BEFORE THE NEW PLYMOUTH DISTRICT AND TARANAKI REGIONAL COUNCILS

IN THE MATTER	of the Resource Management Act 1991
AND	
IN THE MATTER	applications from NZTA to alter a designation and for resource consents for the Mt Messenger Bypass Project (SH 3 between Uruti and Ahititi).

LAURENCE PETER BAREA

SUPPLEMENTARY EVIDENCE ON BEHALF OF THE DIRECTOR-GENERAL OF CONSERVATION (Environmental Compensation)

Dated: 5 October 2018

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1. INTRODUCTION

1.1. My full name is Laurence Peter Barea.

1.2. I provided a Statement of Evidence in relation to this matter dated 24 July 2018 (Evidence in Chief or EIC).

1.3. This Supplementary Statement of Evidence responds to the second Supplementary Statements of Evidence of Simon Chapman, Roger MacGibbon and Peter Roan for the NZ Transport Agency.

1.4. I have the qualifications and experience set out in my EIC.

1.5. 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 it.

2. REMAINING ISSUES DOC/NZTA

2.1. The Supplementary Statements of Evidence for NZ Transport Agency refer to discussions between DOC and Agency on the matters of long-tailed bats and lizards. I have participated in those discussions as one of the key personnel for DOC. I provide evidence on these two matters, together with comments on the proposed designation and resource consent conditions dated 28 September 2018.

Lizards

2.2. NZTA's proposal for managing herpetofauna, in particular the striped skink requires amending as recommended in Ms Adams' Supplementary Evidence. These amendments can be summarised as including the following;

1) Relocation of any salvaged stripped skinks to Rotokare Scenic Reserve, south Taranaki near Eltham. Striped skinks will be released using a soft release pen following best practice, and monitored and reported on following Ms Adams recommendations if >10 individuals are released.

2) Salvaged copper skinks will be released into appropriate habitat in proximity to the Project area and all other species will be released into suitable habitat within the PMA.

2.3. With the adoption of Ms Adam's recommendations into consent conditions I am satisfied that the overall compensation package has adequately addressed adverse effects to lizards.

Long-tailed bats

2.4. As explained in the evidence of Dr O'Donnell, given that the NZ Transport Agency has proposed a programme for radio-tracking with the intention of locating maternity roost trees for long-tailed bats, DOC has agreed that with effective pest management, including monitoring pest control outcomes and appropriately managing pest invasion from unmanaged areas, the PMA could have an area of 3650 ha (reduced from the 5000 ha sought at the August 2018 hearings). The proposal for a radio-tracking programme is welcomed by DOC.

2.5. The remaining issues between DOC and the Agency relate to scenarios for pest management that would occur depending on the number of maternity roost trees and where they are located in the Study Area following this radio-tracking programme. The main point of difference relates to DOC's view that sufficient roost trees would need to be located within a core area, or an area with sufficient *buffering*, in order to provide sufficient certainty of maintaining or restoring populations of long-tailed bats.

2.6. In this respect, my evidence covers:

(a) Buffer areas and their consideration in pest control programmes;

(b) The ecological principles of proximity, additionality, 'like-for-like' and management in perpetuity and their relevance to the confirmation of the PMA area.

(c) The use of intensification of pest management around known nesting trees of kokako, and the success of that approach.[1]

[1] Responding to Dr MacGibbon's Second Supplementary Statement at [33]-[34].

(d) Consent conditions (Schedule 1) and the draft ELMP.

2.7. Before turning to these matters, I wish to comment on whether compensation for the effects for the Project on bats will be achieved if the existing rate of population decline of long-tailed bats is slowed.[2] I do not agree that slowing the decline in the local long-tailed bat population would be sufficient to address the effects of the Project on bats. The Project is likely to increase the current rates of decline of the long-tailed bat population at Mt Messenger and reduce opportunities for species recovery efforts for that population. I disagree with Mr Chapman's statement that 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 Projects direct adverse effects on bats)*". Mr Chapman provides no data or evidence to quantify the rate of decline, or an estimate of adverse effect size. An estimate of both the background rate of decline and additive effect of the Project are necessary to substantiate his statement that exacerbating the existing population decline would indeed be small. I rely on Dr O'Donnell's EIC that *significant* adverse effects could occur.[3]

Buffering

2.8. In my EIC I refer to the importance of buffering a management area to manage invasion from outside. I agree with Mr MacGibbon who also discusses the importance of a buffer for the same reasons.

2.9. It is common ground between NZTA and DOC that rats, stoats and possums predate on long-tailed bats at maternity roosts. In my EIC I noted that the PMA previously proposed had significant portions of edge with no management buffer between adjacent farmland or bush. When controlling pests to a target level within an explicit management area, such as the 3650ha PMA, an effective buffer needs to manage invasion from outside the PMA by controlling pests *before* they enter it. This means that the buffer must be outside the PMA, not within it as proposed by the Applicant. This is not a situation of placing a buffer on top of another buffer, but rather, good practice in managing pests within a spatially defined management area - essential when there are explicit pest targets to meet. In my opinion

[2] MacGibbon Second Supplementary at [43].
[3] Chapman Second Supplementary at [40], O'Donnell EIC, including at [3.5].

including a buffer *within* the PMA reduces its effective size below the stated 3650ha.

2.10. I agree with Dr O'Donnell's approach that when managing for species recovery, consideration of the buffer area in which pest invasions can be expected to occur, is very important. I also agree that an adequate buffer should be based on the behaviour and home ranges of the pests that predate on the relevant species.

2.11. DOC has agreed to reduce the PMA area from 5000 ha (sought at the previous hearing), to 3650 ha, only on the basis of Dr O'Donnell's opinion that sufficient maternity roost trees must be located in an area where we can be confident that protection from predation can be achieved. That is, there must be confidence the intended outcomes of the management will be delivered, i.e. at least 80% annual survival of adult female long-tailed bats.[4]

2.12. Confidence that pest control outcomes can be delivered is critical because no specific outcome monitoring for long-tailed bats is proposed. Rather, outcomes are inferred from the monitoring results of residual pest levels. If that monitoring does not occur, as proposed by the applicant for the edge of the PMA, then bat roosts located in the edge will be subject to increased predation if predator populations increase above the 5% performance target, which the draft ELMP anticipates. Under such a scenario I have low confidence that the proposal can deliver its intended outcome.

2.13. This problem is exacerbated by the Applicant's intention to abandon monitoring the results of pest control after 5 years and to only monitor pest levels prior the breeding season. As such and given there is no outcome monitoring for long-tailed bats, the Requiring Authority, Council and other stakeholders will not know whether the management is successful in achieving pest level performance targets or delivering the intended outcome for long-tailed bats. In my opinion, pest monitoring must occur before and after control is applied and at a frequency following established best practice for its purpose, i.e. reducing predation on long-tailed bats and other fauna.

[4] Dr O'Donnell Supplementary Evidence at [2.2].

2.14. Dr O'Donnell considers that enough maternity roosts must be in a core area that is more than 1 km from the PMA outer boundary, given there is no external buffer. If that cannot be achieved, the gains to be made by radio-tracking and locating roost trees will not transfer into adequate pest management.

2.15. In his second supplementary evidence Mr MacGibbon proposes that in the event that less than 10 active maternity roosts are found within 500m of the PMA boundary, the intensity of pest management will be increased around five of them. He proposes that the "*intensified pest management will consist of traps and bait stations installed at 20 metre spacings extending 50 metres out from the roost tree*." In support of this approach he refers to similar approaches being used for kokako.

2.16. I coordinate the Kokako Specialist Group (formerly Recovery Group) which is comprised of kokako experts, some of which were key ecologists involved in founding the Research by Management programme in the early 1990's that lead to the successful recovery of the species. Over that period there have been many attempts to protect kokako nests from predation by intensifying pest control (sometimes called ring of steel) in the immediate area around kokako nests, similar to what is currently proposed by the Applicant for bats. I am aware that these attempts do not guarantee nests will avoid predation and it is difficult to attribute nest survival to the intensification of management, at these scales.

2.17. The approach poses risks when using toxins in the manner proposed, i.e. within close proximity to maternity roosts. The use of anticoagulants which require consumption over several days to be effective might also lead to attracting rats to roosts before the rats succumb to the effects of the toxin. This risk would be elevated if the rat population was higher around the edge of the PMA as the applicant indicates is likely. The use of acute toxins that are effective quickly requires pre-feeding to attract rats prior to provision of toxin, which will likely have the same impacts i.e. drawing in rats close to the roost.

2.18. DOC proposed an alternative approach whereby very intensive management would be needed around the perimeter of the 3650 PMA, to achieve confidence that invasions at the perimeter would be managed adequately. This alternative was proposed because it was understood that

the Applicant wanted a higher likelihood that the Intended PMA, or at least the Wider PMA. This approach would also avoid the costly problem associated with bats frequently changing roosts, both within and between years, necessitating ongoing location of new roosts so that the small-scale intensive management can adapt spatially to where it is needed. That proposal by DOC has not been accepted. In my opinion, and relying on Dr O'Donnell's evidence, this means the proposal cannot provide enough confidence that it can deliver its intended outcomes.

2.19. In my EIC I expressed concern that monitoring pest target levels for predators was not proposed for the outer perimeter, because the Applicant had acknowledged that target levels may well be exceeded, due to invasions. Although the Intended PMA has now been redrawn, the potential for invasion remains, as does the intention for the Applicant to not monitor pest levels and allow for pest levels to rise to an effective 10% threshold.

2.20. Although neither an offset nor environmental compensation can be *imposed* upon an applicant under the RMA, the impasse does raise the need to balance the matters of the ability of a proposed offset or compensation to actually deliver an outcome, and choosing a PMA in proximity to the Project Area. I deal with this in the next section of my evidence.

Proximity, 'Like-for-like' and Additionality

2.21. In my EIC I discussed the need to avoid conflating the concepts of 'offset' and 'environmental compensation'. In particular, an offset involves the ability to calculate or demonstrate the goal of no net loss. I also said that a well-designed environmental compensation approach can achieve beneficial outcomes for the environment, and that other BBOP principles can be usefully applied to environmental compensation approaches. Mr MacGibbon has discussed the principles of proximity and 'like-for-like' in the context of preferring the Intended and Wider PMA areas. Mr MacGibbon also discusses (in relation to Parininihi) the principle of additionality.

2.22. For the management of long-tailed bats, as I said in my EIC, in situations where uncertainty is high, and the level of conservation concern is also high, it is good practice to ensure that proposed management actions

provide a high level of confidence that intended outcomes can be achieved.[5] In my opinion this principle overrides the Applicant's concerns around proximity and like-for-like, taking into account my comments below on the Waitaanga site.

2.23. I stated in paragraph [6.65] of my EIC that I am not confident that the pest residual levels can be met in the PMA (now referred to as intended PMA) due to the challenging topography and the constraints that places on establishing best practice pest management designs. The topography in the Mount Messenger Conservation Area is steep and difficult to traverse and likely to make effective ground-based pest control very challenging (Gareth Hopkins, Pers. Comm. 3/10/18). While I have not walked either area, topographic maps of both areas show the topography in the Waitaanga Conservation Area, while being steep in places presents fewer challenges to effective ground-based pest control. The Waitaanga Plateau is one of the few areas regionally where "easy" country exists.[6]

Proximity

2.24. It is generally accepted to be good practice to locate biodiversity offsets or environmental compensation as close as possible to the impact site. This principle recognises that biodiversity variation is multi-dimensional, including that it varies spatially. As the distance between the impact site and offset/compensation sites increase, so too does the dissimilarity in biodiversity values. This is particularly important for biodiversity offsets where the goal is no net loss because as dissimilarity between the biodiversity at impact and offset sites increases, any confidence of achieving no net loss is reduced.

2.25. Environmental compensation can be thought of as similar to offsets except that no net loss is not an intended outcome, in this case because the values lost were not or could not be measured. In such situations it is my opinion that an acceptable solution might involve one or more compensation locations that are not immediately adjacent to the impact area.

[5] At [4.68] Pilgrim *et al* 2013 "A framework for assessing offset ability of biodiversity of impacts".

[6] Nicholls, J. L. 1956. The historical ecology of the indigenous forest of the Taranaki upland. New Zealand Journal of forestry 7: 17-34.

2.26. In New Zealand it is common for offsets or compensation to be implemented at the local scale of Ecological District. An Ecological District is a local geographic area where the topographical, geological, climatic, soil and biological features, including the broad cultural pattern, produce a characteristic landscape and range of biological communities. I confirm that all the potential PMA locations referred to in the Applicant's proposal, including the Waitaanga Ecological Area, are located within the North Taranaki Ecological District. As such, and given that the actions being proposed involve compensation rather than a no net loss offset, I am comfortable that implementation within this Ecological District is an appropriate ecological spatial scale.

2.27. In his second supplementary evidence Mr MacGibbon proposes that, in the event that the PMA cannot be established in the intended PMA (Figures 1 & 2 of his second supplementary evidence), then a 3650ha area within the Waitaanga Conservation Area would be chosen as a fall back option.

2.28. In paragraph [2.27] of his Supplementary Evidence Dr O'Donnell considers it possible that the long-tailed bats recorded in the Mt Messenger area by the Applicants could be from the same population as those using the Waitaanga Conservation Area.

2.29. Although there are some differences in vegetation, as discussed below, the Waitaanga Conservation Area is within the same North Taranaki Ecological District as the Project site and Wider PMA area (approximately 16km to the north east). On this basis I am comfortable that the Waitaanga Conservation Area is an appropriate option with respect to proximity.

Like for Like

2.30. The like for like principle is related to proximity and is also critical for offsets aimed at no net loss. This is because the no net loss concept requires replacing lost biodiversity with the same values somewhere close to the impact site. However, in my opinion when environmental compensation is being proposed, as it is here, a degree of departure from strict like for like exchanges does not need to prevent well designed solutions that compensate for residual adverse effects.

2.31. What matters is the degree of similarity retained between the impact site and compensation site, not a comparison between alternative compensations sites.

2.32. The degree to which two ecosystems are alike requires a quantitative comparison of biodiversity inventory data collected from both areas. This comparison has not been done for the Waitaanga Conservation Area *or* for the Intended PMA with respect to the Project impact area.

2.33. The Waitaanga Conservation Area is a large (16,579 ha) tract of primary forest supporting a range of vegetation types representative of North Taranaki. An extensive area of silver beech-dominant forest on broad ridges and terraces is present. It is an isolated population, and one of the few silver beech associations on the western side of the North Island. There are large areas of primary alluvial kahikatea, rimu, and tawa forest along the streams and rivers. The forest supports the only known locations in the district of yellow and red mistletoe. The Waitaanga forest is also known for its wildlife values, including rare species, both regionally and nationally. These include kiwi, kaka, yellow crowned kakariki, short and long tailed bats, whio, NZ falcon and NI robin.

2.34. Although there are some differences in vegetation associations between the impact site and the Waitaanga forests, e.g. the presence of silver beech-dominated forest (hard beech replaces silver beech at the intended PMA) there are many similarities in vegetation and fauna. Although the degree of similarity has not been intentionally assessed, on the basis of the information we do have, and because the residual adverse effects management approach is environmental compensation rather than an offset, I am comfortable that the level of dissimilarity between the impact area and the Waitaanga Conservation Area is not substantially high so as to override other considerations.

2.35. The Applicant proposes to inform the siting of the Alternative PMA location on historical records of short-tailed bat maternity roosts, i.e. as a surrogate for the presence of long-tailed bat roosts. The intention is that this would obviate the need to locate them via radio tracking and avoid additional costs and time delay to the project. This concept has been discussed with Dr O'Donnell and myself. In paragraphs [2.31]-[2.32] of his Supplementary

Evidence Dr O'Donnell provides his rationale as to why he is comfortable with basing the location of the PMA on short-tailed bat maternity roosts.

2.36. Given Dr O'Donnell's view that the location of short-tailed bat maternity roosts are an ecologically supported proxy for those of long-tailed bats, I am comfortable that if the pest control is successful the gains will be on a like for like basis for long-tailed bats. In support of this approach the Department has provided the Applicant with information identifying the location of historically known short-tailed bat maternity roosts. I recommend that if a consent is granted that conditions are imposed that require the PMA to be centred on the location of known short-tailed bat maternity roosts.

Additionality

2.37. The principle of additionality is critical to ensuring management outcomes are above those that would have occurred in the absence of the proposed offset or compensation. Mr MacGibbon states in paragraph [62] of his second supplementary evidence that he understands from discussions with DOC that the Waitaanga Conservation Area has not received regular pest management. That is incorrect.

2.38. The Waitaanga Conservation Area was last treated with aerial 1080 in October 2017 as part of DOC's Battle for our Birds Programme. Prior to that operation regular aerial 1080 management was funded from DOC's annual budget. Future plans are for continued aerial 1080 every 3 years. The Waitaanga Conservation also receives goat control as part of the District's annual goat management programme and that is intended to continue into the future. Outcome monitoring consists of monitoring vegetation plots and this is also planned to continue into the future. If the PMA is established within the Waitaanga Conservation Area then it is likely that funds supporting current management by DOC would be used to manage other biodiversity values within the DOC New Plymouth district.

2.39. If the compensation is to be delivered in the Waitaanga Conservation Area I note that formal approval from DOC will be including under the provisions of the Conservation Act 1987.

Management in Perpetuity

2.40. The Applicant proposes to manage pests in the final PMA in perpetuity and I have commended that approach in my EIC. The current proposal intends to include the Parininihi pest management area within the PMA but provides no assurance that the Requiring Authority can implement pest control in perpetuity. The Parininihi area is owned by Ngati Tama. Mr White's EIC at [44] stated Ngati Tama had reservations with a commitment to pest control in perpetuity. Mr White also stated there had been discussions about a 25-35 year arrangement with rights of renewal but the detail was still under consideration.

2.41. In my opinion, if this area becomes part of the PMA then formal agreement guaranteeing pest control in perpetuity must be demonstrated.

3. COMMENTS ON PROPOSED CONDITION - SCHEDULE 1

3.1. I now comment on Schedule 1 of the proposed resource consent and designation conditions. (The following updates my EIC at [4.48]-[4.87].)

3.2. DOC tabled its proposal for Schedule 1 on 16 August 2018, prior to the adjournment. It is pleasing to see that the Applicant has included a Schedule in its current proposal and adopted much of what DOC proposed. Notwithstanding that, there are several areas where points of difference remain. I outline the main points below with the remaining being addressed in the proposed Schedule 1 attached to Mr Inger's evidence;

1) Remediation planting in the AWA remains on a 1:1 ratio (9 ha) which I refer to in my EIC as needing to be at least on a 1:2 ratio to account for less than 100% success and time lags.

2) The performance measures for Landscape and Vegetation Management Plan lack certainty and adequate milestones and there is no monitoring of translocated rare plants. These are provided in DOC's proposal.

3) Detail for the Bat Management Plan requires amending to provide for VRPs for potential roosts trees between 15cm and 80cm DBH which are considered by a specialist bat ecologist as having features suitable for bat roosting, both maternity roosts and other roosts.

4) Restriction on felling high risk trees (potential bat roosts) to the summer months (i.e. October to April inclusive).

5) Provision for the development of measures to detect and protect kiwi needs to involve DOC.

6) Inclusion of fernbird territory mapping at 3-yearly intervals for 12 years post construction for all fernbirds in the Mimi wetland, and if found to be present, in the Mangapepeke Valley.

7) In the event kōkako are detected in or adjacent to the construction area measures must be focussed on avoiding, rather than minimising, disturbance to breeding birds or their nests.

8) The freshwater provisions require realignment with DOC's proposed Schedule in numerous areas.

9) The 20% increase in relative abundance for kiwi, tui, bellbird, kereru, whitehead, long-tailed cuckoo, fernbird, and North Island Robin outcomes for forest birds needs to be a statistically significant 20% increase. This is because high variation in data collected under an inadequate monitoring design could produce an apparent 20% increase that is not real.

10) The current proposal in inadequate to adaptively manage pests and ensure delivery of outcomes for long-tailed bats and other biodiversity values. Monitoring for pest levels needs to occur after the application of pest control on an annual basis across the entire PMA, including the perimeter, to inform adaptive management, demonstrate the conditions for residual pest levels are met and to provide confidence that long-tailed bat outcomes will be delivered (given there is no specific outcome monitoring for bats).

11) The biosecurity provisions are focussed on minimising invasion rather than avoiding it and lack sufficient detail regarding management actions and reporting to provide confidence that the Project site will be secure with respect to invasion of new plant and animal pests.

3.3. To resolve shortfalls in the Applicant's proposal and provide increased certainty that the compensation package can deliver intended outcomes, I recommend that DOC's proposal for Schedule 1 be adopted if a a recommendation is made to confirm the NOR (or consents granted).

4. COMMENTS ON ADEQUACY OF THE DRAFT ELMP

4.1. I stated in my EIC that I did not support approving the draft ELMP during the hearing because it was not fit for purpose. Since then, although it has undergone some revision, my view has not changed. By way of example I provide some of the concerns I have about approving the draft ELMP as proposed.

1) The proposed extra protection for edge long-tailed bat maternity roosts is inadequate to ensure the compensation can deliver its outcomes, as discussed by Dr O'Donnell and in my evidence above.

2) The 5% rat RTI target is weakened to allow for 10% to be considered successful.

3) The draft ELMP at 9.5.3.1 states that "*After 5 years from the commencement of the programme monitoring will occur once annually immediately prior to breeding season*." This means that after 5 years it won't be possible to demonstrate meeting consent conditions requiring measurable pest level performance targets, because monitoring will not occur following pest control.

4) Lack of monitoring the outcomes of pest control after 5 years means that it is not possible to adaptively manage pests. This is concerning because the draft ELMP, in several places, acknowledges the difficulty of successful ground-based pest control in the Mt Messenger area due to the steep topography. I have referred to this issue above.

5) The draft ELMP at 9.5.3.1 states "Performance monitoring indices will be generated from the area of the PMA excluding a 200 metre deep buffer around the full perimeter of the PMA. Pest densities can be expected to be higher in the buffer as a result of incursions from the surrounding unmanaged landscape." This is an acknowledgement of the need for an adequate buffer and is a fundamental flaw for the management of long-tailed bat roosts found in the perimeter.

6) The draft ELMP acknowledges it might not meet pest targets, refers to adaptively managing that risk but then sets out a design that is challenging at Mr Messenger locations, i.e. bullet 1 p 107, where it states the "aim is for devices to be at 1 per ha (and as close as physically possible to 100 x 100 m spacings where the terrain allows)."

I discussed device spacing and topographical constraints in my EIC and remain unconvinced that the proposal can meet its targets set in consent conditions.

4.2. My position remains that the critical detail required to provide certainty be contained in consent conditions and that the draft ELMP be refined after the hearing. There is too much detail in a complex draft ELMP that has continually evolved as it corrects mistakes and omissions, or adds new material, with limited time provided for DOC to assess its adequacy or ability to provide confidence that conditions will be met. For example, at the time of writing this evidence DOC has received a proposed vision to section 11 of the draft ELMP (Biosecurity). I consider that there are very significant potential adverse effects associated with the Project warranting a need for a full consideration of the draft ELMP document, following the completion of this hearing.