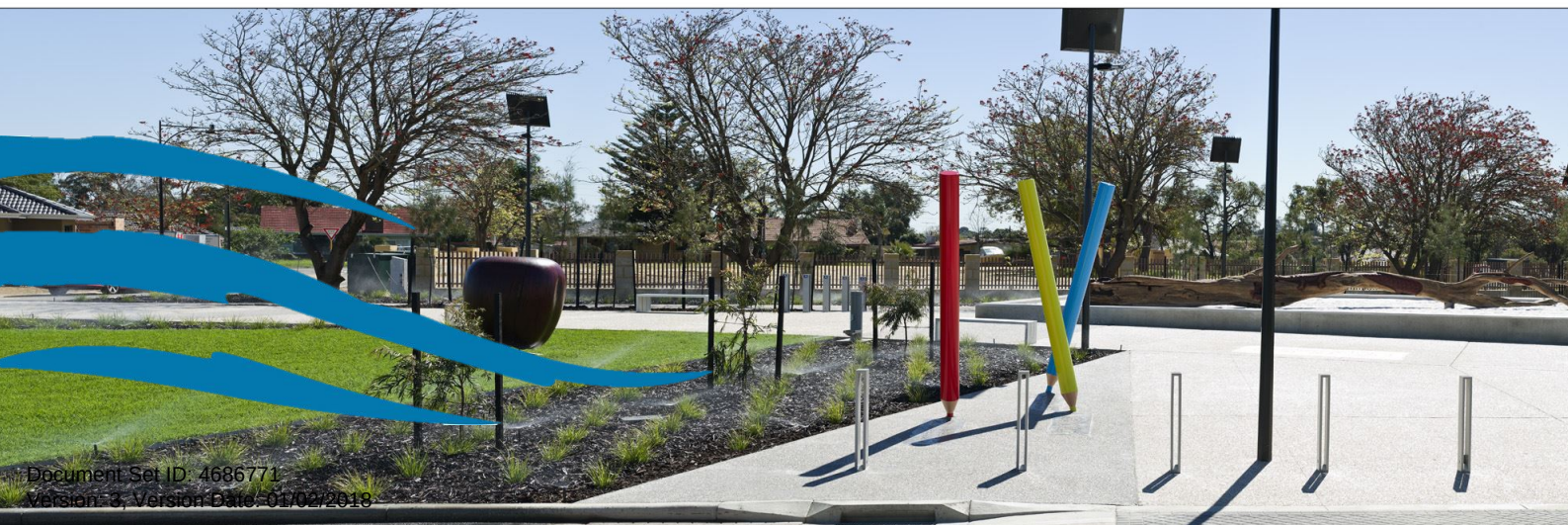
City of Cockburn

Open Space Lighting Guidelines



Document Review

This document is required to be reviewed every four years. Periodic reviews can be undertaken if significant technological or policy changes occur.

Document Information

Document Title	Open Space Lighting Guidelines		
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Document Status	Final	Version	1.0

Revisions

Revision	Revision Date	Nature of Revision.	Revised by
1.0	28.11.2014	Issued	Manager Parks and Environment

ECM document set ID 4322805

City of Cockburn –Open Space Lighting Guidelines

Table of Contents

1 Introduction

Public lighting helps make many of our public spaces more usable and enjoyable for all.

The City of Cockburn is committed to providing sustainable public lighting in public areas and has developed these *Guidelines* to guide new installations, replacements and repair programs. All **non-street** public space lighting in *the City of Cockburn* needs to follow these guidelines.

1.1 Purpose of the Public Lighting Guidelines

The overall aim of these guidelines is to ensure new lighting for parks, car parks, recreation facilities and around public buildings are sustainable, well designed and located and meets the Australian Standards for lighting.

These guidelines will be used:

- To 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;
- To help council staff, lighting design consultants and others consistently apply sustainable lighting principles to new public lighting installations, replacements and repair programs;
- To communicate Council's public lighting minimum efficiency and standard design requirements.

1.2 Who should use these Guidelines?

These guidelines are for both internal council staff, and external contractors in the following fields:

- Engineers/asset planners and managers
- Landscape architects
- Urban designers/place managers
- Lighting designers
- Developers
- Maintenance staff and contractors

1.3 Objectives for Public Lighting in City of Cockburn

Public lighting in *the City of Cockburn* is designed to:

a. *Create a safer night time environment for the community*
   Safety and security is about "good" lighting and not necessarily "more" lighting

b. *Embrace Council's commitment to sustainability*
   Providing better lighting systems will reduce greenhouse gas emissions and potentially encourage pedestrian and cyclist activity and also public transport patronage

c. *Improve the look and feel of the City*
   Consistent approaches to delivering attractive design

d. *Designing assets that can be managed over their lifetime;*
   Long lasting, consistent and affordable infrastructure used when and where required.

These guidelines will help ensure lighting installations for public spaces (including parks, reserves and the foreshore) incorporate energy efficiency and other sustainability principles.

1.4 Using these Guidelines

City of Cockburn Staff should use these guidelines when:

- Installing new lighting in a previously unlit area;
- Replacing/upgrading lighting in an area.

City of Cockburn staff can use the guidelines to inform their 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 City of Cockburn's style and technical

specifications. To assist the tender/quotation assessment process, the checklists included in the Guidelines should be incorporated into the tender submission documentation..

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 should be included as part of tender submissions.

1.5 Document review

This document is designed to be reviewed at least every 4 years. Periodic reviews can be undertaken if significant technological or policy changes occur.

2 Defining Public Lighting

Public lighting in *the City of Cockburn* is made up of street lighting and lighting of other areas that comprise a variety of other external lighting types such as decorative, sportsground, security and feature lighting (collectively referred to as “public space lighting”). These guidelines apply to ‘public space lighting’ only.

2.1 Public Space Lighting

In the *City of Cockburn,* off-street lighting includes lighting in parks, pathways, cycleways, sportsgrounds, foreshore, feature and decorative lighting in precincts, and security lighting on buildings.

Decorative Lighting
Compliments streetscape and open space

Sportsground Lighting
Enables recreation in the evenings

Building and Security Lighting
Lights near facilities and car parks

Feature Lighting
Enhances urban landscapes

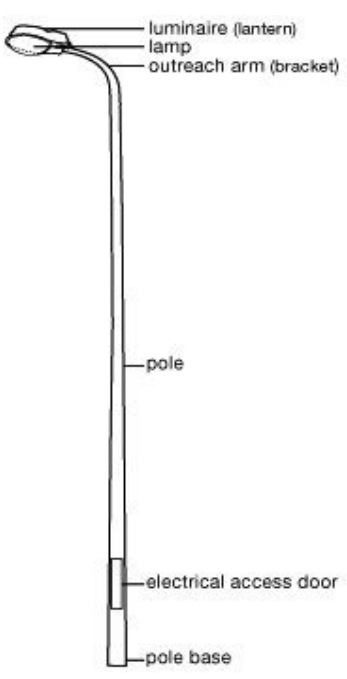
2.2 Street Lighting

Street lighting found in residential streets and main roads has standard or non-standard poles, both containing the same basic parts. Lights may also be attached via brackets to power distribution poles. Whilst street lighting is addressed in these guidelines to some extent, the principal focus is on public lighting elsewhere.

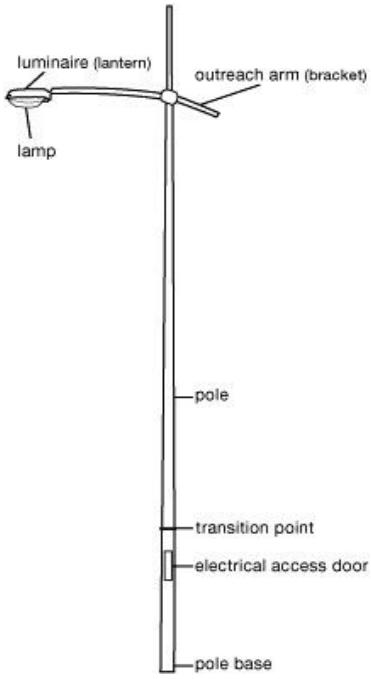
3.3 Lighting Componentry

1. *Luminaire (lantern)* – A device that distributes, filters or transforms the light given by a lamp or lamps and which includes all the items necessary for fixing and protecting these lamps. Examples of luminaires include 80 watt mercury vapour, high pressure sodium and T5.

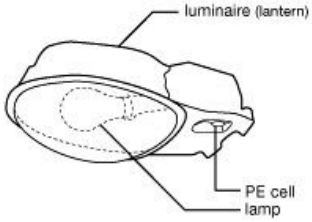
Figure 1: *Different types of luminaires*



Standard Pole



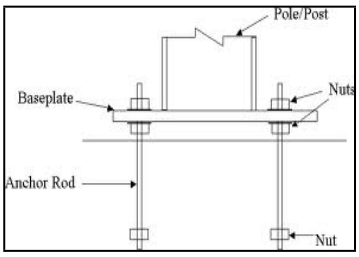
Non Standard Pole
(example - Lincoln)



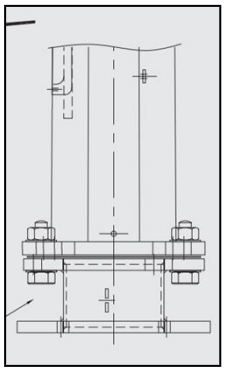
A luminaire

Figure 2: *Diagrams of street lighting*

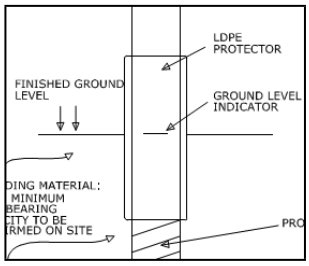
2. *Lamp (globe)* – The lamp emits light and is located within the luminaire (lantern)
   For example, a T5 luminaire will host two T5 lamps.
3. *Photoelectric (PE) Cell* – A device that is normally incorporated in a luminaire that detects outside light levels to automatically switch the luminaire on and off as required.
4. *Pole*
   - *Bracket*- (outreach arm) – the supporting connection from the pole to the luminaire.
   - *Base* –the lower section of the pole that is secured to the ground. See below for examples of base types.



Ragbolt base



Slip base



In-ground pole

2.3 Glossary

Term	Definition
CFL	Compact Fluorescent Lamp
DNSP	Distribution Network Service Provider (Western Power in Cockburn)
GHG	Greenhouse Gas (typically in tonnes of CO_2 equivalents)
HPS	High Pressure Sodium lamp
LED	Light Emitting Diode
MH	Metal Halide lamp
MV	Mercury Vapour lamp
Public Space lighting	External lighting types such as decorative, sportsground, car park, security and feature lighting (non-street lighting)
T5	Efficient lineal fluorescent lamp

3 Responsibility for Public Lighting in the City of Cockburn

Responsibility for management, maintenance and capital projects related to public lighting in *City of Cockburn* is split between different council departments. The following table summarises these areas of responsibility.

Table 1: *Responsibility for Public Lighting*

Area	Business Unit	Maintenance	Capital Projects	Pole & Light 'Ownership'	Electricity Cost Coverage
Parks and Open Space lighting (*generally metered lighting*)	Parks and Environment	Park manicured turf – Parks Service unit Nature reserves – Environment SU	Park manicured turf – Parks Service unit Nature reserves – Environment SU	Park manicured turf – Parks Service unit Nature reserves – Environment SU	Parks OP
Foreshore lighting (*generally metered lighting*)	Parks and Environment	Parks	Parks	Parks	Parks OP
Street lighting – standard unmetered (*majority of lighting*)	Local Roads (mainly Engineering B/U for application of Policy) WA Planning Commission (can override local policies) Main Roads & Highways – Main Roads WA Local Road Undergrounding of Power & associated road lighting upgrade (driven by Council, agreed by State Government and project managed by WP)	Western Power	Council (Engineering approve) Western Power approve	Western Power	Local Roads - Roads OP Highways & Main Roads - MRWA

Table 1 (cont'd): *Responsibility for Public Lighting*

Area	Business Unit	Maintenance	Capital Projects	Pole & Light 'Ownership'	Electricity Cost Coverage
Street lighting and access ways – decorative, non - standard unmetered	Council (mainly Engineering for Policy) also WA Planning Commission (can override local policies)	Council (Roads)	Council (Engineering approve) Western Power approve	Council (Roads)	Local Roads & PAW's - Roads OP

Car park lighting (*generally metered lighting*)	Engineering or Infrastructure Services	Facilities Roads	Facilities Roads Recreation	Facilities Roads	Facilities OP Roads OP
Outdoor sports lighting (*generally metered lighting*)	Parks and Environment Facilities	Parks Facilities	Recreation Facilities	Parks Facilities	Recoup via Clubs
External building lighting (*generally metered lighting*)	Infrastructure Services	Facilities	Project Mgmt & Delivery S/U or Facilities	Facilities	Facilities OP

4 Responsibility for Approving New Public Lighting in the City of Cockburn

Public lights in *the City of Cockburn* are owned and managed by Council and/or the Energy Distribution Businesses (Western Power). There are three different management structures including:

4.1 Standard Unmetered Lighting (majority of street lighting in the City of Cockburn)

This lighting is owned and managed by the Energy Distribution Business (Western Power). Council pays a service charge to the distributor to maintain the light and pole over its life, in addition to paying for the electricity consumed at a per luminaire rate dependant on the rated wattage and times of operation.

Street lighting often needs to be installed in new residential subdivisions. Developers propose lighting schemes that then need to be approved by Council. If the developer chooses to use a standard pole and luminaire then Western Power needs to approve the pole and luminaire. <check – can the developer not just pick a light from the Western Power approved list and the approval is for the unmetered connection only?>

Figure 3 below outlines council's role in standard unmetered lighting. Note: these guidelines do not provide specific guidance and specifications for standard unmetered lighting.

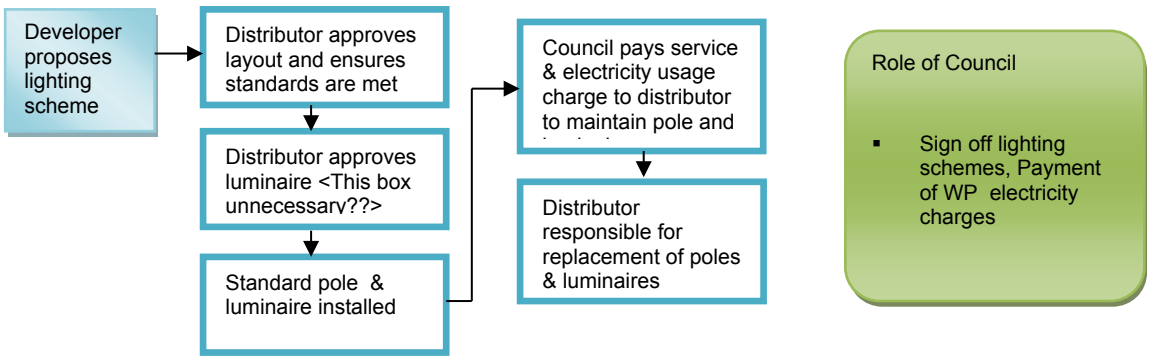


Figure 3: *Ownership and management of standard unmetered lighting*

4.2 Non Standard Unmetered Lighting (e.g. decorative street lighting)

Lighting is owned by Council and electricity supplied by Western Power. Council pays to maintain the light and pole over its life and Council is responsible for purchasing replacement poles and lights.

This lighting typically occurs in new developments where the developers have requested a non-standard pole or where Council installs new decorative street lighting.

Figure 4 below outlines council's role in non-standard unmetered lighting. Note: these guidelines do not provide specific guidance and specifications for non-standard unmetered lighting.

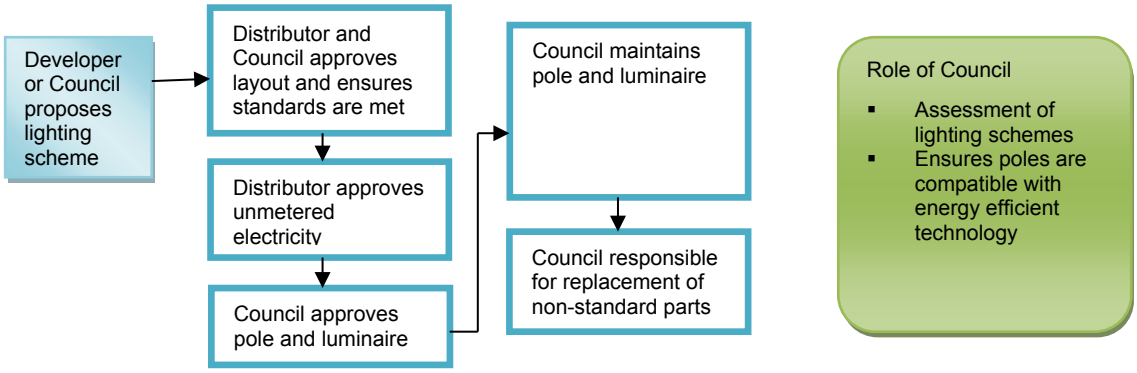


Figure 4: *Ownership and management of non-standard unmetered lighting*

4.3 Metered Lighting and Off Grid Lighting

This lighting is owned and managed by Council.

Commonly sports facilities, car parks and open space reserves are connected to a Western Power electricity supply meter to measure energy taken from the electricity network. Some street lighting in the City of Cockburn (e.g.Cockburn Town Centre) is also metered. These lights can have their own meter or be connected to a switchboard supplying power to a building, BBQ or other electrical load.

For metered lighting, these guidelines provide:

- guidance when proposing lighting schemes to meet Council needs
- developers with specifications for selecting pole and lights to ensure they are compatible with energy efficient technology
- council staff with tools to assess new lighting schemes

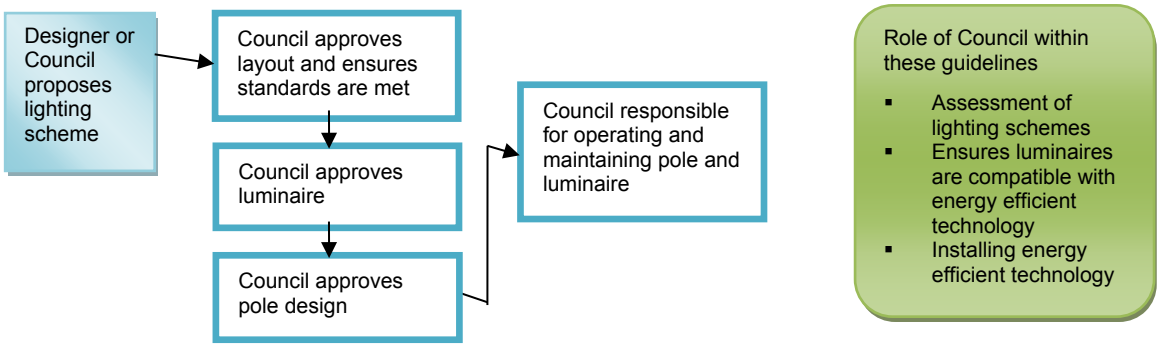


Figure 5: *Ownership and management of metered lighting*

5 New Public Lighting in the City of Cockburn – Principles and Process

When planning for new public lighting in the City of Cockburn, council staff should consider the following principles.

5.1 Guiding Principles for Sustainable Public Lighting in City of Cockburn

All public lighting in the City of Cockburn will consider the following guiding principles:

Making better use of open space	Most people use public space during the day and early evenings. Lighting should support positive evening use, whereas lighting of a site all night should be provided only where specifically found to be necessary.
Assisting walking, cycling, public transport and safe driving	Appropriate lighting will allow for higher visibility and encourage people in Cockburn to walk, cycle and take public transport.
Improving safety	Council will avoid creating a false sense of security by not installing lighting in remote or poorly surveilled locations. Lighting will be used where relevant in accordance with the *Crime Prevention through Environmental Design Guidelines* and the Liveable Neighbourhoods Planning Tool.
Reducing greenhouse emissions	Council will install and manage lighting of a type that assists to minimise greenhouse emissions. This will be applied following the hierarchy of first energy avoidance then energy efficiency and finally using renewable energy.
Ensuring economically sustainable assets are installed and managed	Council will choose lighting assets that are comparatively easy to install, have low maintenance requirements and are cost effective over the life of the asset.
Protecting habitat value areas	In some cases lighting (or some types of lighting) can be harmful to the wellbeing of animals, such as through disruption to natural foraging or nesting patterns or acting as an undesirable attractant .
Showcasing urban features in an effective way	When people are visiting our city, they should see and enjoy our urban features—for example, monuments, signs, and public art. Lighting can be an effective way of doing this in key locations at key times.

5.2 Design Process for the lighting of public spaces

In order to complete a design and to meet these guidelines designers will typically identify the following (in order):

1. Location and purpose/need for lighting (Covered in Section 7.1 below)
2. Category of lighting (Section 7.2);
3. Type of light (luminaire), pole and bracket to be used (Section 8); and
4. The method for lighting control (Section 9).

The remainder of this document covers Councils requirements around these four items.

6 Design Process for the lighting of public spaces

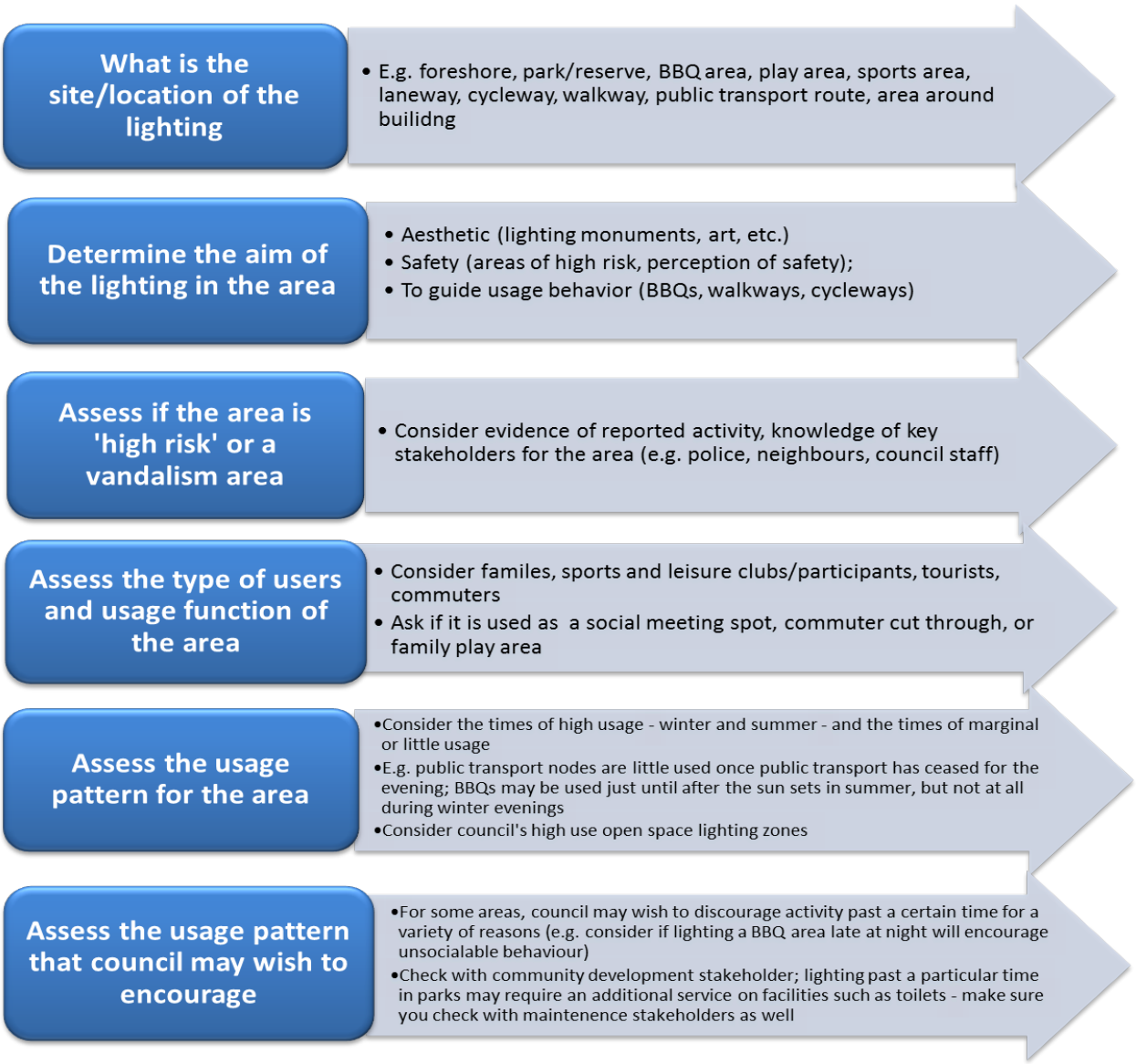
6.1 Location and purpose for lighting

When selecting appropriate lighting, key questions need to be asked about the location of the lighting, and the use of the area. The first consideration is around the need for any new lighting at all. 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 (see table 2);
- Council has identified the lighting purpose as not recommended (such as uplighting, feature lighting, and daytime use only recreation areas);

Different lighting types are applicable to different locations:

Key Questions to Guide Application of Lighting Principles



< Re 'Safety' section in the table above, should differentiate between safety re personal security and safety re to enable people to see hazards such as a steep drop off alongside path or step or similar >

The following Table provides guidance on how the guiding principles in 6.1 can be applied to different lighting sites and applications.

***Table 2**: Lighting requirements for specific types of locations in the City of Cockburn*

Sites/Applications	Requirements
General	
Uplighting/feature lighting of signs, trees, buildings, monuments, art, renewable energy art	This type of location is suitable for high profile locations only (e.g. Port Coogee and Cockburn Central). Where it is a high use/important location then minimal lighting with a timer may be used Time settings are from dark to 10pm and then from 5am to light. Additionally timing may be required for a specific event.
High use areas	Entertainment precincts (including Cockburn Central, Coolbellup Hub and Coogee beach Public Open Space and facilities) and high profile and visitation locations. Lighting should be provided all night in these locations at an appropriate standard. Recommend minimum P3 (using AS/NZS 1158) and dimming to P4 in appropriate locations.
Areas of Anti-Social Behaviour	Lights may be installed, subject to trial in the following order: • using motion sensors • CCTV video cameras, where the use needs to adhere to the City of Cockburn CCTV Policy • increase lighting in accordance with the Liveable Neighbourhoods Planning Tool
Event lighting	Permanent lighting not to be installed unless quite regular use of the location for these events planned. Temporary lighting can be used that utilises similar efficiency requirements as permanent lighting. Ensure that future proofing to meet these needs is designed (including the provision of power points at relevant locations <not necessarily economical, can be high capital cost, may be better to bring in generators depending on the capital cost to get a permanent power supply installed>). The use of lighting for events that have the potential to cause a nuisance (such as laser lighting) needs to be approved by Council and will be assessed on a case by case basis.
Outdoor recreation lighting	
Active Recreation areas including skate parks, basketball half or mini-courts, playgrounds	In general lighting is not appropriate in these locations particularly adjacent to residential areas. However, where it is a high use precinct and a demand for lighting then an appropriate standard of lighting with a timer may be used. Time settings are from dark to 10pm (at latest).
Sports facilities (competition) - inc. bowls, football, basketball, netball, soccer, tennis, cricket.	Lights may be installed with timers directly linked to time of use (operation hours in the lease or planning permit, or if not stipulated then to 9pm). To avoid environmental light spill, sports clubs need to comply with AS4282 Obtrusive Lighting Code for Control Measure 1 for built up residential with no surrounding lights or Control measure 2 for sports fields next to commercial precincts. Timers associated with hours of use should dim sports lighting 15 minutes before switching off.

***Table 2 (cont'd)**: Lighting requirements for specific types of locations in the City of Cockburn*

Sites/Applications	Requirements
Lighting in parks and natural areas	
Natural Areas	Lighting is not appropriate as it will disrupt local flora and fauna. Care needs to be taken in regard to insect fauna. Blue-white light, uplighting and lighting with high spill have the most detrimental effect. Yellow lighting is preferred if lighting is required.
BBQ's, shelters and toilets	Time settings are from dark to 9pm or 10pm depending on the location.
Lighting for transport – walking, cycling, public transport and vehicles	
Public Transport nodes	Lights may be installed with timers linked to operating hours of public transport, for example: **Train Station:** set timers to turn lights off after 1am and on at 5am. **Bus stops:** set timers to turn the lights on 30 mins before and off 30 mins after the last service (as bus routes are highly variable simply check the routes and stop times before setting timers).
Bike paths	Lights may be installed with timers (see Table 3) on commuter and recreational cyclist routes to/from public transport nodes. Lights may be installed and run all night for high use pathways, desirably dimmed between 10pm and 5am.
Car parks	Lights may be installed with timers set to the hours of operation of the associated site or building
Public Access Ways	Lights may be installed where the public access way provides a logical shortcut for pedestrians. Care needs to be taken to minimise spill lighting into adjacent private property.
Lighting around buildings	
Building security lighting	Lights may be installed with timers directly linked to the operating hours of the building and/or on motion sensors. Motion sensors for all new security lighting installations. The use of low levels of lighting outside of operating hours can be used as a passive deterrent for anti-social behaviours and for low level surveillance (e.g. 1 in 5 lights remaining on all night)
Urban Open Space/Hard landscape	Lights may be installed with timers set to the hours of operation of the associated site <Not sure what this is meant to cover ?>
Shopping strip lighting schemes – additional lighting to street lighting	Lighting is not considered appropriate if an appropriate level of public road lighting already exists and meets standards also for the adjacent pedestrian and cyclist movement areas.

<Need content in these Guidelines at vearious locations dealing with lighting type and level to suit CCTV installations in public areas and of building surrounds>

6.2 Category of lighting

6.2.1 Recommended Lighting Categories for Open Space Lighting

Public lighting design for open space and roadways are covered in the Australian and New Zealand standards (AS/NZS 1158).

Figure 6 below provides a guide to how to apply different categories for various external lighting applications. Most lighting categories can be chosen simply. Public Space lighting for pedestrian and cycleways are more complicated and are discussed further below.

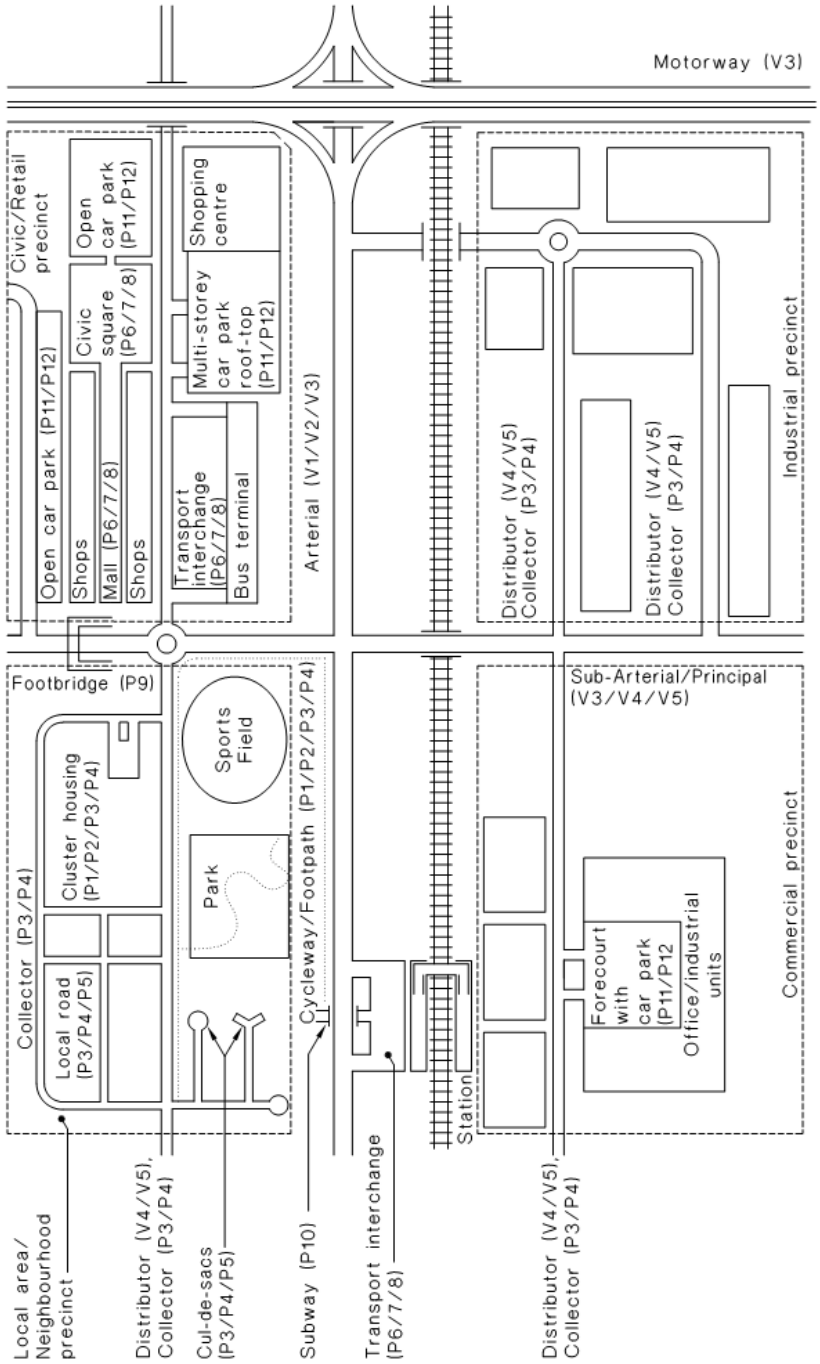


Figure 6: *Figure 2.1 from AS/NZS 1158.3.1 2005*

To be compliant with the different categories of lighting shown in Figure 6 different levels of Illuminance (light) are required. Table 3 provides a quick guide to some of the most common categories and how they compare to natural light levels.

Table 3**: **Lighting standards for Australian roads

Category/Typical application	Average (P) or Point (V) horizontal Illuminance (lux)	Similar light level
P5/ Older residential streets	0.5	Full moon
P4/ New residential streets	0.85	Deep Twilight
P3/ Perth CBD	1.75	
V5/ Rural highways	3.5	
V3/ Urban highways	7.5	Twilight
V1/ Main CBD highway	15	
N/A	1,000	Overcast day
N/A	100,000	Bright Sunlight

6.2.2 Recommended Lighting of Pathways and Cycleways

To determine lighting categories for pathways and cycleways please refer to AS/NZS 1158.3.1. They can be located along local roads, collector, arterial roads, walkways, lanes, park paths and cycle ways.

The following steps should be taken to determine the applicable lighting subcategory for these applications:

1. Assess the level of activity, i.e. high, medium or low. High activity levels would normally be for commuters from high use railway stations to high density housing (e.g. in the centre of Perth and some high use retail precincts). Medium would cover well used commuter or recreation usage. Low would be the majority of other locations in the City of Cockburn.

2. Determine the risk of crime. Areas adjacent to stations plus isolated unlit paths are potential crime spots.

3. Select the applicable lighting subcategory

    i. ID specific high use locations here for specific categories- Category P3 or P4

    ii. All other parks and open space (where lit in peak hours) – Category P4 recommended;

    iii. All other parks and open space (off peak hours) – Off;

Cycleways along arterial roads do not normally require separate lighting. The road must be lit to the applicable level of Category V lighting complying with AS/NZS 1158.1.1. If the footpath is shaded or is separated from the roadway by a wide nature strip or service road the lighting should be at least subcategory P4.

Cycleways along collector/local roads should also be lit to least subcategory P4. Initial light level readings can be carried out to identify the current lighting level before lighting upgrades are considered.

7 Choosing a type of light, pole and bracket to be used

7.1 Energy Efficient Lighting

The City of Cockburn has identified minimum energy efficiency standards for all new lighting infrastructure. This is identified using a **luminaire system efficacy of no less than 60 lumens per watt**.

System efficacy can be calculated by dividing the total light output by the total system energy. For example an 80W Mercury Vapour (MV) uses 95.8W and its light output is 3800 lumens. The system efficacy is 39.67 lumens per watt (3800/95.8). Beware not to use the lamp efficacy which is the *lamp* watts compared to the energy use.

Table 4 below summarises the system efficacy of the main external lighting types.

Table 4**: **Typical system efficacy of different light types

Existing technology	System Efficacy	Recommendation on use
50/80/125W MV	28/40/44	✗
50W HPS	58	✗
250/400W MV	48/51	✗
The lights above this point would no longer be installed		
18W LED	88	✓
2x14W T5 fluoro	80	✓
32W CFL	71	✓
42W CFL	67	✓
70W HPS	70	✓
70W MH	76	✓
150W HPS	84	✓
250W HPS	103	✓

7.2 Use of Specific Light Types

There are some specific light types that require special comment. The following table addresses these.

Table 5**: **Specific light types

Specific light types	Recommendation on usage
Solar lighting	Generally not recommended due to the comparatively high maintenance costs for panels/batteries. Panels to be cleaned annually and batteries replaced on 5-10 year cycle. However, where the cost to install mains electricity is high, solar (or other localised renewable energy) powered lights may be viable. In this case a life cycle cost assessment should be made to determine the preferred choice. Use of local generation is typically recommended for larger, centralised systems that are on buildings. <What is meant here, we wouldn't fit a battery system in a building when mains power is available, rather we woulkd use PV to help reduce the mains draw for the whole site including any outdoor lighting.??> This ensures the installations are economic and any maintenance can be carried out at low cost.
Watchmen/spotlights	Watchmen lights are generally inefficient and not recommended for area lighting. Flood or spot lights combined with motion and light sensors can be a useful way to light locations which have inconsistent night time usage.
Recessed ground lights	Not recommended to be installed due to comparatively high maintenance impost.
Bollard lighting	Generally not encouraged, although they can be suitable for low level path and paved area lighting. In some circumstances. Where they are to be used, bollards with high vandal resistance are required.

LED lighting	Can be used for decorative purposes, signage lighting and where found to be the least use energy for the purpose. Currently other lighting types (such as fluorescent and MH, HPS lighting has superior system efficacy.

7.3 Approved Decorative lighting poles

The light shown in Figure 7 below is the approved type for any decorative lighting application in the City of Cockburn. Decorative (also called non-standard) light poles and luminaires are not recommended for unmetered street lighting installations.

Figure 7: *Approved City of Cockburn open space and decorative pole options*

8 Control of Lighting

8.1 Use of Timers for Public Lighting

In many of Council's open space areas, lighting does not need to be on all night. This depends on how the area is being used. New applications for lighting will need to specify the intended purpose of the lighting scheme in order to determine settings for timers. Table 6 guides the use of timers in lighting installations.

Currently timers are only able to be installed on Council owned metered public lighting schemes.

***Table 6**: Use of timers in open space*

Open Space Use	Proposed Times		Rationale
	Winter	Summer	
Commuting – journey to work, public transport and cycling	Switch off at 1am Switch on at 5am	Switch off at 1am Switch on at 5am	Commuter routes are linked to operation times of public transport and venues. Also see specific public transport types listed above.
BBQ, picnics and social gatherings	Switch off at 10pm	Switch off at 10pm	Turning lights off after 10pm will encourage people to move elsewhere, thus not being a nuisance potential for nearby residential areas or a catalyst for anti social behaviour.
Recreation Facilities	Switch off at 9pm	Switch off at 9pm	Turning playingand recreation field lights off after 9pm to be in line with typical practice locally.
High use open space zones	Dim from Category P3 or P4 to Category P4 or P5 after 10pm	Dim from Category P3 or P4 to Category P4 or P5 after 1am	Certain locations including entertainment precincts (including Cockburn Central, Port Coogee and Coogee Beach Public Open Space and facilities) and high profile and visitation locations can have lighting on all night. Lighting is recommended to having dimming installed so that out of peak periods the light level can be reduced.

8.2 Use of Dimming for Public Lighting

Dimming is applicable for locations where lighting is still required, even though there is little movement of pedestrians or vehicles. For most locations switching lighting off when not required is more useful. However, for high profile locations the use of diming is a great way to indicate its' importance without causing nuisance or wasting energy. This can include entertainment precincts (including Cockburn Central, and Coogee beach Public Open Space and facilities) and high profile and visitation locations.

Any systems chosen should be compatible with DALI or TALQ, international protocols that allow different products and brands to control and be controlled. This a gives council flexibility in choosing product types into the future.

9 Legislation and references

External Standards and references include:

- AS/NZS 1158 2010 Lighting for roads and public spaces. This is the main Australian standards that guide lighting design of roads and open space. All the VicRoads and AustRoads guides below are largely using the data in this standard.
- AS 3000:2007: Electrical Installations (known as the wiring rules)
- AS4282 Obtrusive Lighting Code for Control Measure 1 for built up residential with no surrounding lights or Control measure 2 for sports fields next to commercial precincts;
- AustRoads “Guide to Road Design Part 6A: Pedestrian and Bicycle Paths”;
- AustRoads “Guide to Traffic Engineering Part 13: Pedestrians (1995) and Part 14: Bicycles (1999)”;
- AustRoads “Pedestrian-Cyclist Conflict minimisation on shared paths and footpaths” (2006);
- AustRoads “Guide to Road Design Part 6A: Pedestrian and bicycle Paths” (2009);

Internal Policies and Strategies include

- 2013 – AEW3, “Streetlighting policy”
- 2013 – SEW2, “Street and Public Area Lighting”

10 Checklists and specific requirements for new public lighting in the City of Cockburn

Council will support lighting installations that meet these guidelines.

Final approval for additional lighting will be decided after considering proof of need, sustainability and community feedback where necessary

When proposing a new lighting scheme in *the City of Cockburn*, please submit the relevant checklists as specified in the flow chart below:

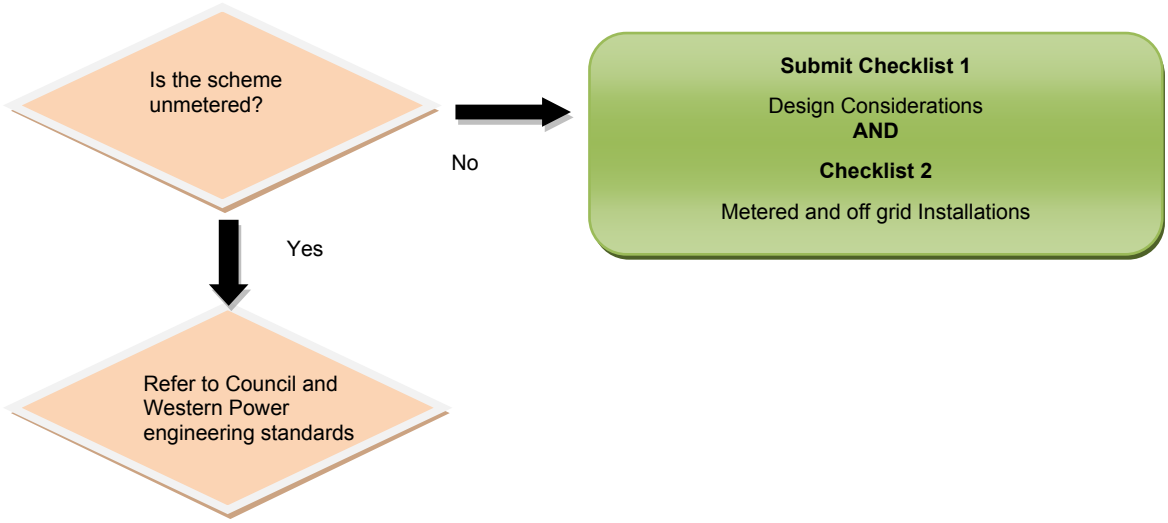


Figure 8: *User flow chart for new public lighting proposals*

Checklist 1 – Design Considerations

Applicant Name .....

Site Name .....

Site Details (intended use of site).....

Attachments	
	Has a lighting plan been submitted?
	Have "for construction" drawings including details of make and model numbers of lamps been submitted (Note "As Built" drawings will also be required to be submitted upon completion of project)?

All new lighting installations in City of Cockburn must address the following requirements.

1. Define the location and purpose for the lighting	
	Have the location and purpose been defined (see section 7 of these guidelines)
	Does the lighting scheme meet requirements of Table 2 of these guidelines?
2. Define lighting category	
	If there is a need for lighting, has the designer used the correct category i.e. not lighting above the necessary level required for a particular area? (see Section 7 of these guidelines) *By reducing the lighting category by one step (e.g. P3 to P4) the lighting level (and energy consumption) can be reduced by as much as half.*
3. Identify the light, pole and bracket type	
	Is the proposed luminaire energy efficient? What is the System efficacy (see Section 8 for comparison)? Is it at least 60 lumens per Watt.
	Has one of Council's preferred pole types been used? If not, please explain.
4. Lighting control	
	Does the lighting control meet the requirements of Section 9 of these guidelines (around the use of timers)?
	What other control devices are considered in the design?
5. Life cycle considerations	
	Are long lasting materials being used? Including lamps (whereby 4 years is acceptable and 10-12 years excellent), PE cells and luminaires (at least 20 years) and poles (at least 30 years).
	Can the proposed materials be recycled or reused at end of life? Discuss.
6. 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.

Submissions will be considered more favourably if the following criteria are addressed:

- best practice energy efficiency
- community need
- potential for generation of onsite renewable energy to match lighting energy needs.

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
- itemise the renewal costs and expected timeframes

Comments

Internal Use Only

Engineering Approval	Yes / No	
Hold points required during construction	Yes / No	Details
Signed		
Date		
Project Manager Approval	Yes / No	
Signed		
Date		

Checklist 2 – Requirements for Metered and Off Grid Installations

All new metered and off grid installations must address the following requirements

Pole design

The following pole requirements are for new public lighting installations categorised under P1-4 of Australian /New Zealand Standard (AS/NZS) 1158.3.1:2005 and AS 3000:2007.

☐ **Is the mounting height for bracket installation no less than 6.5m above ground level*?***

- *Provided the required lighting footprint can be maintained via luminaire choice the increasing of pole heights can facilitate increased pole spacing. 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 with abutting residences and also areas of ecological significance*

☐ **Is the pole a type approved for use (or similar) as a decorative pole by the City of Cockburn (see Figure 7)?**

Coating systems

☐ **Will the coating system ensure a long service life with reduced maintenance?**

- A *heavy duty zinc protective coating or two pack adhesion promoting primer over a galvanised steel pole to prevent corrosion, followed by two coats of two pack aliphatic polyurethane*[1]
- *Surface scratches can be repainted with the recommended finishing coat. If rust is present, it must be removed and the affected area repainted in accordance with the recommended method for new poles.*

Base

☐ **Where the pole is located in parks, gardens and shopping centres, is the base on a rag bolt assembly secured into a reinforced concrete base?**

- *This shall be done in accordance with manufacturer's specification and structural engineers certification taking account of local site conditions.*

☐ **Where the pole is located in any other area, is the base of the pole mounted onto a base plate mounted to the pole?** <This doesn't make sense adnd is not seufficiently proscriptive, is it meant to refer to a direct buried pole or a pole bolted to a foundation, and why separate it out from the above scenario – the choice of mounting type versus location doesn't seem logical?>

- *The base plate must be either stainless steel <not if an aluminium or galvanised steel pole!>or concreted into the ground for the entire base length to ensure base strength and longevity ???*

Luminaire requirements

The following luminaire requirements and comments are for new public lighting installations categorised under P1-5 of Australian /New Zealand Standard (AS/NZS) 1158.3.1:2005 and AS 3000:2007.

☐ **Does the system have an efficacy of no less than 60 lumens per watt?**

This eliminates energy inefficient light types such as the Mercury Vapour (MV), incandescent and halogen lights

Note for Category V lighting HPS lights (with Active Reactor control gear) are recommended as currently the most cost and energy effective[2]*.*

☐ **Is the lamp white light?**

Light sources providing white light (3500-4500K) provide the best seeing conditions in low light situations (such as parks and residential streets). Yellow light may be used in limited applications (such as major roads and areas where pedestrians are uncommon).

☐ **Are the PE cells** (which activate the lights in low light conditions) **electronic?**

Electronic PE cells are more accurate, last longer and use less energy than basic thermal D2 cells.

Off Grid Power requirements

☐ **Are all solar panels positioned to avoid overshadowing from nearby buildings, trees and power lines/poles?**

☐ **Are the solar panels using a pitch of 30º, facing north?**

☐ **Is the system to be installed by a qualified professional, accredited by the Clean Energy Council?**

Internal Use Only

Engineering Department Approval	Yes / No
Signed	
Date	

[1] Examples of products recommended include (Wattyl) Sigma EP universal primer/Epinamel primer 250 and Sigadur400/Poly U400 or Dulux 2 Pak Acrathane IF paint for the finishing coats.

[2] *Roadway lighting guide to traffic engineering practice part 12', AUSTROADS.*

Project Manager Approval	Yes / No

Signed Date