

**BEFORE INDEPENDENT HEARING COMMISSIONERS APPOINTED BY THE
KAIKOURA DISTRICT COUNCIL**

IN THE MATTER OF

The Resource Management Act 1991 (**RMA** or
the Act)

AND

IN THE MATTER OF

Proposed Plan Change 4 (**PC4**) to the Kaikoura
District Plan (**KDP** or **the Plan**) brought by
Kaikoura Business Park Limited (**KBP**)

AND

IN THE MATTER OF

The Hearing of Submissions and Further
Submissions on PC4

**EVIDENCE OF GLEN WRIGHT FOR THE APPLICANT
KAIKOURA BUSINESS PARK LIMITED**

DATE: 12 March 2024

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INTRODUCTION

- 1 My name is Glen Andrew Wright
- 2 I am employed as a Principal at S&T Wellington Limited, an architectural and engineering consultancy based in Wellington.
- 3 I hold the qualifications of New Zealand Certificate of Engineering (Electrical), I am a Registered Engineering Associate and an Associate Member of the Illuminating Engineering Society of Australia and New Zealand.
- 4 I have over 30 years' experience in lighting design, application and review. This includes exterior lighting for amenity, security and appearance, and also includes public spaces, carparks, walkways, sports fields and buildings in urban and rural environments. I am the recipient of six national lighting awards.
- 5 I have provided lighting effects advice to many resource consent applicants and Auckland, Whangarei, Palmerston North, Porirua, Wellington and Upper Hutt Councils, and was the South Wairarapa District Council's lighting technical adviser for the recent Dark Sky Plan Change 12 to the Wairarapa Combined District Plan.
- 6 I have read the Environment Court's Code of Conduct and agree to comply with it. My qualifications as an expert are set out above. The matters addressed in my evidence are within my area of expertise, however where I make statements on issues that are not in my area of expertise, I will state whose evidence I have relied upon. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in my evidence.

SCOPE OF EVIDENCE

- 7 In my evidence I address the following issues:
 - (a) Assessment of the proposed changes to the Kaikoura District Plan that relate to artificial lighting
 - (b) Responses to lighting technical matters raised by submitters and in Section 42A Reports

CONTEXT

8 I was the author of the *"Stephenson & Turner Lighting Assessment Report"* dated 12/07/2022, the purpose of my evidence is to provide technical opinion on appropriate district plan lighting rules that will seek to control the artificial lighting effects associated with this proposed land use (business park) so that they are not obtrusive to the occupants of surrounding dwellings and effects on the brightness of the sky are controlled in line with the aspirations of the Kaikōura Dark Sky Trust.

9 I understand that under s73(2) of the Resource Management Act 1991 (RMA), Kaikōura Business Park Ltd ("the Applicant") requests a change to the Kaikōura District Plan (KDP), to re-zone approximately 21.6 ha of rural land located at 69 Inland Kaikōura Road, Peketā, to a new proposed 'Light Industrial Zone'. This plan change will allow the rural pastoral land to be developed into a business park.

10 This evidence relates to land legally described as Lot 2 DP 501321 & approved Lot 20 SU-2021-1765-00 and commonly known as 69 Inland Kaikōura Road Peketā, Kaikōura. I affirm the contents of the following attached reports:

- (a) Stephenson & Turner Lighting Assessment Report dated 12/07/2022 (**Appendix A**), including:
 - (i) Kaikoura Dark Sky Trust Responsible Lighting Guidelines for Kaikoura May 2022; (**Appendix B** to Evidence of Kyra Xavia)

THE RECEIVING ENVIRONMENT

Surrounding dwellings

11 There are dwellings within the surrounds of the proposed land use (business park), therefore the effects of artificial lighting within the business park require appropriate lighting standards to ensure their effects are sufficiently mitigated with respect to the occupants of these dwellings.

The Hutton's Shearwater

12 I understand that the proposed Light Industrial Zone located at Inland Kaikōura Road is located in the flight path of the Hutton's Shearwater, an endangered seabird which nests at the head of the Kowhai River. The migration of these

birds can be impacted by artificial lighting that can disorient the birds and causes them to fly into things either damaging them or killing them.

Quality of night sky viewing

13 I understand that the quality of night sky viewing is important to the Kaikōura community. If not adequately controlled artificial lighting from the proposed land use (business park) can contribute upward light that increases the brightness of the night sky, increasing the sky brightness reduces the brightness of viewed stars and thereby reduces the quality of view of stars at night.

ASSESSMENT OF THE PROPOSAL

Kaikōura District Plan As of 10 October 2024

14 The Kaikōura District Plan As of 10 October 2024 includes a LIGHT chapter which deals with the effects of artificial light across the district, it provides the district wide issues, objectives, policies and standards. Different lighting standards are provided for each of the following zones:

- LIGHT-S1 Light standards in the General Residential, Settlement, and Marines Facilities Zones
- LIGHT-S2 Light standards in the General Rural Zone
- LIGHT-S3 Light standards in the Commercial Zone
- LIGHT-S4 Light standards in the Kaikōura Peninsula Tourism Development Area
- LIGHT-S5 Light standards in the Ocean Ridge Development Area

Proposed Plan Change Lighting Standards

15 The Applicant is proposing to introduce new Light Industrial Zone to be incorporated into the KDP as a new chapter, this new chapter includes policy, methods and standards that address the effects of artificial light within the new Light Industrial Zone. I provide comment on these in the following:

- 16 *Policy, LIZ-P7 – Ensure noise and light effects do not affect amenity states:*

To ensure adverse effects from noise and light spill on both the flight paths of Hutton's Shearwater and the amenity enjoyed on lifestyle and residential sites are avoided.

I believe this policy appropriately identifies the adverse effects of light spill on Hutton's Shearwater and residential amenity that are to be avoided.

- 17 *Methods, LIZ-M2 – Use of Rules to Protect Adjoining Zoning states:*

To include rule requirements that apply to the interface between Light Industrial Zones and adjoining zones, including:

- 3. Standards for noise from activities adjoining zones, and control of light spillage onto adjacent zones.*

I believe this method appropriately identifies the importance of rules that control light effects onto adjacent zones.

- 18 *Standards, LIZ-S7 – Lighting states:*

- 1. Exterior lights shall not result in lux spill which exceeds:

 - a. 3 lux maximum (horizontal and vertical) onto adjacent residential and rural sites; or*
 - b. 10 lux maximum (horizontal and vertical) onto adjoining non-residential and non-rural sites:**

I note these light spill standards are identical to those in the KDP Light Chapter Standard LIGHT-S3 Lighting standards for the Commercial Zone, with the exception, references to "rural" and "non-rural" sites has been included in LIZ-S7. I believe this light spill standard is appropriate but should include the Light Chapter standard that states where the light spill shall be measured for consistency and to avoid ambiguity. Therefore, I recommend the addition of the following to LIZ-S7:

- 2. Light spill shall be measured at any point more than 2m inside the boundary of the adjoining sites.*

19 *Standards, LIZ-S7 – Lighting* also includes states:

3. All artificial lighting shall comply with the requirements of Appendix 1 (7) of the Plan.

These referenced requirements are also included in the proposed plan change as amendments to KDP Appendix 1 – Landscape, Amenity and Energy efficiency Guidelines, I comment on these next,

20 Baseline Group Plan Change in their proposed KDP Amendment 2, Lighting Requirements are to be inserted into Appendix 1 – Landscape, Amenity and Energy efficiency Guidelines.

These lighting requirements require that *All artificial lighting within the Inland Kaikoura Road Outline Development Plan must comply with the following:*

These lighting requirements are largely the same as those included in my Recommendations on Lighting Management Plan in my Lighting Assessment Report. There is one change to my wording that I do not agree with from a clarity perspective. In proposed 7a,i it states:

7a.i All lights are to have a clear, specific purpose (task specific) other than lighting gardens

The requirement to not light gardens may be lost, therefore I recommend changing the wording to:

7a.i All lights are to have a clear, specific purpose (task specific).
~~other than lighting gardens~~ Do not light gardens.

21 I believe the proposed Lighting Requirements will be effective in reducing effects on the Hutton's Shearwater and ensuring the quality of the night sky viewing will not be affected by artificial lighting within the Inland Kaikōura Road Outline Development Plan.

RESPONSE TO MATTERS RAISED BY SUBMITTERS AND IN SECTION 42A REPORTS

22 My response to submissions is limited to the consideration of lighting technical matters in contention.

Submissions in support of the reports relating to light pollution

- 23 Submissions of Emma & Darryn Hopkins, Ashley Cunliffe, Penelope Cunliffe, Henry Murray, Lianne Murray, Andy Hurst and Bev Hurst all provided the following support:

"We support the limitations specified by the reports provided in the business plan relating to sound + light pollution."

Submission of Dr Larry Field

- 24 As a Kaikōura Dark Sky Trust member Dr Field states he is empowered to speak on behalf of all members of the group. He states the following support for the proposed outdoor lighting approach:

"I would like to submit our strong support of the proposed outdoor lighting approach proposed in the plan change. It is noted that the plan change recommends lighting performance standards via a lighting management plan, prepared by planners Stephenson & Turner. These standards are in alignment with the Responsible Lighting Guidelines produced by the Kaikoura Dark Sky Trust."

- 25 Dr Field has suggested some changes to the wording of the Lighting Requirements proposed for inclusion as Appendix 1 (7) of the District Plan. I have considered each of his suggestions and provide my opinion in the following:

- 26 Item 7a.i, his suggestion:

"Address the problem that flat panel LED floodlights/security lights aimed downwards illuminate everything below the horizontal plane of the light, which results in light trespass onto adjacent sections and roads."

His proposed change to wording:

- 7a.i All lights are to have a clear, specific purpose (task specific) other than lighting gardens, and should be shielded to illuminate only the area requiring lighting.

I agree with the suggestion of additional wording to ensure the lighting is only to illuminate the area requiring lighting, but I don't believe "shielded" is the best word as a combination of both light fitting selection and how it is installed is required. My suggestion is to substitute "shielded" with "selected and installed".

My suggested wording is:

- 7a.i All lights are to have a clear, specific purpose (task specific) other than lighting gardens, and should be selected and installed to illuminate only the area requiring lighting.

27 Item 7a.ii and 7b.iii, his suggestion:

"level" and "levels" are ambiguous words which can mean either height above the ground, or light intensity. "intensity" is not ambiguous and has been suggested."

His proposed change to wording:

- 7a.ii Lighting intensities ~~levels~~ shall be the minimum levels necessary to carry out each site activity.
- 7b.iii Signs to be illuminated by shielded downlights, as per (a.iii) above, with lights to be dimmable and lighting intensity ~~level~~ set to the minimum level required for the sign to be legible from the adjacent road.

I take no issue with the substitution of "intensity" for "level", but for consistency all references to "level" should be changed to "intensity". Also for clarity I recommend that his proposed addition of reference to "as per a.iii above, with" is replaced with the actual wording "

My suggested wording is:

- 7a.ii Lighting intensities ~~levels~~ shall be the minimum intensities ~~levels~~ necessary to carry out each site activity.
- 7b.iii Signs to be illuminated by shielded downlights, light fittings when installed shall not project any light at or above the height of their light source, lights to be dimmable and lighting

~~intensity level~~ set to the minimum ~~intensity level~~ required for the sign to be legible from the adjacent road.

28 Item 7a.v, his suggestion:

"low lumen output" is vague and needs criteria for selecting lumen output. Also the word "maximum" lacks meaning."

His proposed change to wording:

7a.v All light fittings are to be low lumen output, maximum ~~??????.~~

There was an error/omission in my Lighting Assessment Report which was carried over to the Notified Rules Package, a maximum value of "5000 Lumens" should have been stated, accordingly I recommend that the wording of 7av should be amended to:

7a.v All light fittings are to be low lumen output, maximum 5000 Lumens.

29 Item 7a.vi, his suggestion:

"presence" tends not to be used in the lighting industry to describe sensors which detect movement at night. Instead, "motion sensor" or "PIR sensors (Passive InfraRed)" are used. I suggest substituting with "motion sensor"

His proposed change to wording:

7a.vi The lighting is to have automatic ~~motion sensors~~ ~~presence~~ and daylight controls such that the lights are on only from dusk to dawn, and when motion ~~presence~~ has been detected, maximum on time of 5 minutes.

I agree with this change.

KEY ISSUES AND SUMMARY OF CONCLUSIONS

Effects on residents

30 It is my expert opinion that the proposed lighting standards when complied with will ensure that artificial lighting effects on occupants of surrounding dwellings will be less than minor.

Effects on the Hutton's Shearwater

31 I am not an ecologist, but from my research on the effects of artificial light on fauna a resource often referred to in Australia and New Zealand is Australian Government, Department of the Environment and Energy publication National Light Pollution Guidelines for Wildlife, January 2020 Version 1.0.

These Guidelines do not infringe on human safety obligations. Where there are competing objectives for lighting, creative solutions may be needed that meet both human safety requirements for artificial light and threatened and migratory species conservation.

The Guideline outline the process to be followed where there is the potential for artificial lighting to affect wildlife.

These Guideline provide users with the theoretical, technical and practical information required to assess if artificial lighting is likely to affect wildlife and the management tools to minimise and mitigate the effects.

32 Best practice lighting design for mitigating effects on wildlife incorporates the following design principles.

1. Start with natural darkness and only add light for specific purposes. Artificial light should be added for specific and defined purposes, and only in the required location and for the specified duration of human use.
2. Use adaptive lighting controls to manage light timing through dimming, timers and motion sensors
3. Light only the object or area intended, keep lights directed and shielded to avoid light spill.
4. Use the lowest intensity lighting appropriate for the task.

5. Use non-reflective, dark coloured surfaces.

6. Use lights with reduced or filtered blue, violet and ultra-violet wavelengths.

33 The lighting standards are aligned with these recommended design principles. Therefore it is my expert opinion that the proposed lighting standards when complied with will ensure that artificial lighting effects on migrating Sutton's Clearwater will be less than minor.

Effects on the quality of the night sky

34 The lighting standards are in alignment with the Responsible Lighting Guidelines produced by the Kaikōura Dark Sky Trust and the Guideline requires align with the International Dark Sky Association outdoor lighting guidelines that I am familiar with through my work advising a number of councils on lighting standards. It is my expert opinion that the proposed lighting standards when complied with will ensure that artificial lighting effects on the quality of the night sky will be less than minor.

Glen Andrew Wright



Dated: 12 March 2024