BEFORE THE INDEPENDENT HEARINGS PANEL
APPOINTED ON BEHALF OF THE TIMARU DISTRICT COUNCIL

UNDER	the Resource Management Act 1991
AND	
IN THE MATTER OF	Submissions and further submissions in relation to Timaru Proposed District Plan – Hearing F
AND	Dir. General Conservation (Submitter 166)

JOINT WITNESS STATEMENT
Planning

Dated: 17 June 2025

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1 INTRODUCTION

1.1 This joint witness statement (**JWS**) has been prepared by Liz Williams (planner for DOC) and Liz White (Section 42A Officer for the Timaru District Council (**Council**)), as directed by the Hearing Panel in paragraph 7 of Minute #34.

1.2 This JWS relates to submissions made by the Director General Conservation (Submitter 166) (**DOC**) on the Proposed Timaru District Plan (**PDP**), requesting the application of lighting controls within the Bat Protection Area (**BPA**) Overlay. More specifically, it relates to what specific controls for the BPA are appropriate to include in LIGHT-R1 to achieve the outcomes sought. This includes those recommended in the s42A Report as well as additional controls sought in the evidence of Ms Williams.

1.3 The Minute directed that we:

Provide a joint statement in relation to the Light provisions, responding to the lighting sought in the Evidence of Ms Williams, which considers s32AA and in particular the practicalities of complying with the lux limits sought in that evidence, and any recommended changes to the Light rules as a result.

Ms White indicated that she would likely need to seek technical advice from a lighting expert. If this occurs, the advice is to be shared with Ms Williams to inform the s32AA analysis and joint statement.

1.4 As indicated, Ms White sought technical advice from Paul Wilson, a lighting design expert, which is attached to this JWS as Appendix 1.

1.5 This advice was provided to Ms Williams, who in turn provided it to Simon Waugh (Biodiversity Ranger) and Moira Pryde (Technical Advisor) at DOC. Mr Waugh also provided evidence on this matter to the Hearing Panel. Mr Waugh & Ms Pryde sought clarification on several matters set out in Mr Wilson's advice, which were then discussed at a meeting held on Wednesday 11th June, between Ms White, Mr Wilson, Ms Williams, Mr Waugh and Ms Pryde. In particular, in Mr Wilson's advice, he identified (at paragraph 16) possible alternate methods of limiting the effects of lighting, for example through illuminance or intensity controls, but did not provide a specific recommendation on these. The meeting was therefore used to discuss the practicality and appropriateness of such an additional control(s) and what it might include.

1.6 This JWS has been prepared in accordance with sections 9.4 and 9.5 of the Environment Court Practice Note 2023, which relates specifically to expert conferencing. The participants confirm they have read, and agree to abide with, the updated Code of Conduct for Expert Witnesses included in Section 9 of the Environment Court Practice Note 2023.

1.7 This JWS sets out all matters agreed and not agreed by the experts, with an outline of the reasons for disagreement provided where appropriate.

1.8 The approach we have taken in this JWS is to record views provided by Mr Waugh and Ms Pryde for the purposes of preparing this JWS. Mr Waugh and Ms Pryde have reviewed those sections and confirmed that what is recorded is accurate.

1.9 A copy of the proposed drafting (at 2.1) has been provided to Mr Wilson, Mr Waugh and Ms Pryde. No additional points to those covered in this statement were raised.

2 CONTROLS FOR LIGHTING WITHIN THE BPA

2.1 Following our discussions, and informed by the technical advice prepared by Mr Wilson and the views expressed by DOC's technical advisor and biodiversity ranger, we agree with the following wording for LIGHT-R1 (and a related new definition), which is explained further below:

X. Long-tailed Bat Habitat Protection Area Overlay	**Activity status: Permitted** **Where:** **PER-1** LIGHT-S1 and LIGHT-S2 are complied with; and **PER-2** The artificial outdoor lighting: 1. is for a temporary activity; or 2. is on a pivot irrigator and is limited to amber or red light only; or **PER-3** In any Rural Zone or Open Space and Recreation Zone, the exterior artificial outdoor lighting must: 1. be fully shielded (see Figure 18 — Lighting Fixtures) and be installed such that the light emitting surface is facing directly down; and 2. have a colour corrected temperature of no greater than 2700K (warm white), except for floodlighting for sports, yards or security lighting, which must have a colour corrected temperature of no greater than 3000K; and 3. be directed away from any bat roost tree; and	**Activity status when compliance not achieved with PER-1: Restricted Discretionary** **Matters of discretion are restricted to:** 1. the matters of discretion of any infringed standard **Activity status when compliance not achieved with PER-2 or PER-3: Discretionary**

	4. not exceed a vertical illuminance of 0.1 lux at any bat roost tree or within 2 metres of a bat roost tree.	

2.2 Add the following new definition:

BAT ROOST TREE [IN RELATION TO THE LIGHT CHAPTER]	in relation to the Light Chapter, means a tree that is located within the Long-Tailed Bat Habitat Protection Area overlay on the Planning Maps, that is either a confirmed bat roost tree denoted with a sign, or is: 1. a native tree with a trunk circumference of more than 31.5cm, when measured at 1.5m above ground level; or 2. an exotic tree, excluding willow, with a trunk circumference of more than 70cm, when measured at 1.5m above ground level greater; or 3. any willow tree with a trunk circumference of more than 120cm, when measured at 1.5m above ground level.

3 Application of LIGHT-S1 & LIGHT-S2

3.1 In the s42A report Ms White recommended a control (in PER-1) that would require compliance with LIGHT-S1 and LIGHT-S2. These standards apply district-wide (i.e. not just within the BPA) and include a requirement to comply with the horizontal and vertical illuminance levels for the relevant Zone or Area set out in Table 22. Table 22 then sets out the relevant levels applying within different areas.

3.2 In her evidence, Ms Williams sought that PDP include a standard that limits lux levels at sites within the BPA (where within any Rural Zone or Open Space and Recreation Zone) to 0.5 lux (horizontal and vertical illuminance above the background level at a site boundary) between Civil Dusk and Civil Dawn. Ms Williams acknowledged in her evidence that without input from a lighting expert it was difficult to determine where lux levels could be measured within the BPA. However, at a minimum, it would provide some controls on lux levels within the BPA to minimise adverse effects on bats as recommended in Mr Waugh's evidence.

Technical Feedback

3.3 Mr Wilson provided advice on the practicality of applying a lux limit to site boundaries within the BPA, (which is set out in paragraphs 9-16 of Appendix 1), which ultimately concludes that such a limit would be ineffective as it would not control the level of illuminance within the BPA.

Areas of Agreement

3.4 We accept the advice of Mr Wilson as to why a lux level control at site boundaries within the BPA would not be effective at achieving the outcomes sought, particularly in terms of minimising adverse effects on long-tailed bats (as per recommended LIGHT-O1.3). For the reasons outlined below, we consider that an alternate control is more appropriate. We therefore agree with retaining PER-1 as previously recommended by Ms White.

4 Artificial outdoor lighting for a temporary activity

4.1 In the s42A report, Ms White recommended that artificial outdoor lighting for a temporary activity is expressly permitted, via PER-2. In her evidence, Ms Williams is supportive of this and did not seek a change to this condition through her evidence. For completeness we note that an addition is recommended to this condition in relation to pivot irrigators, which is discussed below.

5 Shielding & Direction

5.1 In the s42A report, Ms White recommended that in any Rural Zone or Open Space and Recreation Zone, any exterior artificial outdoor lighting must be fully shielded (PER-3.1). In her evidence, Ms Williams requested that this condition be amended so that in addition to shielding, exterior artificial outdoor lighting is required to be installed with the light emitting surface facing directly downwards.

Technical Feedback

5.2 Mr Wilson has addressed this in paragraph 19-28 of his advice. He considers it is appropriate to control both shielding and direction to minimise light pollution.

Areas of Agreement

5.3 We accept the advice of Mr Wilson that it is appropriate to control the direction of lighting, as well as requiring shielding. This is because a “fully shielded” luminaire, if mounted in a tilted position (rather than directly downward position) will emit light above the horizontal causing upward waste light, as per Figures A1 and A2 is his advice. We therefore consider the additional requirement will better minimise adverse effects on long-tailed bats.

5.4 From a drafting perspective, we note that Mr Wilson also refers to “upward light output ratio” (**ULOR**), but that he explains paragraph 20 that this is an alternate way of expressing the shielding requirement. As such, we do not consider that specifying an ULOR limit of 0.00 is needed in addition to the requirement for shielding. We think that the shielding requirement, which refers to Figure 18, will

be easier for plan users to understand. We also understand from Mr Wilson's advice, that the combination of shielding and the requirement to face lighting downwards will result in a ULOR of 0.00 in any case, without the need for this to be expressly required in the condition wording.

6 Colour Corrected Temperature

6.1 In the s42A report, Ms White recommended that in any Rural Zone or Open Space and Recreation Zone, any exterior artificial outdoor lighting must have a colour corrected temperature (**CCT**) of no greater than 2700K (warm white) (PER-3.2). Ms William's supported this in her evidence. During the hearing, a question was raised by the Panel regarding the availability of this type of lighting.

Technical Feedback

6.2 Mr Wilson discusses this at paragraphs 29-41 of his advice. He notes that the availability of light sources in the 2700K CCT range has increased in recent years in consumer/residential lighting products, but that there are some forms of lighting which are not readily available at 2700K CCT. In particular, this includes security lights, floodlighting for activities such as sportsfields and farm yards. In his advice, he states that the 2700K CCT limit would in his view be "*impractical to implement at this time and is likely to result in increased costs, reduced lumen output/efficacy and delays in obtaining lighting product*". While recommending a CCT limit of 3000K, Mr Wilson considers that if a CCT of 2700K is adopted, then flood lighting for sports lighting and health and safety purposes on farms and worksites should be exempted, but with curfews applied on the times of their use, to limit the effects of lighting on biota.

6.3 At the meeting on 11th June, further discussion was held around this, where Mr Wilson advised that a practical option might be to apply different CCT limits to different types of lighting, in order to provide for lighting, while ensuring lower colour temperature limits where this is currently practicable. Mr Waugh noted that the international guidelines to reduce the effects of light on bats (as referred to in his evidence) recommends that where light is required then using light sources with low, no blue wavelength light, with 2700K or warmer temperatures is preferable. Mr Waugh noted that this demonstrated that the less blue light there is, the better this is in terms of effects on bats.

Areas of Agreement

6.4 We agree that it is appropriate to apply a CCT limit of 2700K, to outdoor lighting within the BPA generally, where this is a reasonable practical limit to comply with. We consider that it is appropriate to apply a higher 3000K CCT limit for the type

of lighting identified by Mr Wilson as being difficult to source. While we note that he recommended exempting such lighting from the controls, and instead applying curfews, following our further discussion with him, we consider a better approach is to apply a higher limit to this type of lighting, rather than a full exemption. We do not consider that a curfew is then necessary in addition to the limit and note that in any case, the timing of the use of this lighting is likely to be self-limiting, without the need for an additional level of control in the District Plan.

7 Controlling Lux levels at a bat roost tree

7.1 As discussed above, we agree that the standard proposed to control lux levels at the site boundary would not be effective. However, we have considered whether any other alternative controls on lighting levels within the BPA would be appropriate to further minimise effects on bats from artificial light.

Technical Feedback

7.2 Mr Wilson provided some options in paragraph 17 of his evidence for more effective controls for limiting the effects of light within the BPA. His Option A was to introduce a limit to control a maximum vertical illuminance at a bat roost site.

7.3 This was discussed further at the meeting on 11th June. In his evidence, Mr Waugh noted that based on current understanding of the effects of light intensity on bats, artificial light should not exceed average-intensity moonlight (0.1 lux). Mr Waugh and Ms Pryde noted that bats not only roost within the BPA but also forage, socialise and commute within and out of the BPA as a highly mobile species. However, they both considered that in combination with the other controls applying within the whole of the BPA (including shielding/lighting direction and colour temperature), that a further measure to control lux levels at the roost sites would be beneficial for bats.

7.4 A further question arose about how to best identify a roost tree, i.e. to determine where the lux level control would apply. Mr Waugh noted that new bat roost trees are identified on a yearly basis and that whilst DOC hold a register of these sites, this is not publicly available. Most bat roost trees are identified onsite with a sign however not every tree is identified, and this does not include potential roost trees.

Areas of Agreement

7.5 We agree that it is appropriate to control lux levels at a bat roost tree. Whilst we acknowledge that bats use the whole BPA, there do not appear to be practicable standards to include in the plan rules that would effectively control light intensity and illuminance levels over the whole of the BPA. We are also concerned that

additional intensity and/or illuminance controls across the whole of the BPA might be too restrictive on activities that are anticipated by the underlying zoning of these areas, and therefore the costs associated with such controls might not outweigh the benefits.

7.6 We agree that for plan user clarity, a new definition should be included to define what a 'bat roost tree' is and subsequently identify where the lux level control would apply within the BPA. The proposed new definition aligns with the criteria set out in the ECO chapter (ECO-R4) but also includes trees identified as bat roost trees which are denoted by a sign. Ms Pryde suggested that an alternative option would be to align the definition with the criteria set out in the Bat Roost Protocols which specifies a bat roost tree as any tree that has more than 15cm Diameter at Breast Height. However, we note that this would apply the recommended lighting control to a large number of trees, many of which will not be used for roosting. This would be effective at capturing roost trees but is likely to be inefficient. Therefore, on balance, we consider it to be more efficient, and more consistent, to target the rule to the same trees that are managed under the ECO Chapter, as well as including trees that have been specifically identified as being bat roost trees.

8 Exemptions

8.1 Ms White also sought advice from Mr Wilson as to whether there are particular types of lighting used in rural and recreation areas that, for practical reasons should be exempted from the recommended requirements.

Technical Feedback

8.2 Mr Wilson states that the application of the recommended standards to pivot irrigators would be impractical. However, he notes that amber lights are widely available for pivot irrigators and their use would, in his view, mitigate any light pollution concerns without compromising health and safety or irrigation operations.

8.3 Mr Waugh and Ms Pryde support the requirement for a red/amber light as part of this exemption to mitigate adverse effects on bats.

Areas of Agreement

8.4 We agree that it would be impractical to apply the recommended standards to lighting in pivot irrigators, and that it is therefore appropriate to apply an exemption to this type of lighting, in order to allow for the use of this particular lighting. We consider that restricting the colour of this light to red/amber is

appropriate to minimise the effects of this type of lighting while still allowing for it to serve it function.

9 S32AA

9.1 Ms White has provided an assessment under s32AA of the application of the previously-proposed LSA controls to the BPA (in paragraphs 7.3.37- 7.3.40 and 7.3.69 – 7.3.70). Our further assessment therefore relates to the additional changes we now recommend to LIGHT-R1.

9.2 In undertaking the following assessment, we have been particularly guided by the outcome sought in recommended LIGHT-O1, which generally seeks to provide for the use of outdoor lighting for night-time activities, while minimising effects on long-tailed bats. In considering the package of controls, we have considered 'minimising' in the context of how practical the limits are, and whether they would compromise the ability to use lighting for its intended purpose. The approach we have taken is also to look at the package of controls within the BPA collectively, noting that they are intended to work together to minimise the impacts of lighting on bats.

9.3 For pivot irrigators we consider, based on Mr Wilson's advice that the control will have limited costs in terms of limiting choice of lights, but that the control is appropriate to minimise the effects of this type of lighting on bats, and therefore is an efficient and effective way to achieve LIGHT-O1.

9.4 The additional controls in PER-3 will result in some additional costs. In terms of the additional requirement to face downwards, we note Mr Wilson's comments that the practical effect of the additional control is that it may require the placement of additional luminaires on higher poles (and the additional costs associated with this) than would otherwise be needed in absence of the direction control. There are also additional costs arising from the limitations on lighting near bat roost trees, as these controls will limit the placement and intensity of lighting. However, we consider that the controls are practical to comply with and still allow for the use of lighting for its intended purpose. We think the benefits, in terms of minimising light spill, particularly around trees where bats are most likely to roost, outweigh the costs of the additional controls.

9.5 In coming to our recommendations on the additional controls, we have taken into account the other potential options identified by Mr Wilson. While we are mindful that bats forage, commute and socialise within the BPA, beyond the roost trees, we consider that the options for additional controls within the BPA as a whole, particularly given the geographical area it covers, would likely be inefficient, both in terms of being difficult to implement and in terms of the practical limitations

arising. We consider that the additional controls on roost trees provide a further level of mitigation in relation to roosting, noting that from a planning perspective, this is a control that can be effectively implemented. In our view, the proposed provisions are an efficient and effective way to achieve LIGHT-O1.

9.6 In terms of the CCT controls, we consider the changes to this now recommended provide a better balance between allowing for specific types of lighting that might otherwise be precluded from being used, if the lower CCT is applied to them, and minimising the effects of this lighting on bats.

9.7 Overall, we consider that the package of controls now recommended for lighting within the BPA is appropriately targeted such that they will be efficient and effective at achieving LIGHT-O1.

Signed:

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Liz Williams

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Liz White