

**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

**SECOND SUPPLEMENTARY STATEMENT OF EVIDENCE OF SIMON
PERCIVAL CHAPMAN (BATS AND HERPETOFAUNA) ON BEHALF OF THE NZ
TRANSPORT AGENCY**

28 September 2018

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INTRODUCTION

1. My full name is Simon Percival Chapman.
2. This second supplementary statement of 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. It is my fourth statement of evidence, following:
 - (a) my statement of evidence in chief ("**EIC**") dated 25 May 2018;
 - (b) my (first) supplementary statement of evidence dated 17 July 2018; and
 - (c) my statement of rebuttal evidence dated 30 July 2018.
4. I have the qualifications and experience set out in my EIC.
5. 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.
6. In this evidence I use the same defined terms as in my EIC.

SCOPE OF EVIDENCE

7. The purpose of this second supplementary statement of evidence is to present and explain the amendments made by the Transport Agency to the ecological Restoration Package, in relation to addressing effects on bats and on herpetofauna, since the hearing was adjourned on 16 August 2018.
8. In particular, my evidence addresses:
 - (a) the proposed measures to address effects on long-tailed bats (in particular, the now-proposed programme of capturing and monitoring long-tailed bats); and
 - (b) the proposed measures to address effects on herpetofauna.
9. During the adjournment, careful consideration has been given to these matters. I have (along with Mr MacGibbon and others) attended two meetings with DOC, and one with NPDC's consultant ecologists, Wildlands, to discuss lizards and bats.

PROPOSED LONG-TAILED BAT MONITORING PROGRAMME

Reasons for a bat monitoring programme

10. In his evidence Dr O'Donnell raised issues about the lack of bat radio-tracking monitoring for the Project. During the presentation of his evidence at the

hearing, Dr O'Donnell (DOC's bat expert) made it clear that the critical issue for DOC is a lack of certainty that the PMA will provide benefits for long-tailed bats by protecting important roosting areas.

11. In my opinion, the risk of the PMA failing to protect important roosting habitat for long-tailed bats is negligible. However, I acknowledge it is a possibility. My opinion is based on my understanding of the PMA's size, location, habitats and context in the landscape.
12. I understand that a key reason behind the Transport Agency's decision to seek an adjournment to the hearing was to consider the potential to undertake a season of bat monitoring to determine whether the PMA accommodates bat roosts.

Bat monitoring methodology

13. Long-tailed bat trapping and radio-tracking methodologies are well established. Best practice methodologies for bat trapping and radio-tracking are described in DOC's best practice manual of conservation techniques for bats.¹ The ELMP has been updated during the adjournment period, to include relevant detailed methodologies for the bat monitoring programme.
14. Evidence and feedback from DOC and NPDC's bat experts on the previous bat trapping attempt associated with the Project (contained in my technical reports and summarised in my EIC) was that:
 - (a) too few traps were used; and
 - (b) there was insufficient flexibility in the programme timeframes to allow the programme to be paused during unfavourable trapping conditions.
15. In response to those criticisms, and to ensure a robust trapping methodology is applied, the monitoring proposed for the upcoming field season (October 2018 to March 2019) will:
 - (a) utilise at least eight harp traps (compared to five traps used previously); and
 - (b) run for at least 30 nights of trapping during suitable conditions (compared to the previous 15-night programme, which was abandoned after nine nights of unsuitable conditions).
16. In my opinion the methodologies, trapping approach and effort proposed for the programme are appropriate given the objective of determining whether the PMA provides important roosting habitat for bats. This is because:

¹ Sedgeley, J.; O'Donnell, C.; Lyall, J.; Edmonds, H.; Simpson, W.; Carpenter, J.; Hoare, J.; McInnes, K. (2012): DOC best practice manual of conservation techniques for bats Version 1.0. Department of Conservation. 171p.

- (a) information generated during the previous trapping attempt (e.g., identification of potential trapping locations) provides the programme with a strong head-start;
 - (b) additional expertise has been added to the monitoring team, including an additional level E (trainer) competent bat ecologist and at least two additional level D bat ecologists (trapping, handling and roost identification);
 - (c) the monitoring timeframe includes an entire field season, combined with the flexibility to target efforts towards periods of most suitable weather conditions and increase trapping and radio-tracking effort as opportunities arise;
 - (d) the monitoring team will be based on-site, and throughout the duration of the monitoring programme at least one level E bat expert will be present in case suitable trapping conditions arise unexpectedly;
 - (e) the monitoring programme is well resourced with key equipment including 30 radio-transmitters (meaning up to 30 bats can be radio-tracked), at least eight harp traps, four - six mist nets, three - four radio-tracking receiver/antenna setups, two acoustic lures, and two UAV/drone units for aerial radio-tracking;
 - (f) the trapping approach provides flexibility to refine trapping site selection as the team gathers acoustic monitoring data and becomes more familiar with the landscape and associated trapping opportunities as the programme progresses; and
 - (g) the inclusion of three level E bat ecologists on the team combined with multiple sets of equipment provides the flexibility to run two separate trapping teams concurrently, apply more than one trapping approach at a time, and to cover more locations.
17. This robust methodology, which I drafted with assistance from Mr MacGibbon, is contained within the ELMP. It is a methodology that I consider to be highly likely to resolve the present uncertainty as to the presence of bat roosts within the PMA.
18. I note that the use of acoustic lures is a fairly new methodology in New Zealand, but it is used widely overseas and anecdotal evidence indicates that it can also be effective here. The monitoring does not rely on lures, however their use provides an additional means of boosting trapping success and also further research as to their potential effectiveness.
19. Similarly, the use of drones to track bats is an innovation for the programme that is not widely used in New Zealand or elsewhere. The use of drone technology could significantly simplify bat tracking and roost identification by

quickly providing an indication of bat roost locations and reducing the time required for field-based radio-tracking teams to locate roosts. Again, the programme has sufficient human effort to not rely on the effectiveness of drones but they provide additional potential benefit to the programme.

CHANGES TO PROPOSED ONSITE MITIGATION MEASURES TO ADDRESS EFFECTS ON BATS

20. The ELMP has been updated to include provision for site-specific relevant information on bat roosting (generated by the monitoring programme) to be utilised during VRP implementation. For example, roosts identified will be included within the VRP.
21. Also, if the radio-tracking reveals that particular types of roosts or roost tree species are favoured by bats in the area, these will also be included within the VRP.

PROPOSED BAT MONITORING CONDITION

22. The Transport Agency has revised the draft consent conditions² to increase certainty that the Restoration Package will benefit bats. I have worked with Mr MacGibbon and Mr Roan in the drafting of the conditions.
23. The conditions, which are also described in the second supplementary statements of Mr Roan and Mr MacGibbon:
 - (a) set out the purpose of the monitoring programme, being to confirm and map the location of long-tailed bat maternity roosts within the study area which will enable clear assessment of the suitability of the PMA for long-tailed bats.
 - (b) provide a definition of maternity roost which I consider is clear and appropriate.
 - (c) provide for the methodology and parameters of the monitoring programme, including that it is undertaken in accordance with the ELMP which I consider to be best practice and appropriate for the purpose of the monitoring programme.
 - (d) provide for four possible scenarios, being:
 - (i) **Scenario 1:** the PMA is confirmed as proposed (the "**Intended PMA**") if 10 or more maternity roosts are located within the Intended PMA;³ or if 10 or more maternity roosts are found within

² Attached to Peter Roan's second supplementary evidence.

³ Mr MacGibbon provides definitions of the Intended PMA and other areas referred to (e.g., 'Study Area') in his second supplementary evidence. These in turn draw on the definitions in the proposed new conditions related to the bat tracking programme and subsequent confirmation of the final PMA.

the Study Area and 70% or more of them are within the Intended PMA.

The threshold of 10 roosts reflects my opinion that 10 maternity roosts found within the PMA during one field season would indicate that the Intended PMA provides important roosting habitat (noting that this would indicate that many more roosts would likely be found there if monitoring continued over multiple field seasons).

The selection of the second, 70% of 10 or more total maternity roosts threshold is based on the fact that this proportion provides a clear indication that the Intended PMA provides roosting habitat that has a high degree of relative importance in the wider area.

- (ii) **Scenario 2:** This applies if Scenario 1 does not apply, but two or more maternity roosts are found within the Wider PMA; or if two or more are found within the Study Area and 50% or more are located within the Wider PMA.

In either case, the Project bat expert will consult with DOC's bat expert to determine whether the Wider PMA supports suitable maternity roosts to contain the Confirmed PMA, and where the boundaries of the Confirmed PMA should be located.

In doing so, there are a list of criteria to be applied, in particular for bats. However, subject to other matters, 70% of the maternal roosts identified will be in the Confirmed PMA. This approach, including the thresholds and criteria, is appropriate because a reduced amount of information may likely provide an indication of the PMA's importance for bat roosting, but the PMA boundaries may need to be adjusted (to include land outside Intended PMA but within the Wider PMA) to ensure that important roosting areas are adequately protected.

- (iii) **Scenario 3:** This scenario applies if two or more maternity roosts are discovered in the Study Area, but less than 50% of those are in the Wider PMA.

The Project bat expert will consult with DOC's bat expert to determine whether the Study Area supports suitable roosts to accommodate the Confirmed PMA. If it does, the boundaries of the Confirmed PMA (within the Study Area) will be determined taking into account the factors listed.

This scenario provides for the possibility that a low number of roosts may be found within the Intended PMA or Wider PMA, but that one or more of the roosts within the PMA are particularly important (e.g., large numbers of bats utilise it/them, or the roost

may be utilised for a longer than usual length of time). It also ensures that all appropriate factors related to bat roosting are considered before abandoning a PMA in close proximity to the Project area (ie, within the Study Area). In this scenario, the PMA could ultimately be located anywhere within the Study Area, as appropriate in light of the factors to be considered that are set out in the condition.

- (iv) **Scenario 4:** If the PMA is not confirmed under the above scenarios, then a 3,650 ha PMA will be established in the Waitaanga Conservation Area (or an alternative site agreed with DOC). This is a known area of long-tailed bat activity and DOC has identified existing short-tailed bat roost trees.

Short-tailed bats are a different species to the long-tailed bats that will be impacted by the Project. Protecting the known bat habitat at the Waitaanga Conservation Area would provide a meaningful benefit for bats. However, my strong preference is for a like-for-like approach in which benefits for long-tailed bats (as well as for other fauna, and vegetation) are achieved as close as possible to the location of the adverse effects. That is why this option is listed as Scenario 4; it is very much intended to be a 'fall back' option.

The Waitaanga Conservation Area has consistently been raised by DOC as an appropriate location for the PMA in addressing bats. If the PMA must be shifted, the Waitaanga area is likely to be an appropriate alternative for bats because it is known to provide habitat for both native bat species. While it is also a known striped skink area, I understand that it would require further assessment work to determine the most suitable part of the Waitaanga Conservation Area for providing benefits for any other taxa or ecological communities impacted by the Project. That is why consultation with other experts is included within the condition.

- (e) Require increased intensity of pest control to be provided at up to five maternity roosts that are located within 500 m of the edge of the PMA (if 10 roosts are not located beyond 500m) (discussed further below).
24. In my opinion the revised bat conditions provide an appropriate mechanism for utilising the results of the bat monitoring programme to determine whether the Intended PMA (and if necessary, the Wider PMA and Study Area) provides suitable long-tailed bat habitat sufficient to mitigate or compensate for the effects of the Project on long-tailed bats.

REMAINING ISSUES WITH DOC

25. My understanding is that there is a large degree of agreement with DOC's experts in respect of the bat methodology and conditions I have outlined

above. However, DOC⁴ (I understand through Dr O'Donnell) has raised a concern that the PMA will not provide sufficient benefits for bats that roost within the outer 1km edge of the PMA. DOC's approach is that 10 maternity roosts located by radio tracking should occur at least 1km from the PMA edge (i.e., beyond a 1 km buffer) to substantiate the PMA as suitable roost habitat for bats. Otherwise, if any of the 10 roosts occur within the buffer a rat RTI of below 1% and mustelid densities of zero detections must be sustained for them to "count" towards verification of the PMA.

26. I disagree with DOC's position for the following reasons.
27. Dr O'Donnell's research in Fiordland found that 95% of long-tailed bat roost trees were within 500 m of forest edges.⁵ Furthermore, most roosts were in forest on relatively flat valley floors. That mirrors my experience that roosts are often found at or near forest margins. It would be very unlikely for the Intended PMA to be confirmed if only roosts >1km inside the PMA edge count towards the tally of 10 required because:
 - (a) long-tailed bats typically select roosts within 500 m of a forest edge;
 - (b) as set out in Mr MacGibbon's second supplementary evidence, only 458 ha (12.5%) of the total PMA area of 3,650 ha occurs >1 km from the PMA edge; and
 - (c) the central core areas of the PMA are dominated by steeper topography which are less favoured by long-tailed bats for roosting.
28. Bat roosts can be difficult to find and if only one in 20 roosts are >500 m within the forest edge, as was found by Dr O'Donnell in Fiordland, it could be expected that as many as 200 roosts may need to be found before a tally of 10 would be reached within the "core" area.
29. Applying DOC's 1 km buffer, achieving a tally of 10 roosts within the small "core" area of the Intended PMA would likely require that many more than 200 roosts would need to be found around the perimeter. That is an enormous number of roosts and shows the exacting level of certainty, and bat population levels being sought by DOC before they are willing to support the PMA. Such a level of roosts in a 3,650ha area would, in my experience, be unprecedented. Even if that number of roosts was present, it would take many years of intensive trapping and radio-tracking to find them.
30. In my opinion there is no justification for requiring that maternal bat roosts be located more than 1km from the edge of the PMA before they can be "counted". Nor do I consider that identifying that many roosts in that small part of the Intended PMA would be achievable.

⁴ Email from Ms Ongley (DOC's lawyer) to Mr Allen (the Transport Agency's lawyer) dated 21 September 2018.

⁵ 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.

31. DOC's alternative position is that if any of the 10 identified roosts are within a 1km buffer, a rat RTI below 1% and mustelid densities of zero detections must be sustained for them to "count" towards verification of the PMA. Mr MacGibbon in his second supplementary evidence explains why he does not accept that position.
32. In my opinion DOC's proposed approach is exceptionally and unnecessarily conservative. Adopting that approach would in my view carry a very high risk of leading to the Intended PMA (and even the Wider PMA and Study Area) being rejected, even if it would protect important bat roosting habitat near to the location where the Project's assumed adverse effects on bats will occur.
33. It is worth considering the position by analogy to other existing or potential pest management programmes that might benefit bats. In particular, I would be very concerned if only areas with confirmed bat roosting areas >1 km from forest edges, or programmes with a less than 1% rat RTI, were considered suitable for protection with pest management. Those criteria would rule out the protection of long-tailed bat populations across large areas of New Zealand – especially the North Island, where forests are typically fragmented and such low levels of rat detection are unachievable.
34. For example, in the Waikato Region, where many long-tailed bat colonies occur, there would be very few areas remaining where DOC's proposed criteria for pest control could be achieved (especially for the bat populations living within Hamilton City and the ongoing viability of projects like Project Echo). Such an approach will, in my opinion, see the majority of roosts (which we know long-tailed bats preferentially select at / near forest margins) that I consider could (and should) be protected lost to predation and a continuation of the current bat population decline.
35. Reinvasions of pests can and do occur, which is why the ELMP already provides for more focused predator control at the edges of the PMA. That being said, I consider that the intensive pest management proposed for the PMA provides a practical and appropriate method to reduce, and potentially reverse, the existing decline of long-tailed bats in the area.
36. In contrast to DOC's pest control programmes for long-tailed bat protection (e.g., Eglington Valley, Iris Burn Valley), pest reinvasion will be minimised with a greater intensity of pest control around the PMA edges where such reinvasion is most likely to occur. Furthermore, the ELMP has been updated to provide for increased intensity of pest control at up to five maternity roosts that are located within 500 m of the edge of the PMA, as described in Mr MacGibbon's second supplementary evidence. In my opinion, the increased pest control intensity at the PMA edge and around maternity roosts is appropriate to address the risk that the effectiveness of pest control may be compromised for roosts near the PMA's outer margin.

BENEFITS OF THE PMA FOR BATS

37. In my opinion the proposed pest control in perpetuity will provide benefits for long-tailed bats if maternity roosts are present in the final PMA. The monitoring programme proposed to confirm the value of the Intended PMA for long-tailed bats will reduce the residual uncertainty in this regard.
38. As explained in my earlier evidence, the threat status of long tailed bat was recently revised to the more serious category of 'Threatened: Nationally Critical'. The criterion under which the species qualified for that category means that a $\geq 70\%$ population decline is predicted over the next 10 years. Large-scale predator control is the only known means of halting or reversing long-tailed bat population declines.
39. For the monitoring programme to lead to confirmation of the PMA at Mt Messenger, it must be shown that the PMA is important for long-tailed bat roosting. If the PMA is important long-tailed bat roosting habitat, then a 3,650 ha pest control programme in perpetuity, with provision for additional intensity near PMA edges, carries an extremely low risk of failure to halt or reverse the local population decline predicted to occur over the next 10 years.
40. Even if the PMA does not halt or reverse the predicted population decline, I reiterate my position as discussed in my EIC that:
 - (a) the adverse effects of the Project would, at worst, exacerbate the existing population decline by a small amount (especially given that VRPs will be applied to reduce the Project's direct adverse effects on bats); and
 - (b) My understanding is that the Transport Agency is required to provide benefits for bats commensurate with the adverse effects. That being the case, the Transport Agency is not obliged to halt/reverse the existing bat population decline. Even slowing the decline in local long -tailed bat numbers would be sufficient to address the effects of the Project on bats.
41. It is conceivable that the objective of the bat mitigation/compensation may be achieved, yet the local long-tailed bat population may still be in decline. While I accept that there is a risk – albeit negligible – that the long-tailed bat population decline may not be halted or reversed by the PMA, in my opinion there is no risk that insufficient benefits will be achieved to meet the objective of the PMA for long-tailed bats.
42. Large scale pest control is the only method known to halt/reverse long-tailed bat population declines. I am not aware of any other existing or proposed project to protect a long-tailed bat population with intensive pest control in perpetuity across such a large area in North Taranaki. It is impossible to completely eliminate uncertainty but, in my opinion, very reasonable steps to

appropriately reduce uncertainty have been incorporated into the revised consent conditions and ELMP.

43. With the Project and PMA, there is a high probability that the local bat population decline will be halted or reversed. At the very least, in my opinion, the existing population decline will be slowed sufficiently to provide benefits commensurate with the Project's adverse effects. Therefore, in my opinion, the local long-tailed bat population will likely be significantly better off with the Project than without it.

MEASURES TO COMPENSATE FOR EFFECTS ON LIZARDS

44. I have discussed lizard compensation and mitigation issues over the adjournment period with DOC, including Ms Adams. The initial unresolved issue was the duration of maintenance of the proposed pest-proof fenced lizard enclosure primarily aimed at protecting striped skink.
45. However, as the discussions progressed, it became clear that there remains a risk, even with the best information available, and lizard surveys undertaken at potential enclosure locations, that an enclosure could be constructed with no lizards present and no lizards salvaged from the Project's construction footprint. That scenario would mean that the Project's assumed adverse effects on lizards would not be adequately mitigated/compensated.
46. Compensation for the assumed adverse effects on lizards should provide guaranteed benefits for lizards. Given the risk that a pest-proof enclosure may fail to provide conservation benefits, we have explored other compensation options.
47. Of the alternative options considered, the provision of funding towards lizard research provides, in my opinion, the most certain and beneficial outcomes to herpetofauna relative to the effects of the Project. I understand that DOC's (and the NZ Lizard Technical Advisory Group's) highest priority lizard research project is a multistage research programme aimed at developing methodologies and strategies for controlling mice to benefit native lizard populations. Such research would provide significant additional information for developing pest management strategies that are effective for protecting herpetofauna.
48. The proposed contribution towards the research programme of \$200,000 is based on the combined estimated costs of constructing the previously proposed lizard enclosure and eradicating all pests therein (without being able to prove what benefit, if any, was occurring).
49. I consider that a contribution of that amount would provide benefits for native lizards by funding the initial component(s) of New Zealand's highest priority lizard conservation research programme. I also understand that those

benefits would be achieved even if subsequent stages of the programme do not proceed.

50. As addressed in the second supplementary statement of Mr MacGibbon, in addition to the monetary contribution, effects on native lizards will be mitigated by salvaging at risk and threatened native lizards from the Project footprint and translocating them into suitable habitat within the pest free Rotokare Scenic Reserve (inland from Eltham).⁶ The revised Herpetofauna Management Plan (Chapter 7 in the ELMP) describes the release site selection and preparation (e.g., foam covers and/or soft-release pens where appropriate depending on the species translocated). I consider that such an approach is appropriate and will provide for the likely survival of translocated lizards.
51. Overall, with the proposed herpetofauna monetary contribution, translocation and vegetation removal protocols I consider that the effects of the project on herpetofauna are appropriately addressed.

Simon Chapman

28 September 2018

⁶ Noting that any salvaged copper skinks would be released into suitable habitat outside but in the vicinity of the Project footprint.