Application Form for Rat control in Te Maruia

August 2019

Name of applicant:	s 9(2)(a), 9(2)(g)(ii)
Company/organisation:	Department of Conservation
Postal address:	PO Box 370 Greymouth
Phone number:	s 9(2)(a), 9(2)(g)(ii)
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s 9(2)(a), 9(2)(g)(ii)

CONTENTS

1. Introduction

1.1 Overview

To control rats, with a by-kill of stoats in Te Maruia following a rat irruption triggered by a beech mast event, it is proposed that the following pesticide uses will be applied:

- Pesticide Use #1: 1.5g/kg cereal pellet (0.15% 1080 pellet) aerial **and/or** Pesticide Use #140 Sodium fluoroacetate 1.5g/kg Cereal pellet aerial (Pestex) 6gm bait aerial application over 69,910ha
- Pesticide Use #2 Sodium fluoroacetate 1.5g/kg Cereal pellet Handlaying (0.15% 1080 pellet) 6gm **and/or** Pesticide use #141 Sodium fluoroacetate 1.5g/kg Cereal pellet Hand laying (Pestex) hand laid over 420ha

Permission is sought for toxic application starting on or after 1 September 2019 and ending on or before 13 December 2019.

Prefeed will be applied no earlier than 1 September 2019.

1.2 Treatment area

The treatment area forms part of the Department of Conservation beech mast response under the Tiakina Nga Manu banner and is named Te Maruia. The operation size is 70,330 ha

1.3 Treatment block(s)

The treatment area applied for in this application covers:

- Aerial component 69,910 ha
- Ground component 420 ha

Block: Te Maruia 70,330 hectares.

1.4 Geographical location

The locality of the treatment block spans the upper reaches of the Grey, Maruia and Rappahannock Valleys lying to the west of Lewis Pass. It includes the Upper Grey River catchment upstream of the Robinson River confluence, including the catchments of the Blue Grey and Brown Grey Rivers. The block bounds the main valley from Springs Junction to Maruia on both sides, which includes the Westbank 1.1 EMU as far north as Manuka Creek.

The township of Springs Junction lies near the centre of the proposed treatment blocks.

The ground control component will be carried out by contractors on the State Highway between Lewis Pass and Marble Hill, Palmers Road and along the State Highway between Springs Junction and Reefton. The ground control will also include the

aerial exclusion areas from Lake Daniell south to the Sluice Box bridge.

1.5 Adjacent land tenure and uses

The majority of the Te Maruia treatment area is directly bounded by land owned by the Crown and managed by the Department of Conservation. Adjacent areas include land within Nelson Lakes National Park, Lewis Pass Scenic Reserve and the Victoria Conservation Park.

Two other statutory land administrators have parts of their administration area covered by this application; Buller District Council and Land Information NZ.

Approval for these areas has been obtained, as discussed in Appendix 4.

s 6(d) [redacted]

This area does not have high public use but is seasonally grazed by cattle and as treatment is prescribed to the boundary approval to treat private land here was obtained to incorporate land right to the bush edge to minimise potential treatment gaps.

The primary land use in the area is dairy and dairy support farming, with 35 landowners identified in the Communications Plan as being adjacent to the operation area. Two dairy landowners are including part(s) of their properties in the operational area; s 6(d), 9(2)(g)(ii) [redacted]

Other agricultural interests in the area include cattle and sheep grazing and deer farming, with many lifestyle block holders taking part in some form of limited stocking.

State Highway 7 passes through the proposed treatment area between Springs Junction and Lewis Pass. There are several accommodation facilities along the highway and adjacent to the proposed treatment area. Each of these will receive fact packs for each rented room to provide guests with information should they choose to visit tracks within the treated area where there is public access.

1.6 Nearby residential areas or facilities

Springs Junction is situated near the centre of the proposed treatment areas and at its closest point is about 500m from the operation area.

Maruia School and township is situated 2.1 km away from the operation area but is within 900 m of the closest loading site.

State Highway 7 runs from Springs Junction and on to Lewis Pass, directly through the area. There are several accommodation facilities and private dwellings along the highway and adjacent to the proposed treatment area.

There is a DOC camping area adjacent to the proposed treatment area at Marble Hill

1.7 Community interests

The proposed Te Maruia treatment area is a mix of locally high use public facilities, low and moderate use areas mainly accessed by walking tracks and routes into the area and large areas of un-tracked and remote areas.

The entire area is used by hunters, both recreational and commercial, the rivers and lakes by anglers and walking tracks and huts by a wide range of recreationalists. There are a small number of highly valued recreational facilities mainly centred around the Marble Hill camping area and the Lake Daniell track. The Manson Nicholl Memorial Hut has now been removed to make way for a new hut which is phased for completion in February 2020. In the interim there are no facilities for overnight stays at the site other than camping. There are quarters for DOC construction staff only on site and a 50m buffer from the construction site has been requested by the construction team. Other more remote parts of the area receive less public use.

1.8 Management history

The area has been under sustained management for many years with the first aerial operation occurring 2002, this site had benefitted from regular AHB and DOC control from that point up until 2014 when TbFree operations ceased in the valley. Ground control under the Te Maruia Waka Huia programme has a network of DOC200 in a landscape design and 360 ha on Marble Hill with A24 Goodnature traps for rodent control. A further 140 ha is planned for completion by December 2019.

Year	Operation Name	Control Method	Pestlink Ref
2002-3	Station Creek Lewis Pass	1080 / cyanide ground. Aerial 1080.	Pre-dates pestlink
2003-4	Station Creek	1080 bait stations	Pre-dates pestlink
2004-5	Station Creek	1080 ground	Pre-dates pestlink

2006-7	Station Creek/ Rappahannock/ Lake Daniels	Aerial 1080	
2007	Lewis Pass [DOC]	Aerial 1080	0708GRY01
2007-8	Upper Grey	Ground [AHB]	
2009	Inangahua Lewis Pass/ Station Ck Nancy	Ground [AHB] Aerial 1080 [DOC] Aerial 1080 [AHB]	0809BUL08
2010	Inangahua/Springs Junction/Upper Grey. Maruia Nth/ Maruia West/Springs Junction	Ground [AHB] Aerial 1080	
2011	Inangahua Hukarere/Inangahua	Ground [AHB] Aerial 1080	
2012	Upper Grey Lewis Pass/ Station Ck	Ground [AHB] Aerial 1080 [DOC]	1213GRY02
2013	Upper Grey McVicars	Ground [AHB] Aerial 1080 [AHB]	
2014	Te Maruia BFOB	Aerial 1080 [DOC]	1314GRY0

2016 Te Maruia Rodent Control Aerial (DOC)	
Block size	28,569 ha
Block description	Lewis Pass / Station Creek through to Rappahannock. Upper Grey valley from the northern shores of Lake Christabel to State Highway 7. Included the Turpentine Range south of the Upper Grey River.
Prefeed (bait size, rate, ha)	Prefeed 6g cereal pellets were sown @ 1kg/ha
Control method: (incl bait size, toxic loading, rate, operator, dates)	6g cereal pellets (0.15% w/w 1080) were sown at 1kg/ha 21 November 2016. Sown by s 6(d) [redacted]
Dates	**RATS:** 26 August 2016 Pre 27 % RTI
Pestlink no.	1617GRY01
Result	**1.6 % rat tracking index**

2. Outcomes and targets

2.1 Conservation outcome(s)

- 5MBC of vulnerable forest birds (including but not exclusive to bellbird, tui, kaka, fantail, riflemen, grey warbler, kakariki, South Island robin, tomtit) in the control area will be higher than those in the uncontrolled area by 30 December 2020.

- Bat populations will be maintained at current levels or higher by 28 February 2020.
- Black billed gull nest counts will be maintained at current levels or higher by 30 December 2019 [Providing nesting occurs].

2.2 Target(s)

Reduce rodent abundance to < 5% RTI by 30 November 2019

3. Consultation and consents

3.1 Consultation

All landowners were sent pre-notification letter, with those immediately adjoining that were absentee owners provided with a questionnaire and individual property maps showing private boundary in relation to operational boundary. Requests were made for domestic water supplies to be informed immediately. Local landowners adjoining the treatment area were contacted and a visit arranged to discuss the operation.

Following the consultation phase the treatment block was amended to accommodate agreed changes largely pertaining to water supplies for domestic take and where fence issues exposed domestic stock to increased risk of accidental poisoning.

NZDA and WARO operators had the consultation initially undertaken on a national level. The local NZDA club and local WARO operators are included in the two week notification as per the Communications Plan. Early consultation of these groups was conducted at a national level.

All concessionaires identified on the Permissions database who hold consents for the general area were provided with a preliminary notification and key facts sheet.

Te Rünanga o Ngäti Waewae were given a key facts pack and maps. During the consultation phase iwi raised no significant issue and were very supportive of the use of 1080 for this programme. This area holds significance to local iwi as it was a traditional greenstone trading route between the east and west coasts. Ngati Waewae support this operation in its aim to maintain or improve taonga species found within the Te Maruia Waka Huia programme area.

3.2 Consents

The following documents are attached as Appendix 4:

- ☑ Public health permission (including application form) or proof of public health application [1] *[delete the options which do not apply]*
- ☑ Copies of landowner/occupier consents (if obtained in writing)
- ☐ Other (specify):

4. Methods

4.1 Treatment block 1

Te Maruia

Pesticides—aerial

Pesticide use #1 and/or #140	**Target pest**
Sodium fluoroacetate [0.15% w/w] Cereal pellet 6 gram Orillion RS5and/or Pestex Aerial	Rats

Brand name of pesticide	Sodium fluroacetate 0.15%
Lure/mask (& %)	1.5% Cinnamon
Type of pre-feed (lure/dye)	Cereal Pellet [Cinnamon 3% / no dye]
Number of pre-feeds (if any)	1
Sowing rates for pre-feed and toxic bait	2 kg/ha
Other details about this method	

Pesticides—hand laying operations

Pesticide use #2 and/or #141	**Target pest**
Sodium fluoroacetate [0.15% w/w] Cereal pellet RS5 (Orillion) and/or Pestex 6 gram hand laying	Rats

Brand name of pesticide	**Sodium fluroacetate**
Lure/mask (& %)	1.5% Cinnamon

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

Type of pre-feed (lure/dye)	Cereal pellet [Cinnamon 3% /no dye]
Number of pre-feeds (if any)	1
Sowing rate toxic	2 kg/ha
Sowing rate pre-feed	2 kg/ha
Other details about this method This method will be carried out by contractors. Planned for same day delivery as aerial	

4.2 Justification for proposed method

Te Maruia

The method of aerial 1080 control has been chosen due to the large scale, and in parts, very steep and rugged terrain that requires treatment. Any method of ground control is considered impractical over this block especially as rat control requires rapid and evenly distributed bait to cover each rat home range. This is not possible using ground laid bait or traps as these are rapidly overrun in rodent irruptions and as they are single kill inadequate to control large predator populations quickly requiring a high staff resource to maintain cleared traps.

Pre-feed and toxic bait will be applied at 2 kg/ha over the operational area. This is a variation to the originally proposed sowing rate due to BFOB TAG having reassessed completed operations to date. This resulted in recommended changes in sowing rates for this operation to be successful in reducing rodent abundance.

The use of hand laid bait in some areas of this operation has been chosen to compliment the aerial operation by baiting selected buffers which cannot be aerially treated given their proximity to road corridors or high use tracks. Bait will be laid at a similar sowing rate to 2kg/ha.

4.3 Treatment Block 2

N/A

4.4 Justification for proposed method

N/A

5. Further information

Details of contractor or principle

Company/organisation:	Vector Control Services Ltd
Contact person:	s 9(2)(a)
Contact number:	PO Box 453, Greymouth. s 9(2)(a)

Further information

As stated previously the ground control component will be contracted to a qualified operator holding the relevant CSL but operating on the ground under the Department's management and DOC Permission if approved. The VTA application lodged covers this aspect of the operation.

Appendix 1: DOC Performance Standards

Pesticide Use #140	Sodium fluoroacetate 1.5g/kg Cereal pellet Aerial (Pestex)	Target Pests: Possums, Rats

Location of operation
Te Maruia

CSL REQUIRED

Caution Period
The estimated caution period for this operation is nine months after last date of bait application and is subject to compulsory bait and carcass monitoring. This estimated caution period cannot be reduced to less than 4 months and must be extended if the endpoints for monitoring have not been met at the end of the period.

Performance Standards

*Compulsory for **all** operations*

1. For operations targeting rats, prefeed with this pesticide use.
2. The DOC Code of practice for aerial 1080 in kea habitat DOC-2612859 must be followed.
3. Flight paths to and from the bait loading zones by aircraft equipped with loaded or uncleaned bait sowing equipment must avoid: stocked paddocks, residential dwellings, and any other 'no fly zones' specified by consent providers.
4. An aircraft must not, when flying to or from the treatment area, fly over a public drinking water supply or waterway that is less than 100 metres upstream of a point of extraction from a water source for a drinking water supply (not being a water supply exclusively for stock).
5. For operations targeting possums, baits will have a mean size in excess of 6g and 95% of baits should weigh more than 4g.
6. The baits must be dyed green or blue.
7. The boundaries of the bait preparation and loading site are marked and loading site signs docdm-181171 erected. At the end of every day of the operation (including the final day), the loading site and any storage area must be fenced so that people do not inadvertently enter the site and stock cannot gain access to the area. The fence and signs remain in place until the area is decontaminated.
8. If there is any likelihood that farm stock has been exposed to 1080, the owner must be advised as soon as possible and stock removed from the area.
9. The product must only be used as specified on the manufacturer's product label.

Compulsory for this operation (delete those that you won't be applying to your operation)

10. Bait sowing rate must be no greater than 5kg/ha for 6gm baits (or equivalent bait density per hectare for other bait sizes).
11. Designate a "Safety Officer" on loading site who audits and ensures adherence to safety standards.
12. *[Add further standards as required. These could include local performance standards as well as any recommendations from Current Agreed Best Practice that you want to apply to your operation. Attach conditions from other consents as separate pages.]*

Information Needs

*Compulsory for **all** operations*

Nil

Compulsory for this operation

1. *[Add as required.]*

Operational Planning & Design Considerations

- Apply bait in coldest months of year.
- For operations targeting possums, do not repeat aerial operations within 4 years using the same bait.
- Current Agreed Best Practice – Possum Control – Aerial Application of 1080 Cereal Pellets docdm-341728
- Current Agreed Best Practice – Rat Control – Aerial Application of 1080 Cereal Bait docdm-29375

My approval dated is subject to these performance standards being met. Compliance monitoring may occur.

_____.

Pesticide Use #2	Sodium fluoroacetate 1.5g/kg Cereal pellet Handlaying (0.15% 1080 pellet)	Target Pests: Possums, Rats

Location of operation
Te Maruia Rat Control

CSL REQUIRED

Caution Period
The estimated caution period for this operation is nine months after last date of bait application and is subject to compulsory bait and carcass monitoring. This estimated caution period cannot be reduced to less than 4 months, and must be extended if the endpoints for monitoring have not been met at the end of the period.

Performance Standards

*Compulsory for **all** operations*

1. For operations targeting rats, prefeed with this pesticide use.
2. For operations targeting possums, baits will have a mean size in excess of 6g and 95% of baits should weigh more than 4g.
3. The baits must be dyed green or blue.
4. The product must only be used as specified on the manufacturer's product label.

Compulsory for this operation

5. The DOC Code of practice for aerial 1080 in kea habitat DOC-2612859 must be followed.
6.

Information Needs

*Compulsory for **all** operations*

Nil

Compulsory for this operation (delete those that you won't be applying to your operation)

1. Monitoring: For operations targeting possums, follow best practice for pre and post control result monitoring to estimate percentage kill and report results in operational report.
2. Monitoring: Monitor for native non-target animals in operational area, send samples for residue testing and report search effort and results in operational report. The Vertebrate Pesticides Residue Database SOP docdm-33461 applies.
3. *[Add as required.]*

Operational Planning & Design Considerations

- Current Agreed Best Practice – Possum Control – Handlaying 1080 Cereal Pellets docdm-29797.

My approval dated _____ is subject to these performance standards being met. Compliance monitoring may occur.

_____.

Pesticide Use #1	Sodium fluoroacetate 1.5g/kg Cereal pellet Aerial (0.15% 1080 Pellet)	Target Pests: Possums, Rats

Location of operation
Te Maruia Rat Control

CSL REQUIRED

Caution Period
The estimated caution period for this operation is nine months after last date of bait application and is subject to compulsory bait and carcass monitoring. This estimated caution period cannot be reduced to less than 4 months, and must be extended if the endpoints for monitoring have not been met at the end of the period.

Performance Standards

*Compulsory for **all** operations*

1. For operations targeting rats, prefeed with this pesticide use.
2. The DOC Code of practice for aerial 1080 in kea habitat DOC-2612859 must be followed.
3. Flight paths to and from the bait loading zones by aircraft equipped with loaded or uncleaned bait sowing equipment must avoid: stocked paddocks, residential dwellings, and any other 'no fly zones' specified by consent providers.
4. An aircraft must not, when flying to or from the treatment area, fly over a public drinking water supply or waterway that is less than 100 metres upstream of a point of extraction from a water source for a drinking water supply (not being a water supply exclusively for stock).
5. For operations targeting possums, baits will have a mean size in excess of 6g and 95% of baits should weigh more than 4g.
6. The baits must be dyed green or blue.
7. The boundaries of the bait preparation and loading site are marked and loading site signs docdm-181171 erected. At the end of every day of the operation (including the final day), the loading site and any storage area must be fenced so that people do not inadvertently enter the site and stock cannot gain access to the area. The fence and signs remain in place until the area is decontaminated.
8. If there is any likelihood that farm stock has been exposed to 1080, the owner must be advised as soon as possible, and stock removed from the area.
9. The product must only be used as specified on the manufacturer's product label.

Compulsory for this operation (delete those that you won't be applying to your operation)

10. Bait sowing rate must be no greater than 5kg/ha for 6gm baits (or equivalent bait density per hectare for other bait sizes).
11. Designate a "Safety Officer" on loading site who audits and ensures adherence to safety standards.
12. Use bait sowing buckets with retractable legs.
13. *[Add further standards as required. These could include local performance standards as well as any recommendations from Current Agreed Best Practice that you want to apply to your operation. Attach conditions from other consents as separate pages.]*

Information Needs

*Compulsory for **all** operations*

Nil

Compulsory for this operation

1. *[Add as required.]*

Operational Planning & Design Considerations

- Apply bait in coldest months of year.

- For operations targeting possums, do not repeat aerial operations within 4 years using the same bait.
- Current Agreed Best Practice – Possum Control – Aerial Application of 1080 Cereal Pellets docdm-341728
- Current Agreed Best Practice – Rat Control – Aerial Application of 1080 Cereal Bait docdm-29375

My approval dated is subject to these performance standards being met. Compliance monitoring may occur.

_____.

Pesticide Use #141	Sodium fluoroacetate 1.5g/kg Cereal pellet Hand laying (Pestex)	Target Pests: Possums, Rats

Location of operation
Te Maruia Rat Control

CSL REQUIRED

Caution Period
The estimated caution period for this operation is nine months after last date of bait application and is subject to compulsory bait and carcass monitoring. This estimated caution period cannot be reduced to less than 4 months, and must be extended if the endpoints for monitoring have not been met at the end of the period.

Performance Standards

*Compulsory for **all** operations*

7. For operations targeting rats, prefeed with this pesticide use.
8. For operations targeting possums, baits will have a mean size in excess of 6g and 95% of baits should weigh more than 4g.
9. The baits must be dyed green or blue.
10. The product must only be used as specified on the manufacturer's product label.

Compulsory for this operation (delete those that you won't be applying to your operation)

11. The DOC Code of practice for aerial 1080 in kea habitat DOC-2612859 must be followed.
12. *[Add further standards as required. These could include local performance standards as well as any recommendations from Current Agreed Best Practice that you want to apply to your operation. Attach conditions from other consents as separate pages.]*

Information Needs

*Compulsory for **all** operations*

Nil

Compulsory for this operation (delete those that you won't be applying to your operation)

Nil

Operational Planning & Design Considerations

- Current Agreed Best Practice – Possum Control – Handlaying 1080 Cereal Pellets docdm-29797.

My approval dated *[date]* is subject to these performance standards being met. Compliance monitoring may occur.

_____.

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.

Q:\GIS_Users\Greymouth\Data\Biodiversity\1080Aerial_Operations_Greymouth\TeMaruia_2019_20_BFOB\Permission_Maps

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.

- Published on Pesticides App. As proposed [s 9(2)(a), 9(2)(g)(ii)]

Appendix 3: Communication Record

- See Communications plan
  https://doccm.doc.govt.nz/wcc/faces/wccdoc?dDocName=DOC-5666533

Appendix 4: Consents

Insert copies of all consents you specified in Section 3.2.
Landowner/occupier consents are recorded in the Consultation record (DOCCM 5666533). All necessary approvals have been obtained for this operation.

s 6(d), 9(2)(g)(ii)
https://doccm.doc.govt.nz/wcc/faces/wccdoc?dDocName=DOC-5949616

s 6(d)
https://doccm.doc.govt.nz/wcc/faces/wccdoc?dDocName=DOC-5932275

s 6(d), 9(2)(g)(ii)
https://doccm.doc.govt.nz/wcc/faces/wccdoc?dID=6335268&dDocName=DOC-5953526

Buller District Council
https://doccm.doc.govt.nz/wcc/faces/wccdoc?dID=6508390&dDocName=DOC-6022453

Land Transport New Zealand
https://doccm.doc.govt.nz/wcc/faces/wccdoc?dID=6412096&dDocName=DOC-5989933

Land Information New Zealand
https://doccm.doc.govt.nz/wcc/faces/wccdoc?dID=6392616&dDocName=DOC-5980452

MOH Application for VTA Use
https://doccm.doc.govt.nz/wcc/faces/wccdoc?dDocName=DOC-5940322

MOH VTA Approval Final
https://doccm.doc.govt.nz/wcc/faces/wccdoc?dID=6577665&dDocName=DOC-6045063

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

- Kea – *Nestor notabilis* (Nationally endangered)
- Kaka – *Nestor meridionalis* (Nationally vulnerable)
- Kakariki – *Cyanoramphus spp.* (Varied classifications)
- Rifleman - *Acanthisitta chloris* (Not threatened)
- Morepork – *Ninox novaeseelandiae* (Not threatened)
- Scarlet Mistletoe – *Peraxilla colensoi* (Declining)
- Tree Fuchsia – *Fuchsia excorticata* (Not threatened)
- Long tailed bat **-** *Chalinolobus tuberculatus (*nationally critical)
- Whio - Hymenolaimus malacorhynchos (nationally vulnerable)
- Mohua (Nationally vulnerable)
- Black billed gull (Nationally Critical)

Non-target species

- Kea - *Nestor notabilis* (Nationally endangered)

  See doccm-2612859 code of practice for aerial 1080 in Kea habitat

- South Island Rifleman - *Acanthisitta chloris* (Not Threatened)
- Kakariki – *Cyanoramphus novaezelandiae* (Relict)
- Morepork – *Ninox novaeseelandiae* (Not threatened)
- Tomtit – *Petroica macrocephala* (Not threatened)
- New Zealand Falcon – *Falco novaeseelandeiae* (Nationally vunerable)
- South Island Fernbird - *Bowdleria punctatapunctata* (Declining)
- South Island robin (*Petroica australis australis*) (Not threatened)

Effect of operation on native species

There are wide variations in the sensitivity to 1080 between taxonomic groups but mammals are more sensitive than invertebrates and birds. 24 species of native birds have been intensively monitored including kiwi, kaka, whio, fernbird and kereru. None of these studies has identified population level mortalities threatening species viability. Fernbird have shown a mortality rate of 9.4%, but studies have shown that this rate of mortality is correlated to the length of time the birds are exposed to baits. Given a rat irruption is being experienced in this treatment area, baits are expected to be mostly consumed by the high population of rodents over the first two nights. This coupled with a low sowing rate at 2kg per hectare provides some mitigation to impacts on fernbird.

Invertebrate studies over nine separate aerials have shown that there are no significant population impacts and they are not considered as a possible vector for secondary poisoning. Studies for native land snails indicates a substantial benefit to populations where aerial poisoning of predators has been conducted.

In regards aquatic species, risks from 1080 operations are considered as low, with fish having a tolerance to 1080. There have been no recorded deaths of longfin eel, kōaro or upland bullies during experiments using high densities of 1080 pellets in the water just upstream of them. There are no recorded incidents of eel deaths following consumption of possum tissue containing 1080.

Specific to this operation, there are no known impacts on long tailed bats from 1080 operations.

Kea are found throughout the South Island more commonly in alpine environments, but at certain times of the year they frequent the lowland forest environments as well. Their population is assessed as somewhere between 5,000-15,000 birds. They are vulnerable to a range of introduced mammalian predators due to ground nesting and an extended nesting cycle.

The Department of Conservation has monitored kea survival through 10 aerial operations in nine locations. In total 222 kea have been monitored with 24 recorded deaths due to 1080. Half of these birds died the day after sowing occurred. Over all the death rate of kea during 1080 operations in remote areas is about 1% whereas it is about 20% in areas where the kea come in regular contact with people. Over the last 20 years 138 kea nesting attempts have been monitored. In normal years kea nesting success is only 30%, with stoats

and possums being the cause of most nest failures (Kemp et al NZJE).

In a captive environment a small sample of captive kea were offered RS5 and Wanganui No.7 non-toxic cereal possum baits.

One bird did not eat any bait and another bird ate only Wanganui No.7 bait, which provides an indication that RS5 bait may be less palatable to kea. There is no evidence that aerial 1080 operations are or have affected kea at a population level.

It is expected that predator reduction from aerial 1080 baiting will reduce mortality of young birds and that kea populations will increase in abundance overall though greater fledgling success. Although this operation may result in some non-target deaths of individual birds, research has shown that 1080 operations have a net positive effect where non-target deaths in the short-term are counterbalanced by better survival of the population in the longer term (Powlesland *et al.* 1998). The Maruia Valley is not an area synonymous with scavenging kea and the potential for human interaction is extremely low.

The Department of Conservation is working with others to develop, register and implement an effective bird repellent to prevent kea deaths at aerial 1080 operations. This research is ongoing but is showing positive outcomes.

Performance standards and information needs

See DOC Performance Standards sheets in Appendix 1.

There are two sets of compulsory performance standards for all operations using aerially applied 0.15% 1080 Pellets within the distribution of kea. The first set aims to reduce kea deaths and the second aims to ensure benefit to kea from stoat control. The DOC kea code of practice (COP) states and explains the compulsory performance standards that will apply to all pest operations aerially applying 1080 within the distribution of kea (Appendix 1 on doccm 2612859) on lands managed by DOC, using the following registered method:

- Aerially applied 0.15% 1080 Pellets (pesticide use #1 and #140 on the DOC Status List)

Compulsory performance standards to reduce kea deaths:

- Standard 1: Only use cinnamon-lured RS5 pellets. (it is noted that the Kea COP predates the registration of Pestex (PCRP) 1080 baits. Both

types of bait have the same HSNO registration and active ingredient, and are the of the same formulation type.)

- Standard 2: Use a maximum of 4kg/ha of prefeed bait for 12g baits (or 2kg/ha for 6g baits).
- Standard 3: Use a maximum of 4kg/ha of toxic bait for 12g baits (or 2kg/ha for 6g baits).

Performance standards for hand-laid 0.15% 1080 Pellets (pesticide use #2 and #141 on the DOC Status List) also apply to this operation.

Effects on non-target domestic and feral animals

Non-target species

Red Deer – *Cervus Elaphus*

Fallow Deer – *Dama dama*

Chamois - *Ruicapra ruicapra*

Feral pig – *Sus scrofa*

Domestic Cattle and other farmed livestock

Domestic Dogs

Domestic Horses

Effects of operation on domestic and feral animals

There is wide variation between species in their susceptibility to 1080 poisoning. Dogs are especially vulnerable and highly likely to die if they eat 1080 baits or scavenge animals killed by 1080. Larger animals such as cattle need several possum baits (the larger 12g baits) to receive a lethal dose but deaths have been reported where animals have access to baits, including those contained in bait stations.

Sub-lethal effects at realistic dose rates have been recorded in sheep and other species, typically affecting the heart. Exposure to prolonged high doses resulted in mild foetal abnormalities in pregnant rats and damaged sperm in male rats but no mutagenic properties were found. No antidote is currently available for 1080 poisoning although veterinary treatment can be successful. 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, pre-feeding or bait type. Most estimates of deer kill fall between 30 and 60%. Nugent et al. (2001 and 2011) 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.

Birds are generally less susceptible to 1080 than mammals but introduced birds such as blackbirds and chaffinches are found dead after aerial poisoning operations. Although 1080 is toxic to bees, baits used in pest control are generally not attractive to bees. There are currently no known beekeeping operations within close proximity to this operation.

Performance standards and information needs

See DOC Performance Standards sheets in Appendix 1.

Any risks to domestic animals will be minimised by the block boundaries being set 100m from areas where stock are grazed, and further if fencing is considered inadequate by the landowner. The consultation process also means any land owners are well informed and are assisted with the moving of stock if required. These interested parties are kept well informed of our plans and also of the caution periods following the sowing of toxic baits. Grazing of cattle occurs s 6([redacted] here is constant communication and understanding of operation progress with the person concerned. Stock have been removed from this area for calving and there is no intention to return until the area has been deemed non-toxic.

Further information

Further information

The proposed aerial application would complement the current predator control efforts in the core 1.1 EMU Te Maruia.

Long term goals for this area include the potential to translocate mohua back into the area to bolster the remnant population and it is vital that rodent populations are controlled to be considered for translocation. The Te Maruia waka Huia programme relies on suppressed predator levels to achieve the desired goals for a number of at risk species and all control options need to be considered including aerial baiting in mast events as trap infrastructure is quickly overrun in irruption events, particularly where single kill traps are deployed.

The ground component of this operation has been designed to reduce the rodent population in buffers where possible while ensuring the safety of the public. This allows for accurate

dispersal of baits where spatial features narrow the forested areas and make aerial application impossible, or where conditions of permissions do not allow for aerial applications of baits.

References

The following published references were used in developing this AEE:

- Dawson. J & Lucas. R. 2000. Nature guide to the New Zealand Forest.
- de Longe. P.J. et.al. 2012. Conservation status of New Zealand indigenous vascular plants. New Zealand Department of Conservation
- Fairweather A.A.C. & Broome. K.G. 2018. Sodium fluroacetate Pesticide Information Review. New Zealand Department of Conservation.
- Kemp J., Mosen Corey C.M., Elliott G., Hunter C.M. and van Klink P, Kea survival during aerial poisoning for rat and possum control. New Zealand Journal Ecology 43(1)
- O'Donnell. C.F.J. et.al. 2017. Conservation status of New Zealand bats. New Zealand Department of Conservation.
- Robertson H.A. et.al. 2012. Conservation status of New Zealand birds. New Zealand Department of Conservation.

Appendix 6:

If you need to add further appendices please copy and paste the entire heading above and then change the appendix number and title. This will ensure that the formatting is retained and the text will be transferred to the Table of Contents.
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