




Bat Survey Results for 70 Lisle Farm Drive, Pukekohe

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1.0 Introduction

Seven Department of Conservation AR4 Automatic Bat Monitors (ABMs) running software version 1.5 were deployed at 70 Lisle Farm Drive from 4 to 20 December 2024. A battery change was performed on 12 December.

The ABMs were tested using the Department of Conservation Bat Recorder Tester (Tussock Innovation Ltd) phone app prior to deployment and were placed by an experienced bat ecologist along habitat features such as streams, gulleys and near large trees with potential bat roosting features. ABMs were set to start recording one hour before official sunset and to stop recording one hour after official sunrise.

Data from the ABMs were analysed using the Department of Conservation BatSearch 3.23 software. All confirmed bat records (“passes”) from each ABM are summarised in the results section below. Four out of seven ABMs recorded at least 14 nights of data, with one ABM failing to record completely (Table 1). Of the 16 nights the ABMs were deployed, two nights (9 and 11 December) were excluded from analysis due to heavy rainfall.

The results of the survey are presented below.

Table 1 – Nights recorded for each ABM during the December 2024 bat survey at 70 Lisle Farm Drive.

Site	Bats detected	Nights recorded total	Valid survey nights recorded
Site 1	No	15	13
Site 2	No	16	14
Site 3	No	0	0
Site 4	Yes	16	14
Site 5	No	13	11
Site 6	No	14	12
Site 7	No	12	10

2.0 Survey Results

Over the course of the survey, two long-tailed bat passes were detected. Both passes were recorded at Site 4, shortly after midnight on 5 December (Figure 1). Site 4 was located along the stream edge of the eastern gully system. This low incidence of bat activity suggests that bats are likely to pass through the site occasionally. However, it is worth noting that bat activity patterns can change seasonally. Additional surveys may be required to understand the full extent of bat habitat use in the area.





3.0 Guidelines around lighting effects

While it is acknowledged that a finalised lighting plan will not be developed until the subdivision stage, the effects of artificial light on bats will need to be considered. Outlined below is a broad overview of the effects of lighting on bats and potential mitigation measures to consider when designing a lighting plan.

There is a growing body of evidence suggesting that artificial light can interfere with the commuting and foraging activity of long-tailed bats (Smith et al., 2017). A key priority for minimising the impacts of lighting on long-tailed bats is to ensure that known roost sites, foraging areas and commuting routes are kept dark. This requires assessment of roosting potential in trees near the forest edge where there may be potential for exposure to artificial light. Common foraging and commuting pathways will also need to be avoided as much as possible. Further bat survey work will help guide our understanding of how bats are using the area, and how usage of the site changes seasonally so that more active areas can be avoided in the final lighting design.

The following actions should be considered to further reduce the impacts of artificial lighting from the project. These include:

- Ensuring light levels are attenuated to below 0.3 lux (horizontal and vertical) when measured at the external boundary of the forest.
- Selecting luminaires with temperatures of 2,700 Kelvins.
- Limiting street lights along access roads.
- Directing external light fittings away from the forest and fitting bulbs that have minimal light spill and emit no upwards light.
- Mounting light fixtures as low as practical.
- Programming external lighting to automatically turn off during peak activity hours (e.g. two hours after sunset).
- Installing external light fittings that are triggered by movement sensors to minimise the duration of potential light impact.
- Install black-out curtains on windows in close proximity to forested habitats.

Light spill can also be minimised through planting of dense trees and shrubs where buildings or access roads are close to existing forest to provide a buffer between the development and bat habitat. A mixture of fast and large-growing species is recommended. The width and spacing of the planting will be determined once a lighting plan has been prepared for the site and the full light spill effects are better understood. Recommended species include mānuka (*Leptospermum scoparium*), māhoe (*Melicytus ramiflorus*), tōtara (*Podocarpus totara*), titoki (*Alectryon excelsus*), tarata (*Pittosporum eugenioides*), kohūhū (*P. tenuifolium*), and houhere (*Hoheria populnea*).

References

Smith, D., Borkin, K., Jones, C., Lindberg, S., Davies, F., & Eccles, G. (2017). *Effects of land transport activities on New Zealand's endemic bat populations: Reviews of ecological and regulatory literature* (NZ Transport Agency Research Report 623). Waka Kotahi.