

BEFORE THE HEARING PANEL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of Proposed Plan Change 5 to the Operative Hamilton
City District Plan

**REBUTTAL STATEMENT OF EVIDENCE OF DR HANNAH MUELLER
(ECOLOGY)**

Dated 22 September 2022

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INTRODUCTION

1. My full name is Dr Hannah Mueller.
2. My qualifications and experience are as set out in paragraphs 2 to 10 of my primary statement of evidence dated 2 September 2022 (**primary evidence**).
3. I reconfirm that I have read and am familiar with the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2014 and I agree to comply with it.
4. I provide this rebuttal evidence on behalf of Hamilton City Council (**HCC**) as proponent of Plan Change 5 (**PC5**).

PURPOSE AND SCOPE OF EVIDENCE

5. The purpose of this rebuttal statement of evidence is to respond to several bat ecology points raised in submitter evidence, particularly in evidence presented on behalf of the Director-General for Conservation (**DGC**).
6. I will address matters of buffer zones, bat monitoring and habitat enhancement in particular.

BUFFER ZONES

7. In paragraph 14.3 of her evidence¹, Dr Kerry Borkin states that there should be 100 m separation between light sources and bat habitat in line with European guidelines that dark spaces with less than 0.1 lux light levels are required to minimise any adverse effects of lighting on bats.

¹ Dr Kerry Borkin, Evidence in Chief, paragraph 14.3.

8. While I agree that dark spaces are required for bats, and that 0.1 lux appears to be the currently used level deemed adequate for bats to ensure these dark spaces, I support the discussion in the Peacocke Structure Plan Area (PSPA) Long-tailed bat report (LTBR)² with regards to the creation of buffer zones to create these dark spaces.

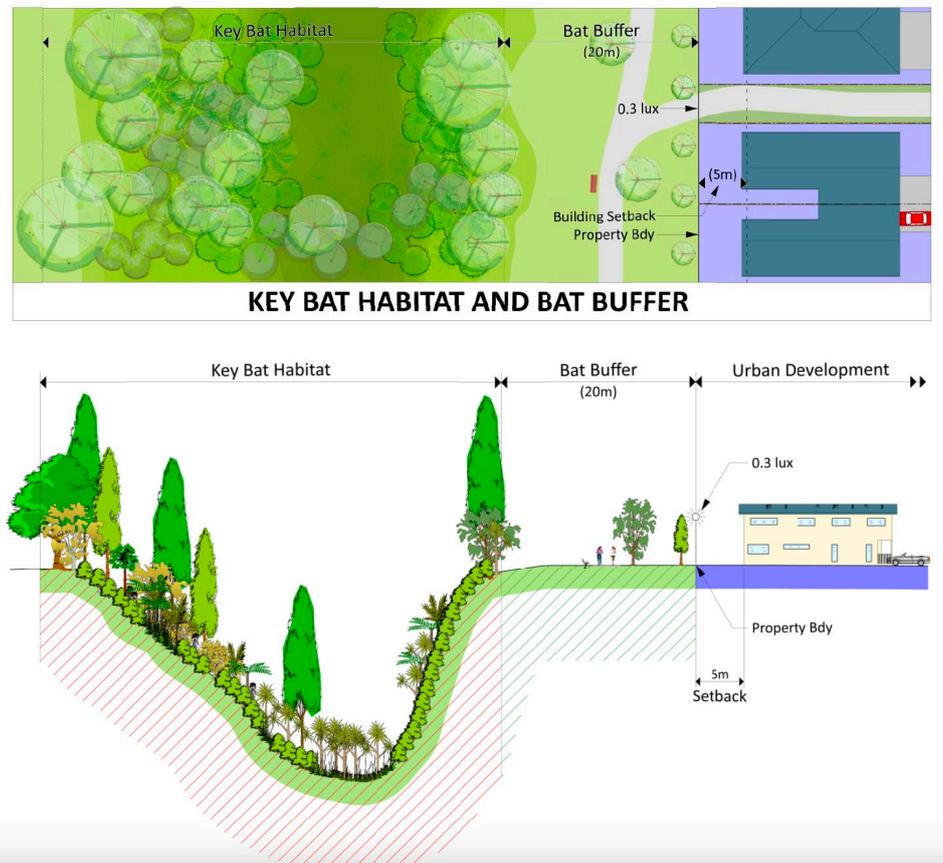


Figure 1 Key bat habitat and buffer areas proposed to limit light intrusion into bat habitat. Reproduced Figure 8 of the LTBR.

9. While ecologically more buffering than less is always preferable based on the precautionary principle, the bat habitat areas proposed as part of PC5 were designed, as shown in Figure 8 of the report (Figure 1 above), to ensure light intrusion into bat habitat is limited to 0.1 lux or less. This is to be achieved through:

² Peacocke Structure Plan Assessment of Environmental Effects - Appendix J, Peacocke Structure Area Plan Change Long-tailed bat report, 4Sight 4 June 2021.

- a) A limit of 0.3 lux at the property boundary, achieved through lighting controls and a 5 m setback; and
 - b) A 20 m buffer of open space that physically distances bat habitat from development areas.
10. Based on these mechanisms, I expect that lighting levels within bat habitat are adequately low to provide the required dark space and allow bats to continue using these areas.
11. In order for buffers to be effective at limiting development effects, early planting of any buffers will be required well ahead of development phases affecting bat habitat as discussed in the LTBR.

BAT MONITORING

12. In paragraph 22.14 of her evidence, Dr Borkin suggests that it is preferable to take a project-by-project or property-by-property based approach to bat monitoring, which would then allow to link specific effects to individual projects. I disagree with this statement for two reasons.
13. Firstly, I do not deem it feasible to link any adverse effects to a specific development in a landscape context where widespread development occurs, and a species context subject to natural variability and a variety of landscape pressures such as habitat loss, fragmentation and predation in other areas of the home range.
14. Secondly, as I have stated in my evidence, centralised monitoring will allow for a landscape-scale approach to bats that all experts were able to agree during expert conferencing³ on, and will mean that monitoring can be

³ Joint Witness Statement (JWS) in relation to Planning & Bats, dated 24 August 2022, paragraph 3.3.

coordinated and conducted independently from individual development projects. As a minimum, monitoring should be following the same guidelines informed by an independent panel so that scientific rigour can be ensured.

15. The preference for centralised pest control, habitat enhancement and monitoring has also been supported by various submitters, such as the Adare Company⁴. While I disagree with Mr Andrew Collins' statement in paragraph 75 that the proposed monitoring and bat management requirements are 'too wide-ranging and onerous', I do agree that management and monitoring need to be designed and coordinated at a landscape level for the approach to be effective, and for cumulative effects to be accounted for in a meaningful way.

BAT HABITAT ENHANCEMENT

16. In paragraph 23.5 of her evidence, Dr Borkin lists a number of actions that can be taken to enhance bat habitat connectivity and preservation of bat habitat. I support these measures, though I believe that PC5 already goes some way to addressing them. For example, many known roost sites will be protected by the Significant Natural Area (**SNA**) overlay, and additional planting of open spaces is proposed for various areas across the PSPA to ensure bat habitat connectivity.
17. In paragraph 27, Mr Andrew Blayney comments on the requirement for a "framework that provides for a cohesive, coordinated, and proactive approach to managing the retention and creation of long-tailed bat habitat across the entirety of the PSPA".⁵ Mr Blayney then provides suggestions to coordinate effects management for bats at an area-wide, not a consent-by-consent basis.

⁴ Andrew Collins, Evidence in Chief, paragraph 77. Andrew Blayney, paragraph 32.

⁵ Andrew Blayney, Evidence in Chief, paragraph 27.

18. From an ecological perspective, I support this approach for the same reasons I have outlined with regards to monitoring in paragraph 15 above. A fragmented approach is unlikely to account for the full suite of potential effects for each consent, in particular with regards to cumulative effects. A centralised approach can also ensure scientific rigour and independence of assessments.

CONCLUSION

19. Bat corridors and buffers have been designed in a way that minimises light intrusion into the key bat habitat areas through setbacks, lighting controls and a 20 m buffer zone that will ensure that light levels within the bat habitat area are sufficiently low to create dark spaces where bats can roost, commute and forage.
20. I maintain that bat monitoring should be implemented in a way that is centralised and coordinated, so that cumulative effects can be accounted for and monitoring is implemented independently with scientific rigour, rather than taking a fragmented approach.
21. A range of measures to enhance bat habitat within the PSPA have been proposed by PC5. I agree that taking a landscape-scale approach to monitoring, management and enhancement measures is likely to be most effective for achieving the best outcomes for bats.
22. Early planting of new bat habitat and buffer areas will be critical to allow these areas to become functional, at least in part, before development commences.

Dr Hannah Mueller

22 September 2022