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 SIMON PERCIVAL CHAPMAN (BATS AND HERPETOFAUNA) ON BEHALF OF THE NZ TRANSPORT AGENCY

30 July 2018

BUDDLEFINDLAY
Barristers and Solicitors
Wellington

Solicitors Acting: **Paul Beverley** / **David Allen / Thaddeus Ryan**
Email: david.allen@buddlefindlay.com / thaddeus.ryan@buddlefindlay.com
Tel 64-4-499 4242 Fax 64-4-499 4141 PO Box 2694 DX SP20201 Wellington 6140

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INTRODUCTION

1. My name is Simon Percival Chapman.

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 Colin O'Donnell, Dr Laurence Barea and Ms Lynn Adams filed on behalf of DOC.

DR COLIN O'DONNELL'S EVIDENCE

Adequacy of information on bats

7. Dr O'Donnell highlights in paragraph 3.5 and section 8 of his evidence that he considers that insufficient information has been provided about bat roosting and foraging areas therefore an unacceptably high degree of uncertainty exists regarding the effects of the Project on bats requiring a larger PMA. Specifically, in paragraphs 8.3 and 8.4 he points to the lack of a radio-tracking study as the main reason for the high degree of uncertainty.

8. As explained in my reports and EIC, bat trapping and radio-tracking programme was attempted, but it failed to trap any bats. In paragraph 8.9 of his evidence, Dr O'Donnell criticises the programme's timing and low level of trapping effort. The timing of trapping was carried out during summer in accordance with current best practice as described in DOC's best practice manual of conservation techniques for bats[1].

9. During discussions with DOC's then bat expert (Ms Moira Pryde) after the attempted trapping programme it was agreed that while radio-tracking is the preferred way to reduce uncertainty, it can take several years to generate

[1] Sedgeley, J, C O'Donnell, J Lyall, H Edmonds, W Simpson, J Carpenter, J Hoare and K McInnes (2012). DOC best practice manual of conservation techniques for bats. DOCDM-131465. Christchurch: Department of Conservation.

meaningful results capable of providing a degree of certainty (Dr O'Donnell notes in paragraph 8.8 of his evidence that it took him three summers to determine long-tailed bat roosting and foraging ranges in the Eglinton Valley). My recommendation to the Project team at the time was to carry out further attempts to trap and radio-track. However, due to the risk that spending the required time (potentially several years) and resources would not substantially reduce the degree of uncertainty, the Project team decided to focus instead on addressing uncertainty by increasing the size of the PMA to benefit bats and relying more on VRPs. In my opinion that was the correct decision as it focuses on providing beneficial outcomes for bats, rather than expert argument and research as to certainty (which, even with years of study, may well not be achieved).

10. I agree with Dr O'Donnell that the decision to discontinue bat trapping and radio-tracking means that the compensation put forward from the PMA must be in a location, and of a scale, that would have a high probability of achieving benefits of a greater magnitude than the likely magnitude of adverse effects the Project may have on bats.

11. To put the uncertainty in perspective, the Project footprint includes less than 0.025% of the approximately 130,484 hectares of indigenous forest present in the North Taranaki Ecological District and less than 1% of the total area of indigenous forest present in the PMA area[2].

12. Dr O'Donnell is correct that long-tailed bats can utilise trees with a wide range of sizes (paragraph 8.11) however we know that they generally use cavity-bearing trees >80 cm DBH for roosting and breeding when available[3]. Tree size classes in the PMA have not been surveyed extensively but based on initial assessments carried out there by Mr MacGibbon and a Tonkin + Taylor team, tens of thousands of trees >80cm DBH are present. Mr MacGibbon describes his preliminary assessments of tree size classes and densities in his rebuttal evidence (paragraph 23).

13. Minimising the loss of large/mature native trees was a major consideration during route selection and design processes. On that basis, the Project footprint is highly unlikely to contain higher number of trees >80 cm DBH per hectare (i.e., density) than the PMA. In fact, the density of such trees is likely to be lower within the Project footprint compared with the PMA. It is therefore reasonable to assume conservatively that (based on proportion of area) approximately 1% of the number of >80 cm DBH trees within the PMA area will be removed during construction. This is well within natural levels of tree fall. For example, a North Island study found that 6.2% of known long-tailed

[2] EIC of Mr Singers, paragraph 31.
[3] Sedgeley JA; O'Donnell CFJ. (1999). Roost selection by the long-tailed bat, *Chalinolobus tuberculatus*, in temperate New Zealand rainforest and its implications for the conservation of bats in managed forests. Biological Conservation 88:261–276.

bat roosts were lost due to natural tree fall over 3 years[4]. In contrast to natural tree fall, the Project includes VRP application to minimise the risk of impacting occupied bats roosts when large trees are felled. While those factors do not eliminate uncertainty, they do put claims of local extinction into perspective and highlight the value of the PMA.

Size and location of PMA

14. DOC's bat experts' advice on the size of the PMA has been a moving target. The initial figure put forward by Ms Pryde (DOC's bat expert until April 2018) was 3,000 hectares (based on the Fiordland research). This was shifted to 5,000 hectares and Dr O'Donnell appears to have shifted the area again (in paragraph 3.14(b) of his evidence) by recommending additional buffers that would add hundreds if not thousands of hectares to the PMA's area (or have the intended PMA moved to an area of solely DOC land).

15. It is my understanding from Mr MacGibbon's rebuttal evidence that he only termed the outer edges of the PMA "buffers" because it would be more difficult to achieve pest population monitoring targets where reinvasion is most likely to occur. It does not necessarily follow that biodiversity benefits will not occur in those areas. Rather than less effective control being implemented around the outer edges of the PMA, I understand that additional pest control will be implemented in those areas to counter the potential impacts of reinvasion. Mr MacGibbon's rebuttal evidence addresses how the ELMP will be updated to reflect the intended additional pest control around the perimeter of the PMA.

16. Upon further review of the Fiordland research (Attachment 1 to my Supplementary Evidence) I can find no mention of any buffer areas being implemented in addition to the main pest control. In other words, it seems that the 1,500-3,350 hectares of pest control that was sufficient to reverse population declines across three bat colonies in Fiordland had no additional buffers, or areas of more intensive control around the perimeter of the pest control areas.

17. Dr O'Donnell states in paragraph 9.13 in his evidence: ***the choice of 5000 hectares is a minimum precautionary area for protection of long-tailed bat populations and reflects the uncertainty*** *over where exactly breeding roosts are in the landscape, the possible home range size of the local bat colony,* ***and the strong need to have a safe core area of habitat buffered against pest reinvasion*** [my emphasis].

18. Those comments leave no room for doubt that buffers (and uncertainty) are already incorporated into his recommended 5,000 hectares of pest control.[5] I am therefore unsure why he seeks additional buffers.

[4] Borkin, KM, O'Donnell, C. Parsons, S. (2011). Bat colony size reduction coincides with clear-fell harvest operations and high rates of roost loss in plantation forest, Biodiversity and Conservation, 10: 3537-3548.
[5] Noting that this contradicts his earlier comments in paragraph 3.14 of his evidence that suggest the 5,000+ hectare area itself needs to be buffered.

19. Based on the small proportion of native forest impacted by the Project and the abundance of unaffected native forest with similar or higher densities of large trees within the PMA, I am confident that the risk that the PMA will fail to generate a positive outcome for bats is negligible to nil. We know there is a large number of long-tailed bats in the wider Project area.[6] I stand by my previous conclusion that the PMA will likely achieve 'no net loss' and irrespective of any argument over terminology will appropriately address all adverse effects of the Project on bats (and provide in perpetuity benefits). Long-tailed bat populations throughout New Zealand are declining where predators are not controlled. Reversing a likely ongoing decline towards extinction of the local long-tailed bat population is not a requirement in this case, but it is a near-certain outcome now that the PMA has been expanded to 3,650 hectares. As explained in my Supplementary Evidence, it is likely that the bat population in the wider Project area is presently declining and without the Project this decline is likely to continue.[7]

20. The aim of the Project development in terms of bats (and all ecological effects) has been to first avoid effects (as was done through alignment selection and optimisation), then minimise/mitigate effects (as will be achieved with VRP), and then finally compensate for residual effects with pest control of sufficient area, intensity and duration in the right location(s) to provide a significant benefit for long-tailed bats (as will be provided by the PMA). As mentioned above, in my opinion, this appropriately addresses (and provides benefits beyond) the adverse effects of the Project on bats. Critically, too, while I do not consider it to be a requirement for the Project it will, in my opinion, reverse the likely current decline of the wider Project area bat population.

Roost availability

21. As stated above only a small proportion (approximately 1% or less) of large trees (>80 cm DBH) will be impacted by the Project. I agree that such trees are important, but I do not agree that the loss of a small proportion of such trees – especially when tens of thousands will remain (under the protection of pest control in perpetuity) – will be potentially *"catastrophic for long-tailed bats because felling of breeding trees during road construction may lead to extinction of the Mt Messenger bat population"* as stated by Dr O'Donnell in paragraph 3.5 of his evidence.

22. VRP implementation will substantially reduce the risk of bats being killed as a direct effect of tree removal. As inhabitants of dynamic forest environments, long-tailed bats must be able to adapt to a constant turnover in their pool of roost trees. Similarly, populations must also be adapted to cope with occasional larger-scale losses of roost trees across the landscape such as those that might occur when storms and/or high winds cause natural tree fall.

[6] Dr O'Donnell states at paragraph 6.5 of his evidence "These results imply large numbers of long-tailed bats live at Mt Messenger.
[7] At paragraph 24. Dr O'Donnell has not challenged this position in his evidence.

Long-tailed bats must actively seek out new roost trees to address such a common natural occurrence. An indication of this is provided by the North Island study highlighted above that found that 6.2% of known roost trees were lost due to natural tree fall over 3 years[8]. Aspects of long-tailed bat behaviour that reduce the impacts of tree loss on the population are that each colony is typically spread over multiple roost trees on any one day, and they usually move to new roost tree every day or two.[9]

23. Also, given that pest control is known to successfully recover long-tailed bat populations, there must be some flexibility and adaptability in roost use by long-tailed bats otherwise the additional numbers of bats generated by population growth resulting from pest control would have nowhere to roost.

24. Finally, long-tailed bats persist in parts of the Waikato Region where few native trees or forest areas remain. Recent unpublished research in Hamilton[10] has shown that long-tailed bats can adapt to using artificial roosts boxes (an option for the Project I had earlier discussed with Ms Pryde who was open to exploring it though we both agreed that large-scale pest control is preferable) as well as a range of exotic tree species. Overall, I remain of the view that if the felling of occupied roost trees can be appropriately minimised/avoided (see below) by applying VRPs, which I consider likely, the local bat population will not be driven to extinction by this Project (even without the 3,650ha PMA).

Vegetation Removal Protocols

25. Dr O'Donnell criticised a lack of evidence for comments in my evidence regarding factors limiting bat populations (his paragraph 7.12) and the proportion of bat habitat impacted by the Project (paragraph 7.13).

26. I agree that long-tailed bats have specialised roosting requirements, and that there is some uncertainty around the precise proportion of bat habitat in the Project footprint and the PMA (however, uncertainty is likely to remain – even with considerable study effort). There is however no doubt that the impacts of introduced predators are suppressing bat populations (otherwise it would not be possible to recover bat populations with pest control).

27. On that basis there must be some 'headroom' for additional bats which means they must be able to find alternative roosts. While some roosting habitat utilised during and following population recovery may be suboptimal, it only needs to be adequate or better. My comment that less than 1% of long-tailed bat habitat would be lost due to the Project is based on ecosystem mapping

[8] Borkin, KM, O'Donnell, C. Parsons, S. (2011). Bat colony size reduction coincides with clear-fell harvest operations and high rates of roost loss in plantation forest, Biodiversity and Conservation, 10: 3537-3548.
[9] O'Donnell, C.F.J. (2001): Advances in New Zealand mammalogy 1990–2001: long-tailed bat. Journal of the Royal Society of New Zealand 31: 43–57.
[10] https://nzta.govt.nz/media-releases/southern-links-bat-research-breaks-new-ground/

and is supported by Mr MacGibbon's preliminary field-based verification as stated above.

28. There are approximately 130,484 hectares of indigenous forest present in the North Taranaki Ecological District[11]. The Project footprint includes 31.7 hectares of forest, scrub, wetland and cliff vegetation communities, which is collectively <0.025% of the total area of indigenous vegetation in the ecological district and <1% of the PMA area. Given the strong link between long-tailed bat presence and the presence of indigenous forest I consider it reasonable to make the point that only a tiny proportion of the bat population in the ecological district will be impacted. I agree that not all of that native forest provides bat roosting habitat but then the same can also be said of the Project footprint (and we know bats can also use exotic vegetation for roosting).

29. I disagree with Dr O'Donnell's comment at para 9.3 that VRPs are a last resort action in the avoid, remedy, mitigate, offset and compensate hierarchy. I consider VRP to be essential on-site avoidance/mitigation where bats are present because it directly avoids/mitigates the effects of vegetation clearance on bats in roosting trees (Dr O'Donnell uses the words "*minimise harm*" which to me is the equivalent of mitigation). In my experience (e.g., during VRP implementation on the Waikato Expressway project I personally observed bats exiting roost trees which were then able to be confirmed as unoccupied when felled) VRPs can be effective at mitigating direct effects of vegetation removal (although Dr O'Donnell is correct that they do not "guarantee" this). These points, as to the role and effectiveness of VRPs, may indicate one of the reasons for the differences in effects of the Project between myself and Dr O'Donnell.

30. Finally, at paragraph 9.4 (page 41) of his evidence Dr O'Donnell nevertheless agrees with the VRP condition but seeks amendments. Dr O'Donnell would prefer the VRP to be applied to all trees that are potential bat roosts >15 cm DBH, but he would be comfortable for the VRP to be applied to trees in the 15-80 cm DBH range at the discretion of the Project's 'Supervising Bat Ecologist'. For the reasons set out in my Supplementary Evidence I remain confident as to the rationale for the 80 cm DBH limit and the benefits that will create. However, in an effort to try and resolve the matter, I suggest that trees below 80 cm DBH and above 50 cm DBH may be inspected at the discretion of the Project's 'Supervising Bat Ecologist' as being likely to contain bat roosts. Given the abundance of smaller trees, many of which lack characteristics for bat roosts in the area, I do not consider it necessary to go below this level. In my opinion, and in my experience with VRPs as mentioned above, with this amendment to the VRP, the risk of roosting trees with bats in them being felled is further reduced. I consider this change further supports the adequacy

[11] EIC of Mr Singers, paragraph 31.

of the proposed 3,650 ha PMA as appropriately enabling the long-term sustainability of the Mt Messenger bat population.

31. At paragraph 9.7 (pages 41-42) of his evidence Dr O'Donnell points out several discrepancies between the VRP included in the ELMP and the version provided in the NZTA's Bat Management Framework. As stated, the VRP included in the ELMP NZTA's Bat Management Framework has been modified to reflect the Project. Dr O'Donnell's concerns appear to be that the framework is not being absolutely followed and what is proposed is different to some other roading projects. I am not opposed to the recommended change in language (from suggestive to prescriptive) specified in his paragraph 9.7 b-c on page 42 but I do not consider that strict application to felling of high risk trees occurring only in summer months is necessary with the VRPs proposed. I agree that felling trees in winter must be avoided (and a May-September restriction is already proposed) but the VRPs have been applied successfully in other North Island roading projects (e.g., Waikato Expressway, SH1 Puhoi to Warkworth) with a tree removal restriction of May to September as proposed for this Project. The keys aspects of Dr O'Donnell's concerns about VRP effectiveness during colder periods will be addressed by accepting his recommendations in paragraph 9.7 b-c on page 42 of his evidence. Those amendments will ensure that VRP application will only proceed when specific temperature and humidity criteria are met so that impacts on torpid bats will be avoided during colder periods. In my opinion, the temperature and humidity thresholds in the VRP are already set conservatively and no additional seasonal restrictions are necessary (beyond the May-September restriction already proposed).

32. Dr O'Donnell addresses the issue of lighting at paragraph 9.10 (page 43) of his evidence. I agree that any temporary lighting (e.g., for safety purposes,) should be designed (both in terms of shading and light wavelengths) so as not to attract bats to the roadway. To that end section 5.10 of the Construction Environmental Management Plan specifies that the Project Ecologist will be involved in both the temporary and permanent lighting design for the Project.

Conclusion

33. Overall, having read Dr O'Donnell's evidence, my opinion remains that the Project goes substantially beyond mitigating/offsetting/compensating the effects of the project on long-tailed bats and will secure the long-term future of at least one long-tailed bat colony (and almost certainly multiple colonies) in north Taranaki.

DR LAURENCE BAREA'S EVIDENCE

No net loss

34. In paragraphs 4.8 and 4.66 of his evidence Dr Barea challenges the suggestion in my EIC that no net loss (and possibly a net gain) is a likely

outcome for long-tailed bats on the basis that my conclusion is unsupported by any quantitative assessment of losses and gains. He goes on to point out that the potential for local extinction of long-tailed bats must considered an outcome of the road being constructed because the locations of breeding or day roosts have not been identified. While I agree that a quantitative assessment has not been carried out (and would be difficult or not possible) for long-tailed bats, my conclusion of no net loss as a likely outcome of the Project is based on several key facts that are not in dispute:

(a) Long-tailed bats are critically endangered and are considered to be declining throughout their range except where they are protected by large-scale intensive pest control;

(b) The Project includes the only pest control programme of the scale, type and duration required to recover long-tailed bat populations currently proposed for North Taranaki;

(c) The Project footprint represents a tiny proportion of the native forest (and large trees) present in the PMA (approximately 1%) and the North Taranaki Ecological District (<0.025%); and

(d) The Project includes VRP application which is the appropriate mechanism to avoid/minimise direct effects on bats within the Project footprint.

35. In my opinion, based on the above matters, it is reasonable to assume that long-tailed bats in the Project area (and the wider Project area) will be worse off without the Project than with it. On that basis I stand by my conclusion that despite a lack of quantitative evidence, no net loss is the most likely outcome of the Project for long-tailed bats

PMA location and buffers

36. In paragraphs 4.68-4.70 of his evidence Dr Barea supports Dr O'Donnell's conclusion that a minimum pest control area of 5,000 hectares is required to provide a high level of confidence that a successful outcome will be achieved. In paragraph 4.69 he acknowledges that a 3,650-hectare PMA adjacent to the existing Parininihi pest management area might be an appropriate combination subject to securing long-term management of the Parininihi pest control programme. In my opinion a PMA adjacent to the Parininihi pest control programme area is an excellent option for bat compensation.

37. Dr Barea states in paragraph 4.60 of his evidence that as Mr MacGibbon considers the outer perimeter of the PMA to be a 'buffer', the effective size of the PMA is reduced below that required to compensate for adverse effects on long-tailed bats. I disagree with Dr Barea because as discussed above, Dr O'Donnell's recommendation of a minimum of 5,000 hectares of pest control

for long-tailed bat population recovery already incorporates allowances for uncertainty and buffers (paragraph 9.13 of Dr O'Donnell's evidence).

MS LYNN ADAMS' EVIDENCE

Predator-proof fenced lizard enclosure

38. Paragraphs 6.1-6.8 of Ms Adams' evidence set out the details she considers to be missing from the lizard enclosure proposal. I agree that the proposal requires further details and that these should be incorporated into the ELMP and/or the consent conditions as suggested by Ms Adams in paragraph 7.1 of her evidence.

Simon Chapman

30 July 2018