

15 January 2026
 L186J_R01_P1

Prosper 5-9 Cowan Road St Ives Pty Ltd
 Level 9
 100 William Street
 Sydney, NSW 2000

Attention: Natalie Bocock

5 – 9 Cowan Road – St Ives Obtrusive Lighting Assessment (Current Conditions)

Lighting, Art & Science (LA+S) was engaged by Prosper to assess the obtrusive lighting impacts of the existing outdoor lighting on the surrounding environment of the proposed nine-storey residential development located at 5–9 Cowan Road, St Ives, in accordance with AS/NZS 4282:2023 *Control of the Obtrusive Effects of Outdoor Lighting*.



Figure 1 – Future Residential Building Location & Current St Ives Shopping Village

Current Conditions

the site at 5–9 Cowan Road is bounded by:

- **East:** St Ives Shopping Village
- **North:** St Ives Shopping Village outdoor car park
- **West:** Cowan Road
- **South:** Commercial buildings

The St Ives Shopping Village outdoor car park is illuminated by 120 W LED luminaires installed at a mounting height of approximately 4.5 m, arranged in configurations of two or three luminaires per pole (refer Figures 2 and 3).



Figure 2 – St Ives Shopping Village Carpark Lighting



Figure 3 – St Ives Shopping Village Carpark Lighting

At the St Ives Village Shopping Centre, the area facing 5–9 Cowan Road comprises the shopping centre loading dock. This area is illuminated by floodlights and linear light battens (refer Figures 4 and 5).



Figure 4 – COLES loading dock Lighting

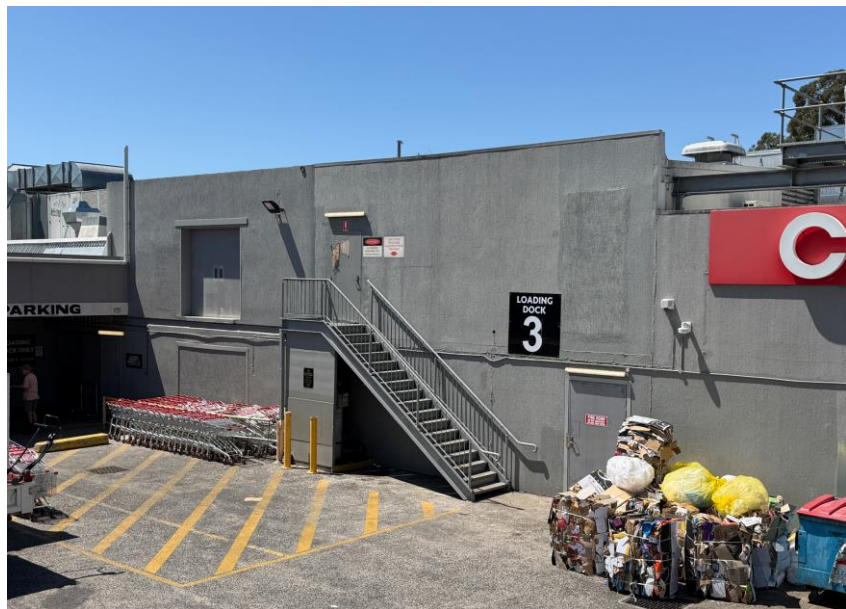


Figure 5 – COLES loading dock Lighting

The car park under Coles is illuminated by LED battens installed on the underside of the concrete slab (refer Figure 6). Due to the difference in levels between the underground car park and the residential area, together with the existing boundary fence separating the residential and commercial areas, the car park lighting under Coles is not visible from the residences at 5–9 Cowan Road (refer Figure 7).



Figure 6 – Coles Underground Carpark Lighting



Figure 7 – Existing Fence

The surrounding commercial buildings to the south are externally illuminated by wall-mounted diffused luminaires and spotlights (refer Figures 8 and 9).



Figure 8 – Wall Mounted Light



Figure 9 – Spotlight

The existing street lighting on the public roads surrounding the site is provided by Ausgrid and consists of a combination of steel poles with underground power supplies and timber poles with aerial power lines. As public street lighting is a safety requirement, it is outside the scope of this assessment.

Australia Standard AS/NZS 4282 lighting requirements

AS/NZS 4282 provides recommended limits for obtrusive lighting as a benchmark for what a person living in an urban environment can reasonably tolerate from adjacent external lighting.

The preface of the standard states “These criteria have been utilized to ensure that the document is both credible to the interested parties and pragmatic in application”.

The standard sets limits for several lighting technical parameters (LTPs) based on ambient conditions (Environmental Zones) and time of night (non-curfew and curfew periods).

- **Curfew period:** Default is 11:00 pm to 6:00 am (modifiable by the consent authority)



▪ **Ambient light classifications:**

- Intrinsically dark
- Dark
- Low district brightness
- Medium district brightness
- High district brightness

The higher the ambient conditions, the higher the allowable obtrusive lighting limits. Environmental zones reflect the nature of the surrounding areas, expected ambient lighting, and activity levels.

Since the site is a residential area adjacent to a commercial area, the ambient lighting category for this assessment is A4 – High District Brightness (refer to the extract from AS/NZS 4282:2023 provided in the Appendix).

Obtrusive Lighting Parameters

Four parameters are considered in the assessment:

- **Vertical illuminance** – This is calculated at the building line of potentially affected dwellings. This is a measure of how much the lighting will light up the rooms in the residence. The illuminance reduces proportional to the square of the distance. The standard only addresses light coming directly from the light fittings. Light that is reflected off other surfaces shall not be included in the assessment.

Based on A4 - High District Brightness Environmental Zone, the maximum vertical illuminance recommended during curfew by AS/NZS 4282 is 5.0 lux.

- **Luminous intensity** – This is an indication of the potential for the installation to cause glare. The luminous intensity does not reduce with distance. It is used as an indication of the level of discomfort, or the disabling effect that the lighting might cause. The luminous intensity relates to a specific direction and will depend on the light distribution of the light fitting and the direction of view.

Based on A4 - High District Brightness Environmental Zone, and curfew conditions, the maximum luminous intensity recommended by AS/NZS 4282 is 2,500 cd.

- **Threshold Increment** - This is a measure of the effect that the lighting will have on the ability for drivers to see objects and signs in the surrounding streets. The Threshold increment reduces with distance and as the angle between the direction of view of the driver and the light source increases. The recommended limit for dark surrounds is 20% based in an adaptation luminance of 5.0 cd/m².

Threshold Increment (TI) is not considered applicable for the site and has therefore not been included in this assessment.

- **Upward Light Ratio (ULR)** - This is used as a measure to limit direct spill light to the sky. It is a proportion of the luminous flux of an installation that is emitted at and above the horizontal. Based on A4 - High District Brightness Environmental Zone, the maximum Upward Light Ratio recommended by AS/NZS 4282 is of 3%.



Lighting Assessment Methodology

To assess compliance with AS/NZS 4282:2023, AGI32 computer-based lighting calculation software was used, performing illuminance-based and spill-light calculations. Calculations were performed using initial luminaire lumens (MF = 1.0).

Where photometric data were available for surveyed existing light fittings, these data were used in the assessment. For fittings where photometric data were not available, information from an equivalent luminaire was adopted.

In the absence of manufacturer-specific photometric data for the car park luminaires, a representative IES file was used for the lighting calculations. Consequently, the assessment is based on assumed photometric performance and should be considered indicative only.

The same approach was applied to the light battens and spotlights, as the luminaire suppliers could not be identified and photometric data could not be obtained.

Obtrusive Lighting Assessment Results

Based on the methodology and criteria above, the existing outdoor lighting surrounding the site meets the requirements of AS/NZS 4282:2023 for:

- Category: A4 – High District Brightness
- Period: Curfew

Drawing CL-101 illustrates the obtrusive lighting impact of the current surrounding lighting on the future residential building at 5-9 Cowan Road, St Ives.

Appendix

- Extracts from AS/NZS 4282:2023

Table 3.1 — Environmental zones

Environmental zones	Ambient light conditions	Descriptions/ Examples
A0	Intrinsically dark	UNESCO Starlight Reserve. IDA: Dark Sky Parks, Reserves or Sanctuaries Major optical observatories Other accreditations for dark sky places for example astrotourism, heritage value, astronomical importance, wildlife/ecosystem protection Lighting for safe access may be required
A1	Dark	Relatively uninhabited rural areas (including terrestrial, marine, aquatic and coastal areas) Generally roadways without streetlighting through rural areas
A2	Low district brightness	Sparsely inhabited rural and semi-rural areas Generally roadways without streetlighting through suburban, rural or semi-rural areas other than intersections
A3	Medium district brightness	Suburban areas in towns and cities Generally roadways with streetlighting through suburban, rural or semi-rural areas
A4	High district brightness	Town and city centres and other commercial areas Residential areas abutting commercial areas Industrial and Port areas Transport Interchanges
TV	High district brightness	Vicinity of major sport and event stadiums during TV broadcasts

NOTE Zones A0 and A1 would normally have a minimum area of 50 ha (0.5 km²). There may be smaller environmentally sensitive areas.

Table 3.1 from AS/NZS 4282:2023 – Environmental zones

Table 3.2 — Light technical parameter limits

Zones	Maximum vertical illuminance (E_v) lux		Threshold increment (TI)		Upward Light Ratio
	Non-curfew	Curfew	Maximum TI %	Default Adaptation level (L_{ad}) cd/m ²	Maximum ULR _S or ULR _L
A0	0 ^a	0.0	N/A	N/A	0.00
A1	2	0.1	20	0.1	0.00
A2	5	1	20	0.2 ^b	0.01
A3	10	2	20	1	0.02
A4	25	5	20	5	0.03
TV	N/A	N/A	20	10	0.08

^a For A0, E_v shall be as close to zero as practicable without impacting safety considerations.
^b For an internally illuminated sign in a A2 zone, $L_{ad} \leq 0.25$ cd/m²

Table 3.2 from AS/NZS 4282:2023 – Light Technical Parameter Limits

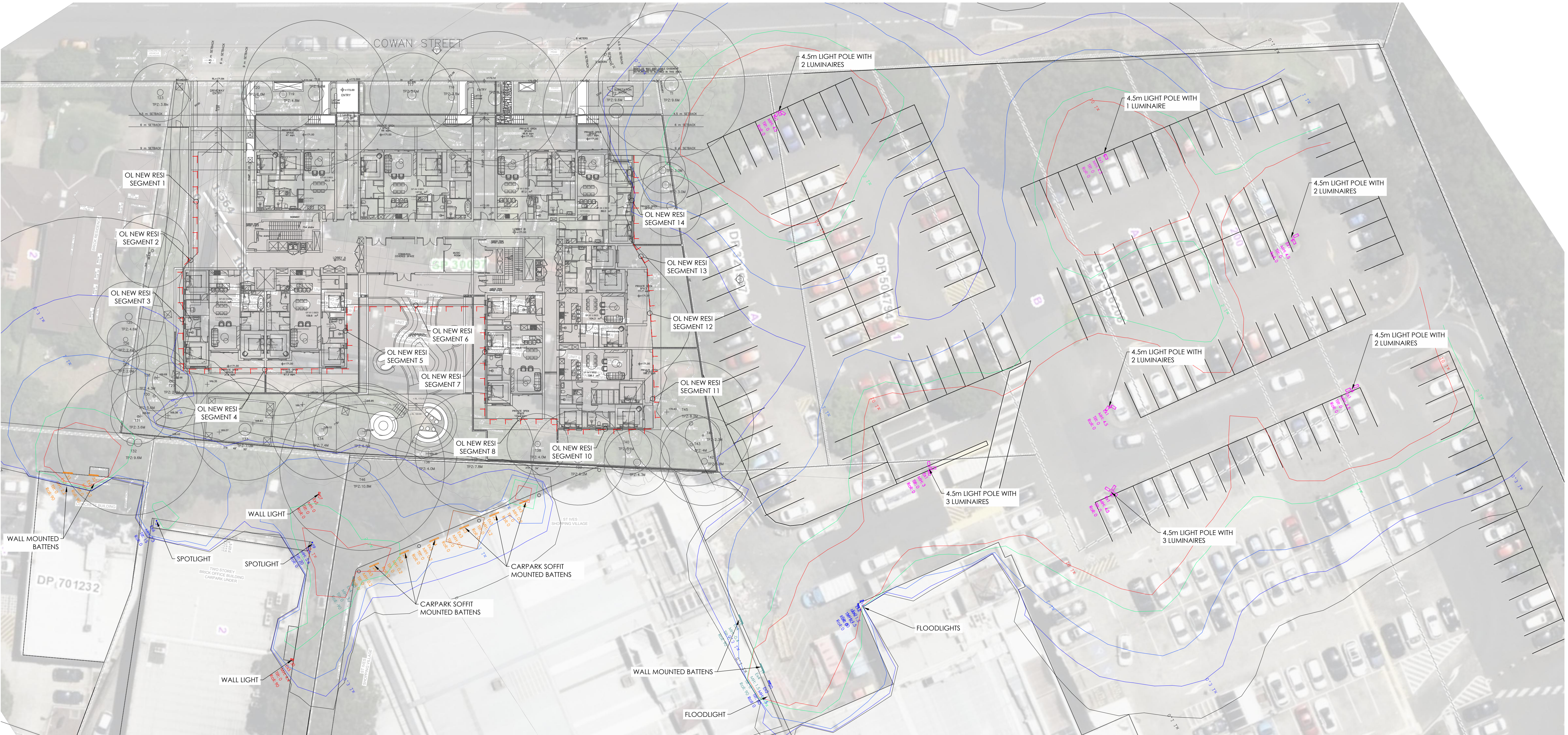
Table 3.3 — Maximum luminous intensities per luminaire

Zone	Luminous intensity (I), cd		
	Non-curfew Level 1 (L1)	Non-curfew Level 2 (L2)	Curfew
A0	See Note	See Note	0
A1	2 500	5 000	500
A2	7 500	12 500	1 000
A3	12 500	25 000	2 500
A4	25 000	50 000	2 500
TV	100 000	165 000	0

NOTE For A0, I shall be as close to zero as practicable without impacting safety considerations.

Table 3.3 from AS/NZS 4282:2023 – Maximum luminous intensities per luminaire

- CL-101 – Obtrusive Lighting Assessment – AS/NZS 4282:2023 – A4 Area Curfew



5-9 Cowan Road, St Ives, NSW 2075
Review of the Obtrusive Effects of Outdoor Lighting (CURFEW)

Scope
The scope of the works is to assess the potential impact of existing outdoor lighting on the proposed residential development at 5-9 Cowan Road, St Ives, to comply with:

- AS/NZS 4282:2023 Control of obtrusive effects of outdoor lighting requirements for A4 Environmental Zone (High District Brightness), Curfew Conditions.

Control of obtrusive effects of outdoor lighting - AS/NZS 4282:2023 (Curfew Conditions)

- Environmental zone: A4 - High district brightness - Residential areas abutting commercial areas
- Illuminance in vertical plane (Ev) < 5.0 lx (CURFEW)
- Upward light ratio < 0.03
- Maximum luminous intensity (I) from each luminaire < 2,500 cd (CURFEW)
- Threshold increment (TI) recommended maximum value: 20% based on adaptation luminance of 5.0 cd/m²
- Maintenance factor 1.0

Luminaire Schedule		Qty	Label	Description	Tag	LUF	Luminaire Lumens	Luminaires Watts	Total Watts
Symbol	Qty								
15	15	MINANGL17389 Type IV 4K	Existing Carpark Posttop Assumed ies	Ex1	1,000	15000	120	1800	
3	3	SHADSC353 Symmetric 5K	Existing Symmetric Flood Assumed ies	Ex2	1,000	4395	50	150	
8	8	ARAGON1200-S-8-3250-840	Exel Batten 1200mm 3250lm assumed	Ex3	1,000	3250	26.7	213.6	
3	3	ARAGON1200-S-8-2600-840	Exel Batten 1200mm 2600lm assumed	Ex4	1,000	2600	21.4	44.2	
2	2	JUL156C3 4K	Existing Burner Light Assumed ies	Ex5	1,000	1574	15	30	
2	2	PSL128C3PS 4K	Existing PAR Flood Assumed ies	Ex6	1,000	953	11	22	

Certification

The existing outdoor lighting at St Ives Shopping Village, complies with
- AS/NZS 4282:2023 Control of obtrusive effects of outdoor lighting requirements for A4 Environmental Zone (High District Brightness), Curfew Conditions.
on the proposed residential development at 5-9 Cowan Road, St Ives.

Drawn: A1 gye

Date: 14/01/2026
Filename: L186J-08T-001-MA-EXIST-AGI
Lighting, Art & Science Pty Ltd
PH 02 9436 0998
EM mail@laands.com.au

Maria Albuquerque MIES [Aust + NZ] MIES 5490

Luminaire Location Summary										
LumNo	Label	X	Y	Z	Tilt	Orient	Ball	Tag (Qty)		
1	MINANGL17389 Type IV 4K	329322.354	6266348.18	4.5	0	84	0	Ex1 (1)		
2	MINANGL17389 Type IV 4K	329322.354	6266348.18	4.5	0	334	0	Ex1 (1)		
3	MINANGL17389 Type IV 4K	329343.252	6266344.517	4.5	0	263	0	Ex1 (1)		
4	MINANGL17389 Type IV 4K	329343.252	6266344.517	4.5	0	83	0	Ex1 (1)		
5	MINANGL17389 Type IV 4K	329399.915	6266333.103	4.5	0	352	0	Ex1 (1)		
6	MINANGL17389 Type IV 4K	329328.436	6266316.38	4.5	0	25	0	Ex1 (1)		
7	MINANGL17389 Type IV 4K	329328.436	6266316.38	4.5	0	295	0	Ex1 (1)		
8	MINANGL17389 Type IV 4K	329338.204	6266310.573	4.5	0	115	0	Ex1 (1)		
9	MINANGL17389 Type IV 4K	329338.204	6266310.573	4.5	0	25	0	Ex1 (1)		
10	MINANGL17389 Type IV 4K	329338.204	6266310.573	4.5	0	255	0	Ex1 (1)		
11	MINANGL17389 Type IV 4K	329327.915	6266299.81	4.5	0	25	0	Ex1 (1)		
12	MINANGL17389 Type IV 4K	329327.915	6266299.81	4.5	0	295	0	Ex1 (1)		
13	MINANGL17389 Type IV 4K	329323.088	6266291.88	3	0	332	0	Ex1 (1)		
14	MINANGL17389 Type IV 4K	329323.088	6266291.88	3	0	152	0	Ex1 (1)		
15	MINANGL17389 Type IV 4K	329323.088	6266291.88	3	0	42	0	Ex1 (1)		
16	SHADSC353 Symmetric 5K	329333.245	6266275.26	1.5	80	165	0	Ex2 (1)		
17	SHADSC353 Symmetric 5K	329333.245	6266274.454	1.5	80	251	0	Ex2 (1)		
18	ARAGON1200-S-8-2600-840	329326.758	6266260.445	-0.4	0	352	90	Ex4 (1)		
19	ARAGON1200-S-8-2600-840	329333.859	6266259.479	1.5	0	352	90	Ex4 (1)		
20	SHADSC353 Symmetric 5K	329333.866	6266259.388	1.5	80	63	0	Ex2 (1)		
21	ARAGON1200-S-8-3250-840	329398.931	6266244.485	0.2	0	81	0	Ex3 (1)		
22	ARAGON1200-S-8-3250-840	329398.931	6266240.269	0.2	0	81	0	Ex3 (1)		
23	ARAGON1200-S-8-3250-840	329397.63	6266236.053	0.2	0	81	0	Ex3 (1)		
24	ARAGON1200-S-8-3250-840	329396.979	6266231.838	0.2	0	81	0	Ex3 (1)		
25	ARAGON1200-S-8-3250-840	329396.328	6266227.622	0.2	0	81	0	Ex3 (1)		
26	ARAGON1200-S-8-3250-840	329395.677	6266223.406	0.2	0	81	0	Ex3 (1)		
27	JUL156C3 4K	329383.956	6266222.202	0	0	300	0	Ex5 (1)		
28	ARAGON1200-S-8-2600-840	329396.678	6266219.988	3.7	0	300	90	Ex4 (1)		
29	PSL128C3PS 4K	329388.928	6266218.073	5.6	20	111	0	Ex6 (1)		
30	JUL156C3 4K	329300.444	6266207.696	4.4	0	48	90	Ex5 (1)		
31	PSL128C3PS 4K	329275.795	6266202.222	7.3	15	150	0	Ex6 (1)		
32	ARAGON1200-S-8-3250-840	329266.422	6266198.308	2.2	0	53	90	Ex3 (1)		
33	ARAGON1200-S-8-3250-840	329264.395	6266195.392	2.2	0	53	90	Ex3 (1)		
Total Quantity: 33										

Isoline Legend	
Illuminance (Lux)	Value
0.1	0.1
0.3	0.3
1	1
5	5
10	10

Calculation Summary						
Label	Max	P50ctr	P50ctb	CalcType	Grid Tilt	Meter Type
OL New Resi_Cd_Seg1	820.0	2	1	Obtrusive - Cd	90	Vert PerpCW
OL New Resi_Cd_Seg10	1888	2	1	Obtrusive - Cd	90	Vert PerpCW
OL New Resi_Cd_Seg11	2292	2	1	Obtrusive - Cd	90	Vert PerpCW
OL New Resi_Cd_Seg12	2424	2	1	Obtrusive - Cd	90	Vert PerpCW
OL New Resi_Cd_Seg13	80.0	2	1	Obtrusive - Cd	90	Vert PerpCW
OL New Resi_Cd_Seg14	2486	2	1	Obtrusive - Cd	90	Vert PerpCW
OL New Resi_Cd_Seg5	0.0	2	1	Obtrusive - Cd	90	Vert PerpCW
OL New Resi_Cd_Seg3	785.0	2	1	Obtrusive - Cd	90	Vert PerpCW
OL New Resi_Cd_Seg4	1922	2	1	Obtrusive - Cd	90	Vert PerpCW
OL New Resi_Cd_Seg5	1751	2	1	Obtrusive - Cd	90	Vert PerpCW
OL New Resi_Cd_Seg6	389.3	2	1	Obtrusive - Cd	90	Vert PerpCW
OL New Resi_Cd_Seg7	374.2	2	1	Obtrusive - Cd	90	Vert PerpCW
OL New Resi_Cd_Seg8	1699	2	1	Obtrusive - Cd	90	Vert PerpCW
OL New Resi_Cd_Seg9	344.1	2	1	Obtrusive - Cd	90	Vert PerpCW
OL New Resi_III_Seg1	0.5	2	1	Obtrusive - III	90	Vert PerpCW
OL New Resi_III_Seg10	1.5	2	1	Obtrusive - III	90	Vert PerpCW
OL New Resi_III_Seg11	0.9	2	1	Obtrusive - III	90	Vert PerpCW
OL New Resi_III_Seg12	0.2	2	1	Obtrusive - III	90	Vert PerpCW
OL New Resi_III_Seg13	1.6	2	1	Obtrusive - III	90	Vert PerpCW
OL New Resi_III_Seg14	0.9	2	1	Obtrusive - III	90	Vert PerpCW
OL New Resi_III_Seg2	0.0	2	1	Obtrusive - III	90	Vert PerpCW
OL New Resi_III_Seg3	1.8	2	1	Obtrusive - III	90	Vert PerpCW
OL New Resi_III_Seg4	2.1	2	1	Obtrusive - III	90	Vert PerpCW
OL New Resi_III_Seg5	2.6	2	1	Obtrusive - III	90	Vert PerpCW
OL New Resi_III_Seg6	0.5	2	1	Obtrusive - III	90	Vert PerpCW
OL New Resi_III_Seg7	0.8	2	1	Obtrusive - III	90	Vert PerpCW
OL New Resi_III_Seg8	0.4	2	1	Obtrusive - III	90	Vert PerpCW
OL New Resi_III_Seg9	0.8	2	1	Obtrusive - III	90	Vert PerpCW

Grid Spacing = 2m Horizontal x 1m Vertical x 1m Bottom / 15m Top

Obtrusive Light - Compliance Report

AS/NZS 4282:2023 A4 - High District Brightness, Curfew
Filename: L186J-08T-001-MA-EXIST
14/01/2026 6:37:47 PM

Illuminance

Maximum Allowable Value: 5 Lux

Calculations Tested (14):

Calculation Label	Test Results	Max. Illum.
OL New Resi_III_Seg1	PASS	0.5
OL New Resi_III_Seg10	PASS	1.5
OL New Resi_III_Seg11	PASS	1.6
OL New Resi_III_Seg12	PASS	0.9
OL New Resi_III_Seg13	PASS	0.2
OL New Resi_III_Seg2	PASS	0.0
OL New Resi_III_Seg3	PASS	2.1
OL New Resi_III_Seg4	PASS	2.6
OL New Resi_III_Seg5	PASS	0.5
OL New Resi_III_Seg6	PASS	0.8
OL New Resi_III_Seg7	PASS	0.4
OL New Resi_III_Seg8	PASS	0.8
OL New Resi_III_Seg9	PASS	0.2

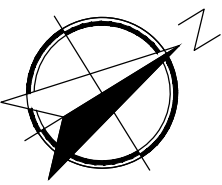
Luminous Intensity (Cd) At Vertical Planes

Maximum Allowable Value: 2500 Cd

Calculations Tested (14):

Calculation Label	Test Results
OL New Resi_Cd_Seg1	PASS
OL New Resi_Cd_Seg10	PASS
OL New Resi_Cd_Seg11	PASS
OL New Resi_Cd_Seg12	PASS
OL New Resi_Cd_Seg13	PASS
OL New Resi_Cd_Seg14	PASS
OL New Resi_Cd_Seg2	PASS
OL New Resi_Cd_Seg3	PASS
OL New Resi_Cd_Seg4	PASS
OL New Resi_Cd_Seg5	PASS
OL New Resi_Cd_Seg6	PASS
OL New Resi_Cd_Seg7	PASS
OL New Resi_Cd_Seg8	PASS
OL New Resi_Cd_Seg9	PASS

Issue	Amendment	Date
P1	PRELIMINARY ISSUE	15-01-26



0 2.5 5 7.5 10 12.5 25m
1:250@A1

Lead Consultant

Client
PROSPER



Lighting, Art & Science

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Project 5-9 COWAN ROAD, ST IVES
OBTRUSIVE LIGHTING ASSESSMENT

Drawing OBTRUSIVE LIGHTING CALCULATIONS
CURFEW (11PM - SUNRISE)

Drawn MA Approved RM Date JAN 2026
Project No Drawing No

L186J CL-101 P1

Scale
1:250@A1
Rev