

## Pest Management Options for the Hunua Ranges Regional Parklands

File No.: CP2014/21307

### Purpose

1. To approve changing the pest control methodology in the Hūnua Ranges Regional parklands to address the increase in pest numbers and the risk to endangered flora and fauna and indigenous species.

### Executive summary

2. The purpose of this report is to consider changing the pest control methodology in the Hūnua Ranges regional parklands (Hūnua, Whakatiwai and Waharau, referred to as Hūnua Ranges in this report).
3. The Hūnua Ranges is characterised by rugged terrain and low population densities, and is the habitat for a number of rare and endangered fauna and flora and indigenous species. It is home to the only naturally occurring population of kōkako in mainland Auckland.
4. Monitoring in the Hūnua Ranges is showing extremely high rat and possum populations this year. This increase in pest numbers in the Hūnua Ranges is placing great pressure on the unique wildlife habitat and high ecological values of the park.
5. The current methodology of brodifacoum (targeting rats) and cyanide (targeting possums) in bait stations is most effective at managing pests at low to moderate pest densities.
6. Without a change in methodology the ecological values of the park will be put at risk and council will not be able to meet its performance and management targets for pest management.
7. In the current context it is appropriate to consider the available options for pest control in the Hūnua Ranges, to ensure its natural values and unique forest are enhanced and maintained.
8. After careful consideration of the issue, options available, and taking into account the specifics of the Hūnua Ranges, it is recommended that the Regional Strategy and Policy Committee approve a change in pest management methodology, from brodifacoum and cyanide in bait stations to the aerial application of sodium fluoroacetate (1080), commencing in mid-2015.
9. Best practice guidelines for this activity will be followed including the National Pest Control Agencies' *Aerial 1080 Pest Control Industry Guidelines* and the Environmental Risk Management Authority's *Communications Guideline for Aerial 1080 Operations*.
10. This decision is specific to the Hūnua Ranges. Use of this methodology in other areas would need to be considered on a case by case basis specific to each site.

### Recommendations

That the Regional Strategy and Policy Committee:

- a) approve a change in pest management methodology for the Hūnua Ranges regional parklands, to the aerial application of sodium-fluoroacetate (1080), to commence in mid-2015
- b) note that best practice guidelines for this activity will be followed including the National Pest Control Agencies' *Aerial 1080 Pest Control Industry Guidelines* and the Environmental Risk Management Authority's *Communications Guideline for Aerial 1080 Operations*
- c) note that this decision is specific to the Hūnua Ranges regional parklands. Use of this methodology in other areas would need to be considered on a case by case basis specific to each site.

## Comments

### Background

11. The indigenous plants and animals in New Zealand are unique because we have no native ground dwelling mammals. Plants, birds, snails, lizards, insects and all other native species have evolved in almost total isolation from the rest of the world. This makes them particularly vulnerable to predators such as possums, rats and stoats because they have not developed natural defences against them. Possums, stoats and rats, for example, eat nesting adults, eggs and chicks. As a result the breeding success of native birds is threatened. Possums also pose a significant threat to forest canopy health.
12. An increase in pest numbers across the country is putting New Zealand's already endangered native wildlife at greater risk. High levels of seed production in forests (called a mast event) as a result of extreme weather such as hotter summers, is currently triggering a significant increase in animal predators.
13. When seed supplies run out, these pests then prey on indigenous birds such as kōkako and kākā, along with other at-risk species like bats, frogs and land snails. When predator levels rise, this also puts our native trees and plants at risk, through significantly increased browsing damage.
14. Climate change and global warming make it highly likely that climatic conditions triggering these mast events will become more frequent.
15. In response to these threats, the Department of Conservation (DOC) has initiated its 'Battle for our Birds' programme. This is a predator control response to protect native wildlife from predators. It involves 22 predator control operations of aerially applied 1080 bait over about 600,000ha of public conservation land.

### *Hūnua Ranges Regional Parkland*

16. The Hūnua Ranges is the largest forest in mainland Auckland, characterised by rugged terrain, low population densities, outstanding wildlife habitat and high ecological values.
17. The Hūnua Ranges has four reservoirs which supply approximately 65% of Auckland's potable water supply. The majority of the Hūnua Ranges sits within the Waikato Regional Council jurisdiction. The regional park, however, is owned by Auckland Council who has responsibility for the management and pest control of this asset.
18. The Hūnua Ranges is home to the only naturally occurring population of kōkako in mainland Auckland. It is also the habitat for a number of rare and endangered fauna and flora including the long-tailed bat, hochstetter's frog, and kākā. In addition, it is home to a number of other indigenous species including kereru, bellbird, tomtit, tui and piwakawaka (fantail).
19. The Hūnua Ranges is home to 59 regionally threatened plants (including NZ toropapa and Kirk's daisy), sixteen of which are also nationally threatened. The park contains the largest areas of kauri-hard beech forest in the Auckland region; this forest type is significant in the context of the North Island's flora. Importantly, the Hūnua Ranges is currently free of kauri dieback disease.
20. As a result of predation by animal pests, kōkako numbers dropped to only one breeding pair in the 1990s. In response to this challenge a Kōkako Management Area (KMA) was established in 1994 to protect the pair through intensive pest control. It has expanded to cover 1,100ha of the Hūnua Ranges, about 6.5 per cent of the total park area. This control programme specifically manages pest numbers in this conservation area. The success of this pest controlled area has led to there now being 55 kōkako breeding pairs within the managed areas. Four pairs have been found close to the pest control special management areas.
21. In addition to the council funded KMA, two smaller satellite projects (Piggott's and Hūnua Falls) are delivered through the significant efforts of volunteers supported by council staff. Volunteer investment in supporting kōkako protection in the Hūnua Ranges exceeds 1,600 hours per year.

22. The specific management focus for the park is to *'protect and enhance this outstanding wildlife habitat with high ecological values, and to cultivate an ethic of stewardship'*.<sup>1</sup> Included in these management policies are specific detail on pest control:

*'continue to undertake comprehensive pest animal control programmes, irrespective of regional boundary changes, to maintain and enhance the habitat for indigenous flora and fauna, with particular focus on:*

- a) *lowering the threshold for possum control to a maximum five per cent residual trap catch to reduce possum abundance over the whole park to improve forest health*
- b) *intensifying goat control, with a target of local eradication in the Hūnua Ranges and the maintenance of a buffer zone on all adjoining properties*
- c) *liaising with Department of Conservation to prevent the incursion of deer into the Hūnua Ranges*
- d) *continuing integrated pest animal control at selected sites within the Ranges, including the Kōkako Management and the Hūnua Falls Pest Control Project Areas... to allow for complete ecosystem recovery and reintroductions of rare and threatened species*
- e) *investigating opportunities to further expand integrated pest animal control in the Hūnua ranges, and*
- f) *continuing the integrated pest animal eradication and management programmes in the Hūnua Ranges onto neighbouring reserve land and adjoining private property.'*

23. In line with the management guidelines detailed above council's current pest control work in the Hūnua Ranges includes rat, possum, stoat, feral deer, pig, goat and pest plant control.

24. Council currently spends \$473,000 per annum on rat and possum pest management in the Hūnua Ranges. \$75,000 of this is to deliver rat control in KMA using brodifacoum in bait stations and trapping for stoats. Possum control is undertaken in areas of the park where monitoring shows densities exceed the target residual trap catch (RTC)<sup>2</sup> at an annual cost of \$40,000 for monitoring and \$358,000 for control. Possum control is completed using cyanide in bait stations with application by contractors holding a controlled substance licence.

### Challenge

25. Reflecting the national trend, pest numbers have significantly risen in the Hūnua Ranges, placing great pressure on the unique wildlife habitat and high ecological values of the park. For example, rat numbers in managed areas are seven times higher than the current target of 5 per cent. Rat numbers in unmanaged areas are 14 times higher than the current targets. In addition, possum numbers are also higher than the management target and stoat numbers are seen as an increasing threat as well.
26. The current methodology of brodifacoum (targeting rats) and cyanide (targeting possums) in bait stations is most effective at managing pests at low to moderate pest densities, i.e. lower than the densities currently present.
27. Whilst current kōkako monitoring has shown increases in the numbers of breeding pairs, rat monitoring data shows that achieving and maintaining the pest management target is becoming much more difficult. Pest numbers above 5 per cent are known to affect the breeding success of native birds and cause forest canopy decline.
28. In the current context it is appropriate to consider the available options for pest control in the Hūnua Ranges to ensure its natural values and unique forest are enhanced and maintained, as detailed below.

<sup>1</sup> Section 17.5.4, Auckland Regional Council, *Regional Parks Management Plan* (RPMP)

1. <sup>2</sup> The residual trap-catch (RTC) index is a simple method of determining relative possum abundance. A < 5% RTC means a result of less than 5 possums caught for every 100 trap-nights. Auckland Plan and Long-term plan measures of 'proportion of the region where possum populations are maintained under 5% residual trap count index.

### Options for pest control

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29. A number of different methods are available to deal with the increased threat. Different available methods of pest control have been reviewed using the following criteria:
- Must be effective at killing all of the target species
  - Must be done with minimal disturbance and impact to the natural environment
  - Adverse effects on species of non-target wildlife must be known to be minor and, or can be avoided, remedied or mitigated
  - Any risks to human health and community well-being can be avoided, remedied or mitigated; and
  - Must be cost effective.
30. The options for the Hūnua Ranges are:
- Continue with the status quo – brodifacoum and cyanide in bait stations in targeted areas
  - Increase ground based brodifacoum and cyanide bait station network
  - Change to an alternative toxin in ground based bait stations
  - Wait for the development of alternative methodologies such as bio-controls; or
  - Change methodology of toxin application to aerial application of either brodifacoum or sodium fluoroacetate (1080) bait pellets.
31. A summary of the advantages and disadvantages of the available toxins, which informed this options analysis, is appended as Attachment A to this report.
- Continue status quo – brodifacoum and cyanide bait stations in targeted areas*
32. Brodifacoum and cyanide are best at dealing with low to moderate numbers of rodents and possums respectively. Given the current significant increase in pest numbers it is highly unlikely that this methodology will continue to adequately address pest management requirements. This method will also not enable expansion of biodiversity values outside the 6.5 per cent of the currently managed area of the park.
33. This option is no longer considered appropriate for the Hunua Ranges as it will not achieve the desired pest management objectives for the park, specifically to 'lower the threshold for possum control to a maximum five per cent residual trap catch to reduce possum abundance over the whole park to improve forest health' and to 'allow for complete ecosystem recovery and reintroductions of rare and threatened species'. It is likely that this methodology will not allow delivery of the Auckland Plan and Long-term Plan measures of 'proportion of the region where possum populations are maintained under 5 per cent residual trap count index.'
34. Predation by rats and possums was almost wholly attributed to the decline of kokako in the Hūnua Ranges in the 1990s. Research carried out to identify the requirements for successful kōkako recovery have shown that the reduction of these pests to very low levels results in significant increases in chick output and adult survival and that management of vulnerable kōkako populations should aim to reduce possums and rats to very low levels (below 5 per cent trapping/tracking index) particularly at the onset of breeding over consecutive years. Continued failure to meet and sustain these targets for pests will result in a reduction in breeding success and over time put the kokako population at risk. An inability to meet possum targets is currently resulting in forest canopy damage.
- Increase the ground-based brodifacoum and cyanide bait station network*
35. Due to the size and rugged nature of the Hūnua Ranges, ground-based control is not a practical management option for pest control of this scale. Bait station networks are highly unlikely to sufficiently knock down pest numbers at the level currently being displayed. To attempt to target all rats, for example, would require a significant increase of bait stations from two per hectare to nine per hectare. This increase would result in approximately 153,000 bait stations and 612,000 traps to cover all of the Hūnua Ranges.

36. This extensive network of trap tracks would be costly to establish and maintain, and damaging to the environment. More tracks would have to be cut increasing the risk of *Phytophthora taxon Agathis* (PTA) (kauri dieback) being introduced to the park. The rugged terrain in some areas would pose a risk to staff and or contractors and may mean that bait stations cannot be installed in some areas, posing a risk of reinvasion.
37. Bearing in mind the potential impact on the environment, the cost and the number of bait stations required, this option is not considered appropriate for the Hūnua Ranges.  
*Change the toxin used in-ground-based bait stations*
38. A number of toxins have been considered for use in the existing bait station to assess whether a change in toxin might better address the current challenge. These toxins were cholecalciferol, cyanide, pindone, phosphorous, and sodium fluoroacetate (1080).
39. Cholecalciferol causes calcification of body tissues and organs with death occurring between three and seven days from ingestion. It is considered very inhumane and while effective against possums and rats, secondary poisoning and persistence in the environment of cholecalciferol is not well understood. It is relatively expensive, often difficult to source and not registered for aerial application. For these reasons it is not recommended as a viable solution to the current problem.
40. Cyanide is relatively inexpensive compared to other ground based methods. It achieves a quick knockdown, has low environmental persistence, has a low secondary poison risk and is quick acting. However, it is hazardous to non-target species, including humans and requires applicators to be licensed in its use. Because of the risk to human health and damage caused to the environment (mentioned above), the increased use of this toxin is not recommended for wider use in the park.
41. Pindone, an anticoagulant similar to brodifacoum, requires large amounts of toxin to be used and is not effective at killing possums. Therefore it has limited effectiveness to address the current issue.
42. Phosphorous was first used for killing rabbits in the 1920s but was deregistered on the grounds of inhumanness and is not supported for use by the SPCA. As there is limited research on its environmental impact and persistence it was not considered an appropriate option.
43. Sodium fluoroacetate (1080) is most effective when applied aurally over large areas of rugged terrain and is discussed in more detail later in this report. All other toxins have been assessed as inappropriate for the current challenge as detailed above.  
*Wait for the development of alternative methodologies such as bio-controls and self-resetting traps*
44. Pest control methodology is constantly evolving and council works closely with developers, research entities and ministries to support the development of these new technologies. For example Auckland Council has invested, with other regional councils, in the development of various self-resetting traps and is currently exploring field trials for a rodent trap to commence in 2015.
45. Although research and development is on-going, each trap is target specific and not yet designed to target possums, rats and stoats. No emerging technology to support more effective management of predators at the scale currently seen in the Hūnua Ranges is available or anticipated to materialise in the short to medium term.
46. Identifying a safe and effective biocontrol agent is a long and potentially risky process to ensure that any potential agent does not itself become a pest species. Waiting for a safe biocontrol agent is not considered a suitable option at this time.

*Change methodology of toxin application to aerial application of either brodifacoum or sodium fluoroacetate (1080)*

- Item 9**
47. In addition to its unique natural heritage values the Hūnua Ranges is characterised by steep difficult terrain. Aerial application of pest control offers the most effective and efficient method of environmental protection and support for the Hūnua Ranges. Two main toxins have been assessed for suitability for aerial application; brodifacoum and sodium fluoroacetate (1080).
  48. Brodifacoum is not currently licensed for aerial applications although an exemption may be applied for. Applying brodifacoum aerially would target a greater area however brodifacoum is persistent in the food chain for longer and therefore there would be a high chance of secondary poisoning when applied aerially.
  49. Brodifacoum has, on occasion, been applied aerially on a one-off basis for the purpose of eradication in sites where there is little chance of re-invasion (i.e. islands or fenced sanctuaries, and the ability to close or impose high access restrictions). The risk of secondary poisoning outweighs the advantages of aerial application of brodifacoum in sites which need on-going management. Given the specifics of the Hūnua Ranges, aerial application of brodifacoum is not recommended.
  50. The recommended methodology for pest management in the Hūnua Ranges is to change to an aerial application of sodium fluoroacetate (1080) and the reasons for this recommendation are detailed below.

#### **Proposed Change of Pest Control Method**

51. As noted previously the key driver for change is the need to best protect the Hūnua Ranges, its unique forest, threatened species and the conservation and recreational values of the park.
52. After careful consideration of the issue, options available, and taking into account the specifics of the Hūnua Ranges, it is recommended that the Regional Strategy and Policy Committee approve a change in pest management methodology, from brodifacoum and cyanide in bait stations to the aerial application of sodium fluoroacetate (1080), commencing in mid-2015.
53. Sodium fluoroacetate (1080) is biodegradable, dilutes quickly in water and does not build up in the food chain. It can be safely applied by air and is the most cost-effective method of providing large forest-scale pest control over rugged terrain.
54. Using sodium fluoroacetate (1080) will have a number of benefits for the Hūnua Ranges:
  - Targets all three predators (possums, rats and stoats) allowing an increase in native species and forest regeneration.
  - Provides the greatest environmental protection for the entire Hūnua Ranges ecosystem by leaving the rugged more remote areas of the forest undisturbed.
  - Is proven to be successful in the management of kōkako, and other native fauna, when under heavy predation.
  - Increases the future potential of the site as a protected habitat (possible to reintroduce kiwi and other species which are no longer living in the forest.)
  - Is biodegradable, dilutes quickly in water with significant reduction in human health risks in comparison with current or alternative methods.
  - Can be easily applied to rugged terrain of the Hūnua Ranges.
  - If aerially applied, would enable the total Hūnua Ranges (17,000ha) to be treated for the same budget that is currently used for possum and rat control over a much smaller area.
  - The larger the area pest control is applied to, the longer it will take for pest numbers to build back up.
  - The use of sodium fluoroacetate (1080) aerially would mean a reduction in the frequency of toxin application (most likely every two-three years as opposed to current method which requires on ongoing commitment to annual control).

- Cost effective (aerial sodium fluoroacetate (1080) operation costs on average \$17 per hectare, targeting 3 pest species whereas a ground based programme is estimated to cost up to three times as much per hectare).
55. The proposed change in methodology represents both a long-term cost saving and more effective environmental outcomes for the Hūnua Ranges and Auckland.
56. The total cost of a three year pest control programme targeting rats, possums and stoats using the current methodology within 6.5 per cent of the Hūnua Ranges is \$1,419,000.
57. The total cost of a three year pest control programme over the whole Hūnua Ranges, using aerial application of sodium fluoroacetate (1080), would be \$529,000.
58. In summary this proposed change can be delivered from within existing budgets and, over a three year cycle, affords a 77 per cent saving for pest management in the Hūnua Ranges, and increases the managed area from 1,100ha to 17,000ha.

### Recent scientific analysis

59. The use of aerial application of sodium fluoroacetate (1080) for pest management has been subject to a number of national reviews and public consultation processes and is guided by a number of specific documents as listed in Attachment B to this report. In the last decade there have been four peer reviewed scientific reports by:
- The Environmental Risk Management Authority (ERMA)
  - The Environmental Protection Agency (EPA) and
  - The Parliamentary Commissioner for the Environment (two reports).
60. All of these agencies indicated that they regarded sodium fluoroacetate (1080) as effective and appropriate to combat significantly increased pest numbers for the protection of forests and their native birds and rare species.
61. Specifically ERMA 2008 concluded that there are no practical alternatives to 1080 for the preservation of native bush and protection of agriculture. It concluded that 1080 should continue to be used, but with a tighter management regime designed to improve 1080 use.
62. In 2013 the EPA published its report “Five-year review of the aerial use of 1080 2008-2012” which concluded that the tighter management regime is working and that there is no indication that a further reassessment of 1080 is required.
63. The use of 1080 for protecting native wildlife was also highlighted by the Parliamentary Commissioner for the Environment in reports published in 2011 and 2013. In her 2011 report the Commissioner concluded:

*“It is my view based on careful analysis of the evidence that not only should the use of 1080 continue (including in aerial operations) to protect our forests, but that we should use more of it.”*

### Concerns

64. There is a long and well documented history of public concerns expressed over the use of 1080. These concerns commonly centre around the perceived effect of 1080 on by-kill, water catchments, animals (dogs), human health and soil.
65. These concerns have been thoroughly canvassed in national level consultations and well researched over the 60 years 1080 has been used in New Zealand. They have led to significant improvements in the way 1080 operations are carried out. For example average sowing rates have reduced from 30kg per hectare in the 1950s to around 2kgs per hectare today (i.e. four-six baits on the size of a double tennis court, of which only 15 per cent is 1080).

66. In addition baits are now dyed green and impregnated with lures that are attractive to pests but repel birds, resulting in the significant reduction of non-target kill. Scientific evidence also supports that while it is possible that a small number of individual birds and other fauna may die as a result of an operation, overall species populations dramatically increase. There has been scientific research carried out on the impacts of 1080 on aquatic biodiversity which has concluded that 1080 is unlikely to affect aquatic organisms as the toxin concentrations required to have an impact are most unlikely to ever occur in streams. In studies carried out in both the United States and New Zealand fish (juvenile and adult trout) were fed 1080 baits and of all fish tested 100% survived and none showed ill effects.
67. 1080 naturally breaks down in the environment and does not leave permanent residues in water, soil, plants or animals. The rate at which 1080 breaks down depends on the temperature, level of bacteria and other micro-organisms.
68. While 1080 is designed to kill pests in our forest it can be dangerous for dogs if they are allowed in pest control areas. This risk is mitigated through close adherence to the guidelines for the use of 1080 and through responsible dog owners taking proactive approaches. These include paying close attention to signs, staying out of areas where signage is present, and keeping dogs on a leash, well fed and hydrated. Muzzling is an additional precaution dog owners can take to prevent dogs from scavenging.
69. During the 2011 Parliamentary Commissioner for the Environment reassessment of 1080, submitters raised concerns about baits getting into water during operations and potential impacts on native aquatic species or drinking water. The risk to human health from using 1080 as a pest control methodology are minimal and subject to a number of operational guidelines and independent checks and controls to ensure its use poses no risk to human health.
70. Whilst measures are always taken to minimise human contamination the human health risk from 1080 in water supplies is negligible. Laboratory analysis can detect 1080 in water at concentrations as low as 0.1 parts per billion (ppb). The maximum amount of 1080 residue allowed in drinking water by the Ministry of Health is 2.0 ppb. This has never been breached as water is routinely monitored after aerial application of 1080 in New Zealand. Specifically in the past five years over 500 water samples have been taken from reticulated drinking water supplies across NZ following 1080 operations. No traces of 1080 were detected in any of these samples.
71. As noted below Auckland Council and Watercare services will work together to develop and implement strict management controls to minimise any risks to the Hūnua catchment.

#### **Watercare & Water Supply**

72. The Hūnua Ranges provides 65% of Auckland's potable water supply. Safety of this supply is paramount. It is possible (although highly unlikely) that 1080 could enter waterways during an operation. To minimise any risks to waterways the national operational guidelines for this activity have strict protocols regarding aerial operations using 1080. With best management practices this supply can be assured.
73. Auckland Council and Watercare Services will work collaboratively to develop management protocols. These may include setbacks from any water take, no fly zones over water reservoirs and stringent water monitoring regimes as determined necessary by the Auckland Regional Public Health Service.
74. Water cannot be taken from a supply until monitoring results fall within the required Ministry of Health level of 2.0 ppb. With current management practices the risk of people becoming sick from drinking water or eating food containing 1080 is extremely unlikely. This is because 1080 is highly soluble in water and dilutes quickly into non-toxic compounds naturally found in the environment as per the previous section of this report.

### Engagement and communications

75. Using toxic chemicals in any situation often worries people and 1080 is no exception. There are many groups that oppose its use and other citizens understandably have concerns about the effects of the toxin, even if they acknowledge the challenges associated with pest control.
76. Of particular concern in the application of aerial 1080 is the effect on water catchments, adverse effects on flora and fauna and dogs or pigs accidentally coming into contact with bait. These concerns need to be considered in an open, honest and transparent engagement process with stakeholders, guided by the prescriptive and comprehensive Environmental Risk Management Authority's *Communications Guideline for Aerial 1080 Operations*.
77. People managing 1080 operations must meet minimum standards for communication set out in the Environmental Risk Management Authority's (ERMA) 2007 decision on the reassessment of 1080 and the conditions on permissions from the Ministry of Health. The guidelines state "*There is an expectation for operators to consult with people likely to be affected by an operation and engage with others in the community, to an extent that is reasonable, about the direct and indirect effects that the operation may have on the community...and that this is an area that ERMA are monitoring*".
78. In acknowledging the importance of communication and engagement during aerial 1080 operations the Environmental Risk Management Authority developed best practise guidelines: *Communications Guideline for Aerial 1080 Operations* in March 2009. The proposed aerial application of 1080 in the Hūnua Ranges would follow the guidelines.
79. Furthermore, an operational plan would be required to be submitted to the Auckland Regional Public Health Service as part of the process of obtaining permission for an aerial 1080 operation. The operational plan assesses, amongst other criteria, communication and states, "communication must be undertaken in accordance with the Communications Guideline for Aerial 1080 Operations".
80. The above mentioned themes and requirements would be covered in a communications plan that would support the operational plan and a plan for engaging with stakeholders. The communications and engagement plans would be developed in three phases:



81. Planning for phase one and two stakeholder engagement is underway and key stakeholders for engagement include:
  - Iwi
  - Franklin Local Board, Waikato Regional Council and Waikato District Council
  - Those that live and work in the ranges, including neighbouring properties, and forestry licensees
  - Park users like hunters, trappers and tramping groups and general visitors
  - Environmental groups, friends groups and organisations
  - Local businesses, veterinary clinics, nearby schools and childcare facilities
  - Government departments such as the Department of Conservation and Ministry of Health.
82. Phase one and two engagement with stakeholders would include direct communication and information on the proposed operation, including the decision-making process covered by this report.
83. Once planning begins for the operational phase (phase three), widespread communication would begin – including (but not limited to) public notices in newspapers, signage across the parkland and public information on noticeboards and websites.

84. Iwi engagement is of paramount importance in this process as both Mana Whenua and kaitiaki and is further detailed in the Māori impact section of this report.

### Regulatory Framework & Permissions

85. Aerial application of 1080 in the Hūnua Ranges can be undertaken as a Permitted activity. Provided there is compliance with pre-set conditions, it is a permitted activity under the:
- Auckland Council Regional Plan (Air Land and Water)
  - Auckland Council District Plan (Franklin, Manukau and Papakura sections) and the
  - Proposed Auckland Unitary Plan.
86. To note, the majority of the Hūnua Ranges is within the administrative boundary of the Waikato Regional Council and Waikato District Council. The Waikato Regional Council has not undertaken a plan change since the 2010 boundary change. Therefore the rules that apply to this part of the Waikato region are those rules that applied prior to amalgamation, as listed above.
87. Permission is required from the Ministry of Health for an aerial 1080 operation. 1080 is an approved vertebrate toxic agent (VTA) and provided a thorough application is submitted the permission should be granted. The Ministry of Health must grant approval of any aerial application of 1080.
88. The application is assessed by a Health Protection Officer (HPO) who is also warranted under the Hazardous Substances and New Organisms Act 1996 (HSNO). The agreement for approval is made with the assessing HPO and the Medical Officer of Health (MOH) (approval is valid for 12 months).
89. In principle, as 1080 is an approved vertebrate toxic agent (VTA), the application permission should be issued with a series of conditions to ensure best practice management of the activity.

### Timeframes

90. The most effective time for a fast tactical knockdown of possums, rats and stoats is in the winter months. This is when pests are most hungry and most likely to eat the baits.
91. Before an aerial operation can begin, there are a number of essential steps that must occur first, including engagement, iwi engagement, operational planning, Ministry of Health permission and bait procurement.
92. This means that, if the operation is to commence in the winter of 2015, a decision on this proposal needs to be made in October 2014. The approximate timings from today are as follows
- On-going engagement with iwi
  - Stakeholder and community engagement
  - Secure Certificates of Compliance (RMA)
  - Pre-operation monitoring
  - Calibration of operational methodology
  - June 2015 – Obtain Ministry of Health permission
  - July-August 2015 – Operations would begin.

## Consideration

### Local board views and implications

93. A workshop with was held with members of the Regional Strategy and Policy Committee and a number of local board members on 23 September 2014. This session was to enable a preliminary discussion on this challenge, the current methodology used and alternatives as background for this decision item.

94. Two members of the Franklin Local Board, including the Deputy Chair, attended this workshop and provided feedback to staff. A further workshop was held with the Franklin Local Board on 30 September to further discuss this issue.
95. The Franklin Local Board has confirmed general support for the proposed change. The local board noted that the health of the Hunua Ranges across a wide spectrum is incredibly important to not only the local board, but the local and wider community. Furthermore the board highlighted the significance of this environment and the potential in the future to add to it, is something they are acutely aware of and see as a priority.
96. Specifically from the information provided to the board, the board have indicated that they are comfortable supporting the proposed pest management change for the Hūnua Ranges with the key areas of interest for the board being:
  - The need to make sure this is the best way to deal with the pest / predator problem in terms of best practice as well as best investment from a ratepayer funding perspective
  - The need to ensure risk to those things we are trying to protect is mitigated – including to our water supply and other indigenous species (bats / frogs)
  - The need to not threaten the kauri dieback programme through having to increase access to the ranges for alternative methods of control
  - The need for a comprehensive public and local community engagement / education plan to ensure people are able to have all the information possibly available and to take in as wide a local footprint with that engagement.

### Significance

97. The recommended option contained within this report has been reviewed in terms of Auckland Council's Significance Policy. In summary, the proposed decision does not reach the threshold for significance under this policy. Specifically the potential decision:
  - Will not involve change of ownership of a strategic asset
  - Will not create or cease a group of activity
  - Will not involve an increase of 33 per cent or decrease by 20 per cent in the nature of the group of activity.
98. In regards to the general criteria the proposed decision is of low significance. Specifically the proposed decision:
  - Will impact positively on the governing body's ability to deliver on the environmental well-being of the region
  - Will not change the indicators of intended level of service
  - The number of residents and ratepayers affected by the decision is low
  - The extent to which residents and ratepayers are effected by the decision is low
  - The likely impacts or consequences of the decision from the perspective of those affected is low
  - The extent of public interest within the local board area / Auckland region or New Zealand generally (for a governing body decision) has historically been medium
  - The extent to which the decision or proposal is reversible is low.

### Māori impact statement

99. The Hūnua Ranges are of historical, customary, cultural and spiritual significance to Ngāi Tai ki Tāmaki, Ngāti Koheriki, Ngāti Tamaoho, Ngāti Pāoa, and Ngaati Whanaunga. Three tribal authorities also have kaitiakitanga status; Ngati Maru Runanga, Ngati Te Ata Waiohua and Tainui – Waikato.

100. The maunga Kohukohunui, the highest peak within the Hūnua Ranges, is a Tūpuna Maunga and an important boundary marker. Kokako are a highly valued taonga species and mana whenua have been active partners in enabling kōkako recovery in the park. To increase the kōkako population the area under effective pest management must increase. Such an increase will offer the long term potential of returning other valued species, such as kiwi, to the park.
101. The Regional Parks Management Plan 2010 recognises the relationship of mana whenua in the Hūnua Ranges and includes consultation on the planning, protection, development and management of the park and Māori values they contain - Policy: 17.5.4 20 (a).
102. Officers have begun work with Te Waka Angamua who have offered tautoko/support for engagement with iwi. A key priority is to ensure appropriate tikanga and matauranga is practised, acknowledged, and woven through this work.
103. There has been preliminary contact with five iwi: Ngāti Whanaunga, Ngāti Paoa, Ngai Tai ki Tamaki, Ngāti Tamaoho and Ngāti Te Ata. Broadly, mana whenua do not support the use of toxins in the environment but tolerate its use to achieve improved environmental outcomes. A future vision proposed by one kaumātua is for knowledgeable iwi rangers to assist with pest management of the Hūnua Ranges Regional Park.
104. The timeframes for engagement need to be negotiated with each iwi and engagement will be adapted as required, pending the outcome of this decision.

## Implementation

105. If the council decided to change its pest eradication methods in the Hunua Ranges, best practice application and stringent operational methods would be employed which would closely follow the extensive operational guidelines available in order to ensure the safe delivery of the operation.
106. The impacts of the new methodology (increased bird and insect populations, receiving water quality, and any other effects) would be carefully monitored and reported regularly to council, affected local boards, stakeholders and the community.

## Attachments

No.	Title	Page
A	Analysis of Toxins	19
B	Key Documents	23

## Signatories

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Authoriser	Dean Kimpton - Chief Operating Officer

**Attachment A – Advantages and Disadvantages of toxins analysis**

Item 9

<b>Brodifacoum</b>	
<i>Mode of action: Second-generation anticoagulant – works by increasing the clotting time of blood leading to death from haemorrhaging.</i>	
<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>• Is highly effective against possums and rats – generally used to maintain low possum numbers following use of fast-acting poisons such as 1080</li> <li>• Vitamin K an effective antidote for accidental poisoning</li> <li>• Less toxic to invertebrates than to birds and mammals</li> <li>• Readily accessible, able to be used by volunteers and general public, perceived as being safer than other toxins</li> <li>• Can be used aerially for eradication on off-shore islands and inside fenced sanctuaries, otherwise can only be used in bait stations. Does not require prefeeding.</li> </ul>	<ul style="list-style-type: none"> <li>• Persistent after sublethal exposure (&gt; 36 months) in liver of vertebrates (can enter food chain)</li> <li>• High risk of secondary poisoning of some non-target species</li> <li>• Has been found throughout the food chain in NZ and implicated in deaths of predators overseas</li> <li>• Because it is slower acting possums and rats often consume far in excess of a lethal amount (more bait used than necessary with potential higher environmental residue burdens). For example possums can take 2-4 weeks to die</li> <li>• Expensive compared with 1080 or cyanide</li> <li>• Not currently licenced / registered for aerial application. Exemptions for aerial application may be applied for (e.g. Shakespear)</li> </ul>

Attachment A

<b>Cholecalciferol</b>	
<i>Mode of Action: Cholecalciferol (vitamin D3) causes calcification of soft tissues. Death occurs within about 3-7 days from heart and renal failure</i>	
<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>• Is effective against possums and rats and is able to achieve a fast reduction in pest numbers</li> <li>• Readily accessible, Does not require specific licence to use</li> <li>• Lower toxicity to birds than mammals which reduces primary poisoning risk to birds</li> <li>• Residues in sub-lethally poisoned animals do not have prolonged persistence.</li> </ul>	<ul style="list-style-type: none"> <li>• Treatment for accidental poisoning is available, but is complex and treatment must occur quickly after ingestion</li> <li>• Fate and persistence in the environment not as well understood as other toxins</li> <li>• Not registered for aerial application</li> <li>• Relatively expensive and at times can be difficult to source in a timely fashion at quantities required</li> <li>• High risk to dogs if bait is consumed but relatively low risk through secondary poisoning as dogs would typically need to consume more than one carcass to receive a lethal dose</li> <li>• Requires prefeeding to ensure a good kill.</li> </ul>
<b>Cyanide</b>	
<i>Mode of action: inhibits mitochondrial cytochrome oxidase and blocks electron transport, resulting in decreased oxidative metabolism and oxygen utilisation</i>	
<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>• Cheap compared to other ground based methods (can use as a paste and not rely on bait stations for delivery)</li> <li>• Achieves a quick knockdown of possums</li> <li>• low environmental persistence</li> <li>• low secondary poisoning risk</li> </ul>	<ul style="list-style-type: none"> <li>• Hazardous in paste format to non-target species including humans if they come into contact – requires cautious approach in high visitation areas</li> <li>• Requires a licence to use</li> <li>• Bait shyness can become an issue with repeated use (not as prominent with the use of pellet formulations)</li> </ul>

<ul style="list-style-type: none"> <li>• Quick acting and considered relatively humane - target species are killed within minutes (rather than days/weeks). This also makes it a suitable method for fur recovery.</li> </ul>	<ul style="list-style-type: none"> <li>• Broad-spectrum toxicity = high primary risk to non-target species. Antidote available but must be consumed immediately</li> <li>• Not suitable for rodent control</li> <li>• Does not always achieve a high kill of possums (to a level that achieved biodiversity gains).</li> </ul>
<p><b>Sodium Fluoroacetate (1080)</b></p>	
<p><i>Mode of action: 1080 breaks the respiration process or energy pathway of living cells, causing possums to die of heart or respiratory failure</i></p>	
<p><b>Advantages</b></p>	<p><b>Disadvantages</b></p>
<ul style="list-style-type: none"> <li>• Highly effective at rapid reduction in possum and rodent numbers</li> <li>• Registered for aerial broadcast</li> <li>• Biodegradable in the environment (soil, water)</li> <li>• Residues in sub-lethally exposed animals do not have prolonged persistence</li> <li>• Proven track record in possum control Quality efficacy data exists to support both aerial and ground-baiting techniques, with on-going potential to reduce application rates</li> <li>• Cost effective</li> </ul>	<ul style="list-style-type: none"> <li>• Its use (particularly aerially) is controversial</li> <li>• Dogs are particularly susceptible to 1080 both through eating bait and poisoned carcasses.)</li> <li>• No effective antidote – although medication to induce vomiting in dogs is reasonably effective if delivered in a timely fashion. However, dog owners often don't realise the dog has been exposed until symptoms become visible, by then it's too late for effective treatment.</li> <li>• Generates bait shyness if target animal gets sub-lethal dose (more of an issue for ground-based operations</li> <li>• Requires pre-feeding.</li> </ul>



## Attachment B – Key Documents in regards 1080 use in NZ

### Parliamentary Commissioner for the Environment:

<http://www.pce.parliament.nz/publications/all-publications/evaluating-the-use-of-1080-predators-poisons-and-silent-forests>

### Department of Conservation:

[http://www.doc.govt.nz/publications/conservation/threats-and-impacts/animal-pests/the-use-of-1080-for-pest-control/5-outcomes-of-1080-use/5\\_1-outcomes-for-bird-populations/](http://www.doc.govt.nz/publications/conservation/threats-and-impacts/animal-pests/the-use-of-1080-for-pest-control/5-outcomes-of-1080-use/5_1-outcomes-for-bird-populations/)

### Federated Farmers/Forest & Bird:

<http://www.1080facts.co.nz/>

### Environment Protection Agency

<http://www.epa.govt.nz/publications/1080-decision-document-with-amendments.pdf>  
[http://www.epa.govt.nz/Publications/Five\\_year\\_review\\_1080.pdf](http://www.epa.govt.nz/Publications/Five_year_review_1080.pdf)

A study by **Eason et al (2010)** identified few suitable 1080 alternatives and showed that 1080 has many advantages compared with other poisons. Advantages were seen as being very effective, relative humaneness in the target species, little environmental persistence or potential to bioaccumulate and less costly.

The evidence of Dr Penny Fisher (Landcare Research) at the **Waitangi Tribunal Hearing** (the Whanganui Inquiry) 2008:

[http://www.1080facts.co.nz/upload/download\\_files/Waitangi%20hearing%20-%20\(1080%20Brief\).pdf](http://www.1080facts.co.nz/upload/download_files/Waitangi%20hearing%20-%20(1080%20Brief).pdf)

National Pest Control Agencies' *Aerial 1080 Pest Control Industry Guidelines*

[http://www.npca.org.nz/images/stories/NPCA/PDF/b9\\_aerial\\_1080\\_guidelines\\_201104\\_web.pdf](http://www.npca.org.nz/images/stories/NPCA/PDF/b9_aerial_1080_guidelines_201104_web.pdf)

Environmental Risk Management Authority's *Communications Guideline for Aerial 1080 Operations*

<http://www.epa.govt.nz/publications/ERMA-1080-guidelines.pdf>