

Application for Department of Conservation consent

2019 Kahurangi predator control
(Aerial & Ground methods)
Version 1.1

April 2019

Name of applicant: s 9(2)(a)

Company/organisation: Vector Free Marlborough Limited

Postal address: Private Bag 1007
Blenheim 7240

Phone number: s 9(2)(a)

Email address: s 9(2)(a)

**VECTOR
FREE**
MARLBOROUGH LTD



Amendment history

| Date | Version | Section(s) | Reason for amendment |
|-------------|----------------|-------------------|--|
| 27/02/19 | 1.0 | All | Initial draft for VFML internal review |
| 04/04/19 | 1.1 | Various | Final draft for submission |

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1. Introduction

1.1 Overview

Vector Free Marlborough Limited (VFML) has been engaged by the Department of Conservation (DOC) to deliver its 2019 Kahurangi predator control operation, involving aerial and ground methods, as part of DOCs nationwide beech mast response to protect indigenous flora and fauna from greatly elevated predator density.

While mostly comprised of public conservation land administered by DOC, the control area also takes in several small parcels of public land administered variously by Land Information New Zealand (LINZ), Maritime New Zealand (MNZ), Pending OIA consultation [redacted] and Pending OIA [redacted], as several parcels of privately held land owned by Pending OIA consultation [redacted] and Pending OIA consultation [redacted].

Other than DOC administered facilities such as tracks, roads, structures and buildings proposed for inclusion, land within the project area is generally undeveloped.

The methodology for the Kahurangi operation has been determined by DOC as the contract principal. The preferred control method is aerially applied Sodium fluoroacetate (1080) using broadcast and trickle-sowing equipment.

The contract requires VFML to undertake ground-based control in the lower Heaphy Catchment if that area is excluded, and DOC also has the discretion to require ground-based control in any other place where local constraints such as consent conditions, boundary geometry and adjacent land tenure prevent aerial application. Ground-based control will utilise hand-laid 1080 as far as consent conditions allow.

The following DOC pesticide uses are proposed on all land included in the consent area:

- Pesticide Use #1 - aerially applied 1080
- Pesticide Use #2 – hand laid 1080

The Cobb portion of the operation is likely to include an area of deer repellent, however the final extent and availability of repellent and funding was not confirmed as of the date of submission for this application.

Permission is sought to carry out this operation between 1 May 2019 and 20 December 2019, with an indicative

commencement date of 6 May 2019 assuming consents and final operational specifications are to hand.

Applications for consent have also been lodged with Community and Public Health West Coast, and Nelson Marlborough Public Health, which are the district health boards relevant to the project area.

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**1.2
Consent area**

Approximately 326,022.62 ha

**1.3
Treatment
block(s)**

The project area has been divided into four blocks based on loading site availability and efficient use of aircraft. These are as follows:

- Aorere
- Cobb
- Karamea
- Wangapeka

DOC administered land proposed for inclusion in each block is as follows (note hectares for each reflect consent rather than operational shape):

Aorere portion

| Cons ID | Name or owner | Area (Ha) |
|---------|-------------------------------|-----------|
| M27001 | Kahurangi National Park | 90,848.12 |
| 1 | North West Nelson Forest Park | 6,341.15 |

Cobb portion

| Cons ID | Name | Area (Ha) |
|---------|-----------------------------------|-----------|
| 176 | Cobb Quarry Reserve | 3.18 |
| 177 | Conservation Area - Cobb Lake Bed | 316.81 |
| 110 | Conservation Area - Sams Creek | 8.81 |
| M27001 | Kahurangi National Park | 69,800.74 |

| | | |
|---|-------------------------------|--------|
| 1 | North West Nelson Forest Park | 896.66 |
|---|-------------------------------|--------|

Karamea portion

| Cons ID | Name | Area (Ha) |
|---------|-------------------------------|-----------|
| ? | Kahurangi Marine Reserve | 183.93 |
| M27001 | Kahurangi National Park | 80,159.8 |
| 1 | North West Nelson Forest Park | 772.93 |

Wangapeka portion

| Cons ID | Name | Area (Ha) |
|---------|---|-----------|
| L28006 | Conservation Area - Lyell Range - Radiant Range | 138.48 |
| M27001 | Kahurangi National Park | 75,754.62 |
| 1 | North West Nelson Forest Park | 18.83 |
| 172 | Wangapeka Scenic Reserve | 69.92 |

There is no fixed order for delivery, but VFML considers it preferable to complete the Karamea portion as soon as possible from 6 May to take advantage of the more settled weather conditions that are typically experienced during early winter.

1.4 Geographical location

The boundaries of the Kahurangi treatment area extend from Kahurangi Point and Parapara in the north to the top of the Owen Valley in the south.

Much of the western boundary is defined by the coastline of the Tasman Sea before turning inland and loosely following parts of the Fenian Range, Stormy Ridge, Scarlett Range, Radiant Range, Allen Range, Matiri Range and Bald Knob Ridge.

To the east the boundary follows parts of the Lookout Arthur and Lockett Ranges then meanders across the Waingaro catchment and part of the Anatoki Range before crossing the Anatoki catchment, skirting the eastern side of Parapara Peak and joining the northern boundary.

The treatment area takes in catchments of many waterways, with the most notable being the Aorere, Heaphy, Karamea, Little Wanganui, Owen, Wangapeka, Cobb, Takaka, Stanley, Waingaro and Anatoki rivers.

The treatment area also includes a significant number of waterbodies ranging from small alpine tarns less than 1ha in size to the Cobb Reservoir at over 200ha.

**1.5
Adjacent land
tenure and
uses**

Land tenure adjacent to the combined control area varies, with the most notable being DOC administered land, pastoral farming, plantation forestry and electricity generation.

**1.6
Nearby
residential
areas or
facilities**

The eastern boundary of the treatment area is the most intensively developed, with the main towns being Collingwood, Motueka and Takaka. The remaining boundaries are generally further removed from developed areas, but notable settlements are Karamea and Murchison.

Smaller localities with groupings of residential properties include Puramahoi, Tadmor, Tapawera, Upper Takaka, the Rainbow Valley Community in the Anatoki catchment and Hamama Road in the lower Waingaro catchment, as well as farms and lifestyle blocks at Little Wanganui and in the Aorere and Owen valleys.

**1.7
Community
interests**

Recreational hunting

While consultation with organised hunting groups has been carried out by DOC rather than VFML, it is noted that the Kahurangi project area takes in a vast tract of land that is popular with hunters including an area in the Cobb catchment that is regionally significant for members of the Pending OIA Pending OIA consultation.

Negotiation between DOC and Pending is ongoing, but it is likely that part of the Cobb portion of the operation will have deer repellent used. With or without the use of repellent it is likely that hunters will be closely scrutinising by-kill in the deer population following recent publicity of deer by-kill in the 2017 Molesworth aerial.

Pig hunting is a popular pastime in several adjacent areas including plantation forestry in the Wangapeka catchment, and in the Owen Valley.

Potable water supplies

Several private water supplies are sourced from catchments affected by the various blocks detailed in this application. VFML has agreed to provide a basic level of mitigation for those supply owners who have requested it. This ranges from provision of alternative water supplies to water sampling.

During the course of consultation VFML has also engaged with representatives of Pending OIA consultation to identify public water supply intakes and discuss mitigation measures such as exclusion of intakes, water sampling and

provision of alternative water supplies whilst the operation is carried out.

While no formal response from either council has yet been received, the only supply likely to be affected is the Hamama supply which originates in the Waingaro catchment, and the intake for this is located well downstream from the nearest boundary of the treatment area, so the minimum requirement for mitigation has already been met.

The network of huts, camps, shelters and bivs in the treatment area generally includes a water supply at each location. These include roof sourced supplies, reticulated supplies from stream and spring sources as well as ad-hoc collection from streams and waterbodies.

Mitigation for each site will follow the same process that DOC used for during delivery of earlier operations in the park.

Water supplies and mitigations are documented in the facilities tab of the VFML communications log, which itself provides an index to the consent maps provided with this application.

Wild Animal Recovery Operations (WARO)

The majority of DOC administered land within the Kahurangi treatment area is designated for aerial hunting by holders of a Wild Animal Recovery Operations (WARO) concession.

Where toxins are applied operators cannot supply game animal carcasses for human consumption for an extended period of time afterward, and it is possible that some operators may be opposed to the work on that basis.

Details of concession holders were obtained from DOC and information about the operations provided to relevant operators inviting them to contact VFML with any concerns.

To date, VFML has not received any enquiries itself. But is aware of at least one enquiry made directly to DOC as principal.

Tourism and recreation

The combined aerial and ground control area includes, or is located in close proximity to, a large number of DOC managed recreation facilities ranging from high use areas such as the Oparara Basin and the Heaphy Track Great Walk to back country routes receiving extremely low levels of use year-round.

Caving is a popular pastime, with significant areas of karst landscape in the project area including sites such as the

Oparara Basin and Mount Owen. Likewise, the network of tracks and associated facilities are also widely used for access by hunters and trout fishermen.

With the exception of access for activities such as caving, hunting and fishing, recreational usage is otherwise largely confined to the DOC managed facilities.

Various bodies representing recreational users are likely to have an interest in the work described by this application, and VFML will promulgate information to these for notification purposes.

Community sentiment

Leaving aside reservations about aerial bait application, the attitude among adjacent landowners toward control has generally been very positive. In fact, some nearby landowners noted an increase in birdlife which they associate with work done in earlier Kahurangi operations.

Notwithstanding support for the work, we are mindful the previous operations in the park have attracted varying levels of organised protest action and we are aware that certain locals are attempting to mobilise people against the operation this year.

Given it is likely that at least effort will be made to obstruct the work this year, the security arrangements for work onsite and associated logistics and services will be scaled accordingly. In saying this, it is also possible that parties opposed to the operation will use indirect methods in an attempt to obstruct the work. Previously this has included pressuring consenting landowners, such as those who allow access to their properties for loading site purposes, to withdraw their support.

1.8 Management history

Parts of the project area have received control during earlier Battle for our Birds (BfoB) operations in 2014, 2016 and 2017.

Besides that, a number of TBfree NZ funded vector control operations have been carried out in the surrounding area during recent years, with some of them taking in parts of the Kahurangi project area.

The Operation Plan prepared by the Department provides details of earlier BfoB operations delivered by DOC and others on its behalf.

With the above in mind, most landowners spoken to have had at least some contact with prior control operations and awareness in the adjacent communities is generally very good.

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2. Outcomes and targets

2.1 Conservation outcome(s)

Field observations of beech flowering in all beech species throughout the Kahurangi region in late 2018 indicated there was likely to be a significant beech mast event with seed-fall from April 2019.

Subsequent monitoring in early 2019 indicated seed production is significantly greater and more uniform throughout the Kahurangi project area than earlier mast events in 2014 and 2016.

Based on this monitoring a predator plague is considered to be very likely. These predatory vertebrates can threaten habitat, nesting success and fledgling survival rates for several iconic native species including kiwi and whio, that are found within in the control area.

Control will generally be of benefit to indigenous biodiversity values, which are otherwise threatened by impacts such as preferential consumption of plant species, predation of invertebrates and iconic native birds.

2.2 Target(s)

Targets for the operation are identified in the Operation Plan prepared by the Department and appended to this application.

3. Consultation and consents

3.1 Consultation

High level consultation with the likes of iwi and various interested parties began in November 2018, and was followed by a letter sent to landowners within three-kilometres of the project area and a range of other interested parties including:

- Agricultural industry
- Animal care professionals
- Conservation groups
- DOC concessionaires & WARO
- Education institutions
- Hunting and fishing groups
- Local government
- Medical professionals
- Police
- Recreation groups
- Statutory organisations
- Tourism operators

The letter outlined what is proposed, provided information about the methodology to be used, and the risks and precautions relevant to the presence of toxins, as well as a map of the project area.

VFML began landowner consultation during January 2019, which involved contact with the owners/occupiers of all property that it is proposed to include within the operation, and at least the nearest adjoining property.

In many cases adjoining landowner consultation also took in properties up to three kilometres away to determine the presence of any water supplies for human potable and/or dairy shed use that may be sourced from water bodies that originate within the control area.

Consultation with the owners of land proposed for inclusion was principally to seek approval for such land to be included.

Consultation with adjoining landowners and other parties potentially affected by the operation was limited to providing details of the proposed control operation and seeking information about matters such as potable water supplies, stock containment issues and the safety of companion animals.

The safety of companion animals was addressed with each landowner and in some instances VFML has agreed to provide emetic pills and/or dog muzzles to assist dog owners to manage risk during and following the control period. Further information about this can be found in the communication log.

A number of properties are either undeveloped or unoccupied, and VFML was unable to establish contact with the landowner at the property. In these cases, other methods of communication, such as telephone, email and letter have been employed to provide such people with an opportunity to engage with VFML.

A range of stakeholders and other interested parties in the wider community including local iwi and the territorial local authority were consulted by DOC and/or VFML.

Information about the operation has also been provided to concessionaires and WARO permit holders identified by the Department of Conservation as possibly undertaking activities on DOC administered land within the proposed control area. Such information included an overview of the proposed control methodologies and timings, and invited recipients to contact VFML with any concerns they may have.

No public meetings or information events were held for the 2019 Kahurangi operation, as they have become a focal point for organised protest action, and there has been an increasing trend of threatening and abusive behaviour toward presenters and those attending in support of control agencies.

With this in mind, it is considered that direct consultation with landowners and other interest groups in the surrounding communities achieves more effective consultative outcomes, and also leverages a relatively high level of understanding that communities have developed after delivery of earlier BfoB operations in the park.

3.2 Consents

The following documents are attached as Appendix 4:
 Proof of public health application¹

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

4. Methods Aerial / Ground Applications

The principal methodology for the control operation will be aerial bait application. The following pesticide use is proposed:

- Pesticide Use #1 - aerially applied 1080

The contract requires VFML to undertake ground-based control in the lower Heaphy Catchment if that area is excluded, and DOC also has the discretion to require ground-based control in any other place where local constraints such as consent conditions, boundary geometry and adjacent land tenure prevent aerial application.

The following pesticide use is proposed for ground-based control:

- Pesticide Use #2 – hand laid 1080

Applications for Medical Officer of Health consent have been lodged with Community and Public Health West Coast, and Nelson Marlborough Public Health and both include aerial and ground based toxin application.

4.1 Treatment block(s)

The target application rates for prefeed and toxin are both 1.5kg per hectare, however contractual specifications require a two-swath overlap along internal boundaries where the interval between work in adjacent blocks exceeds seven days. The application rates specified in this section allow for the required overlap.

Aorere portion

| | |
|--------------------------------|--|
| Area | 97,388.82 ha |
| Target species | Brush tail possum (<i>Trichosurus vulpecula</i>) Norway rat (<i>Rattus norvegicus</i>) Ship rat (<i>Rattus rattus</i>) Stoat (<i>Mustela erminea</i>) |
| DOC pesticide use | #1, #2 |
| Methodology | Aerial application <ul style="list-style-type: none"> • broadcast • trickle Hand-laying |
| Brand name of pesticide | 0.15% 1080 Cereal Pellets |
| Toxic bait | 6g RS5 pellets Double lured w/cinnamon |
| Prefeed | 6g RS5 pellets Double lured w/cinnamon |
| Number of prefeeds | One |
| Application rates | Prefeed – 3kg/ha Toxin – 3kg/ha |

Cobb portion

| | |
|--------------------------------|--|
| Area | 71,104.34 ha |
| Target species | Brush tail possum (<i>Trichosurus vulpecula</i>) Norway rat (<i>Rattus norvegicus</i>) Ship rat (<i>Rattus rattus</i>) Stoat (<i>Mustela erminea</i>) |
| DOC pesticide use | #1, #2 |
| Methodology | Aerial application <ul style="list-style-type: none">• broadcast• trickle Hand-laying |
| Brand name of pesticide | 0.15% 1080 Cereal Pellets |
| Toxic bait | 6g RS5 pellets Double lured w/cinnamon |
| Prefeed | 6g RS5 pellets Double lured w/cinnamon |
| Number of prefeeds | One |
| Application rates | Prefeed – 3kg/ha Toxin – 3kg/ha |

Karamea portion

| | |
|--------------------------------|--|
| Area | 81,477.21 ha |
| Target species | Brush tail possum (<i>Trichosurus vulpecula</i>) Norway rat (<i>Rattus norvegicus</i>) Ship rat (<i>Rattus rattus</i>) Stoat (<i>Mustela erminea</i>) |
| DOC pesticide use | #1, #2 |
| Methodology | Aerial application <ul style="list-style-type: none">• broadcast• trickle Hand-laying |
| Brand name of pesticide | 0.15% 1080 Cereal Pellets |
| Toxic bait | 6g RS5 pellets Double lured w/cinnamon |
| Prefeed | 6g RS5 pellets Double lured w/cinnamon |
| Number of prefeeds | One |
| Application rates | Prefeed – 3kg/ha Toxin – 3kg/ha |

Wangapeka portion

| | |
|--------------------------------|--|
| Area | 76,052.25 ha |
| Target species | Brush tail possum (<i>Trichosurus vulpecula</i>) Norway rat (<i>Rattus norvegicus</i>) Ship rat (<i>Rattus rattus</i>) Stoat (<i>Mustela erminea</i>) |
| DOC pesticide use | #1, #2 |
| Methodology | Aerial application <ul style="list-style-type: none">• broadcast• trickle Hand-laying |
| Brand name of pesticide | 0.15% 1080 Cereal Pellets |
| Toxic bait | 6g RS5 pellets Double lured w/cinnamon |
| Prefeed | 6g RS5 pellets Double lured w/cinnamon |
| Number of prefeeds | One |
| Application rates | Prefeed – 3kg/ha Toxin – 3kg/ha |

4.2 Justification for proposed methods

Aerial bait delivery

Aerially applied 1080 is the preferred methodology due to the large extent and rugged nature of the majority of the control area.

The use of aerial baiting methodologies will enable uniform rates of application in terrain that is otherwise too dangerous and/or costly to effectively control using ground-based methods.

Trickle sowing can also be used for narrow strata and parts of the control that are too geometrically complex to be safely or effectively controlled using broadcast application.

Whilst consent conditions will ultimately determine the final extent of trickle sowing required for the various blocks, we expect that this methodology will be employed along sensitive boundaries including areas adjacent to farmland, water supplies, road corridors and recreational facilities where there is a higher risk profile in the event of misapplication occurring.

Control using aerially applied 1080 can be completed in a very short timeframe and can achieve a rapid knockdown independent of terrain or possum population density in the control area. Effective control can be achieved without the lead-time, cost and environmental impacts (inc. vegetation cutting, erosion, sedimentation and biosecurity risk) otherwise required to establish access and infrastructure for ground-based methodologies.

With improved controls on the production, storage and handling of cereal pellet baits during the past decade there has been a significant reduction in application rates, which greatly reduces risk to non-targets such as native birds, game animals and dogs.

The fate of 1080 in the environment has been exhaustively studied over several decades, and the body of knowledge that has accumulated firmly supports 1080 being a relatively safe method for large scale control in a range of landforms and use situations.

The present regulatory environment imposes stringent and effective controls on all aspects of 1080 use, including standards for consultation and community engagement, a uniform national suite of controls to protect values such as human health, livestock and companion animals.

Ground based control

Where consent conditions do not allow for aerial baiting methodologies to be used, hand broadcast 1080 will provide the most efficient and efficacious control, having regard for factors such as terrain and vegetation that may pose an unacceptable risk to personal safety.

In saying this however, exclusions requiring ground control are likely to be located immediately adjacent to visitor facilities, particularly alongside linear features such as tracks and roads where access should be possible without undue risk to operatives.

5. Further information

Details of principal

The Kahurangi operation is being carried out by Vector Free Marlborough Limited on behalf of the Department of Conservation.

| | |
|------------------------------|----------------------------|
| Company/organisation: | Department of Conservation |
| Office: | Takaka |
| Contact person: | § 9(2)(a) |
| Role: | Site Lead for Kahurangi |
| Contact number: | § 9(2)(a) |
| Email: | § 9(2)(a) |

Mitigations proposed for recreation facilities in control area

The Kahurangi project area takes in a significant number and range of recreational facilities. Some of these are proposed for exclusion, however the majority will be sown and cleared subject to favourable consent conditions.

Recreational facilities and proposed mitigations are detailed in the applications for VTA permission included as appendices to this document.

Sites proposed for bait and carcass monitoring

Proposed monitoring sites have been selected in accordance with the DOC Bait and Carcass Monitoring SOP, based on treating the project area as a single entity and establishing one or more monitoring sites for each LENZ environment type.

It is proposed that sites are established once the last portion of the operation is flown, with the caution period extending until the slowest of the sites reaches an acceptable state.

Site selection for this proposal was based on the following principles:

- LENZ data for the project area aggregated by type
- 'Null' entries and the 1ha of category 'R' land disregarded
- Each LENZ category within the overall project area requires at least one monitoring site
- Monitoring sites within a particular portion should have reasonable geographic separation
- Sites should be more or less evenly distributed between the various portions
- As many sites as possible should be at road-end accessible locations

-
- Back-country sites are to be located at or as near as possible to places where signage is required
 - The majority of each portion is comprised of Category 'P' land so each block must one site in that environment
-

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Appendix 1: DOC Performance Standards

Placeholder for:

- Pesticide Use #1 - aerially applied 1080
- Pesticide Use #2 – hand laid 1080

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Appendix 2: Maps & shapefiles

[Link](#) to folder contents:

- Ao Aorere maps (x2 sheets)
- Ao Cobb map
- Ao Karamea map
- Ao Wangapeka map
- Map index
- Shapefiles
 - Bait and carcass monitoring sites
 - Consent boundary
 - Warning signage locations
 - Loading sites
 - Affected private water supplies

Appendix 3: Communication Record

[Link](#) to folder contents:

- DOC communications record
- Link to VFML communications record

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Appendix 4: Consents

[Link](#) to folder contents:

- MOH consent application for West Coast portion
- MOH consent application for Nelson Marlborough portion
- Landowner permissions

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Appendix 5: Assessment of environmental effects

The operation will provide significant benefit to native flora and fauna by removing grazing and predatory vertebrates that otherwise threaten habitat, nesting success and fledgling survival rates in the control area.

Effects on non-target native species

Species that will benefit from control

Notable species expected to be found within the control area that will benefit from the operation are as follows.

| Species | Current threat status |
|---|-----------------------|
| Blue duck <i>Hymenolaimus malacorhynchos</i> | Nationally Vulnerable |
| Giant land snail <i>Powelliphanta</i> | Nationally endangered |
| Great spotted kiwi <i>Apteryx haastii</i> | Nationally Vulnerable |
| Long-tailed bat <i>Chalinolobus tuberculatus</i> | Nationally Critical |
| Rock wren <i>Xenicus gilviventris</i> | Nationally endangered |
| South Island kaka <i>Nestor m. meridionalis</i> | Nationally Vulnerable |

Bird species

While some risk does exist to individual birds in a population, studies have demonstrated this is outweighed at a population level by the significant reduction in predatory vertebrates that typically follows an aerial operation.

Studies for all of these bird species have demonstrated an increase in breeding and fledgling success following aerial 1080 application in habitat areas, compared to similar areas where no control has taken place, or exclusively ground-based methods of control have been used.

Examples of this benefit include increases in the Blue duck population in the Kahurangi National Park, NZ Falcon in Central North Island forests, and Great spotted kiwi in the lowland forests of South Westland.

Invertebrates

A number of distinct native land snail species can be found in the control area.

Native land snails are at significant risk from impacts caused by introduced vertebrate pests. In particular, predation by rats, pigs and possums, and trampling damage to habitat caused by larger browsers such as deer, goats and wild cattle.

Invertebrate populations have been monitored during several aerial 1080 poisoning operations. There have been no significant population effects on any species studied, nor any evidence to suggest that poisoned invertebrates are a significant factor in secondary poisoning of other animals.

Long term (up to 20 years) monitoring of native land snails nationally indicates that the alleviation of possum and rodent predation in sites treated with aerial 1080 poisoning can lead to benefits to threatened populations.

Species that may be at risk from control

Control using toxins

There is wide variation in sensitivity between taxonomic groups for native fauna, with mammals more sensitive than birds and invertebrates (on a weight for weight basis) to exposure to toxin.

In saying this, the small size of many native species (relative to the target pests) means that toxic baits used for pest control are capable of causing harm to almost anything that consumes baits, however eleven species of birds have been intensely monitored during poison operations, and no studies have identified population mortality which would impact the long-term viability of a species.

Examples of measures to reduce risk in other operations have included the exclusion of open tussock and alpine tops in areas where kea are present, and a prohibition on the use of Feratox encapsulated cyanide in single-use bait bags and striker baits in areas where weka are present. These have been developed to minimise risks that may otherwise be posed to individuals in a population.

Performance standards proposed

Recreational facilities

Proposals for managing recreational facilities during the operational period are specified in the Application for MOH consent appended to this application. These are based on guidance from the Site Lead for the operation following discussion with staff of the relevant DOC offices.

Aerial loading sites

The aerial loading site(s) will be thoroughly decontaminated after use using high pressure water, to render any cereal bait fragments non-toxic and minimise the chance of native birds sustaining a lethal dose of toxin.

Application rates

As noted elsewhere, the application rate for this operation is nominally 1.5kg per hectare, but the rate specified in this document (and the application for MOH consent) is 3kg/ha to accommodate the contractual requirement for a two swath overlap between adjacent blocks where the interval between successive tranches of the operation exceeds seven days.

Inspection of warning signage

The following sign inspection regime is proposed for the operation:

- Road accessible sites - checked fortnightly until monitoring indicates bait is no longer toxic, or a maximum of eight weeks has elapsed since toxin was applied, with frequency to be monthly thereafter until carcass monitoring indicates it is appropriate for warning signage to be removed.
- Non-road accessible sites – checked three-monthly until monitoring indicates bait and carcasses are no longer toxic, on the basis that back country signage is generally far less of an issue from a maintenance / vandalism perspective than road-accessible stuff.

Deer repellent

As noted elsewhere, the final extent and funding for repellent use within the Cobb portion of the operation are not confirmed. With this in mind, we propose that the DOC permission allow for the use of repellent interchangeably in any area within the Cobb portion of the operation.

Effects on non-target domestic and feral animals

Non-target species for TBfree NZ funded control

- Cats
- Pigs
- Deer (feral and farmed)
- Goats
- Dogs (companion)
- Cattle (farmed)

Effects of operation on domestic and feral animals

Non-target feral by-kill

Whilst the operation is not focused on control of ungulates, it will nonetheless provide significant benefit by removing grazing herbivores that otherwise threaten the habitat of a range of vulnerable species in the project area.

Likewise, an incidental reduction in feral cat density from secondary poisoning is likely to enhance benefits of the operation to several native bird species for at least the short term.

Recreational hunting

Game animals including deer, pigs and goats are likely to be more or less uniformly present across much of the control area, albeit in relatively low densities.

These game animals are at some risk from consuming baits, and whilst application rates for this operation are low, it is not unlikely that some will succumb to poisoning.

Given parts of the control area are popular with recreational hunters, the installation of warning signage at known access-points will be an important control to ensure that people are informed of the risks of taking game animals for human and animal consumption during the caution period.

Wild Animal Recovery Operations (WARO)

While WARO concession holders may contribute to improved biodiversity outcomes, the impact of such activity is difficult to quantify as aerial hunting is largely confined to open areas whereas the majority of the control area is heavy vegetated.

It is assumed that aerial hunting would not have a sustained impact given the greater mobility and range of ungulate populations, and factors such as uncontrolled strata in adjacent areas.

Whilst application rates for this operation are low, it is not unlikely that some game animals will succumb to poisoning, and for this reason operators cannot supply game animal carcasses for human consumption for an extended period of time afterward.

VFML will provide notification to identified WARO concession holders prior to operational commencement.

Possum fur recovery

While fur recovery operations may provide some benefit to indigenous biodiversity in localised areas, it is important to note that control is not the principal objective of such operations and the beneficial effects of commercial hunting are therefore likely to be of limited duration given that operations are usually undertaken according to the law of diminishing returns.

With this in mind, uniform control over large tracts of land using aerially applied toxin will provide greater initial knock-down and effective suppression of possums than commercial fur recovery, and a possible reduction in fur recovery activity following aerial application of toxin would be more than offset by improved outcomes for indigenous biodiversity.

VFML will provide notification to any permit holders that DOC may identify nearer to operational commencement.

Companion animals

Dogs are at considerable risk of poisoning if they are taken into the control area before the caution period has ended. They are particularly sensitive to most toxins and need only ingest a very low dose to succumb. This is especially true of dogs and 1080 and is compounded by there being no antidote available.

Carcasses are the main route by which dogs are poisoned and are likely to remain poisonous to dogs until they have fully decomposed to a state where they are no more than skin and bone. Given the potential for carcasses of poisoned animals to be carried downstream, there is some risk to dogs that are allowed to roam unsupervised on beaches and near waterways.

Affected parties consulted by VFML have all been informed of the risk to dogs posed by contact with toxic bait and poisoned carcasses, and the importance of vigilance whilst the caution period is ongoing.

Dog owners have been offered emetic pills to induce vomiting in animals that are suspected to have consumed baits or poisoned carcasses following the toxic phase of the operation.

Livestock

Livestock, such as cattle and deer, on adjoining properties, are susceptible to direct poisoning if they encounter baits, however this scenario would only be possible following misapplication or stock trespass into the control area.

The chances of this happening are greatly diminished by the use of robust procedures for the identification of operational boundaries, advice to landowners regarding the containment of livestock, and pre-operational notification to ensure that landowners can verify that stock are contained.

An aerial inspection of sensitive boundaries to ascertain that the control area is free of livestock is undertaken before toxin application commences.

Performance standards proposed

VFML will identify formal access-points from which the public are able to gain access to the control area. Warning signage will be installed at such places and will clearly identify the risk to dogs.

Bait and carcass monitoring will be implemented according to DOC requirements. Monitoring sites will be caged and staked to prevent interference by pigs and other scavengers.

Warning signage will not be removed during the caution period until monitoring results indicate that it is appropriate for removal to occur.

The caution period will be determined by carcass and bait monitoring, and when such monitoring indicates that it is appropriate for warning signage to be removed, VFML will communicate this to affected parties.

Signage will be inspected at the frequency specified in statutory consents issued for the operation and replaced as necessary to maintain their effectiveness against unwitting access to the control area by members of the public.

Emetic pills and dog muzzles will be provided to affected parties who requested them, and these will be delivered immediately prior to the application of toxin.

References

The following 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 docdm25427, Department of Conservation, Hamilton, NZ. 110p.
- Hitchmough, R. (comp.) 2002: New Zealand Threat Classification System lists – 2002. Threatened Species Occasional Publication 23, 210p. Department of Conservation, Wellington, N.Z.
- s 9(2)(a) (Research Leader). Effects of aerial 1080 operations on kea. AHB Research Milestone Report. Jan 2012. Unpublished.

Appendix 6: Other reference material

[Link](#) to folder contents:

- DOC Operational Plan
- Link to VFML Operational Plan
- Link to VFML Risk Management Plan

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