

## Application for DOC permission to use VTAs: assessment report

Applicant name:	§ 9(2)(a)
Operation name:	Possum, rat and stoat control in the Kepler Peninsula, Fiordland National Park
Approving manager:	Aaron Fleming
Assessor:	§ 9(2)(a), 9(2)(g)(ii)
Date received:	29.05.19
Overview:	<p>It is proposed that the following pesticide uses will be applied:</p> <p>Pesticide Use 1 Sodium fluoroacetate 1.5g/kg RS5 cereal pellet aerial.</p> <p>Pesticide Use 140 Sodium fluoroacetate 1.5g/kg RS5 cereal pellet aerial.</p> <p>Pesticide Use 116 Pindone 0.5g/kg cereal pellet bait stations</p> <p>Permission is sought for toxic application starting on or after 1 July 2019 and ending on or before 30 May 2020.</p> <p>Non-toxic prefeed will be applied no earlier than 20 June 2019.</p>
Applicant type: <i>Delete the incorrect options.</i>	Independent individual or organisation —National performance standards for pest operations docdm-1492976 will apply.

<b>Step 1 Confirm application is complete</b> <i>Are all documents (listed below) provided?</i>	
<p>DOC Application form complete: <i>Are all sections of the DOC Application Form completed to a standard that you can assess them? Where are the information gaps? Is the operational information for treatment blocks clearly separated in each section of the application form where differences exist between them? Does the proposed application meet the grouping standard (see <a href="#">Applying for DOC permission for external agencies</a> or <a href="#">Operational planning for animal pest operations SOP</a> ? Where required, was the AEE section completed?</i></p>	<p><b>Updated information received 11<sup>th</sup> June 2019</b></p> <p><b>Section 1.6</b> Missing information re recreational facilities within &amp; adjacent to treatment area – tracks, huts, shelters, toilets. No list of nearby residential facilities e.g. schools. <b>Satisfactory</b></p> <p><b>Section 1.7</b> Include community conservation projects. Are there any concession holders using the treatment area? <b>Satisfactory</b></p> <p><b>Section 1.8</b></p>

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	<p>When were A24 traps installed at Harts Hill? Satisfactory</p> <p>Section 3.1 &amp; Appendix 3 No comms record provided Received by email 19.06.19 Comms plan DOC-6021220 Comms record (DOC) DOC-6021213 Comms log (EcoFX) DOC-6021217</p> <p>Section 3.2 Applicant noted in email had applied for MOH consent but no copy of application included. Hard copy of application provided, received 17.06.19 Copy of MOH Permissions received 10.07.19</p> <p>Land owned &amp; occupied by Meridian Energy Limited covered by proposed treatment area but no consent from them supplied. Not addressed – on advice from s 9(2)(a), 9(2)(g)(ii) asked s 9(2)(a) over phone to either get written consent from Meridian or move treatment boundary. s 9(2)(a) is going to pull the proposed treatment boundary back to the PCL boundary and exclude Meridian land from this. s 9(2)(a) has provided me with an updated shape file 21.06.19</p>
<p>Are all the proposed pesticide use(s) accepted for use? <i>Check the Status List category and if any compulsory restrictions apply. If any compulsory information needs apply, consider if the operation is designed to provide the required information.</i></p>	<p>Yes</p>
<p>Performance standards sheets <i>Is there a performance standard sheet for each pesticide uses proposed, and trapping if applicable?</i></p>	<p>No Additional performance standard sheet for Pesticide Use #140 for Pestex bait added on advice from s 9(2)(a), 9(2)(g) 10.07.19</p>
<p>DOC permission map(s) (image file or files) <i>Does the map or maps meet the minimum standards (as stated in Appendix 2 of the <a href="#">DOC Application Form</a>), including showing proposed warning sign locations and normal points of entry where warning signs must be A3?</i></p>	<p>Supplied as an image file with applicant's original email.</p> <p>PCL only denoted on some maps (Overview, Map 3 and Map 6).</p> <p>No warning sign for loading site.</p> <p>Warning signs: None shown at Cosy Nook landing, Dock bay landing &amp; picnic site and Shallow Bay Hut. s 9(2)(a)</p>

	<p>No differentiation between A4 and A3 signs.</p> <p>Control gate access point warning sign in wrong place.</p> <p>Meridian Energy Ltd. land at The Outlet not shown.</p> <p>Map 6 too busy for clarity of sign &amp; exclusion locations etc.</p> <p>No map showing warning signs placed at Lake Manapouri access points.</p> <p>A0 physical map received 16.06.19, sign issues corrected.</p>
<p>DOC Pesticide Summary shapefiles (independent groups or individuals only)</p> <p><i>Are the control methods clearly assigned to each treatment block? Do operational boundaries and warning sign locations match the DOC permission map(s)?</i></p>	<p>Boundaries match.</p> <p>Warning signs do not match – may be obscured on map due to inappropriate scale/choice of icon</p> <p>Satisfactory. Forwarded to DOC programme lead.</p>
<p>Consultation record including conditions of landowner consents</p> <p><i>Was level of consultation adequate? All required owner/occupier consents obtained? Are conditions of consent evident in their application?</i></p>	<p>Not provided</p> <p>19.06.19 Received comms record (DOC) DOC-6021213 and comms log (EcoFX) DOC-6021217, includes details of consultation undertaken. Satisfactory with all parties. Also comms plan DOC-6021220</p> <p>21.06.19 Permission for use of <span style="background-color: black; color: white;">s 6(d), 9(2)(g)(ii)</span> for loading site provided.</p>
<p>Public health permission/ proof of application</p> <p><i>Proof of application for public health permission is adequate to process the application, as long as the public health permission and associated application form is sighted prior to approval.</i></p>	<p>Neither included</p> <p>Hard copy of application received 17.06.19, will forward permission when is received.</p> <p>Permission sighted 10.07.19</p>
<p>Other (specify, e.g. RMA consent )</p>	<p>NA</p>
<p>Your confirmation email and subsequent correspondence</p> <p><i>Include dates and nature of requests for further information.</i></p>	<p><a href="#">DOC-5962770</a> Sent 06.06.19</p> <p>21.06 phone to talk about issue with Meridian land in treatment area – <span style="background-color: black; color: white;">s 9(2)(a)</span> decided to removed</p>

	rather than pursue consent. Emailed amended shapefiles. Emailed <sup>s 9(2)</sup> <sup>s 6(d), 9(2)(g)(ii)</sup> e. permission letter for using <sup>s 9(2)</sup> he sent through as email.
<b>Step 2 Capture treatment blocks in the Pesticide Application</b>	
Your publication of the proposed operation on the DOC Pesticide Summary (independent groups or individuals only) <i>Include date and note any issues.</i>	NA
<b>Step 3 Evaluate control method</b> <i>Is the proposed method suited to the pest problem, treatment area and consultation outcomes?</i>	
Your assessment of the control method <i>Include relevant points from the 'Choose your control method' part of Current Agreed Best Practice, where available.</i>	<p>The proposed methods are acceptable for the pest problem and treatment area. Aerial 0.15% 1080 cereal pellet have been previously used effectively in this area.</p> <p>The Pesticide Use sheet for Pesticide Use 1 (0.15% 1080 cereal pellet aerial) states "For operations targeting possums, do not repeat aerial operations within 4 years using the same bait."</p> <p>This operation targets possums and is using the same bait as a previous operation the same area 3 years previously. However as possums are not the main target of this operation, this risk is deemed acceptable.</p>
Label directions <i>Check the product label to ensure that the proposed method detail complies with the label content.</i>	Fine
Summary of any technical advice received on the proposed control methods.	<p>Asked <sup>s 9(2)(a), 9(2)(g)(ii)</sup> for advice re Meridian land at control gates: Can't have as exclusion – either move treatment boundary or get written consent from Meridian.</p> <p>Asked Te Anau team with <sup>s 9(2)(a), 9(2)(g)(ii)</sup> for any hazards etc. to be aware of and to include in permission letter. At the moment just avalanche risk, will change depending on timing of operations.</p>
Summary of any Community relations and Pou Tairangahau advice received.	NA

<sup>s 9(2)(a)</sup>

**Step 4 Identify and assess risks and adverse effects** *Are you satisfied that all risks and adverse effects have been identified?*

Are there any gaps in the applicant's assessment of these (where the AEE section was supplied)?

No

Relevant points from the DOC Pesticide Information Reviews

**Sodium Fluroactate**

All the registered target species have relatively high susceptibility to 1080.

The percentage kills (for possums) obtained during aerial operations using 0.15% 1080 cereal pellets between 2010 and 2017 are presented in Table 36. The mean percentage kill was 89.1% ( $\pm 2.0\%$  s.e., n=37). The results for earlier operations are in Appendix 1.

The percentage rat kills obtained during aerial operations using 0.15% 1080 cereal pellets between 2010 and 2015 are presented in Table 45. Based on this data, the mean kill for prefed operations is 93.0% (n=87).

1080 in baits may be defluorinated in 1–2 weeks under favourable conditions. However, under less favourable conditions breakdown may take several weeks and, in extreme cold and drought, 1080 residues could persist in baits for several months.

There have been numerous studies examining the effects of aerial poisoning on native non-target populations over the last 20 years. 24 species of native birds, particularly threatened species, have been monitored. None of the studies have identified population level mortality which threatened the viability of the species, although the only reliably calculated mortality rates are for kokako, kiwi, kaka, whio and fernbirds. The upper 95% mortality rates for kokako, kiwi, kaka, whio are all less than 3.5%. The mean mortality rate for fernbirds is 9.4%.

44 radio-tagged great spotted kiwi have been monitored through four 0.15% 1080 Pellet aerial operations and none died from 1080 poisoning (**Error! Reference source not found.**).

A total of 131 NI brown kiwi have been monitored during aerial and handlaid 1080 pellet operations during 5 operations and none have died from poisoning (**Error! Reference source not found.**). Kiwi call count monitoring during the Waipoua operation did not indicate significant 1080 related mortality (Pierce & Montgomery 1992).



46 Rowi were monitored during an aerial 0.15% 1080 Wanganui #7 pellet operation at Okarito in November 1998 with no deaths being reported (Veltman & Westbrooke 2011). 19 Haast tokoeka were monitored during an aerial 0.15% 1080 Wanganui #7 pellet operation (2 kg ha<sup>-1</sup> prefeed, 3 kg ha<sup>-1</sup> toxic) in the Haast Kiwi Sanctuary in May 2001, with no deaths being recorded (H Robertson pers. comm.).

Limited monitoring of short tailed bats and native frogs has not indicated detectable mortality due to aerial 1080 poisoning.

Edmonds et al. (2017) monitored individually marked **Short-tailed bats** before, during and after an aerial 1080 operation in the Eglinton Valley in December 2014. In this 10 939 ha operation, RS5 pellets were prefed at a 1 kg/ha followed by 1 kg/ha 0.15% 1080 RS5 pellets approximately 6 weeks later. 764 out of 771 marked bats (99.1%) were alive one week after the operation. One bat pup found dead under a roost tree tested positive for 1080 residues. However, any immediate impact of 1080 was assessed as minimal because the calculated annual survival rates of female bats was high (91.5%).

Lloyd (1994) offered non-toxic cereal pellets to captive **Short-tailed bats** and hand broadcast baits containing a fluorescent marker throughout an area known to be inhabited by bats and concluded "...short-tailed bats are unlikely to eat carrot or grain-based baits...". However short-tailed bats are possibly vulnerable to secondary poisoning because they are known to feed on arthropods that have been recorded feeding on 1080 baits and residues in these prey can in theory be enough to kill a bat (Lloyd & McQueen 2000).

In a study in Rangataua forest where 0.15% 1080 Pellets were aerially broadcast (3 – 5 kg ha<sup>-1</sup>) over "...almost the entire winter range..." of the study animals, a total of 269 short-tailed bats were caught at their roost following poisoning and held for 48 hours to determine mortality or signs of poisoning. All animals survived and showed no signs of 1080 poisoning (Lloyd & McQueen 2000).

Feral deer population mortality from aerial poisoning operations targeting possums is highly variable and does not appear to be consistently influenced by toxic loading, sowing rate, prefeeding or bait type. Most estimates of deer kill fall between 30 and 60%. Nugent

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et al. (2001) quote productivity figures for red deer populations of around 30% so low to moderate by-kill of deer populations is probably negated within a couple of years.

### **Pindone**

Under favourable conditions baits containing pindone can remain toxic for months. If pindone in its acid form enters the soil, its half-life is likely to be in the order of a month and any residues could be expected to be well retained and degrade at a moderate rate.

The acid form of pindone has a very low solubility in water. Leaching from soil into water is therefore unlikely to occur.

The toxicity of pindone to native New Zealand species has not been widely studied. A wide range of native bird species have been found dead following pindone operations to control rabbits, however it is unknown if this has an impact at a population level.

The toxicity of pindone to different species is highly variable and animals are generally far more susceptible to repeat doses of pindone than single doses.

There has been limited residue testing of native species found after pest control operations using pindone.

**A NI brown kiwi** found dead on a road in Maungataniwha Forest, in Northern Hawkes Bay, in 2015 had pindone residues of  $0.14 \mu\text{g g}^{-1}$  in its muscle tissue (VPRD: 19940). At the time pindone pellets (0.5 g/kg pindone) were being used in bait stations in the forest. The pathology report could not determine whether the kiwi died as a result of being hit by a car or from pindone poisoning, although pindone poisoning was suspected.

Two short-tailed bats that were found dead at roost sites in Pureora Forest in 2015 following the use of Pindone Possum and Rat Pellets in bait stations both tested positive for pindone ( $0.31 - 4.1 \mu\text{g g}^{-1}$  VPRD: 19186, 19214).

The survivorship of PIT-tagged **lesser short-tailed bats** during a pindone bait station (Pindone Pellets, 0.50 g/kg pindone, in a 100 x 100 m bait station grid) operation in the Elginton Valley, Fiordland, during the late winter and summer of 2009-2010 was at least 97%. This

	<p>compared favourably to the 76% annual survival rate recorded in 2008 which was a non-predator year when pest control was not carried out (O'Donnell et al. 2011). The authors concluded that the use of pindone had little or no impact on the survivorship of the bats.</p> <p>While there is no LD50 data for insects, pindone has significant insecticidal properties and is likely to be toxic to bees.</p>
Summary of any technical or community relations advice received	NA
Other resources consulted ( <i>specify</i> )	NA
Your assessment of technical risks and adverse effects ( <i>e.g. the pesticide use, use pattern, site factors</i> )	The pesticide use is suitable for the target outcome, and follows best practices to minimise risks of failure or endangering native wildlife.
Your assessment of non-technical risks ( <i>e.g. high public use, consultation outcomes</i> )	<p>The area is of high public use and is highly visible.</p> <p>There is a risk of the operation being delayed into the Great Walk season which will require extra consideration of public safety &amp; operational security. The MOH permission states cannot sow onto track during the Great Walk period.</p> <p>There is also an active anti-1080 group in the area that the applicant is aware of.</p>
<p><b>Step 5 Calculate estimated caution period and evaluate if risks and adverse effects are at an acceptable level</b> <i>Will risks be managed adequately with the performance standards proposed for this operation? Include dates and outcomes of any discussion with the applicant.</i></p>	
Estimated caution period for all the pesticide use(s) <i>Does this differ from the recommended caution period in the Caution period calculator?</i>	<p>Pesticide Use # 1 and #140 Aerial 0.15% 1080 Pellets – 8 months after date of last bait application.</p> <p>Pesticide Use #116 Pindone Pellets in bait stations – 5 months after bait removal.</p>
How well does the proposed operation manage potential risks to native fauna? <i>(i.e. as proposed in the Application form or performance standards)</i>	<p>Follows Code of Practice for Aerial 1080 in kea habitat.</p> <p>Whilst there are kea and kaka in the wider treatment area, they are not found in the area targeted with bait stations, so standard bait stations should be sufficient.</p> <p>There is limited risk to other fauna in the area.</p>
How well are other potential risks managed? <i>(i.e. as proposed in the Application form or performance standards)</i>	All user groups of this area have been communicated with well in advance to reduce risk to the public, and warning signs are being placed at all likely entry points to the treatment area.

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	Use of ground control along the Waiau river and Lake Te Anau stretches of the Kepler Track reduces likelihood of track users coming across aerial baits.
Are you satisfied with the proposed warning sign locations and normal points of entry?	No – Warning signs also required at: <ol style="list-style-type: none"> <li>1) Cosy Nook landing</li> <li>2) Dock Bay landing</li> <li>3) Dock Bay picnic site</li> <li>4) Shallow Bay hut</li> </ol> The warning sign at the control gates point of entry is not in the correct place.  Amended, satisfied.
Summary of any technical or community relations advice received	NA
Public health permission, including application form sighted (if not provided at time of application) <i>Consider if public health permission has any impact on DOC permission conditions.</i>	Application sighted 16.06.19 Permission sighted 10.07.19
Other resources consulted ( <i>specify</i> )	NA
Which additional performance standards should be applied and why? <i>Consider impacts of conditions from other consents. Consider if the additional performance standards specific and auditable, and can be justified.</i>	NA
<b>Step 6 Make a recommendation Should the application be approved or declined?</b>	
What key points should the approving manager have drawn to their attention?	<ul style="list-style-type: none"> <li>• That there is a risk that operations could be delayed into the great walk season.</li> <li>• That there are kea and kaka present in the operational area.</li> <li>• That the operation is following the Code of Practice for Aerial 1080 in kea habitat.</li> </ul>
Is approval or decline recommended? <i>If declined, summarise reasons. If approved, is a readiness check recommended (DOC operations only – see Pre-Operational Step 7 of the <a href="#">Operational planning for animal pest operations SOP</a>)?</i>	Approval is recommended.
<b>Step 7 Prepare documents and advise manager</b>	

<p><b>For recommended approval:</b> Attached correct draft letter of permission, DOC Performance Standards sheet(s) and map(s) of operational boundaries.</p>	<p>Performance Standard Sheet Use # 1 <a href="#">DOC-6012513</a> Performance Standard Sheet Use # 140 <a href="#">DOC-6012528</a> Performance Standard Sheet Use # 116 <a href="#">DOC-6012554</a></p>
<p><b>For recommended decline:</b> Attach draft letter of decline including a summary of reasons.</p>	

<p><b>Record of permission decisions that differ from the assessor recommendation</b></p>	
<p><b>Record of permission decision</b> <i>Only complete this section where the manager has made a decision that differs from the assessor's recommendation. For example, where the manager decides on different operational timing or warning sign locations or rejects a recommendation to approve or decline the application.</i> <i>Where required, complete this in Section 7 (Approving or declining DOC permissions), Step 2. Record the difference between the decision and recommendation and summarise the reason(s) for the decision.</i></p>	

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