Dark Skies – A Landscape Architect's Perspective

Case Study - Phillip Island Penguin Boardwalk Lighting and scoping for an AILA Dark Skies Practice Note

Presented by: Tim Hart, Managing Director, Urban Initiatives Pty Ltd

I recognise the custodianship of the Wurundjeri Woi-wurrung and Bunurong peoples of the lands on which we meet and pay our respect to Elders past and present and emerging.

We also recognise that their enduring cultural and ancestral connection to land, waters and skies enrich our understanding of caring for Country.

In a time of ecological and biodiversity crises, light pollution mitigation and fauna sensitive lighting is critical to the maintenance and restoration of urban ecosystems and needs to be considered in all projects undertaken by Landscape Architects.

Further evidence-based research, case studies and inter-discipline collaboration are required to convince clients, policymakers and government bodies on the benefits, rather than the limitations or risks associated with light pollution mitigation.

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Phillip Island Nature Parks lighting guidelines

Requirements from Nature Parks researchers for minimal blue wavelength, zero blue spectrum emission

Warm lights in the orange/red spectrum – not metal halide

Warm light colour with Kelvin reading under 2,700K

Total light intensity limited to less than 10 lux for outdoor lighting

Caution with LED's as they produce undesirable blue light

If LED are used - it is recommended to use LED with 2700K coupled with blue light spectra filter (we have used Zircon Warm Amber 806 with great success) to reduce the amount of blue light
We have also used C/W CREE XP-E2 AMBER CHIP in LED. The amber chip LED is close to 2200K

Light fittings which restrict light spread with shields, particularly to reduce the amount of upward light spill

Wildlife and Artificial Light

Vision is a critical cue for wildlife to orient themselves in their environment, find food, avoid predation and communicate[7]. An important consideration in the management of artificial light for wildlife is an understanding of how light is perceived by animals, both in terms of what the eye sees and the animal's viewing perspective.

Animals perceive light differently from humans. Most animals are sensitive to ultra-violet (UV)/violet/blue light[8], while some birds are sensitive to longer wavelength yellow/orange[9] and some snakes, can detect infra-red wavelengths[10] (Figure 2). Understanding the sensitivity of wildlife to different light wavelengths is critical to assessing the potential effects of artificial light on wildlife.

The way light is described and measured has traditionally focused on human vision. To manage light appropriately for wildlife, it is critical to understand how light is defined, described and measured and to consider light from the wildlife's perspective.

For a detailed explanation of these issues see What is Light and how do Wildlife Perceive it? The Glossary provides a summary of terms used to describe light and light measurements and notes the appropriate terms for discussing the effects of light on wildlife.

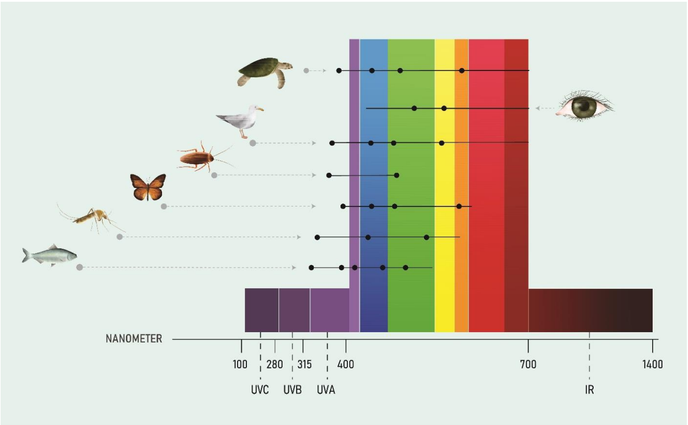
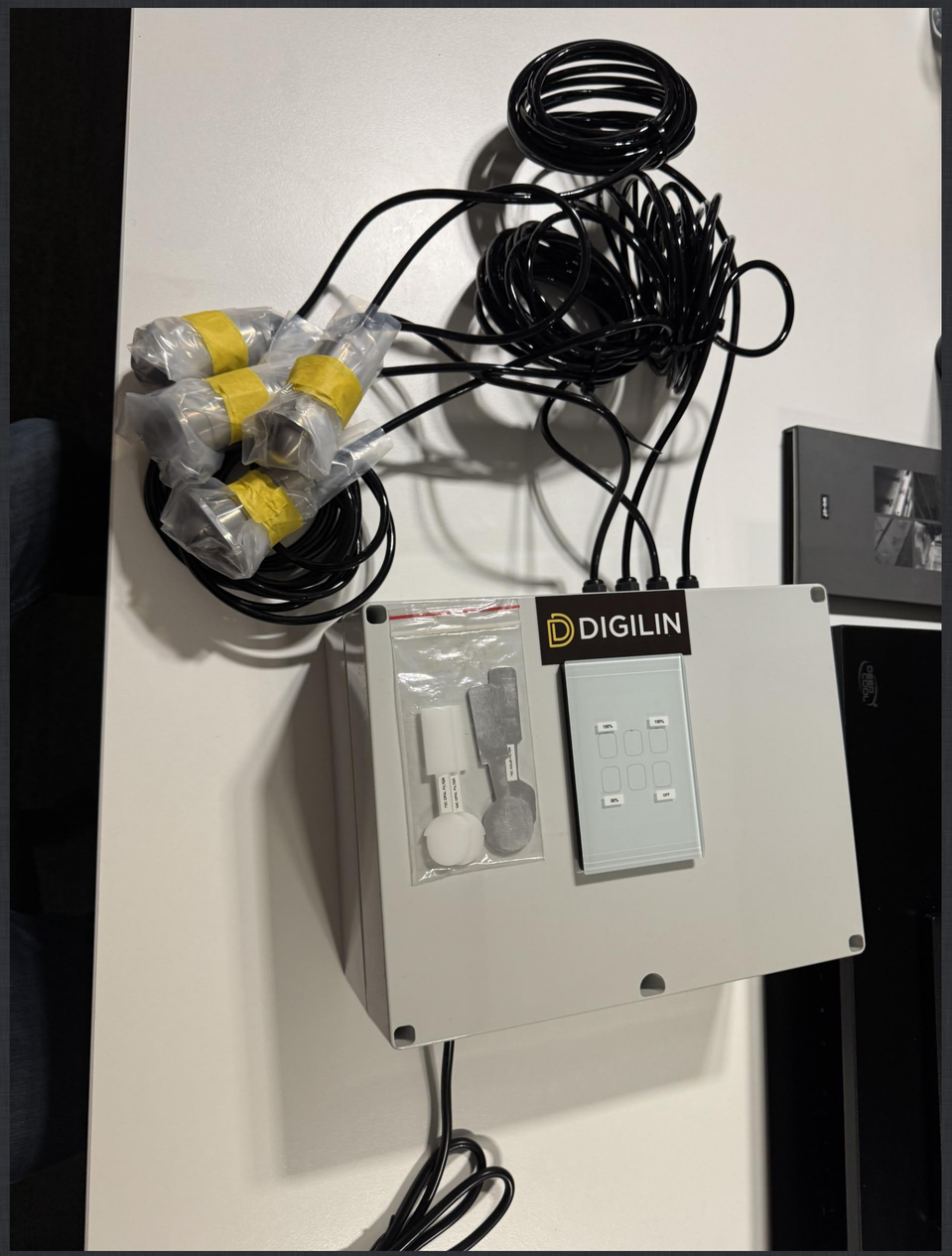
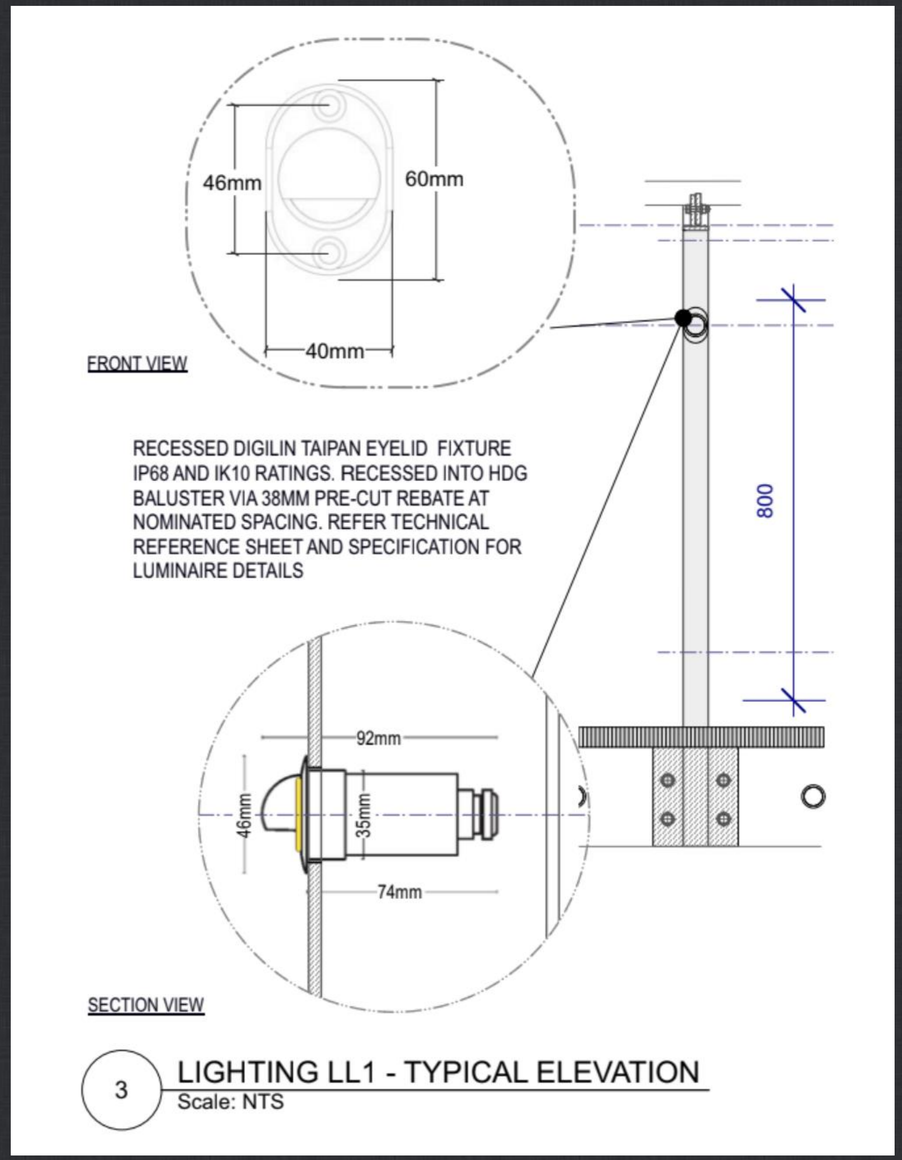
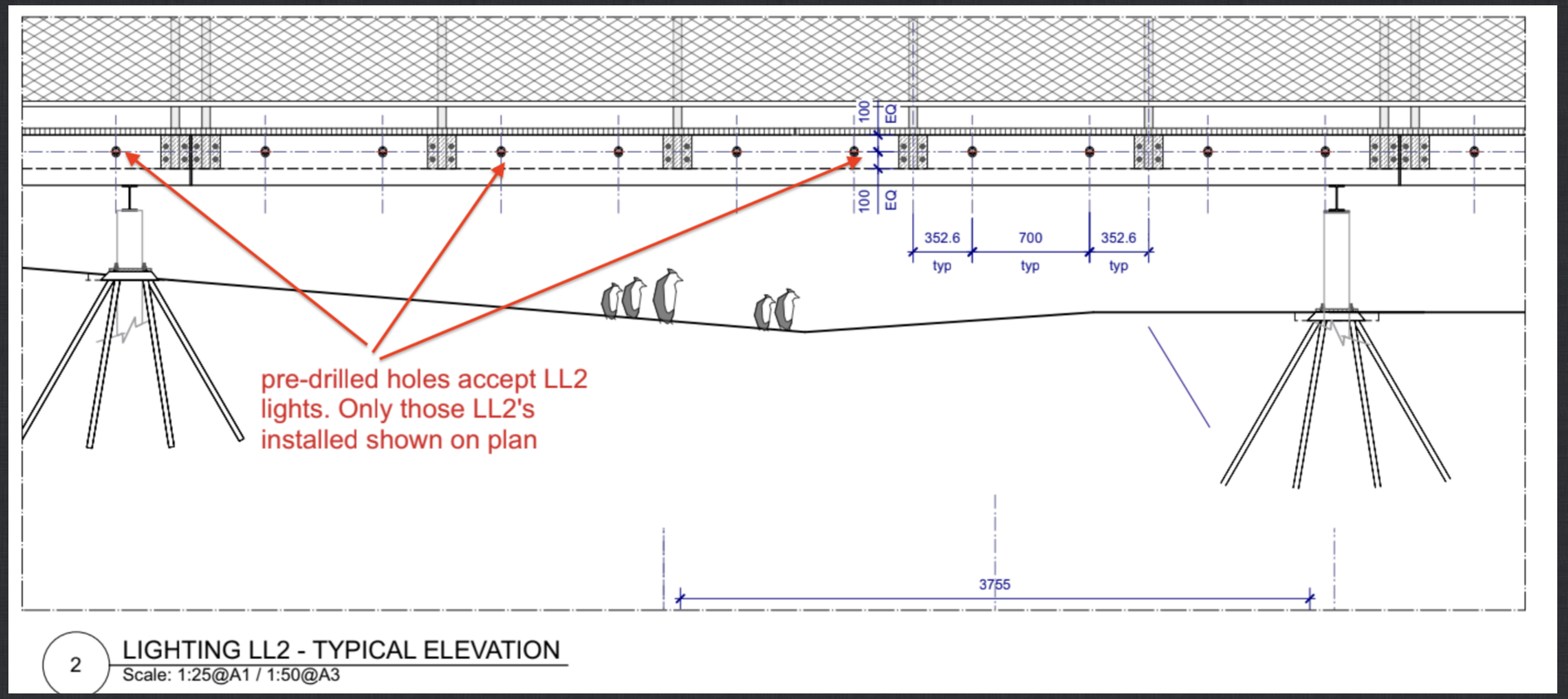


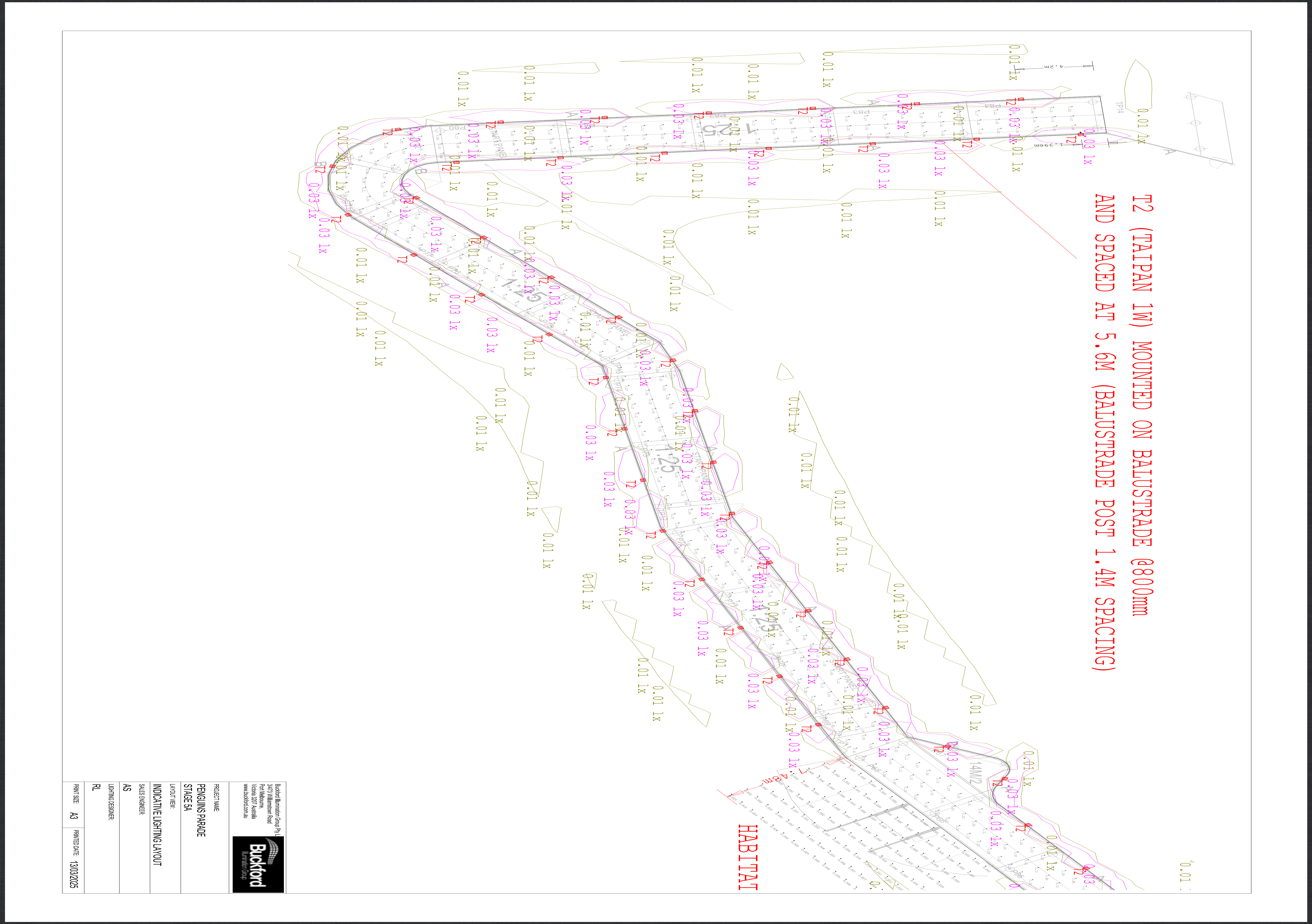
Figure 2 Ability to perceive different wavelengths of light in humans and wildlife is shown by horizontal lines. Black dots represent reported peak sensitivities. Figure adapted from Campos (2017)[8].


DIGILIN


46mm
60mm
40mm
FRONT VIEW
RECESSED DIGILIN TAIPAN EYELID FIXTURE IP68 AND IK10 RATINGS. RECESSED INTO HDG BALUSTER VIA 38MM PRE-CUT REBATE AT NOMINATED SPACING. REFER TECHNICAL REFERENCE SHEET AND SPECIFICATION FOR LUMINAIRE DETAILS
800
92mm
46mm
35mm
74mm
SECTION VIEW
3
LIGHTING LL1 - TYPICAL ELEVATION
Scale: NTS

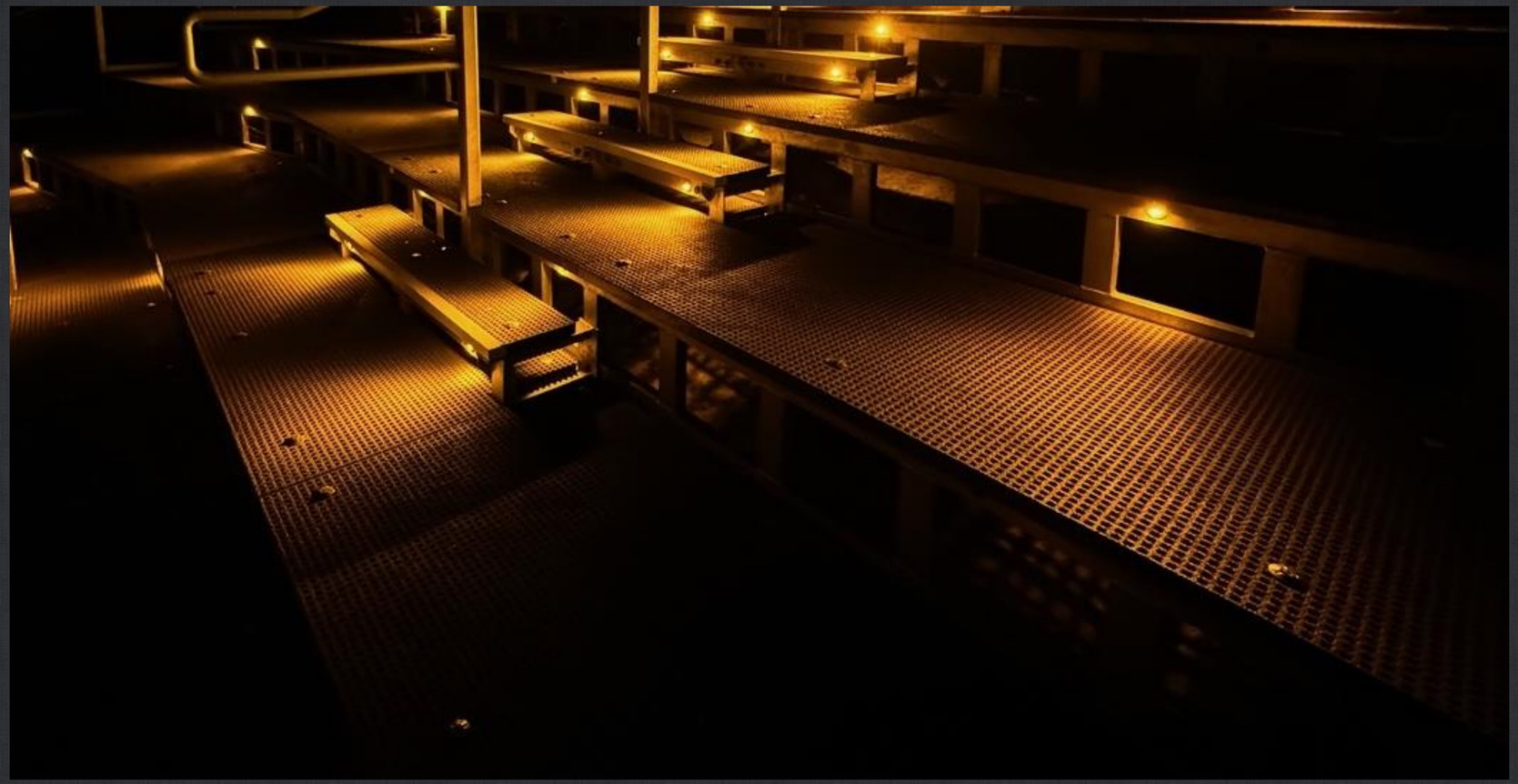


2 LIGHTING LL2 - TYPICAL ELEVATION
Scale: 1:25@A1 / 1:50@A3



T2 (TAIPAN 1W) MOUNTED ON BALUSTRADE @800mm
AND SPACED AT 5.6M (BALUSTRADE POST 1.4M SPACING)
HABITAT
Buckford Illumination Group Pty Ltd
3/473 Williamstown Road
Port Melbourne,
Victoria 3207 Australia
www.buckford.com.au
PROJECT NAME:
PENGUINS PARADE
STAGE 5A
LAYOUT VIEW:
INDICATIVE LIGHTING LAYOUT
SALES ENGINEER:
AS
LIGHTING DESIGNER:
RL
PRINT SIZE: A3
PRINTED DATE: 13/03/2025

Illuminance
(Lux)
0
0.25
0.5
0.75
1
1.3
1.5
1.8
2
T2 (TAIPAN 1W) MOUNTED ON BALUSTRADE @800mm
AND SPACED AT 5.6M (BALUSTRADE POST 1.4M SPACING)
HABITAT AREA 1
HABITAT AREA 2



Practice Note

Australian Institute of Landscape Architects

Dark Skies and Environmentally Sensitive Lighting

Strategic Linkage

The development and provision of practice notes to help guide members on areas of practice form part of AILA's Membership Strategic Pillar:

- AILA understands and is responsive to the needs of its members
- The value proposition for AILA membership for all landscape architects is increasing- Update and note alignment based on other examples

Purpose

Good business administration and employment practices and procedures are crucial to the health of any business. The development, application and sharing of Professional and member related documents is important to many AILA members.

Objectives

The AILA National Practice Committee are responsible for the planning and development of new practice notes to help members. The following guideline has been prepared to the provide a consistent approach, structure and format for the development of new practice notes.

Practice Note Preparation

The tone of the writing should be professional and clear. Any acronyms and technical language or terms should be defined with any content that is likely to be updated, linked via a hyperlink to the source document or reference. Text should be prepared in Word format by a member of the Practice Committee with review undertaken by a second member of the Committee, before being presented to the Committee for review and adoption. The AILA Executive be responsible for the formatting of each Practice Note in a standard template

Any items requiring legal advice or guidance should be identified and professional advice sought early in the process (subject to AILA Executive approval). The following provides a template for how to structure project text.

Purpose:
Outline the purpose of the Practice note with a brief summary and outline of the topic.

Introduction and objectives:

- Describe what the objectives of the Practice Note area and what the issue or topic is about.
- Define the key issues, requirements and terms.
- Describe the benefits or opportunities presented by adherence to the Practice Note.

Body:
This is the crux of the document and should summarise the issue and preferred approach or solutions.

- What is the Issue?
- What are the risks?
- How does it impact on members, client or the community?
- What are the roles and responsibilities?
- Describe the Process proposed under the Practice Note: This should include an outline the technical steps and requirements- numbered dot points preferred.

Practice Note closure:

- List resources, reference documents, further reading, additional links or services.

Where relevant, note any related AILA policies or Practice Notes.

Review:

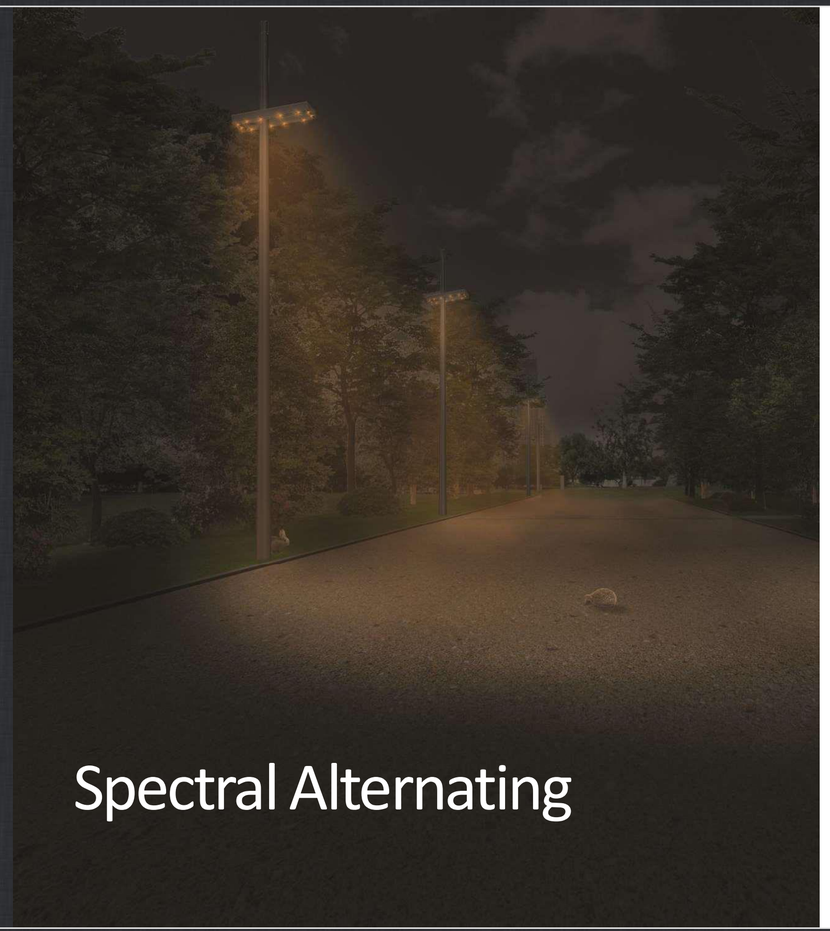
- Notes should be reviewed annually to ensure hyperlinks are up to date and still active.
- The date of issue and revision number should be listed in the footer.

Creating a dark sky environment is good design and involves creating a more responsive design.

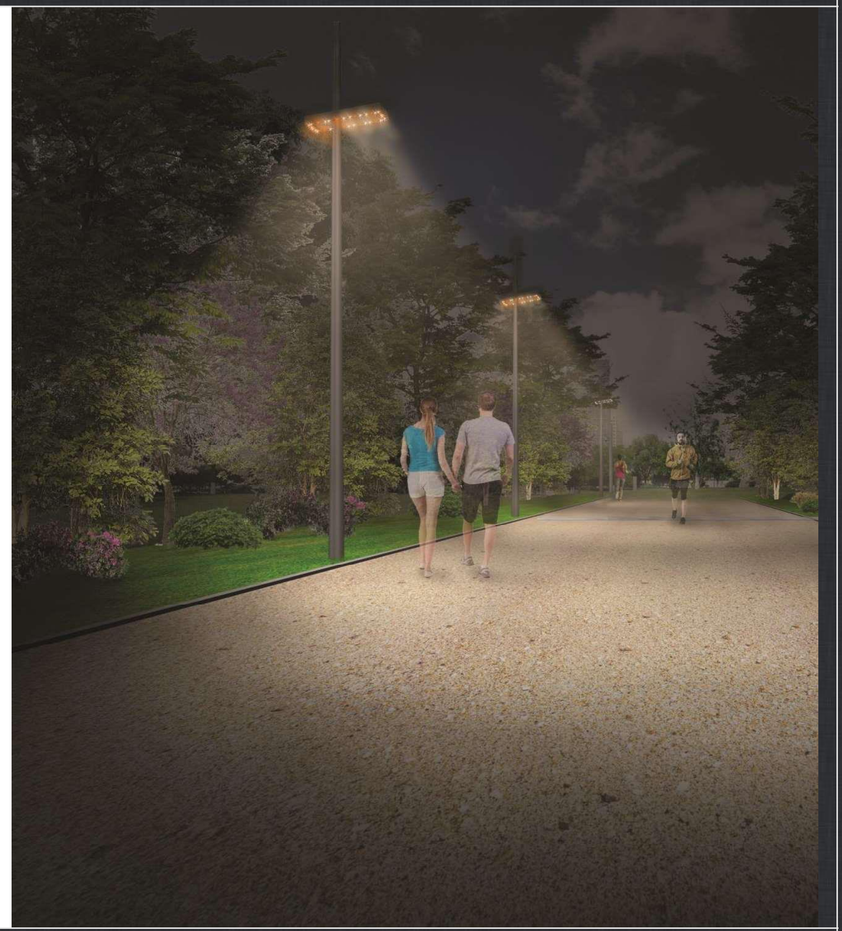
Beyond humans, we need to consider animals, insects and other natural systems influenced or affected by light in our policies and actions.

WHITE

AMBER



Spectral Alternating



Distilled down the best practice approach accords with Responsible Outdoor Lighting at Night Principles. Some of those key principles are:

1. *Light should have a clear purpose*
2. *Light should be directed where it is needed*
3. *Light should be no brighter than is necessary*
4. *Light should be dimmed down and turned off when not required*
5. *Use warmer tones where possible*

Please send case studies or technical information to assist in the preparation of the AILA Practice Note to:

tim@urbaninitiatives.com.au

Humans have always feared the night – and now we are wiping it out, one streetlight at a time.

Into the Dark
Jacqueline Yallop