Surf Coast Shire Council

Public Lighting Guidelines

Prepared for Surf Coast Shire Council

Version	Author	Date	Description of changes
V1	Ironbark Sustainability	March 2025	Initial adopted by Council

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1. Glossary

Term	Definition
CCT	Correlated colour temperature describes the colour of a light source and is measured in degrees Kelvin (K). Blue-white or "cooler" light sources have a high colour temperature (e.g. 4000K). Yellow or "warmer" light sources have a low colour temperature, (e.g. 2000K)
CRI	Colour rendering describes the degree to which natural colours can be perceived under different kinds of artificial light. It is measured on a colour rendering index (CRI). A CRI of 100 indicates that colours are depicted accurately. A CRI of less than 30 indicates colours are distorted and difficult to recognise. In general, a CRI of 70 or above provides an acceptable standard for outdoor lighting.
Decorative lighting	Refer to 'non-standard'
DNSP	Distribution Network Service Provider, also known as Energy Distribution Business (EDB), also known as distributor.
HID	High-intensity discharge lighting produces light using an electrical discharge through an ionised gas. Now considered old and inefficient, these lights are being phased out and replaced by LEDs.
HPS	High pressure sodium lamps or luminaires
IK rating	Measure of protection against mechanical impact (vandalism)
IP rating	Measure of protection against ingress by water and solid objects
IoT	IoT (internet of things) involves extending internet connectivity beyond standard devices, such as desktops, laptops, smartphones and tablets, to any range of traditionally *dumb* or non-internet-enabled physical devices and everyday objects such as streetlights. Embedded with technology, these devices can communicate and interact over the internet, and they can be remotely monitored and controlled.
Lamp	The light bulb in a luminaire
LED	Light emitting diode
Luminaire	The light source (lamp or LED module), fitting and control gear of the light
LER	The luminaire efficacy rating (LER) is a measure of the efficiency with which a luminaire converts electrical energy into light, measured in lumens per watt
MH	Metal halide lamps or luminaires
Non-standard lighting	Lighting that is typically not held in stock by DNSPs, sometimes also referred to as 'decorative' (typically found in URD areas)

Standard lighting	Lighting that is typically held in stock by DNSPs, and is found on their list of products approved for use
Street lighting	Street lighting found in residential streets and main roads
URD	Underground Residential Distribution (URD) is the standard means by which new street lighting schemes are deployed in new developments. This involves an underground power supply with dedicated light poles and differs from traditional approaches with an overhead power supply with luminaires being mounted on distribution poles.
UWLR	Upward waste light ratio (UWLR) is a measure of the light output of the luminaire that is emitted above the horizontal

2. Introduction

Public lighting in Surf Coast Shire is made up of street lighting and a variety of other external lighting types such as pathway, sportsground, security and feature lighting. Public lighting helps make many public spaces safer, more usable and enjoyable for all.

Surf Coast Shire Council (Council) is committed to providing consistent and sustainable lighting in public areas and has developed these Public Lighting Guidelines to guide:

- new installations
- replacements and upgrade programs; and
- maintenance processes.

2.1 Objectives of Public Lighting in Surf Coast Shire

Public lighting in Surf Coast Shire is designed to:

1. ***Create a safer nighttime environment for the community***

   Safety is about "adequate" lighting and not necessarily "more" lighting

2. ***Improve the look and the feel of the townships within the Shire***

   Consistent approaches to delivering attractive lighting

3. ***Make better use of open space***

   Allow for public spaces to be used by the community at appropriate times

4. ***Consist of assets that can be managed over their lifetime***

   Long lasting, consistent, and affordable infrastructure used when and where required

5. ***Embrace Council's commitment to environmental sustainability and a zero net emissions target***

Providing better lighting systems with consideration of the National Light Pollution Guidelines for Wildlife[1] and the Dark Skies Places program[2] will help to protect local fauna and reduce greenhouse gas emissions in line with Council's zero net emissions target and Climate Emergency Declaration.

Public lighting in Surf Coast Shire should be installed and managed with a view to ensure:

- supporting appropriate use of public spaces
- best practice asset management
- environmental sustainability
- financial responsibility
- minimal impact on amenity and environment

[1] See https://www.dcceew.gov.au/environment/biodiversity/publications/national-light-pollution-guidelines-wildlife
[2] See https://darksky.org/what-we-do/international-dark-sky-places/

- adherence to community expectations
- innovation

2.2 Purpose of the Public Lighting Guidelines

These Guidelines define the following:

Where, when and what: inform and guide Council's decision making for public lighting, to decide where and when public lighting is needed, and if so, what sort of lighting should be installed.

Consistency: help Council staff, lighting design consultants and others consistently apply sustainable lighting principles and standard design requirements to new public lighting installations, replacements and repair programs and maintenance.

Performance levels: communicate Council's public lighting minimum efficiency and standard design requirements.

Council is committed to gender equity and recognises that public lighting can have gendered impacts on perceptions of safety, mobility, and access to public space. These guidelines seek to ensure inclusive, equitable lighting design that responds to the needs and experiences of all community members, particularly those who may be disproportionately affected by inadequate or inequitable lighting.

2.3 Policy Context

These Guidelines have been designed to comply with all relevant Australian laws and legislation, and to comply with and complement the following standards, policies, codes and strategies.

External references:

- AS/NZS 1158 Lighting for roads and public spaces
- AS 4100 Steel Structures
- AS 4282 Control of the Obtrusive Effects of Outdoor Lighting
- AS 2560 Sports Lighting
- ANSI C136.41-2013 (Dimming receptacles)
- National Light Pollution Guidelines for Wildlife - https://bit.ly/3JpXUX0
- Crime Prevention Through Environmental Design Guidelines - https://bit.ly/2WA6ACE

Council plans, policies and strategies:

- Climate Emergency Response Plan
- Safer Cycling Strategy 2022-27
- Economic Development Strategy 2021-2031
- Open Space Strategy 2016-25
- Pathways Strategy 2012Road Management Plan 2021 -25
- Aireys Inlet Recreation Infrastructure Strategy
- Aireys Inlet to Eastern View Structure Plan
- Mt Moriac Recreation Reserve Masterplan

- Torquay and Jan Juc Structure Plan (2007)
- Stribling Reserve Master Plan
- Torquay Town Centre Parking and Access Strategy 2011-16 (2011)
- Torquay Town Centre Parking Precinct Plan (2012)
- Jan Juc Creak Linear Reserve Master Management Plan Report
- Spring Creek Linear Reserve Master Management Plan Report
- Eastern Recreation Reserve and Hess Street Winchelsea Master Plan 2015
- G21 and AFL Barwon Regional Strategy 2015
- G21 Regional Football (Soccer) Strategy 2023-2033
- Barwon Tennis Strategy 2024 -2034
- Sustainable Design Policy
- Capital Works Community Engagement Policy
- Community Engagement Policy

2.4 Who Should Use These Guidelines

These Guidelines should be used by internal Council staff, and any external contractors with a formal role in the design and management of public lighting in Surf Coast Shire, including:

- engineers
- asset planners and managers
- landscape architects
- urban designers
- place managers
- lighting designers
- developers
- land managers
- maintenance staff and contractors

All public lighting, excluding private lighting and lighting on Department of Transport and Planning roads in Surf Coast Shire, must follow these Guidelines.

2.5 Using These Guidelines

Council staff should use these Guidelines when:

- installing new lighting in a previously unlit area including community requests for new lighting
- replacing/upgrading/modifying existing lighting in an area
- considering the potential removal of existing lighting

Council officers must use the Guidelines to inform briefs for lighting design and installation tenders, as well as to assess submitted tenders to ensure they meet the required minimum Australian Standards for lighting

in different circumstances and meet Council's style and technical specifications. Staff should use the completed checklists (refer to Section 13) to assist with the tender assessment process.

The Guidelines should be provided to external lighting design contractors, developers, urban designers and engineers as part of brief documents, to guide their tender submissions for public lighting design and installation.

The appropriate completed checklists (refer to Section 13) should be included as part of tender submissions.

2.6 Guidelines Review Period

These Guidelines will be reviewed every four years or when there are significant advances in lighting technology.

3. Definition of Public Lighting

Public lighting assets provide night-time lighting of the public realm including open space lighting, external building lighting, aesthetic lighting, streets and road lighting, and outdoor sports lighting. Public lighting is not related to lighting of private outdoor spaces and Council will not install lights to illuminate private properties.

3.1 Open Space Lighting

Open space is publicly owned or managed land used for recreation, nature conservation, passive outdoor enjoyment, public gatherings or access to nature. Open space lighting includes a wide variety of outdoor lighting assets including:

- Council car park lighting
    - retail centre car parks
    - public facility or recreation reserve car parks
- Park lights and other pole-mounted open space lights
    - pedestrian path lighting
    - plaza/square lighting
    - off street shared path lighting
    - wayfinding lighting (bollards and in-ground path markers)
- External building lighting (any lighting that is attached to the outside of a Council building):
    - perimeter lighting
    - external building entrance lighting
- Aesthetic lighting (lighting that does not serve a functional purpose and instead focuses on creating a sense of place):
    - building façade lighting
    - up-lighting
    - lighting related to sculptures and public art
    - decorative/ornamental/ambient lighting for gateways and activity centres.

3.2 Street lighting

Street lighting can be found in residential streets, laneways and main roads and has a variety of pole types, each containing the same basic parts.

Typical infrastructure that is required for street lighting includes the following:

Luminaire (lantern) – A device that distributes, filters or transforms the light given by a light source and which includes all the items necessary protecting the light source and connecting it to the pole, bracket or other structure.

Light source/Lamp – The light source (a lamp or globe in a traditional luminaire, or LED chips) emits light and is located within the luminaire (lantern). Examples of light sources include high pressure sodium (HPS), metal halide (MH) and light emitting diode (LED).

Photoelectric (PE) Cell – A device that is normally incorporated in a luminaire that detects outside light levels to automatically switch the luminaire on and off as required. Smart PE cells (or nodes, or light point controllers) allow streetlights to be remotely controlled and monitored.

Pole - Used to elevate the luminaires, poles are typically made of steel, aluminium, wood or concrete. Components of a pole include:

- Base – the lower section of the pole that is secured to the ground
- Bracket (outreach arm) – the supporting connection from the pole to the luminaire (this can also be used in other mounting arrangements such as wall mounted luminaires)
- Electrical access door – provides access to internal wiring and fuses

Standard Pole (Category V)

Standard Pole (Category P)

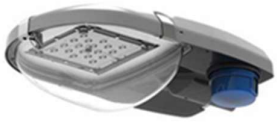
Distribution Pole

Standard Decorative Pole

Non-standard Pole (Category P)

Non-standard Pole (Category V)

Solar Light



LED Luminaire

Figure 1: Diagrams of street lighting

3.3 Sports Lighting

Sports lighting includes lighting of fields and public spaces for professional and amateur sporting activities including tennis, football (AFL, rugby, soccer etc.), outdoor basketball and netball, cricket, hockey, skating and a wide range of other sporting activities.

4. Responsibility for Public Lighting in Council

Responsibility for the design, management, maintenance and capital projects related to public lighting is split between different Council departments and Powercor. Table 1 summarises the areas of responsibility.

Table 1: Responsibility for unmetered public lighting by Council Department

Type of Lighting	**Planning and Design**	**Operation and Maintenance**	**Asset Renewal (like for like replacement) and Capital Works**	**Pole & Light Ownership**
Parks and Open Space lighting	Land Manager	Operations – Facilities	A&E – Asset Management	Council
Street lighting (unmetered)	Assets & Engineering	DNSP	A&E – Asset Management and/or Land Manager	DNSP
Council owned car park lighting	Land Manager	Operations – Facilities	A&E – Asset Management	Council
Sports Lighting	Land Manager	Operations – Facilities	A&E – Asset Management	Council
Public Recreation (walking tracks, shared paths etc.)	Land Manager	Operations – Facilities	A&E – Asset Management	Council
External building lighting	Land Manager	Operations – Facilities	A&E – Asset Management	Council
Aesthetic lighting	Land Manager	Operations – Facilities	A&E – Asset Management	Council

5. New Public Lighting – Principles and Process

When planning for new public lighting Council staff should apply the following principles and process.

5.1 Guiding Principles for Public Lighting

For all new public lighting in Surf Coast Shire Council area the guiding principles outlined in *Table 2* will need to be considered.

Table 2: Guiding principles for installation of public lighting in Surf Coast Shire

Making better use of open space
Most people use public space during the day and early evenings. Lighting should support positive evening use and selective all-night lighting should be provided only where required
Assisting walking, cycling, public transport and safe driving
Appropriate lighting will only be installed where it aligns with these guidelines. It will allow for higher visibility and encourage people in Surf Coast Shire to walk, cycle and take public transport.
Improving safety
Council will avoid creating a false sense of safety by not installing lighting in remote or poorly surveyed locations. Lighting will be discouraged in sites where it promotes inappropriate behaviour after hours in accordance with principles of the Crime Prevention through Environmental Design Guidelines. Public lighting will not be installed to light private properties.
Ensuring economically sustainable assets are installed and managed
At the scoping stage, a high-level business case analysis should be conducted to ensure that only lighting assets that are easy to install, have low maintenance requirements and are cost effective over the life of the asset are deployed. All lights and parts need to be commercially available in Australia with preference for Australian design and lighting suppliers.
Minimising the negative impacts of artificial lighting at night
Lighting (or some types of lighting) may be harmful to biodiversity (in particular, insects and nocturnal animals) and people. Poorly designed lighting may also reduce the visibility of the night sky. These impacts must be weighed against human benefits and minimised when considering any lighting in any areas of high environmental value. Lighting should incorporate controls and techniques that are designed to minimise harmful impacts. This includes avoiding lighting where possible, providing only minimum luminance where required, and using fixtures which minimise up-light or spill in areas of remnant vegetation and riparian habitats.
Showcasing urban and natural features in an effective way
When people are visiting Surf Coast Shire, they should see and enjoy our urban features, for example, monuments, signs, and public art. Lighting can be an effective way of highlighting such features in key locations at selective times. Conversely, choosing not to light or to minimise lighting can enable appreciation of the natural environment of the Surf Coast at night.

Maximising energy efficiency and minimising climate impacts
Council acknowledges the climate emergency and is committed to creating a cooler, climate resilient city with a low carbon footprint. Installing the most energy efficient lighting technologies available (i.e. LED) and using smart technologies (e.g. light sensors, timers and dimmers) will minimise energy usage. Public lighting shall also be powered by 100 per cent renewable electricity.

5.2 Design Process for the Lighting of Public Spaces

To ensure that public lighting is designed and installed in compliance with these Guidelines, designers should use the following step-by-step decision-making process to determine if, when, where, and how lighting should be installed:

- Step 1: Establish the need for lighting (Section 6)
- Step 2: Determine site type and site-specific considerations (Section 7)
- Step 3: Determine the lighting requirements (Section 8)
- Step 4: Determine the luminaire and pole type (Section 9)
- Step 5: Follow the appropriate approval process for new lighting (Section 10)

Each of these steps is described in more detail in the relevant sections.

5.3 Smart Lighting

Smart city approaches are being used by local governments worldwide to provide better services for local communities. Smart city infrastructure:

- gathers data from smart devices and sensors
- shares data via smart communications system
- creates valuable information & services

Council is already leveraging smart cities approaches for the management of:

- waste management (rubbish bin fill level detection)
- facility smart lighting control
- parking compliance (parking sensors)

A number of attributes mean that lighting assets are an ideal component within a smart city, these attributes include:

- its physical location high on a pole means there is good ability for clear communication
- its ubiquitous presence anywhere that there are reasonable densities of people means the light can reinforce the network where the need for data is greatest
- the presence of power at the light means that connecting the smart networks communication device to electricity is easy

A smart light can be used as a relay for other information (in a smart grid network). This increases the effectiveness of the entire network and can reinforce and improve the way the network operates. Alternatively, street lighting communications devices can be part of a standalone street lighting control network, without reference to other smart networks within a city.

Other smart city technologies can be installed as part of new smart lighting infrastructure including:

i. temperature

ii. air quality

iii. pedestrian and traffic counting

v. Wi-Fi and other telecommunications

vi. voltage

On their own the remote monitoring and management of smart lights delivers direct environmental and road safety benefits via the ability to:

- tailor lighting levels to the exact levels required throughout the night (via dimming and/or switching) thereby reducing over-lighting and energy consumption; and
- detect and respond to faults as soon as they happen.

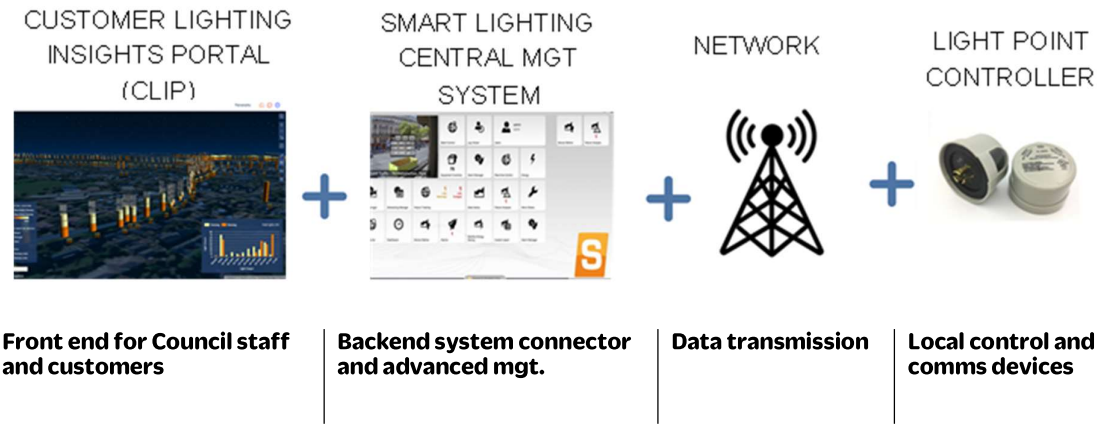
Smart metering of street lighting (which is currently unmetered) will be available from mid-2026 at which point direct financial savings from the dimming and/or switching of smart street lighting will also be available.

New public lighting in Surf Coast Shire shall therefore comply with the smart city requirements outlined in these Guidelines (refer Section 9).

Where unmetered public lighting assets are concerned, Council will collaborate with Powercor to deliver the smart lighting objectives outlined in these Guidelines as soon as possible.

Where metered public lighting is concerned, Council intends to assess the value of establishing a smart lighting system through the completion of a business case and/or trial within the next 2-5 years. It is envisaged that the overarching smart lighting system will have the basic elements outlined in Figure 2.

Figure 2: Smart lighting system basic architecture and functionality



For each of these elements, the following basic requirements/features shall apply (while not being limited to these requirements).

Customer Lighting Insights Portal:

- Integrate multiple backend systems
- Deliver simple visualisations & asset mapping
- Handle customer requests
- Provide project initiation, design and smart programming tools
- Expected usage by Council officers, customer service

Central Management System:

- Provide secure connection to LPCs to CLIP
- Provide fault reporting
- Provide real-time data monitoring
- Accessible to authorised users only (i.e. restricted access)
- Secure, open APIs for access by other third-party applications (inc. the CLIP)
- Fully interoperable (e.g. TALQ v2.0 compliant)
- Allow individual (or batch) scheduling of constant light output, dimming and switching
- Locally hosted (i.e. in Australia)
- Expected usage by Council officer, third-party service providers

Network:

- Facilitate secure, encrypted comms between LPCs and SLCMS

Light Point Controller:

- Transmit public light specific data
- Suitable for local conditions (e.g. temperature)
- Rated to minimum IP65
- Securely communicate using open, standards-based communications protocols and technologies

Importantly, each of the elements should be modular and seamlessly interoperable with the other elements of the system meaning Council can replace and/or upgrade individual elements over time as technology and needs change.

6. Establishing the Need for Lighting

The first step of the decision-making process is to establish the need for lighting. Lighting should be targeted and provided only where it serves the objectives of these Guidelines. Most importantly it should be fit for purpose, that is, provide a level of luminance which is suited to the location and use of the site and provided at the times of activity (which may change over time).

Reasons that new lighting may not be required include:

- adequate lighting is already available from an alternate source such as street, public transport zone, car park, building or any other adjacent lighting (in some locations this can reduce the number of new lights installed)
- the area is one where lighting is not recommended (as identified in Section 7)
- Council has identified the lighting purpose as not recommended (e.g. biodiversity or nature tourism areas, areas where nighttime activity is not encouraged)

There may also be safety reasons that new lighting is not needed or recommended. Whilst this may seem contradictory, it is important to not light spaces that may be remote or poorly surveyed and thus create false perceptions of safety. Reasons include:

- an area does not have sufficient natural (passive) surveillance looking into the space from houses or businesses facing the space or passing vehicular and pedestrian traffic
- an area/pathway leads to a dead end or otherwise unsafe area with little natural (passive) surveillance

New lighting should also only be considered if one or a combination of the following apply:

- there is a pedestrian path that provides a legitimate shortcut from an area of high activity
- new lighting will increase or maintain desired outdoor activity
- the site allows for passive surveillance
- in response to road safety issue.

Other considerations should include an assessment of whether:

- activity or traffic will be all night or only for a portion of the night (relevant control methods can be utilised if lighting is for part of the night)
- a new power supply connection will be required
- the area/location can support the required infrastructure

7. Determining the Site Type and Site-Specific Considerations

Once the need for public lighting has been established, the second step of the decision-making process should determine the site type and any site-specific considerations such as:

- the aim of lighting in the area: for example, aesthetic, to create atmosphere, for safety or to guide preferred usage patterns
- whether the area is a 'high risk' security or accident area, or vandalism risk area, based on evidence
- the type of users and usage function, as well as usage patterns for the area (e.g. recreation, commuter), as this may indicate particular lighting controls that can be applied

Table 3 provides guidance on how the guiding principles in Section 5.1 shall be applied to different lighting sites and applications.

Table 3: Lighting requirements for specific types of locations in Surf Coast Shire

Site/Application	Requirements	Controls[3] (e.g. dimming, switching, sensors)

Large/Regional/District Parks	• light only paths and thoroughfares through parks, not lawns
	• avoid lighting dead-ended paths, unless the path provides access to a facility within the park that is used during nighttime hours
	• lighting should only be considered for large parks under the following circumstances:
	  ○ if there is a thoroughfare for pedestrians/cyclists
	  ○ if it promotes or maintains appropriate nighttime physical activity (e.g. a running track or walking circuit)
	  ○ a public benefit or demand exists (e.g. for a dog park, running track or walking circuit)
		Use dimming and timers to turn lights off or down when usage levels drop off or no longer exist, or where activity is no longer desired after certain hours.
		Switch off/dim:
		11pm Sun-Thu
		1am Fri-Sat
		Switch on/brighten: 5am

[3] Where controls such as dimming or switching are implemented, consideration should be given to the need for public signage alerting the public to when lights will be turned off or dimmed.

Site/Application	Requirements	Controls[3] (e.g. dimming, switching, sensors)
Small/Local Parks	• in general, lighting should not be considered for local "pocket" parks • lighting should only be considered if there is a thoroughfare for pedestrians and/or cyclists to or from a destination such as activity centres, transit stops or community facilities	If lighting is installed, use dimming and timers to turn lights off or down when usage levels drop off or no longer exist, or where activity is no longer desired after certain hours. Switch off/dim: between 11pm and 1am Switch on/brighten: 5am
Nature or Bushland Reserves and Habitat Corridors[4]	• in general, lighting should not be considered for bushland reserves and habitat corridors due to negative impacts on local flora and fauna, unless exceptional, extenuating circumstances apply. • where lighting is installed, the following should be considered (in order of preference and depending on the purpose of the lighting): 1. lights with site-specific optics or baffles (to minimise light spill) and the use of dimming or switching after hours of use 2. use of a low CCT (at or below 3000K with preference for lighting with lower blue light content) 3. lighting mounted low to the ground e.g. bollards • the design solutions outlined in Section 7.1 to control light pollution should be considered when selecting luminaire and pole types	If lighting is installed, use dimming and timers to turn lights off or down when usage levels drop off or no longer exist, or where activity is no longer desired after certain hours. Switch off/dim: between 11pm and 1am Switch on/brighten: 5am

[4] See 14.1 Surf Coast Shire Nature Reserve Listing & Base Information for nature and bushland reserves

Site/Application	Requirements	Controls[3] (e.g. dimming, switching, sensors)

Threatened/critical species habitat areas[5]	• applicable to any known habitat areas for species on the Victorian Flora and Fauna Guarantee Act 1988 Threatened List or the EPBC Act List of Threatened Fauna.
	• in general, lighting should not be considered due to negative impacts on flora and fauna, unless exceptional, extenuating circumstances apply.
	• the design solutions outlined in Section 7.1 to control light pollution should be considered when selecting luminaire and pole types
	• where lighting is installed, it must (unless constrained by DNSP approvals, whereby it must get as close to as possible):
	  ○ not exceed 2700K
	  ○ contain little or no blue, violet and UV wavelength lighting
	  ○ have 0% UWLR
	  ○ be species-appropriate (refer to the National Light Pollution Guidelines for Wildlife)
		If lighting is installed, use dimming and timers to turn lights off or down when usage levels drop off or no longer exist, or where activity is no longer desired after certain hours.
		Switch off/dim: between 11pm and 1am
		Switch on/brighten: 5am

[5] Threatened/critical species habitat areas are not static and consultation with the environment team is required for new light installations to ensure the latest information on threatened and critical species habitats is obtained

Site/Application	Requirements	Controls[3] (e.g. dimming, switching, sensors)

Aireys Inlet Dark Sky Community	• Council will support AIDA in their application for Aireys Inlet to become a dark skies community as per the minimum requirements stated in the International Dark Sky Community Program (DSCP) Guidelines[6]
	• Specific guidance on some of the IDSCP requirements includes:
	• Section 1.B
	  ○ The CCT of lights must not exceed 3000K
	• Section 1.C and 1.D
	  ○ Lighting shall not exceed those listed in section 8.2 of these guidelines
	• Section 1.G.i
	  ○ Refer to sports lighting section in Table 4 in section 8.2 of these guidelines in place of DSCP requirement
	• Existing lighting will be replaced upon end of life with Dark Skies appropriate lighting (unless constrained by DNSP approvals)
		Smart cells can be installed in accordance with outcomes of section 11.4
		Dimming after 11pm
		Switching off may be considered

Recreation areas	• for basketball courts and skate parks lighting should not be installed unless used for organized competitive sporting activities • for BBQs, gazebos etc. lighting will only be considered where it is associated with an adjacent active recreation facility	If lighting is installed, timers must be used, with lighting to be switched off no later than 10 pm and dimmed over a short shoulder period (e.g. 15 min) to allow safe departure from the area.
Playgrounds	• lighting is not appropriate as playground activity is better suited to daylight hours	Not applicable as lighting is not considered appropriate in these spaces
Bus routes/stops	• additional lighting may be installed	Timers and/or dimmers linked to operating hours of public transport

[6] See chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://darksky.org/app/uploads/2018/07/IDSC-Guidelines-Jun2018.pdf

Site/Application	Requirements	Controls[3] (e.g. dimming, switching, sensors)
Shared Paths (off road)	• lighting may be installed on shared paths • generally, do not light paths in environmentally sensitive areas	Lights may be installed with timers and/or dimmers Switch off/dim: between 11pm and 1am Switch on/brighten: 5am
External building lighting	External building lighting may be considered if the building is adjacent to and/or within: 1. a Council car park (e.g. lighting on the building provides light for the car park) 2. a Council reserve (e.g. lighting on the building provides light for the reserve) 3. a Council footpath or shared path, including a path to a Council building (e.g. lighting on the building provides light for the path that leads to the building entry or lighting on the building provides light for shared path that runs adjacent to the building) 4. a Council public art project 5. an area of high vandalism Where a building is open at night, building access points may be lit. This includes public toilets with nighttime operating hours.	Controls to be applied depending on the nature of the adjacent public space (e.g. car park) as well as the hours of operation of the building Dim: 30min after lease period timing Switch off: 1 hour after lease period timing Switch on/brighten: 5am
Car parks	• lights may be installed where nighttime activity is present e.g. activity centres, sports facilities. • consideration should be given to lighting any pedestrian linkages to the facility/precinct that the car park services	Lights may be installed with timers set to the hours of operation of the associated site or building or dimmers set to the usage levels of the car park over the course of the night

Site/Application	Requirements	Controls[3] (e.g. dimming, switching, sensors)
Laneways	• lighting may be installed where the laneway provides a logical shortcut for pedestrians or if it is a key thoroughfare for pedestrians and/or cyclists • lighting should be avoided wherever there is poor passive surveillance • where lighting is installed, the design process should consider the need for light spill control (i.e. the use of glare shields/baffles) and/or site-specific optics • consideration should be given to space constraints such as the ability to install and protect infrastructure whilst maintaining a trafficable laneway, the ability to supply power to this infrastructure, operational and maintenance issues due to the infrastructure being located in the laneway and excessive light spill within the rear of properties that are adjacent to the laneway • if a suitable alternative pedestrian path exists that requires minimal additional travel time and distance, then pedestrians should be encouraged to walk on the existing footpath network where there is sufficient existing street lighting available	For metered connection points, dimming/switching is encouraged where usage patterns allow, or where activity is not desired after certain hours Switch off/dim: between 11pm and 1am Switch on/brighten: 5am
Retail centre or shopping strip lighting schemes – additional lighting to street lighting	• in general, lighting is not considered appropriate if unmetered street lighting already exists • additional lighting may be considered in some circumstances if the existing street lighting scheme is not deemed appropriate for the area • where place-making/urban renewal is planned for a retail centre, Council will explore options to remove existing unmetered street lighting and install metered lighting.	For metered connection points, dimming is encouraged where usage patterns allow, or where activity is not desired after certain hours. Switching off is not recommended for shopping strip lighting
Aesthetic lighting (e.g. uplighting/feature lighting, catenary lighting and lighting of signs, trees, buildings, monuments, art)	• lighting may be installed with timers based on a needs assessment	Timers are to be installed linked to operation hours of the associated site or building

Site/Application	Requirements	Controls[3] (e.g. dimming, switching, sensors)
Areas of high vandalism	• lighting may be installed, in accordance with the Crime Prevention through Environmental Design Guidelines	

Lighting in new or existing streetscapes	• street lighting, trees and other elements of a streetscape should be considered as part of the lighting design at the same time
	• where trees are already present, lighting should be located and designed to accommodate for minimal shading and minimal impact on tree roots and canopies
	• the design process should consider the following principles:
	  ○ the locations of street trees and light poles should be coordinated to minimise shadowing
	  ○ where street trees (new or existing) and poles are co-located, luminaires should be located below the canopy (if possible)
	  ○ where necessary, lighting may be placed nearer the centre of streets, out of reach of foliage
	  ○ supplementary lighting may be considered where street trees or verandahs would otherwise produce shadowing
		Relevant controls to minimise environmental impact (whilst balancing the need for safety and utilisation of urban spaces) needs to be integrated into the design process.
		Trimming and dimming times as per section 8.1

Sports lighting	• lighting may be installed where demand exists	Switching can be managed via the cloud/mobile network.

7.1 Control of Light Pollution

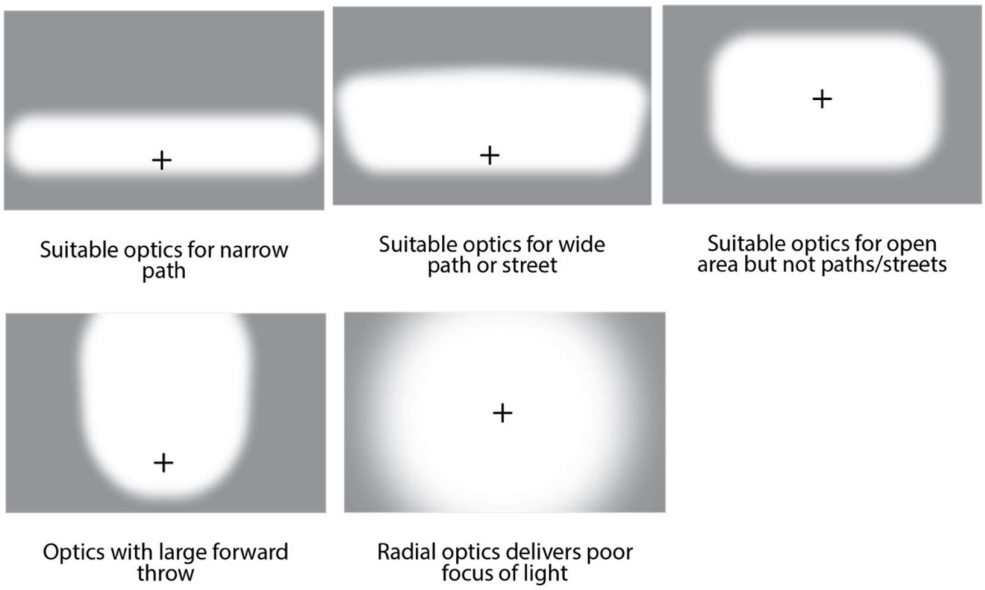
Light pollution must be controlled in the following ways in order of effectiveness:

1.	**Avoid lighting where it is not needed**	Lighting is not always a necessary component of the built environment. Consider whether night-time usage is desired and/or prioritise areas of environmental importance and apply restrictions to lighting.
2.	**Avoid over-lighting**	Do not over-light. Over lighting is a major cause of light pollution. Recommended lighting levels exist for most outdoor lighting applications. Consultation of relevant Standards should be carried out to ensure suitable lighting levels are applied.
3.	**Switch off or dim lights during periods when lighting is not required**	Most people use public space during the day and early evenings. Lighting should support positive evening use and all-night lighting should be provided only where required. Where switching lights off is deemed unreasonable, consideration of changes to usage patterns over time should be carried out, with opportunities to dim lighting levels applied wherever viable.
4.	**Reduce or eliminate light spill**	Wherever possible, direct light downwards, not upwards, to illuminate the target area.

Section 6 provides guidance on where lighting is not needed and how to apply dimming and switching when lighting is no longer needed during night time hours; Section 7 provides guidance on appropriate controls; Section 8 provides guidance on appropriate lighting levels; and Section 9 makes reference to the requirement that new lights should have a maximum upward waste light spill ratio of less than 1%.

This section provides guidance on acceptable solutions to further control light pollution. These solutions should be considered during the design process of any new lighting scheme and are of particular importance to any lighting schemes in or around areas of environmental importance such as nature or bushland reserves and habitat corridors.

Solution	Description	Examples	Limitations
Choose appropriate optics configurations	Luminaires with a range of optics configurations should be selected. LED technology provides the ability to direct lighting where it is needed via adjustments to the individual optics of each LED chip. This provides options during the design phase to reduce light spill beyond the area that needs to be illuminated. Each space will be unique so any number of optic configurations may need to be employed to minimise light spill.	• Most LED fixtures available today will offer a range of optics options. Examples of common optics configurations and their suitable applications are provided below.	• The majority of luminaires designed for unmetered street lighting applications do not offer variations in their optics configurations.



Suitable optics for narrow path

Suitable optics for wide path or street

Suitable optics for open area but not paths/streets

Optics with large forward throw

Radial optics delivers poor focus of light

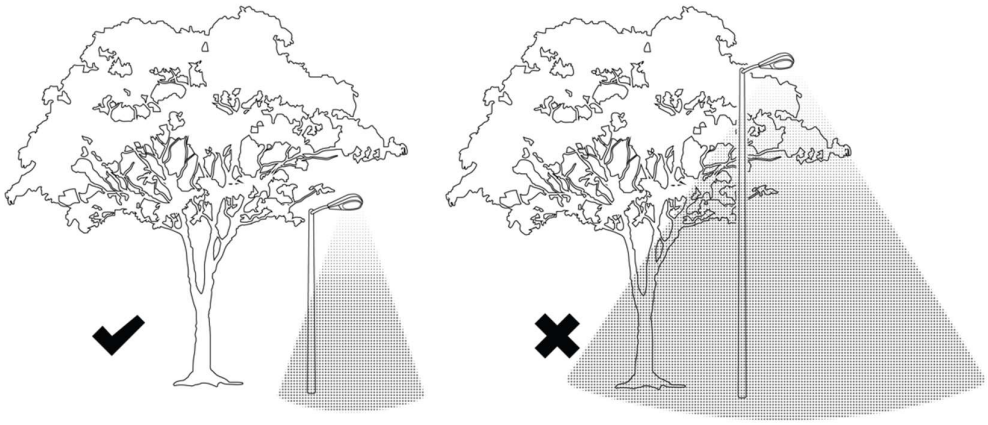
Solution	Description	Examples	Limitations
Employ the use of baffles, shields and louvres	Where unwanted light spill into areas is anticipated to occur despite the use of nuanced optics; shields, baffles and louvres should be used to further reduce light spill. Shields are particularly useful in reducing side-spill into native vegetation at bends in roads and paths.	• Optional attachments are available with numerous luminaires on the market • On Council controlled lights, the option exists to develop bespoke shields or apply paint if deemed necessary • Examples of baffles, shields and louvres are provided below	• A limited availability of baffles/shields/louvres are available on the Powercor network. • The impact of baffles/shields/louvres on compliance with AS/NZS 1158 needs to be considered. • Availability of baffles/ shields/louvres is supplier specific

Rear shield example

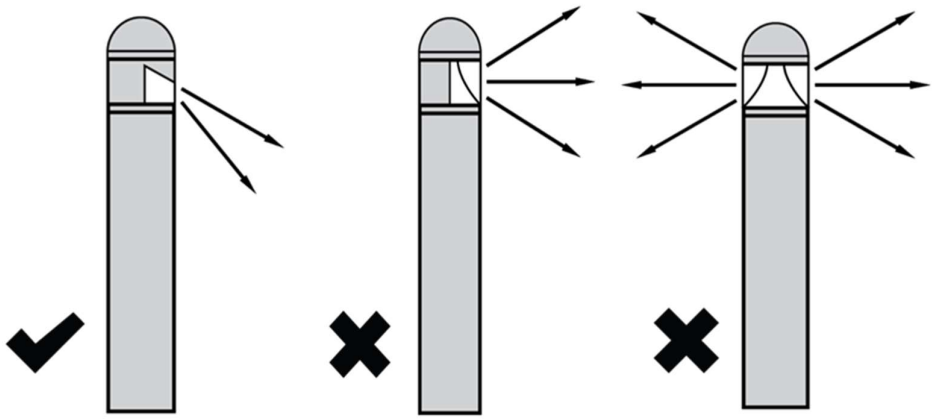
Front & rear shield example

Louvre example

Solution	Description	Examples	Limitations
Use lower luminaire mounting heights	During the design phase of a new lighting scheme, an emphasis should be placed on lowering mounting heights to a scale that minimizes the spill and scatter of artificial lighting into areas that do not need to be lit.	• Pole heights should allow for luminaires to be mounted at heights below tree canopies and fauna movement infrastructure. • Pole heights should allow for luminaires to be mounted at heights that allow surrounding barriers (buildings, trees etc) to block light spill into areas where it is not needed.	• High pole mounting heights paired with higher powered luminaires will typically result in less poles and luminaires being used and consequently lower energy and maintenance costs.



Solution	Description	Examples	Limitations
Consider low-output bollard or in-ground lighting	Where it is determined that there is a need for lighting but the environmental importance/impacts preclude the installation of typical lighting, but some form of delineation is still desired, then the use of in-ground path markers may be considered.	• Where bollard lighting is selected, no glare and no upwards light spill should exist and appropriate optics should be chosen that directs light on to design area with minimal back and/or forward spill. • Where in-ground path lighting is selected, 'cat eye' style lights shall be used to minimize the visibility of the lights from above.	• Whilst it is not possible for these lighting types to achieve compliance with Australian Standards (AS/NZS 1158) they are still able to provide a basic illumination of a pathway whilst minimizing light spill into areas of environmental importance.



Bollards with no upwards or backwards light spill and minimal forward spill should be used

"Cat eye" style ground-lights shall be used to minimize the visibility of the lights from above.

Configure pole location to direct light onto the design area	Minimise pole set-back: The setback of a light pole from the design area shall be kept to a minimum (but no less than 1.0m for bicycle paths). This will ensure less back spill and make the	• In most cases, it is desirable for the luminaire to 'overhang' into the area that is intended to be lit. This can be done by placing the pole within, or	• Pole set back must be considered in conjunction with the potential dangers of pole proximity to moving traffic

Solution	Description	Examples	Limitations
	shielding of back spill easier if it is required.	otherwise as close to, the design area as possible.	
	Increase outreach: Where the pole set-back is not able to be minimized due to the physical constraints of a site, longer bracket arms should be used to position the luminaires closer to/over the design area.	• Pole outreach arms can be used to extend the 'overhang' of a luminaire into the area that is intended to be lit.	• Torque created by longer outreach arms may limit the achievable overhang for certain poles.

8. Determining the Lighting Requirements

Once the need to light has been established and site-specific considerations assessed in accordance with Sections 6 and 7, the third step of the decision-making process should determine the required lighting category (light level).

8.1 Assigning Lighting Categories Using the Standard

A framework for selecting the appropriate lighting category for a given type of open space or road is provided in the Australian and New Zealand Standard Lighting for Roads and Public Spaces (AS/NZS 1158).

Figure 2.1 from AS/NZS 1158.1.1 (2022) summarises what categories may apply to different space types (copied as Figure 3 below). In most situations, the appropriate lighting category can be determined by application of the following process:

1. Define the function and how busy the road/space is via consultation with relevant Council staff
2. Match the definition of the road/space with the guidance provided by:
    1. the Australian Standard (AS/NZS 1158 series)
    2. lighting schemes in similar roads/spaces in other local government areas
3. Assign the most appropriate lighting subcategory to the road/space

Under certain circumstances a lighting category that differs to that determined by application of AS/NZS 1158 may be appropriate. These exceptions are outlined in Section 8.2.

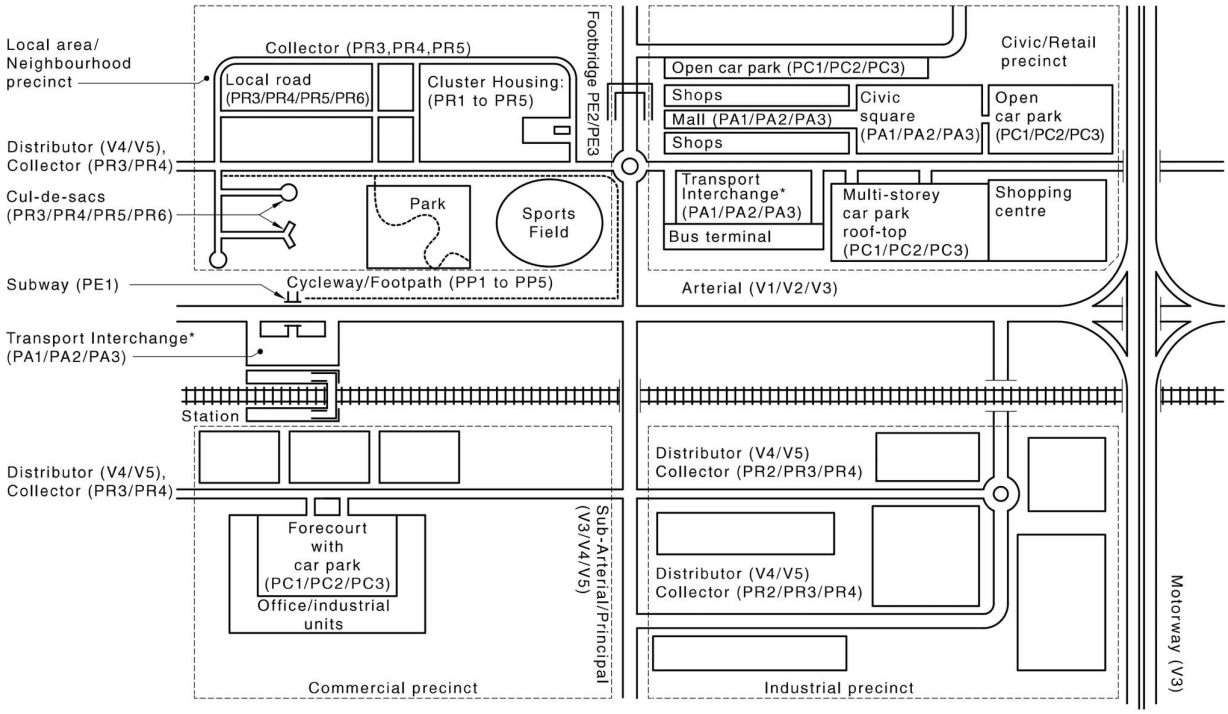


Figure 3: Figure 2.1 from AS/NZS 1158.1.1 2022

8.2 Recommended Lighting Categories for Specific Site Types

In order to provide additional guidance to that provided in the Australian Standards, examples of best practice lighting levels for common site types in Surf Coast Shire are presented in Table 4.

Table 4: Site-specific lighting category requirements

Site/Application	Desirable Minimum Lighting Category	Additional Information
Lower order roads (collector)	Light to PR3	Dim to PR5 after 11pm (where smart controls installed)
Middle order roads	Light to V5	Dim to PR3 after 11pm (where smart controls installed)
Major Roads (inc. those cost shared lighting with DTP)	Light to V3	Non cost-shared roads: dim to V5 after 11pm (where smart controls installed)
Local streets and roads	Where lighting is installed on electricity distribution poles, light to PR6 Where lighting is installed in new estates on URD poles, light to minimum PR5	Switching may be considered in certain environmentally sensitive locations or along migratory bird paths during migrating periods (where smart controls installed). Timing of switching will be determined on a site-by-site basis.
Pedestrian crossing (non-flashing lights)	Light to V3 (7.5 lux) across all road categories Where a high level of traffic and pedestrian volume ae present, compliance with AS1158.4 must be considered	No dimming
Rural roads	Flag lighting only	No dimming unless in response to light spill
Main rural roads	Flag lighting only	No dimming unless in response to light spill
Sport lighting	Refer to relevant peak sporting body guidelines and/or Australian Standards for relevant sports.	To avoid environmental spill, sports clubs need to comply with AS4282 Obtrusive Lighting Code
Safe Pedestrian and Bicycle Crossings	Light to at least traffic management device standards (3.5 lux) in pedestrian category areas	
Shared paths	Light from PP3 to PP5	

Site/Application	Desirable Minimum Lighting Category	Additional Information
Car park lighting	Refer to standards Disable car parking bays must be lit to PCD	Switch off 1 hour after last use of linked facility (where smart controls installed)

9. Determining the Luminaire and Pole Type

Once the need for lighting, as well as any site-specific requirements and the lighting category have been established in accordance with Sections 6, 7 and 8, the fourth step of the decision-making process should determine the luminaire and pole type.

The number of poles should be rationalised and kept to a minimum (e.g. sharing poles with other function i.e. power lines, signage etc.) to eliminate clutter as well as allowing variation for key sites.

9.1 Requirements for Unmetered Public Lighting Assets

Unmetered lighting installations must meet the requirements outlined in Table 5.

Table 5: Requirements for unmetered assets

Feature	Requirement
Luminaires	
Powercor approval	Must be approved as a standard fitting by Powercor DNSP-approved non-standard "decorative" fittings are not permitted
CCT	Preferred value for Category V or where speed limit is >= 80km/h should be: 4000K nominal (3985±275) Preferred value for pedestrian crossings should be: 4000K nominal (3985±275) Preferred value for Category P or where speed limit is <80km/h should be: 3000K nominal (3045±175) Where nominal 3000K is used, the scotopic/photopic (S/P) ratio of the luminaire must be ≥1. In general, nominal 4000K luminaires should be used where there are higher levels of vehicular traffic or pedestrian activity where visual discrimination is needed (i.e. where road safety concerns are dominant). Nominal 3000K luminaires should be used in areas of special environmental consideration (such as Dark Skies reserves) or high pedestrian use, preferably where vehicular movements and speeds have been managed to mitigate the potential conflicts between cars/trucks and pedestrians/cyclists. Lower CCTs (i.e. <3000K) may be considered in areas of particular environmental significance on a case-by-case basis. Use of lower CCTs lower than 4000K will be subject to approval by Powercor.
Technology	Must be LED
"Smart City" compatibility	Must include a 7-pin NEMA base wired as per the requirements of ANSI C136.41-2013 to a variable output DALI 2.0 control gear (for dimming/brightening). Category V luminaires must also include a Powercor-approved smart node (or "street light controller"). Smart nodes may be required on Category P luminaires on a case-by-case basis (e.g. where dimming or switching is desirable).
Entry type	Must be side entry
Energy efficiency	Must have a minimum luminaire efficacy rating (LER) of 120 lumens per watt
Poles	
Mounting height	Must have a mounting height of not less than 5.5m

Feature	Requirement
Luminaires	
Surface finish	Must be uncoated galvanised steel
Entry type	Must be side entry
Powercor approval	Must be approved as a standard pole by Powercor Powercor approved non-standard or "decorative" poles are not permitted

9.2 Requirements for Public Space, Car Park and Pathway Lighting Assets

Public space, car park and pathway lighting installations must meet the requirements outlined in Table 6. Note this excludes sports lighting (refer to Section 9.3).

Table 6: Requirements for metered assets

Feature	Recommended requirement
Luminaires	
Design	Luminaire design is to be considered on a per-site basis. Luminaire choice should endeavour to promote consistency of style across the municipality as well as use universal styles/models that are likely to be supported by suppliers long term.
Surface finish	A galvanised finish or black colour paint is required. If a paint finish is used, then this must be matte black and must use a durable method of coating (e.g. a heavy-duty zinc protective powder coating)
Protection against dust/water ingress and mechanical impact	Must have minimum IP65 (ingress) and IK06 (mechanical impact) ratings
Energy efficiency	Must have minimum LER of 120 lm/w
Upward Waste Light Ratio (UWLR)	Must have maximum UWLR of less than 1% **Note**: Any site-specific requirements outlined in Section 7 take precedence over these general requirements.
Minimisation of glare	Must comply with glare requirements of AS/NZS 1158
CCT	Preference is for 3000K nominal (3045±175) (must not exceed 3000K unless for pedestrian crossings where the preferred value is 4000K (3985±275)) The scotopic/photopic (S/P) ratio of the luminaire must be ≥1. Lower CCTs (i.e. <3000K) may be considered in areas of particular environmental significance on a case-by-case basis. **Note**: Any site-specific requirements outlined in Section 7 take precedence over these general requirements.
Technology	Must be LED
Colour rendering index (CRI)	Must have minimum CRI = 70 A minimum CRI of 80 is encouraged in areas where improving perceptions of safety is a priority.
Entry type	Must be side entry
Surge protection	Must include Surge Protection Device rated to minimum In = 5kA (Imax = 10kA)
Glare shielding options available	The luminaire shall have optional glare shielding accessories.
Compliance with relevant standards	Must comply with requirements of SA/SNZ TS 1158.6

Feature	Recommended requirement
"Smart City" compatibility	Must include: • a 7-pin NEMA receptacle wired as per the requirements of ANSI C136.41-2013 to a variable output DALI 2.0 control gear (for dimming/brightening); and • a Zhaga Book 18 Edition 2.0 receptacle (bottom-mounted, supplied with sealing cap); and • a DiiA D4i compliant power supply (with auxiliary power supply for connected devices of 24V DC 4W maximum) **Note:** Central time clocks and/or PE cells are not permitted moving forward due to their inability to supply 24-hour power to smart lighting assets.
Smart Nodes (Light Point Controllers) – if applicable	Must include GPS technology and be compatible with 7-pin NEMA base
Design life	Must have minimum design life of 20 years
Poles	
Design	Pole design should be contemporary, with clean, minimalist lines and no decorative detailing.
Surface finish	A galvanised finish or black colour paint is required If a paint finish is used, then this must be matte black and must use a durable method of coating (e.g. a heavy-duty zinc protective powder coating)
Compliance with relevant standards	Must comply with AS 4100
Entry type	Must be side entry
Mounting height	Luminaire mounting height of any pole should be of an appropriate scale for the space it is in, with a minimum height of 5.5m unless existing tree canopies dictate a lower mounting height.
Offset from pathways	Where the purpose of lighting is to illuminate a pathway, the minimum offset of the pole from the pathway shall be 0.5m for pedestrian paths and 1.0m for bike paths.
Design life	Must have minimum design life of 35 years

9.3 Requirements for Sports Lighting Assets

Sport lighting installations must meet the requirements outlined in Table 7.

Table 7: Requirements for sports lighting assets

Feature	Recommended requirement
Luminaires	
Design	N/A
Surface finish	A galvanised finish is required for minimal maintenance
Protection against dust/water ingress and mechanical impact	Must have minimum IP65 (ingress) and IK06 (mechanical impact) ratings

Feature	Recommended requirement
Technology	Must be LED
Energy efficiency	Must have minimum LER of 120 lm/w
Upward Waste Light Ratio (UWLR)	Must be Type C or D (shoebox) as per the design guidelines of AS 4282
Minimisation of glare	
CCT	Must be nominal 4000K (3985±275)
Colour rendering index (CRI)	Must comply with AS 2560
Compliance with relevant standards	Must comply with requirements of IEC 60598-2-5 Particular requirements - Floodlights
"Smart City" compatibility	Due to possible compatibility constraints with incorporating sports lighting into a broader smart lighting system, a sports lighting system should meet the following base level requirements: • Curfew timer • Multi-phase switching to allow appropriate light levels for the level of play Where feasible, a cloud base switching system should be used to allow key users to switch on lights without physical access to the switchboard.
Design life	Must have minimum design life of 20 years
Poles	
Design	Pole design should be contemporary, with clean, minimalist lines and no decorative detailing
Surface finish	A galvanised finish is required
Compliance with relevant standards	Must comply with AS 4100
Mounting height	Consideration should be given to the surrounding space to minimise the obtrusive effects of unwanted light spill
Design life	Must have minimum design life of 35 years

9.4 Solar Lighting

The installation of solar lighting may be considered in circumstances where:

- connection to the grid is not considered viable
- tree roots systems or terrain constrains the implementation of deep trenching
- whole of life cost benefits exist compared to grid connected system

In circumstances where solar lighting is deemed appropriate, reputable, long-standing suppliers must be used to ensure quality of product and ongoing support for spare parts and trouble shooting. Solar lighting must also comply with the relevant requirements outlined in Sections 9.1 to 9.3.

9.5 Bollard Lighting

Generally, bollard lighting is not to be considered due to its susceptibility to vandalism and constraints in achieving compliance with Australian Standards (AS 1158.3). The installation of bollard lighting will only be considered on pathways where light spill risk is of major concern and the low mounting height of bollards is able to mitigate this risk. Bollard lighting will not be considered for roadways.

9.6 In-ground Path Lighting

In-ground path lighting is generally not permitted due to its susceptibility to water ingress, short lifespan and in-ability in achieving compliance with Australian Standards (AS 1158.3). The installation of in-ground path lighting will only be considered on off-road shared paths where lighting must be installed, and the area is of environmental importance.

10. Approval Process for New Public Lighting

Public lighting in Surf Coast Shire is generally owned and managed by Council and/or the Distribution Network Service Provider (DNSP) that operates in the municipality – Powercor. There are two different management structures for the approval of new public lighting, which are discussed in Sections 10.1 and 10.2.

Council may also consider aesthetic or feature lighting under special circumstances. The approval and management of such lighting is discussed in Section 10.3.

10.1 Unmetered Lighting

Most street lighting in Surf Coast Shire is standard unmetered lighting. Unmetered standard lighting is owned and managed by Powercor and Council pays a service charge to Powercor to maintain the light and pole over its life.

Figure 4 describes the process whereby Council has oversight of the design/preparation phase and Powercor has control of the installation, commissioning and ongoing management of the asset.

The Checklists referenced in Figure 4 are found in Section 13.

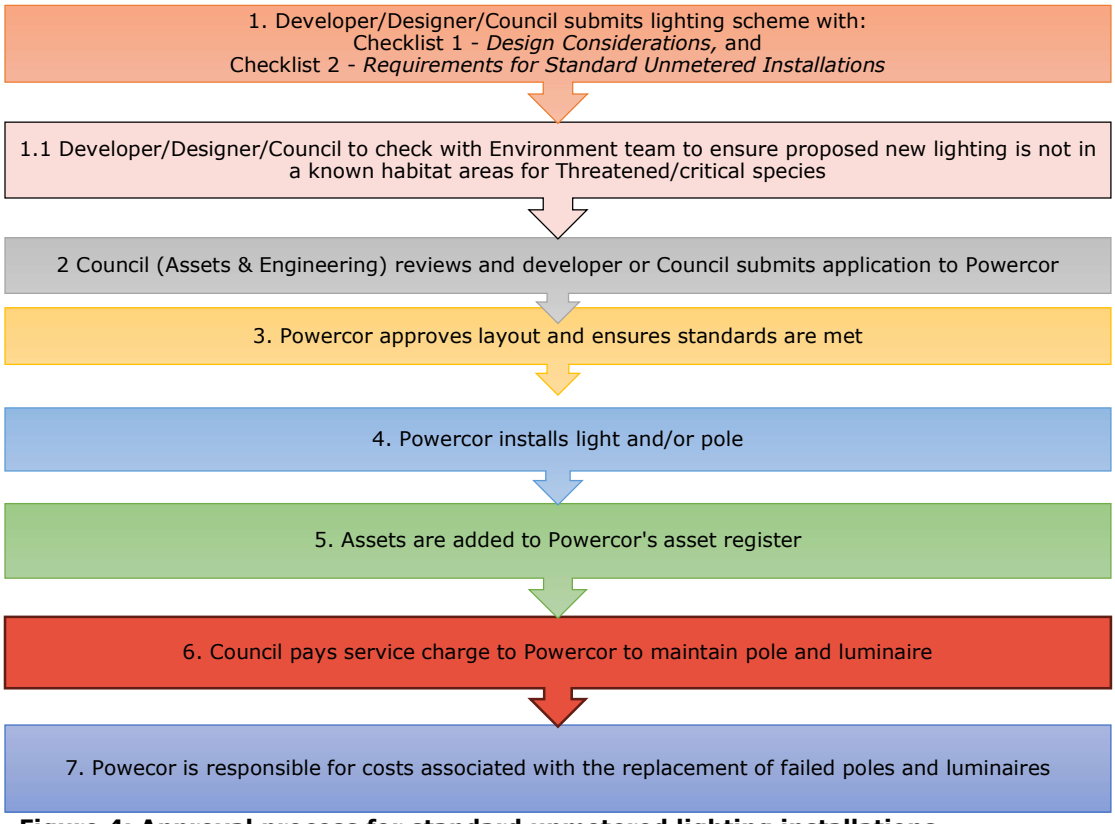


Figure 4: Approval process for standard unmetered lighting installations

10.2 Metered Lighting

Metered lighting is owned and managed by Council. Commonly sports facilities, car parks and open space reserves are connected to a meter to measure energy taken from the electricity network. These lights can have their own meter or be connected to a building, BBQ or other electrical load (which has its own meter).

Figure 5 describes the process whereby Council has oversight of the design/preparation phase as well as the installation, commissioning and ongoing management of the asset.

The Checklists referenced in Figure 5 are found in Section 13.

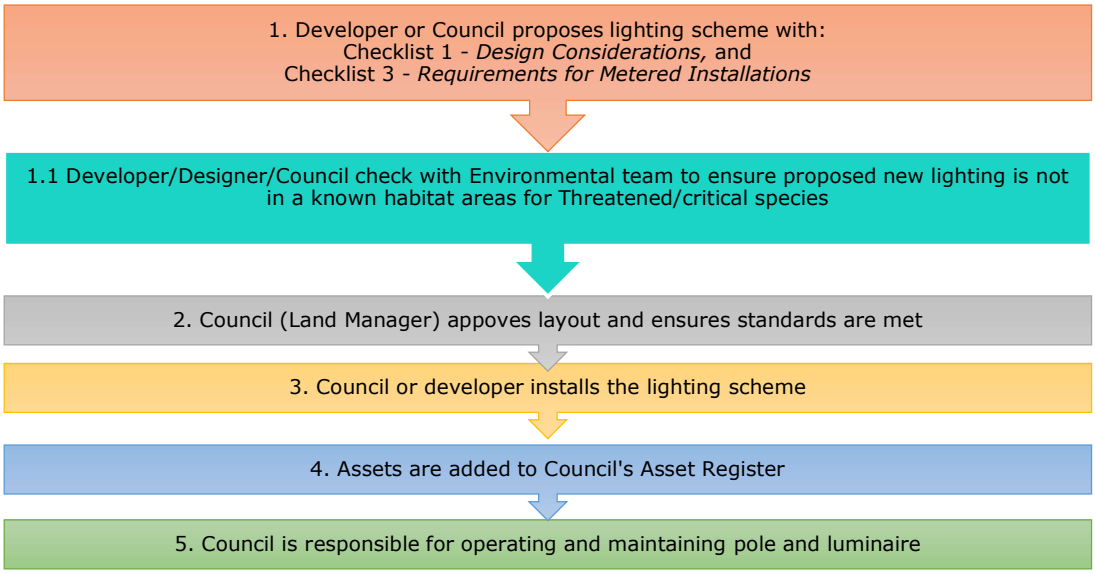


Figure 5: Approval process for metered lighting installations

10.3 Aesthetic Lighting

Council may consider the approval of aesthetic lighting. Aesthetic lighting is typically metered and is not installed for the purposes of maintaining functional lighting levels in an area. Examples of aesthetic lighting may include uplighting, feature lighting, façade lighting and bud lighting.

Where aesthetic lighting is public (i.e. proposed by Council), it may be considered where the installation:

- is not located within an area of environmental significance/sensitivity
- contributes to place making
- highlights prominent public artwork (e.g. wall murals)
- assists with reducing vandalism and/or increasing public safety

All aesthetic lighting needs to be balanced against potential maintenance issues of Council assets. Tree bud lighting for example may be damaged by tree-pruning processes or cause damage to the tree via strangulation.

Where aesthetic lighting is private (i.e. proposed by a private entity but to be installed in the public realm), it may be considered and approved by Council where the installation:

- is not being installed on public assets where maintenance of that asset might be affected (i.e. trees)
- is temporary and can easily be removed
- does not impact negatively on existing functional lighting
- contributes to place making
- is to be installed, operated, maintained and removed by the person/body making the request
- does not require the installation of any permanent supporting infrastructure
- does not cause any safety issues
- does not cause light pollution in sensitive environmental areas.

10.4 Updating Asset Registers

10.4.1 Unmetered Lighting

For unmetered street lighting assets, Powercor maintains an asset register that includes a range of information such as location, lamp wattage, lamp type, pole ID and commission date.

Council is provided with access to an online portal through which it can download up to date asset registers at any time. Data is accessed on an as needs basis to ensure only the latest data is used.

When new lighting is installed or existing lighting is upgraded, Powercor will arrange for the assets register to be updated.

10.4.2 Metered Lighting

For metered assets, Council maintains an asset register of its public lighting. This includes the following pieces of data:

- Luminaire type and manufacturer
- Luminaire colour
- Luminaire condition rating
- Lamp type
- Lamp wattage
- Pole type and manufacturer
- Pole material
- Pole condition rating
- Pole base type
- Pole base condition rating
- Pole base faults
- Overview photo
- Location (GPS co-ordinates)
- Mounting Height
- Switching (PE cell, timer etc)
- Timer settings
- ID number
- Site Name

In order to maintain an up to date asset register, all new or recently upgraded lighting assets are entered into the asset register using the following procedure:

- Council's Project Manager will at the commencement of works have Asset IDs created for all new lighting assets to ensure a Work Order can be created for the works.
- Upon the completion of the works the Project Manager will obtain and record all relevant design and as-built documentation and save in TRIM. After the documentation and completion is endorsed the Project Manager will complete an asset handover that will document all key asset information and finance data for the project and assets.
- Completed asset handover form will be sent to the Asset Management Department for processing and updating of the asset system.
- Cyclic asset condition audits will furthermore be captured within the asset system by the Asset Management Department.

11. Complaints/Requests Procedures

The following procedures will be applied to the assessment of complaints and/or requests received by Council in relation to public lighting.

All complaints and/or requests received by Council in relation to public lighting need to be considered in conjunction with Council's Complaints Handling Procedure.

11.1 Requests for New Lighting (Existing Lighting)

Where Council receives requests for the installation of additional lighting in areas where lighting already exists, the request will be assessed using the following process:

1. Undertake initial site inspections to determine number and type of lighting assets within the area. If the initial inspection determines there are insufficient lighting assets in the area move on to step two.
2. On-site light level analysis utilising a high-quality light meter to determine the existing levels of lighting.
3. Comparison of existing lighting levels against the requirements of the relevant Australian Standard for lighting in the given location.
4. Report developed detailing the outcomes of the analysis including advice on whether additional lighting is or is not merited.
5. If lighting is merited, conduct community consultation in line with the requirements within Council's Community Engagement policy and Capital Works Engagement policy to provide residents a platform to voice their opinion

Based on this analysis, a final decision will be made as to the merits of the request.

11.2 Requests for New Lighting (No Existing Lighting)

Where Council receives requests for the installation of lighting in locations where there is currently no lighting (sports, open space or unmetered), such requests will be assessed on a case-by-case basis.

Assessment of requests will consider (but are not limited to) the existence of a legitimate need for lighting and the viability of installing lighting from a cost and infrastructure perspective (refer to Sections 6 and 7) and the outcomes of further community consultation.

Where a genuine need is identified and provision of lighting is considered viable, lighting will be provided in accordance with these Guidelines (refer to Sections 7 to 9).

11.3 Requests for Removal of Lighting

Where Council receives requests for the removal of existing lighting, such requests will be assessed on a case-by-case basis.

Assessment of requests will consider (but are not limited to) the legitimate need for lighting (refer to Sections 6 and 7).

Consideration will be given to the level of community support for the removal of a lighting scheme.

Generally, it will be on those making the request to fund the removal or relocation of the lighting if the request is supported by Council.

11.4 Requests for Lighting Treatments by Community User and Special Interest Groups.

Where Council receives requests for lighting treatments by community user or special interest groups (e.g. Dark Skies accreditation). The request will be assessed using the following process:

- Council to determine whether the request is worth exploring. If yes;
- Council to support a feasibility study funded by those requesting the change which would consider:
    - Ecological impacts
    - Financial impacts
    - Public safety
    - Amenity
    - Economic activity
- Based on the feasibility study, Council will make a final decision whether to support the project.

11.5 Complaints About Over-Lighting or Light Spill

Where Council receives complaints about over lighting or light spill into properties or environmental areas from existing lighting, the request will be assessed using the following process:

- on-site analysis utilising a high-quality light meter to determine the existing levels of lighting on the window of a habitable room in a dwelling
- a comparison of existing lighting levels against the requirements of the AS 4282 Control of the Obtrusive Effects of Outdoor Lighting
- detailing the outcomes of the analysis including advice on whether light spill control is or is not merited

Based on the above analysis a final decision will be made as to the merits of the complaint. Should a complaint be deemed invalid, Council will take no proactive action and suggest property specific treatments to the resident at the land owners costs (eg: recommending a new window treatment such as block out blinds). Should a complaint be deemed valid, the issue may be resolved in several ways including those listed below:

- property specific treatments (eg: recommending a new window treatment such as block out blinds)
- installing shielding on or within the luminaire
- installing a different luminaire (lower output or more directional photometrics)
- dimming the luminaire using smart lighting technology

11.6 Complaints About Shading of Lighting by Trees

Where Council receives complaints about shading of lighting by trees, the complaint will be assessed using the following process:

- On-site analysis utilising a high-quality light meter to determine the existing levels of lighting 40 metres on either side of the tree

- Comparison of existing lighting levels against the requirements of the AS/NZS 1158
- Report development detailing the outcomes of the analysis including advice on whether tree pruning or tree/light relocation should be investigated further. Priority will be placed on modifying existing lights or installing new lights before tree pruning is considered.

12. Maintenance Procedures

12.1 Unmetered Assets

Unmetered public lighting assets in Surf Coast are maintained and repaired by Powercor. This is covered by an annual operation, maintenance and replacement (OMR) cost charged to Council by the DNSP.

Different unmetered asset types fall under different processes for maintenance and repair. The most notable difference is that Council is required to source, pay for and supply replacement non-standard street lights and poles whereas the DNSP's OMR costs cover replacement standard street lights and poles.

Council will procure new decorative (non-standard) poles and luminaires once Powercor has informed Council of a failure.

Table 8: Overview of repair and maintenance processes for unmetered asset types

	Minor Road Light (P-Category)	Major Road Light (V-Category)
Standard	• Faults are identified passively via reports from the public or Council • Faulty lamps or PE cells are replaced under OMR costs • Replacement luminaires and poles (due to fault or end-of-life) are replaced under OMR costs • Lamps and PE cells upgraded at pre-defined cycles	• Faults are identified proactively via regular nighttime patrols • Faulty lamps or PE cells are replaced under OMR costs • Replacement luminaires and poles (due to fault or end-of-life) are replaced under OMR costs • Lamps and PE cells are replaced only on failure.
Non-Standard	• Faults are identified passively via reports from the public or Council • Faulty lamps or PE cells are replaced under OMR costs • Replacement luminaires and poles must be paid for and supplied by Council with the street lighting reserve fund • Lamps and PE cells upgraded at pre-defined cycles	• Faults are identified proactively via regular nighttime patrols • Faulty lamps or PE cells are replaced under OMR costs • Replacement luminaires and poles must be paid for and supplied by Council with the street lighting reserve fund • Lamps and PE cells are replaced only on failure.

12.2 Metered Assets

Metered public lighting assets in Surf Coast Shire are maintained and repaired by Council. This includes the following maintenance and asset management activities:

- Regular (every 12 to 24 months) audits to test for the operation and condition of sports lighting assets followed by repairs to fix any assets that are not working.
- Regular (every 12 months) testing and adjustments of sports lighting timeclocks (where installed)

- Regular (every 3 years) audits to assess the condition of lighting assets in order to identify structural faults (rust, pole lean etc.). Condition audits will also occur in response to resident complaints.
- Recording of all maintenance and repair work carried out in order to identify assets/sites with reoccurring issues and thus better inform asset renewal.
- The upkeep of an asset register to record the location, characteristics, condition and maintenance history of each metered public lighting asset
- Where lighting is located on non-council assets (e.g. telecommunication towers), the maintenance practises and access arrangements of the asset owner will be followed.

13. Checklists and Specific Requirements for New Public Lighting

Council will support lighting installations that meet these Guidelines.

When proposing a new public lighting scheme in Surf Coast Shire, please submit the relevant checklists as specified in Table 9.

Table 9: Summary of checklists required for submission with lighting proposals

Installation Type	Requirement
Unmetered installation	Submit checklist 1 and 2
Metered installation	Submit checklist 1 and 3

13.1 Checklist 1 – General Design Considerations

All new public lighting installations must address the following general design requirements.

Applicant Name	
Site Name	
Site Details (intended use of site)	

Attachments	
	Has a lighting plan been submitted?
	Have "as built" drawings including details of make and model numbers of luminaires been submitted (to be submitted upon completion of project)?

All new lighting installations in Surf Coast Shire must address the following requirements:

	Needs assessment, site-specific requirements and lighting category selection
	Is there a need for lighting according to the AS/NZS 1158 and Section 6 of Surf Coast Shire's Public Lighting Guidelines 2024?
	Has the Environment team been consulted on the latest threatened/critical species habitat areas
	Does the lighting scheme meet any site-specific requirements outlined in Sections 7 and 9 of Surf Coast Shire's Public Lighting Guidelines 2024 (including application of controls)?
	Has the design used the correct lighting category (i.e. not lighting above the necessary level required for a particular area) as per AS/NZS 1158 and Section 8 of Surf Coast Shire's Public Lighting Guidelines?
	Has a gender lens been applied to assess how the lighting design may affect different user groups (including gender, age, disability, and cultural background), with consideration of safety, accessibility, and equitable use of public space?
	Life cycle considerations
	Can the proposed materials (luminaires and poles) be recycled or reused at end of life?
Additional Information	
If the proposed lighting scheme is not aligned with these Guidelines, then an application needs to be made to Council identifying a clear need for the variation. Where applications do not follow the requirements set out in these guidelines, applicants may be required to provide: • itemised estimate of annual energy consumption arising from the project • itemised estimate of annual maintenance costs arising from the project	

Comments

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Department Approval **Yes / No**

Signed

Date

Project Manager Approval **Yes / No**

Signed

Date

13.2 Checklist 2 – Requirements for Standard Unmetered Installations

All new standard unmetered installations must address the following requirements.

Pole design		**Luminaire requirements**	
☐	**Is the mounting height for bracket installation no less than 5.5m above ground level?** *Increasing the pole heights, increases pole spacing (particularly when road reserve widths are over 18m). Light numbers can be reduced resulting in reduced maintenance costs, energy costs and greenhouse emissions.* *Light spill into areas outside road reserves is undesirable and needs to be evaluated in areas that are sensitive to this, including narrow road reserves or laneways and areas of ecological significance*	☐	**Has colour temperature choice been considered from an aesthetic, road safety and environmental perspective**
☐	**Is the pole side entry?**	☐	**Are the PE cell bases compatible with 7-PIN NEMA PE Cells and are drivers Dali 2.0?** *This ensures future proofing for use of smart lighting controls.*
☐	**Is the pole approved as standard by Powercor?**		
Pole coating systems			
☐	**Is the pole uncoated galvanised steel?**	☐	**Do Category V lights include Powercor approved smart nodes?**
		☐	**Are the luminaires approved as standard fittings by Powercor?**

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Date

Project Manager Approval **Yes / No**

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Date

13.2.1 Checklist 3 – Requirements for Public Space, Car Park and Pathway Lighting Installations

All new metered installations must meet the following requirements. Refer to section 4 to determine department responsibilities.

<table>
<tr><th colspan="2">Pole design</th><th colspan="2">Luminaire requirements</th></tr>
<tr><td rowspan="4">☐</td><td rowspan="4">Is the mounting height for brackets at least 5.5m and in keeping with the surrounding environment?

Consider existing and future tree canopies, building awnings and existing lighting infrastructure and lower mounting height where appropriate.

Increasing the pole height increases pole spacing and thus reduce the required pole and luminaire quantities. This needs to be balanced, however, with the features of the surrounding environment.

Light spill into areas outside the design area is undesirable and needs to be evaluated in areas that are sensitive to this, including narrow road reserves or laneways and areas of ecological significance</td><td>☐</td><td>Does the luminaire comply with the requirements of SA/SNZ TS 1158.6?</td></tr>
<tr><td>☐</td><td>Is the luminaire side entry?</td></tr>
<tr><td>☐</td><td>Does the luminaire have a minimum IK06 rating and minimum IP65 rating?</td></tr>
<tr><td>☐</td><td>Does the luminaire have an upwards light spill ratio of no greater than 1%?</td></tr>
<tr><td>☐</td><td>If the pole is adjacent to a pathway, is it offset from the pathway by a minimum of 0.5m?</td><td>☐</td><td>Has colour temperature choice been considered from an aesthetic and environmental perspective?

Prefer colour temperature is 3000K with lower CCT being considered for environmentally sensitive areas and 4000K for pedestrian crossings</td></tr>
<tr><td>☐</td><td>Does the pole allow compatibility for a side entry installation for the light fitting?

Side entry poles allow for a wider range of light fittings (luminaires) including fitting standard energy efficient LED luminaires in the future should a move away from non-standard fittings be desired.

Modular poles with removable outreach arms can allow refitting of a top entry arm to allow side entry lights.</td><td>☐</td><td>Does the luminaire feature:
• a 7-pin NEMA base wired as per the requirements of ANSI C136.41-2013 to a variable output control gear?
• a Zhaga Book 18 Edition 2.0 receptacle (bottom-mounted, supplied with sealing cap);
• a DiiA D4i compliant power supply (with auxiliary power supply for connected devices of 24V DC 4W maximum)</td></tr>
<tr><td>☐</td><td>Is the pole compliant with AS4100?</td><td></td><td>Does the luminaire have a colour rendering index (CRI) of not less than 70?</td></tr>
</table>

			A minimum CRI of 80 is encouraged in areas where improving perceptions of safety is a priority.
☐	Does the pole have a minimum 35-year design life?	☐	Does the luminaire comply with glare limits specified in AS/NZS 1158?
☐	If the pole is adjacent to a pathway, is it offset from the pathway by a minimum of 0.5m?	☐	Does the luminaire include Surge Protection Device rated to minimum In = 5kA (Imax = 10kA)
☐	Does the pole allow compatibility for a side entry installation for the light fitting? Side entry poles allow for a wider range of light fittings (luminaires) including fitting standard energy efficient LED luminaires in the future should a move away from non-standard fittings be desired. Modular poles with removable outreach arms can allow refitting of a top entry arm to allow side entry lights.	☐	Does the luminaire include a smart node with GPS?
Pole coating systems			
☐	Is the pole galvanised or painted matte black using a durable method of coating?		

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13.3 Checklist 4 – Requirements for Sports Lighting Installations

All new metered installations must meet the following requirements. Refer to section 4 to determine department responsibilities.

Pole design		**Luminaire requirements**	
☐	Does the pole comply with AS4100?	☐	Does the luminaire have a galvanised finish?
☐	Does the pole have a minimum 35-year design life?	☐	Does the luminaire have a minimum IK06 rating and minimum IP65 rating?
Pole coating systems			
☐	Does the pole have a galvanised finish?	☐	Does the luminaire have a minimum LER of 120 lm/W?
Switching requirements			
☐	Does the system have a curfew timer?	☐	Is the luminaire 4000K?
☐	Does the system allow for multi-phase switching to allow for different levels of play?	☐	Does the CRI of the luminaire comply with AS 2560?
☐	Can switching can be managed via the cloud/mobile network?	☐	Does the luminaire comply with requirements of IEC 60598-2-5 Particular requirements – Floodlights?
		☐	Does the luminaire have a minimum 20-year design life?
		☐	Is the luminaire type C or D as per the design guidelines of AS4282?
Internal Use Only **Department Approval** **Yes / No** Signed Date **Project Manager Approval** **Yes / No** Signed Date			

14. Appendix 1: Maps/Sites

14.1 Surf Coast Shire Nature Reserve Listing & Base Information

Parcel (Ha)	Public use/pressure	EVC no.	EVC	Bioregional Conservation Status	Habitat Ha Score	Known listed Flora species or community	Known listed fauna	Threat	Size and edge effect	Ranking
Spring Creek Nature Reserve (14)	High	858	Coastal alkaline scrub	Endangered	38	Coastal Moonah Woodland Bellarine Yellow Gum				A
		175	Grassy Woodland	Endangered	36	Bellarine Yellow Gum				
Bells Beach Surfing Recreation Reserve		21	Shrubby Dry Forest	Least Concern	75	Glenelg Pomaderris				A
(17.1, SCS freehold portion)		858	Coastal Alkaline Scrub	Endangered	82	Coastal Moonah Woodland				
Grasstree Park Nature Reserve (25.7)	High	478	Heathy Woodland/Damp Heathland Mosaic	Not assigned	Up to 59					A
Mellors Swamp Nature Reserve (5.9)	Low		Estuarine Wetland	Endangered	79	Estuarine Wetland	Swamp Antechinus Great Egret			A

							Broad-toothed Rat			
			Brackish Sedgeland	Vulnerable	79					
			Estuarine Flats Grassland	Very High?	79					
			Coastal Saltmarsh	Endangered	79					
Moonah Woodlands Nature Reserve (12.7)	Low	858	Coastal Alkaline Scrub	Endangered	Up to 59	Coastal Moonah Woodland (FFG)	Questionable record for Smoky Mouse (EPBC Endangered), Broad-toothed Rat (bodies found during Pindone use)			A
Jarosite Road Nature Reserve (2.7)	Low	161	Coastal Headland Scrub	Vulnerable		Glenelg Pomaderris				A
Deep Creek (East and West)	High	175	Grassy Woodland	Endangered		Bellarine Yellow Gum Grassy Woodland				A
(24.3)		48	Heathy Woodland	Least Concern						
Painkalac Creek Nature Reserve (up to Old Coach Road (35)	Medium		See detailed ARI report, 16 EVCs	Endangered, Vulnerable, Rare		Lawrencia spictata Lachnagrostis robusta	Broad-toothed Rat (trapped Carr 1990) Great Egret Swamp Antechinus			A

Winchelsea Common Nature Reserve (9.9)	Medium	55	Plains Grassy Woodland	Endangered		Natural Temperate Grassland of the Victorian Volcanic Plain EPBC				A
Barwon River Nature Reserves (4.1)	Medium	56	Floodplain Riparian Woodland	Endangered		Basalt Peppercress				A
Dans Nature Reserve (1.2)	Medium	56	Floodplain Riparian Woodland	Endangered	28					A
		132	Plains Grassland	Endangered	Up to 55	Natural Temperate Grassland of the Victorian Volcanic Plain Glenelg Pomaderris (planted)				
Moggs Creek Nature Reserve (3.1)	Medium	48	Heathy Woodland	Least Concern						B
		198	Sedgy Riparian Complex	Depleted						
		178	Herb-rich Foothill Forest/Shrubby Foothill Forest Complex							
		16	Lowland Forest	Depleted	46					
Merrans Nature Reserve (0.6)	Medium	48	Heathy Woodland	Least Concern	49	Merran's Sun Orchid FFG				B

Kuarka Dorla Nature Reserve	Medium	3	Damp Sands Herb-rich Woodland	Vulnerable						B
(4.7)		16	Lowland Forest	Depleted	Up to 59					
		48	Heathy Woodland	Least Concern						
Rice Nature Reserve (5.2)	Low	132	Plains Grassland	Endangered	Up to 61	Natural Temperate Grassland of the Victorian Volcanic Plain EPBC	Lathams Snipe Yarra Pygmy Perch (in stream obviously)			B
		56	Floodplain Riparian Woodland	Endangered	44					
		68	Creekline Grassy Woodland	Endangered	39					
Great Ocean Road Nature Reserve (8.8)	Low	16	Lowland Forest	Depleted	52					B
Bellbrae Nature Reserve (3.1)	Medium	16	Lowland Forest	Least Concern	49					B
Allen Noble Sanctuary (1.8)	Medium	10	Estuarine Wetland	Endangered	23		Lathams Snipe Great Egret			B
Ocean Acres Nature Reserve (3.8)	High	16	Lowland Forest	Depleted						B
Coogoorah Park (3.5, SCS portion re entrance)	High	48	Heathy Woodland Estuarine Wetland	Least concern			Southern Brown Bandicoot, Swamp			B

		10		Endangered			Antechinus (main reserve)			
Stony Creek Nature Reserve (2.9 just SCS portion)	Low (SCS portion)	45 201	Shrubby Foothill Forest Shrubby Wet Forest	Least concern Common						B
Jan Juc Creek West Nature Reserve (western end)	Low (west)	175	Grassy Woodland	Endangered	28	Bellarine Yellow Gum				C
(0.8)		10	Estaurine Wetland	Endangered	37					
Greenhood Nature Reserve (0.4)	Low	21	Shrubby Dry Forest	Least Concern						C
		48	Heathy Woodland	Least Concern						
		16	Lowland Forest	Depleted	Up to 57					
Bristlebird Nature Reserve (0.3)	Low	48	Heathy Woodland	Lest Concern	Up to 40	Rufous Bristlebird				C
		17	Riparian Scrub Complex							
Surfers Way Nature Reserve (0.5)	Low	175	Grassy Woodland	Endangered	NA	Bellarine Yellow Gum				C

Larcombes Road Nature Reserve (2.3)	Low	175	Grassy Woodland	Endangered	30					C
		83	Swampy Riparian Woodland	Endangered						
		55	Plains Grassy Woodland	Endangered		Grassy Eucalypt Woodland of the Victorian Volcanic Plain or Natural Temperate Grassland of the Victorian Volcanic Plain				
		3	Damp Sands Herb-rich Woodland	Vulnerable	31					
Giddings Road Nature Reserve (2.7)	Low	175	Grassy Woodland	Endangered						C
Paringa Nature Reserve (1.1)	Low	3	Damp Sands Herb-rich Woodland?	Vulnerable						C
		48	Heathy Woodland?x	Least Concern						
		175	Grassy Woodland	Endangered						
Woodbank Rise Nature Reserve (0.4)	Low	21	Shrubby Dry Forest	Least Concern						C

Sandy Gully Nature Reserve (0.3)	Low									C
Snow Gum Nature Reserve (0.6)	Low	83	Swampy Riparian Woodland	Endangered						C
Lialeeta Linear Reserve	Low									C
Banool Linear Reserve	Low									
4 Caulfield Street Lorne	Low									