

To: Hearing Commissioners – Te Tai o Poutini Plan

From: Briar Belgrave – Reporting Officer

Date: 29 August 2024

Re: **s42A Author Right of Reply Part 2 – General District Wide Matters: Management of Indigenous, Threatened, and Endangered species**

Introduction and Purpose

- (1) Part 2 of this report responds to the questions raised by Commissioners during the General District Wide hearing for Earthworks, Light, and Temporary Activities chapters which relate to ecological matters. In particular, the Commissioners have asked for further information on the management of potential effects on indigenous, threatened, and endangered species under the Light and Temporary Activities chapters.
- (2) This report should be read in conjunction with Part 1, dated 29 November 2023, which responds to all other questions raised by Commissioners and evidence presented by submitters during the hearing. This includes a number of recommended amendments to the Light and Temporary Activity provisions.
- (3) The West Coast Regional Council has now obtained technical ecology and lighting advice to inform the relevant matters. In preparing my response, I have relied on expert advice from Paul Wilson in relation to lighting matters and Della Bennet in relation to ecology matters.
- (4) Part 2 of this report is supported by the following attachments:
 - a. **Attachment 1:** Recommended provisions;
 - b. **Attachment 2:** Ecology Report and Addendum prepared by Della Bennet dated April 2024 and August 2024.
 - c. **Attachment 3:** Light Memorandum prepared by Paul Wilson, dated 7 May 2024; and

Light Chapter - Analysis

- (5) In response to questions raised by Commissioners in relation to the potential effects of lighting on indigenous, threatened, and endangered species. I have relied on the Ecology Report and Addendum prepared by Ms Bennet and Light Memorandum prepared by Mr Wilson. I have recommended a number of amendments in relation to the provisions of the Light chapter.
- (6) My assessment of the Light chapter has been undertaken in accordance with the following themes:
 - Theme A: Approach to light management across the district;
 - Theme B: Appropriate lighting controls and restrictions within light sensitive areas; and
 - Theme C: Appropriate lighting controls and restrictions within other areas.
- (7) In summary, my recommended amendments to the Light chapter are:
 - a. Retain the rule structure, which applies different lighting controls to different zones and overlays;
 - b. Amend LIGHT-RX3 to:

- i. Require lighting in all areas and overlays managed under LIGHT-RX3 to be fully shielded and mounted in a horizontal position;
 - ii. Require lighting in all areas and overlays managed under LIGHT-RX3 to be no greater than 3000 kelvin; and
 - iii. Including areas within 15 kilometres of the coastal environment to the rule header;
- c. Amend LIGHT-R5 to include an additional matter of discretion in relation to the consideration of a Light Management Plan (LMP).

(8) Amendments to the Light chapter are set out in full at **Attachment 1**.

Light Chapter – Objectives and Policies

(9) I consider that the further amendments are not necessary to the objectives and policies of the Light chapter as per the provisions attached to Part 1 of the Right of Reply. In particular, LIGHT-O2 seeks to protect significant habitats of indigenous fauna and the species themselves and maintain the habitats other indigenous fauna and species. LIGHT-P3 seeks to avoid adverse effects on significant habitats of indigenous fauna and the species or avoid, remedy, or mitigate adverse effects on other habitats of indigenous fauna and the species.

Theme A: The approach to light management across the district

(10) The Ecology Report and Addendum prepared by Ms Bennet collectively identify and recommend the need to include additional controls for all lighting in the Districts. In a number of instances, the recommendations apply to all lights. It is therefore relevant to consider the most appropriate approach and rule structure to light management across the district.

(11) In my opinion, the current format of the Light rules (summarised below) is efficient and effective in managing lighting controls across the Districts:

- a. LIGHT-R2 applying to lighting in the TCZ - Town Centre, MUZ - Mixed Use, COMZ - Commercial, PORTZ - Port, HOSZ - Hospital, STADZ - Stadium, AIRPZ- Airport and all INZ - Industrial Zones;
- b. LIGHT-RX1 applying to lighting in all Residential Zones, SETZ – PREC 2 – Settlement Zone – Settlement Centre Precinct, SETZ – PREC 4 – Settlement Zone – Rural Residential Precinct, OSZ – Open Space Zone, and OSRZ - Open Space and Recreation Zone;
- c. LIGHT-RX2 applying to lighting in all Rural Zones and MINZ – Special Purpose Mineral Extraction Zone; and
- d. LIGHT-RX3 applying to lighting in zones not provided for in the above, and within the Outstanding Coastal Natural Character Overlay, Outstanding Natural Landscapes Overlay and Outstanding Natural Features Overlay.

(12) I support this rule structure for the following reasons:

- a. It will enable a targeted approach to lighting control ensuring lighting in sensitive environments can be appropriately managed, and that lighting in other less sensitive areas is enabled to support social, cultural, and economic well-being.
- b. Applying standardised lighting controls across all areas, including less sensitive areas, will provide for greater protection, however will create increased cost to landowners associated with achieving and demonstrating compliance.

c. Applying the same level of lighting control to sensitive and less sensitive areas restrict activities which have operational requirements for lighting. For example, Mr Wilson identifies at paragraph 12 that it may be difficult for Port or Industrial areas to meet vertical illuminance levels that may be appropriate in sensitive receiving environments.

(13) I do not recommend any further amendments to the rule structure of the Light chapter, including amendments to apply a consistent set of lighting rules to all zones and overlays across the districts

Theme B: Appropriate lighting controls and restrictions within light sensitive areas

(14) As concluded above, retaining different lighting controls for different areas is the most appropriate approach and structure to light management. In particular, the recommended rules differentiate between areas where more enabling lighting controls are appropriate and requiring all other areas to comply with more restrictive controls.

(15) It is therefore necessary to determine whether LIGHT-RX3 appropriately identifies all light sensitive areas and applies the appropriate lighting controls for these sensitive areas.

(16) Ms Bennet identifies a number of recommendations at Section 4 of the Ecology Addendum. I consider that the following recommendations are relevant to the consideration of lighting controls within sensitive areas:

- a. All lights should be fully shielded and mounted horizontally, preventing upward illumination and reducing horizontal light spread.
- b. Use LEDs with as low a colour-correlated temperature as practicable, preferably as low as 3,000 kelvin (warm light), but no greater than 5,000 kelvin.
- c. Coastal areas within 15 kilometres of the ocean should use preferably as low as 3,000 kelvin (warm light), but no greater than 3,500 kelvin.
- d. A buffer of 15 kilometres should be established on either side of the tāiko/Westland petrel flight path from breeding colony to the ocean. The lighting should be no greater than 3,000 kelvin, especially between November to late January.
- e. All lights must have as little or no short wavelength (380-500 nanometres) violet or blue light as possible.

(17) Ms Bennet has not recommended amendments to the maximum allowable lux levels under LIGHT-RX3.

(18) The identification of options and section 32AA evaluation for Theme B is included in Table 1 below.

(19) Overall, I support Option 3 for the reasons set out in the table below and recommend the identified amendments to LIGHT-RX3. Following these amendments, I consider that LIGHT-R3 accurately identifies light sensitive areas within the districts where it is appropriate to apply a greater level of control.

Table 1: Evaluation of Options for Theme B: Appropriate lighting controls and restrictions within light sensitive areas.

	Option 1 – Status Quo	Option 2 – Amend LIGHT-R3 to include all additional lighting controls identified	Option 3 – Amend LIGHT-RX3 to partially include additional lighting controls identified
Description of option	<p>This option involves retaining LIGHT-RX3 as attached to the Right of Reply Report Part 1. LIGHT-RX3 applies to all areas that are not provided for within other rules of the Light chapter, as well as the Outstanding Coastal Natural Character Overlay, Outstanding Natural Landscapes Overlay, and Outstanding Natural Features Overlay.</p> <p>In summary, LIGHT-RX3 requires the following for lighting:</p> <ul style="list-style-type: none"> • Lux levels of 2 Lux between 7.00am – 10.00pm and 1 Lux between 10.00pm – 7.00am; • In the SETZ – PREC 3 – Settlement Zone – Coastal Settlement Precinct of Okarito: <ul style="list-style-type: none"> ○ Be fully shielded and mounted in a horizontal position; ○ Be no greater than 3000 kelvin (warm white); ○ Be installed in a manner that precludes operation of lights greater than 500 lumens for durations greater than five minutes between 10.00pm – 7.00am; • In the Outstanding Coastal Natural Character Overlay: <ul style="list-style-type: none"> ○ Lighting is to be fully shielded and mounted in a horizontal position; ○ Be no greater than 3000 kelvin (warm white); ○ Be installed a manner that precludes operation between 10pm and 7am the following day. 	<p>This option involves amending LIGHT-RX3 to include all additional lighting controls identified at paragraph 13 above, which are not already provided for under LIGHT-RX3.</p> <p>In summary, the additional controls to be included are:</p> <ul style="list-style-type: none"> • Requiring lighting in all areas and overlays managed under LIGHT-RX3 to be fully shielded and mounted in a horizontal position; • Requiring LED lighting in all areas and overlays managed under LIGHT-RX3 to be no greater than 3000 kelvin; • Coastal areas within 15 kilometres of the ocean should use preferably as low as 3,000 kelvin (warm light), but no greater than 3,500 kelvin. • A buffer of 15 kilometres should be established on either side of the tāiko/Westland petrel flight path from breeding colony to the ocean. The lighting should be no greater than 3,000 kelvin, especially between November to late January. • All lights must have as little or no short wavelength (380-500 nanometres) violet or blue light as possible. 	<p>This option involves amending LIGHT-RX3 include additional lighting controls which partially address the recommendations identified at paragraph 13 above, and which are not already provided for under LIGHT-RX3. The additional controls include:</p> <ul style="list-style-type: none"> • Requiring lighting in all areas and overlays managed under LIGHT-RX3 to be fully shielded and mounted in a horizontal position; • Requiring lighting in all areas and overlays managed under LIGHT-RX3 to be no greater than 3000 kelvin; and • Identifying areas within 15 kilometres of the coastal environment under the rule heading for LIGHT-RX3.
Efficiency and effectiveness in achieving objectives LIGHT-O2(e) is considered to be relevant to Theme B.	<p>This option is efficient in achieving LIGHT-O2(e) as more stringent requirements for lighting are focussed to the Outstanding Coastal Natural Character Overlay, where there is the greatest potential effect on indigenous, threatened, and endangered species on the West Coast due to proximity to the coastal marine area.</p> <p>This option is less effective in achieving LIGHT-O2(2) compared to Options 2 and 3 as a number of the controls only apply to a limited spatial extent as required under LIGHT-RX3.2 and LIGHT-RX3.3.</p>	<p>This option is the most effective in achieving LIGHT-O2(e) compared to Options 1 and 3 as it applies the highest level of lighting control.</p> <p>This option is less efficient compared to Options 1 and 3. In particular, the spatial extent of the flight path of the tāiko/Westland petrel is not currently defined within the pTTPP, and there are additional costs and complexities to plan users in determining compliance with the wavelength requirements.</p>	<p>This option is efficient in achieving LIGHT-O2(e) as it introduces lighting controls for the mounting of light and the maximum allowable kelvin to all zones and overlays managed under LIGHT-RX3. The controls are considered to be easily measurable and achievable for plan users.</p> <p>This option is more effective than Option 1 in managing potential lighting effects on indigenous, threatened, and endangered species as it applies a greater level of control, however is less effective than Option 2.</p>
Benefits	<ul style="list-style-type: none"> • This option includes rule requirements for clearly identified zones, precincts, and overlays within the pTTPP, and can therefore be implemented and monitored at a greater cost efficiency compared to Option 2. • This option will provide protection to indigenous, threatened, and endangered species within the Outstanding Coastal Natural Character Overlay, an area where the management of lighting will be effective due to the proximity to the coastal marine area. 	<ul style="list-style-type: none"> • This option will provide the greatest level of protection to indigenous, threatened, and endangered species within sensitive areas from potential adverse lighting effects. 	<ul style="list-style-type: none"> • This option includes rule requirements for clearly identified zones, precincts, and overlays already existing within the pTTPP, and can therefore be implemented and monitored at a greater cost efficiency compared to Option 2. The inclusion of land within 15 kilometres of the coastal environment in addition to the Outstanding Coastal Natural Character Overlay will apply restrictions to land identified by Ms Bennet, being within 15 kilometres of the ocean. This inclusion will provide for a clearly definable and measurable spatial area, while also ensuring that the extent is as focussed as possible. • By including additional requirements which are measurable and achievable, this option will achieve a greater level of environmental protection than Option 1, while ensuring that unreasonably costs are not incurred for landowners. In particular, and as identified by Mr Wilson:

	Option 1 – Status Quo	Option 2 – Amend LIGHT-R3 to include all additional lighting controls identified	Option 3 – Amend LIGHT-RX3 to partially include additional lighting controls identified
			<ul style="list-style-type: none"> ○ A range of acceptable lighting solutions are available to achieve lighting that is shielded and mounted in a horizontal position, as shown at Attachment 3; ○ Lighting of 3,000 kelvin is widely available for low power applications, as set out in Mr Wilson’s EIC and appended to the section 42A Report.
Costs	<ul style="list-style-type: none"> • This option provides for less protection compared to Options 2 and 3, and therefore has the greatest potential for adverse environmental effects. 	<ul style="list-style-type: none"> • This option relies on spatial areas that are not currently identified in the pTTPP, and as a result will create additional costs for implementation, monitoring, and administration. • The requirements for wavelength introduce additional complexity, and may create additional costs for implementation, monitoring, and administration. In particular, this includes landowners who will be required to source lighting for domestic residential purposes which comply with the requirements for wavelengths. 	<ul style="list-style-type: none"> • This option provides for less protection compared to Option 3. • This option will introduce additional costs for landowners to demonstrate compliance. However, LIGHT-RX3 does not apply to those zones managed under the other rules and which may have operational requirements for lighting.
Summary	<p>The preferred option is Option 3, which includes amendments to LIGHT-RX3 to introduce additional controls as identified above. On balance, Option 3 is both efficient and effective in managing the potential effects of lighting on indigenous, threatened, and endangered species through rules which are clear, measurable, and achievable. Option 3 will also ensure that the additional costs for implementation, monitoring, and administration for landowners and the Councils are not unreasonable.</p>		

Theme C: Appropriate lighting controls and restrictions within other areas

- (20) Similar to Theme B, it is necessary to determine whether LIGHT-R2, LIGHT-RX1, and LIGHT-RX2 apply to appropriate areas and include appropriate lighting controls within these areas.
- (21) Ms Bennet identifies a number of recommendations at Section 4 of the Ecology Addendum. I consider that the following recommendations are relevant to the consideration of lighting controls within those areas managed under LIGHT-R2, LIGHT-RX1, and LIGHT-RX2:
- a. All lights should be fully shielded and mounted horizontally, preventing upward illumination and reducing horizontal light spread.
 - b. Use LEDs with as low a colour-correlated temperature as practicable, preferably as low as 3,000 kelvin (warm light), but no greater than 5,000 kelvin.
 - c. Use LEDs with as low a colour-correlated temperature as practicable, preferably as low as 3,000 kelvin (warm light), but no greater than 5,000 kelvin in Light-R2 areas needing to meet specific health and safety requirements (e.g. port and industrial). If up to 5,000 kelvin is used, control of light spread and intensity is imperative.
 - d. Areas further inland than 15 kilometres should be around 3,000 kelvin. However, if source at larger commercial scale is challenging, the lighting should be as low as practical, but not greater than 4,500 kelvin.
 - e. In areas of mineral and mining activity, for coastal areas (<15 kilometres) and not within the tāiko/Westland petrel flight path, lighting can be up to 4,000 kelvin.
 - f. If mineral and mining activity is within the petrel flight path, works should only occur during curfew hours if the lighting can be reduced to 3,000 kelvin.
 - g. All lights must have as little or no short wavelength (380-500 nanometres) violet or blue light as possible.
- (22) Within the Ecology Addendum, Ms Bennet has not recommended amendments to the maximum allowable lux levels under the relevant rules.
- (23) My comments on the recommendations identified by Ms Bennet are set out below.
- (24) I do not support the inclusion of additional rules which require all lights to be fully shielded and mounted horizontally for the reasons set out below. I acknowledge the assessment of Mr Wilson which identifies that the control of vertical illumination and light spill is an important consideration in terms of potential effects on human health, ecological impacts, and astro-tourism, and note the following:
- a. Based on the examples of acceptable lighting solutions to achieve lighting that is shielded and mounted in a horizontal position, as identified by Mr Wilson and included at Attachment 3, I note that this requirement would extend to small scale lighting, such as garden lights and bollards which are commonly installed in association with residential activities. In my opinion, controlling this type of lighting would create unnecessary restrictions for landowners and residential activities throughout the districts.
 - b. For similar reasons, I also do not support the inclusion of this requirement in relation to LIGHT-R2, LIGHT-RX2, or the Open Space zones, and note the potential restrictions on operational

requirements for activities undertaken within these zones. I further note that these zones, where lighting controls are comparatively more enabling, have limited spatial extent.

- c. LIGHT-R1.5 requires that all lighting to be directed towards the area within the site that is intended to be illuminated. I consider that this will contribute to minimising the potential effects of light spill. I consider that on balance, LIGHT-R1.5 is appropriate to manage potential effects of vertical light spill on indigenous, threatened, and endangered species in areas that are not identified as being sensitive to lighting.
- (25) I do not support the inclusion of additional rules which require a maximum kelvin for lighting managed under LIGHT-R2, LIGHT-RX1, and LIGHT-RX2. In my opinion, these requirements would not be efficient or effective in achieving LIGHT-O1, may result in additional costs to landowners, and restrict the operational requirements of activities.
- (26) I further note that LIGHT-RX3 will apply to a number of relevant overlays, irrespective of the underlying zoning. I therefore consider that it is not necessary to apply additional controls for the mounting of lights and the maximum allowable kelvin to areas outside of LIGHT-RX3.
- (27) I do not support the inclusion of additional rules which manage activities within the tāiko/Westland petrel flight path as these are not clearly identified or mapped within the pTTPP.
- (28) As discussed above for Theme B, I do not support the inclusion of controls which manage requirements for wavelength and consider that this will introduce additional complexity, and may create additional costs for implementation, monitoring, and administration.
- (29) Mr Wilson identifies at paragraph 13 of the Lighting Memorandum that a LMP can be an effective means to develop lighting solutions that meet operational requirements while managing potential adverse effects, including on wildlife. I agree that a LMP can be a helpful tool, and recommend the inclusion of an additional matter of discretion to LIGHT-R5 to include consideration for any LMP. In my opinion, this will assist to encourage their preparation and inclusion within relevant resource consent applications.
- (30) For completeness, I also note that street lights within the district are managed outside of the pTTPP.
- (31) I consider that the scale of amendments proposed to LIGHT-R5 does not necessitate a Section 32AA evaluation.

Temporary Activities Chapter - Analysis

- (32) Similar to the provisions of the Light chapter, I have considered the potential effects of temporary activities on indigenous, threatened, and endangered species. I have considered the Ecology Report prepared by Ms Bennet.
- (33) Ms Bennet has recommended a number of amendments to TEMP-R1, and no amendments are recommended to be made in relation to the other rules. In relation to TEMP-R2 (Temporary Motorsport Activities) and TEMP-R6 (Other Temporary Activities and Buildings), Ms Bennet considers that these activities will generally occur near residential areas, during daylight hours, or for a short duration, and it is not anticipated that the tāiko/Westland petrel will be adversely affected.
- (34) In my opinion, one or more of these characteristics will also apply to activities provided for under TEMP-R3 (Temporary Buildings and Structures Ancillary to a Construction and Demolition Activity), TEMP-R4 (Temporary Residential Buildings Following an Emergency Declaration), and TEMP-R5

(Freedom Camping on land adjacent to the State Highway Network). I have therefore focussed my assessment to TEMP-R1.

- (35) In summary, my recommended amendments to the Temporary Activities chapter include:
- a. Amendment to TEMP-R1 to restrict the use of outdoor artificial lighting during the tāiko/Westland petrel breeding season (1 November to 15 January);
 - b. Amendment to TEMP-R1 to restrict temporary and military training activities and emergency management training within Significant Natural Area (SNA) identified in Schedule Four of the pTTPP; and
 - c. Consequential amendment to the matters of control under TEMP-R7.
- (36) Amendments to the Temporary Activities chapter are set out in full at **Attachment 1**.

Temporary Activities Chapter – Objectives and Policies

- (37) I consider that further amendments are not necessary to the objectives and policies of the Temporary Activities chapter. TEMP-O1 and TEMP-P2 as attached to Part 1 of the Right of Reply are relevant:
- TEMP-O1: To provide for temporary activities where they contribute to the social, economic and cultural wellbeing of the West Coast while minimising adverse effects.
 - TEMP-P2: Enable temporary military training and emergency management training activities while ensuring that adverse effects on amenity values, safety and the environment are avoided, remedied or mitigated.

TEMP-R1 – Temporary and Military Training Activities and Emergency Management Training

- (38) In relation to TEMP-R1, Ms Bennet has identified that lighting associated with activities occurring over 31 consecutive days could adversely affect the tāiko/Westland petrel during breeding season.
- (39) Ms Bennet also identifies that TEMP-R1 does not restrict activities occurring within significant habitat for indigenous fauna, and notes that this is a concern for a number of indigenous species.
- (40) Ms Bennet has recommended the following additional permitted activity rules be included under TEMP-R1:
- a. All activities should:
 - Avoid the tāiko/Westland petrel breeding season, especially around early November to mid-January (peak around 26 December);
 - Not be within a known tāiko/Westland petrel flight path.
 - b. Alternatively, all light should:
 - If activities must proceed within an area over which the tāiko/Westland petrel fly to and from the sea, all lights must be fully shielded and mounted in a horizontal position; and
 - Have a colour corrected temperature of no greater than 3000K (warm white);
 - Maximum of 2 Lux during curfew.
 - c. Restrictions should be implemented on activities occurring within significant habitat for indigenous fauna, particularly during the breeding season (May to February).

- (41) My comments on the recommendations identified by Ms Bennet are set out below.
- (42) I support the inclusion of a restriction to avoid the use of outdoor artificial lighting during the tāiko/Westland petrel breeding season, from 1 November to 15 January. While this will introduce an additional restriction, I consider that non-compliances can be efficiently managed through the resource consent process for a controlled activity (TEMP-R7), and note that daytime operations will not be affected.
- (43) I do not support the inclusion requirements to avoid activities within known flight paths or associated lighting controls. As identified above, these are not clearly identified or mapped within the pTTPP.
- (44) I do not support the inclusion of requirements to avoid significant habitat of indigenous fauna as in my opinion, these areas are not identified with sufficient certainty under the pTTPP, and are an inappropriate permitted activity rule. As an alternative, I recommend amendments to TEMP-R1.4 to require that activities do not occur within a SNA identified in Schedule Four as SNAs include significant habitat of indigenous fauna.
- (45) I understand that the Schedule Four pTTPP in its current form has only identified SNAs within the Grey District, and that the provisions of the Ecosystems and Indigenous Biodiversity require further assessment to be undertaken at the time of resource consent to identify significant indigenous biodiversity within the Buller and Westland Districts. In these instances, an ecological assessment process is required to be undertaken by an ecologist to confirm the presence of significant indigenous biodiversity.
- (46) I consider that the requirement for ecological assessment will create additional costs for demonstrating compliance under TEMP-R1. Given the limited scope of activities provided for under TEMP-R1 and that their temporary nature, I consider that referring to SNA identified in Schedule Four will provide an appropriate level of protection. This wording will also ensure that the plan provisions are future proofed until such time that SNAs in the Buller and Westland District can be identified and included within the Schedule.
- (47) Consequential to the above amendments, I also recommend the following amendments to the matters of control under TEMP-R7 to ensure that the assessment of any non-compliance is appropriately focussed to potential ecological effects:
- Matters of Control are:
- Visual amenity ~~from~~ of neighbouring properties and public places and significant habitats of indigenous fauna within Significant Natural Areas identified in Schedule Four, taking into account the duration, hours of operation and frequency of the activity;
- ...
- (48) I consider that the scale of amendments proposed to LIGHT-R1 and LIGHT-R7 does not necessitate a Section 32AA evaluation.