

**Application Form for possum and
rat control in the Kotarenu and
Mangapiko Scenic Reserves**

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1. Introduction

1.1 Overview	<p>It is proposed that the following pesticide uses will be applied:</p> <ul style="list-style-type: none">• Pesticide Use 3 Sodium fluoroacetate, 1.5g/kg, Cereal pellet, Bait stations (0.15% 1080 pellet)• Pesticide Use 19 Cyanide, 475g/kg, Encapsulated pellet with pre-feed paste, Feratox Biobag/Strikers (Bait bags) <p>Permission is sought for toxic application starting on 1 August 2014 and ending on or before 30 September 2014. Non-toxic prefeed will be applied no earlier than 16 July 2014.</p>
1.2 Treatment area	<p>Kotarenu Scenic Reserve and Mangapiko Scenic Reserve (See appendix 1 for detailed maps of the treatment area)</p>
1.3 Treatment block(s)	<p>Kotarenu Scenic Reserve – 1134 ha (888 hectares KSR + Mangapiko Scenic Reserve a. – 256 hectares)</p> <p>Mangapiko Scenic Reserve b – 75 hectares</p>
1.4 Geographical location	<p>The Kotarenu Scenic Reserve and Mangapiko Scenic Reserve are situated 15km southeast of Eastwick.</p>
1.5 Adjacent land tenure and uses	<p>Adjoining land is mainly privately owned. There is a small reserve adjoining the northern boundary of Kotarenu SR which is administered by the Department of Conservation. The adjoining land use is predominantly farming with some remnant forest in the gullies.</p>
1.6 Nearby residential areas or facilities	<p>The nearest residence is approximately 1km from the western boundary. The nearest small residential area is Moa Flat which is 2km's south of the treatment area. There are no schools or Marae situated within 10km.</p>
1.7 Community interests	<p>Recreational hunting of pigs and goats has historically been the main public use for the area. In recent times a network of public walking tracks has been developed and it is an increasingly popular day visitor destination. The north east edge of the Mangapiko Scenic Reserve has a fenced 75 hectare current grazing lease.</p>

1.8 Management history

An aerial 1080 operation was carried out in this area in 2003. Possums were reduced from a pre-operation trap catch (TC) of 19.4% ($\pm 2.5\%$) to a post-operation residual trap catch (RTC) of 2.4% ($\pm 0.63\%$). Visual checks for dead non-target animals were made after the operation, none were found.

Results of monitoring undertaken in February 2014 were a RTC of 15.2% ($\pm 3.9\%$) average over both of the reserves. Rat indices were also taken using the standard DOC protocol (docdm-1199768) which indicated an average tracking rate of 88%.

Intensive goat control was undertaken up until 2003. Goat numbers have increased since then with a reduction in understorey condition noted in 2010.

Snail monitoring plots were established in 2003 (4x100m² plots) and 2008 (4x100m² plots) to monitor the population density of the large land snail *Powelliphanta* "Kotarenu". Average snail density initially increased from 1.4 snails/100m² in 2003 to 2.7 snails/100m² in 2005, but then declined to 1.7 snails/100 m² in 2013. Monitoring techniques follow those outlined in Walker 1993.

Canopy condition of Tree Fuchsia (*Fuchsia excorticata*), Hall's totara (*Podocarpus hallii*) and Southern rata (*Metrosideros umbellata*) has been monitored since 2003 using foliar browse index (Payton et al 1998). Between 2004 and 2006 canopy condition improved for both Tree fuchsia (47% to 55% foliage cover) and Southern rata (50% to 57% foliage cover). Monitoring in 2009 and 2012 indicated a continued decline in canopy condition and increased in the amount of browse observed.

2. Outcomes and targets

2.1 Conservation outcome(s)

In order to protect the health and integrity of the forest communities within the Kotarenu and Mangapiko Scenic Reserves, the specific outcome targets are:

Forest canopy condition will be assessed using possum susceptible species as indicators, specifically: (i) To reduce foliar browse scores to less than 0.5 and (ii) improve foliage cover to $\geq 65\%$ for Southern rata, tree fuchsia and Hall's totara by November 2016 (and maintain the above condition indicators indefinitely).

Increase snail density (Powelliphanta “Kotarenuī”) to >8 per 100m² by 2016.

**2.2
Target(s)**

Result Target

- To reduce possum indices to less than 3% RTC over both treatment blocks by 31st October 2014.
 - To reduce rat indices to less than 5% tracking over the treatment block 1 by 31st October 2014.
-

3. Consultation and consents

**3.1
Consultation**

Consultation on control methods: Consultation on control methods was limited to the farmer that grazes in the Mangapiko Scenic Reserve. This is the first time this lease has been included in the treatment area We agreed to use Feratox strikers over the 75 hectares of the grazing lease.

Consultation on effects: We consulted with 24 groups or individuals. This included one meeting with the Eastwick hunting club, one public meeting in the Moa Flat community hall, and phone calls or visits to all neighbouring landowners. The Eastwick hunting club were initially concerned over potential effects on goats and pigs. They were satisfied with the the proposed use of Strikers and bait stations. They were pleased with the proposal to monitor disturbance to the Bio bag/Strikers given the Pesticide Advisory Groups questions around the potential for pigs or goats to access them.

Some members of the Moa Flat community had concerns over public safety particularly as public use of the area has increased over the last few years. They agree that with the proposed signage and public notification, bait bags, bait stations and trapping are acceptable methods for possum control in this area. The group was shown samples of the Feratox strikers and the warning information on them was pointed out. Through consultation it was decided to place simplified warning signs on the 1080 bait stations to provide the same level of information for people encountering them.

Although there are no known cultural or spiritual values within the Reserve, the Raukawa iwi were sent a letter outlining the proposal. A letter of support was received on 15.05.14.

As part of the consultation for this reserve the subject of future goat control was broached with all interested parties. Support for this project is growing and next financial year will see the goat control programme re-commence.

There are no issues outstanding.

A record of consultation is attached as Appendix 3.

3.2 Consents and notification

The following documents are attached as Appendix 4:

- Proof of public health application ¹
- Copies of Landowner/Occupier Consent (if obtained in writing)
- Other (specify): Raukawa iwi letter of support

4. Methods

4.1 Treatment Block 1 (Kotarenui SR and Mangapiko SR a)

Pesticides - Bait Station

Pesticide Use #3
Sodium fluoroacetate, 1.5 g/kg, pellets, bait stations

Target Pest
Possums and rats

Brand Name of pesticide	0.15% 1080 pellet
Lure/mask (& %)	Cinnamon (0.3%)
Type of pre-feed (lure/dye)	Pellet (cinnamon/green)
Number of pre-feeds (if any)	3
Pre-feed quantity when filled	1.5 kg
Toxic bait-number fills	1
Toxic bait quantity when filled	1 kg
Describe pattern of bait stations (e.g. grid/contour/ spur-ridge)	Grid/spur-ridge and contours
Bait station spacing	100m along lines 150m apart
Bait station type	Philproof feeders

¹ The complete public health permission (including application form) must be sighted before DOC permission will be granted.

Other details about this method

Pre-feed will be out for 14 nights.
RS5 baits (6g) will be used. The quantity of bait per bait station will be 1kg. Current Agreed practice to be followed.

**4.2
Justification
for proposed
method**
(Kotarenu SR
and Mangapiko
SR a)

1080 pellets in bait stations were chosen over other baits for this block because they can be used to target both rats and possums simultaneously. 1080 is readily biodegradable and is proven effective against possums and rats, the non-target risks of 1080 are well researched. By using bait stations non-target impacts for many species can be reduced and waterways can easily be avoided. Poisoning is efficient/cost effective at high possum densities and 1080 toxic bait is generally less expensive than alternative poisons.

(Information for this section was taken from Current Agreed Best Practice on the intranet).

**4.3
Treatment
Block 2**
(Mangapiko
Scenic Reserve b)

Pesticide Use 19

Cyanide, 475g/kg
Encapsulated pellet with
prefeed paste, bait bags

Target Pest

Possum

Brand Name of pesticide	Feratox (Bio bag/Strikers)
Lure/mask (& %)	Cinnamon (0.15%)
Type of pre-feed (lure/dye)	Ferafeed
Number of pre-feeds (if any)	1
Pre-feed quantity when filled	18g
Toxic bait-number fills	2
Toxic bait quantity when filled	18g
Describe pattern of bait stations (e.g. grid/contour /spur-ridge)	grid
Bait bag spacing	Every 20m along grid lines 80m apart
Bait bag type	Biobag/Strikers (Connovation)
Other details about this method	
Strikers will be removed and buried at the end of the op.	

**4.4
Justification
for proposed
method
(Mangapiko
Scenic Reserve b)**

As part of consultation with the farmer that grazes in the Mangapiko Scenic Reserve, it was agreed to use Feratox Strikers (cyanide) over the 75 hectares of the grazing lease. This is the first time this lease has been included in the treatment area. This block is being controlled as a likely reinvasion source for possums.

Feratox (Cyanide) has been chosen to provide a rapid and effective knockdown of possums. Cyanide is considered a fast acting humane toxin for possums. It rapidly degrades in the environment and has a low risk of secondary poisoning or bioaccumulation.

For cyanide dogs are less at risk from scavenging possum carcasses than with 1080. Poisoning is efficient/cost effective at high possum densities and by using bait bags there is no cost in bait stations, and minimal track cutting is required. Operators can cover areas at a pace comparable to handlaying if the terrain allows.

(Information for this section was taken from Current Agreed Best Practice).

5. Further information

**Details of
contractor or
principle**

If the operation will be contracted to another company, or if this application is being made on behalf of a principle organisation please provide the following details:

Company/organisation:	Feral Killers Ltd
Contact person:	Mark Sutton
Contact details:	P O Box 1239 Eastwick (06) 303 3006

**Further
information**

No further information is supplied. Contact the author with any queries.

Appendix 1: DOC Performance Standards

The Department of Conservation (DOC) Performance Standards have not been included in this example.

Fictitious example

Appendix 2: Maps

Both of the following must be supplied:

1. DOC permission map(s) as one or more image files (.JPG format preferred)
2. DOC Pesticide Summary shapefiles (**not required for DOC pest operations**)

Your DOC permission map(s) must show the following as a minimum:

- The external boundary of the treatment area or those treatment blocks included in this operation
- Legal boundaries of land managed by DOC
- Name of treatment area
- Land tenure and adjacent owners, including leased land
- Any areas excluded from the treatment area (such as around public water supplies, pā sites)
- Location of any warning signs and public information signs
- Location of normal points of entry where warning signs must be a minimum size of A3
- Bodies of water (include rivers, streams, lakes, reservoirs, wetlands, coastal marine areas)
- Recreational facilities (tracks, huts, road ends, roads, picnic sites)
- Date map prepared

NOTE: 1:50,000 is the preferred scale. Use more than one map if the amount of detail becomes to visually cluttered to be clearly understood.

The DOC Pesticide Summary shapefile(s) will be published on the DOC Pesticide Summary website, initially as a proposed operation. It must be obvious which control methods are proposed for each treatment block. The shape files must also show all boundaries relating to the operation (treatment area/block, exclusion zones, no fly zone etc.) and warning sign locations. DOC pest operations are already captured in the Pesticide application so do not need to supply shapefiles with the application for DOC permission.

Appendix 3: Communication Record

This records every individual or group who has been consulted about the proposed operation. If using the DOC Communication Plan/Record template, insert the Communication Record you created. The required contents are the following pages:

- Introduction
- Consultation on options (if applicable)
- Consultation on effects (if applicable)
- Toolbox

See docdm-22871 for an example (note that this example also includes the notification record which is not required at this stage).

If using another format, information must include:

- The decision on consultation
- Who was consulted
- Actual dates when consultation was undertaken
- Outcomes of consultation, including any complaints and how they were addressed
- Any landowner/occupier consent conditions
- References to which resources were used for each target audience

Appendix 4: Consents

Copies of consents have not been included in this example.
Landowner/occupier consents are recorded in the Consultation record whether or not written consent is obtained.

Fictitious example

Appendix 5: Assessment of environmental effects

Complete this section if an Assessment of Environmental Effects (AEE) is required by the DOC manager approving the permission. An AEE that has been prepared on the DOC RMA AEE template docdm-96227 for a resource consent application can be attached instead if it covers all the pesticides uses in this application.

Effects on non-target native species

Target benefit species

Notable flora and fauna are described below (and also see non-target benefit species 5.2). The rankings given describe the threat classification (Hitchmough 2002)

Invertebrates:

Large land snail *Powelliphanta "Kotarenu"* (Data deficient)

Vascular plants:

Hall's totara *Podocarpus hallii* (Not threatened)

Fuchsia *Fuchsia excorticata* (Not threatened)

Southern Rata *Metrosideros umbellata* (Not threatened)

Kamaha *Weinmannia racemosa* (Not threatened)

Haumakaroa *Raukaua simplex* (Not threatened)

Lancewood *Pseudopanax crassifolius* (Not threatened)

Wineberry *Aristotelia serrata* (Not threatened)

Mistletoe *Tupeia antarctica* (Gradual decline) – Historical record

Non-target species

Birds:

Kereru *Hemiphaga novaeseelandiae* (Gradual decline)

Kaka *Nestor meridionalis* (Nationally endangered)

NZ Falcon *Falco novaeseelandiae* (Nationally vulnerable)

Great spotted kiwi *Apteryx haastii* (Gradual decline)

Effect of operation on native species

In general kiwi, kereru, kaka and other native species are expected to benefit from a reduction in possum and rat numbers.

1080:

There is only one record of a non-target death in field operation where 1080 cereal pellets were used in bait stations. This was a dead kea found in 1997, and residue analysis confirmed 1080 presence in the carcass (Broome et al. 2004). Individual animals have been found dead after a number of aerial and handlaying operations using 1080 carrot and cereal pellet baits. Most of the risks identified in other studies are mitigated by containing baits in the bait stations which:

- Limit access by non-targets
- Protect bait from the elements
- Limit bait spillage
- Are durable and designed for easy attachment

Impacts on invertebrates are of interest to this site given the objective of protecting native land snails. Invertebrates populations have been monitored in nine aerial poisoning operations and none have shown significant population effects on any species studied, nor is there evidence to suggest poisoned invertebrates are a significant factor in secondary poisoning of other animals. Long term monitoring of native land snails indicates substantial benefits to threatened populations in sites treated with aerial poisoning. Four Kauri snails were sampled during an aerial 1080 operation in 1990 at Waipoua forest with no residues detected (Broome et al 2004).

Cyanide:

Most records of non-target deaths (including residues) for Feratox (encapsulated cyanide) in combination with bait bags involve weka with only one other record involving a kea. Neither of these species is present in this treatment block.

There is however moderate numbers of kaka in the treatment block. As they are regarded as an 'inquisitive' bird they could potentially could get access to the pellets and break them open.

Performance standards and information needs

Further Performance Standards for 1080:

- Bait stations must be placed 25-30 cm above the ground
- Bait will be removed after 5 days

Further Information Needs for Cyanide:

A Further Information Need from DOC performance standard sheet is appropriate:

- Monitoring – Search for dead native non-target animals (especially kaka) in treatment area, send samples for residue testing (VPRD) and report search effort and results in operational report.
-

Effects on non-target domestic and feral animals

Non-target species

Mustelids, cats, pigs, dogs, cattle, goats

Effects of operation on domestic and feral animals

Any incidental reduction in mustelid and feral cat numbers from secondary poisoning is likely to provide short term benefits to native bird species.

1080:

Only one incident of domestic and feral non-target deaths have been reported after the use of 1080 cereal pellets in bait stations (Broome et al 2004). In this case cattle were being fed cereal pellets prior to bait stations being put out.

The risk of secondary poisoning especially dogs is high as 1080 can persist in carcasses for months. The rate of degradation of 1080 in carcasses will depend on moisture, temperature and the presence of micro-organisms (Broome et al 2004).

Cyanide:

Several reported (and confirmed) cases of non-target feral and domestic deaths are documented. A dog was reported to have died after eating Feratox in a bait bag, and a single piglet and cattle beast following Feratox in bait station operations (Fisher & Fairweather 2004).

Performance standards and information needs

1080:

The performance standards in section 5.4 are also effective for non-target domestic and feral animals. Secondary poisoning will be addressed through the consultation and notification processes and standards in the Operational Planning for Animal Pest Operations SOP (e.g. by having warning signs in place for dog owners and by informing all adjoining landowners just prior to the operation taking place).

Cyanide:

An Additional Information Need from DOC performance standard sheet has been selected:

- Pay special attention to sign and observations of feral and domestic animals feeding/accessing bait bags (difficult to establish through residue testing. Document results in operational report.

Caution Period Monitoring (Both pesticides):

Monitoring physical breakdown of baits and carcasses (for 1080) and baits (for cyanide) as per the Operational Planning for Animal Pest Operations SOP.

Warning signs and the Pesticide Summary:

Signs will not be removed and operations will not be taken off the Pesticides Summary until these results indicate that the risks have passed.

Further information

Further information

No further information is supplied. Contact the author with any queries.

References

The following published references were used in developing this AEE:

- Fairweather, A.A.C.; Broome, K.G.; Fisher, P. 2013: Sodium Fluoroacetate Pesticide Information Review. Version 2013/1. Unpublished report docdm-25427, Department of Conservation, Hamilton, NZ. 110p.
- Fairweather, A.A.C. 2013: Cyanide Pesticide Information Review. Version 2013/1. Unpublished report docdm-25420, Department of Conservation, Hamilton, NZ. 41p.
- Gillies, C. and Williams, D. 2004: Using tracking tunnels to monitor rodents and mustelids v 2.5.2. DOCDM-1199768: Department of Conservation, Hamilton N.Z. (Unpublished).
- Hitchmough, R. (comp.) 2002: New Zealand Threat Classification System lists – 2002. Threatened Species Occasional Publication 23, 210p. Department of Conservation, Wellington, N.Z.
- Payton, I.J.; Pekelharing, C.J.; Frampton, C.M. 1998: Foliar Browse Index: A Method for Monitoring Possum (*Trichosurus vulpecula*) Damage To Plant Species And Forest Communities. 62p. Manaaki Whenua Landcare Research NZ Ltd, Christchurch, New Zealand
- Walker, K.J. (1993): Techniques of monitoring populations of *Powelliphanta* land snails. Department of Conservation, Internal Report. 11 pp.