**MT MESSENGER BYPASS PROJECT: SUMMARY OF EVIDENCE OF COLIN O’DONNELL (BATS) FOR DOC**

1. I have worked with bats in New Zealand an internationally for over 25 years. I was involved in developing the first NZ bat recovery plan and I am now Leader of the NZ Bat Recovery Group.
2. I am co-author of the research paper attached to the Supplementary evidence of Mr Chapman (“the Eglinton Valley Study”).[[1]](#footnote-1)

**Significance of the Proposed Area for Bats**

1. The long-tailed bat is classified as threatened, with it being in the category at most risk of extinction – Nationally Critical.
2. The Applicant found high levels of bat activity in areas where it is proposed many trees will be felled during construction. Long-tailed bats were recorded at 94% of survey locations, with activity rates of up to an average of 157 bat passes per night per station. Mr Chapman recorded feeding activity at several sampling stations and relatively high levels of bat activity at dawn and dusk on several consecutive nights, which he stated was potentially suggestive of bats departing a roost at dusk and returning to the roost at dawn.
3. Based on my experience in surveying for long-tailed bats over three decades across much of New Zealand, these findings are among the highest bat pass rates I am aware of. I conclude the Mt Messenger Project Area supports a significant population of the critically endangered long-tailed bat.
4. Breeding roost trees are rare and specialised features of the landscape that tend to be hundreds of years old and are almost irreplaceable except over very long time-frames.
5. If breeding and roosting trees lie within the Project Area, as suggested by Mr Chapman’s survey work, adverse effects will occur when trees are destroyed, even if bats are not in them at the time of felling. Bats don’t just change roosts on a whim – they follow a traditional routine that is so strict, that they often use the same roost on the same day each year (EIC [8.6]).

**Potential adverse effects**

1. Internationally, roading projects are known to impact on bats. My evidence lists 5 significant potential adverse effects of the Project on bats ([7.3] EIC).
2. The NZ Land Transport Agency commissioned Wildland Consultants, Landcare Research and AECOM to research roading effects on bats and develop a framework for managing these effects (the NZTA Bat Management Framework, attached to my evidence, October 2017). The Framework attempts to address levels of ecological uncertainty around mitigation options and describes improved bat monitoring (Abstract). The framework recommends an ‘avoid, remedy, mitigate, offset, compensate’ approach, for example:

*“Managing the impacts on bat populations should be based on a series of essential, sequential steps taken throughout a project’s life-cycle in order to eliminate or limit any residual negative impacts on bats and other biodiversity values. This consists of:*

*1 Avoid: measures taken to avoid creating impacts from the outset. This is often the easiest and most effective way of reducing potential negative impacts, but it requires biodiversity to be considered in the early stages of a project. It places large emphasis on pre-construction bat surveys to locate potential roosts (particularly maternity roosts), feeding sites and flight paths, with particular focus on avoidance of roost destruction and disturbance, and avoidance of flight paths. This may necessitate changing the location/route/alignment or selecting a different option. …”*

(Appendix D - D4.4 on page 189. Refer also Appendix DE “Impact Management Strategies”.)

1. For this Project the Applicant has failed to undertake a radio tracking study to confirm where the bats breeding trees are. This means there is significant uncertainty about the precise impacts of the roading development on bats. Mr Chapman suggests that only 1% of the long-tailed bat habitat would be destroyed during road construction. Given that no one has surveyed the bat habitat beyond the proposed road alignments, and no roosts have been searched for, or identified, it is impossible to claim a proportion of habitat loss.
2. Mr Chapman suggests that the rate that trees will be felled to clear lands for road construction is well within the natural levels of tree fall (Rebuttal at [13] and [22]). I consider Mr Chapman has overestimated the natural loss in intact native forest by an order of magnitude. Records of natural loss of roosts in the Eglinton Valley over 25 years show only 2.8% of roosts have fallen in this time. Studies in pine plantations (Kinleith), which Mr Chapman bases his claim on, cannot be transferred to this environment.
3. My evidence is that the effects of the project are potentially catastrophic for long-tailed bats. In particular, the felling of breeding trees during road construction may lead to extinction of the Mt Messenger bat population.

**Radio-tracking studies**

1. Radio-tracking studies for bats are normally carried out for bat conservation projects in New Zealand.
2. Radio-tracking (mark and recapture) studies should involve following a good number of bats during different seasons. Radio tracking should involve tracking both sexes and age groups because breeding females and juveniles are likely to have different requirements from males (and each other). Because bats move to new roost sites frequently, it takes time to find the true extent of the breeding trees. For our DOC radio tracking studies, we generally allocate at least a whole breeding season (October-February) to define roosting areas at a minimum because catching bats is difficult, because their echolocation calls can detect most trapping devices.
3. In my evidence, I explain why I would be surprised if the Applicant’s attempt to catch bats for radio tracking had been successful, because of the lack of effort and the season in which it was undertaken.
4. Mr Chapman says that, although his recommendation to the Project team was to carry out further attempts to trap and radio-track, the Project team decided to focus instead on addressing uncertainty by increasing the size of the PMA to benefit bats and relying more on vegetation removal protocols or VRPs (Rebuttal at [9]).
5. Although radio-tracking would be preferable, I have taken a pragmatic approach, and accepted the focus is now upon the size/adequacy of the PMA together with the application of VRPs.

**Size of the PMA**

1. I understand that the proposed 3650 ha area for pest management is largely based on the effectiveness of predator control in the Eglinton Valley Study. There we demonstrated a benefit for long-tailed bats in a 3350 ha area. We also concluded that for pest control to be effective annual survival of adult female long-tailed bats must be greater than 79%.
2. The lack of radio-tracking also has implications for the size of the PMA. The size of the PMA needs to provide adequate confidence that it will encompass a significant proportion of roost trees. In my evidence I provide examples where this has not occurred, and where benefits for bats have thus not been achieved without moving PMA boundaries (Maruia and Heaphy - Figures 2a and 2b EIC).
3. At Eglinton Valley, predator control was specifically focused on known roosts. That is, we knew exactly where all the bat roosts were. This meant that we could ensure they were in the middle (core) of the management area, thus maximising protection. We also had trapping areas that stretched 5-10 km from the core control area, buffering against reinvasion. (Mr Chapman is incorrect in suggesting this Fiordland study had no buffers.)
4. My evidence responds to Mr Chapman’s comments on the implications of this Study. I respond to his comment that intensity of predator control will be more of a factor in the North Island than in the Fiordland area (at [9.19] EIC). The North Taranaki area likely has different density and composition of predators than Fiordland. I consider that predation pressure will be high all the time, rather than only every few years, as is the case in Fiordland. I also respond to Mr Chapman’s suggestion that long-tailed bats have a smaller home range size in areas where habitat is fragmented and patchy, meaning that a lesser area may be required in the North Island in this context (EIC at [9.20]). The studies I refer to all demonstrate that home range sizes of colonies are larger than the size of the proposed PMA, and thus, there is a reasonable chance that breeding roosts will be located outside the area.
5. If we knew that the main roosting area for long-tailed bats at Mt Messenger was in the centre of the proposed PMA, I would be satisfied with its size. However, I contend, that if you don’t know where the roosts are (as is the case in the Mt Messenger area), the management area needs to larger to maximise the chance of protecting the roosts. I have suggested that this be a minimum of 5000 ha. This is at the low end of what the Department of Conservation would plan for. (Our scientific research demonstrates that the best recovery rates are achieved with predator control over >26,000 ha: EIC at Figure 3).

**Buffering**

1. The PMA would also need to be adequately buffered against reinvasion by pests.
2. I based my evidence on reading of the Applicant's Pest Management Plan, which states "*the area receiving all of the benefits of permanent intensive pest management (resulting in significantly improved ecological integrity) will be at least 2590 ha in size (after deduction of a 200 m deep buffer around the full PMA perimeter)"* (Section 9.3 ELMP) and "*Performance monitoring indices will be generated from the area of the PMA excluding a 200 metre deep buffer around the full perimeter of the PMA. Pest densities can be expected to be higher in the buffer as a result of incursions from the surrounding unmanaged landscape"* (Section 9.5.3.1).
3. In his rebuttal evidence, Mr MacGibbon acknowledges that buffers are zones that suffer occasional penetration from pests. Mr MacGibbon acknowledges "*that, currently, the ELMP does not adequately emphasise the need for more intensive edge pest management*". He suggests that "*In recognition of the importance of pest management around the PMA margins it is proposed that additional pest management effort"* for the proposed buffer zone. This increase in effort needs to be fixed and clearly described in the ELMP and any conditions.
4. I am concerned that in some parts of the PMA, there is no buffer between the PMA and surrounding habitats proposed.
5. If these matters *cannot* be addressed, then radio-tracking should be returned to, or consideration be given to implementing the PMA in a more defendable block of > 5000 hectares of forest with a remnant bat population in North Taranaki (e.g. North Waitaanga forest, approximately 25 km north-east).
6. The PMA proposed by the Applicant maybe sufficient if buffering is improved and considered alongside the adjacent local pest control initiative at Paraninihi (creating >5000 hectares). However intensive pest control at Paraninihi would need to be certain in the long-term.

**Potential for long-tailed bat recovery in the absence of the Project**

1. Although long-tailed bats in the area are likely to declining already, loss of habitat while constructing the road is likely to increase this rate of decline. It would also reduce future opportunities, and compromise current efforts undertaken by DOC, to recover long-tailed bat populations in North Taranaki.

**Vegetation Removal Protocols (VRPs)**

1. I demonstrate in my evidence that while many trees may look like suitable bat roost at first glance, only a tiny proportion are likely to have the specific features required by long-tailed bats for breeding ([3.7], [5.2] – [5.4] EIC).
2. Mr Chapman recommends that tree felling protocols only be mandatory for trees >80 cm in diameter. Roosts also occur in trees smaller than this, and in at least one forest, all roosts were <71 cm dbh (EIC [8.11] – [8.12]). Thus, I would prefer that the VRP be applied to all trees that are potential bat roosts trees between 15 cm and 80 cm diameter (dbh) [8.11]. However, I would be happy for this condition to state that the VRP should be applied to these trees at the discretion of the ‘Supervising Bat Ecologist’. This is because the ‘Supervising Bat Ecologist’ must already have been certified by DOC as competent to assess whether trees are potential bat roosts.
3. Based on my evidence ([9.7] – [9.9]), I remain firm in my recommendation that felling of high risk trees must be strictly limited to the summer months i.e. October to April (rather than “ideally” should not be removed in winter, as recommended in draft conditions).

**Wildlands’ Supplementary Report**

1. Wildlands have pointed out that there is no longer a requirement in the ELMP to discuss with DOC or a Council nominee the process for remove an active roost, beyond experts employed on the Project. I share many of the concerns expressed by Wildlands in its Supplementary (July 2018) and earlier Report. Wildlands express concern that radio-tracking of bats is no longer intended, meaning that bat habitat is not identified (page 8 and 5.7.5). Wildlands agree that excluding all vegetation under 80cm DBH from VRP checks will expose long-tailed bats to risk of injury or death due to tree felling (page 9).

1. O'Donnell, C.F.J.; Pryde, M.A.; van Dam-Bates, P. Elliott, G.P. 2017. Controlling invasive predators enhances the long-term survival of endangered New Zealand long-tailed bats (Chalinolobus tuberculatus): Implications for conservation of bats on oceanic islands. Biological Conservation 214: 156-167. [↑](#footnote-ref-1)