Punakaiki Wild Development

Environmental Lighting Report

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Prepared By

Ewen Cafe
Principal Lighting Designer
Managing Director

3D Lighting Design Limited
553 Peak Road Kaukapakapa
RD2 Helensville
Auckland 0875
New Zealand

Reviewed By

Telephone: +64 21 736 877

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Contents

1 Introduction

3DLD have been engaged by ACG Properties Limited to establish a high-level approach and appropriate technical light parameters to affect the external lighting of the proposed "Punakaiki Wild" development at Punakaiki, referred to herein as "the site".

Our report addresses the relevant control provisions of Buller District Council and specific environment concerns including potential affects to indigenous birdlife within the area immediately surrounding the site.

The site will require lighting to buildings, roading and footpaths to ensure safe movement of pedestrians and vehicles at night, while addressing the environmental sensitivities of the site. It is therefore proposed that most of the lighting will be for "wayfinding" primarily rather than seeking a strict adherence to AS/NZS1158.3:2020, except in isolated locations where vehicle and pedestrian mixed movements call for minimum lighting targets such as the visitor carpark and walkways between the carpark and the lodge. Where compliance with the standard is appropriate, the lowest lighting targets are proposed to balance user safety and environmental concerns.

2 Preamble

2.1 Project Site and Scope

The proposed development is located at 4671/4663 SH6 Te Miko, Punakaiki encompassing TeMiko / Perpendicular Point, (image 1) and the re-development of a former rural property. The proposal includes provision of a Lodge comprising restaurant, bar and spa facilities, 15 cabins providing visitor accommodation and worker accommodations. Records indicate that the site is zoned as general rural under Te Tai o Poutini (TTPP) and is within the Outstanding Coastal Natural Character Overlay. Accordingly, the rules within Part 2 "District-wide Matters" of the District Plan apply, and specifically "LIGHT-R3" which states:

1. *Artificial outdoor lighting must not exceed the following vertical or horizontal light levels:*
    a. *7.00am – 10.00pm: 2 Lux; and*
    b. *10.00pm – 7.00am: 1 Lux; where*
    c. *This is measured at the boundary of the site.*
2. *Where the artificial outdoor lighting is located within the Outstanding Coastal Natural Character Overlay it must:*
    a. *Be fully shielded or use a controlled optic;*
    b. *Have a colour corrected temperature of no greater than 3000K (warm white); and*
    c. *Be installed in a manner that precludes operation between 10pm and 7am the following day.*

The TTPP does not provide guidance for horizontal or vertical lighting within private sites, so instead we have taken guidance from AS/NZS1158.3.1:2020 (amendment 1).

We have also taken guidance from an Environmental Report prepared by Powell Fenwick for the recent Dolomite Point Redevelopment (26th May 2021). Dolomite Point is a public facility whereas Punakaiki Wild is private, however there a similarities in environmental considerations of both sites due to their proximity to local birdlife, and each other.

3 Lighting Methodology

3.1 Light Technical Parameters

In response to the minimal lighting requirements for the overall site, we have broken down the accessways into lighting zones. (refer attached sheet SK01)

1. **Primary Route** – Including the driveway from the main entry on SH6 to the visitor carpark and links to the Lodge. We propose compliance with AS/NZS1158.3.1 sub-category PR6 (below) to cater for guest arrivals and infrequent visitors. Proposed lighting likely powered for efficiency.

Table 3.3 — Values of light technical parameters for roads in local areas

1	2	3	4
Lighting subcategory	Light technical parameters (LTP)		
	Average horizontal illuminance[a,b] $(\bar{E}_h)$ lx	Point horizontal illuminance[a,b] (E_{ph}) lx	Illuminance (horizontal) uniformity[c] Cat. P (U_{E2}) (max/avg)
PR1	7	2	8
PR2	3.5	0.7	8
PR3[d,e]	1.75	0.3	8
PR4[d,e]	1.3	0.22	8
PR5[d,e]	0.85	0.14	10
PR6[d]	0.7	0.07	10

a These values are maintained.

b Conformance is achieved by being greater than or equal to the applicable table value.

c Conformance is achieved by being less than or equal to the applicable table value.

d See Clause 3.2 for lumen derating values for light sources with S/P ratio < 1 and/or CCT < 2 500 K.

e When the luminaires are to be supported on existing electricity reticulation poles, the subcategories PR3, PR4 and PR5 may be reduced to the next lower subcategory PR4, PR5 and PR6 respectively.

NOTE: Where there is a significant fear of crime or where required by the relevant authority then for enhanced lighting of the formed pathways, see Table 3.4.

2. **Secondary Route** – including side-roads accessing guest cabins. We propose wayfinding lighting only from the main driveway to the junction of each track leading to individual cabins. Likely solar-powered lighting.

3. **Local Guidance** – Including guest cabins primary entry point, local lighting only, low intensity, to facilitate safe wayfinding to the front door of the cabin. Lighting either solar bollards, or powered wall lights attached to cabins.

In general, exterior lighting will be restrained to the minimum required for providing safe, navigable movement around the site. There is no lighting proposed for clifftop walkways within the site to dissuade use at night.

3.2 Lighting Equipment

The lighting is proposed to comprise mainly low-level, low output bollards throughout the site and consideration is being made into the viability of solar-powered options as well as mains-powered lighting equipment, or most likely, a combination of both. Wall mounted lighting is proposed for the main lodge, cabins and outbuildings where required.

All lighting will include controlled optics to mitigate skyglow and minimise any effects from glare. Bollards will be 900mm in height and wall lighting shall direct light downward only, no uplighting is proposed anywhere on the site. Lighting columns in general are to be avoided if possible.

Lighting bollards will be arranged in a semi-staggered arrangement along the driveways to provide wayfinding guidance and to identify changes in direction and intersections with sideroads to cabins. All lighting will be controlled by a combination of daylight and timeclock controls and motion sensors. The intent is to operate all lighting from dusk through to approximately 1 hour past the Lodge closing time after which lights will turn off and revert to motion-detection mode.

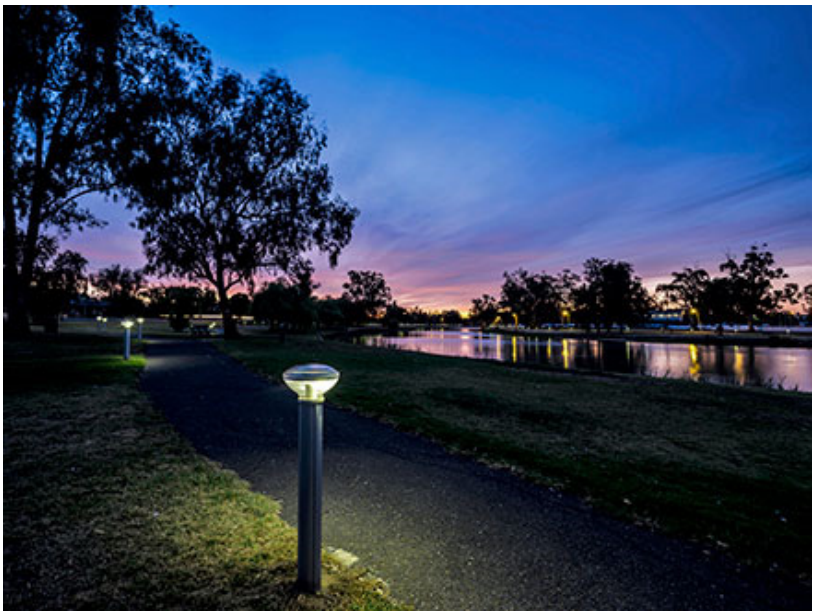


Image 1 - Example of Wayfinding Lighting

4 Environmental Considerations

4.1 Lightspill and Glare.

The proposed lighting will be low output in terms of luminous flux, and combined with controlled optics and the proposed mounting height of 900mm will completely mitigate the risk of glare to users of the driveway and tracks.

4.2 Skyglow

We propose to mitigate contribution to unwanted skyglow through the selection of full cut-off optics and warm colour temperature LED light sources of 2700K to 3000K (max)

4.3 Mitigation of Effects to Birdlife

The Punakaiki region is a recognised conservation area and an important nesting site for native bird species, including the Westland Petrel. While New Zealand does not currently enforce specific lighting standards relating to wildlife sensitivity—outside of maritime guidance—several non-regulatory frameworks can help inform an environmentally responsible approach.

4.3.1 Australasian Dark Sky Alliance (ADSA) Guidance

The Australasian Dark Sky Alliance (ADSA) is a research-based organisation committed to reducing the impact of artificial light in environmentally and astronomically sensitive areas. Though not a formal regulatory body, their recommendations are increasingly referenced in conservation-led projects.

For ecologically sensitive areas, such as the habitat surrounding the site, the ADSA proposes the following specifications:

- **Zero upward light spill** when luminaires are installed at their maximum tilt
- **Colour temperature ≤ 2700K**, with **blue light content under 2%**
- **Maximum 5000 delivered lumens** per luminaire
- **Integrated lighting controls** (e.g., dimming, time-based operation)
- **Uplight limited to ≤1%** from both front and rear of the luminaire

Meeting these criteria, particularly the blue light threshold, often requires amber-spectrum LEDs rather than conventional, blue-based technologies. While this may reduce energy efficiency by approximately 30%, appropriate luminaires are available and can be effectively specified for bollards, wall-mounted lights, and low-level area lighting within the site.

5 Conclusions & Recommendations

The lighting strategy, as proposed, will achieve a balance of meeting minimum public lighting requirements by designing to AS/NZS118.3.1:2020 sub-category PR6 in the areas of highest activity, and the guidelines of the ADSA in the mitigation of environmental effects by providing wayfinding lighting in the secondary areas and immediate cabin surrounds.

We recommend the following consideration as part of a detailed lighting design package:

1. Prior to external lighting being installed, an External Lighting Management Plan (ELMP) shall be prepared by a suitably qualified professional and provided to Council. The objective of the Plan is to manage effects of external lighting on fauna and amenity values. The ELMP shall identify measures to achieve this objective and have regard to the Environmental Lighting Report submitted with the application. All external lighting installed must be in accordance with the principles of the ELMP. The ELMP shall identify how the objectives set out in this condition are to be achieved and shall, as a minimum, address the following:

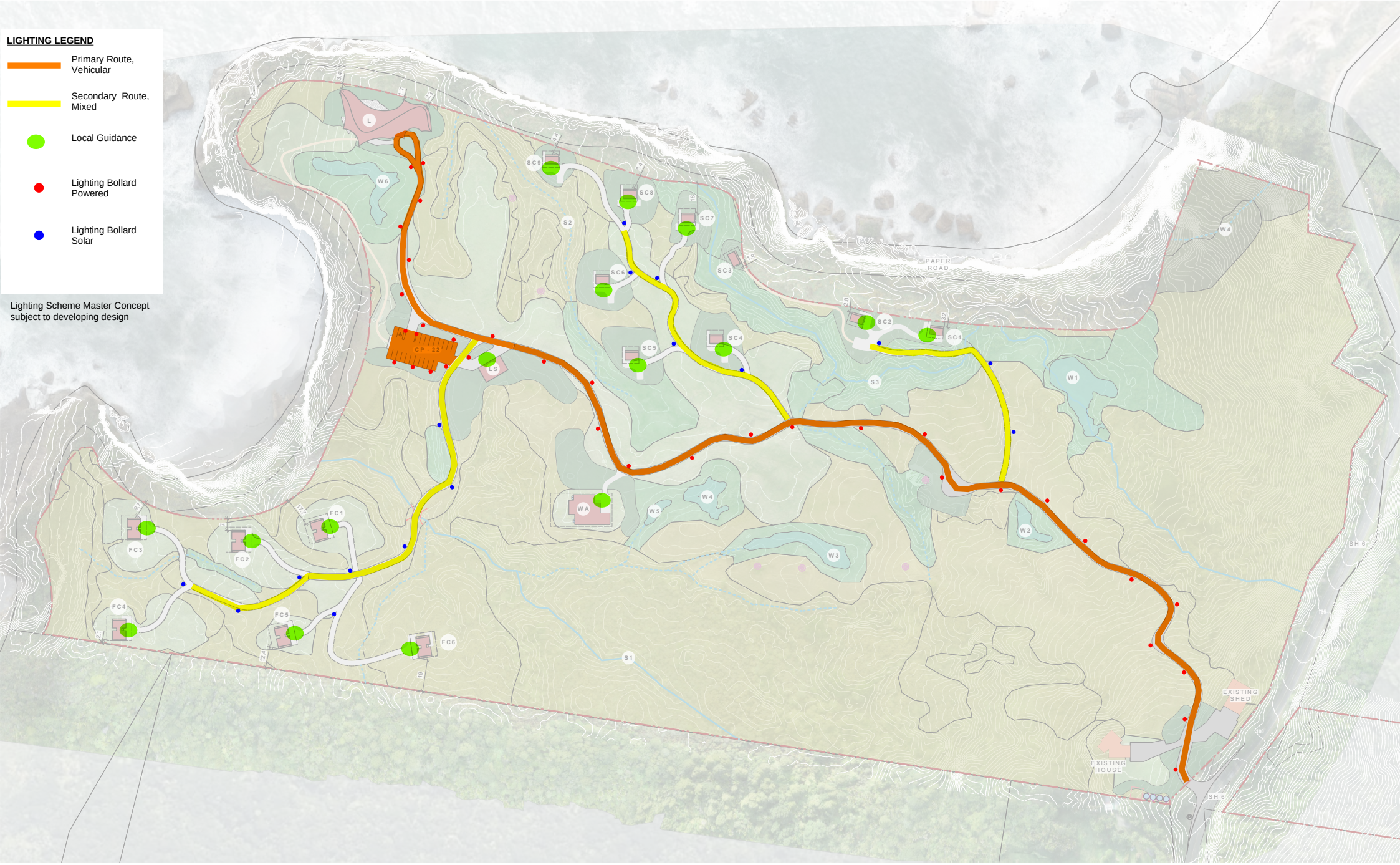
    a. A description of proposed lighting types and specifications;
    b. Identification of locations for all proposed lighting installations;
    c. Measures to avoid excessive light spill and limit light intensity to levels compatible with landscape amenity and ecological values;
    d. Consideration of potential impacts on fauna and flora, particularly light-sensitive species, and measures to mitigate such impacts;
    e. Provisions to ensure compliance with relevant lighting standards and guidelines;
    f. Integration with surrounding landscape and mitigation of visual impacts during night-time;
    g. Monitoring and maintenance procedures to ensure the ongoing effectiveness of the lighting design;
    h. A framework for responding to complaints or queries regarding lighting effects from stakeholders or the community.

2. The certified ELMP shall be implemented prior to the operation of any exterior lighting and maintained thereafter for the duration of the activity.

End of Report

3D Lighting Design
553 Peak Road, Kaukapakapa
RD2 Helensville, Auckland 0875
New Zealand

t: +64 21 736 877
e: ewen@3dlightingdesign.com
w: www.3dlightingdesign.com



1:1000 @A1
1:2000 @A3

0 25 75 m
1m Contour Interval

L - LODGE
Total Floor Area = 621.2sqm
Finished Floor Level= 33.8m

FC - Family Cabin
Total Floor Area = 100 sqm
Approx

SC - Single Cabin
Total Floor Area = 44 sqm
Approx

WA - Workers Accommodation
Total Floor Area = 251sqm
Finished Floor Level= ___m

LS - Lodge Support
Total Floor Area = 150sqm
Finished Floor Level= 36m

CP - 22 Carparks for Lodge
Total Area = 745sqm
Finished Level= 35.6- 36.2m

Setback From Site Boundary

Proposed Access Road (4m)
Proposed Cabin Accessways (2.8m)
Proposed Walkways (1.4m)
Proposed Buildings Platforms
Proposed Water Tanks

Site Surveyed Boundary
Parcel boundraies from LINZ
Existing Access (4m)
Existing Culvert
Site Features

Note: The site is located within the Te Tai o Poutini PDP areas of :

- Outstanding Natural charachter
- Outstanding Natural Landscapes
- General Rural Zone
- Pounamu Manangment Areas
- Coastal Environment
- SASM30 is located on the site.

PUNAKAIKI WILD

MASTERPLAN

19 December 2024 Revision 6

RMM

ROUGH MILNE MITCHELL LANDSCAPE ARCHITECTS