

## **MT MESSENGER BYPASS PROJECT: SUMMARY OF EVIDENCE OF JOHN ALEXANDER MCLENNAN (AVIFAUNA) FOR THE NZ TRANSPORT AGENCY**

1. I was appointed by the Transport Agency in August 2017 to assess the ecological effects of the Project on avifauna.

### **Bird Community in the Mt Messenger area**

2. The Mt Messenger community is typical of those in mixed habitats elsewhere in the North Island, as indicated by: the total number of species present (36); native species dominance (approximately 64% native, 36% introduced); species abundance; and trophic structure.
3. The Mt Messenger avian community is also typical of those in mixed habitats in the North Island where pest control has been either sporadic or non-existent. It is overwhelmingly dominated by 'safe and secure' species.

### **Threatened species**

4. Six resident native species (NI brown kiwi, fernbird, spotless crane, NI robin, whitehead and pipit) one native seasonal migrant (long tailed cuckoo) and one native occasional visitor (black shag) have a threat ranking.
5. The critically endangered Australasian bittern may also visit the Project area occasionally, though it hasn't been detected there yet. The threatened kōkako is also a potential inhabitant of the Project area in the next decade or so if the newly established population in Parininihi expands eastwards.
6. The populations of fernbird and spotless crane are small and confined to wetlands in the Mimi catchment at the southern end of the alignment. All known individuals of both species live outside of the Project footprint. The pipit is also rare in the Project area and may be absent altogether; it has only been recorded on the western side of Mt Messenger.
7. The avian species of greatest conservation value in the Project footprint are NI brown kiwi and NI robin - the former, because of its taxonomic significance, iconic status and extensive distribution in the Project area; and the latter because of their relatively high abundance in the Mt Messenger area. NI robin and NI brown kiwi have the same threat ranking: "At Risk, declining", which is relatively low on the scale of threat rankings.
8. The Mt Messenger kiwi belong to the western subspecies of NI brown kiwi, confined to Wanganui and Taranaki. This subspecies comprises about 30% of the estimated population of NI brown kiwi (24,500). About 10 pairs of kiwi have territories which straddle or border the proposed alignment.

### **Potential effects of Project on avifauna**

9. Although the Project's potential effects ranged from 'very low' to 'high' in the absence of mitigation, offsetting and compensation, some potential effects were avoided by selecting a route that avoided habitats with high ecological values, by using bridges and tunnels to minimise the size of the footprint, and by selecting construction techniques that will help to reduce habitat disturbance.

### **Avoiding effects of construction on kiwi**

10. An intensive radio-tagging and tracking programme is proposed to avoid the potential effects of road construction on kiwi. This involves mapping the territories of kiwi along the length of the alignment, determining which kiwi are potentially at risk of harm from vegetation clearance and earthworks, monitoring potentially vulnerable individuals (including juvenile kiwi) when machines are working in their territories, and moving those individuals to safe places (elsewhere in their territories) when necessary. It also involves uplifting eggs from nests that are at risk of being disturbed, hatching them in a captive breeding facility, and then returning the offspring to the wild.

### **Avoiding post-construction effects on kiwi**

11. Once construction of the road is complete, some parts of it may need permanent kiwi fencing to keep kiwi off the road and prevent them from being injured or killed by vehicles. The fences will be used to restrict kiwi to one side of the road, or to guide them to culverts which will enable them to travel safely under the road without risk of harm.

### **Measures to offset residual adverse effects**

12. Residual effects of the Project on avifauna include: the permanent loss of forest, wetland and farmland habitat; partial habitat severance; disturbance from construction activities; possible harm to eggs and chicks during vegetation clearance; disturbance from traffic, and possible increased mortality from road strike.
13. The main offsetting programme proposed for avifauna is intensive pest control in the PMA, a 3650 ha treatment area surrounding the alignment. Mr MacGibbon describes in his evidence the pest species that will be targeted in the PMA and the methods that will be used to control them.
14. The proposed pest control programme will benefit predation-limited native birds because it is large-scale (by existing sanctuary standards), comprehensive (it targets all mammalian predators except mice), intense (it combines year-round ground control with periodic applications of aerial 1080) and long-lasting (in perpetuity).

### **Expected avifauna response in the PMA**

15. Eight of the 23 native bird species currently present in the PMA are likely to respond to intensive pest control. They are NI brown kiwi; fernbird; NI robin; whitehead; long-tailed cuckoo; kereru; tui; and bellbird. The first five of these respondents have a threat status. A further four native species, currently rare or absent altogether in the PMA, are also potential respondents if they establish breeding populations in the PMA following the onset of predator control. They are: falcon, kaka, rifleman and kōkako.
16. The honeyeaters, long-tailed cuckoo and whitehead should more than double in abundance in the PMA in the first decade of control, while kereru are likely to increase by 10%-30%.
17. The kiwi population in the PMA is likely to double in the first decade of control from about 270 adults to 540 adults. In the following 20 years, the population is likely to increase by another 920 or so individuals, before stabilising at a density of about one breeding pair per 5 ha.
18. Juvenile kiwi will disperse out of the PMA in increasing numbers when the population in the PMA approaches carrying capacity, 20-30 years after the onset of pest control. These dispersers will help to restore kiwi populations in neighbouring forests. The PMA should therefore benefit kiwi in the Mt Messenger area in two ways, initially by increasing the population in the PMA, and then later by providing colonists for the wider area. It will do the same for other threatened birds.

### **Benefit/loss ratios**

19. The Project will remove 31.676 ha of vegetation, the probable equivalent of about 1.5 kiwi territories currently. This living space is currently shared by approximately 20 kiwi living along the length of the alignment. Restoration planting in what is now mainly farmland will eventually replace about 14.4 ha of the forest habitat lost in the footprint, with likely permanent occupation of these restoration areas by kiwi in two-three decades time.
20. The theoretical loss of kiwi resulting from the permanent removal of 31.7 ha of occupied habitat over a 30 year period is about 22 kiwi. Most of this results from forgone reproductive opportunities. The calculation makes no allowance for benefits resulting from restoration planting. It also assumes that the forgone reproductive opportunities are those that would be achieved in the presence of predator control.
21. For kiwi, the estimated gain/loss ratio of the Project is about 55 to 1 and this is not expected to change over time.

22. The potential gains for kiwi resulting from pest control are especially large because the kiwi population in the proposed PMA is currently well below carrying capacity. The gains for the other potential respondents are likely to be more modest, in the range of 20%-100% over the first 12 years of the programme. In all respondents, however, the gains in the PMA should offset the losses resulting from habitat removal in the Project footprint.

#### **Post construction monitoring**

23. Post-construction monitoring of birds (section 9.5.3.2 of the ELMP) will be conducted in the PMA for 12 years, at 3-yearly intervals, following the onset of predator control.
24. The monitoring programme has been designed to detect a 20+% change in abundance of the eight native species that are expected to respond to predator control. This is required to determine whether the performance targets for those species have been achieved.

#### **Response to submissions and NPDC Section 42A Report**

25. The matters raised by DOC in Paragraphs 94-120 were resolved, with one exception. I did not agree with Dr Burns's view that the Project would have a 'high' level of effect on bittern and 'moderate' level of effect on kōkako, because the presence of bittern in the Project area is unconfirmed, and kōkako are unlikely to move into the Project area for some years to come.
26. The matters raised by the Officer in the S42A report are addressed in paragraphs 121-129 of my EIC. Most of these matters involved points of clarification, rather than differences of opinion. I believe they are now resolved.

#### **Response to DOC's evidence in chief**

27. In his evidence in chief, Dr Burns considers: 1) I have overstated the benefits the PMA will produce for kiwi, and 2) that the apparent absence of bittern in the Project area is the result of detection failure. While Dr Burns and I agree on various other matters, which I explain in my rebuttal evidence, I do not agree with these opinions.
28. Firstly, I consider my use of the 6% growth figure is reasonable and appropriate, and my estimate of the potential population increase in the PMA (1220 adults) is fair.
29. Secondly, I disagree the apparent absence of bittern is due to insufficient bittern-specific surveys being undertaken in the area. Ecologists have spent considerable time in the Mangapepeke and Mimi catchments and would report a bittern if they saw one. Further, there is currently nothing to suggest "detection failure" is a more compelling explanation of a zero bittern count in the Project area than "zero presence."