

BEFORE THE HEARING PANEL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of Proposed Plan Change 9 to the Operative Hamilton
City District Plan

STATEMENT OF REBUTTAL EVIDENCE OF DR HANNAH MUELLER

(Ecology – Significant Natural Areas)

Dated 12 May 2023

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INTRODUCTION

1. My full name is Dr Hannah Mueller.
2. My qualifications and experience are as set out in paragraphs 1 to 10 of my primary statement of evidence dated 14 April 2023.
3. I reconfirm that I have read and am familiar with the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2023 and I agree to comply with it.

PURPOSE AND SCOPE OF EVIDENCE

4. The purpose of this rebuttal statement of evidence, which is provided on behalf of Hamilton City Council (**HCC**) as Plan Change 9 (**PC9**) proponent, is to briefly respond to ecology comments in the statements of evidence of Dr Kerry Borkin (ecology) and Ms Ashiley Sycamore (planning) on behalf of the Director-General of Conservation (**DOC**), and Mr Chad Croft (ecology) on behalf of Te Awa Lakes Unincorporated Joint Venture (**TAL**).
5. My responses are limited to lighting effects, noise, vegetation removal, and bat habitat.

DOC

Dr Kerry Borkin (Ecology)

Paragraph 13.6: noise

6. It is my understanding that the recent research into the effects of noise on long-tailed bats explained by Dr Borkin shows the potential of noise to negatively affect long-tailed bats and their usage of habitat. I acknowledge these research findings and agree that, if we were to apply the precautionary principle, noise in Significant Natural Areas (**SNA**) should be

limited as much as possible to avoid adverse effects on long-tailed bats. However, I note that the research in this area is still emerging and there is currently insufficient evidence available to fully understand the effects of noise, or to guide the implementation of effective controls, limits and potential mitigation measures.

7. In addition, it is my understanding that in the context of PC9, it would be challenging to implement rules to limit noise in SNAs within an existing urban environment. This matter is addressed in the planning evidence prepared by Ms Laura Galt.

Paragraph 14.5: lighting temperature limit

8. Applying the precautionary principle, I agree that a maximum colour temperature limit of 2700K rather than 3000K would be preferable to minimise adverse effects on bats associated with artificial lighting. As Dr Borkin explains, current research on long-tailed bats suggests that lighting has adverse effects, and that warmer colour lighting may reduce these effects.
9. However, I note that there is no explicit research showing that 3000K (which is a relatively warm colour with limited blue components) would have adverse effects over 2700K; and that research shows that blue-filtered light (3000K only has a limited amount of blue light in its spectrum) is preferable over white lighting tones with higher amounts of blue light. Accordingly, until further evidence becomes available, I am comfortable with a 3000K colour temperature limit for outdoor lighting within 20m of SNA.

Paragraph 15.1, 16.3 and 22.1: light spill

10. Based on international research, I agree with Dr Borkin that a lower lux limit of 0.1 lux at an SNA boundary (rather than 0.3 lux) would further reduce potential adverse effects on bats associated with artificial lighting.
11. The 0.1 lux limit at the SNA boundary may also be more aligned with the lighting controls imposed at the Amberfield subdivision as part of the Weston Lea Environment Court decision, which included a 0.3 lux limit at the property boundary and a 5m setback of this boundary from any bat habitat.
12. Based on the Weston Lea approach, if lower lux limits at the SNA boundary are not provided for, building setbacks for any additional buildings could achieve the same goal of limiting light intrusion into SNAs.

Paragraph 19.1: sensor timer

13. I am not aware of any scientific evidence that provide guidelines on the length of motion sensor timers with respect to minimising effects on Long-tailed bats. However, to achieve as little artificial light intrusion as possible, a shorter sensor time would obviously be preferable. Whether the shorter period proposed by DOC is material is unknown.

Paragraph 20.8 and 20.13: tree removal

14. I agree with Dr Borkin that bat habitat, in particular suitable potential roost trees, are limited within the Hamilton City urban landscape, and that preserving as many mature trees as possible, as well as encouraging succession, is critical to preserving habitat for this species.

15. A reduction in the amount of tree removal enabled within SNAs would further minimise the risk of removing known, undiscovered or potential roosts, and contribute to maintaining functionality of habitat for bats.

Paragraph 22.2: setbacks

16. As I discuss in paragraph 12, depending on lighting controls, wider setbacks may need to be considered to further reduce light intrusion from residential housing into SNAs. It is my understanding that current provisions would result in 0.3 lux at the SNA boundary, but only assuming curtains are closed to minimise lighting.
17. Wider setbacks and/or buffer plantings may be more suitable tools to achieve the objective of reducing lighting impacts on long-tailed bats.

Paragraph 23.3: infrastructure/structures

18. My main concern with respect to the installation of additional infrastructure or structures in SNAs, assuming no lighting is installed, and no vegetation removal is required, is the incompatibility of the nature of potential bat roost trees with ensuring safe public access. Bat roost trees are often mature, failing trees with broken features.
19. This means that over time, potential bat roost trees may require removal to ensure safe usage of infrastructure. In my view, this is not in alignment with the objective of identifying and protecting SNAs as indigenous fauna habitat.

Ms Ashiley Sycamore (Planning)

Paragraph 24: lighting temperature

20. As I discuss in paragraphs 8 and 13 above, applying the precautionary principle, the adoption of 2700K (instead of 3000K) and a lower motion

sensor timer limit would likely be preferable from an ecological perspective. However, there is a lack of precise scientific evidence informing these numbers, and uncertainty regarding the level of materiality.

21. If sufficient setbacks of any new buildings are provided for, the existing lighting controls should be adequate to minimise any additional light intrusion into SNAs. As I discuss in paragraph 16, current light intrusion into SNAs may be insufficiently minimised by the existing controls, and a widening of the setback for new development (instead of further lighting restrictions) would likely be one option to minimise any new effects.

Paragraph 25: setbacks

22. I agree that if the effects of any additional lighting on SNAs are not otherwise controlled, buffers (i.e., setbacks and/or planted screens) could be introduced to minimise effects on potential bat habitat in SNAs.

Paragraph 29: noise

23. I have addressed the issue of noise above. I agree that noise effects on indigenous fauna in SNAs should be minimised. However, as I discuss in paragraph 7, the research in this area is still emerging and the challenges with respect to the implementation of noise rules in an existing urban environment are not an ecological matter and are addressed by Ms Galt.

Paragraph 46: mudfish

24. As I have discussed in my primary evidence¹, all mudfish habitat meets SNA criteria and should be formally protected from further degradation and habitat loss. The scope to introduce mechanisms for protection of these

¹ Statement of evidence of Hannah Mueller, Ecology – Significant Natural Areas, dated 14 April 2023. Paragraph 41

areas in PC9, whether mapped or otherwise, is not an ecological matter, and is addressed in the evidence of Ms Galt.

Mr Chad Croft (Ecology)

Paragraph 7: SNA on TAL site

25. It is my understanding that areas 3 and 5 have already been removed from the dataset, as vegetation present in these locations has been removed, which I have confirmed during a recent site visit.
26. Area 2 is a stand of eucalypts that has the potential to provide for bat roosting; it is also contiguous with the remaining SNA and the Waikato River riparian vegetation. I understand from communications with Ecology NZ that bats have been recorded at the site recently. Bats are also known to be present in the wider landscape and along the Waikato River corridor.
27. Area 4 forms part of the Waikato River riparian vegetation, and in line with the SNA assessments across the city, forms a critical component of buffering the river system; and providing a corridor to enable the movement of indigenous fauna species.
28. Therefore, all areas that have not been subject to vegetation clearance to date fulfil an important function of buffering and providing bat habitat (including foraging and potential roosting). They do provide critical habitat and have correctly been identified as SNA for these functions.

CONCLUSION

29. The current PC9 plan provisions proposed by HCC provide a robust framework to identify and protect SNAs from urban encroachment, including controls on lighting, setbacks, and vegetation clearance.

30. Applying the precautionary principle, further protection of indigenous fauna in SNAs, in particular bats, could be provided through additional controls with respect to lighting, setbacks, buffers, noise control and vegetation clearance. However, the benefits are not quantified.
31. If the Panel is seeking increased mitigations, a key consideration may be the widening of the currently proposed building setbacks for any new buildings to further minimise their effects, including cumulative effects, on SNAs.
32. I understand that some of these additional controls have implications in a planning context, and may not be practical, which is discussed in Ms Galt's evidence.

Dr Hannah Mueller

12 May 2023