

**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

**STATEMENT OF EVIDENCE OF LEE MARK SHAPIRO
ASSOCIATE PRINCIPAL ECOLOGIST AND BIOSECURITY
CONSULTANT**

24 July 2018

QUALIFICATIONS AND EXPERTISE

My full name is Lee Mark Shapiro.

1. I am an Associate Principal Ecologist and Biosecurity Consultant at Boffa Miskell Limited, a national firm of consulting planners, ecologists and landscape architects.
2. I hold the qualifications of Bachelor of Science (Zoology), Masters of Science with first class honours (Ecology), both from Massey University and a Doctor of Philosophy (PhD) in Ecology from Lincoln University. My PhD research focussed on the development of encapsulated sodium nitrite, a new low residue toxin for the control of feral pigs and possums.
3. I have more than 15 years' experience in the area of vertebrate pest management ecology. I have significant experience in the research and development of tools and methodologies for the control of invasive mammalian pest species. In particular:
 - (a) I have designed and implemented numerous research projects to support the registration and best practice use of new toxins for the control of invasive mammalian pests in New Zealand;
 - (b) I have expertise in preparing and implementing mammalian pest management strategies at a number of large biodiversity restoration projects including experience with effective trapping and toxic baiting tools and strategies;
 - (c) I have published more than 20 reports and peer-reviewed scientific papers on matters relating to the development of new tools and technologies for the control of mammalian pests in New Zealand.
4. I am a Certified Environmental Practitioner (Ecology Specialist) with the EIANZ and am bound by its code of ethics.
5. I am a member of the New Zealand Biosecurity Institute and the New Zealand Ecological Society.

CODE OF CONDUCT

6. I have read the Code of Conduct for Expert Witnesses issued as part of the Environment Court Practice Notes. I agree to comply with the code and am satisfied the matters I address in my evidence are within my expertise. I am not aware of any material facts that I have omitted that might alter or detract from the opinions I express in my evidence.

BACKGROUND AND ROLE

7. The New Zealand Transport Agency (“**Transport Agency**”) has put forward a road realignment proposal. Their intention is to construct a new section of State Highway 3 (“**SH3**”) between Uruti and Ahititi in the Mount Messenger region north of New Plymouth.
8. The Mount Messenger and Whitecliffs area is known to Ngati Tama as Parininihi.
9. Ngati Tama have recently reintroduced kokako into the Parininihi and established the Kokako Restoration Project. It is my understanding that the return of the descendants of the Taranaki Kokako to the Parininihi is something that Ngati Tama are very proud of and is a source of mana for the tribe.
10. The proposed Mt Messenger Bypass Project (“**Project**”) will affect areas of importance to Ngati Tama, including Treaty settlement land.
11. The majority of the proposed Project footprint consists of forest and wetland habitat consisting of indigenous plant and animal communities that are considered to have high ecological value.
12. Consultants engaged by the Transport Agency have prepared an Assessment of Effects on the Environment report¹ (“**AEE**”) that outlines the likely effects on native flora and fauna that will result from this project.

¹ Mt Messenger Bypass Assessment of Effects on the Environment, Mt Messenger Alliance (December 2017).

13. In his statement of evidence in chief (“**EIC**”), Mr Roger John MacGibbon (Tonkin and Taylor; Project Ecologist) explains the substantial ecological effects resulting from the project, including the effects that cannot be avoided. In an effort to address those effects that cannot be avoided a compensation package (“the **Restoration Package**”) has been developed. The details of the Restoration Package are outlined in:
- (a) The Ecology and Landscape Management Plan² (“**ELMP**”), included as Appendix D to the Construction Environmental Management Plan for the Project.
 - (b) EIC of Roger John MacGibbon.
 - (c) Supplementary Statement of Evidence of Roger John MacGibbon.
14. One of the principal components of the proposed Restoration Package involves the undertaking of pest management in perpetuity within a Pest Management Area (“**PMA**”) of 3,650 ha.
15. Te Rūnanga o Ngāti Tama have engaged me to review the proposed pest control measures as well as the pest and biodiversity monitoring proposed for the Restoration Package within the PMA as outlined in the ELMP.
16. I have attended several technical meetings with Roger MacGibbon and staff from the Department of Conservation (“**DOC**”) to discuss the proposed Restoration Package.

SCOPE OF EVIDENCE

17. The purpose of my evidence is to outline the instances in which the mammalian pest control and monitoring proposed for the PMA, as outlined in the ELMP and Supplementary Statement of Evidence of Mr MacGibbon, does not provide sufficient detail to enable the stated pest management performance targets to be achieved. My

² Ecology and Landscape Management Plan, Mt Messenger Alliance (July 2018).

evidence also provides suggestions as to how the proposed Restoration Package can be improved.

SUMMARY OF KEY FINDINGS

Development and implementation of pest control mitigation

18. In the introduction of the ELMP, the aspirations of Ngati Tama to develop and implement the pest control mitigation are referred to but the details are not discussed further.
19. In his evidence, Mr MacGibbon refers to the success of the Kokako Restoration Project within the Parininihi as the most telling evidence as to why the proposed pest control component of the Restoration Package has a high likelihood of success.
20. The success of the Kokako Restoration Project in the Parininihi illustrates how effective Ngati Tama have been at undertaking a large-scale restoration project in this area. In hui with Te Rūnanga o Ngāti Tama they have expressed a desire for the iwi to be directly involved with the development and implementation of the pest control mitigation.
21. In my opinion, the involvement of Ngati Tama with the development and implementation of the pest control mitigation is vital to its potential success given their unique understanding of the terrain and effective control methodologies for this area, as well as their natural intergenerational association with this area.

Proposed location of the PMA

22. The proposed location of the PMA (Appendix 1) is directly adjacent to Ngati Tama land in the west (referred to as the Parininihi) in which members of Ngati Tama are currently carrying out mammalian pest control as part of the Kokako Restoration Project.
23. As outlined in para. 59 of the EIC of Roger John MacGibbon, four ecology principles of best practice were applied when developing the Restoration Package. These included ecological equivalence, ecological proximity, connectedness and high likelihood of success.

I agree with the inclusion of these principles when used to determine the location of the PMA.

24. Based on these best practice principles, in my opinion the most western area of Ngati Tama land identified as being included within the PMA (Appendix 1) does not neatly align with the principles of ecological proximity or connectedness.
25. The most western area of Ngati Tama land identified as within the PMA is not connected to the remainder of the proposed PMA to the east (Appendix 1). The far eastern extent of the DOC land proposed to be included in the PMA are also further removed from the impact site and are therefore reduced in ecological proximity.
26. The area of Ngati Tama land referred to as the Ngati Tama Parininihi Block (Appendix 1) is connected to the main area of the proposed PMA and is directly adjacent to the impact site of the Project. In my opinion, this area adheres to the four ecology principles of ecological equivalence, ecological proximity, connectedness and high likelihood of success. I would have expected this land to be included within the proposed PMA instead of the most western area of Ngati Tama land identified as within the PMA or the eastern extents of the DOC land.

Proposed methods of mammalian pest control

27. Goodnature A24 traps have been recommended in the ELMP for the control of rats and they have also been recommended for stoat control, in addition to double-set DOC200 traps.
28. Goodnature A24 traps are advertised as having a long-life lure for rats to enable these traps to remain attractive for several months before rebaiting is required. A long-life stoat bait does not currently exist for the Goodnature A24 trap. These traps would need to be rebaited at least monthly and in my opinion, are not suitable for stoat control as part of this project.

29. I am aware of a number of New Zealand biodiversity restoration projects where Goodnature A24 traps have not been effective at maintaining low rat numbers.
30. Windy Hill Sanctuary on Great Barrier Island have a grid of 293 Goodnature A24 traps for rat control and during an 18-month trial these traps were not able to reduce rat numbers below 20% RTI even when traps were spaced at 25 m intervals on trapping lines.
31. It is my opinion that Goodnature A24 traps should not be used as the only trap for controlling rats in the proposed pest management treatment area. In my opinion, double-set run through DOC200 traps should be used to control stoats and rats and Goodnature A24 traps should only be used in areas that are difficult to access.
32. The ELMP identifies feral cats as a target species for control by trapping but does not list the suggested trap type. In my opinion, DOC250 traps should be used to control feral cats.

Pest mammal monitoring

33. The monitoring of pest mammal abundance and the monitoring of biodiversity are the two success measures for the pest control mitigation in the PMA and, in my opinion, to provide reliable data they need to use robust monitoring methods and be aligned in both the monitoring period and frequency.
34. The monitoring regime for pest mammal species outlined in section 9.5.3.1 of the ELMP proposes annual monitoring for the first five years with three sample points each year and then once annually in years six and beyond.
35. DOC best practice monitoring³ for mustelids and rats suggests monitoring on at least four separate occasions each year. This can either be every three months or on four occasions (each at least one month apart) in late spring and summer months to coincide with

³ Gillies, C.A.; Williams, D. 2013: DOC tracking tunnel guide v2.5.2: Using tracking tunnels to monitor rodents and mustelids. Department of Conservation, Science & Capability Group, Hamilton, New Zealand.

- the breeding season for most forest birds and the period of peak mustelid abundance.
36. Monitoring at the intensity recommended by DOC will mean that spikes in the abundance of rats or mustelids can be responded to through the implementation of control methods (trapping and the application of toxins in bait stations) in addition to those already being carried out.
37. In my opinion, monitoring of pest mammal species in the PMA should be undertaken on four separate occasions each year for at least the first 12 years following the commencement of the pest management programme. As well as providing important information on the efficacy of pest control, this 12 year pest monitoring programme would also align with the proposed 12 year monitoring program for biodiversity (outlined in section 9.5.3.2 of the ELMP).
38. Section 9.5.3.3 of the ELMP proposes an adaptive pest management response to pest monitoring targets. In my opinion, the key to an effective adaptive pest management response relies on collecting as much pest monitoring data as possible and one annual monitor from years six onwards would not provide adequate information for a truly adaptive management approach.
39. The proposed monitoring regime for pest mammals outlined in the ELMP does not include the monitoring of mustelids and rats immediately before and after the proposed three-yearly aerial 1080 operations. Monitoring before and after the control of pests with aerial 1080 is standard practice for DOC, and, in my opinion is the best measure to determine the efficacy of the control operation and should be included in addition to the proposed annual pest control monitoring regime.
40. A pest management performance target has not been set for mice in the ELMP due to the intensity of effort required to control mice to low levels.

41. While I can accept that a performance target has not been set for mice due to the difficulty in controlling mice with current techniques, it is my opinion that the abundance of mice (as recorded in tracking tunnels for rat and mustelid monitoring) should be recorded during the pest management programme. This is in anticipation of more effective techniques for control and monitoring of mice being developed in the future that can enable ongoing monitoring and make use of these indicative measures of mouse abundance.
42. Section 9.5.1 of the ELMP reports possum tracking tunnel activity as ranging from 4 to 36%. Tracking tunnels are not a valid method of monitoring possums and to avoid confusion this data should be removed from the ELMP. Possum chew card activity is also reported in section 9.5.1 of the ELMP, this is a valid method of monitoring possums and is sufficient for reporting possum relative abundance provided the tracking tunnel data for possums is removed to avoid confusion.
43. Para 25 of the Supplementary Evidence of Roger MacGibbon recommends a buffer area extending from the edge of the PMA 500 m into the PMA which excludes pest monitoring for mustelids and feral cats and a buffer 200 m from the edge of the PMA which excludes pest monitoring for rats and possums.
44. Para 26 of the Supplementary Evidence of Roger MacGibbon states that these PMA buffer areas are excluded from pest density monitoring because of reinvasion pressure from uncontrolled populations on neighbouring land.
45. In my opinion, as many representative habitat types as possible within the PMA should be sampled when pest mammal monitoring is carried out. A buffer area extending from the edge of the PMA 500 m into the PMA would significantly reduce the amount of habitat and total area of the PMA that is monitored for mustelids and feral cats.
46. Feral cats and mustelids typically have home ranges far in excess of 500 m and so the 500 m buffer would only serve to limit the

amount of the PMA and the habitat type that is monitored and is unlikely to limit the detection of mustelids and feral cats reinvading from neighbouring land.

47. In my opinion, the buffer area extending from the edge of the PMA which excludes pest monitoring for mustelids and feral cats should be 200 m instead of the 500 m suggested. This is in line with the 200 m buffer from the edge of the PMA suggested for rat and possum monitoring.
48. Appendix F of the ELMP (Appendix 1) is a map of the PMA with an area referred to as a "Possible Ungulate Control Area". There is no further reference to this area in the ELMP and an explanation of what is proposed for this area needs to be included within the ELMP.

Outcome monitoring for biodiversity

49. As stated in the ELMP, biodiversity outcome monitoring of bird species will only occur within the 230 ha offset area of the PMA and not within the remaining 3,420 ha of the PMA. The 230 ha offset area comprises 6.3% of the 3,650 ha PMA area.
50. In my opinion, bird monitoring (of those species identified in section 9.5.3.2 of the ELMP) should be conducted at sites spread across the entire PMA as this would more accurately record the overall forest bird abundance as well as the effectiveness of pest control within the PMA.
51. The proposed frequency of monitoring for kiwi and forest birds is at three yearly intervals for 12 years following the completion of the construction program. In my opinion, in the 12 years following the completion of the construction program more frequent monitoring (preferably yearly) of kiwi and forest bird species would allow a better trend to be calculated from more representative data.
52. The ELMP does not outline what outcome monitoring for bird species will occur beyond year 12 if the performance target for birds (a 20% increase in relative abundance) is not met. In my opinion,

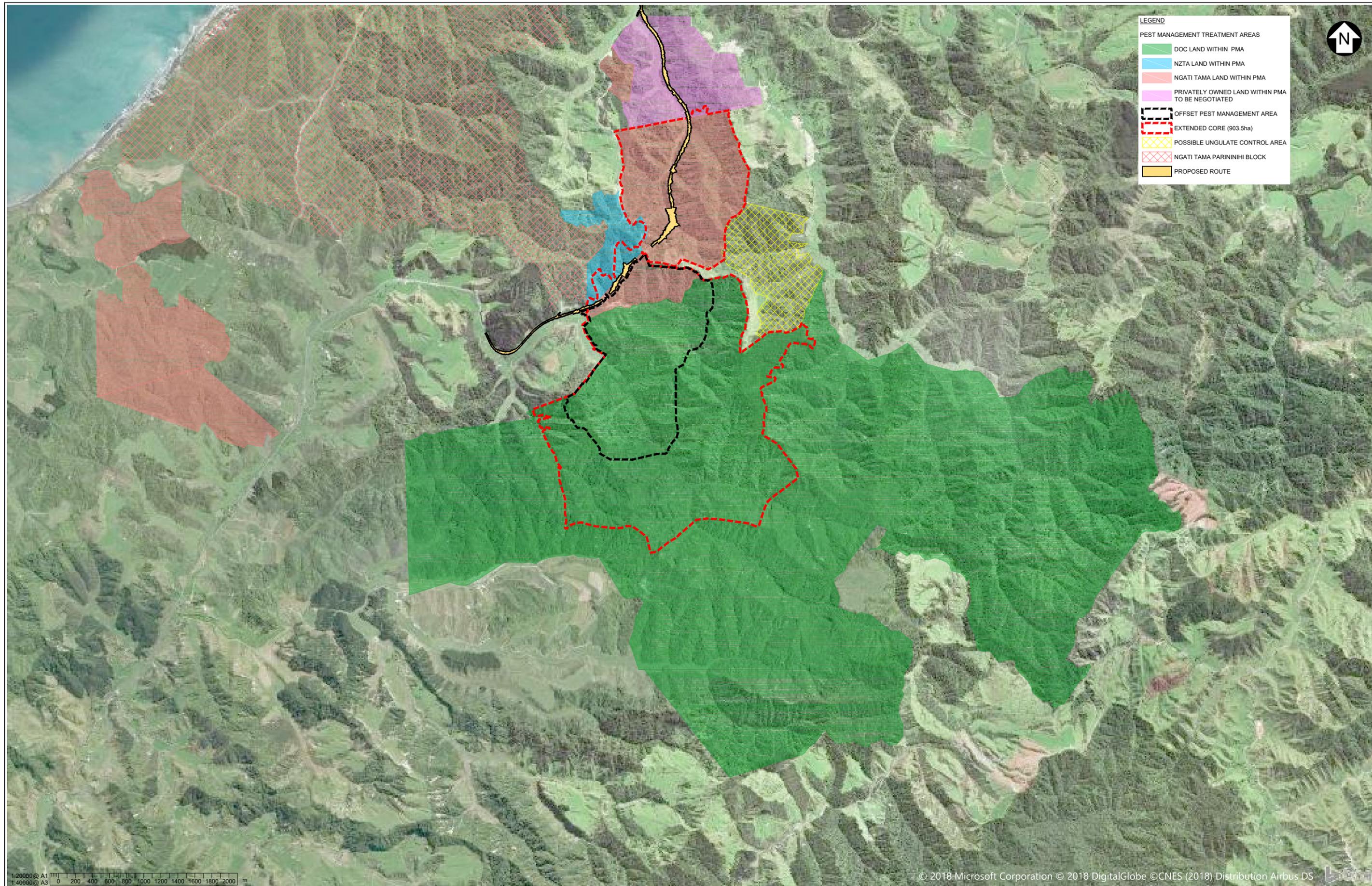
monitoring should continue beyond year 12 for any bird species that has not reached the 20% increase in relative abundance by this point. This monitoring should then continue until they reach the 20% increase in relative abundance target.

53. The ELMP states that if more than one of the biodiversity outcome monitoring targets are not met, the pest management programme will be reappraised.
54. Under the currently proposed biodiversity outcome monitoring there is a potential scenario in which kiwi are the only monitored bird species that doesn't reach the target of 20% increase in relative abundance by year 12. Under this scenario the outcome monitoring proposed in the ELMP would not trigger the pest management programme to be reevaluated for the purpose of providing kiwi with more appropriate protection from key predators.
55. There is a risk of kiwi being the only species below the 20% relative abundance threshold at year 12 and, in my opinion, there should be a specific response prescribed specifically for kiwi. This would mean that if kiwi fail to reach the 20% relative abundance target this alone triggers the pest management programme to be reappraised.

LEE MARK SHAPIRO

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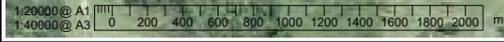
Boffa Miskell Limited
24 July 2018



LEGEND

PEST MANAGEMENT TREATMENT AREAS

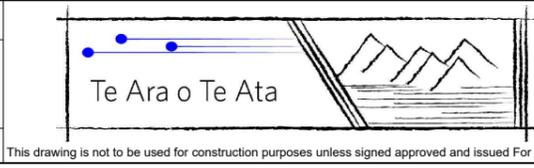
- DOC LAND WITHIN PMA
- NZTA LAND WITHIN PMA
- NGATI TAMA LAND WITHIN PMA
- PRIVATELY OWNED LAND WITHIN PMA TO BE NEGOTIATED
- OFFSET PEST MANAGEMENT AREA
- EXTENDED CORE (903.5ha)
- POSSIBLE UNGULATE CONTROL AREA
- NGATI TAMA PARININIHI BLOCK
- PROPOSED ROUTE



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Rev	Revision Description	Drawn	Checked	Designed	Design Checked	Approved	Date
C	OFFSET PEST MANAGEMENT AREA ADDED	QDO'S	-	RMG	LG	BS	05/07/2018
B	TOPO MAP BASE ADDED	QDO'S	-	RMG	LG	BS	18/06/2018
A	FOR INFORMATION	QDO'S	-	RMG	LG	BS	07/06/2018

Tab	MMA-DES-ECO-E1-FIG-1023
Scales	1:40000 (A3) 1:20000 (A1)
Original Size	A1



MT MESSENGER BYPASS

ECOLOGY

PROPOSED PEST MANAGEMENT AREA (3368ha)

PREFERRED OPTION

Approved	NOT FOR CONSTRUCTION
Status	FOR INFORMATION
Drawing Number	MMA-DES-ECO-E1-FIG-1023
Revision	C