Application for DOC permission to use VTAs: assessment report

Applicant name:	for Zero Invasive Predators Ltd	
Operation name:	Removing surviving or invading ship rats in the Perth River valley	
Director Operations:	Mark Davies, Western South Island	
Assessor:	s 9(2)(a), 9(2)(g) Technical Advisor, Animal Threats	
Date received:	13 September 2019	
Overview:	From the application:	
	Zero Invasive Predators Ltd (ZIP) is collaborating with the Department of Conservation and Predator Free 2050 Ltd on a research and development programme over an approximately 12,000 hectare block within the Perth Valley. The purpose of this research programme is to test and refine a predator management approach to completely remove possums from large areas, and prevent them from reestablishing. The work will also seek to develop this approach for ship rats and stoats.	
	In July 2019, ZIP completed a two-phase '1080-to-Zero' operation over approximately 9,000 ha in the Perth Valley, South Westland. This operation used a novel prescription involving two applications of prefeed and two applications of 1080 baits with the aim of completely removing possums, rats and stoats from the site. If successful, it will be a ground-breaking achievement and a critical step on the pathway to a Predator Free New Zealand by 2050 because it will show that currently-available tools can be used to achieve landscape-scale eradication (not suppression) on the New Zealand mainland. As such, this is a nationally significant project.	
eg nu	At present, ZIP is intensively searching the Perth site using cameras and chew cards with the aim of locating any surviving rats, stoats, or possums so that these individuals can be targeted for removal (see Appendix 6 for details).	
3569/11/1	Our current 'mop-up' plan for responding to any rat detections involves targeting an area surrounding the detection site with additional detection tools to confirm continued rat presence at that location, and kill traps to remove them. Failure to eliminate surviving rats, or potentially their offspring, jeopardises the project as a whole.	
	We therefore seek permission to use brodifacoum baits as an additional survivor-response measure, to be used under strictly regulated conditions to give us the best possible chance of eliminating any rats detected, and achieving our goal of site-wide rat eradication. In	

addition, we seek permission to use brodifacoum baits in the case where we have reason to believe that a breach in our geographic barrier system is likely to have occurred, for example the discovery of a new vegetation or rock bridge (likened to a hole in a predator-fence).

Our strategies to remove any surviving or invading possums or stoats do not involve use of brodifacoum or other anti-coagulants.

The Department of Conservation's policy on the use of secondgeneration anticoagulants (docDM-97398, last updated 23/11/2018) states that brodifacoum and other second-generation anticoagulants may only be used in operations that:

- target rodents only; and
- use captive baits in bait stations designed to exclude other animal pests present (especially possums); and
- where pigs cannot be exposed to the toxin.

ZIP's proposed use of brodifacoum as part of a survivor or incursion-response toolset would breach the second of the above restrictions because we intend to use non-captive baits in bait stations to maximise the likelihood of eradication success. We therefore seek an exemption from the Director, Operations (Western South Island) to allow us to use brodifacoum deployed in response to confirmed rat detections or likely geographic barrier breaches starting on or after 20 September 2019 and ending on or before 20 September 2020, following the methods and restrictions described in this document.

In what scenarios would we use brodifacoum?

A single rat or ambiguous 'rodent' detection on a camera or chew card will trigger a primary response consisting (all or some) of: kill traps, chew cards, tracking tunnels, and additional cameras deployed over an area of at least 2 ha surrounding the detection. The aim of the primary response is to either trap the rat(s), or at minimum confirm it is still in the area.

In addition to the primary response tools listed above, we request permission to use brodifacoum pellets as an additional option for response. We will consider this option only where the following conditions are met:

- Have evidence that suggests with a high degree of certainty that the animal is a rat(s), not a mouse (e.g. identification on camera, chew card, or tracking tunnel); and
- The terrain and accessibility of the detection location permits installation of a grid of bait stations covering an area of a minimum 2 ha and up to 16 ha; and
- The extent of detections (if more than one) is contained within the 2–16 ha area to be treated; and

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 No more than 2 previous brodifacoum grids have been used elsewhere on site within the one-year permitting period (i.e. maximum 3 different locations for this response treatment).

OR

 Have evidence suggesting that a breach of our geographic barrier is likely to have occurred, resulting in likely rat incursion into the Perth River valley site (e.g. treefall that creates a natural bridge over the river boundary)

It is proposed that the following pesticide uses will be applied:

 Pesticide Use #53; Brodifacoum 0.02g/kg; Pestoff Rodent Pellets; bait station

Permission is sought for toxic application starting on or after 20 September 2019 and ending on or before 20 September 2020.

Part Waitangi Forest Conservation Area and part Adams Wilderness Area, Whataroa/Perth catchment, South Westland.

Treatment area for this brodifacoum use is between 2 – 16ha, depending on terrain at specific point of detection.

Applicant type:

Delete the incorrect options.

Independent individual or organisation —National performance standards for pest operations docdm-1492976 will apply.

Step 1 Confirm application is complete Are all documents (listed below) provided?

DOC Application form complete:
Are all sections of the DOC Application
Form completed to a standard that you
can assess them? Where are the
information gaps? Is the operational
information for treatment blocks clearly
separated in each section of the
application form where differences exist
between them? Does the proposed
application meet the grouping standard
(see Applying for DOC permission for
external agencies or Operational
planning for animal pest operations SOP?

All sections of the application form have been completed. This includes the AEE section. The map and shapefile was provided on 25/09/2019.

Permission is sought to be able to apply the pesticide use in up to 3 areas of 2-16 ha each anywhere within a 3,781 hectare area.

Application form: <u>DOC-6079387</u>

Comms record: DOC-6089341

Where required, was the AEE section completed?	Notification letter for hunters: DOC-6089340
Are all the proposed pesticide use(s) accepted for use? Check the Status List category and if any compulsory restrictions apply. If any compulsory information needs apply, consider if the operation is designed to provide the required information.	The pesticide use, #53 Brodifacoum 0.02g/kg cereal pellets Bait stations (Pestoff Rodent Pellets) is approved for use. There are compulsory restrictions for this pesticide use: • The Use of Second Generation Anticoagulants on Public Conservation Lands Policy docd-97398 applies. This states that brodifacoum and other second-generation anticoagulants can only be used for operations that: -target rodents only; and -use captive baits in bait stations designed to exclude other animal pests present (especially possums); and -where pigs cannot be exposed to the toxin. • At mainland sites this pesticide use is restricted to one or two operations per lifespan for the longest-lived native animal species likely to be exposed. (An operation is defined as the application of the pesticide for long enough to achieve the operational target.)
Performance standards sheets Is there a performance standard sheet for each pesticide uses proposed, and trapping if applicable? DO€ permission map(s) (image file or files) Does the map or maps meet the minimum standards (as stated in Appendix 2 of the DOC Application Form), including showing proposed warning sign locations and normal points of entry where warning	This application requests exemption from the restriction in DOC's Policy "Use of second-generation anticoagulants Policy" (DOCDM 97398) requiring use of captive baits in bait stations. ("Captive bait" is secured inside the bait feeder and eaten there by the target pest). This exemption can be granted by Directors, Operations. Yes, there is a performance standard sheet provided for PU#53 Received from \$9(2) on 25/09/2019

	DOC Pesticide Summary shapefiles (independent groups or individuals only) Are the control methods clearly assigned to each treatment block? Do operational boundaries and warning sign locations match the DOC permission map(s)?	
	Consultation record including conditions of landowner consents Was level of consultation adequate? All required owner/occupier consents obtained? Are conditions of consent evident in their application?	There has been extensive consultation about the predator removal project and the 1080 operation (2 nd toxic application completed in July 2019) The interested parties whose activities may affected by using brodifacoum will be the hunting community. Solution has sent a notification to a list of hunter groups/individuals including WARO and AATH concessionaires informing them of ZIP potentially applying brodifacoum at a very limited scale within the Perth Valley project area. The information was also sent to Makaawhio and Ngai Tahui contacts.
	Public health permission/ proof of application Proof of application for public health permission is adequate to process the application, as long as the public health permission and associated application form is sighted prior to approval.	NA, Public Health Permission is not required for this pesticide use.
	Other (specify, e.g. RMA consent)	None
	Your confirmation email and subsequent correspondence Include dates and nature of requests for further information.	I spoke with on 18 September and acknowledged the application would be processed. Further information he agreed to provide was notification material and a list of recipients. This was forwarded on 26/9/2019.
	Step 2 Capture treatment blocks in the	Pesticide Application
20/8	Your publication of the proposed operation on the DOC Pesticide Summary (independent groups or individuals only) Include date and note any issues.	Accurate notification of the application of brodifacoum in localised treatment area(s) in response to rat detections will require variation from the usual GIS pesticide application process steps.
		The operation (permission area) was loaded onto the Pesticide Application as 'proposed don't publish' on 24/9/2019. The DOC South Westland operations team (5)(2)(a), 9(2)(g) will update the

status of the operation. I recommend that following approval the whole consented area is maintained as "Proposed" on the Pesticide Summary, Immediately before an application is to occur a shapefile should be loaded as a new block and this should be progressed as a "Will be laid" then "have been laid" to accurately notify the actual extent of where brodifacoum is applied. The Proposed block should remain in place throughout the permission period (or until a maximum of 3 actual treatments have occurred). If the operation is advanced to 'will be laid' before an actual treatment area is known this could create the false impression (and alarm) that brodifacoum in bait stations will be applied over the entire area. The operations team will be best placed to decide how they wish to manage notification of the operation on the pesticide summary

Step 3 Evaluate control method *Is the proposed method suited to the pest problem, treatment area and consultation outcomes?*

Your assessment of the control method

Include relevant points from the 'Choose your control method' part of Current Agreed Best Practice, where available.

Application will only occur in response to and at the site of a rat detection event or likely incursion. The application area for a given event would be 2-16 hectares with bait presented inside novacoil pipe bait stations at 50m x 50m. There will be 32 g of 0.02g/ka brodifacoum bait in each. This is approximately 4 lethal doses for a rat. Application at each given spot treatment would occur for 3 to 10 weeks and bait would be replenished/replaced to the above levels at 2-10 day intervals.

Brodifacoum is a chronic toxin so is less likely to cause aversion and more likely to be accepted by bait averse rats than any acute toxin. Because brodifacoum is more potent than 1st generation anticoagulants (e.g. diphacinone, pindone) it is more likely to deliver a lethal dose to a rat in a single feed.

The use of non-captive baits is to increase the likelihood that a lethal dose will be consumed and make baits accessible to any offspring that may be resident in the nest.

Label directions

Check the product label to ensure that the proposed method detail complies with the label content.

The proposed use is consistent with label directions.

Summary of any technical advice received on the proposed control methods.	Not sought.
Summary of any Community relations and Pou Tairangahau advice received.	Not sought.
Step 4 Identify and assess risks and adeffects have been identified?	verse effects Are you satisfied that all risks and adverse
Are there any gaps in the applicant's assessment of these (where the AEE section was supplied)?	The AEE section notes that the use of non-captive baits could increase the exposure risk to native birds. I agree with the applicant's conclusion that there is minimal likelihood of population level impact of any native bird species, due to the very limited scale of application.
Relevant points from the DOC Pesticide Information Reviews	The DOC Pesticide information review for brodifacoum records 18 native birds or reptiles across 7 different species found dead during bait station operations using brodifacoum block or cereal pellet baits (Table 6 in the review). Species found dead (tested and brodifacoum residues confirmed or not tested but assumed poisoned) include a number that are present in the Perth treatment area: kaka, robin, silvereye, weka, kereru.
*//e	Information on population impact from brodifacoum use in bait stations is available for some of the native bird species present:
asedundeit	Kereru (Hemiphaga novaeseelandiae) Following rat control using Talon® 50WB blocks in Novacoil bait stations on a 50 x 100m grid in Wenderholm Regional Park in 1992, kereru breeding success was significantly higher (5 fledglings from 11 nests) than over the preceding 5 years (no fledglings from 27 nests) (Clout et al. 1995)
250	New Zealand falcon (Falco novaeseelandiae) There was no evidence of New Zealand falcons being killed by use of Talon® 50WB blocks in Novacoil bait stations on either Hawea Island (40 x 40 m bait station grid) (Taylor RH and Thomas 1989) or Breaksea Island (50 x 100 m bait station grid (Taylor RH and Thomas 1993).

Morepork (Ninox novaeseelandiae)

Taylor & Thomas(1993) reported there was no evidence of morepork being killed by use of Talon® 50WB blocks in Novacoil bait stations on Breaksea Island (50 x 100 m bait station grid.

Fraser and Hauber (2008) conducted an acoustic survey of morepork calls in the Ark in the Park conservation area. This area has received ongoing pest control using brodifacoum cereal pellets in bait stations since 2003. They reported a greater number of calls and call bouts (and therefore a higher estimated number of morepork) from within the poisoned area than the date-matched control locations which had received no poison applications.

Robins (Petroica australis)

Robins were monitored following the use of brodifacoum in bait stations on Breaksea Island (Taylor RH and Thomas 1993) and at Station Creek, Maruia (Brown KP 1997b).

On Breaksea Island, Taylor and Thomas (1993) counted all South Island robins seen and heard at 100m intervals along representative tracks before and after the application of Talon® 50WB blocks in 400 mm Novacoil stations on a 50 x 100 m grid. No change in robin counts was observed. Several robins were seen entering bait stations and/or eating crumbs of bait scattered by rats and two robins were found dead.

Brown (1997b) monitored radio-tagged and banded South Island Robins in a 20 ha study site at Station Creek, Maruia where Talon® 20P pellets were placed in Philproof bait stations on a 100 x 100m grid., in September 1996. The minimum estimate of the robin's survival was 96.7% (95% CI = 83 - 100%).

Weka (Gallirallus australis)

Prior to eradication of rats on Tawhitanui Island, Marlborough Sounds, using of Talon® 50WB blocks in Novacoil bait stations Western Weka were observed to be 'very common'. Nineteen months after the operation, there were no definite sightings of weka on the island (Taylor DP 1984). 80-90% of Stewart Island weka on Ulva Island died following the

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eradication of Norway rats using Talon® 50WB blocks in bait stations (Eason CT et al. 2002).

Repeated below from the DOC pesticide Information Review for Brodifacoum are the summaries of studies to evaluate survival of bellbird, kaka, kakariki, silvereye, and tomtit, in association with aerial/handlaying operations with brodifacoum cereal pellets where there are no such studies for bait station application. During aerial operations the immediate risk of exposure is significantly higher but the period of potential exposure is significantly shorter.

Bellbird (Anthornis melanura)

Five minute bird counts undertaken soon after aerial poisoning with cereal pellets containing brodifacoum on Kapiti Island in 1996 did not show any significant differences in bellbird numbers when compared with baseline counts before poisoning (1991-1993) or six months after poisoning (Empson and Miskelly 1999).

Five-minute bird counts undertaken before and after the rat eradication on Red Mercury Island (Talon® 20P pellet aerially sown at 15.5 kg/ha and some hand laying of Talon® 50WB) indicated a decline in the bellbird numbers on the island (Robertson et al. 1993).

Kaka

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4 out of 20 (20%) of radio-tagged kaka died during the rat eradication (Talon® 7-20 at 9.0 kg/ha followed by 5.1 kg/ha 25 days later) on Kapiti Island (Empson and Miskelly 1999).

All 5 kaka monitored by radio telemetry on Whatupuke Island survived an aerial poison drop of Talon® 20P at 12 kg/ha with some follow up hand laying. Additionally, no reduction in kaka numbers was detected during five-minute bird counts one month after the operation compared with counts one month before the operation (Pierce and Moorhouse 1994).

No obvious change in the number of kaka present (6 birds including one with a radiotransmitter) on Nukuwaiata Island occurred

when Talon® 7-20 was sown at 11 kg/ha (Brown D 1997).

Five-minute bird counts undertaken before and after the rat eradication on Red Mercury Island (Talon® 20P pellet aerially sown at 15.5 kg/ha and some hand laying of Talon® 50WB) indicated no change in the kaka population on the island (Robertson et al. 1993).

Kakariki (Cyanoramphus novaezelandiae)

While Table 7 in *Broome et al* records 7 kakariki deaths during 4 aerial/hand-laid operations, the report also indicates that kakariki are unlikely to be attracted to brodifacoum baits in bait stations.

In winter 2013 a non-toxic bait trial using Pestoff 20R baits with pyranine biomarker was conducted over 6ha of Antipodes Island by handspreading the bait at a rate of 16kg/ha. Both Antipodes parakeets (Cyanoramphus unicolor) • and Reischek's parakeet (Cyanoramphus hochstetteri) were observed in the baited area. Some of these were caught and inspected for signs of feeding on the bait. None of the 18 Antipodes parakeets and 17 Reischek's parakeets captured showed any sign of pyranine marking. There were no observations of either species showing interest in the bait despite them being observed walking over the baits (Elliott et al. 2015).

Kakariki were abundant on Macauley Island in the Kermadecs when kiore were eradicated in 2006 using Pestoff 20R baits applied aerially in two applications totally an average of 13.5kg/ha (Pestlink 0708WAR22). Kakariki were surveyed immediately before the bait was dropped and a follow up expedition in August 2006 found no evidence of any non-target affect on them. About six kakariki were observed near the loading site where bait was available to them on the ground and they showed no interest in it (R. Griffiths pers comm. in Broome 2007).

Five-minute bird counts conducted prior to and post the rat eradication on Red Mercury Island (Talon® 20P pellet aerially sown at 15.5 kg/ha and some hand laying of Talon® 50WB) indicated that red-crowned kakariki were not

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affected by the operation (Robertson et al. 1993).

Five-minute bird counts on Kapiti Island preand post- the rat eradication in 1996 (aerial application of Talon® 7-20 at 9.0 kg/ha followed by 5.1 kg/ha, 25 days later) showed no significant difference in red-crowned kakariki (Robertson et al. 1993; Empson and Miskelly 1999).

Silvereye

Silvereye numbers did not change between fiveminute bird counts undertaken before and after the two Pestoff 20R aerial drops at Tawharanui Regional Park Open Sanctuary in September and October 2004 (Lovegrove and Ritchie 2005).

Silvereye numbers did not change between fiveminute bird counts undertaken before and after aerial application of Talon7-20 cereal baits containing 20 mg/kg brodifacoum on Kapiti Island in 1996 (Empson and Miskelly 1999).

Five minute bird counts undertaken before and after the rat eradication on Red Mercury Island (Talon® 20P pellet aerially sown at 15.5 kg/ha and some hand laying of Talon® 50WB) indicated the silvereye population increased post eradication (Robertson et al. 1993).

Tui (Prosthermadera novaeseelandiae)

Tui increased significantly in the five-minute bird counts undertaken after the two Pestoff 20R aerial drops at Tawharanui Regional Park Open Sanctuary in September and October 2004 (Lovegrove and Ritchie 2005).

Tomtit (Petroica macrocephala)

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Five-minute bird counts conducted prior to and post the rat eradication on Kapiti Island suggested that tomtit were not affected by the aerial application of Talon® 7-20 at 9.0 kg/ha followed, 25 days later, by 5.1 kg/ha (Empson and Miskelly 1999)

Summary of any technical or	Not sought
community relations advice received	
Other resources consulted (specify)	None
Your assessment of technical risks and adverse effects (e.g. the pesticide use, use pattern, site factors)	The risk to populations of native birds in the area is negligible because the pesticide application is so limited in extent (maximum 3 areas of up to 16 hectares each) that only a small proportion of individuals of a given species could potentially be exposed. The assessment of population level risk from previous operations from the DOC pesticide information review should be regarded as an indication of which species may be at risk of incurring some individual losses. Studies providing information on population level impact to kereru, falcon, morepork, robin through brodifacoum bait station operations have not identified adverse impacts. Weka populations have been dramatically reduced through some brodifacoum operations (with 'full coverage' and high application rates) and I did not find any information where the impact on kea populations was assessed.
Your assessment of non-technical risks (e.g. high public use, consultation outcomes)	There is risk of some disruption of hunting activities in the area due to the 36-month caution period and 2 km buffer zone for consuming deer and chamois and 1km buffer zone for thar.
an acceptable level Will risks be managed	iod and evaluate if risks and adverse effects are at a deequately with the performance standards proposed comes of any discussion with the applicant. The recommended and legal caution periods for
pesticide use(s) Does this differ from the recommended caution period in the Caution period calculator?	the pesticide use is 36 months after bait removal.
How well does the proposed operation manage potential risks to native fauna?	The population level risks to native fauna are well managed.
(i.e. as proposed in the Application form or performance standards)	The very limited spatial extent of bait application, bait stations on a $50 \times 50 \text{m}$ grid pattern in up to 3 areas each of 2-16 hectares means the potential for adverse impacts on populations native fauna is negligible.

		The pesticide would be applied for a maximum of 10 weeks at a detection site. Bait quantity in each station is relatively low.
	How well are other potential risks	I have discussed the management of information
	managed?	to notify the time and extent of applications
	(i.e. as proposed in the Application form	accurately in the DOC pesticide summary.
	or performance standards)	accurately in the BBC pesticide summary.
		This will require that ZIP notify and provide a
		shapefile of any brodifacoum application area to
		the DOC South Westland district team s 9(2)(a), 9(2)(g)
		- Senior Ranger Threats) to ensure the actual area
		can be published on the pesticide summary prior to
		bait application.
	Are you satisfied with the proposed	I have requested that in addition to Scone Hut, a
	warning sign locations and normal	warning sign location is required at Nolans Hut. If
	points of entry?	the brodifacoum application takes place after the
	points of circly.	1080 operation caution period has ended the
		warning signs will need to be accompanied by a
		Information board (map) to show the actual area
		of brodifacoum application.
	Summary of any technical or	Not sought
	community relations advice received	Not sought
	Public health permission, including	Not required
	application form sighted (if not	
	provided at time of application)	
	Consider if public health permission has	
	any impact on DOC permission conditions.	
	Other resources consulted (specify)	
	Which additional performance	I have included a requirement in the drafted
	standards should be applied and why?	permission letter that the South Westland District
	Consider impacts of conditions from other	Operations team is notified and provided a
	consents. Consider if the additional	shapefile at least 3 working days prior to bait
	performance standards specific and	application. A shorter period is acceptable if agreed
	auditable, and can be justified.	at the time with the Operations team.
	Step 6 Make a recommendation Should	the application be approved or declined?
	What key points should the approving	 ZIP seek permission to use brodifacoum
	manager have drawn to their	cereal pellets in bait stations for rats. This is
	attention?	one of the tools that ZIP to remove rats that
		may have survived the 1080 treatment or
10		invaded the Perth Valley project area.
20/8		Application would only occur in response to
1		rat detections or a geographic barrier
		breach and would be centred on such a site.
▼		The area would cover 2-16 ha with bait
		stations at 50 x 50m and 32 g of
		brodifacoum cereal pellets applied and
		productouri cereal penets applied and
		maintained in each of the stations for up to

10 weeks. Brodifacoum would be applied at a maximum of 3 such sites within the 1-year permission period. Relative to the size of the managed site the maximum potential extent of land to be treated is very small (48 hectares total). There is a risk of poisoning individuals of native bird species, but negligible risk of population level impact on any native species, due to the limited extent of bait application. There is some potential for disruption of planned use by hunters taking deer, chamois, or thar for consumption due to the long caution period (3 years) and large buffer areas (1-2km) required the MPI Animal Products Notice specifications that relate to brodifacoum. This can be managed with the notification of hunter groups and accurate expression of actual treatment areas on the Pesticide Summary. Recommended for approval. Is approval or decline recommended? If declined, summarise reasons. If approved, is a readiness check recommended (DOC operations only - see Pre-Operational Step 7 of the Operational planning for animal pest operations SOP ? Step 7 Prepare documents and advise manager For recommended approval: Drafted permission letter and attachments DOC-Attached correct draft letter of 6098120. permission, DOC Performance Standards sheet(s) and map(s) of operational boundaries. For recommended decline: Attach draft letter of decline including a summary of reasons. Record of permission decisions that differ from the assessor recommendation Record of permission decision Only complete this section where the manager has made a decision that differs from the assessor's recommendation. For example, where the manager decides on different operational timing or warning

sign locations or rejects a recommendation to approve or decline the application.

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