

**BEFORE THE INDEPENDENT HEARING PANEL  
APPOINTED BY HAMILTON CITY COUNCIL**

**IN THE MATTER** of the Resource Management Act 1991 (**Act**)

**AND**

**IN THE MATTER** of hearing submissions on Plan Change 5 to the Hamilton  
City District Plan

**BETWEEN** **THE ADARE COMPANY LIMITED**  
**Submitter #53**

**AND** **HAMILTON CITY COUNCIL**  
**Local authority**

---

**REPLY EVIDENCE OF ANDREW BLAYNEY  
FOR THE ADARE COMPANY LIMITED  
ECOLOGY – HABITAT FUNCTION AND DESIGN**

**21 SEPTEMBER 2022**

---

---

Solicitors on Record

**WYNN WILLIAMS LAWYERS**  
*SOLICITOR — MIKE DOESBURG*

PO Box 2401, Shortland Street, Auckland 1140  
P 09 300 2600 F 09 300 2609 E mike.doesburg@wynnwilliams.co.nz

Counsel

**Dr R A MAKGILL**  
*BARRISTER*

PO Box 77-037, Mt Albert, Auckland 1350  
P 09 815 6750 E robert@robertmakgill.com

## SUMMARY OF EVIDENCE

1. My name is Andrew Blayney. I prepared evidence in chief (**EIC**) on ecology (habitat function and design) on behalf of The Adare Company Limited (**Adare**) dated 16 September 2022.
2. I have the qualifications and experience set out in my EIC. I repeat the confirmation given in my EIC that I have read the Code of Conduct for expert witnesses and that my evidence has been prepared in compliance with that Code.
3. I respond to matters raised in expert evidence for the Department of Conservation (**DOC**) by Moira Pryde (Bat Ecology) and Dr Kerry Borkin (Bat Ecology and Effects of Development).
4. The scope of this reply relates to the adequacy of the significant bat habitat areas (**SBHA**), the appropriate width of the bat habitat corridors, and the appropriateness of a PSPA-wide response to managing effects on bats / bat habitat.

## CORRIDORS; THEIR FUNCTION AND WIDTH

5. Ms Pryde (at para. [6.20]) identifies that shelterbelts provide long-tailed bats with darkness and shelter from wind allowing movement along the edge without being detected (and, although not stated, energetically efficient movement protected from wind). I agree that habitat features like shelterbelts are important to bat movement, as discussed at para. [12] of my EIC.
6. Ms Pryde (at para. [9.1]) and Dr Borkin (at para. [24.7]) note agreement with Mr Kessels that at least 100m is the minimum width to maintain the use of gullies by long-tailed bats without bespoke design. I agree, but consider, that with bespoke design and effective interface controls, movement corridors can be created within a width of 50m. I acknowledge the points raised by Ms Pryde (at para. [9.1]) and Dr Borkin (at para. [24.4]) regarding the use of Sandford Park, but in my opinion using Sandford Park to justify a minimum corridor width of 50m is problematic due to the complexity of landform, boundary, and width of the Sanford Park gully system. In my opinion, a minimum width of a corridor (that is intended to provide opportunities for movement through the PSPA) should

not be based on the Sandford Park layout. Sandford Park has no surrounding controls on lighting, building setbacks, or bespoke design to promote bat movement and continuation of long-tailed bat usage.

7. I agree with Ms Pryde and Dr Borkin that in most instances, a greater than 50m wide strip of habitat is critical in maintain all the resources and functions for bats.
8. I note that a figure of 50m is for proposed SBHAs is expressed as an absolute minimum rather than overall standard. It is my understanding that, within SBHAs, this minimum width is specified for the identified movement corridors only, and doesn't constrain widths of identified high quality habitats such as the Mangakootukutuku Gully. In this context, most areas are well in excess of 50m wide.
9. The purpose of parts of the SBHA that do not incorporate existing habitat features is to link areas of higher value habitat through the urban landscape. These SBHA corridors maintain connectivity between core habitats areas such as the Mangakotukutuku Gully and the Waikato River, as opposed to providing the full range of functions and resources offered by the core bat habitats (i.e., which the corridors serve to connect).
10. Within the PSPA, the landscape provides multiple constraints to the width of such connections. It is therefore necessary to consider what is the minimum width that can be used to provide this function of connectivity.
11. It is difficult to understand from both Ms Pryde's and Dr Borkin's evidence whether there has been a consideration on the minimum width of corridors for the purposes of providing and promoting connectivity rather than a general consideration of the appropriate width of habitats.
12. In my opinion the minimum width of corridors for the purpose of providing and maintaining connectivity between habitats should be based on a width within which a functionally suitable dark corridor is able to be created no matter where, or what topography, the corridor is located within or what land use abuts it.

13. I consider that the minimum requirements for a functional corridor include:  
(a) buffer vegetation on either edge of the corridor (which blocks both light<sup>1</sup> and wind); (b) at least one central strip (or row) of trees through the middle; and (c) planning the areas between buffer vegetation (i.e., trees) with low standing vegetation. I refer to para. [18] of my EIC for a more detailed explanation of the function and resources that I identify as important for the establishing functional corridors.
14. The configuration shown in **Figure 1** (below), adapted from the Amberfield design, provides for four internal edges away from the development boundary along which long-tailed bats can fly. I consider that this kind of bespoke design adequately enables movement through 50m wide corridors connecting core habitats. A 50m width allows the establishment of three 10m wide strips of vegetation (taking up 30m of the total width) with equally wide areas of open ground in between, and/or variations to these widths in response to adjacent land use/disturbances. 10m wide strips of vegetation, from a structural vegetation point of view, can be established to be thick and dense enough to block both wind and light allowing buffered flight paths to be established within the corridor.
15. I consider that this bespoke type of design coupled with PC5 controls on boundary lighting, building set back, and the management of headlights (in roading design and layout) means that 50m wide corridors can provide the dark corridors necessary to provide connectivity between habitats within the PSPA. I do not agree that generally establishing wider corridors would be more effective way of establishing functional corridors. I agree they would provide more habitat in general, if wider, but the efficacy of connectivity would not change.
16. This approach, as noted by Dr Borkin (at para. [20.1]) is subject to a time lag as it takes time for these features to grow and become effective. Bespoke design, including fast growing plant species and proactive

---

<sup>1</sup> I acknowledge the interface control on light but consider it a prudent approach to buffer the edge as if light does hit it regardless. With such an approach, there is an expectation that part of the SBHAs will include specific design and planting to manage potential light edge effects. I consider this approach would also provide a level of buffering against wind and other potential edge effects associated with urban development such as noise.

implementation of these corridors through the PSPA, are therefore needed to manage this time lag.

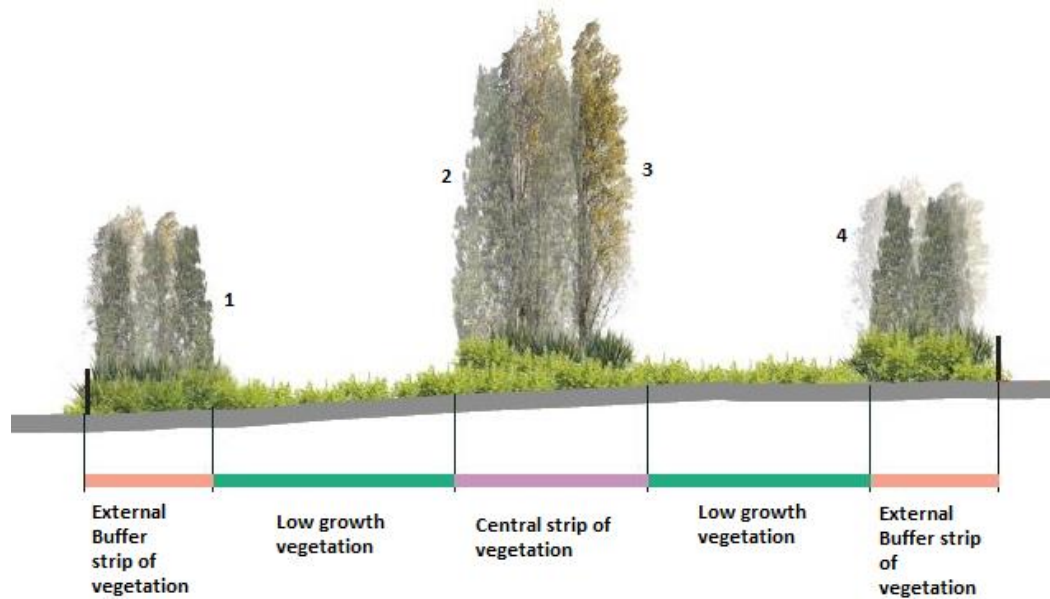


Figure 1: Indicative design for a long-tailed bat movement corridor – four internal edges noted in text numbered for clarity. Adapted from Amberfield East-West shelterbelt design as example.

## HABITATS; ASSESSMENT OF VALUES AND THE EFFECTS MANAGEMENT HIERACHY

17. I agree with Ms Pryde's concerns about the compensation package (at paras. [9.4 – 9.5]) and how or where it might be applied. I concur that a much greater level of certainty is needed on the proposed compensation approach if it is to be relied on to manage adverse effects. I also agree with Ms Pryde, in this context (at para. [9.7]), that there needs to be a greater focus on the PSPA area itself. As identified in my EIC (at para. [32]), I consider that a major part of the focus needs to be directed at the appropriate implementation of the proposed landscape level approach.
18. Ms Pryde identifies (at para. [9.11]) that the bat habitats proposed within PSPA are 16% of the average home range of a bat. I note that this calculation treats all habitats equally. Similar concerns are raised by Dr Borkin (at para. [10.14]). However, as consistently identified through expert evidence presented as part of this plan change<sup>2</sup>, long-tailed bats have specific habitat preferences and requirements. In this case, a simple

<sup>2</sup> EIC of Dr Mueller (at para. [23 – 24]), EIC of Ms Pryde (at section [6]), EIC of Dr Borkin (at sections [9 – 10]), EIC of Dr Parsons (at paras. [20 - 21, 26 – 28, 34 – 41]), and my EIC (a para. [9]).

area based calculation for habitat retention needs to be caveated by the need for qualitative equality between habitat values and resources. This is not to say I disagree with Ms Pryde or Dr Borkin regarding the severity of the reduction of bat habitat, more so that I hold a concern that such equal treatment of the value of different types of habitat may lead to a corollary misunderstanding that retention/enhancement of different kinds of habitats is also equal.

19. I consider, a qualitative assessment of different habitats is critical to understanding potential impacts and appropriate effects-based management responses. This is more fully addressed within my EIC (at para. [9 – 15]). This suggested change in focus on the quantification of effect, should not be taken as disagreement with Ms Pryde's concerns on the considerable scale of land use change proposed. Instead, I consider that the issues identified by Ms Pryde (at para. [9.11]) are more appropriately managed appropriate planning on how the landscape level effects management approach should be implemented throughout the PSPA.
20. I agree with Ms Pryde (at para. [9.13]) that the effects management hierarchy should be adhered to when dealing with roost trees (and equally any other habitat). Avoidance, where practicable, being the first step in this hierarchy. However, I am concerned that in the context of a proposed landscape level approach (which I consider has the highest potential for effective effects management) that continued revisiting of the effects management hierarchy at smaller and smaller scales will not meaningfully manage adverse effects or result in better outcomes. I have identified in my EIC (at paras. [14, 26]) that the physical retention of habitats within the PSPA is not the same as avoiding adverse effects on these habitats, nor retaining their value, due to the loss of functional habitat values.
21. The proposed ad hoc approach to assessment of effects (on a consent application by consent application basis) could lead to the identification of habitats throughout the PSPA that could be subject to small scale retention. If the structure plan provides no certainty on connectivity, protection, or buffer to said habitats, these habitats will have little to no future functional utility or viability.

22. I consider that, while my suggested approach to avoidance is different from Ms Pryde's, we seek the same outcome. That is, a meaningful effective effects-based management regime for long-tailed bats in the face of large-scale land use. I therefore support appropriate application of the effects management hierarchy at a landscape scale which results in habitat retention, creation, and enhancement to ensure a cohesive and connected habitat is retained and enhanced for long-tailed bats.

### **LONG\_TAILED BAT MONITORING**

23. Ms Pryde (at paras. [9.16 - 9.18]) and Dr Borkin (at section [22]) outline; (a) potential long-tailed bat monitoring designs; (b) the limitations of the different approaches; and (c) the difficult nature of the monitoring from both a technical and resource perspective. While I agree that outcome monitoring is possible, it needs to be properly designed. In the case of acoustic recorders, I agree a survey design can be developed to answer specific questions concerning bat activity in an area. I also agree that a power analysis would typically be used to assess the power of the sample size (sample size would be a combination of number of acoustic recorders deployed and number of nights surveyed). In this instance the "power" of your data correlates to the level of change in bat activity any survey effectively detects (i.e., the statistically significant effect size you can detect). Given the considerable night to night, and year to year, variation in bat activity possible at any one site even with larger sample sizes, it is expected the power of any survey will be low (i.e., only be able to effectively detect large changes in bat activity).
24. It is important to determine what survey changes in activity mean. Ms Pryde notes (at para. [9.17]) *"Bat activity does not differentiate between a lot of calls from one bat or one call each from a number of bats as they pass the recorder. Removing habitat may mean that the remaining bats have to feed for longer in a smaller area – producing an increase in activity when in fact there has been a decline in the number of bats."* I add that increasing habitat size, or quality could cause a drop in detected activity levels due to more efficient foraging, less time spent in sub-optimal habitats, or simply providing more habitat options for bats to occupy.

25. This means that caution should be applied in using bat activity data from acoustic recorders as proxy for interpreting or concluding positive or negative outcomes of effect management.
26. There is, similarly, a need to understand the causative impacts of the changes in activity. Ms Pryde notes "*Isolating the effects is part of good study design*". I agree. I also consider that, due to the large home ranges of long-tailed bats, isolating effects is particularly challenging in fragmented areas of habitats such as the PSPA. The study organism's biology and ever-changing landscapes within their home range means that even well-designed monitoring will struggle to identify causative reasons for changed levels of activity. These limitations need to be front of mind when determining the objectives of the monitoring.
27. In my opinion monitoring within the PSPA has the best chance at being useful if applied at same scale as the landscape scale effects management approach proposed. It is at this large scale that a useful understanding of patterns of landscape use and potential increases and/or decreases in activity stand a better chance of being understood. At this scale, I consider more robust monitoring methods such as radio tracking should be considered. I do not consider that monitoring at an individual consent application scale will be useful in understanding the reasons for changed activity and the measures that should be implemented where reduced activity is detected.

**Dated this 21<sup>st</sup> day of September 2022**



---

**Andrew Blayney**