

Public Lighting Policy Community Consultation Overview of Environmental Impacts

Prepared for
Maroondah City Council

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About Ironbark Sustainability

Ironbark Sustainability is a specialist consultancy that works with government and business around Australia by assisting them to reduce energy and water usage through sustainable asset and data management and on-the-ground implementation.

Ironbark has been operating since 2005 and brings together a wealth of technical and financial analysis, maintenance and implementation experience in the areas of building energy and water efficiency, public lighting and data management. We pride ourselves on supporting our clients to achieve real action regarding the sustainable management of their operations.

Our Mission

The Ironbark mission is to achieve real action on sustainability for councils and their communities.

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1. Introduction

In 2018, Maroondah City Council developed a Draft Public Lighting Policy. The Policy aims to provide guidance on the design, installation and management of public lighting within the municipality. It is Council's intention for the Policy to promote a consistent approach to public lighting in Maroondah that reflects best practice and contributes to the sustainability and amenity of the municipality.

In late 2018 and early 2019 Council sought feedback from the community about the content and direction of the Policy. One of the most common themes of the feedback related to a requirement within Council's Draft Public Lighting Guidelines that specifies that light sources on metered and un-metered lighting schemes must have a correlated colour temperature (CCT) at or around 4000K. The main reason for this feedback relates to concern that a colour temperature value of 4000K will have negative impacts on the health of humans.

More broadly, the community, including members of the International Dark Sky Association have implored Council to place more emphasis on mitigating the impact of artificial light at night on the natural environment as well as human health.

In response to this, Council has commissioned the development of this document, which seeks to examine possible alternatives or solutions, and identify any potential changes that could be made to the Draft Public Lighting Guidelines.

2. Council's Existing Policy Position

2.1 Overview

Council's existing requirement - that that light sources on new metered and un-metered lighting schemes must have a correlated colour temperature (CCT) at or around 4000K- is based on a number of factors. These include:

- Council's distribution network service provider (DNSP), AusNet Services, has not made available a lamp technology that deviates from a correlated colour temperature (CCT) at or around 4000K for P-Category street lights.
- Council's distribution network service provider (DNSP), AusNet Services, has not made available an energy efficient lamp technology that deviates from a correlated colour temperature (CCT) at or around 4000K for V-Category street lights
- The relevant Australian Standards for luminaires (SA/SNZ TS 1158.6) states a "recommended" colour temperature of 4000K for street lighting.
- That previous research has suggested that light sources with a warmer CCT of <3000K result in an increase in vehicle stopping distances when compared to a neutral CCT of 4000K
- That 4000K is a more desirable colour temperature for facial recognition in CCTV camera footage.

Council acknowledges the importance of limiting the effect of all artificial light at night, regardless of CCT, and seeks to manage this within its Policy and Guidelines via:

- Lighting to the levels required (not higher).
- Reducing light spill through well-designed luminaires and lighting schemes.
- Only allowing luminaires with upward waste light ratios (UWLR) of less than 1%
- The use of glare shields where appropriate.
- The use of timers to switch lighting schemes off when not needed or not appropriate.
- The use of smart lighting technology that will allow lighting schemes to be dimmed when patronage drops.

Council has also provided scope/flexibility within its Public Lighting Guidelines to deal with unique scenarios that may require special treatment either via modified CCT or general lighting controls. This is evident via the following clauses:

- "In some cases, lighting (or some types of lighting) can be harmful to biodiversity (in particular insects and nocturnal animals). Lighting in these areas should incorporate controls and/or techniques to minimise this impact."
- "A CCT of less than 4000K (neutral white) may be considered appropriate for certain precincts (e.g. areas where outdoor dining occurs), however the issues raised in other sections of the Guidelines should be considered, the choice of CCT should be consistent with Council's CCTV Policy, and the CCT used should be consistent throughout a given space."

3. Policy and Guidelines Improvements

3.1 Correlated Colour Temperature

Based on the existing feedback, Council will consider the following adjustments to its Draft Guidelines and Policy documents in relation to CCT.

- The provision of an acceptable range of 3000K to 4250K CCT for all new metered public lighting whilst maintaining the requirement for a minimum CRI of 80;
- The acknowledgment that it will advocate for the approval of a broader range of correlated colour temperatures by DNSP, AusNet;
- Providing further clarity on the situations where lower colour temperatures might be preferred in Council owned metered lighting schemes. E.g. all parks and gardens, all areas directly adjacent to nature reserves; and
- Providing further clarification about how consistency of colour temperature is implemented within the framework of a broader range of acceptable colour temperatures. E.g. ensuring that distinct areas are lit with a single colour temperature.

3.2 Where to Light

Council's current position states firmly that it will only install new lighting where it is required. With this basic first hurdle to pass when considering a new lighting scheme, Council has provided clear guidance on where it considers lighting as necessary and where it considers lighting as inappropriate. As such, no further additions to the Draft Guidelines and Policy documents are considered necessary.

3.3 Light Spill

Council has addressed the control of light spill via a number of clauses within its Draft Guidelines document.

- Reducing light spill through well-designed luminaires and lighting schemes.
- Only allowing luminaires with upward waste light ratios (UWLR) of less than 1%
- The use of glare shields where appropriate.

Council will consider expanding on the existing level of detail by including:

- Example diagrams of lighting optics that act to reduce light spill along narrow paths and at bends.
- Example diagrams of luminaire "types" to provide clearer guidance to users of the document around luminaire selection

- Example scenarios where glare shields and/or nuanced optics may be suitable

Council will also consider playing an advocacy role for the approval of a greater range of approved light spill controls for unmetered street lighting. This applies in particular to V-Category street lighting where no light spill controls except for full cut-off luminaires are approved.

3.4 Light Control (dimming and timers)

Council has afforded considerable scope for the use of dimming and timers to ensure Council-owned metered lighting schemes do not over-light a space during times of lower patronage and that lights can be turned off when the usage of a space is minimal and/or undesired. As such no further additions to the Draft Guidelines and Policy documents are considered necessary.

For unmetered street lights, however, there is no existing framework to allow dimming or switching. Council will consider advocating for the approval of smart lighting technology by AusNet, as well as opportunities to act an industry leader by participating in trials of smart lighting technologies. Learnings from trials as well as any eventual long term use of smart lighting may result in a revolutionary reframe of how streets and roads are illuminated over the course of an evening.