

**Before the Hearings Panel  
At Wellington City Council**

**Under** Schedule 1 of the Resource Management Act 1991

**In the matter of** the Proposed Wellington City District Plan

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**Statement of evidence of Glen Andrew Wright on behalf of Wellington City  
Council (Lighting)**

**Date: 19<sup>th</sup> February 2024**

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## **INTRODUCTION:**

- 1 My full name is Glen Andrew Wright, I am employed as a Principal at S&T Wellington Limited, an architectural and engineering consultancy based in Wellington.
- 2 I have prepared this statement of evidence on behalf of the Wellington City Council (the **Council**) in respect of technical related matters arising from the submissions and further submissions on the Proposed Wellington City District Plan (the **PDP**).
- 3 Specifically, this statement of evidence relates to the matters in Chapter LIGHT.
- 4 I am authorised to provide this evidence on behalf of the Council.

## **QUALIFICATIONS AND EXPERIENCE**

- 5 I hold the qualifications of New Zealand Certificate of Engineering (Electrical) and I am a Registered Engineering Associate.
- 6 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.
- 7 I have provided lighting effects advice to many resource consent applicants and Auckland, Whangarei, Palmerston North, Porirua, Wellington, Upper Hutt and Kaikoura Councils. I was the South Wairarapa District Council's lighting technical adviser for the recent Dark Sky Plan Change 12 to the Wairarapa Combined District Plan and Porirua City Council's lighting technical adviser for their Proposed District Plan Light and Sign chapters.

8 I am an Associate Member of the Illuminating Engineering Society of Australia and New Zealand.

#### **Code of conduct**

9 I have read the Code of Conduct for Expert Witnesses set out in the Environment Court's Practice Note 2023. I have complied with the Code of Conduct in preparing my evidence and will continue to comply with it while giving oral evidence before the Environment Court. My qualifications as an expert are set out above. Except where I state I rely on the evidence of another person, I confirm that the issues addressed in this statement of evidence are within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from my expressed opinions.

#### **SUMMARY**

10 My name is Glen Andrew Wirght.

11 I have been asked by the Council to provide lighting technical evidence in relation to the appeal on Chapter LIGHT, which primarily relates to artificial lighting.

12 My statement of evidence addresses lighting technical issues raised by several submitters and a couple of technical amendment recommendations.

#### **INVOLVEMENT WITH THE PROPOSED PLAN**

13 I have been involved in the PDP since 14<sup>th</sup> December 2023

#### **SCOPE OF EVIDENCE**

14 My statement of evidence addresses the following matters:

14.1 Responses to lighting technical matters raised by submitters.

- 14.2 Technical amendment recommendations arising from my review of the technical aspects of the Chapter.

## **RESPONSE TO MATTERS RAISED BY SUBMITTERS**

### **Submission of Director-General of Conservation**

- 15 *The Director-General requests the addition of a new light rule similar to LIGHT-R2 that seeks to protect indigenous fauna residing within SNA's from adverse lighting effects.*
- 16 If SNA's were a zone within the PDP then AS/NZS 4282 recommendations for an Environmental Zone A1 could be considered as appropriate (currently no Zone A1 areas are included in the PDP light rules). Examples of an Environmental Zone A1 are relatively uninhabited rural areas with no road lighting.

### **Submission of Wellington International Airport Limited (WIAL)**

- 17 Seeks that the LIGHT chapter is amended to add protection for aircraft from poorly managed lighting,
- 18 Requests the amendment of LIGHT-S2 (Light Spill) to include the following standard:
- "2. All exterior lighting shall be directed downward."*
- 19 I disagree as it would place an overly restrictive control on all exterior lighting, instead limits on the percentage of light that can be projected upward are already provided in LIGHT-S5 (Skyglow) via its upward light ratios limits and these can be expected to also mitigate upward light effects to aircraft.
- 20 Requests the amendment of LIGHT-S4 (Effects on road users) to include the following standard:

*“4. The impact of lighting on aircraft or the safe and efficient functioning of the Airport.”*

21 I disagree as LIGHT-S4 are standards for controlling the effects on road users, not aircraft or airports.

**Submission of Catherine Underwood**

22 Seeks that the LIGHT chapter provisions adhere to the lighting recommendations from the International Dark Sky Association.

23 Additional artificial lighting controls that would improve the quality of night sky and align with the lighting recommendations from the International Dark Sky Association could be added but these would possibly need a Section 32 type review as these would introduce appreciable restrictions and costs for artificial lighting.

24 The required additional lighting controls would typically include; restrictions on types of light fittings, tighter upward light ratios, light source colour of 2700K or lower and adaptive controls such as automatic daylight control and motion detection.

25 Such rules would require associated education of public, electricians and local lighting suppliers to provide and install only compliant light fittings and installations.

26 Objective LIGHT-O2, and standards LIGHT-S1 through to LIGHT-S6 can be expected to contribute to a reduction in sky glow.

**Submission of Retirement Villages Association of New Zealand Incorporated (RVA)**

27 *Supports permitted activity status for outdoor lighting, but considers the applicable standards are too restrictive. For example, the vertical illuminance levels in LIGHT-S2 may be difficult to comply with. In*

*addition, considers that the standards are complex and likely to require extensive technical input.*

- 28 I disagree, the applicable standards are required to control obtrusive effects of lighting and thereby maintain the amenity for neighbours of retirement villages. These rules also afford protection for their residents from artificial lighting external to their property boundaries.
- 29 With appropriate light fitting selections and locations the majority of artificial lighting can be installed without the need for extensive technical input. It is often where more intensive lighting is being installed that extensive technical input is required, with this input ensuring effects are appropriately controlled while providing the lighting required for an activity.

#### **TECHNICAL AMENDMENT RECOMMENDATIONS**

- 30 I carried out a technical review of the LIGHT Chapter and identified a couple of technical amendments that I recommend are considered.

#### **AS/NZS 4282:2023 current version**

- 31 Standard LIGHT-S1 makes reference to *Australian/New Zealand standard AS/NZS 4282:2019 Control of the obtrusive effects of outdoor lighting*, the current version of this standard is AS/NZS 4282:2023. I recommend this reference is updated to “AS/NZS 4282:~~2019~~2023”.
- 32 I note that standards LIGHT-S1 through to LIGHT-S6 have been based on light technical parameter limits that align with those of AS/NZS 4282:2019, these limits remain unchanged in the latest AS/NZS 4282:2023 and therefore no amendment to them is required.

## Standard LIGHT-S6 technical amendment

33 I note that standard LIGHT-S6 (Externally illuminated surfaces) includes the following note in sections 1, 2 and 3:

*“Note: The limits shall be determined by calculation or measurement in accordance with CIE 150:2017 Guide on the limitation of the effects of obtrusive light from outdoor lighting installations, Second Edition.”*

This note should be deleted as AS/NZS 4282:2023 now includes guidance on how to calculate these limits and reference to AS/NZS 4282 is included in standard LIGHT-S1 (Measurements methods). Also the referenced standard *CIE 150:2017* has also be superseded by its 2017 2<sup>nd</sup> Edition and is not a common reference in the New Zealand lighting industry.

**Date:** 19/02/2024

Glen Andrew Wright



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