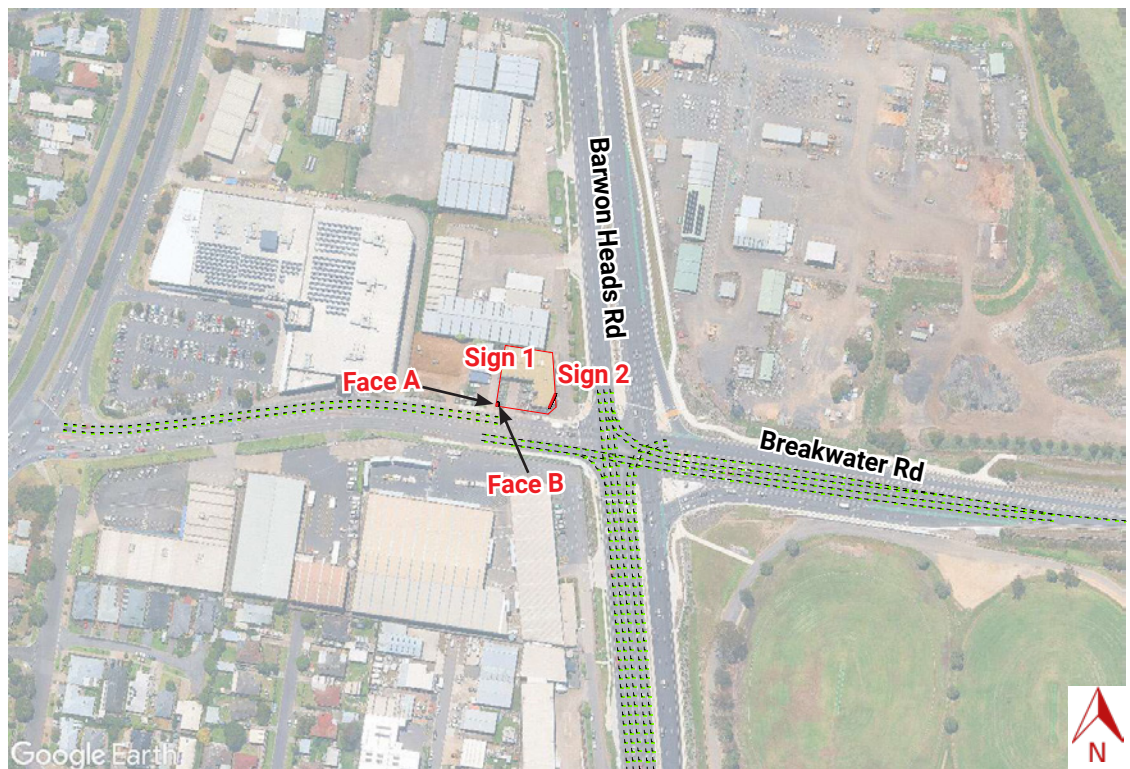
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APPENDIX C

THRESHOLD INCREMENT CALCULATIONS

Calculation Summary			
Project: Ti			
Label	CalcType	Units	Max
Barwon Heads Rd (N)	Obtrusive - TI	%	0.31
Barwon Heads Rd (N)_1	Obtrusive - TI	%	0.16
Barwon Heads Rd to Breakwater Rd (W)	Obtrusive - TI	%	3.80
Breakwater Rd (E)	Obtrusive - TI	%	7.09
Breakwater Rd (W)	Obtrusive - TI	%	0.80
Breakwater Rd (W)_1	Obtrusive - TI	%	2.81
Breakwater Rd (W)_2	Obtrusive - TI	%	0.91
Breakwater Rd to Barwon Heads Rd (N)	Obtrusive - TI	%	6.33



APPENDIX C

THRESHOLD INCREMENT CALCULATIONS

Obtrusive Light - Compliance Report

AS/NZS 4282:2023, A4 - High District Brightness, Curfew

Filename: 3124.51 John Deer, Breakwater Road, Belmont rev A

7/07/2026 7:23:32 PM

Threshold Increment (TI)

Maximum Allowable Value: 20 %

Calculations Tested (8):

Calculation Label	Adaptation Luminance	Test Results
Barwon Heads Rd (N)	5	PASS
Barwon Heads Rd (N)_1	5	PASS
Barwon Heads Rd to Breakwater Rd (W)	5	PASS
Breakwater Rd (E)	5	PASS
Breakwater Rd (W)	5	PASS
Breakwater Rd (W)_1	5	PASS
Breakwater Rd (W)_2	5	PASS
Breakwater Rd to Barwon Heads Rd (N)	5	PASS