



15 January 2026
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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 (Future Conditions)

Lighting, Art & Science (LA+S) was commissioned by Prosper to undertake an assessment of the obtrusive lighting impacts arising from existing outdoor lighting, together with proposed modifications to the outdoor lighting at St Ives Shopping Village, on the surrounding environment of the proposed nine-storey residential development 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



Figure 2 – Aerial View – Proposed Improvements at St Ives Shopping Village

Current Conditions and Proposed Modifications to St Ives Shopping Village

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 currently 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 3 and 4).

As part of the proposed extension of the St Ives Shopping Village building, two of the existing light poles are assumed to be removed (refer notes on Drawing CL-201). To provide adequate illumination along the new building façade, wall-mounted luminaires are proposed, as indicated on Drawing CL-201.



Figure 3 – St Ives Shopping Village Carpark Lighting



Figure 4 – 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 currently illuminated by floodlights and linear light battens (refer Figures 5 and 6).



Figure 5 – COLES loading dock Lighting

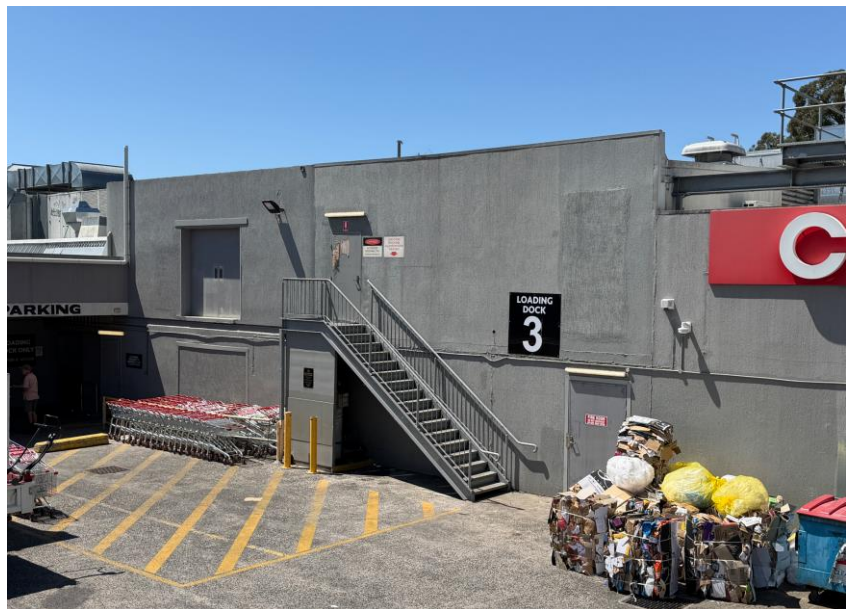


Figure 6 – COLES loading dock Lighting

The proposed improvements at St Ives Shopping Village include the construction of an undercover area above the loading dock. As a result, the existing floodlights installed at the top of the building corner (refer Figure 5) will be removed.

In the absence of a lighting design for the shopping centre upgrade to maintain adequate illumination of the loading dock driveway, it is proposed that wall-mounted luminaires be installed for this area, as noted on Drawing CL-201.

The car park under Coles is currently illuminated by LED battens installed on the underside of the concrete slab (refer Figure 7).

The proposed improvements at St Ives Shopping Village include an extension of the supermarket and car park under to the boundary with 5-9 Cowan Road. It is assumed that, consistent with the existing arrangement, the carparking area under Coles will remain open-ended with no enclosing wall, and that illumination will be provided by LED battens installed along the edge of the slab above.

Notwithstanding the above, 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 underground car park lighting will not be visible from the residences at 5-9 Cowan Road.

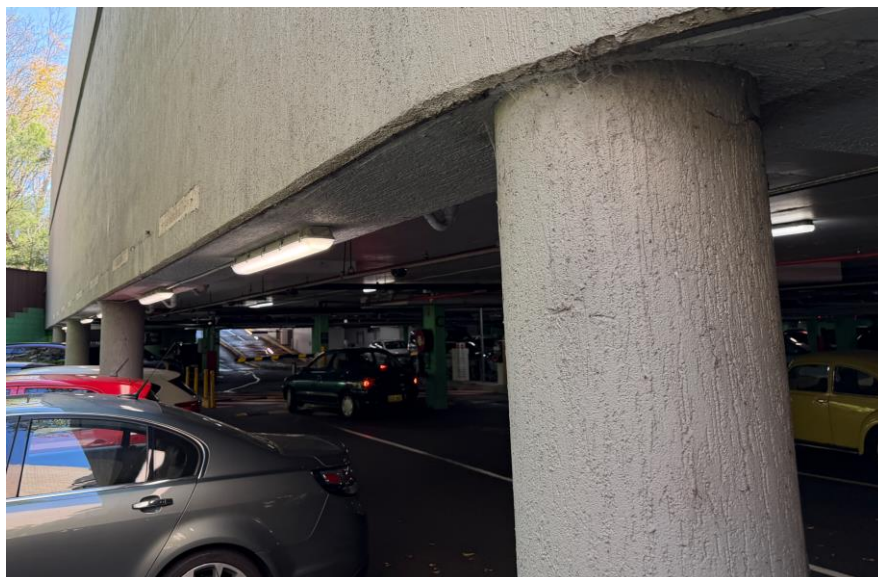


Figure 7 – Coles Underground Carpark Lighting

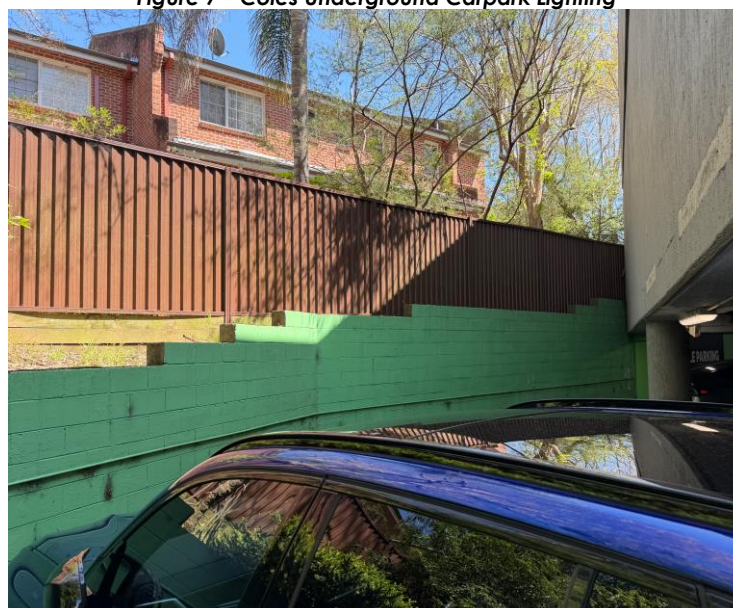


Figure 8 – Existing Fence

The surrounding commercial buildings to the south are externally illuminated by wall-mounted diffused luminaires and spotlights (refer Figures 9 and 10).



Figure 9 – Wall Mounted Light



Figure 10 – 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.

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.

For the proposed new wall-mounted luminaires to be installed along the loading dock driveway and building extension, a lens-based luminaire option has been selected to ensure that light is directed only to the areas where illumination is required, without the need to tilt the fittings. This luminaire type provides efficient ground illumination while minimising glare at ground level and eliminating glare at observation points above the luminaire mounting height. Luminaires are mounted on walls with no upward tilt to reduce stray light.

Obtrusive Lighting Assessment Results

Based on the methodology and criteria outlined above, the existing outdoor lighting, together with the proposed modifications to the outdoor lighting at St Ives Shopping Village surrounding the site, is considered to comply with the requirements of AS/NZS 4282:2023 for the following conditions:

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

Drawing CL-201 illustrates the obtrusive lighting impact of the existing surrounding lighting and the proposed alterations to the outdoor lighting at St Ives Shopping Village on the future residential development 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-201 – Obtrusive Lighting Assessment – AS/NZS 4282:2023 – A4 Area Curfew

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