

**Mt Messenger Bypass Project, Summary of Evidence of Laurence Barea
(Offsetting and Environmental Compensation) for DOC**

1. I am a Technical Advisor advising DOC with respect to biodiversity offsetting. I also represent the DOC on the Advisory Group to the international Biodiversity and Business Offsets Programme (BBOP). I also lead the Kokako Specialist Group.
2. In response to an increasing number of proposals involving offsets, DOC led a cross government department initiative to develop biodiversity offsetting guidance, commencing 2009. The intention was to ensure that solutions addressing residual effects are ecologically sound, and demonstrably result in no net loss or a net gain.

No Net Loss

3. Claiming no net loss can be viewed as a 'gold standard' approach to addressing adverse effects. No net loss needs to be *demonstrated* as being possible prior to its delivery. This is important so that decision makers and other stakeholders have confidence in relying on the claim.
4. In my evidence I commend the Applicant for proposing pest control in perpetuity. I also commend Mr Singers for using the accounting system/model developed for DOC (Maseyk et al. 2016), of which I was a co-author.
5. Under this model, in order to balance losses and gains, biodiversity is translated into a currency. The currency used by Mr Singers was Ecological Integrity (EI). EI represents a particular ecological measure of condition for browse intolerant elements of forest types and related wider ecosystem function. This provides the basis for exchange and describes 'how much of what' is being lost and gained.
 - 5.1. I have concerns regarding the transparency of the input values (used to generate the EI values used in the offset model). How the data was used to calculate EI has not been documented or provided with the offset calculation. This means that the offset calculation is not repeatable by anyone other than the person developing it because future EI values cannot be generated and compared with those representing pre-construction EI. This creates a difficulty with repeating the calculation in 10-15 years to verify whether no net loss was achieved. This is more than academic because transparently demonstrating no net loss can be achieved (i.e. not assuming no net loss or opining that it will occur) and then verifying its achievement in the future is at the core of biodiversity offsetting.

6. I also consider it critical to understand that the model does not, and was not intended to, apply over all biodiversity values of the Project:
 - 6.1. EI does not cover the *area* of forest lost (Mr Singers' calculations involve an offset implemented in an *existing* forest).
 - 6.2. EI does not cover individual components (because different plant species may be traded in this model).
 - 6.3. EI does not include measures for freshwater values, wetlands, long-tailed bats, birds or other fauna. In many cases there is insufficient baseline data upon which project ecologists can conclude 'no net loss' would be achieved. For example, Mr Chapman's claim of a no net loss (and possibly a net gain) outcome for long-tailed bats is unsupported by any quantitative assessment or comparison of losses and gains. That is not surprising because the Applicant has not obtained data that could be used in such a manner, and therefore cannot demonstrate no net loss for long-tailed bats.
7. Mr Singers has developed a separate and specific currency for the kahikatea offset (based on canopy cover), because kahikatea does not respond positively to browser control. Overall, I am comfortable with the offset design for kahikatea canopy cover.
 - 7.1. Mr MacGibbon outlines 9 ha of restoration planting to account for loss of primarily manuka-tree fern scrub, manuka succession, tree fern scrub and manuka scrub on a 1:1 replacement ratio, and for the loss of exotic rushland on the Mangapepeke floodplain on a 0.5:1 ratio. I do not support a 1:1 ratio (or a lower one such as the proposed 0.5:1) because it does not account for time lags and assumes 100% success. Accordingly, I support the recommendation in the NPDC Officer's report for a 1:2 ratio for all restoration planting within the AWA.
 - 7.2. Mr MacGibbon states that up to 3400 seedlings representing 200 seedlings of each of 17 significant trees will be planted in the designation or immediately adjacent to it. I have concerns regarding certainty of that outcome given no assessment of the suitability of planting sites and their location, nor performance measures, have been provided.

Environmental compensation

8. In my opinion, the Applicant should abandon its proposed biodiversity offset and present the package as environmental compensation. Well-designed environmental compensation can achieve beneficial outcomes for the environment. However it is critical that any environmental compensation is additional to what would have occurred in the absence of the application (additionality). The remaining offsetting principles (other than No Net Loss) are also relevant.

9. In Mr Singer's re-ran the offset model to reflect the updated restoration package (size increase from 1085ha to 3650ha). I acknowledge that successfully managing pests to the specified target levels will provide increased benefit over the initial proposal, simply due to the increase area and I support that with the exception of long-tailed bats.

Adequacy of environmental compensation

10. I agree with the performance targets proposed, and their application across the whole PMA. I consider it important that these targets be explicitly stated in the conditions for increased certainty, rather than in the ELMP which can be modified. I maintain a similar view that all performance measures for the full range of management actions should be contained within conditions for the same reason. The ELMP can then provide flexibility for meeting them.
11. The timing and frequency of pest control performance monitoring must be capable of providing an accurate understanding of whether pest target levels are confidently met, in particular given the challenging topography of the PMA. If a consent is granted, I support requiring monitoring to follow DOC best practice or equivalent established best practice methods approved by NPDC in consultation with DOC.
12. Mr MacGibbon outlines proposed monitoring for vegetation with target performance outcome of 75% of tagged palatable individual plants in the browse tier of the Recce plots showing no sign of animal pest browsing within five years after the completion of road construction and refers to an adaptive approach to management if pest performance measures are not met. In that case "*[t] he pest management methods and intensity will continue to be adapted until all pest density targets and biodiversity indicator targets have been met.*"
13. The NPDC Officers report also comments on this matter (paragraph 115). I support the condition 25(b) proposed by the NPDC requiring a quantitative assessment of forest condition and tree health, including a canopy measure (e.g. Foliar Browse Index) and an understorey measure (e.g. Seedling Ratio Index). This should include the PMA to provide a baseline for vegetation outcome monitoring.
14. Appendix F to the ELMP also shows an area to the south west and south of the Parininihi pest management area (coloured pink) as part of the PMA. This area essentially has no effective buffer (notwithstanding the nearby Parininihi management area). Its small size, shape and isolated nature means that re-invasion across the entire area will be an ongoing problem.

15. While I generally agree with the adaptive management concept, the ELMP needs to incorporate a clearer process for adaptive management and input by the Ecology Review Panel.
16. The ELMP also needs to provide for a Ecology Review Panel with function beyond pest management (e.g. fauna outcome monitoring), rather than the narrow (proposed) Pest Management Review Panel. The function of the Panel should also include reviewing a revised ELMP and ecological reports provided to Council and making recommendations to Council based on those reviews.

Fauna

17. The long-tailed bat is critically endangered. In situations where uncertainty is high, and the level of conservation concern of affected biodiversity is also high, it is good practice to ensure that proposed management actions provide a high level of confidence that intended *outcomes are realised.*
18. There is insufficient detail on the monitoring and reporting of bittern during the construction period.
19. There is a lack of detail around biosecurity provisions around restoration planting, as stated by Mr Edwards.
20. I also recommend that, because there is a possibility that kokako may move into the construction area, that a consent condition requiring a Kokako Management Plan be prepared in consultation with DOC and certified by NPDC. The purpose of a Kokako Management response will be to provide for the detection of kokako in the construction area during the construction period, immediate notification to the New Plymouth DOC Operations Manager if detected and avoiding disturbance to any kokako pairs and nests detected during the October – April breeding season.
21. Overall I am of the view that the proposal offered by the Applicant does not currently adequately address residual adverse effects in a manner that provides confidence for the maintenance of biodiversity in the Mt Messenger area. If a consent is granted, it is my view that all performance measures should be contained in consent conditions rather than the ELMP which in my opinion contains too much uncertainty to be relied upon in its current state.