

Engineering Design Specification D03 Public Lighting

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1 GENERAL

The design of public lighting is to be carried out as described in AS 1158 and AS 4282.

1.1 Reference Documents – Public Lighting Standards

Public lighting shall be designed, constructed and maintained in accordance with the requirements of the relevant Australian Standards. These standards are:

- AS1158.0: As amended, Road lighting - Introduction, sets out definitions and lighting categories needed for reference in the other AS1158 series. Applies to roads and other outdoor public areas.
- AS1158.1.1: As amended, Road Lighting - Vehicular Traffic (Category V) lighting - Performance and installation design requirements
- AS1158.1.3: As amended, Road Lighting - Vehicular Traffic (Category V) lighting - Guide to design, installation, operation and maintenance
- AS1158.3.1: As amended, Road lighting - Pedestrian Area (Category PR) Lighting - Performance and installation design requirements
- AS1158.4: As amended, Supplementary Lighting at Pedestrian Crossings
- AS4282 - Control of the obtrusive effects of outdoor lighting
- Council Construction Specification: C22 Public Lighting

2 Pre design planning

2.1 Lighting of Specific Use Areas

Designers must match the type of road or public space usage with the relevant pedestrian or vehicle category as per AS1158.1.1 (as amended). Additionally, the designer must seek confirmation of the proposed category from Council's Traffic Engineer prior to accepting a design.

2.1.1 Lighting of Specific Use Areas

Vehicle Categories - V1 to VS - Refer to the extract from the Standard shown in Appendix 1

Pedestrian Categories - PR1 to PR12 - Refer to the extract from the Standard of road/area types and indicative lighting categories as referred in AS 1158 series

Designers must match the type of road usage with the relevant pedestrian or vehicle category.

2.2 Pedestrian Categories

A risk assessment is required to be submitted to Council in order to assess the appropriate level of lighting of pedestrian paths, recreational paths and paths through parks and reserves. These will be assessed individually on their merits, and where lighting is indicated must not be less than PR5. Historically in Wingecarribee Shire, recreational paths have not been lit.

Lighting in residential subdivisions where the minimum lot size is less than 2000 square metres and industrial subdivisions shall be provided to PR5 as minimum or as advised by the client. The lighting design must specify vegetation envelopes where the provision of street vegetation does not adversely affect the level of lighting, especially in terms of traffic safety and security.

Street Lighting for roundabouts in residential and industrial areas are to be provided to PR5 as minimum or as specified by the client.

Street Lighting for development in areas zoned for a minimum lot size greater than 2000 square metres are to be provided to PR5 at road intersections only as minimum or as advised by the client.

Outside the town and villages areas, rural residential subdivisions with lot sizes of 40 Ha or greater do not require pedestrian lighting.

CBD/High Pedestrian Areas - The installation of LED should be the first preference, all other lamps can be used where LED cannot meet the luminosity or other design requirements such as white light sources such as Metal Halide or Mercury Vapour lamps.

Public activity areas, connecting elements such as stairways and ramps and carparks to be designed in accordance with AS 1158 series after necessary risk assessment or as advised by the client.

2.3 Vehicle Categories

Arterial and sub-arterial roads in built-up areas are to be lit to a minimum standard as specified in AS 1158 series

Lighting of rural roads and intersections outside the town and village areas is to be carried out on a traffic safety and risk basis. There is generally no lighting in rural areas except on classified roads. Flag lighting at intersections or traffic management devices may also be required.

The traffic management devices listed below are examples of the devices required to be very brightly lit (3.5 lux) according to AS1158.3.1 as amended

- Roundabouts
- Marked Foot crossings
- Traffic and pedestrian signals

2.4 Process within Council

1. Council must specify the level of public lighting in the Shire.
2. Council's Development Control Branch is responsible for specifying the minimum level of lighting for new developments and subdivisions according to this policy and Council resolutions. Integral Energy's Public lighting Design Brief (Appendix 3) must be completed and forwarded to Integral Energy for all proposed lighting projects.
3. Council's Technical Services Division is responsible for specifying the level of lighting on the existing road network. Public lighting of roads is managed by the Roads and Traffic Branch while the Parks and Property Section specifies the lighting of Council buildings and within parks and reserves.
4. Council's development control branch is responsible for approving notification of change (NOCC) for lighting associated with the development.
5. Council's asset branch is responsible for approving NOCC for lighting associated with council's Capital Works Program and any private lighting application within the road reserve.

2.5 Vegetation Management

Designers must satisfy the aim of lighting the whole road area, from boundary to boundary, with acceptable uniformity and a minimum of shadows. The design of road lighting must consider existing and proposed footway trees and in particular their final mature characteristics. The type and location of trees, their spacing, ground clearance, spread and density of foliage are critical to the location of lighting and selection of luminaires.

In all cases the design of the landscaping must be coordinated with the design of the lighting. The lighting designer must specify vegetation envelopes on the plans. These locations must be the only locations where vegetation is permissible.

3 Design criteria

3.1 Design requirements

Design documentation is to include the following:

- A lighting design report including details of non-conforming design elements, whole of life cost analysis, and how construction of the project will be managed so that the design is successfully implemented.
- Lighting design drawings including details of the following:
 - Existing and proposed electrical load of the lighting circuits.
 - Existing cable locations and offsets that are maintained by the electricity distributor.
 - Distribution pole attachment details.
 - Lighting classification and subcategory, mounting height, tilt, maximum spacing and any non-conforming portions.
 - A lighting schedule with details of lamps, luminaires, brackets, columns, mounting heights, and other equipment.
- Computer analysis information conforming to the AS/NZS 1158 series.
- Details of the computer program used including the name and source of the program and a statement with details of conformance to the requirements of AS/NZS 1158.2 (as amended).
- Details of the road surface reflection characteristics assumed in luminance-based design calculations.
- Justification for the maintenance factor used in the calculations and associated schedule of maintenance, e.g. for luminaire cleaning and or lamp replacement intervals.
- Cross-sectional drawings showing proposed column type, setbacks, outreach arm, luminaire offset and luminaire.

3.2 Types of Lighting Equipment

Luminaires are to be from Endeavour Energy's list of approved luminaires. Any luminaire that does not appear on the list of approved luminaires can only be connected to Public Lighting as rate 3. Details are set out in Endeavour Energy's "General Terms and Conditions for the Connection of Public Lighting".

Designers are limited to the following poles:-

- Standard galvanised pole
- Macarthur – powder coated

Galvanised light poles can be painted – refer to Development Control Plan (DCP) for specific controls. If no specific controls articulated in the DCP - Hawthorn Green, charcoal, black or unpainted.

3.3 Location of Lighting Equipment

Designers must show the following level of details on lighting designs

- K & G, property boundaries
- Pole positions – offset from boundary, spacing between lights
- Landscaping – size, type and location of plantings including species
- Scale to be not greater than 1:500
- Typical Isolux diagram indicating level of illuminance need to be shown.

3.4 Lighting not on Endeavour's Street Lighting Circuit

A standard meter board must be installed to which Endeavour Energy connects the power for all lighting not on Endeavour's Street Lighting Circuit. This lighting is then powered from the meter board. Examples of such lights are:

- Decorative lighting for malls, walkways, arcades, memorials
- Community title developments
- Private property

3.5 Certification of Lighting Design

The design shall be certified by a qualified person suitably accredited stating the category of lighting and the standards it complies with. This needs to be approved by energy provider as conforming to their requirements prior to being provided to council for signoff and final acceptance of any lighting design.