

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

30 July 2018

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## INTRODUCTION

1. My name is John Alexander McLennan.
2. This rebuttal 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**"). It is my third statement of evidence for the Project, following my evidence in chief ("**EIC**") dated 25 May 2018 and my supplementary statement of evidence ("**Supplementary Evidence**") dated 17 July 2018.
3. I have the qualifications and experience set out in my EIC.
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 and Supplementary Evidence.

## RESPONSE TO EVIDENCE

6. This evidence responds to the evidence of Dr Rhys James Burns and Mr Laurence Barea on behalf of DOC.
7. Dr Burns states in his evidence (Paragraphs 3.13 and 8.10) that the proposed 3650 ha PMA is sufficient to compensate for effects generally on forest birds and wetland birds, with the possible exceptions of kiwi and bittern.
8. In this evidence I address Dr Burns' concerns relating to kiwi and bittern. I specifically address:
  - (a) the expected response of kiwi to predator control in the PMA;
  - (b) the adequacy of the PMA for offsetting residual effects on kiwi; and
  - (c) the status of bittern in the Project area and the need for more intensive bittern surveys.
9. I also address the requirement for fencing to protect kiwi from potential hazards associated with road construction and operation, and correct a minor factual detail in Dr Burns' evidence relating to kiwi surveys and monitoring.

## EXPECTED RESPONSE OF KIWI TO PREDATOR CONTROL IN THE PMA

10. In Paragraph 3.13 of his evidence, Dr Burns states that "*I disagree with the calculation of the benefits and consider Dr McLennan has significantly overestimated benefits for kiwi*". In Paragraph 8.12 Dr Burns says "*I consider two aspects of Dr McLennan's modelling to be unrealistic. The first aspect is his population model provides for no allowance for kiwi dispersal outside of the*

*PMA. The second aspect is the assumption that the carrying capacity of the Project Area will reach a mean of 5 ha per pair within 25 years. Both of these assumptions have, in my opinion, resulted in an overly optimistic model of kiwi benefits arising from the actions of the PMP within the PMA".*

11. The numerical response of kiwi to predator control in the PMA is determined by three factors: the size of the starting population, its average rate of growth in the presence of predator control, and its eventual finishing size when carrying capacity is reached and the rate of growth declines to zero. As Dr Burns correctly points out, the rate of growth is positive when the gains from reproduction and immigration (inwards dispersal) exceed the losses from deaths and emigration (outward dispersal).
12. In my evidence in chief, I did not provide individual values for reproductive rate, death rate, and dispersal rate. I instead provided an estimate of average expected growth rate up to carrying capacity - 6% per annum - which I sourced from Innes et al., 2015. This figure is the net difference between gains and losses. It takes into account the effects of dispersal, without actually quantifying them.
13. The 6% figure was calculated by Dr Hugh Robertson (Kiwi specialist, Department of Conservation, Wellington), a co-author of the Innes et al., 2015 report. He derived it by averaging the rates of population increase in existing North Island kiwi sanctuaries with trapping and poisoning programmes - and then applied it to estimate the probable growth of kiwi populations in those sanctuaries over the next 15 years. The existing sanctuaries span the size of the one proposed for the PMA.
14. The 6% estimate is therefore not an unduly optimistic one derived from large and successful sanctuaries as Dr Burns suggests in Paragraph 8.13 of his evidence, but is instead an average derived from both small and large sanctuaries. For this reason, I consider it is directly applicable to the proposed 3650 ha PMA.
15. North Island brown kiwi are potentially capable of fast population growth. In highly favourable circumstances such as fenced sanctuaries or offshore islands (no predators and no dispersal)  $r_{max}$  (maximum intrinsic rate of increase) can exceed 0.25, equating to an annual population increase of about 28%-30% (McLennan, unpublished data, presented to the Department of Conservation's Kiwi Recovery Group, Wellington, February 2017). By this measure, the 6% growth figure for the proposed PMA is conservative and realistic, with ample allowance for occasional losses to predators and dispersal.
16. In paragraph 8.11 of his evidence, Dr Burns estimates that the proposed PMA currently contains about 120 adult kiwi, and calculates they will produce 10-30

recruits (chicks that survive to adulthood) each year. This equates to annual growth of 8.3% - 25% if no recruits disperse.

17. Although I think Dr Burns' estimate of population starting size is too low, his calculation is important and informative because it shows he expects the proposed predator control programme will reverse the trajectory of the kiwi population in the PMA from one of (presumed) decline to one of growth. His concern about my use of the 6% growth figure is therefore not about whether the proposed PMA will benefit kiwi, but instead about how many of the young kiwi hatched in the PMA will remain there to contribute to subsequent population growth.
18. This distinction is important. With pest control in perpetuity, it does not really matter if it takes the kiwi population in the PMA 25 years or 50 years to reach carrying capacity, because juveniles which disperse out of it will contribute to population recovery in surrounding areas, wherever they settle. It does matter, however, if our differences of opinion relate to the potential effectiveness of the PMA and its ability to compensate for residual effects on kiwi and other birds. This, however, is clearly not the case.
19. I therefore do not agree with Dr Burns' opinion that I have overestimated the potential benefits of the PMA for kiwi. I think my use of the 6% growth figure is reasonable and appropriate; and I think my estimate of the potential population increase in the PMA (1220 adults) is also fair, given that the estimated ceiling density of one pair per 5 ha (carrying capacity) has been reached, or exceeded, in lowland sanctuaries elsewhere in the North Island (eg. Ponui Island in the Hauraki Gulf).

#### **ADEQUACY OF THE PMA FOR OFFSETTING RESIDUAL EFFECTS ON KIWI**

20. In paragraph 29 of my supplementary evidence, I calculated the estimated benefit:loss ratio of the Project for kiwi was 55:1. I remain of the opinion that this estimate is correct. I used the same input values to calculate the gains in the PMA and the theoretical losses in the Project footprint.
21. The calculated gains and losses of the Project are sensitive to the input values that are used to derive them (population growth rate, duration of predator control, size of starting populations). The benefits of the Project always greatly outweigh the losses when:
  - (a) the PMA is much larger than the footprint (as it is); and
  - (b) annual population growth in the PMA is greater than zero.

These two factors determine the overall 'net benefit of the Project' for all predation-limited avifauna in the Project area.

22. Dr Burns and I may disagree on some matters of detail, but we do agree that the proposed 3650 ha PMA will offset (compensate) the residual effects of the

Project on all forest-dwelling birds. This includes the two species of special conservation interest, NI robin and NI kiwi.

### **BITTERN AND BITTERN SURVEYS**

23. In Paragraph 3.2 of his evidence, Dr Burns notes there are five threatened species of birds in the wider Taranaki region that may occasionally visit the Project area, but have not yet been detected in it. He provides several possible explanations for these detection 'failures', all equally valid.
24. In bittern, secretive behaviour and camouflage combine to make them difficult to observe, increasing the chances of detection failure in places where they are actually present. They are also extremely rare, especially in Taranaki, as Figure 3 in Dr Burns' evidence shows. This means that in most places, at most times, they are not actually there to detect.
25. In paragraph 6.14, Dr Burns states that, in his opinion, *"the current failure to detect bittern with the Project Area is likely due to little or no bittern-specific survey being made in each season of the year"*.
26. I disagree with this statement because:
  - (a) ecologists have already spent considerable time in the Mangapepeke and Mimi catchments, and would report a bittern if they saw one; and
  - (b) currently, there is nothing to suggest "detection failure" is a more compelling explanation of a zero bittern count in the Project area than "zero presence". Fig 3. of Dr Burns' evidence shows there were no recorded sightings of bittern in the Project area, or its immediate surrounds, in the 21 year period from 1990 to 2011 (the period over which the data were collected).
27. The use of song detectors this coming spring will help to clarify the status of bittern in the Project area. In the meantime, their presence in the Project area is still best described as unconfirmed. This also means the potential effects of the Project on bittern are currently impossible to quantify. 'No effect' and 'some effect' are equally valid possibilities.

### **FENCING FOR KIWI PROTECTION**

28. The potential use of roadside fencing to protect kiwi from vehicle strike is accepted and contained in the ELMP. The development of a fencing plan, informed by radio-tracking, is also agreed.
29. In my opinion, however, the use of fences to prevent lethal falls down newly formed cuts and slopes (as proposed by Dr Burns in Paragraph 8.22 of his evidence) would produce few additional benefits for kiwi in a landscape already naturally (and through the existing SH3 cuttings) populated with cliffs

and steep slopes. Kiwi continue to survive in this landscape because they recognise these potential hazards and avoid them.

## **BIRD MONITORING**

30. In section 9.1 of his evidence, Dr Burns states that kiwi monitoring should be undertaken over the entire 3650 ha PMA. The May 2018 baseline measurement was undertaken throughout the then 1085 ha PMA. Additional listening stations will be established during the next survey to include those parts of the enlarged PMA that were not sampled previously.
31. The baseline measurements of forest and wetland bird abundance in the PMA are sufficiently robust to enable changes exceeding 20% to be detected with high probability. I therefore consider the opinion expressed by Mr Laurence Barea in paragraph 2.5 of his evidence - *"There is no rigour provided to support how the Applicant's experts (other than Mr Singers) have determined the proposal is sufficient to achieve no net loss. In many cases there is lack of sufficient baseline data to support the claim. For some fauna there are no available or reliable techniques for determining no net loss"* - is not applicable to birds.

**John McLennan**

**30 July 2018**