**MT MESSENGER BYPASS PROJECT: SUMMARY OF EVIDENCE OF ROGER JOHN MACGIBBON (ECOLOGY MITIGATION AND OFFSETS) FOR THE NZ TRANSPORT AGENCY**

1. My role in the Mt Messenger Project has been to prepare and present the ecological mitigation, offset, compensation and monitoring package.

**Existing Environment and Effects**

2. The forest and natural habitat along and adjacent to the Project footprint east of the existing SH3 retains indigenous plant and animal communities that are considered to have high ecological value. However, the full ecological potential of the area has been significantly diminished over many decades by the largely uncontrolled impact of browsing, grazing and predatory animal pests and unfenced cattle.

3. The unmitigated ecological effects of the Project will be significant and are likely to include: removal of or damage to 31.676ha of predominantly indigenous vegetation; the removal of up to 17 significant trees from along the Project footprint; the loss or alteration of 3705 metres of stream; the loss or alteration of habitat occupied by indigenous bats, forest and wetland birds (including kiwi), lizards, aquatic fauna and invertebrates; increased fragmentation of habitat occupied by indigenous fauna; and the risk of indigenous fauna injury or mortality due to vehicle strikes.

**Restoration Package**

4. A comprehensive Restoration Package has been developed to address all residual ecological effects of the Project with the aim of achieving a net gain of biodiversity 15 years following road construction.

5. The Restoration Package as a whole meets the key principles of offset including:

   (a) Establishment of an outcome target of no net loss of biodiversity (we are proposing a net gain);

   (b) Long term ecological outcomes (in this case, pest management in perpetuity);

   (c) Ecological equivalence and proximity (all proposed restoration activities, with one exception, are proposed on land adjoined or in close proximity to the Project site);

   (d) Connectedness (all mitigation and offset activities will be on adjoining land that is physically connected to the pest managed Parininihi);

   (e) High likelihood of success (practices and techniques will be adopted that have produced successful ecological outcomes locally (Parininihi) and nationally).

6. Intensive, multi-species pest management in perpetuity over a 3650ha area is the principal focus of the Restoration Package. Pest management has been chosen because it can be expected to result in considerably more rapid and more ecologically diverse recovery of forest biodiversity at the Project site than could be achieved by more conventional restoration methods such as planting.

7. The Restoration Package proposed for the Project, updated since the production of my EIC and covered in my supplementary and rebuttal evidence, is as follows:

   (a) The Pest Management Area has been increased in size from 1085ha to 3650ha. Pest management over this enlarged PMA will be in perpetuity and will include the intensive management of rats, mustelids, possums, feral cats, goats and pigs to low densities, as well as the exclusion of all farm livestock;

   (b) 6ha of kahikatea swamp forest will be planted;

   (c) 9ha of mitigation planting;

   (d) Fencing and planting of 8.455km of stream (or 8153m2 of stream surface area). The riparian planting will occupy an average of 10m each side of the stream which equates to 16.91ha;

   (e) 200 seedlings will be planted of the same species as each of the significant trees that will be felled along the Project footprint. Seventeen significant trees have been identified so 3400 seedlings will be planted;

   (f) The residual ecological effects on lizards will be compensated for by the capture and translocation of striped skink and arboreal geckos salvaged during vegetation clearance to a pest proof fenced enclosure (of a minimum size of 1 ha) built around suitable habitat in an area where striped skink have recently been recorded;

   (g) Kiwi roadside barrier fencing will be built along areas of roadside margin that are considered to be locations where there is a high risk of kiwi attempting to cross the road during construction and road operation;

   (h) The bat vegetation removal protocol has been altered to include trees of 80cm dbh or larger, or at the bat ecologist's discretion trees greater than 50cm dbh, rather than trees larger than 15cm dbh. This change has been made because the oldest/tallest/largest trees within the Project footprint, are those most likely to contain communal/maternity roosts and with the knowledge based on scientific literature that the 3650ha PMA will more than offset the residual effects caused to long tailed bats.

(i) Establishment of an Ecological Review Panel including personnel with recognised pest management expertise to review the pest management and monitoring programme and to provide guidance and recommendations in the event that the pest management programme fails to meet any performance targets in any 2 consecutive years (note that the name and composition of this panel has been revised in my rebuttal evidence).

8. Details of the Restoration Package and the proposed methods and monitoring can be found in Chapters 3 to 10 of the ELMP.

**Projected ecological outcomes**

9. The enlargement of the PMA to 3650ha has increased the forest area under perpetual intensive pest management by 336% compared to the 1085ha PMA initially proposed and, as a consequence, has substantially increased the magnitude and diversity of ecological recovery that will result.

10. The size, duration and intensity of the proposed pest management programme is unprecedented as mitigation or offset for the construction of a new road in New Zealand, and will, in my professional opinion, generate biodiversity gains that are significantly greater than the likely residual ecological effects of the Project.

11. Intensive enduring control of rats, possums, mustelids, feral cats, goats, and pigs and the exclusion of farm livestock will induce regeneration of many palatable plant species, measurable improvement in forest canopy condition, and increased recruitment of many bird species including kiwi, long tailed bats, many invertebrates, and some lizard species. The kiwi population alone is estimated to increase by 1220 extra birds over 25 years as a result of the pest management programme.

12. The 8.455km of stream fencing and planting will create riparian and aquatic habitat that has not occurred at the proposed restoration sites since the land was cleared for farming and the ecological benefits have a high likelihood of occurring because the restoration sites are physically connected to a reliable source of animals to colonise the restored reaches.

13. The proposed striped skink pest-free enclosure will improve the long-term prospects for this “at risk: declining” species in the north Taranaki region, with opportunities likely to arise in the future to relocate lizards back into the PMA and other North Taranaki locations.

14. In summary, I believe that the Restoration Package proposed, including a PMA of 3650ha, 32ha of mitigation and offset planting, and the establishment of a 1ha (minimum) pest-free lizard enclosure can be expected to create substantial biodiversity

gains by year 15, well in excess of the effects caused, and of a magnitude that is unprecedented as mitigation/offset for a road construction project in New Zealand.

**Response to submissions and Section 42A Reports on mitigation, offset and monitoring issues**

15. Three submissions (from DOC, Forest and Bird and Ms Lacy) were received that relate directly to concerns about the impact of the Project on biodiversity and the proposed Restoration Package. Issues raised by DOC are addressed in my supplementary and rebuttal evidence. I consider that the subsequent enlargement of the PMA to 3650ha will address the concerns expressed by Forest and Bird and Ms Lacy.

16. In the NPDC Section 42A report, Wildland Consultants proposed several additional mitigation and offset measures that they believe will address the ecological effects of the Project. The enlargement of the PMA "to a minimum of 3000ha" as they requested has been adopted. The other two main proposed additions: mitigation plantings to be at a 1:2 ratio not 1:1, and offset planting of 19.85ha of hillslope forest have not been adopted for reasons that are discussed in my EIC, supplementary and rebuttal evidence.

**Summary of Rebuttal evidence**

17. I have responded to a range of comments and areas of disagreement expressed by Dr Barea about the Restoration Package in his evidence, addressed invertebrate biosecurity issues raised by Mr Edwards, and provided my views on some of the areas of concern related to the pest management programme expressed by Dr Shapiro.

18. After giving due consideration to all of the issues raised, and having responded in detail, I remain of the opinion that the Restoration Package, as currently proposed, will provide substantial biodiversity gains by year 15, well in excess of the effects caused by the Project. Therefore, the Restoration Package appropriately addresses the ecological effects of the Project and will provide substantial biodiversity gains in perpetuity.