

**BEFORE THE TARANAKI REGIONAL COUNCIL AND NEW PLYMOUTH  
DISTRICT COUNCIL  
MT MESSENGER BYPASS PROJECT**

In the matter of the Resource Management Act 1991

and

In the matter of applications for resource consents, and a notice of requirement by the NZ Transport Agency for an alteration to the State Highway 3 designation in the New Plymouth District Plan, to carry out the Mt Messenger Bypass Project

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**SUPPLEMENTARY STATEMENT OF EVIDENCE OF JOHN ALEXANDER  
MCLENNAN (AVIFAUNA) ON BEHALF OF THE NZ TRANSPORT AGENCY**

17 July 2018

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## TABLE OF CONTENTS

INTRODUCTION .....	3
SCOPE OF EVIDENCE .....	3
PEST SUPPRESSION IN THE PMA .....	3
BIRD POPULATIONS IN THE UPDATED PMA.....	4
POPULATION GAINS FOR KIWI AND OTHER BIRDS IN THE INTENDED PMA...	5
AVIFAUNA BENEFIT/LOSS RATIO .....	7

## **INTRODUCTION**

1. My name is John McLennan.
2. My supplementary evidence is given in relation to applications for resource consents, and a notice of requirement by the NZ Transport Agency ("the **Transport Agency**") for an alteration to the State Highway 3 designation in the New Plymouth District Plan, to carry out the Mt Messenger Bypass Project ("the **Project**").
3. I have the qualifications and experience set out in my statement of evidence in chief ("**EIC**") dated 25 May 2018.
4. 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.
5. In this evidence I use the same defined terms as in my EIC.

## **SCOPE OF EVIDENCE**

6. My supplementary evidence describes the probable responses of birds to the updated Restoration Package. It specifically addresses how enlargement of the pest management area ("PMA") - from 1085 ha to 3650 ha - will increase the absolute abundance of predation-limited birds in the PMA and wider landscape.
7. My supplementary evidence addresses how the updated Restoration Package will:
  - (a) increase the chances of successful pest suppression in the PMA;
  - (b) enable more birds to benefit from pest control;
  - (c) produce substantial incremental population gains for kiwi and other predation-limited birds; and
  - (d) improve the Project's avifauna benefit/loss ratio.

## **PEST SUPPRESSION IN THE PMA**

8. Mr MacGibbon describes in his EIC the methods that will be used to control pests in the PMA. I understand from his supplementary evidence that the same control methods are proposed for the updated PMA, with no reduction in

intensity. The proposed methods target all mammalian predators of New Zealand birds, except mice.

9. Rats and possums can usually be suppressed to low levels year-round in all unfenced sanctuaries, regardless of size. Mustelids are difficult to control in unfenced sanctuaries less than 1000 ha in size, except where natural barriers reduce rates of re-invasion.
10. In paragraph 78 of my EIC, I noted the (then) PMA of 1085 ha was part of a larger control network and was likely to benefit from the collective efforts of those programmes. This is why I considered the chances of achieving sustained and effective mustelid control in the 1085 ha PMA were "reasonably high".
11. The intended 3650 ha PMA will also benefit from neighbouring pest control programmes, but is now less reliant on them for successful pest suppression within the PMA itself. A 3650 ha PMA has more 'protected core' than a 1085 ha one - and probably enough core to function as a stand alone sanctuary in most years.
12. The intended 3650 ha PMA is now large by current sanctuary standards, in the top 20% of 40 North Island sanctuaries listed on the "Sanctuaries of New Zealand" website.<sup>1</sup> The proposed method of pest control in the PMA is also unusually intense by current sanctuary standards, involving a mix of aerial 1080 and year-round ground-based control, rather than just one or the other.
13. Enlargement of the PMA, with no loss of pest control intensity, has made the attainment of key threshold pest densities in the PMA much more certain. Accordingly, the chances of achieving successful mustelid and cat control in the PMA have now, in my opinion, increased from 'reasonably high' to 'very high'. At a minimum, the 3650 ha PMA should perform at least as well as other large unfenced mainland sanctuaries with proven track records (eg. Te Urewera Mainland Island). Indeed, the updated PMA now promises to be one of the largest 'pest-free' areas in the North Island.

## **BIRD POPULATIONS IN THE UPDATED PMA**

14. The additional 2565 ha in the updated PMA comprise forest habitats, similar to those in the southern part of the original (1085 ha) PMA.<sup>2</sup> It is highly likely that the bird community in the un-sampled parts of the updated PMA is very similar

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<sup>1</sup> [www.sanctuariesnz.org](http://www.sanctuariesnz.org)

<sup>2</sup> Mr Singers includes a vegetation map of the now intended PMA in the Appendix to his supplementary evidence.

to the one in the sampled parts, both in species composition and species abundance. The single exception may be rifleman, which if present in the updated PMA, would increase its count of threatened species inhabitants from 8 to 9.

15. It is also highly likely that the survey results for kiwi from the original PMA are directly applicable to the updated PMA. Two of the listening stations in the May 2018 baseline kiwi survey provided partial coverage of the forests in the updated PMA, and detected kiwi in them.
16. The updated PMA should therefore benefit about three times as many forest birds as the original PMA, simply because it is about three times larger. The estimated starting size of the kiwi population in the updated PMA is 240 adults (up from 80 in the original PMA) - about 3% of the total population of kiwi in the Wanganui/ Taranaki region. The estimated starting population of NI robins is 1500 (up from 500), a significant population in its own right.

#### **POPULATION GAINS FOR KIWI AND OTHER BIRDS IN THE INTENDED PMA**

17. Although the success of the predator control programme in the intended PMA is more certain, the responses of birds to predator suppression are unlikely to change much. The actual number of respondent species may increase by one (from 8 to 9) if rifleman are present; and the average demographic responses of those species will increase slightly if they experience fewer years, or no years at all, with moderate or high predation losses.
18. In kiwi, for example, the average rate of growth in the intended PMA may be 7% or 8% per year, rather than the 6% estimated for the original PMA. This will reduce the time to reach carrying capacity by 3-5 years, but otherwise make no difference to final densities in the PMA. They will stabilise at about one pair per 5 ha, just as they would have in the original PMA.
19. Nonetheless, the incremental gains from the intended PMA are substantial, simply because it is so much larger than the original PMA. In paragraph 85 of my EIC, I estimated the kiwi population in the original 1085 ha PMA would increase by 379 adults over 30 years. The equivalent estimate for the updated PMA is 1220 adults over 25 years (a slightly shorter period because of the faster growth rate). The incremental gain from the increase in size of the intended PMA is therefore 841 adults (i.e. 1220 minus 379), a substantial number by any conservation measure.

20. The longterm kiwi conservation programme at Lake Waikaremoana, mentioned in paragraph 77 of my EIC, has demonstrated unequivocally that large population gains are achievable when kiwi are subjected to continuous and effective predator control for decades.
21. The incremental gains for other avian respondents will be smaller than those of kiwi, for the reasons outlined in my EIC. In kereru, for example, the incremental gain from the updated PMA will probably be about an additional 184 individuals over 30 years, based on an average rate of growth of 2% per annum and a starting population size of one breeding pair per 50 ha.<sup>3</sup>
22. The incremental gains for fernbird and spotless crane will be close to zero because the updated PMA contains only small amounts of additional habitat for these species.
23. The incremental gains for the updated PMA do not abate when the populations of respondent species reach carrying capacity and stop growing. Offspring unable to find space in the PMA will move into neighbouring areas, as described in paragraphs 87 and 88 of my EIC. These dispersers will contribute to population growth in those areas, particularly if they happen to establish in sites receiving predator control. Several large sites with intermittent or continuous pest control programmes exist already near the PMA, and they are likely to become even more plentiful over time as the 'Predator Free 2050'<sup>4</sup> initiative gains traction.
24. In kiwi, about 730 juveniles are predicted to disperse out of the updated PMA each year when the population reaches carrying capacity, about 500 more than the outflow expected from the original PMA (230 juveniles per year). The cumulative conservation benefits of this 'outflow' difference would also be substantial when measured over decades.
25. To summarise, the updated PMA will produce greater conservation gains for avifauna than the original PMA. The gains accrue because the updated PMA is likely to have more certain predator control outcomes, because it supports larger populations of respondent species, and because it will produce more dispersers when the populations of respondent species in the PMA reach carrying capacity. The incremental gains for kiwi are particularly large.

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<sup>3</sup> The starting populations of kereru in the original and updated PMA are assumed to be 44 and 146 individuals respectively, and the finishing populations after 30 years of predator control are estimated to be 80 and 264 individuals respectively. The incremental gain from PMA enlargement is 184 individuals (264 minus 80).

<sup>4</sup> [www.doc.govt.nz/nature/pests](http://www.doc.govt.nz/nature/pests)

## **AVIFAUNA BENEFIT/LOSS RATIO**

26. In paragraph 23 of my EIC, I stated that the offset/compensation programmes described in section 6 of the Ecology and Landscape Management Plan were, in my opinion, sufficient to protect and enhance the existing avifauna values in the Project area. The updated PMA reinforces this view because it profoundly increases the extent to which avifauna will be enhanced in the Project area.
27. In paragraph 85 of my EIC I calculated that the net benefit of the Project for kiwi over 30 years was 355 adults. This figure was the difference between the expected gains in the PMA over 30 years and the theoretical losses in the Project footprint over 30 years. With the updated PMA, the net benefit of the Project for kiwi increases to 1198 adults over 30 years, with no allowance made for any additional conservation gains resulting from dispersal.
28. The revised estimates with the updated PMA show the minimum benefit: loss ratio of the Project for kiwi is 1220:22 or 55 gains for each theoretical loss. This net benefit ratio will not erode over time because predator control in the PMA is expected to continue indefinitely.
29. In my experience, a net benefit ratio of 55 for kiwi is 'high' and possibly unprecedented, but opportunities for comparison are limited. There is no doubt, however, that the Project will produce a net benefit for avifauna in the Project area, and that the updated PMA will substantially increase the size of that benefit.

**John McLennan**

**17 July 2018**