Department of Conservation
Te Papa Atawhai

Pesticides - Decision Support Document (PDSD) (Assessment of Vertebrate Pesticide Permission)

Application Details	
Applicant[1]	Zero Invasive Predators on behalf of the Director General of Conservation
Date received	9/05/2025
Permission Number	1197465 PCO
Substance approval Number (s)	HSR002424 – Sodium fluoroacetate
Short description of application	Predator control on Rakiura
Public Health Permission ID (if applicable)	Pending as of 19/05/2025 however a condition is in the Permission Letter – operation will only commence when the PHP is granted/approved.

Document Links	
Application Link	Initial application to DOC DOC 10297137 Finalised application DOC 10326662

Resources	
Assessor	9(2)(g)(ii)
Permissions Advisor	9(2)(g)(ii)
District Offices where application assessed	Christchurch and Dunedin
Decision Maker	9(2)(g)(ii) Director Operations SSI

[1] The Applicant is the Director-General of Conservation for a Departmental operation, including when a contractor is making the application on behalf of the Department. Any such permission should be granted in the name of the Director-General and cover staff and contractors, and addressed to the Director-General, care of the contractor. Where the Application is not the Director-General, provide the External Applicant Name, which will normally be a company and should also include staff and contractors.

Purpose:	To consider the granting of permissions / authorisations for undertaking pest control by applying sodium fluoroacetate to the Rakiura operational area.

Overview of application:	ZIP, working in partnership with the Department of Conservation, is seeking permission to apply sodium fluoroacetate over key pukunui breeding grounds to protect the birds from predation this coming 2025/26 breeding season, which begins in October 2025. This standard suppression operation is a measure to halt the pukunui population decline seen over the last few years, which is moving the species towards extinction. The total pukunui population currently sits at just 101 birds, and the population has been declining 20% per year for the last three years. Action is needed now to save this species. While the pukunui recovery operation is a standalone response to an immediate conservation crisis, it also presents an opportunity to gain critical insights into predator behaviour and control methods on Rakiura. Within this standard predator suppression operation to protect pukunui, it is proposed that a smaller area will be sown to trial ZIP's '1080 to Zero' methodology in the Rakiura environment. This trial area will be monitored intensively to contribute towards ZIP's knowledge and will be invaluable in informing future work towards Predator Free Rakiura. Predator Free Rakiura is an ambitious and complex project that will support community and nature to thrive together by removing rats, possums, feral cats, and hedgehogs from Rakiura. It is proposed that the following pesticide uses will be used: • Pesticide Use #1 Sodium fluoroacetate, 0.15%, 6g cereal pellet, ProNature Dry Forest or Wet Forest, aerial application. • Pesticide Use #2 Sodium fluoroacetate, 0.15%, 6g cereal pellet, ProNature Dry Forest or Wet Forest, hand laid application • Pesticide Use #145 Sodium fluoroacetate, 0.15%, 6g cereal pellet, ProDeer Possum and Rat Bait, aerial application • Pesticide Use #146 Sodium fluoroacetate, 0.15%, 6g cereal pellet, ProDeer Possum and Rat Bait, hand laid application • Pesticide Use #155 Sodium fluoroacetate, 0.15%, 6g cereal pellet, ProDeer WF Possum and Rat Bait, aerial application • Pesticide Use #156 Sodium fluoroacetate,

0.15%, 6g cereal pellet, ProDeer WF Possum and Rat Bait, hand laid application

The use of deer repellent will be assessed as part of this permission. ZIP is also applying for permission to use non deer repellent bait across the entire proposed area, an avenue which will be considered in the event that permission is not given for the use of deer repellent.

Permission is sought for toxic application starting on or after 01 June 2025. Non-toxic prefeed will be applied no earlier than 20 May 2025.

Location:

The proposed Rakiura aerial treatment area totals approximately 43,080 ha, entirely on public conservation land (Rakiura National Park and Eastern Rakiura Scenic Reserve) except for 13 ha of LINZ hydro parcel.

Time record

Function	Time (minutes)	Date complete
Capture	10	06/05/25
Summary	25	06/05/25
Assign	16	09/05/25
Assessor		Click or tap to enter a date.
Permissions Advisor	180	20/05/25
Decision Maker	120	23/05/25

Step 1 Confirm application is complete *are all documents (listed below) provided?* For guidance see the Processing Applications for VTAs SOP DOCDM-1490584 See also the Process Map for PPL permissions DOC-6315017	
Complete application form received Are all sections of the DOC Application Form completed to a standard that you can assess them The application was completed to a standard that allowed assessment to begin. An AEE section has been completed as part of the application. Op homepage: DOC-7874715	Yes Date Received (by assessor): 09/05/2025
Are all the proposed pesticide use(s) accepted for use from the EPA? Proposed pesticide uses are accepted for use on the Status List (i.e. approved by the DOC Pesticide Advisory Group (PAG)[2]: • PU #1, #2, #145, #146, #155, #156 Compulsory restrictions PU#145, #146, #155, #156 (aerial and handlaid 1080 – Prodeer and WF): • Do not use in kea habitat as defined in the DOC Code of practice for aerial 1080 in kea habitat DOC-2612859. **N.B. There are no kea present in the operational area.**	Yes
Performance standards sheets Templates supplied with application final versions of the Performance Standards Sheets will be supplied by the assessor and attached to the permission letter.	Yes
DOC permission map(s) (image file or files) The maps supplied (attached) have met the requirements listed in Appendix 2 of the application form.	Yes

DOC Pesticide summary shapefiles (N/A to DOC operations and Possum hunters using cyanide paste) DOC/ZIP operation – will be captured in the pest app by the DOC site lead.	Yes
Are the control methods clearly assigned to each treatment block? Do operational boundaries and warning sign locations match the DOC permissions map(s)? Will be checked by DOC site lead.	Yes
Consultation record including conditions of non DOC landowner consents. The communications record supplied with the application is comprehensive and being continually updated. See DOC 10219524 From application: *For this application, ZIP and DOC are consulting with the following key partners and other interested groups: (note that consultation is ongoing). Please see communications record for more details.* • *Iwi* • *Hunting interest groups* • *Fisheries* • *Adjacent landowners* • *Concessionaires* • *Local community* Rakiura Operations Manager 9(2)(g)(ii) is comfortable with the level of engagement and consultation that has occurred. See email DOC 10326501	Yes
All required owner/occupier consents obtained? All land within the operational area is PCL except for a small 13 ha hydro parcel. LINZ has been contacted by ZIP regarding this parcel and to seek approval to sow it.	Yes

[2] The Pesticides Asvisory Group (PAG) is an internal advisory group established to keep the status list current by assessing new pesticides, new ways of using pesticides, new information on pesticides, and the impact of legal changes.

Was consultation undertaken with appropriate iwi/hapū? See Consultation with Māori section below. The Communication Plan contains a record of all comms.	**Yes**
Public health permission/ proof of application The PHU application supplied. Permission pending as at 19/05/2025	**Yes**
Your confirmation email and subsequent correspondence 13/05/2025 emailed applicant to confirm application received and processing was underway. See DOC 10326702 and DOC 10326994	

Step 2 Capture treatment blocks in the pesticide application
Your publication of the proposed operation on the DOC Pesticide Summary (N/A to DOC operations and Possum Hunters using cyanide paste) DOC/ZIP operation – will be captured by DOC site lead

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 The aerial application of 1080 cereal pellets is proven to be effective in reducing predator numbers when utilised by experienced operators and is suitable for the proposed control area (large scale and steep, rugged terrain). Hand laying is a suitable complimentary method that may be used where aerial application is not feasible. Two bait formulations are available: RS5, and No. 7. Generally, RS5 is favoured where a shorter exposure period required and where there is limited chance of rain or ground moisture ruining the bait on the first night. In wet forest and where a longer exposure period is sought, the No.7 is generally preferred. **Proposed methods** A standard suppression operation is being proposed sown at 2kg/ha over approximately 43,092 ha to protect NZ southern dotterel/pukunui during the 2025/26 breeding season when the adults and chicks are most vulnerable. Within this suppression area, an **eradication trial operation** over approx. 7,062 ha is also being proposed using more intensive sowing rates to test ZIP's **'1080 to zero'** predator elimination methods in the Paliura ecosystem. The Eradication Trial treatment area, will receive a total treatment of approximately 4kg/ha prefeed over two phases, with approximately 2 5 weeks between phases dependent on weather (around 2 kg/ha for Phase I, 1 2 kg/ha for Phase II) and 6 kg/ha toxin (around 4 kg/ha for Phase I, 2 kg/ha for Phase II) The use of Prodeer deer repellent bait is also proposed over approx. 9,654 ha targeted around the bookable hunting blocks. It is proposed that deer repellent is used to reduce impact on white tail deer populations within bookable hunting blocks, and to test efficacy of deer repellent on eliminating target predator species (kiore, ship rat, Norway rat, possum). ZIP is proposing to monitor white tailed deer populations under both repellent and non repellent areas to quantify the effect of using deer repellent to mitigate impact on the resident white tailed deer population. This will include deer monitoring cameras 1) under the deer repellent area, 2) under the non repellent area and 3) in a control area (no treatment).

Label directions The methods being employed are consistent with the manufacturers label instructions.
Summary of any technical advice received on the proposed control methods. Advice from DOC legal team regarding who will hold the permission for this operation: "... the DG will hold the permits for both Rakiura and Pukunui, and ZIP will act on the DG's behalf as the DG's agent." See email DOC 10326533 See technical advice below re risk to non target species.
Summary of any community relations advice received. Not sought for methods.
Summary of any Pou Tairangahau advice received. Not sought – communication plan has sufficient information.

Step 4 Identify and assess risks and adverse effects *Are you satisfied that all risks and adverse effects have been identified?*
Are there any gaps in the applicant's assessment of these (where the AEE section was supplied)? An AEE was included in the application. The AEE shows a good awareness of possible risks and adverse effects to non target species using the proposed methodology.
~~**Note** If no AEE is required, put N/A. AEE requirements are set out in the "status list" DOC 22655.~~
Relevant points from the DOC Pesticide Information Reviews (PIR). From the 1080 Pesticide Information Review DOCDM-25427 : **N.B. Information below from this PIR relates to the standard aerial 1080 operation specifications not the proposed trial at "1080 to Zero" specifications.** Poutu, N.; Fairweather, A.A.C.; Broome, K. G. 2021: Sodium Fluoroacetate Pesticide Information Review. Version 2024/2. Unpublished report docdm 25427, Department of Conservation, Hamilton, NZ. 134p. The DOC 1080 pesticide information review contains information relating to studies of native species that may be found within the operational area. None of these studies have

identified population level mortality which threatened the viability of the species. It is possible deaths could occur in some bird species though population recovery is normally within one breeding season.

The risks 1080 operations pose to aquatic species is considered very low. Fish are very tolerant to 1080. Additionally, 1080 contamination of water is rarely found during 1080 operations and is at an extremely low level when it has occurred.

In extreme cold and drought, 1080 residues could persist in baits for several months.

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.

Feral deer population mortality from aerial poisoning operations targeting possums and rats has been highly variable. Across a number of 1080 cereal pellet operations deer mortality estimates were more often classed as low (0 33%) when sowing rates were at or below 1.5kg/ha and potentially at those sites that had been previously treated within 5 years. Field trials have indicated that deer repellent baits can reduce the level of deer mortality relative to when non repellent baits are used.

Although 1080 is toxic to honeybees, baits used in pest control are generally not attractive to honeybees. However, this may not be the case if honeybees are particularly hungry and food resources are scarce. On occasion and under these conditions honeybees have been observed collecting and storing cereal pellet bait material in hive frames as a substitute for pollen.

The majority of pest control operations using 1080 have target pest kills of greater than 80%.

Summary of any technical or district advice received

See technical advice below re risk to non target native species.

Other resources consulted *(specify)*

- Method best practice for Battle for our Birds Aerial 1080 baiting Version 1.9 August 2022 DOC 2749355
- Possum control methods current agreed best practice – Method best practice – Aerial Application of 1080 Cereal Pellets DOC-7487883
- Rat control methods current agreed best practice – Method best practice – Aerial Application of 1080 Cereal Bait DOC-2749355

Your assessment of technical risks and adverse effects

The standard suppression operation should present no undue technical risks and should achieve the desired results. However, the operational area on Rakiura can be very wet –

this may affect the bait condition once on the ground and cause it to break down faster reducing the effectiveness.

The "1080 to zero" trial blocks will use non standard aerial 1080 methodology in an attempt to bring the target pest numbers to zero. These methods have had success in previous ZIP operations on the West Coast and should produce similar results in this operational area and significantly reduce predator numbers, with net benefits to native species.

All operational planning e.g. bait transport/storage/loading and necessary consents will need to be in place before the operation begins. Delays with any of this could create risk to the timely protection of pukunui.

Your assessment of non technical risks *(e.g. high public use, consultation outcomes)*

Risk to the public is minimal, conditions in the Public Health Permission will be adhered to, public notices and signage will further reduce risk.

The operational area covers a range of popular DOC campgrounds, huts and tracks. Good management of these facilities for public safety is critical and is well covered in the application documents.

There is some anti 1080 sentiment in community and some groups and individuals are opposed to the operation taking place. The department is continuing to work with these groups and hear their concerns.

What is the level of risk to native fauna?

Proposed control methods and performance standards are adequate to manage risk to native fauna.

There is always some risk to native fauna when toxins are used. However, the risks of death to native fauna have been reduced through the development of bait formulations and sow rates over a number of years.

The overall risk to native fauna throughout this operation is considered low. While there is a likelihood that individual protected species will be killed, research studies have shown that most native species, at the population level, are not affected to any great degree using the proposed toxins and the uses selected.

Part of the operation proposes to use non standard aerial 1080 methodology in an attempt to bring the target pest numbers to zero. These methods have had success in the ZIP Predator Free South Westland and Te Manahuna Aoraki Projects and should produce similar results in Rakiura by significantly reducing predator numbers, with net benefits to native species. However, the "1080 to Zero" method specifications may increase the risk to native bird species i.e. two pre feeds, orange lure and a higher toxic sowing rate (up to 6kg/ha instead of 2kg/ha).

See technical advice below re risk to non target native species.

Step 5 Calculate estimated caution period and evaluate if risks and adverse effects are at an acceptable level *Will risks be managed adequately with the performance standards proposed for this operation? Include dates and outcomes of any discussion with the applicant.*
Estimated caution period for all the pesticide use(s) PU#1, #2, #145, #146, #155, #156 (aerial and hand laid 1080 cereal bait incl Prodeer and WF) Caution period set at 8 months after bait application as recommended in the CP calculator (dry site 'No' (>600mm rainfall pa) and mean temp in the 6 months following the operation <10 degrees 'No'). The minimum caution period for this pesticide uses is 4 months. Bait and carcass monitoring is required. If bait/carcass breakdown monitoring shows endpoints have not been met, the caution period will be extended accordingly as per SOP.
How well does the proposed operation manage potential risks to native fauna? The DOC performance standards for the suppression operation are adequate to manage risks to native fauna. These include standards around bait size, lure, colour and the low nominal application rate (in the suppression block) of 2kg per hectare. "1080 to Zero" method specifications in the trial block may increase the risk to native bird species i.e. two pre-feeds, orange lure and a higher toxic sowing rate (up to 6kg/ha instead of 2kg/ha). From application: *Most studies referenced are based on sowing rates of 1.5-2kg/ha. The Eradication Trial treatment area will be sown at 4kg/ha, which will significantly increase the encounter rate of native species with baits. However, since most native species are not known to preferentially eat baits, and the Eradication Trial treatment area is relatively small in relation to the area of habitat on the island, we have assessed the increased risk as minimal.* *There has never been aerial 1080 used on Rakiura near pukunui. The proposed aerial operation area, timing and methodology in this permission has been approved by the Pukunui Technical Advisory Group (TAG), following an assessment of the potential effects on pukunui.*
How well are other potential risks managed (other than to native fauna)?

The Public Health Permission (PHP) contains conditions to mitigate risk to human health (e.g. water supplies, track clearances, bait exclusion distances from huts, tracks and roads etc) which must be adhered to.

Hunting interest groups have been advised of the operation deer repellent is proposed to be used around the bookable hunting blocks.

Communication with adjoining landowners around the operational timing and boundaries is ongoing.

The communication plan is comprehensive, and the DOC pesticide summary and warning signs will also inform the public of the operation.

From application:

Hunting blocks will remain open during operations. All hunters who have bookings in affected blocks will be contacted directly to inform them of operations. Any new bookings will be informed of operations around the area through messaging on the DOC website and through direct communications immediately upon booking. After toxic sowing, there will be a caution period of 4 months minimum in which hunters will be allowed to book the hunting block but will be made aware of this at the time of booking, including notification of the hunting caution advisory not to eat meat from the area. If the caution period needs to extend due to carcass and bait monitoring, then we will inform hunters at the time of booking.

Any DOC or hunting huts in the treatment area will have signage to inform of the operation. Warning signs will remain in place until the carcass and bait monitoring end points have been reached as per DOC national performance standards.

Public huts and private DOC Bivvies will be sown over during operations, and their water supplies managed by ZIP, with agreement from DOC. Water supplies will be disconnected prior to operations, and roofs, gutters and hut surroundings cleared before reconnection.

In the small area where the proposed Eradication Trial treatment area reaches the coastal edge in areas where we need to ensure no gaps in habitat are left, our intention is to use precision bait application techniques (trickle and fixed trickle sowing, hand lay) to ensure that no bait enters the ocean.

Bait will be transported to the island by marine transport and moved onto a land based loading site (see maps) for operations. Operating from a land based site (including bait and fuel) was requested by wild fishers and the Southland Marine Farmers Association. From this land based site, mechanical loading will be used to transfer bait into heli buckets (broadcast, trickle or fixed trickle), or moved in small quantities in buckets or drybags to be used in hand lay.

9(2)(g)(ii) *have been engaged to provide loading site security on days of bait application and to act as security consultants throughout the planning of the operation. Security plan includes* 9(2)(g)(ii)

9(2)(g)(ii) [redacted]

A health and safety plan & emergency plan is in place and will be verified by both DOC and ZIP prior to operations beginning. This will include plans through from bait on load site to vessel management.

Are you satisfied with the proposed warning sign locations and normal points of entry?

Operational maps with all warning signs marked have been supplied. Warning sign locations have been checked by local DOC staff.

Summary of any technical or community relations advice received

Advice from 9(2)(g)(ii) [redacted] Technical Advisor Threats:

"In general, I don't see the incorporation of the **Predator Free Rakiura trial** (where some blocks will receive two toxin applications, with the first being at a relatively high sowing rate and different bait matrix) as significantly increasing risk. This is because of the relatively small scale of the trial blocks, and because there are few species present that we would either expect to be negatively affected by a single operation (in which case two toxin applications could increase that effect) or where the risks are unknown. The most critical (not because we expect high risk but because of the significance if that assessment is wrong) is pukunui/southern NZ dotterel, however this is mostly isolated by little potential nesting habitat included within the trial blocks, and if weather conditions allow the additional application in the trial blocks will be completed before nesting begins.

However, if based on other advice the trial is not supported, this should not compromise the main part of the operation. While I would recommend approving the operation as a whole, if that is not possible we should still approve that part referred to as the Pukunui Predator Control Operation. We also need to ensure the Pukunui Predator Control Operation is delivered before or as close to the beginning of nesting season – **I would recommend setting a date at which if the trial component is not yet underway, priority is to shift to the Pukunui blocks.**

Pukunui – there is a bit of an unknown regarding both disturbance and a possible poisoning risk. We've already considered poisoning and think it's unlikely but not impossible there's a pathway. Given the main operation is driven by pukunui protection and the trial blocks have minimal overlap with nesting habitat (and hopefully nesting period) the pukunui TAG have accepted this unknown and worked with the operation planners to minimise as much as possible any risk that may be present through operational timing. There will be monitoring of dotterel behaviour during, and dotterel outcomes following the operation.

Fernbird – known mortality rates in aerial 1080 cereal bait operations is at the higher end for passerines, but still at a level where a healthy population should be able to quickly recover. I would have concerns if Rakiura fernbird (recognised as an endemic subspecies) was critically threatened and restricted to habitat within the operational area. However, I have checked with 9(2)(g)(ii) [redacted] (Senior Ranger, Rakiura) and while there are limited data, it appears that fernbirds are widely distributed across Rakiura – the map of recent records would serve just as well as a map of recent human activity in expected fernbird habitat. So worst case scenario this operation could have a temporary negative impact on populations within the operational area but not on the Rakiura population as a whole, and we would expect this species to benefit directly from control of rats and other target species. Within the trial blocks, which will receive two applications of 1080, overall mortality could increase, but if that resulted in a longer term negative impact on populations, this would be localised to within those trial blocks.

Weka – I agree with the analysis in the AEE but have pulled out for attention here because I didn't see on the species list. My understanding is that for most of mainland Rakiura weka are very rare but could be present in the operational area. So, it would be better to make sure they're on the species list rather than remove the analysis from the AEE.

Black-backed gulls (BBG) are susceptible to poisoning in 1080 operations, and there has been one known case of a significant number of deaths occurring at and around an active BBG colony included within an operation area (South Ōkārito, November 2021). In recent years there has been at least one BBG colony within the Rakiura operational area (hill 511) – this was subject to an alphachloralose op last year. It is too soon to say if that successfully de established the colony and there could be colonies elsewhere on open tops or wetlands within the operational area, so there could be a notable number of deaths resulting from this operation. However, that would probably further improve outcomes for dotterels, as BBG are regarded as predators and the presence of colonies is also believed to have an impact through disturbance & exclusion from potential nesting habitat. Location of the trial blocks and the proposed timing of phase 1 means that this aspect of the operation is unlikely to cause significant gull mortality. However, even under optimal timing the main operation is likely to have an impact on any gull colonies within the operational area – activity at BBG colonies can start to build up by late July.

There's no evidence of direct negative impacts on **lizards** in aerial 1080 operations, but this isn't well understood. We would expect that if the operation is equally successful against all three rat species as well as feral cats, and mice are not present, it will greatly benefit lizards (and invertebrates). However, if the operation disrupts the current rodent community structure either by allowing undetected mice to increase or if kiore and/or Norway rats are not suppressed as much as ship rats, this may in the medium to long term increase predation pressure on terrestrial lizards. ZIP's result monitoring will inform this so needs to be shared as we may need to consider additional management for the most threatened or distribution limited lizard species (harlequin gecko and small-eared skink probably being the priorities).

We should expect an impact on both **deer species**. It looks to me that everything that can be done to minimise or manage the social impact of this without compromising the operation, is being done, resulting from the consultation process. Use of deer repellent in some blocks isn't expected to increase risk to any native species present through making bait more attractive, or to compromise outcomes by making bait less attractive to target species. Result monitoring by ZIP and DOC means that we will be able to test the latter expectation."

See email DOC-10320524

Public health permission, including application form sighted (if not provided at time of application)

PHU application supplied by applicant. Permission is pending and the conditions will be checked to ensure they align with DOC requirements and present no problems.

Other resources consulted *(specify)*
Rakiura Deer repellent memo DOC 10306036 (attached)

From application:
It is proposed that deer repellent be used for bookable hunting blocks under the treatment area. Deer repellent has been requested for use in all areas possible by leadership for the New Zealand Deerstalkers Association, and Game Animal Council, along with experienced local hunters, to reduce impact on deer populations in the blocks. It should be noted that the impact of using deer repellent with white tailed deer populations is not well understood.

Using deer repellent in bookable hunting blocks aims to mitigate impacts on white-tailed deer hunting opportunities, where the highest deer numbers and hunting value is. Additionally, this design provides the opportunity to learn about the differences in target and non target outcomes between repellent and non repellent blocks (which is expected to have significant benefit for the planning of proposed future Predator Free Rakiura operations).

From DOC Operational Plan DOC 7874715 :

"Worksafe hazardous substance storage location compliance certificate is required to store up to 50t of toxic bait. A Resource Consent for a hazardous substance storage facility is also required from Southland District Council if more than 200kg of toxic bait is stored on Rakiura

A resource consent from Environment Southland for aircraft noise is required to operate aircraft from the coastal marine area on any waters within Patterson Inlet. Aircraft noise outside of Patterson Inlet is a permitted activity, providing aircraft operation is restricted to between 0700 and 2200hrs, aircraft undertake noise limiting actions during flight, and the noise is no higher than 50db where the land meets the coastal marine area. Environment Southland Coastal Marine Plan Rule 5.3.8."

A readiness check will occur to ensure all required consents are in place before the operation occurs.
Which additional performance standards should be applied and why? TBC
Please list any recommended exemptions or extra conditions specific to this operation here. TBC

The operation has been applied for at the following locations:			
Public Conservation Land title	Land status	Conservation Management Planning Document(s)	Area (Ha)
Rakiura National Park	National Park (s4 National Parks Act)	Stewart Island/Rakiura Conservation Management Strategy and Rakiura National Park Management Plan 2011	42,600 ha
Eastern Rakiura Scenic Reserve	Scenic reserve (s 19 Reserves Act)	Stewart Island/Rakiura Conservation Management Strategy 2011	479 ha

Consultation by DOC with Māori -	
Brief analysis/outcome of consultation:	From application: *For this application, ZIP and DOC are consulting with the following key partners and other interested groups: (note that consultation is ongoing). A summary is below, please see communications record for more details.* *The DOC Rakiura operations manager leads consultation on effects with Papatipu Rūnaka ki Murihiku (see consultation record), made up of representatives from the four Southern Ngāi Tahu hapū;* • *Waihōpai Rūnaka. Murihiku Marae* • *Te Rūnaka o Awarua. Te Rau Aroha Marae* • *Te Rūnanga o Ōraka Aparima. Takutai O Te Titi Marae* • *Hokonui Rūnaka. Ō Te Ika Rama Marae*

	Kaitiaki Rōpū ki Murihiku meet regularly with Rakiura DOC operations manager to consult and work together on projects on Rakiura. *ZIP has also met with a subset of the Kaititaki Roopū O Murihiku that form the Ngāi Tahu Leadership for Predator Free Rakiura. This group has indicated support for the operation to protect pukunui. See the communication record for further details.* Rakiura Operations Manager 9(2)(g)(ii) is comfortable with the level of engagement and consultation that has occurred. See email DOC 10326501
For detail, please refer to Communication Plan:	See: DOC 10219524

Analysis of the Principles of the Treaty of Waitangi –

Section 4 of the Conservation Act 1987 states 'This Act shall be so interpreted and administered as to give effect to the principles of the Treaty of Waitangi'. This is applied to all Acts administered by DOC.

The key principles of the Treaty of Waitangi that apply to DOC's work are:

1. Partnership – mutual good faith and reasonableness: The Crown and Māori must act towards each other reasonably and in good faith;
2. Informed decision making: Both the Crown and Māori need to be well informed of the other's interests and views;
3. Active protection: The Crown must actively protect Māori interests retained under the Treaty as part of the promises made in the Treaty for the right to govern;
4. Redress and reconciliation: The Treaty relationship should include processes to address differences of view between the Crown and Māori.

Discussion:

The Department and ZIP consulted with Ngāti Tahu regarding Pukunui management and extinction risk has been ongoing for several years. Pukunui have been under intensive

management since 1994.

The DOC Rakiura operations manager leads consultation on effects with Papatipu Rūnaka ki Murihiku (see consultation record), made up of representatives from the four Southern Ngāi Tahu hapū;

- Waihōpai Rūnaka. Murihiku Marae
- Te Rūnaka o Awarua. Te Rau Aroha Marae
- Te Rūnanga o Ōraka Aparima. Takutai O Te Titi Marae
- Hokonui Rūnaka. Ō Te Ika Rama Marae

Kaitiaki Rōpū ki Murihiku meet regularly with Rakiura DOC operations manager to consult and work together on projects on Rakiura.
ZIP has also met with a subset of the Kaititaki Roopū o Murihiku from the Ngāi Tahu Leadership for Predator Free Rakiura. This group has indicated support for the operation to protect pukunui. See the communication record for further details.

ZIP + DOC have also been in contact with representatives from the Rakiura Tītī Island Administering Body and the Rakiura Tītī Committee, who are kaitiaki of the Rakiura Tītī Islands along with, and on behalf of, all Rakiura Māori, and with the representatives of the Rakiura Māori Lands Trust, which holds land in trust for many Rakiura Māori descendants.

All iwi feedback recorded in the consultation communication log, submitted with the application is supportive of the operation.

Partnership The Department showed partnership by contacting Treaty Partners via email and a hui ,with a summary of the application and allowing adequate time for a response (20 working days). Treaty Partners were provided with a key fact sheet and opportunities to ask questions and discuss the programme, to ensure they are fully informed of the proposal.

Active Protection The Department must actively protect Māori interests retained under the Treaty as parts of the promises made by the Crown in the Treaty in return for the right to govern. By understanding views provided by iwi and including Operating Standards to ensure best practice is followed, the Department aims to protect Māori interests.

Informed Decision Making Using the information provided, the Department is able to make an informed decision, taking cultural views into account. The Department acknowledges all views provided and aims to protect Māori interests through the decision made. Treaty Partner's were generally supportive of the activity, understanding the benefits to native species and taonga species in the area.

Redress Redress and reconciliation will be taken into consideration with iwi informed of the final decision and the reasoning behind it. Further discussions will be held if issues emerge or questions emerge from our treaty partners before, during or after the operation.

The application and manner in which the Crown has consulted affected tangata whenua meets section 4 of the Conservation Act 1987. It is considered that the Crown has acted reasonably and is actively protecting Māori interests through the consultation process with

affected tangata whenua (demonstrated in the application form and comms plan) to ensure well informed decision making.

Are there any specific post settlement obligations that relate to the application area? Detail on individual treaty settlement commitments can be found here: Intranet –> Our Work –> Treaty Relationships > Treaty Settlement commitments

Zero Invasive Predators seeks to remove predators to benefit many native species and taonga present within the area.
Section 288 of the Ngāi Tahu Claims Settlement Act 1998 sets out the importance and special association of Ngāi Tahu to all taonga species (Crown acknowledgement of the cultural, spiritual, historic and traditional association). Although there are some risks from 1080 poisoning (non target species), overall, the population benefit for those species is typically significant.

The Act covers the importance to consult and have regard to their views when decisions are made concerning the protection and/or management of taonga species , which has been carried out as above.

The Department appears to be fulfilling its post-settlement commitments and Section 4 obligations.

Statutory Analysis –

Hazardous Substances and New Organisms Act 1996 (HSNO Act)

Under the HSNO Act, the Environmental Protection Authority (the Authority) has approved the use of certain VTAs but has imposed a requirement that:

No person may apply or otherwise use this substance on land administered or managed by the Department of Conservation unless the person first obtains a permission from the Authority.

All persons exercising powers do so to achieve the purpose of the HSNO Act as set out in section 4:

> *The purpose of this Act is to protect the environment, and the health and safety of people and communities, by preventing or managing the adverse effects of hazardous substances and new organisms.*

1. When exercising the power of decision, to achieve the purpose of the Act, are the principles of section 5 recognised and provided for, being:

   (a) the safeguarding of the life supporting capacity of air, water, soil, and ecosystems:

(b) the maintenance and enhancement of the capacity of people and communities to provide for their own economic, social, and cultural well being and for the reasonably foreseeable needs of future generations.

Yes ~~/ No~~

Discussion:

2. When exercising the power of decision, to achieve the purpose of the Act, have the matters in section 6 been taken into account, being:

(a) the sustainability of all native and valued introduced flora and fauna:
The use of aerially applied 1080 will promote the sustainable management of valued native flora and fauna, including Southern New Zealand Dotterel and other species listed in Appendix 5 of the application. The purpose of this operation is to reverse the decline of native species. It is possible deaths could occur in some bird species though population recovery is normally within one breeding season. The control of pests falls within the scope of sustainable management.

(b) the intrinsic value of ecosystems:
Pest control measures are essential to ensure that the condition of New Zealand's native ecosystems is maintained in order to ensure the ongoing survival of native and valued introduced species and the protection of indigenous biodiversity. 1080 is the only tool currently available to achieve rapid and effective pest control in difficult terrain, and is, in this case, critical to ensuring the sustainability of native and valued introduced flora and fauna and the intrinsic value of ecosystems.

(c) public health:
While there is public concern over adverse human health effects of use of 1080, as well as the concerns of hunters and dog owners, adverse effects can be adequately managed by the controls and by the overall management regime for 1080. The Ministry of Health is responsible for ensuring that the provisions of the HSNO Act are complied with where it is necessary to protect public health. The EPA has delegated the function of granting permissions for the use of selected VTAs (to medical officers of health and health protection officers who are also warranted HSNO enforcement officers. Human health is therefore also considered through the public health permission.

(d) the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, valued flora and fauna, and other taonga:
Papatipu Rūnaka ki Murihiku and Kaitiaki Rōpū ki Murihiku are supportive of the operation, understanding the benefits of pest control to native species.

(e) the economic and related benefits and costs of using a particular hazardous substance or new organism:

The use of 1080 has significant benefits for New Zealand, particularly in relation to the environment and the market economy.

(f) New Zealand's international obligations.

The use of 1080 enables New Zealand to meet requirements of international obligations associated with animal health, biodiversity and conservation, including the World Organisation for Animal Health Terrestrial Animal Health Code, the Convention on Biological Diversity, and the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage 1972.

Yes ~~/ No~~

3. When exercising the power of decision has the precautionary approach in section 7 been taken into account being the need for caution in managing adverse effects where there is scientific and technical uncertainty about those effects?

Yes ~~/ No~~

Discussion:

A precautionary approach has been displayed throughout the planning and preparation of the proposed activity. The pesticides proposed for use are known to be hazardous substances and as such caution will be taken to manage possible adverse effects. The Assessor has determined that any adverse effects can be mitigated and the AEE shows a good understanding of these effects to non target species using the proposed methodology.

The proposed activity is consistent with Section 7 of the Hazardous Substances and New Organisms Act 1996.

4. When exercising the powers of decision has account been taken of the principles of the Treaty of Waitangi (Te Tiriti o Waitangi)

Yes ~~/ No~~

Discussion:

An assessment of the principles of the Treaty of Waitangi and section 4 of the Conservation Act 1987 has occurred. Such an assessment can also be applied to Section 8 of the Hazardous Substances and New Organisms Act 1996. As such the principles of the Treaty of Waitangi has been considered through consultation and other means.

5. In accordance with section 95A(3) has the following been considered:

(a) the adverse effects involved in the use or uses of the substance to which the application relates; and

(b) the conditions (if any) that the decision maker thinks should be imposed as part of the permission.

Note: These conditions are related to conditions which are set out in the performance sheets attached to the permission as well as the conditions/requirements in the permission letter.

Yes ~~/ No~~

Discussion:

Adverse effects involved in the use of substances to which this application relates have been discussed throughout this document by the assigned assessor. Conditions which will be imposed by the decision maker as part of any permission for the use of such substances are outlined in the associated permissions letter. Conditions noted in the permissions letter will mitigate any possible adverse effects from the proposed activity.

6. Can a permission under section 95A of the HSNO Act be recommended?

Yes ~~/ No~~

Discussion:

Based on the above assessment, permission can be recommended for approval under section 95A of the Hazard Substances and New Organisms Act 1996.

Wildlife Act 1953

A principal purpose of the Wildlife Act is the protection and control of wildlife within New Zealand. Any Wildlife Act authorisations can apply to the whole operational area, regardless of land ownership.

Will individual protected wildlife be killed (are deaths foreseeable and unavoidable) in this operation, even if that is not desired?

Yes ~~/ No~~

Discussion:

Under section 53 you may grant an authority to incidentally kill wildlife.

The killing of wildlife is incidental where it is not directly intended but is unavoidable and foreseeable as a result of undertaking an otherwise lawful activity. The applicant has provided the reasons as to why the killing of wildlife is unavoidable (i.e., an inevitable consequence) of carrying out their lawful activity. The reasons provided by the applicant have been assessed and considered against the definition in section 53A. The application is consistent with the definition of incidental killing under section 53A.

Section 53B Consistency with the protection of wildlife
Section 53B(2) of the Wildlife Act deems an authority to be consistent with the protection of wildlife, where you are satisfied that the overall effect of the authority would be consistent with the protection of populations of wildlife and individual wildlife.
You are not required to be satisfied that the lawful activity itself is consistent with the protection of wildlife, or that each individual act of killing, viewed in isolation, is consistent with the protection of wildlife.

Protection of populations of wildlife.
Section 53B(3) sets out the matters in which you must have regard to in determining whether the overall effect of the authority would be consistent with the protection of populations of wildlife.

Section 53B(3)(a)(i): the potential adverse effects on the populations of wildlife that may be affected by the lawful activity.
The likelihood of non target species being killed is low and therefore the DOC performance standards for the suppression operation are adequate to manage risks to native fauna.

Section 53B(3)(a)(ii): the viability of the species to which that wildlife belongs
Despite the risk of death of a few individuals, this activity will protect non target species in the long term by reducing predator numbers, which will increase survival and nesting success of non target native species. The purpose of the operations is to enable the long term viability of these species.

Section 53B(3)(b): the extent to which the authority, including any conditions imposed, addresses the potential adverse effects of the lawful activity
The DOC performance standards imposed will address the potential adverse effects to the greatest extent possible.

Section 53B(3)(c): any other matter you consider relevant
This operation will help New Zealand move towards the goal of zero invasive predators by 2050. This goal will benefit all native wildlife in New Zealand by increasing survival and nesting success rates. This operation will also be used to better understand the efficacy of deer repellent, including its effect on non target species, including protected wildlife, to enable a better understanding of how to optimise pest control operations to protect wildlife.

Protection of individual wildlife

Section 53B(4) describes how you may determine if the overall effect of the authority would be consistent with the protection of individual wildlife.

The overall effect of this authority is consistent with the protection of individual wildlife.

Section 53B(4): Protection of Individual Wildlife

The Applicant has provided research indicating that the likelihood of death is low. A condition of the authority will be to comply with DOC performance standards, which include a requirement that baits are to have a mean size of 6 g or more, and 95% of baits should weigh more than 4 g, to minimise impact on non target species. The baits must also be dyed green or blue, so they are not attractive to protected wildlife.

8. Are conditions imposed that will limit such incidental deaths?

Yes / ~~No~~

Discussion: The DOC performance standards for the suppression operation are adequate to manage risks to native fauna. These include standards around bait size, lure, and colour.

9. In these circumstances can it be recommended that an authorisation be granted by the Director General under section 53 of the Wildlife Act to kill protected wildlife as a result of this operation because it will, in the longer term, aid the protection of wildlife?

Yes / ~~No~~

Wild Animal Control Act 1977

Section 17 enables the Minister to authorise the hunting or killing of wild animals (including deer, chamois, thar, goats and pigs) on land administered by the Department.

11. Does the operation seek to target wild animals on land administered by the Department?

~~Yes~~ / No

Discussion:

The Wild Animal Control Act 1977 provides for "the control of wild animals generally and their eradication locally where necessary and practical." The effects of the proposed operation on the population of any non target, wild animal species will vary on a case by case basis depending on the characteristics of the operational area and whether the operational area has been subject to previous landscape pest control efforts (and the frequency of those efforts).

There are no domestic animals within the operation area, however there may be livestock adjacent private land. A buffer zone will be implemented to reduce the risk

of bait falling on land not managed by the Department. Feral species (other than the target species) likely to be found within the operational area which may be at risk from aerially applied baits include red deer (in particular, pose a serious risk to national park values) chamois, and hares. Deer repellent will be used to discourage deer from consuming the bait.

All the identified species listed are at risk from primary or secondary poisoning from 1080; there is a wide variation between the species in their susceptibility to 1080 poisoning. 1080 poses a high risk to dogs and stock, with dogs being especially vulnerable to secondary poisoning. Some of the treatment area is a National Park no dogs are permitted into this part of the operational area. The rate of degradation of carcasses will depend on moisture, temperature, and the presence of micro organisms. Larger animals need several baits to receive a lethal dose, but deaths have been reported where animals have access to baits in large quantities, particularly at Loading Sites. All these animals are susceptible to primary or secondary poisoning and in most cases, it is unlikely that they will encounter baits or poisoned carcasses. This is most likely to happen either by misapplication or stock accessing the block.

12. Would the hunting or killing of wild animals be consist with the Conservation General Policy, any relevant wild animal control plan, and the relevant conservation management strategy?

    Yes / ~~No~~

13. Can authorisation under section 17 of the Wild Animal Control Act 1977 be recommended to be granted by the Minister?

    Yes / ~~No~~

    Discussion:

    While wild animals are not the target species of the operation it is likely that individuals may succumb to ingestion of cereal baits and, in some cases, wild animal populations may be significantly impacted. For completeness the decision maker should authorise the killing of wild animals by poison under s17.

National Parks Act 1980

14. Does the operation area include a National Park?

    Yes ~~/ No~~

15. If yes, note section 4(2)(b) of the Act provides:

... national parks shall be so administered and maintained under the provisions of this Act that— ...
except where the Authority otherwise determines, the native plants and animals of the parks shall as far as possible be preserved and the introduced plants and animals shall as far as possible be exterminated:

Also note the General Policy for National Parks, in particular Policy 4.1 (which recognises the importance of indigenous species and that those within national parks should be managed to prevent their loss or decline and to restore genetic integrity and diversity) and Policy 4.3 relating to management of threats to indigenous species. Policy 4.3(d) provides, for example:

iii) eradicating, where practicable, and containing and reducing the range of established introduced plants and animals; and

iv) controlling widespread introduced species where necessary to maintain the general welfare of national park indigenous species, habitats and ecosystems or to maintain scenic and landform values.

Identify relevant National Park Management Plan:

- Rakiura National Park Management Plan 2017

16. Section 51A of the National Parks Act provides that the Minister may authorise a person to do anything that the Minister considers appropriate for the proper and beneficial management, administration and control of a park. The thing authorised cannot be inconsistent with the management plan for the park and must be in accordance with statements of general policy and conservation management strategy (section 43).

    Is the killing of the pests for the proper and beneficial management, administration and control of this National Park?

    Yes ~~/ No~~
    Discussion:

    The killing of pests for the proper and beneficial management of the park is support in the parks management plan as mentioned above. National Parks are areas designated for the preservation of indigenous species and the National Parks Act 1980 requires that all introduced species shall, as far as possible, be exterminated.

    Would authorising the killing of pests be consistent with the General Policy for National Parks, any conservation management strategy, and the relevant management plan?

    Yes ~~/No~~
    Discussion:

As noted above the authorised killing of pests is consistent with the General Policy and relevant Conservation Management Strategies (discussed below).

17. Can granting of consent be recommended under section 51A of the National Parks Act for the possible killing of introduced animals?

    Yes ~~/ No~~
    Discussion:
    Section 51A(1) of the National Parks Act notes that *'the Minister may do, or authorise a person to do, anything that the Minister considers appropriate for the proper and beneficial management, administration, and control of a park'. If authorisation is provided then 'the Minister may impose any terms and conditions the Minister considers appropriate in the circumstances, including a condition requiring the payment of fees'.*

    The above statement applies to the proposed pest control operation which will include relevant conditions to mitigate adverse effects: as such granting such a consent can be recommended.

18. Section 5(2) provides that no person shall, without the prior written consent of the Minister, kill any indigenous animal found within a national park. Written consent can be given if consistent with a management plan.

    Is the incidental killing of native animals within the national park consistent with the management plan?

    Yes ~~/ No~~
    Discussion:
    The national park's management plan does not discuss incidental kill and as there are no further considerations to be had.

19. Can granting of consent be recommended under section 5 of the National Parks Act for the possible killing of native animals and the killing of introduced animals?

    Yes ~~/ No~~
    Discussion:
    All sections of section 5 of the National Parks Act 1980 apply and written consent can be recommended.

20. National Park Bylaws restrict the use of helicopters, and noise, in some national parks. Is it proposed that helicopters will take off and land in any of the following national parks?

    Abel Tasman National Park

Arthurs Pass National Park
Egmont National Park
Fiordland National Park
Mount Aspiring National Park
Mount Cook National Park
Nelson Lakes National Park Bylaws 2006
Tongariro National Park Bylaws 1981
Westland National Park Bylaws 1981

~~Yes /~~ No

Reserves Act 1977

21. Is any of the operation area a scenic, historic, nature or scientific reserve?

Yes ~~/ No~~

22. If yes, will the killing of fauna (both pests and indigenous species) be in accordance with the management of that reserve type (Refer s 18 historic; s 19 scenic; s 20 nature; and s 21 scientific)?

Yes ~~/ No~~
Discussion:
Section 19 of the Act states that the purpose of scenic reserves is to protect and preserve in perpetuity the land for their intrinsic worth and for the benefit, enjoyment, and use of the public, suitable areas possessing such qualities of scenic interest, beauty, or natural features or landscape that their protection and preservation are desirable in the public interest.

The proposed operation is consistent with the purpose for which the land is held under the Reserves Act and will be managed in accordance with protecting scenic features. To the extent that this operation is about the control of possums, it is in accordance with the administration of scenic reserves, as the control of possums and rats will protect the natural environment. It is also in accordance with the general purpose of the Reserves Act as set out in section 3 which includes "ensuring, as far as possible, the survival of all indigenous species of flora and fauna, both rare and commonplace, in their natural communities and habitats". Pest control directly promotes the protection and enhancement of natural landscapes and native flora and fauna, it is therefore consistent with the management purpose of scenic reserves.

23. Will the reserve be managed in accordance with any conservation management plan, conservation management strategy and / or Conservation General policy?

Yes ~~/ No~~
Discussion:

The reserve will continue to be managed in accordance with the relevant Conservation Management Strategy and the Conservation General Policy.

The proposed operation is consistent with policy 4.2(b) of the Conservation General Policy which aims to eradicate and control pests in order to protect indigenous species, habitats, and ecosystems. The CGP recognises that New Zealand's unique biodiversity is internationally important, with a high percentage of the country's indigenous species being endemic. This places the responsibility on New Zealand for their continued existence. Section 4.2 of the Policy covers biosecurity and management of threats to indigenous species, habitats and ecosystems. 'Conservation Management Strategies and Plans should identify, and where possible, prioritise the threats posed by pests to indigenous species, habitats and ecosystems.

The Stewart Island/Rakiura Conservation Management Strategy and National Park Management Plan 2011 discusses the abundance of native wildlife on the Island and the threat that pest mammals pose (1.3.2).

Section 3.2.2 discusses introduced animals and aims to eradicate, control and manage them within the National Park. All eradication programmes should ensure that
a) all individuals of the target species are exposed to the eradication programme and/or the population is reduced at a rate exceeding the rate of increase;
b) the probability of the introduced animals re establishing can be managed;
c) the community and Stewart Island/Rakiura Pest Liaison Group have been consulted; and
d) the benefits of the project outweigh the costs.
The sow rate and use of prefeed increases the likelihood of all target species being exposed to the toxin. This operation is part of a wider piece of work to remove pest species, which the Stewart Island/Rakiura Pest Liaison Group are involved in. The benefits, as discussed throughout this document, outweigh the costs.

Part 31 of the CMS relates to the control and management of animal threats in the region. Possums and rats, which are targeted in this operation, are considered to have a significant detrimental effect on natural values, native plants and animals and the natural communities and ecosystems. Eradication is a desirable aim to control animal pest populations and to promote the continued existence of native species (Objective 31.1.1).

The CMS supports the decline and control of pest animal population using aerial poisoning and other techniques within the operation area. It is considered that the proposed pest control operation is consistent with the Stewart Island/Rakiua CMS and NPMP as it will have positive conservation impacts including protecting at risk native species and their habitats.

24. Can a recommendation be made to the Minister to authorise the killing of fauna on such reserves? [Note such a recommendation cannot be made if an authorisation under the Wildlife Act is not recommended.]

Yes ~~/ No~~
Discussion:
The proposed killing of fauna in the listed reserve is consistent with the purpose for which the land is held. Under section 50 of the Reserves Act 1977, authorisation can be granted to kill fauna in reserves, provided that (s 50(3)): 'the taking and killing of fauna would not be in contravention...of the Wildlife Act 1953...'. The proposed pesticide operation is on behalf of the Director General of Conservation. Section 63 (the offence of killing) does not apply to the Crown, therefore the Director General would not commit an offence under the Wildlife Act when it incidentally kills wildlife. For this application, as such, s 50 permission can be granted and the activity within the reserve can be recommended for approval.

25. Is the land within the operational area recreational, government purpose or local purpose reserve?

~~Yes /~~ No

Conclusion

1. On the basis of the above analysis can a permission be recommended to the decision maker?

Yes ~~/ No~~

2. Is the proposed permission document consistent with the application?

Yes ~~/ No~~
Discussion:
The permission document drafted by the assigned assessor is consistent with the activities applied for in the application received from the Director General of Conservation.

Make a recommendation *Should the application be approved or declined?*	
What key points should the approving manager have drawn to their attention?	Advice from the DOC legal team regarding who will hold the permission for this operation: "... the DG will hold the permits for both Rakiura and Pukunui, and ZIP will act on the DG's behalf as the DG's agent." See email DOC 10326533 Advice from 9(2)(g)(ii) Technical Advisor, Threats:

	"We also need to ensure the Pukunui Predator Control Operation is delivered before or as close to the beginning of nesting season – I would recommend setting a date at which if the trial component is not yet underway, priority is to shift to the Pukunui blocks." See email DOC-10320524 The appropriate consultation has occurred and is documented in the operational comms plan. Pre op notification is ongoing, and a **readiness check** will ensure all required notification has occurred before the operation goes ahead. The operational area covers a range of popular DOC campgrounds, huts, and tracks. Good management of these facilities for public safety is critical and is well covered in the application documents. The use of deer repellent has been requested by hunting interest groups targeted around the bookable hunting blocks. It is proposed that deer repellent is used to reduce impact on white tail deer populations within bookable hunting blocks, and to test efficacy of deer repellent on eliminating target predator species (kiore, ship rat, Norway rat, possum). 1080 is not registered to target deer and *deer are not being targeted in this operation* but some will almost certainly die as a result of ingesting cereal bait. Hence authorisation under s.17 of the WAC Act is included in the permission letter.
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*)?*	Approval is recommended for the operation to proceed subject to all conditions contained in the permission letter and associated performance standards sheets being adhered to. Use and scale of deer repellent You have the authority to approve or decline the use of deer repellent over part, or all, of the requested area after weighing up all factors in this

	document and in Rakiura Deer Repellent Memo (attached). N.B. The legal advice within this memo also needs to be considered in your decision. This advice is legally privileged, if you require any clarification on legal matters, this needs to be sought from DOC legal advisors.

Recommendations and Prepare Documents -	
For recommended approval: *Attached correct draft letter of permission, DOC Performance Standards sheet(s) and map(s) of operational boundaries.*	Attached Letter: (incl. maps and performance standards sheets) DOC 10817435 Rakiura Deer repellent memo DOC 10306036
For recommended decline: *Attach draft letter of decline including a summary of reasons.*	N/A

Recommendations and decision making -
Recommendations On balance, although this operation does pose some risk of by kill, the benefits are believed to outweigh this risk. This operation is consistent with the Hazardous Substances and New Organisms Act 1996, Wildlife Act 1953, Wild Animal Control Act 1977, National Parks Act 1980, General Policy for National Parks 2005, Reserves Act 1977, Rakiura National Park Management Plan 2011, and Stewart Island/Rakiura Conservation Management Strategy 2011. The appropriate consultation has occurred and is documented in the operational comms plan. Pre-op notification is ongoing a readiness check will ensure all required consultation / notification has occurred and a public health permission has been obtained, before the operations go ahead. Experts within the Department have reviewed this proposal and provided their support. For these reasons, this application is recommended for approval. It is recommended that you: 1. Consider the application, and assessment report;

2. Note that the consultation undertaken by the applicant and the Department is sufficient to meet the obligations to give effect to the principles of the Treaty of Waitangi (section 4 Conservation Act);

3. Agree to grant a permission to Zero Invasive Predators on behalf of the Director-General of Conservation, which will cover staff and contractors;

Agree / ~~Disagree~~

4. Agree that the proposed permission and conditions consider the adverse effects of the use of sodium fluoroacetate on DOC managed or administered land and that granting the permission is in accordance with the purpose of the HSNO Act, recognising the life supporting capacity of ecosystems and the well being of people and communities and taking into account the principles of that Act;

Agree / ~~Disagree~~

5. Agree, under sub delegation from the Chief Executive of the Environmental Protection Authority, to grant permission under s 95A of the Hazardous Substances and New Organisms Act for the use of sodium fluoroacetate on the land managed or administered by DOC in the operation area;

Agree / ~~Disagree~~

6. Agree you are satisfied that, in the area of the operation, pests are causing damage to wildlife and land so killing of these pests in general accordance with the application will meet the purpose of the Wildlife Act;

Agree / ~~Disagree~~

7. Agree that, for the purpose of providing greater protection for protected indigenous species, individual protected wildlife will be killed as a result of this operation even though the conditions on the permission are complied with, and you are satisfied that the authority is consistent with the protection of wildlife and individual wildlife;

Agree / ~~Disagree~~

8. Agree, under delegation from the Director General of Conservation, to grant an authorisation under **section 53 of the Wildlife Act** for the killing of protected indigenous wildlife for the purpose of greater protection of indigenous wildlife in the operation area;

Agree / ~~Disagree~~

9. Agree, under delegation from the Minister of Conservation, to grant authorisation under section 17 of the Wild Animal Control Act 1977

Agree / ~~Disagree~~

10. Agree, in relation to the area of operation within the National Park, that this operation is in accordance with the purpose of the National Parks Act and is consistent with the Rakiura National Park Management Plan;

Agree / ~~Disagree~~

11. Agree, in relation to the area of operation within the Rakiura National Park and under delegated authority from the Minister of Conservation, to authorise under **section 51A of the National Parks Act** the killing of non indigenous animals (particularly possums, rats and hedgehogs);

Agree / ~~Disagree~~

12. Agree, in relation to the area of operation within the Rakiura National Park and under delegated authority from the Minister of Conservation, to authorise under **section 5 of the National Parks Act** the killing of indigenous animals as part of this pest control operation;

Agree / ~~Disagree~~

13. Agree, in relation to the area of operation within the Rakiura National Park and under delegated authority from the [Minister of Conservation/Director General of Conservation],[3] authorise the landing, taking off and hovering of helicopters;

Agree / ~~Disagree~~

14. Agree, in relation to the area of operation that is scenic reserve that the killing of fauna (including indigenous fauna) through the use of hazardous substances in the scenic reserve is in accordance with the administration of the scenic reserve as set out in section 19 and the purpose of the Reserves Act 1977;

Agree / ~~Disagree~~

15. Agree, under delegation from the Minister of Conservation, to grant an authorisation under section 50 of the Reserves Act for the killing of fauna in the Eastern Rakiura Scenic Reserve, through the use of hazardous substances;

Agree / ~~Disagree~~

16. Agree, as a Commissioner of the reserve, to authorise under section 50 of the Reserves Act the killing of fauna on the reserve as part of this pest control operation (Note this cannot be agreed to unless you have agreed to grant an authorisation under s 53 of the Wildlife Act);

[3] Dependant on the particular bylaws that apply – see the National Park Bylaws instrument of delegation: DOC-2583793

Agree / ~~Disagree~~

17. If you have agreed to the above, sign the attached letter of Permission (which includes *DOC Performance Standards sheet(s) and map(s) of operational boundaries).*

- Letter
- PS sheets
- Map(s)

Legal Peer Review (legal team) –To enable a better overall understanding of issues and requirements in processing pesticide applications through PPL, please send this document to 9(2)(g)(ii) for peer review BEFORE you (**Permissions Advisor**) send all documents to the Decision Maker for final Decision.

Has this been peer reviewed by legal?

Yes / ~~No~~

Decision Maker

Decision made by:

Decision Maker to comment on the rationale behind their decision. If there is nothing contentious this can be brief, but if there are differing views between DOC staff and/or DOC and Treaty Partners, or there are multiple options available, or ***the decision made is different from what is recommended/requested, the rationale for the decision made must be clearly provided*** *below in Decision Maker comments section*

9(2)(g)(ii)

.....

9(2)(g)(ii)

Pursuant to the delegation dated 15 September 2015

23 May 2025

Date

Decision Maker comments – Rationale for Decision

In making this decision I have turned my mind to the feedback received from iwi. I have also considered two letters received 21 May 2025 from 9(2)(g)(ii) (RMLT) and the Protect Rakiura Trust. I acknowledge

the differing views between support and opposition that have been received through all feedback received.

My decision is to approve this operation to proceed to protect biodiversity values, and in particular the pukunui/southern NZ dotterel. The suppression of predators following the operation will increase the survival and enhance the breeding success of pukunui.

For clarity,

- I am approving the use of ProDeer repellent so its efficacy for Norway rat and kiore control can be established, to inform any future use of deer repellent bait on Rakiura. This is approved for approx. 9,654 ha targeted around the bookable hunting blocks
- I am approving an eradication trial operation over approx. 7,062 ha using more intensive sowing rates to test ZIP's '1080 to zero' predator elimination methods in the Rakiura ecosystem.

Importantly, this should not be viewed as a precedent setting decision.

Future decisions towards Predator Free Rakiura should be informed from the information available from this operation and eradication trial.

Note – a readiness check needs to be completed before this operation can proceed. If this readiness check arrives too late for the eradication trial to commence, the focus of the operation should focus primarily on the Pukunui Predator Control Operation.

ENDS

PERMISSION TO USE CERTAIN VERTEBRATE TOXIC AGENT(S) OR OTHER HAZARDOUS SUBSTANCE(S)

(IN A CATCHMENT AREA FROM WHICH WATER IS DRAWN FOR HUMAN CONSUMPTION OR AN AREA WHERE A RISK TO PUBLIC HEALTH MAY BE CREATED)

Under section 95A of the Hazardous Substances and New Organisms Act 1996 (HSNO Act), permission is required from a public health HSNO enforcement officer to use certain vertebrate toxic agents (VTAs) or other hazardous substances[1] when they are intended to be applied or used in a catchment area from which water is drawn for human consumption, or applied in any other area where a risk to public health may be created.

Full name of applicant:	Department of Conservation, in partnership with Zero Invasive Predators Ltd (ZIP)
Contact person:	9(2)(g)(ii)
Contact details: Physical address: Postal address: Contact phone number: Email:	Level 3, 5 Willeston Street, Wellington 6011 9(2)(g)(ii) [redacted]

Permission type and identification code					
New	2025/022/SAM	**Extension**		**Renewal**	

Permission period			
Permission start date:	01/06/2025	**Permission end date:**[2]	30/01/2026

Operation	
Operation name:	Pukunui Predator Control Operation and Eradication Trial Operation
Operation locality:	Rakiura | Stewart Island
Purpose of operation:	Rat and possum control
Nearest city/town:	The settlement of Oban (population 400) lies approximately 11 km from the northern edge of the proposed treatment area.
Local government:	Southland District Council, Environment Southland

[1] Hazardous substances requiring permissions refer to substances listed in Schedule 1 of the Environmental Protection Authority's Instrument of Delegation. These are: sodium fluoroacetate (1080), sodium cyanide, potassium cyanide, yellow phosphorous, 3-chloro-p-toluidine-hydrochloride, microencapsulated zinc phosphate paste, Advion® fire ant bait, Amdro® fire ant bait, Campaign® ant bait.

[2] End date refers to expiry date of this permission and not to the final date the vertebrate toxic agent or hazardous substance may be applied.

Total operation size (ha):	46,013 ha
Previous operations:	**19/32/MLC/DUNPH –** 02/09/2019 to 13/03/2020 - Ground based 0.1% 1080 fishmeal pellets in bait stations **20/15/MLC/DUNPH –** 26/08/2020 to 26/03/2021 - Ground based 0.1% 1080 fishmeal pellets in bait stations **21/16/MLC/DUNPH -** 24/08/2021 to 25/03/2022 - Ground based 0.1% 1080 fishmeal pellets in bait stations

I, 9(2)(g)(ii) [redacted], having been appointed by the Director-General of Health as an enforcement officer to enforce the provisions of the Hazardous Substances and New Organisms Act 1996 where it is necessary to protect public health, and acting under delegation from the Environmental Protection Authority, grant permission for the use of the vertebrate toxic agents or other hazardous substances listed in Schedule 1, in the area(s) indicated on the operational map(s) in Schedule 2, and subject to the conditions set out in Schedule 1, Schedule 2 and Schedule 3.

Signed:	9(2)(g)(ii) [redacted]
Name:	9(2)(g)(ii) [redacted]
Title:	Hazardous Substances and New Organisms Designated Officer
Contact details: Postal address: Contact phone number: Email:	 Private Bag 1921, Dunedin 9054 9(2)(g)(ii) [redacted] 9(2)(g)(ii) [redacted]

Appeals: Section 125 (1A) of the Hazardous Substances and New Organisms (HSNO) Act: A person may appeal to the District Court against a decision of the Authority, under section 95A about the terms and conditions of a permission held by the person.

Notice of Appeal: Section 127 of the HSNO Act: Before or immediately after the filing and service of a notice of appeal, the appellant shall serve a copy of the notice on the Authority, and every other party to the proceedings, and any other person who made a submission to the Authority.

Schedule 1: VTA or hazardous substance information	
Permission identification code:	2025/022/SAM
Operation locality:	Rakiura | Stewart Island

VTA or hazardous substance (1)				
VTA or hazardous substance	**Strength**	**Form**	**Application rate**	**Purpose**
Sodium monofluoroacetate (1080)	1.5 g/kg	Pellets	1-4 kg/Ha	Rat and possum
HSNO approval number: HSR002424				
Start date of operation: 01/06/2025			**Last date of operation:** 30/01/2026	
Specify all application methods to be used for the hazardous substance: Methods to be used: • **Aerial method(s):** broadcast, trickle, fixed trickle • **Non-aerial method(s)**: hand broadcast				

Schedule 2: Operational map(s)/lists	
Permission identification code	2025/022/SAM
Operation locality:	Rakiura | Stewart Island

Description of the operational area.

The Eradication Trial area (7,062 ha) sits within the larger Pukunui Predator Control Area (46,013 ha).

The total project area covers the area around the Tin Range over the middle portion of Rakiura | Stewart Island. The northern boundaries of the proposed treatment area extend to the Rakeahua River valley and to the east of the South West Arm inlet. The southern boundary extends to the Deceit Peaks and North Arm of Port Pegasus.

Land use and ownership in this area is entirely Public Conservation Land made up of Rakiura National Park and Eastern Rakiura scenic reserve.

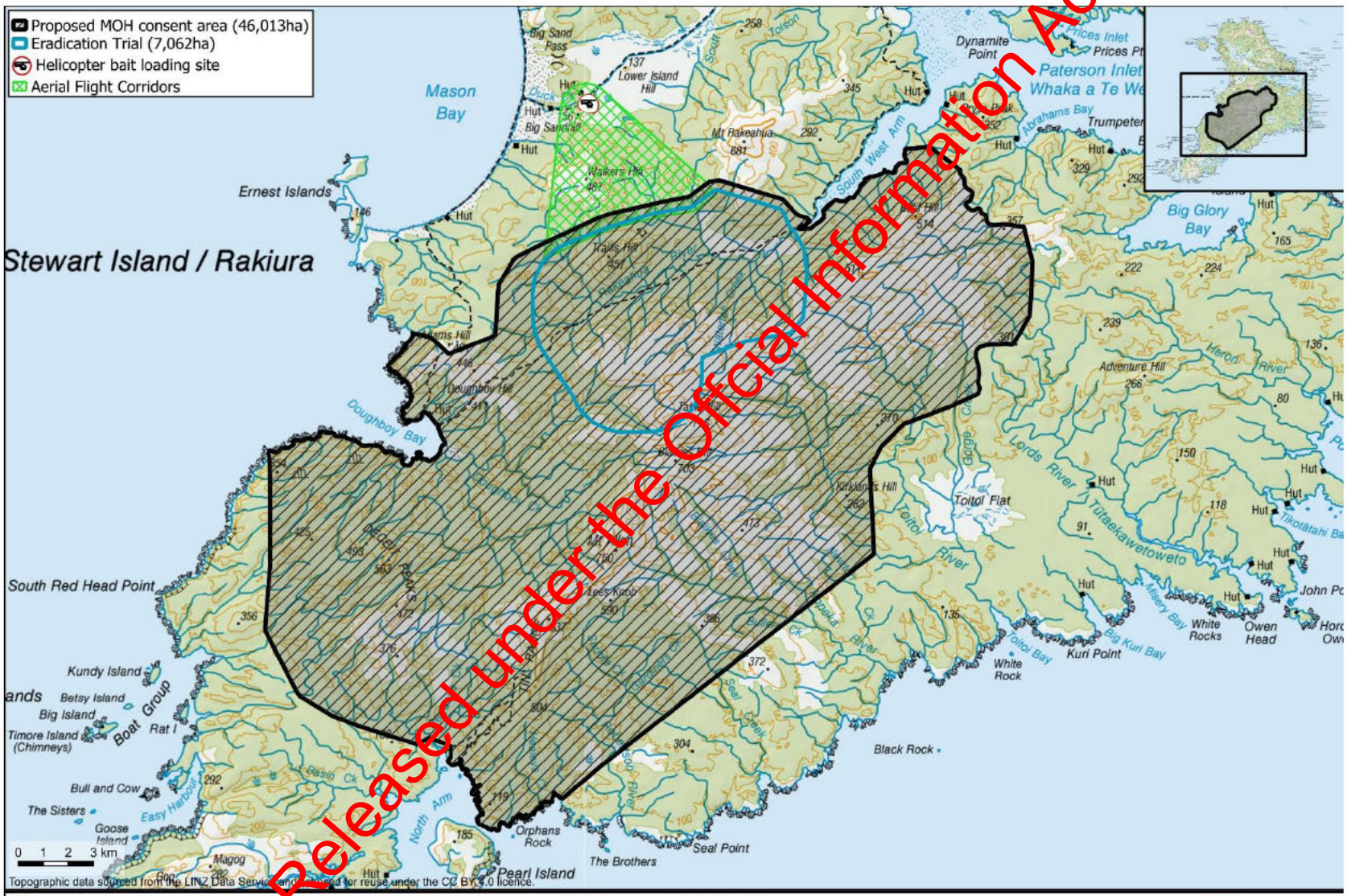
To the proposed treatment area is surrounded by largely uninhabited forest (with the exception of DOC and hunting huts).

There are three pieces of private land adjacent to the proposed treatment area (within 400m). There is a buffer of 150m between this land and the proposed treatment area. Māori land is located to the east of the treatment area. There is a buffer of between 800m – 3km between this land and the proposed treatment area.

Area of ground control	46,013 ha
Area of aerial control	46,013 ha
Total area	**46,013 ha**

The substance must be applied on areas outlined on the maps attached to this permission.

Health New Zealand
Te Whatu Ora



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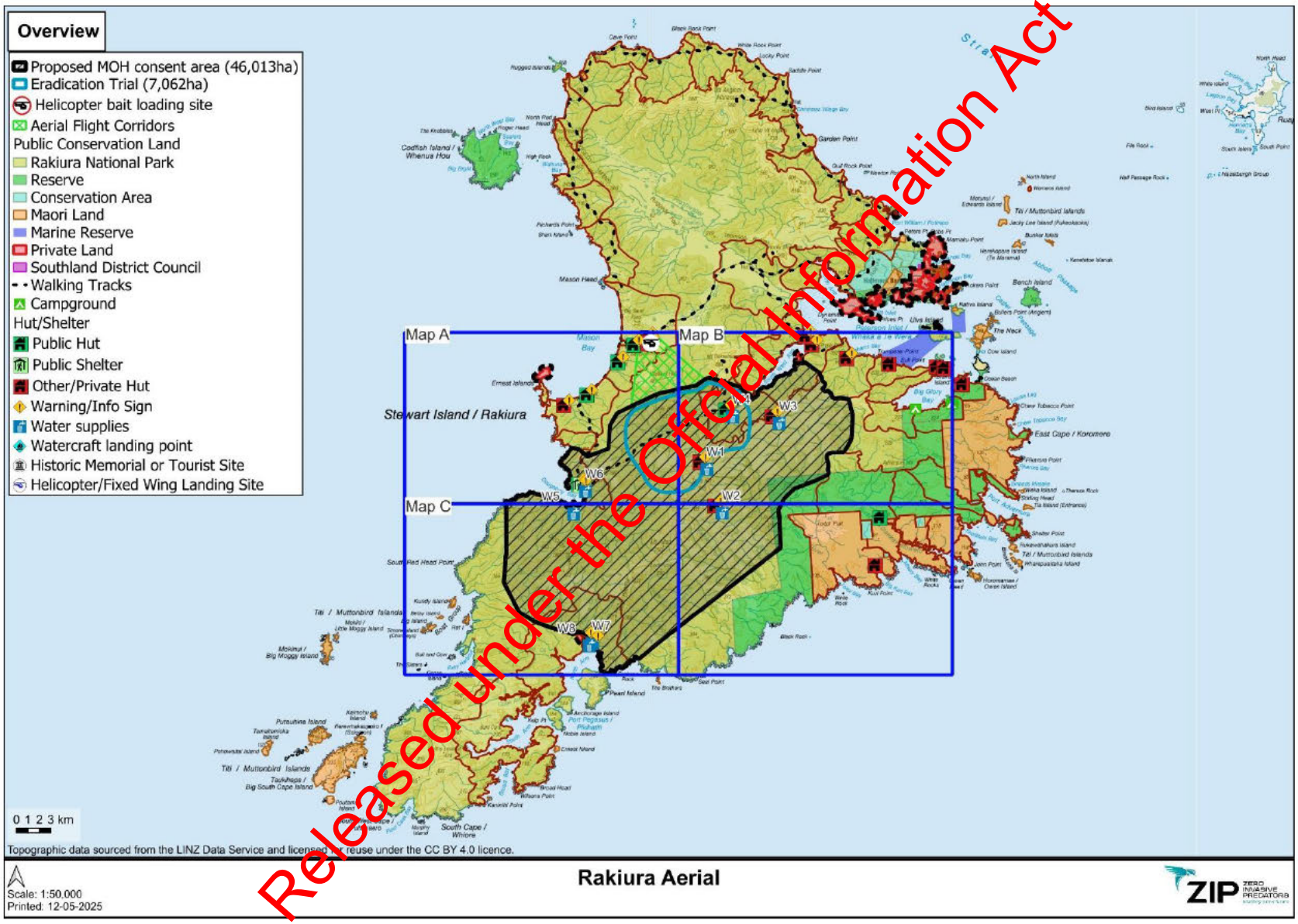
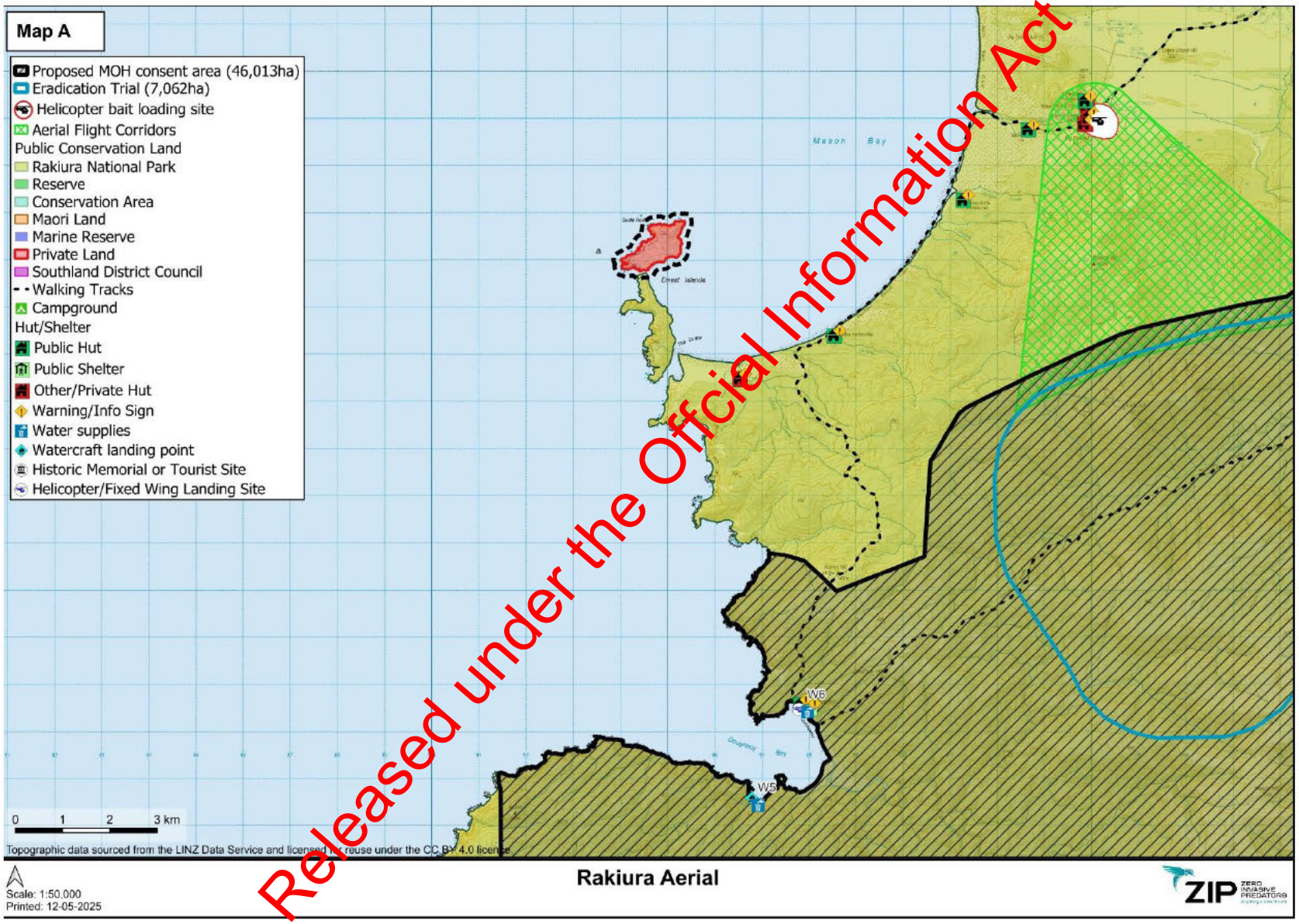
Rakiura Aerial Baiting 2025

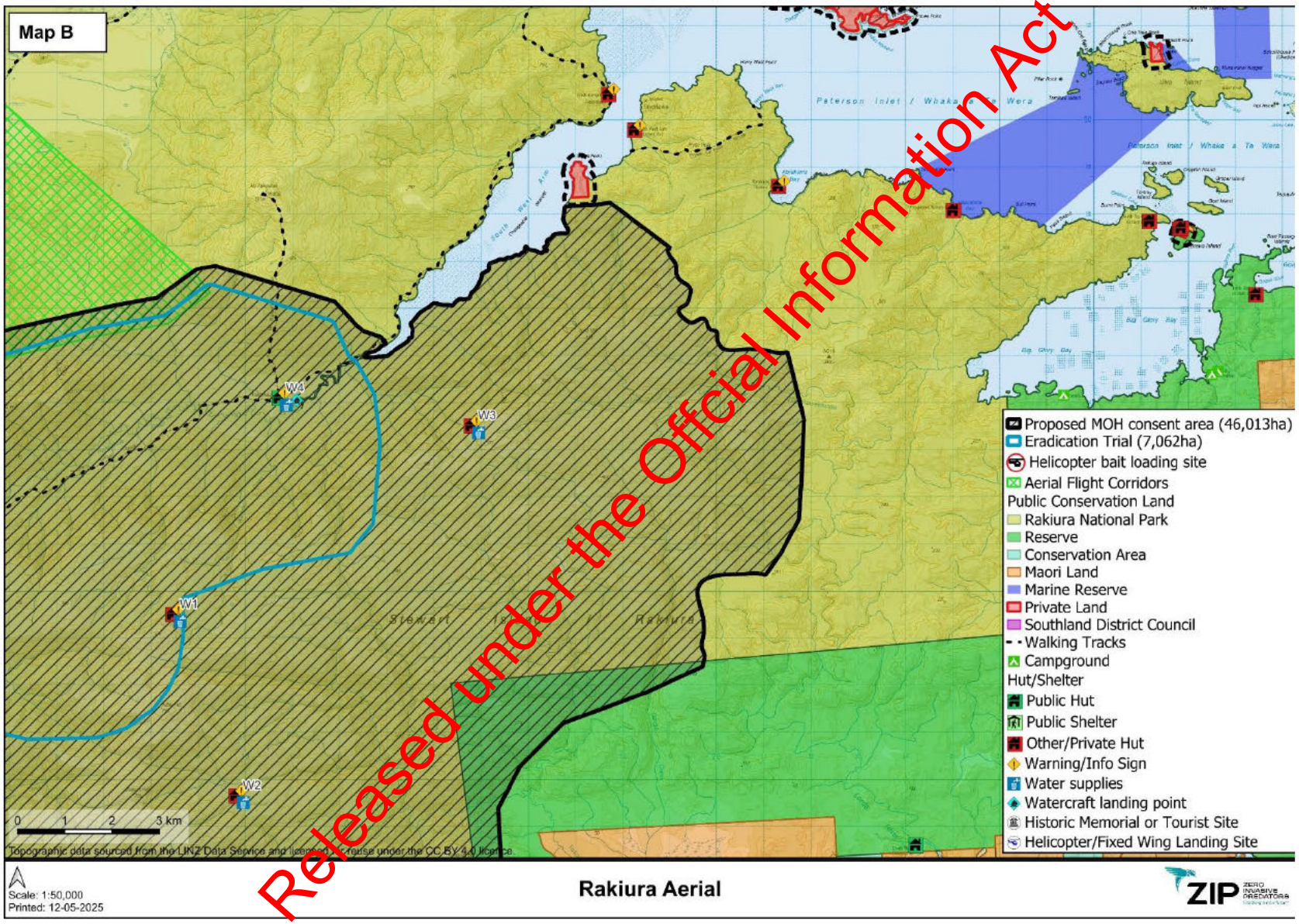
ZIP ZERO INVASIVE PREDATORS

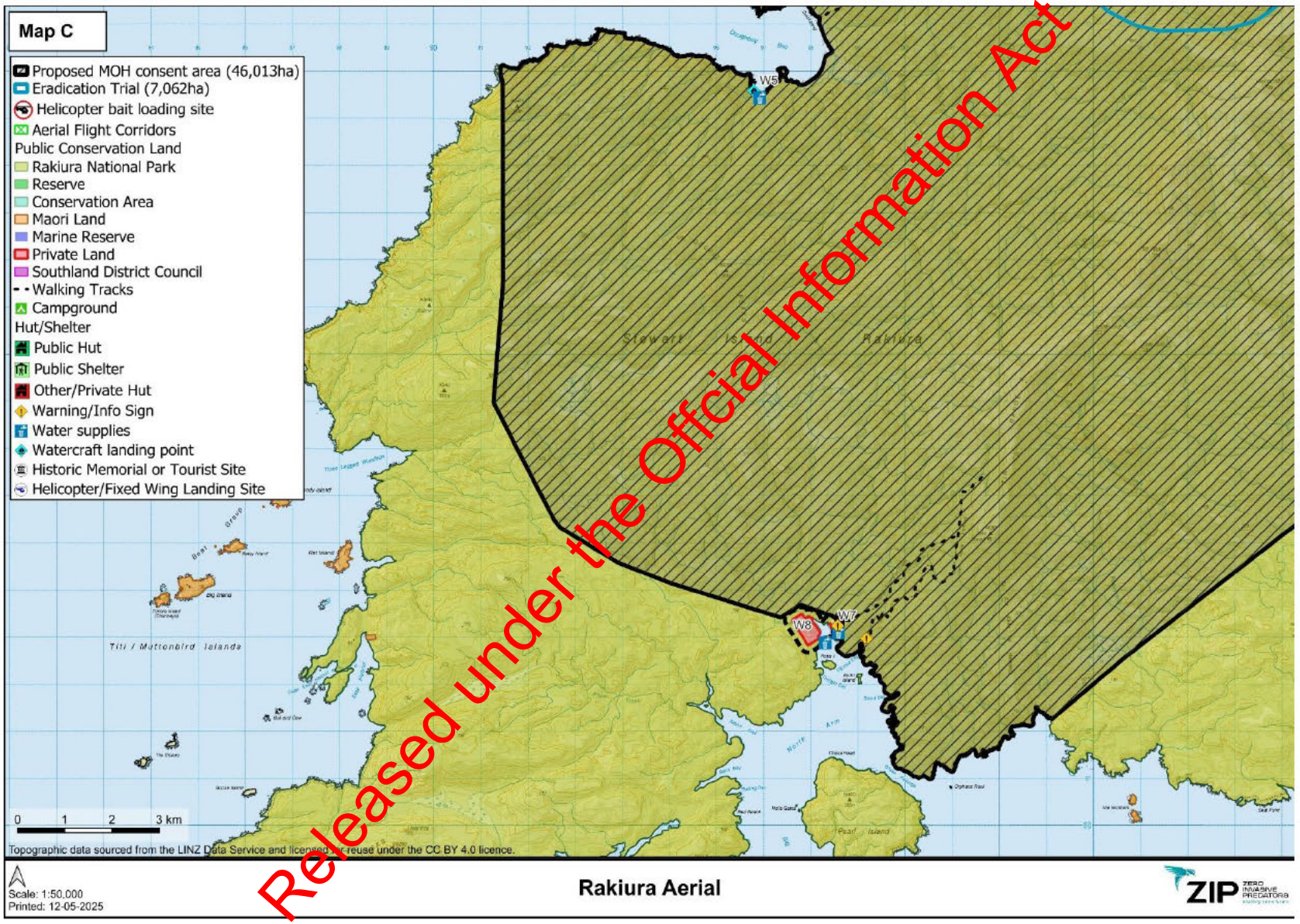




Permission Code: 2025/022/SAM

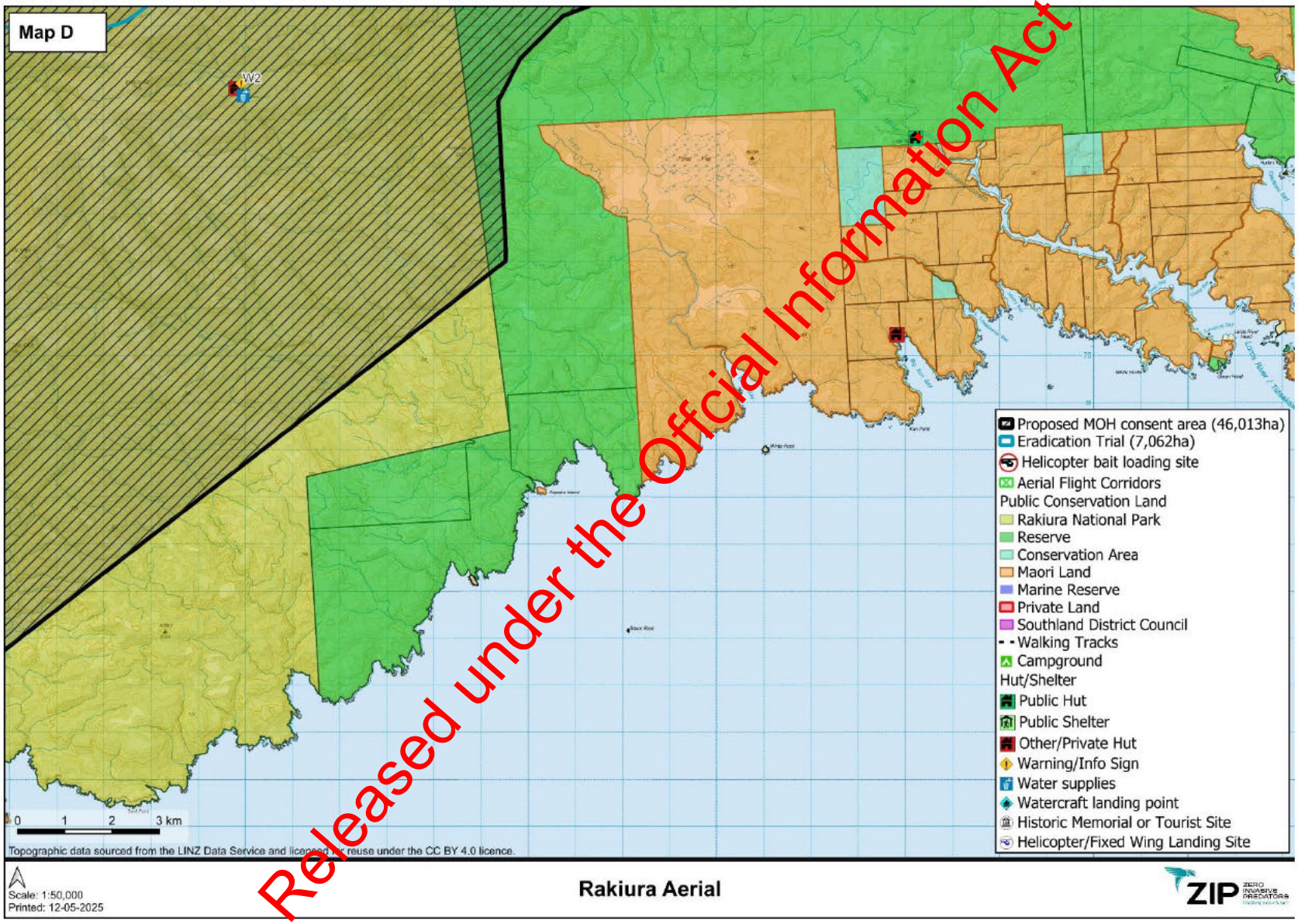
Signatory's Initials: 9(2)(g)(ii)





Permission Code: 2025/022/SAM

Signatory's Initials: 9(2)(g)(ii)



Permission Code: 2025/022/SAM

Signatory's Initials: 9(2)(g)(ii)

Schedule 3: Conditions

Permission identification code	2025/022/SAM
Operation locality:	Rakiura | Stewart Island

Operators must be aware of and comply with all relevant legal obligations. The conditions of a permission are legally binding. However, compliance with conditions does not necessarily mean that operators have met all legal requirements for the use of VTAs and other hazardous substances. It is the responsibility of operators to comply with all legal requirements, including but not limited to, the Agricultural Compounds and Veterinary Medicines Act 1997, Animal Products Act 1999, Biosecurity Act 1993, Civil Aviation Act 1990, Conservation Act 1987, Crimes Act 1961, Food Act 2014, Hazardous Substances and New Organisms Act 1996 (HSNO Act), Health and Safety at Work Act 2015, Health and Safety at Work (Hazardous Substances) Regulations 2017, Land Transport Act 1998, Resource Management Act 1991 and Water Services Act 2021.

The following conditions must be met in order to use the vertebrate toxic agents or other hazardous substances listed in Schedule 1, as they are intended to be applied or used in a catchment area from which water is drawn for human consumption, or in another area where a risk to public health may be created.

General Requirements

Condition 1: Start date and duration

This approval is granted for the period commencing **01/06/2025** to **30/01/2026**.

National Public Health Service - Southern (the issuer) shall be notified if there is any alteration to the intended date of the application.

Advise the issuer of the commencement of the application of the substance(s) specified in Schedule 1, at least 12 hours before commencing application.

Advise the issuer of any significant changes, complaints or incidents relating to this operation.

Contact the issuer at least two weeks before the expiry date of the original approval period if you wish to continue the operation after this date. A permission can be extended only if it meets certain criteria.

For non-urgent matters (e.g., notifying commencement, requesting extension), please notify by emailing VTA@tewhatuora.govt.nz and copying the Contact Person identified on page 2 of this permission. For urgent matters, or if out of office hours (e.g., reporting complaints or incidents), notification should also be copied to oncallhpo@tewhatuora.govt.nz.

Condition 2: Changes to permission

Advise the issuer in writing of any changes to the proposed operation.

Condition 3: Landowner and occupier notification

Before commencing the operation, notify occupiers and, as far as practicable, owners of land, homes or buildings within the operational area and immediately abutting the operational area. The notice must be given sufficiently prior to, but within two months of, the proposed application of the substance(s) specified in Schedule 1. If requested by the person notified, repeat the notification at a mutually agreed time before the proposed application.

The notice shall specify:

1. the name and nature of the VTA(s) and other hazardous substance(s)
2. the approximate date on which the VTA(s) and other hazardous substance(s) will be applied
3. a description of the area over which the VTA(s) and other hazardous substance(s) will be applied
4. the name and address of the person responsible for applying the VTA(s) and other hazardous substance(s)
5. information on safety and precautions with respect to the VTA(s) and other hazardous substance(s) being used.

Condition 4: Complaints and incidents

Any incidents or complaints relating to the operation that are likely to impact on public health shall be reported to the issuer within 24 hours of the incident or complaint.

Areas where a risk to public health may be created

Condition 5: Aerial applications to huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys

The substance specified in Schedule 1 may be applied to the following huts and shelters, access points, landing areas, public areas and historical sites, walking and vehicle tracks:

Huts and shelters:

- Rakeahua hut
- Doughboy hut
- DOC Table Hill Bivvy
- DOC Blakies Bivvy
- DOC 511 Bivvy
- Doughboy Bay Cave

Walking tracks:

- Mt Rakeahua Route
- Southern Circuit track: Fred's camp to Rakeahua Hut
- Southern Circuit track: Rakeahua Hut to Doughboy Bay
- Southern Circuit track: Doughboy Bay to Mason Bay
- Tin Range Surveyors Route
- Tin Range Tramway Route

Watercraft landing points:

- 'Rakeahua Landing' in South West arm up Rakeahua River (landing point for water taxis)
- 'Top Landing' in South West arm up Rakeahua River (landing for smaller private & DOC boats)
- 'Shit face' cove near Doughboy Bay

Landing areas:

- Fixed wing plane landing at Doughboy Bay

Historical/memorial/tourist sites:

- Conserved sites in North Arm in Port Pegasus

First inspection for huts and shelters

If the substance specified in Schedule 1 is applied to any of the above-listed huts and shelters, they must be inspected as soon as possible and no more than 24 hours after the aerial application. Reasonable efforts must be made to find and remove all bait and, if encountered, animal carcasses.

For the above listed huts and shelters, all bait in the immediate vicinity must be cleared, including roof areas, with roof water off-takes being disconnected (where applicable) prior to the operation.

Condition 6: GPS logs

A GPS log shall be recorded and maintained for each hut and shelter clearance, and made available to the issuer, within two weeks of the operation.

Protection of drinking water supplies

Condition 7: Protection of drinking water supplies
Sufficiently prior to, but within two months of, the operation, the applicant must identify appropriate mitigation measures to protect all water supplies (including domestic self-supplies) that draw water for human consumption from an abstraction point: • within the operational area, or • within 200 m for ground-based applications, and within 400 m for aerial applications, downstream of the operational area where the water source is a surface waterbody that flows through or rises within the operational area. Within this same timeframe, the applicant must also notify the water supplier of these measures and take and record these measures.

APPLICATION FOR PERMISSION TO USE CERTAIN VERTEBRATE TOXIC AGENTS OR OTHER HAZARDOUS SUBSTANCES IN A CATCHMENT AREA FROM WHICH WATER IS DRAWN FOR HUMAN CONSUMPTION OR AN AREA WHERE A RISK TO PUBLIC HEALTH MAY BE CREATED

Under section 95A of the Hazardous Substances and New Organisms Act 1996 (HSNO Act), permission is required from a public health HSNO enforcement officer to use certain vertebrate toxic agents (VTAs) or other hazardous substances[1] when they are intended to be applied or used in a catchment area from which water is drawn for human consumption, or applied in any other area where a risk to public health may be created.

This application form is to be used when applying for such a permission.

Guidance

Complete all sections of this application form. If a section is not relevant, return the section as part of the completed application form and write "not applicable" across it. Return the completed application form to vtaapplications@health.govt.nz

Further information is available in the Ministry of Health's *Guidelines for Issuing Permissions for the Use of Vertebrate Toxic Agents (Revised 2022)* available at https://www.health.govt.nz/publication/guidelines-issuing-permissions-use-vertebrate-toxic-agents

The current HSNO Approvals for hazardous substances can be found by searching the register on the Environmental Protection Authority (EPA) website at http://www.epa.govt.nz/search-databases/pages/controls-search.aspx

Other Relevant Legislation

Operators must be aware of and comply with all relevant legal obligations. The conditions of a permission are legally binding; however, compliance with conditions does not necessarily mean that operators have met all legal requirements for the use of VTAs and other hazardous substances. It is the responsibility of operators to comply with all legal requirements, including but not limited to, the Agricultural Compounds and Veterinary Medicines Act 1997, Animal Products Act 1999, Biosecurity Act 1993, Civil Aviation Act 1990, Conservation Act 1987, Crimes Act 1961, Food Act 2014, Hazardous Substances and New Organisms Act 1996 (HSNO Act), Health and Safety at Work Act 2015, Health and Safety at Work (Hazardous Substances) Regulations 2017, Land Transport Act 1998, Resource Management Act 1991 and Water Services Act 2021.

[1] Hazardous substances requiring permissions refer to substances listed in Schedule 1 of the Environmental Protection Authority's Instrument of Delegation. These are: sodium fluoroacetate (1080), sodium cyanide, potassium cyanide, yellow phosphorous, 3-chloro-p-toluidine-hydrochloride, microencapsulated zinc phosphate paste, Advion® fire ant bait, Amdro® fire ant bait, Campaign® ant bait.

SECTION A: GENERAL REQUIREMENTS

Full name of applicant: *The legal entity who will be accountable for complying with the permission conditions eg corporation, company, incorporated society, trust, principal agency, contractor or subcontractor or named individual. It also includes the Crown (e.g. the Department of Conservation).*	Department of Conservation, in partnership with Zero Invasive Predators Limited (ZIP) (ZIP has been engaged by DOC to deliver this operation, under a partnership agreement)
Contact person: *Individual who can answer questions about the application.*	9(2)(g)(ii)
Contact details: Physical address: Postal address: Contact phone number: Email:	Level 3, 5 Willeston Street, Wellington 6011 Ph: 020 415 99207 Email: 9(2)(g)(ii)
Applicant signature: *Individual with authority to sign on behalf of the applicant.*	9(2)(g)(ii)
Date:	12 May 2025

Application type					
A permission may be extended up to 12 months from the original finish date, or renewed for a maximum of three years, if it meets the following criteria. • *Consultation on the dates has occurred.* • *There is no change to the methodology, controls, permission conditions or operation areas.* • *No non-compliances or incidents have been identified.*					
New	Yes	**Extension** *provide permission identification code*	N/A	**Renewal** *provide current permission identification code*	N/A
Operational period *A permission may be issued for a maximum period of three years under certain conditions (refer the Ministry of Health's Guidelines for Issuing Permissions for the Use of Vertebrate Toxic Agents https://www.health.govt.nz/publication/guidelines-issuing-permissions-use-vertebrate-toxic-agents) . Where an operation extends past three years, the applicant must apply for a new permission.*					
Intended start date:	1 June 2025	**Intended finish date:**	30 Jan 2026		

Operation	
Operation name:	Pukunui Predator Control Operation and Eradication Trial Operation
Operation locality:	Rakiura | Stewart Island
Nearest city/town: *Name, direction and distance*	The settlement of Oban (population 400) lies approximately 11 km from the northern edge of the proposed treatment area.
Local government *District council, city council, unitary authority, regional council*	Southland District Council. Environment Southland.
Total operation size (ha):	46,013 ha
Previous operations: *If the applicant has carried out an operation at the same location within the past five years, provide*	Southern New Zealand Dotterel Recovery Programme –

date of operation and permission identification code.	**19/32/MLC/DUNPH** – 02/09/2019 to 13/03/2020 - Ground based 0.1% 1080 fishmeal pellets in bait stations **20/15/MLC/DUNPH** – 26/08/2020 to 26/03/2021 - Ground based 0.1% 1080 fishmeal pellets in bait stations **21/16/MLC/DUNPH** - 24/08/2021 to 25/03/2022 - Ground based 0.1% 1080 fishmeal pellets in bait stations

Contractual arrangements

If any part of the operation is subcontracted, please provide the following information.

	Agency/Authority	Area of responsibility
Example	*Principal agency (eg OSPRI, DoC)* *Contractor (eg Regional Council)* *Subcontractor (eg operator)*	*e.g. Control of bovine TB, Conservation,* *e.g. Contracted by OSPRI* *e.g. Field operations*
Principal agency:	Department of Conservation	DOC and ZIP are working as partners to design this operation. They share operational planning and delivery, and in holding communications & consultation for these operations (see communications record).
Contractor:	Zero Invasive Predators	ZIP has been engaged by DOC to deliver this operation, under a partnership agreement. DOC and ZIP are working as partners to design this operation. They share operational planning and delivery, and in holding communications & consultation for these operations (see communications record).
Subcontractor:	N/A	N/A

Full name of subcontractor: *For example the corporation, company, incorporated society, trust, principal agency, contractor or subcontractor or named individual*	N/A
Contact person: *Individual who can answer questions about the application.*	N/A
Contact details: Physical address: Postal address: Contact phone number: Email:	N/A

VTA or hazardous substance information (1)

VTA or Hazardous substance	Strength	Form	Application rate	Purpose
Sodium Fluoroacetate	1.5 g/kg	Cereal based pellets	**Eradication Trial sites Phase I:** **4 kg/ha** target rate: being 2 kg/ha sowing rate with 50% swath overlap, but up to 6 kg/ha allowing for overlaps between blocks **Eradication Trial sites Phase II:** **2 kg/ha** target rate: being 1 kg/ha sowing rate with 50% swath overlap, but up to 4 kg/ha allowing for overlaps between blocks **Pukunui Predator Control operation:** **2 kg/ha** target rate: being 2 kg/ha sowing rate with 20m swath overlap, but up to 4 kg/ha allowing for overlaps between blocks	Rat and possum suppression, with expected secondary poisoning of feral cats. Within the suppression operation area, there will be a smaller area where a local-scale Eradication trial will be monitored

HSNO approval number: HSR002424

Start date of application: 01/06/2025 | **Last date of application**: 30/01/2026

Specify all application methods to be used for the hazardous substance:

Treatment area size (ha): Eradication Trial Area (46,013 ha), which sits *within* the wider Pukunui Predator Control area (7,062 ha)

Please note that we are requesting aerial permission over a large area, however there are parts of the operational area which will not be treated aerially due to operational design to most efficiently reduce predation on Pukunui, the presence of bookable hunting blocks, mudflats/water and/or other sensitive areas. The exact boundaries of aerial treatment will be confirmed upon agreement with the Department of Conservation.

Methods to be used (tick applicable box):

	Yes	No
• Aerial	☑	☐
• Hand broadcast	☑	☐
• Turf spits/direct to ground	☐	☑
• Other control methods:	☐	☑

Describe briefly below

	Yes	No
• Bait stations and bags:	☐	☑

State heights of bait stations/bags:
Types of bait stations/bags used

Types of operation

Overview

ZIP, working in partnership with the Department of Conservation, is seeking permission to apply sodium fluoroacetate over key pukunui breeding grounds to protect the birds from feral cat predation this coming 2025/26 breeding season, which begins in October 2025. This standard suppression operation is a measure to halt the pukunui population decline seen over the last few years, which is moving the species towards extinction. The total pukunui population currently sits at just 101 birds, and the population has been declining 20% per year for the last three years. Action is needed now to save this species.

Within this standard predator suppression operation, a smaller elimination trial area will be sown using ZIP's '1080 to Zero' methodology. This trial area will be monitored intensively to build an understanding of the outcome, and will be invaluable in informing future work towards Predator Free Rakiura. Predator Free Rakiura is an ambitous and complex project that will support community and nature to thrive together by removing rats, possums, feral cats, and hedgehogs from Rakiura.

Eradication Trial

The Eradication Trial will be completed in two operational phases across the trial block, following ZIP's '1080 to Zero' methodology. Each phase comprises 1-2 pre-feeds c. 5-7 days apart, followed c. 5-7 days later by the application of toxin (1080). The first phase, using orange lured bait removes the vast majority of predators. The second phase, completed approximately 1-2 months later (this timing is weather dependent) will use lower sowing rates (as most predators have now been removed) and cinnamon lured bait. This method has been used successfully to achieve elimination of predators in Predator Free South Westland (107,000 ha project in South Westland).

- 'Phase I' will be completed within the Eradication Trial area, using orange lured bait sown at a target rate of 2 kg/ha for each prefeed operation and 4 kg/ha for the toxic application.
- 'Phase II' will be completed as part of the Pukunui Predator Control Operation, described in below, using cinnamon lured bait sown at a target rate of 1-2kg/ha with a 20m overlap for each prefeed application and 2kg/ha for the toxic applicaton.

Pukunui Predator Control Operation

This operation will follow DOC's standard suppression methods, and be sown within the wider proposed Pukunui Predator Control Operation area.

The suppression operation (which will be completed alongside 'Phase II' of the Eradication Trial operation) is planned to begin in August 2025.

The suppression operation is timed to provide maximum benefit to pukunui, by suppressing predators right before they begin to nest and become extremely vulnerable to predation. The expected by-kill of cats from this operation which specifically targets rats and possums, is expected to reduce predation pressure and allow the pukunui population to grow.

Methods:

Aerial broadcast

The aerial application of bait will primarily be applied by helicopter using standard broadcast buckets, calibrated to the target sowing rates. It is critical to ensure that all individuals have access to bait. To minimise the potential for sowing gaps in the operation, all operations will be sown with overlaps between adjacent swaths. For the Pukunui Predator Control Operation this will be 20m overlap for both prefeed and toxic. For the Eradication trial this will be 20m overlap for prefeed and 50% swath overlap for toxic.

Broadcast is very effective for achieving coverage over large, landscape-scale applications. Helicopter broadcast swaths can throw bait up to 240 m (maximum swath based on bucket calibrations) either side of the helicopter, although will be achieving effective coverage over c. 170-180 m of this. However, it is not well suited to precision bait application adjacent to sensitive boundaries of the coastal edge. A safeline approach will be used with broadcast methods near the coastal edge, to ensure that no bait will enters the ocean, as agreed through consultation with fisheries. The safeline approach combines maximum swath throw (as determined through formal calibration trials), an allowance for wind push, and an additional safety margin to leave a gap between the effective broadcast zone and a 'no bait allowed' exclusion zone.

In the small area where the proposed Eradication Trial treatment area may reach the coastal edge, in areas where we need to ensure no gaps in habitat are left, we may use precision bait application techniques (trickle and fixed trickle sowing, hand lay) to ensure that no bait will enter the ocean.

Trickle baiting may be completed using a standard trickle bucket, an alternative 'fixed' trickle bucket design may also be used (in accordance with all applicable CAA regulations). The new bucket design is essentially a 'fixed trickle bucket', the idea being to increase the precision of a standard trickle bucket by removing bucket swing.

'Fixed' heli buckets

Standard heli buckets are suspended below the helicopter, causing them to sway when the helicopter is manoeuvring. This means that helicopters cannot be used close to sensitive boundaries where an extremely high degree of precision is required. Typically, these boundaries then need to be treated by hand, which carries a high labour cost. In order to maximise the coverage we are able to achieve using helicopters, and therefore to improve the overall efficiency of predator eradication aerial operations, we have developed a trickle sowing heli bucket that is fixed to the helicopter. Improving the precision of sowing by removing the sway caused by the movement of the helicopter.

Hand broadcast

In areas with sensitive boundaries hand lay may be used to apply bait, with high precision. Hand lay points will be GPS tracked.

Hand lay is hand application of bait, completed by walking and throwing a set number of baits on the ground at set intervals to achieve target coverage.

To achieve effective coverage and reduce any gaps in the coverage in the proposed Eradication operation, handlay methods may be used between the aerial treatment boundary and sensitive boundaries of the coastal edge. Any handlay operation will be completed alongside an aerial operation and will use the same bait type and sowing rate. Handlay of bait may be completed alongside both the Eradication Trial operation and Pukunui Predator Control Operation.

Operational maps/lists

Provide a description of the operational area. *Include here the name of the area/reserve, and the name(s) of the landowner(s), noting public and private land ownership.*

The Eradication Trial area (7,062 ha) sits *within* the larger Pukunui Predator Control Area (46,013 ha).

The total project area covers the area around the Tin Range over the middle portion of Rakiura | Stewart Island. The northern boundaries of the proposed treatment area extend to the Rakeahua River valley and to the east of the South West Arm inlet. The southern boundary extends to the Deceit Peaks and North Arm of Port Pegasus.

Land use and ownership in this area is entirely Public Conservation Land, made up of Rakiura National Park and Eastern Rakiura scenic reserve.

To the proposed treatment area is surrounded by largely uninhabited forest (with the exception of DOC and hunting huts).

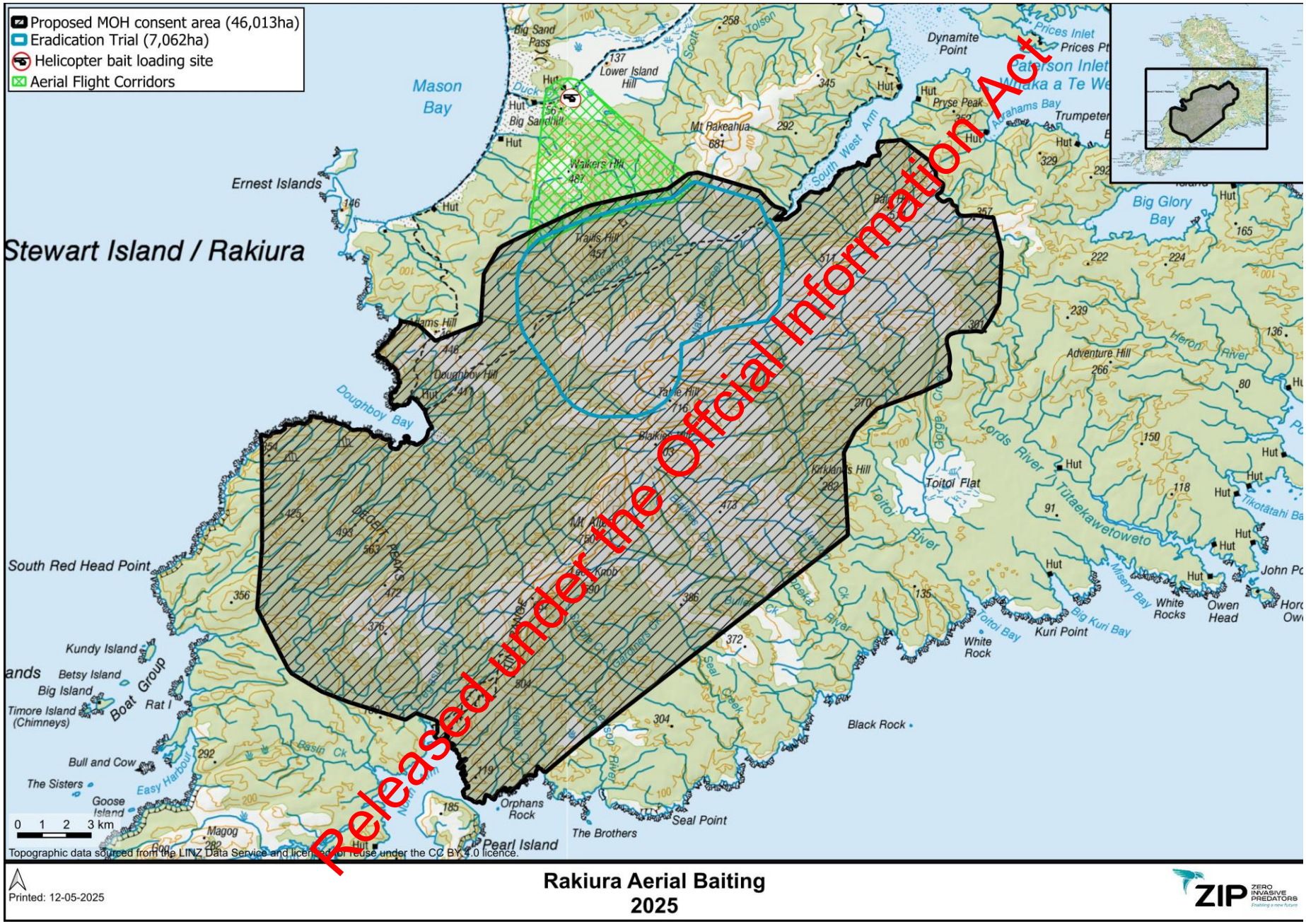
There are three pieces of private land adjacent to the proposed treatment area (within 400m). There is a buffer of 150m between this land and the proposed treatment area. Māori land is located to the east of the treatment area. There is a buffer of between 800m – 3km between this land and the proposed treatment area.

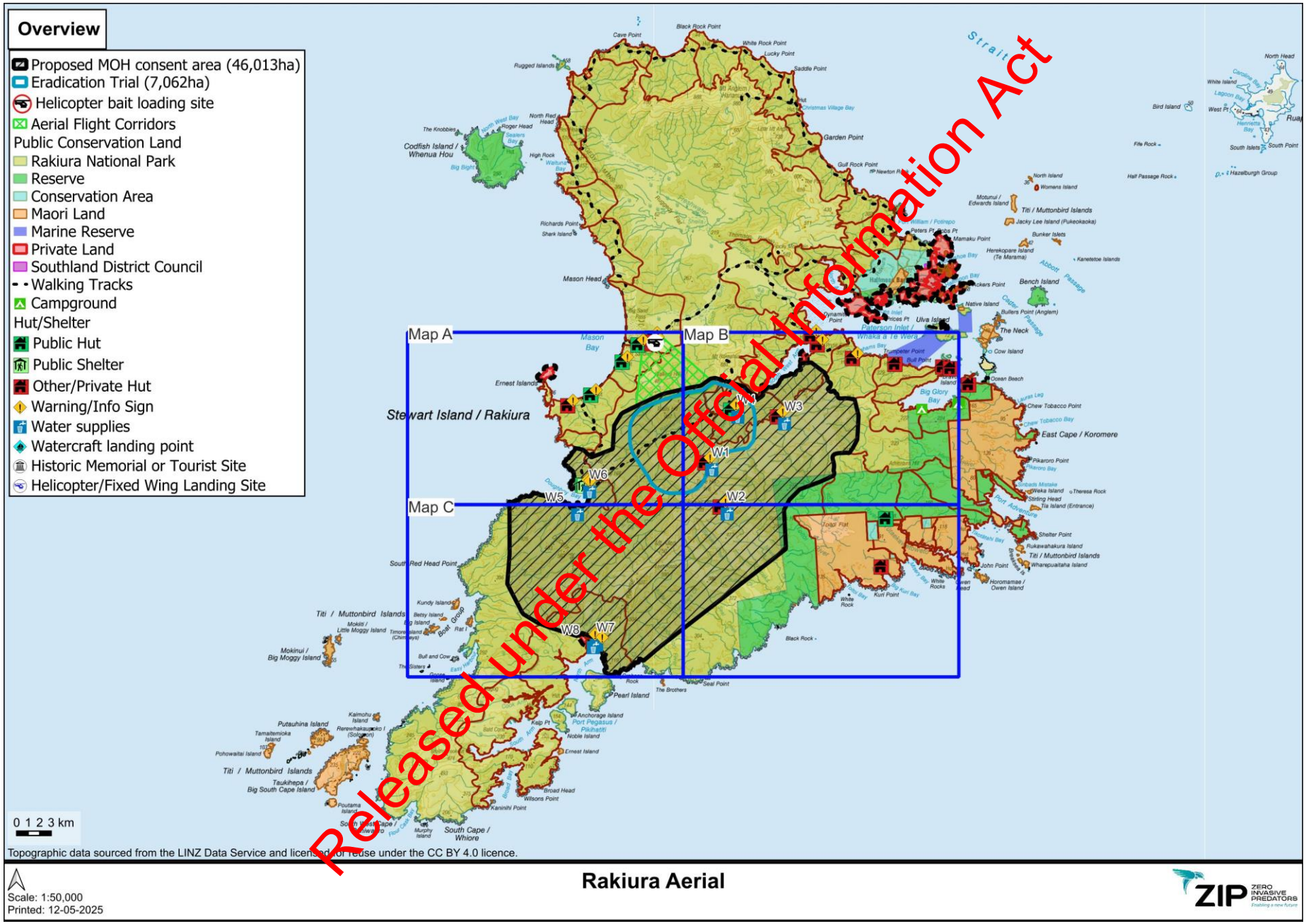
Please see communications record and maps attached for a full list of all landowners adjacent to the proposed treatment areas.

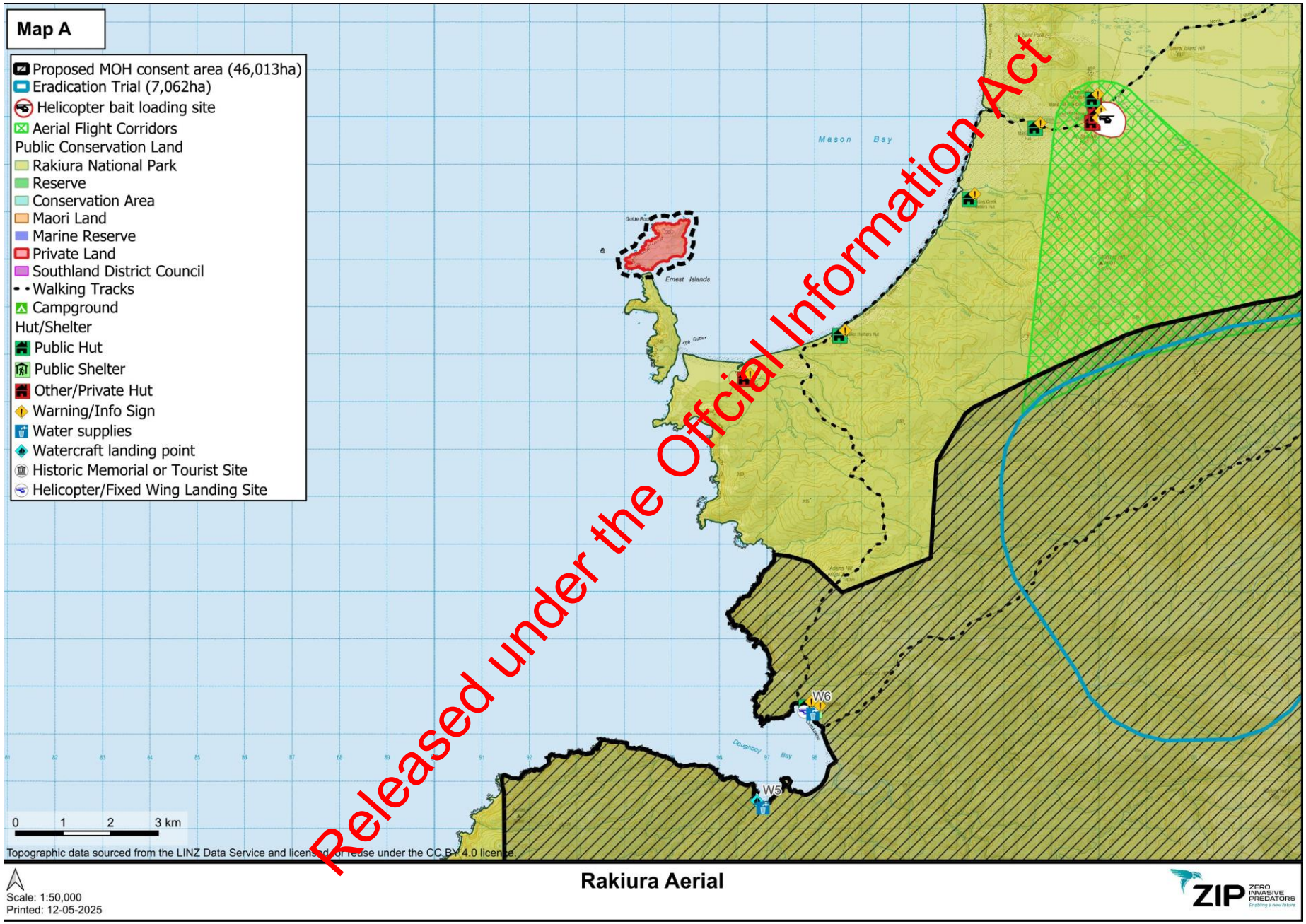
- Operational maps (hardcopy or electronic) should provide an adequate level of detail. A number of map options are available e.g. topographical (e.g. NZMS 260 series or Topo 50 Series), GIS (geographic information systems), and electronic shape file if the relevant public health unit has facilities to use these.
- More than one map may be needed to include all the information. Use maps of different scales if necessary.
- If using more than one hazardous substance, show on the map where each hazardous substance will be applied. The use of different colours or a colour code for different hazardous substances may help.
- Where applicable, clearly delineate Department of Conservation consent areas, buffer zones and other relevant information.
- **Identify** the following on your map(s) by using a colour code, a number code or similar *(capital letters refer to corresponding sections in the application form*

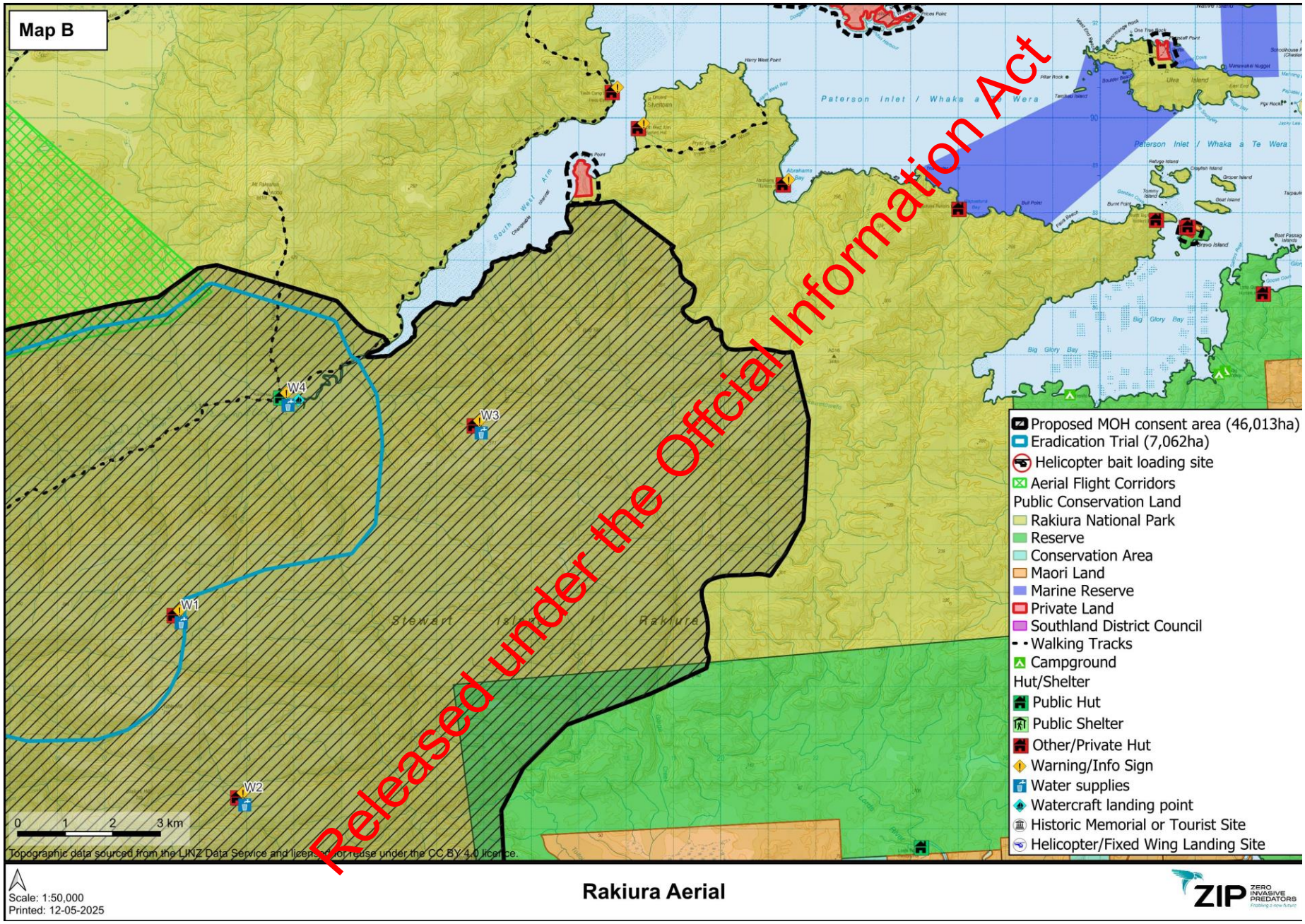
• Dwellings, marae, schools, community/club halls	B
• Huts, bivvies/shelters	C
• Camping sites and picnic areas	C
• Public roads and lay-bys	C
• Watercraft landing points	C
• Helicopter landing pads	C
• Popular swimming and fishing access points	C
• Historical/memorial tourist sites	C
• Urupa/cemeteries	C
• Recreational and amenity facilities (e.g. golf course, wedding or sporting venues)	C
• Other outdoor activities gathering sites (e.g. caving, orienteering etc.)	C
• Walking/biking/off-road tracks	C
• Any other specific sites or features that are readily accessible and may attract or concentrate public activity	C
• Drinking water supply intakes	D

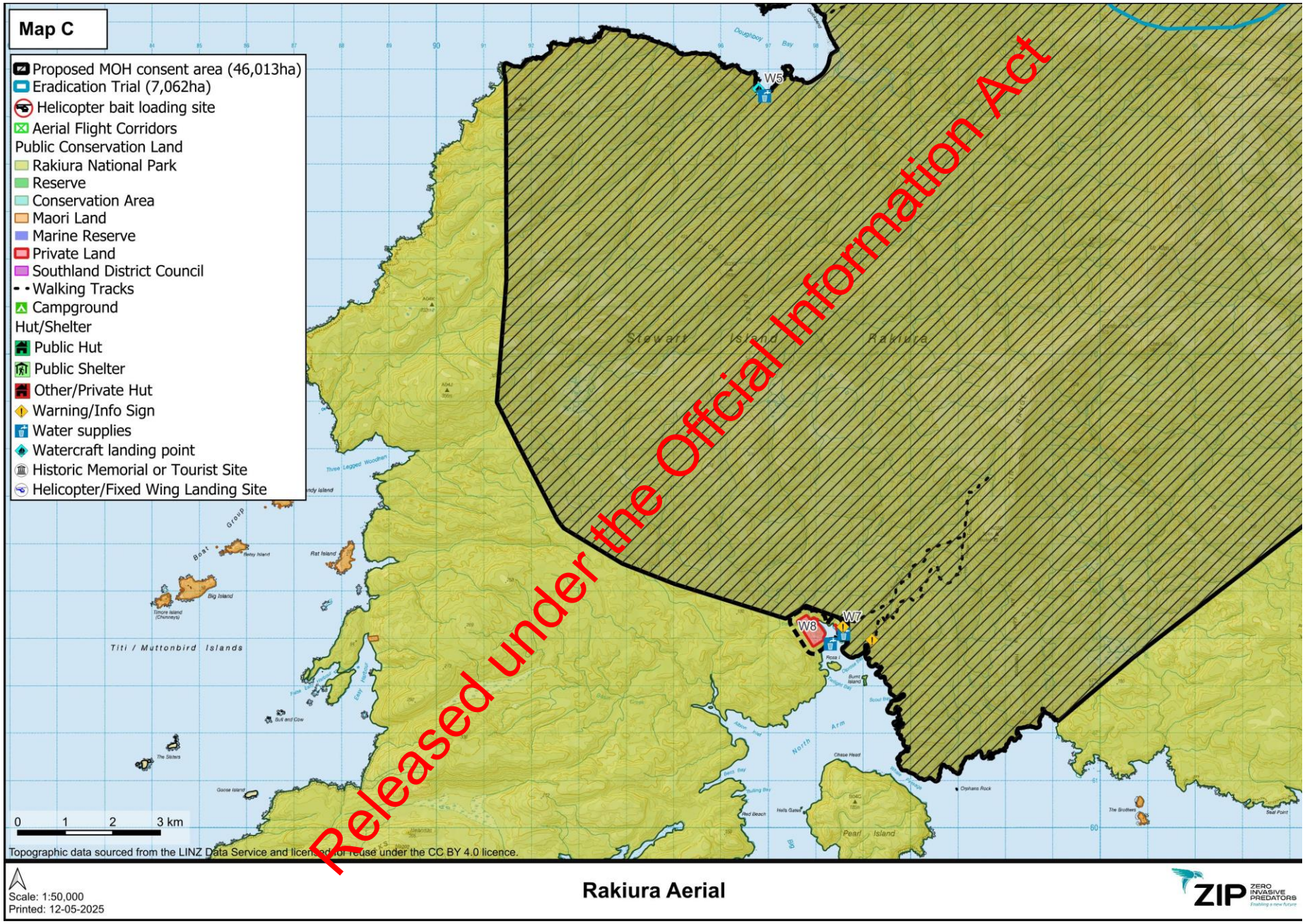
- **Attach a digital copy of the operational map(s) with a digital application OR two hard copies if application is submitted in hard copy**: A copy of the map (including any necessary changes) will be returned to you and form part of the health permission conditions. A copy will be kept as a record by the officer issuing the permission (hard copy or electronically).

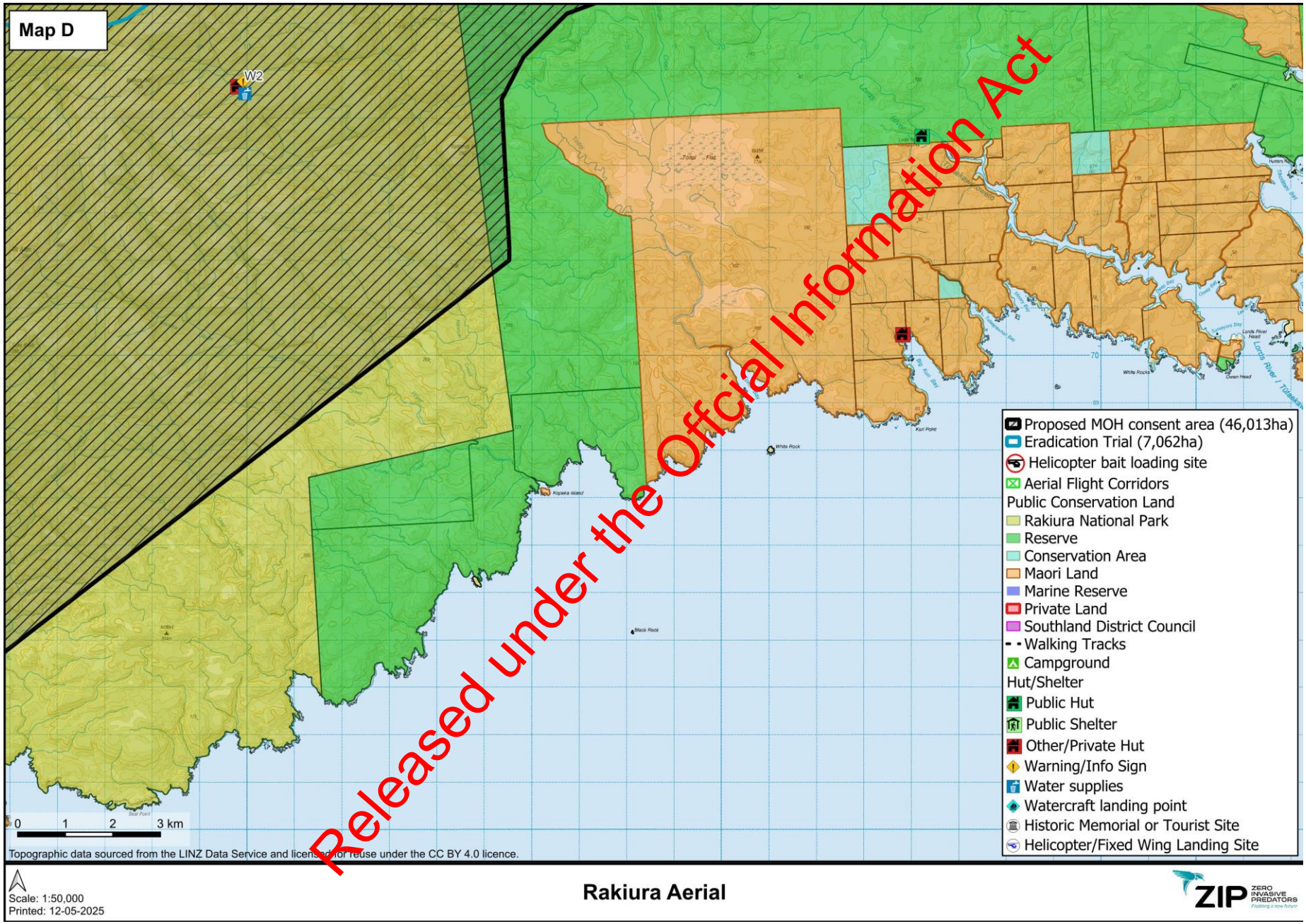












SECTION B: NOTIFICATIONS

Within two months prior to commencing the operation, you may be required to notify occupiers and, as far as practicable, owners of land, homes or buildings within the operational area and immediately abutting the operational area. Occupiers include schools, community and club halls and facilities. In the notification you may need to specifcy the name of the VTA(s) and other hazardous substance(s), the approximate date they will be applied, where they will be applied, who is applying them and and information on safety and precautions..

Have you attached a list of, and identified on the Section A map, all dwellings, marae, schools, community/club halls, recreational and amentity facilities in, and immediately abutting, the operational area?

Yes ☑ No ❑

Have you attached a copy of the information to be provided to landowners and occupiers of these premises in, and immediately abutting, the operational area?

We are in the process of finalising the pre-operation information sheet. Please find attached a copy of the information sheet provided prior to the Price aerial operation by ZIP in Predator Free Southwestland. A similar notice will be provided prior to this operation.

Yes ❑ No ☑

How will you ensure that VTA and /or other hazardous substance baits are not applied near occupied dwellings?

The operational area covers only Public Conservation Land (PCL). This area contains DOC public huts and DOC private staff bivvies. To deliver a Predator Control Operation to that acheieves maximum coverage to protect pukunui, and for the predator Eradication Trial to be successful we will need to achieve effective coverage across the full operational area.

The only occupied dwellings in the operational area are DOC public huts and DOC private staff bivvies. Sowing of toxic baits will not take place over/near any of these occupied dwellings without the consent of the landowner/occupier (DOC).

There is one private dwelling adjacent (within 400m) to the proposed treatment area. This dwelling is >150m away from the proposed treatment area. We will only use these VTAs near occupied dwellings if we have received permission from the landowner/occupier. An exlusion buffer will be applied by default. This exclusion buffer will be loaded on to GPS units of the helicopter(s) to ensure that no toxins are deployed within this exclusion.

For aerial 1080 operations only: the Ministry of Health *Guidelines for Issuing Permissions for the Use of Vertebrate Toxic Agents (Revised 2022) (https://www.health.govt.nz/publication/guidelines-issuing-permissions-use-vertebrate-toxic-agents)* specify that "*operators need to follow the consultation process as prescribed in the EPA's (2009a) Communications Guideline for Aerial 1080 Operations (1080-Communications-Guidelines.pdf (epa.govt.nz)). When applying for a permission, operators should outline their communications for managing public health risks* ***only…:***".

Please outline your communications here:

Consultation to date is detailed in the consultation record attached.

Communication with affected stakeholders, adjacent landowners / occupiers and the wider community will be ongoing in the lead up to the aerial operation, and will continue afterwards as continuation of the communications we've had during the discussions surrounding protecting pukunui, and the Predator Free Rakiura Project.

Consultation summary:

For this application, ZIP is consulting with the following key partners and other interested groups: (note that consultation is ongoing). A summary is below, please see communications record for more details.

Iwi:

Iwi consultation with Ngāi Tahu around Pukunui management and extinction risk has been ongoing for several years. Pukunui have been under intensive management since 1994.

The DOC Rakiura operations manager leads consultation on effects with Papatipu Rūnaka ki Murihiku (see consultation record), made up of representatives from the four Southern Ngāi Tahu hapū;

- Waihōpai Rūnaka. Murihiku Marae
- Te Rūnaka o Awarua. Te Rau Aroha Marae
- Te Rūnanga o Ōraka-Aparima. Takutai O Te Titi Marae
- Hokonui Rūnaka. Ō Te Ika Rama Marae

Kaitiaki Rōpū ki Murihiku meet regularly with Rakiura DOC operations manager to consult and work together on projects on Rakiura.

ZIP has also met with a subset of the Kaititaki Roopū O Murihiku that form the Ngāi Tahu Leadership for Predator Free Rakiura. This group has indicated support for the operation to protect pukunui. See the communication record for further details.

ZIP and DOC have also been in contact with representatives from the Rakiura Tītī Island Administering Body and the Rakiura Tītī Committee, who are kaitiaki of the Rakiura Tītī Islands along with, and on behalf of, all Rakiura Māori, and with the representatives of the Rakiura Māori Lands Trust, which holds land in trust for many Rakiura Māori descendants.

Hunting interests:

ZIP + DOC have met several times with representatives for the New Zealand Deerstalkers Association and the Game Animal Council, as well as several experienced local hunters. They understand the need and urgency to protect pukunui. Their requests were: Avoid bookable hunting blocks where possible; keep bookable hunting blocks open even if the operational area includes them (with direct communications with each party to manage the conflict); and use deer repellent in all areas possible. It was suggested that there is likely to be less impact on hunting activities in the open hunting area (which typically has lower usage at this time of year).

Fisheries interest:

ZIP have met several times with representatives for wild fishers and Southland Marine Farmers Association. They understand the need and urgency to protect pukunui. Their main requests were not sowing toxic bait into the coastal marine area; undertaking the operation from a land-based site (including bait and fuel), and managing market perception if bait/toxin did end up in the ocean environment.

Adjacent Landowners:

There are three private landowners adjacent (within 400m) to the proposed treatment area. ZIP has been in contact with each of these landowners, and these discussions are ongoing. All have expressed support for the work.

DOC Concessionaires:

All concessionaires within the proposed consent area have been identified, and have been sent information regarding the proposed operation with invitations to engage. See communications record for more information.

Local community:

A fact sheet about this Pukunui operation was circulated widely within communities of interest on Friday 7th

March 2025. There was a follow up community meeting in Oban on 25 March to provide additional detail and respond to questions that arose from this information sheet. DOC and ZIP hosted drop-in sessions in Oban on 10 April to provide further opportunity to hear from potentially affected and interested parties.

ZIP, DOC and Te Puka Rakiura Trust have been circulating information about planning towards the first operational stage of the Predator Free Rakiura project since August 2024.

Engagement is also underway with other key groups. All relevant communications to date will be documented on the Communications Record attached to this application. Future updates of the Communications Record will be provided as consultation continues.

Complaints and incidents

You may be required to report any incidents or complaints relating to the operation that are likely to impact on public health (not including persistent vexatious complaints or complaints where public exposure is implausible).

How will you ensure that incidents or complaints are received, logged and notified?

All landowners who are consulted with and who have given permission for bait to be applied on their property (which in the case of this operation, is DOC, as all proposed treatment area is on PCL) will have a ZIP team member's contact details, should they have any questions, concerns or complaints.

In addition, should a member of the public wish to notify of an incident or have a complaint, ZIP or DOC contact details are on all toxin warning signs which are placed at all normal points of entry into the operational area, as well as email addresses provided on information, signage, public notices, and in pre-operational notifications.

To ensure incidents or complaints are logged and notified, all ZIP team members involved in toxin operations are made aware of the internal procedures relating to incidents or complaints prior to the commencement of any operation. If there is an incident or complaint, a ZIP team member will immediately initiate steps for managing the incident or complaint as per the 'ZIP Procedure – Incident Management'. The first step is to notify the incident to the Team Lead and Director Operations (who then notified the Chief Executive), and log the incident into the ZIP incident Tracker (an internal tracking system) within 24 hours of the incident occurring. The Team Lead and/or Director Operations will then initiate a review process (including taking any immediate steps to ensure no further harm or damage is caused).

If the incident or complaint relating to the operation is likely to impact public health, a ZIP team member will notify the relevant Te Whatu Ora (Health New Zealand) contact(s) within 24 hours of the incident occurring. This notification will include details of the incident (date, location, nature of incident) and any actions taken up to that point (or proposed to be taken).

SECTION C: AREAS WHERE A RISK TO PUBLIC HEALTH MAY BE CREATED

You may be prohibited from applying VTA(s) and other hazardous substance(s)) within specified distances or within sight of dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys:

Within the operational area, or within 150 m of the operational area, are there any:		
• Dwellings, marae, schools, community/club halls	❑ Yes	☑ No
• Huts, bivvies/shelters	☑ Yes	❑ No
• Camping sites and picnic areas	☑ Yes	❑ No
• Public roads and lay-bys	❑ Yes	☑ No
• Watercraft landing points	☑ Yes	❑ No
• Helicopter landing pads	☑ Yes	❑ No
• Popular swimming and fishing access points	☑ Yes	❑ No
• Historical/memorial/tourist sites	☑ Yes	❑ No
• Urupa/cemeteries	❑ Yes	☑ No
• Recreational and amenity facilities (e.g. golf course, wedding or sporting venues)	❑ Yes	☑ No
• Other outdoor activities gathering sites (e.g. caving, orienteering etc.)	❑ Yes	☑ No
• Walking, biking, off road tracks	☑ Yes	❑ No
• Any other specific sites or features that are readily accessible and may attract or concentrate public activity	❑ Yes	☑ No

If 'yes' to any above, list below and ensure they are clearly identified on Section A map(s):

Public Huts, bivvies/shelters:

- Rakeahua hut
- Doughboy Bay hut
- Doughboy Bay Cave

Private Huts, bivvies/shelters:

- DOC Table Hill Bivvy
- DOC Blakies Bivvy
- DOC 511 Bivvy

Watercraft landing points

- 'Rakeahua Landing' in South West arm up Rakeahua River (landing point for water taxis)
- 'Top Landing' in South West arm up Rakeahua River (landing for smaller private & DOC boats)
- 'Shit face' cove near Doughboy Bay

There are no official wharf structures in the proposed treatment area, however boats can land at various points around the island, depending on the size of the vessels, weather conditions and tide.

Any additional locations regularly used by locals as (unofficial) watercraft landing points may be identified as consultation continues, and will be included in updated maps.

Helicopter/Plane landing areas

- Fixed wing plane landing at Doughboy Bay
- There are no official helicopter landing pads in the project area

Any additional locations regularly used by tourism operators that may be identified as consultation continues

will be included in updated maps.

Popular fishing and swimming access points

As above, boats can land at various points around the island, depending on the size of the vessels, weather conditions and tide. Similarly, low-use fishing from land may occur by recreational fishers and hunting parties at various points. However, we are currently unaware of any regularly used points where people congregate to fish.

Any additional locations regularly used by locals as set fishing points may be identified as consultation continues, and will be included in updated maps.

Historical/memorial/tourist sites

- Silvertown disused mine (adjacent to treatment area)
- Conserved sites in North Arm in Port Pegasus

Walking tracks

- Mt Rakeahua Route
- Southern Circuit track: Fred's camp to Rakeahua Hut
- Southern Circuit track: Rakeahua Hut to Doughboy Bay
- Southern Circuit track: Doughboy Bay to Mason Bay
- Tin Range Surveyors Route
- Tin Range Tramway Route

Hunting Interests:

White-tailed and Red Deer are present within the operational areas and are targeted by recreational hunters. There are four bookable hunting blocks in the proposed treatment area, all near the coast, and an open hunting area in the middle of the island. Bookable hunting blocks can be booked by parties of up to 10 people at one time, and bookings are managed throught the Department of Conservation. Hunting on the island is popular, especially during the roar, and in summer months.

Give the source(s) of your information:

Conversations with local residents, and information from DOC.

Estimate the number of people visiting the operational area during the period of the operation. In particular, consider whether it is a high use area or if the number of people using it increase for specific events or according to the season or holiday periods (particularly think of children):

❑ **HIGH USE** *(more than 50 people per day)*	❑ **MODERATE USE** *(between 10 and 50 people per day)*	❑ **LOW USE** *(fewer 10 people per day)*
	Hunting blocks (during the roar or summer season): • Block numbers 18, 19, 31 and 32	**Public Huts, bivvies/shelters:** • Rakeahua hut • Doughboy hut • Dougboy Bay Cave **Private Huts, bivvies/shelters:**

		• DOC Table Hill Bivvy • DOC Blakies Bivvy • DOC 511 Bivvy **Watercraft landing points** • 'Rakeahua Landing' in South West arm up Rakeahua River (landing point for water taxis) • 'Top Landing' in South West arm up Rakeahua River (landing for smaller private & DOC boats) • 'Spit face' cove near Doughboy Bay **Historical/memorial/tourist sites** • Silvertwon disused mine (adjacent to treatment area) • Conserved sites in North Arm in Port Pegasus **Walking tracks** • Mt Rakeahua Route • Southern Circuit track: Fred's camp to Rakeahua Hut • Southern Circuit track: Rakeahua Hut to Doughboy Bay • Southern Circuit track: Doughboy Bay to Mason Bay • Tin Range Surveyors Route • Tin Range Tramway Route **Hunting blocks (during low/winter season):** • Block numbers 18, 19, 31 and 32
Describe the baiting plans around these areas: **Below we list the huts, tracks, public roads, carparks, and watercraft landing points with relevant**		

mitigation measures

Huts & shelters:

We propose to sow over and clear the following huts and shelters unless otherwise agreed upon with hut managers (DOC) ahead of baiting:

- Rakeahua hut
- Doughboy hut
- DOC Table Hill Bivvy
- DOC Blakies Bivvy
- DOC 511 Bivvy
- Doughboy Bay Cave

Any additional mitigation measures will be agreed upon with agreement with hut owners (DOC).

Walking tracks:

We propose to sow over the following tracks (all tracks in operational area) unless otherwise agreed with track managers ahead of baiting:

Currently maintained, low use

- Mt Rakeahua Route
- Southern Circuit track: Fred's camp to Rakeahua Hut
- Southern Circuit track: Rakeahua Hut to Doughboy Bay
- Southern Circuit track: Doughboy Bay to Mason Bay

Not maintained, very infrequent use

- Tin Range Surveyors Route
- Tin Range Tramway Route

We are proposing that no track clearance is required for these walking tracks, due to their remote back country location, very low usage, and high likelihood visitors will travel away from marked tracks.

The southern circuit is promoted by DOC as being... *"…a remote, challenging tramping experience and requires a high level of fitness, good route finding skills, and backcountry experience".*

The Tin Range Surveyors Route and Tin Range Tramway Route is no longer maintained or advertised by DOC.

Visitors to these tracks are visiting back country tramps/routes, or hunting throughout the area. Therefore they area likely to travel outside of the immediate vicinity of the track into the bush and encounter bait, regardless of bait clearance along the track. These tracks have low use year round (~1 person per day). Some routes (Tin Range Surveyors and Tramway Routes) are used by only a handful of people per year, and may not be used during aerial operations or for weeks/months after an aerial operation.

To minimise the risk to public from being in the area during sowing, the following actions will be taken:

1. DOC and ZIP will work together to contact the anyone present in the DOC huts (Rakeahua and Doughboy

Bay), or shelters (Doughboy Bay Cave) to advise them of the sowing operation.
2. DOC and ZIP will work together to inform local DOC staff at DOC bivvies of sowing
3. Toxic warning signs will be placed at all normal points of entry to the operational area.
4. Clear information will be circulated around the community, on the DOC website and at the Rakiura DOC visitors center about the operations.

To clear Rakeahua and Doughboy Bay huts, the following actions will be taken:

Rakeahua and Doughboy Bay huts are managed by the Department of Conservation and is accessible by foot, boat, helicopter, and in the case of Doughboy Bay, fixed wing plane. ZIP intends to sow over these huts and clear once as agreed with the hut managers.
1. On the day before, or morning of, the toxic bait application, the roof gutter down pipe for the huts (where required) will be disconnected from the water tanks (detailed in Section D). The water within the tank itself will act as storage supply during this period.
2. Following baiting, the roof and gutters will be checked and cleared of baits before the water supply is reconnected.
It is proposed that one bait clearance will be conducted, or as agreed upon by hut owners. This is because a) there is no overhanging vegetation surrounding the huts and b) visitors of the hut are likely to travel outside of the immediate vicinity of the hut into the bush and encounter bait, regardless of bait clearance around the hut.

To clear Doughboy Bay Cave, the following actions will be taken:

Doughboy Bay Cave is a rock shelter on public conservation land, used occasionally by trampers and hunters.
1. Once the area surrounding the rock shelter has been sown over, DOC or ZIP staff on site will check the cave and cave entrance for baits. Any baits will be removed. It is proposed that one bait clearance will be conducted. This is because visitors to the cave will travel outside of the immediate vicinity into the bush and encounter bait, regardless of bait clearance around cave,

To clear private DOC bivvies, the following actions will be taken:

It is intended that the bivviess will be sown over, to ensure all individuals of the target species are exposed to the baiting (a fundamental principal of predator elimination).

1. On the day before, or morning of, the toxic bait application, the roof gutter down pipe for the bivvies (where required) will be disconnected from the water tanks (detailed in Section D). The water within the tank itself will act as storage supply during this period.
2. Following baiting, the roof and gutters will be checked and cleared of baits before the water supply is reconnected.
It is proposed that one bait clearance will be conducted, or as agreed upon by hut/bach owners. This is because a) there is no overhanging foliage around the bivvies and b) DOC users of the hut will to travel outside of the immediate vicinity of the bivvy into the bush and encounter bait, regardless of bait clearance around the bivvy.

Watercraft landing points, popular fishing access areas:

It is proposed that no clearance of watercraft landing points or fishing areas will be taken. Due to the safeline baiting approach described above, there will be no bait directly on the coastline where boats land or fishing occurs (there will be a gap between the effective broadcast sowing and the exclusion zone). Any precision sowing near the coast (e.g. if using hand lay) can avoid key watercraft landing points). Additionally:

- locations of watercraft landing points are approximate and users may land at various places along the coast
- users of these landing points and fishing areas will to travel outside of the immediate vicinity into the bush and encounter bait, regardless of bait clearance around the point.
- All these locations are low use

It is proposed that any future watercraft landing points or fishing access points indentified through consultation will not be cleared as described above.

Warning signage at the key watercraft landing points will communicate the pesticide uses and operation details to users.

Clear information will be circulated around the community, on the DOC website and at the Rakiura DOC visitors center about the operations.

List any areas where access is to be restricted or closed and how this will occur:

All tracks will remain open for use, as will all bookable hunting blocks. Communication with hunters, trampers and other users of the area will take place to ensure they are aware of the operation.

Aerial applications to dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys

Under certain conditions, you may be permitted to aerially apply VTA(s) and/or other hazardous substance(s) over walking and vehicle tracks.

List all dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys within the operational area over which you intend to aerially apply VTA(s) and/or other hazardous substance(s) and ensure they are clearly identified on Section A map(s):

Please see section above.

Describe any risks from aerial application to dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys during school or public holidays, and how you will mitigate these:

Due to unpredictable weather patterns and logistical challenges of delivering an operation on Rakiura, having the option to treat the proposed area within school/public holiday timing is necessary to successfully complete operations to protect pukunui. The target window for proposed operations are planned to occur between the months of June and September (but may move be delayed due to adverse weather conditions).

This area of the island is difficult to access, requiring a boat, helicopter, fixed winged plane or ~2 days tramp, and walking tracks in these areas are classified as *"…a remote, challenging tramping experience and requires a high level of fitness, good route finding skills, and backcountry experience"*.

As such we do not expect a significant increased risk with more young children accessing this area during the school holiday period. Walking tracks, huts and other use points identified above are generally of low use for the whole year. As such we propose that no further mitigation is required beyond that described in the section above, and that the proposed operations be permitted to occur during school or public holidays.

Describe the track clearance plan, including the time and frequency of track inspections:

Please see section above.

Confirm a GPS track log shall be recorded and maintained for each track clearance, and be available on request, for example if there is a complaint investigation:

There will be GPS tracks recorded for all huts/bivvies/shelters that are cleared at any part of the operation. It is proposed that no track clearance will occur, see above.

SECTION D: PROTECTION OF DRINKING WATER SUPPLIES

You may be required to identify appropriate mitigation measures to protect all water supplies (including domestic self-supplies) that draw water for human consumption from an abstraction point within the operational area, or within 200 m for ground-based applications, and within 400 m for aerial applications, downstream of the operational area where the water source is a surface waterbody that flows through or rises within the operational area. You may also be required to notify the water supplier of these measures. Information about potential mitigation measures, including provision of alternative water supplies, is available in the Ministry of Health Guidelines for Issuing Permissions for the Use of Vertebrate Toxic Agents (Revised 2022) available at https://www.health.govt.nz/publication/guidelines-issuing-permissions-use-vertebrate-toxic-agents

Locations of drinking water supply intakes
List drinking water supply intakes within the operational area, or within 200 m for ground-based applications, and within 400 m for aerial applications, downstream of the operational area where the water source is a surface waterbody that flows through or rises within the operational area and ensure they are clearly identified on Section A map(s): Have these locations been confirmed with the water supplier? **Yes** If your answer is no, describe how you have verified the location.

Name of supply (1): Table Hill Bivvy	
Intake *(insert your map code):* W1	Grid ref. of intake: E 1208468 N 4779503
Type of supply *(e.g. roof, bore, spring, river, lake, etc.)*: Roof rainwater tank	
Have you made contact with the owner/operator of this supply?	☑ Yes ☐ No
This is a DOC owned bivvy used for management purposes (staff working on the SNZD recovery programme).	
Detail any specific concerns raised or mitigations requested by the drinking water supplier:	
Describe the mitigation measures you will take: Mitigation measures will be agreed upon with hut managers ahead of baiting. It is intended that the hut will be sown over, to ensure all individuals of the target species are exposed to the baiting (a fundamental principal of predator eradication), unless otherwise agreed upon by hut managers. The water supply will be disconnected before toxic baiting (see methods above). Following baiting, the roof and gutters will be checked and cleared of baits before the water supply is reconnected.	
Note any proposed mitigation measures that have NOT been agreed with the water supplier and describe the reasons for this:	

Name of supply (2): Blakies Bivvy	
Intake *(insert your map code):* W2	Grid ref. of intake: E 1209807 N 4775659
Type of supply *(e.g. roof, bore, spring, river, lake, etc.):* Roof rainwater tank	
Have you made contact with the owner/operator of this supply? ☑ Yes ☐ No This is a DOC owned bivvy used for management purposes (staff working on the SNZD recovery programme).	
Detail any specific concerns raised or mitigations requested by the drinking water supplier:	
Describe the mitigation measures you will take: Mitigation measures will be agreed upon with hut managers ahead of baiting. It is intended that the hut will be sown over, to ensure all individuals of the target species are exposed to the baiting (a fundamental principal of predator eradication), unless otherwise agreed upon by hut managers. The water supply will be disconnected before toxic baiting (see methods above). Following baiting, the roof and gutters will be checked and cleared of baits before the water supply is reconnected.	
Note any proposed mitigation measures that have NOT been agreed with the water supplier and describe the reasons for this:	

Name of supply (3): 511 Bivvy	
Intake *(insert your map code):* W3	Grid ref. of intake: E 1214795 N 4783505
Type of supply *(e.g. roof, bore, spring, river, lake, etc.):* Roof rainwater tank	
Have you made contact with the owner/operator of this supply? ☑ Yes ☐ No This is a DOC owned bivvy used for management purposes (staff working on the SNZD recovery programme).	
Detail any specific concerns raised or mitigations requested by the drinking water supplier:	
Describe the mitigation measures you will take: Mitigation measures will be agreed upon with hut managers ahead of baiting. It is intended that the hut will be sown over, to ensure all individuals of the target species are exposed to the baiting (a fundamental principal of predator eradication), unless otherwise agreed upon by hut managers. The water supply will be disconnected before toxic baiting (see methods above). Following baiting, the roof and gutters will be checked and cleared of baits before the water supply is reconnected.	

Note any proposed mitigation measures that have NOT been agreed with the water supplier and describe the reasons for this:

Name of supply (4): Rakeahua Hut	
Intake *(insert your map code):* W4	Grid ref. of intake: E 1210721 N 4784090
Type of supply *(e.g. roof, bore, spring, river, lake, etc.):* Rain water tank	
Have you made contact with the owner/operator of this supply? ☑ Yes ☐ No This is a DOC owned public hut used by trampers and hunters .	
Detail any specific concerns raised or mitigations requested by the drinking water supplier:	
Describe the mitigation measures you will take: Mitigation measures will be agreed upon with hut managers ahead of baiting. It is intended that the hut will be sown over, to ensure all individuals of the target species are exposed to the baiting (a fundamental principal of predator elimination), unless otherwise agreed upon by hut managers. The water supply will be disconnected before toxic baiting (see methods above). Following baiting, the roof and gutters will be checked and cleared of baits before the water supply is reconnected.	
Note any proposed mitigation measures that have NOT been agreed with the water supplier and describe the reasons for this:	

Name of supply (5): 'Shit face' water take	
Intake *(insert your map code):* W5	Grid ref. of intake: E 1196771 N 4775585
Type of supply *(e.g. roof, bore, spring, river, lake, etc.):* Creek take	
Have you made contact with the owner/operator of this supply? ☑ Yes ☐ No Unofficial creek take on Public Conservation Land, identified by the local DOC team as being occasionally used by the maritime community to refill fresh water.	
Detail any specific concerns raised or mitigations requested by the drinking water supplier:	
Describe the mitigation measures you will take: This location is being ground truthed. Warning signage will be placed at this water source. Communications will be sent to the local maritime community to avoid landing/taking water from this area during and after operations.	
Note any proposed mitigation measures that have NOT been agreed with the water supplier and describe the reasons for this:	

Name of supply (6): Doughboy Bay Hut	
Intake *(insert your map code):* W6	Grid ref. of intake: E 1197824 N 4777565
Type of supply *(e.g. roof, bore, spring, river, lake, etc.):* Rain water tank	
Have you made contact with the owner/operator of this supply? ☑ Yes ☐ No This is a DOC owned public hut used by trampers and hunters .	
Detail any specific concerns raised or mitigations requested by the drinking water supplier:	
Describe the mitigation measures you will take: Mitigation measures will be agreed upon with hut managers ahead of baiting. It is intended that the hut will be sown over, to ensure all individuals of the target species are exposed to the baiting (a fundamental principal of predator elimination), unless otherwise agreed upon by hut managers. The water supply will be disconnected before toxic baiting (see methods above). Following baiting, the roof and gutters will be checked and cleared of baits before the water supply is reconnected.	
Note any proposed mitigation measures that have NOT been agreed with the water supplier and describe the reasons for this:	

Name of supply (7): Bowmar Private Water Supply	
Intake *(insert your map code):* W7	Grid ref. of intake: E 1198440 N 4764237
Type of supply *(e.g. roof, bore, spring, river, lake, etc.):* Roof rainwater tank	
Have you made contact with the owner/operator of this supply? ☑ Yes ☐ No	
Detail any specific concerns raised or mitigations requested by the drinking water supplier:	
Describe the mitigation measures you will take: N/A this dwelling and water supply is not under the proposed treatment area: it will not be sown over.	
Note any proposed mitigation measures that have NOT been agreed with the water supplier and describe the reasons for this:	

Name of supply (8): Water pipe near Belltopper falls

Intake *(insert your map code):* W8	Grid ref. of intake: E 1198163 N 4764038
Type of supply *(e.g. roof, bore, spring, river, lake, etc.):* Water pipe	
Have you made contact with the owner/operator of this supply? ☑ Yes ❑ No Unofficial water source, partly on PCL and partly on private land. Identified by the local DOC team as being occasionally used by the maritime community to refill fresh water.	
Detail any specific concerns raised or mitigations requested by the drinking water supplier:	
Describe the mitigation measures you will take: This location is being ground truthed. Warning signage will be placed at this water source. It is thought that the overland water source does not arise from the treatment area, however communications will be sent to the local maritime community to avoid landing/taking water from this area during and after operations.	
Note any proposed mitigation measures that have NOT been agreed with the water supplier and describe the reasons for this:	

Return the completed application form to vtaapplications@health.govt.nz

Application Form for Predator Control on Rakiura

May 2025- Jan 2026

Name of applicant: 9(2)(g)(ii)

Company/organisation: Zero Invasive Predators

Postal address: 9(2)(g)(ii)

Phone number: 9(2)(g)(ii)

Email address 9(2)(g)(ii)

Prepared by: 9(2)(g)(ii)

May 2025

CONTENTS

1. Introduction

1.1 Overview

ZIP, working in partnership with the Department of Conservation, is seeking permission to apply sodium fluoroacetate over key pukunui breeding grounds to protect the birds from predation this coming 2025/26 breeding season, which begins in October 2025. This standard suppression operation is a measure to halt the pukunui population decline seen over the last few years, which is moving the species towards extinction. The total pukunui population currently sits at just 101 birds, and the population has been declining 20% per year for the last three years. Action is needed now to save this species.

While the pukunui recovery operation is a standalone response to an immediate conservation crisis, it also presents an opportunity to gain critical insights into predator behaviour and control methods on Rakiura. Within this standard predator suppression operation to protect pukunui, it is proposed that a smaller area will be sown to trial ZIP's '1080 to Zero' methodology in the Rakiura environment. This trial area will be monitored intensively to contribute towards ZIP's knowledge, and will be invaluable in informing future work towards Predator Free Rakiura. Predator Free Rakiura is an ambitious and complex project that will support community and nature to thrive together by removing rats, possums, feral cats, and hedgehogs from Rakiura.

ZIP's 1080 to Zero methodology includes two operational 'phases'. Each phase comprises 1-2 pre-feeds followed by the application of toxin. The first phase removes the vast majority of predators, and the second phase, completed 1-2 months later, mops up any surviving predators. It is proposed that that 'Phase 1' of the 1080 to Zero Eradication Trial operation will be sown first in a smaller area within the Pukunui Predator Control Operation area. This will be followed, 1-2 months later, by the Pukunui Predator Control Operation itself. The suppression operation will cover a larger area, and where it overlaps with the Eradication Trial treatment area will also constitute 'Phase 2' of the 1080 to Zero Eradication Trial.

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

- Pesticide Use #1 - Sodium fluoroacetate, 0.15%, 6g cereal pellet, ProNature Dry Forest or Wet Forest, aerial application.
- Pesticide Use #2 - Sodium fluoroacetate, 0.15%, 6g cereal pellet, ProNature Dry Forest or Wet Forest, hand laid application.

- Pesticide Use #145 - Sodium fluoroacetate, 0.15%, 6g cereal pellet, ProDeer Possum and Rat Bait, aerial application
- Pesticide Use #146 - Sodium fluoroacetate, 0.15%, 6g cereal pellet, ProDeer Possum and Rat Bait, hand laid application
- Pesticide Use #155 - Sodium fluoroacetate, 0.15%, 6g cereal pellet, ProDeer WF Possum and Rat Bait, aerial application
- Pesticide Use #156 - Sodium fluoroacetate, 0.15%, 6g cereal pellet, ProDeer WF Possum and Rat Bait, hand laid application

The use of deer repellent will be assessed as part of this permission. ZIP is also applying for permission to use non-deer repellent bait across the entire proposed area, an avenue which will be considered in the event that permission is not given for the use of deer repellent.

Permission is sought for toxic application starting on or after 01 June 2025. Non-toxic prefeed will be applied no earlier than 20 May 2025.

1.2 Treatment area

The proposed Rakiura aerial treatment area totals approximately 43,080 ha, entirely on public conservation land (Rakiura National Park and Eastern Rakiura Scenic Reserve).

It covers an area around the Tin Range over the roughly middle portion of the island. The northern boundaries of the proposed treatment area extend to the Rakeahua River valley and to the east of the South West Arm inlet. The southern boundary extends to the Deceit Peaks and North Arm.

Note that within this consent areas, bait application and treatment area will be smaller, with the final design being agreed upon with the Department.

The consent area includes 42,600 ha of Rakiura National Park and 479 ha of Eastern Rakiura Scenic Reserve.

1.3 Treatment block(s)

Four treatment blocks:

1) Eradication Trial Operation - Non-Repellent Bait – 7,062 ha of Rakiura National Park, 7,062 ha total

2) Eradication Trial Operation – Deer Repellent Bait (if approved) – 2,055 ha of Rakiura National Park, 2055 ha total

3) Pukunui Predator Control Operation – Non-Repellent Bait– 42,600 ha of Rakiura National Park and 479 ha of Eastern Rakiura Scenic Reserve, 13 ha of Hydro Parcel, 43,092 ha total

4) Pukunui Predator Control Operation – Deer Repellent Bait (if approved) – 10,230 ha of Rakiura National Park 9,654 ha total

1.4 Geographical location

Rakiura is located 30 kilometres south of the South Island of Aotearoa New Zealand, separated by the Foveaux Strait. Rakiura is bordered by the Tasman Sea to the West and Pacific Ocean to the East.

The area proposed to be treated is entirely on public conservation land, sitting within Rakiura National Park.

It covers an area around the Tin Range over the roughly middle portion of the island. The northern boundaries of the proposed treatment area extend to the Rakeahua River valley and to the east of the South West Arm inlet. The southern boundary extends to the Deceit Peaks and North Arm.

To the east, west and south of the proposed treatment area is largely uninhabited forest (with the exception of DOC and hunting huts).

The settlement of Oban (population 400) lies approximately 11 km from the northern edge of the proposed treatment area

1.5 Adjacent land tenure and uses

Land use adjacent to the proposed treatment blocks includes Crown Public Conservation Land (PCL), Māori land and private land.

The proposed area to be treated is entirely on public conservation land within Rakiura National Park.

Adjacent land tenure to the east of the proposed treatment area includes Māori land. There is a buffer between this land and the proposed treatment area.

Land use within and adjacent to the proposed treatment blocks includes hunting, tramping, commercial and recreational fishing, and tourism (guided walks, cruises etc).

1.6 Nearby residential areas or facilities

The settlement of Oban (population 400) lies approximately 11 km from the northern extent of the proposed treatment area.

The settlement of Oban includes Oban Visitors Centre, Rakiura National Park Visitors Centre, Stewart Island Visitor Terminal.

The only school on the island area is: Half Moon Bay school, Ayr St, Oban 9818, also 11km from the treatment area in Oban township.

No schools, educational centres, villages, towns or residential areas are present within or directly adjacent to the proposed treatment area.

There are two DOC public huts and three DOC staff bivvies within the proposed treatment area. These are Rakeahua hut, Doughboy Bay Hut, and staff Bivvies at Table Hill, spot height 511 and Blakies Hill.

The DOC Southern circuit walking track, Mt Rakeahua Route, Tin Range Surveyors Track and Tin Range Tramway track run through the treatment area.

1.7 Community interests

The proposed treatment area generally receives a low level of use by the public for most of the year by local hunters, day walkers and fishers.

The proposed treatment area includes parts of the Southern Circuit Track, Mt Rakeahua Route, Rakeahua Hut and Doughboy Bay Hut & cave/rock shelter, Tin Range Surveyors and Tramway walks. These receive low levels of use (<10 people per day) year-round.

The hunting blocks in the proposed treatment area also generally receive low levels of use (<10 people per day). However, this may rise to moderate level of use (up to 10 people) in certain months of the year, particularly from hunters during the roar (late March to May). Hunting blocks may be booked by groups of up to 10 people at one time.

Some areas adjacent to the proposed treatment area, around South West Arm and North Arm are accessed by tourist cruises and guided walks. Communication with these tour groups will ensure they are aware of the operations and any track closures.

Within the proposed treatment area:

DOC huts (low level of use):

- Mt Rakeahua hut
- Doughboy Bay Hut

Public Rock Shelter (low level of use)

- Doughboy Bay Cave

Non-public DOC bivvies (low level of use):

- Blakies Bivvy
- Table Hill Bivvy
- 511 Bivvy

DOC Walking tracks (low level of use):

- Mt Rakeahua Route
- Southern Circuit track: Fred's camp to Rakeahua Hut
- Southern Circuit track: Rakeahua Hut to Doughboy Bay
- Southern Circuit track: Doughboy Bay to Mason Bay
- Tin Range Surveyors Route
- Tin Range Tramway Route

This area is frequently used by hunters and includes the open hunting zone permit area, as well as portions of bookable hunting blocks 18, 19, 32, and 31 (see map).

1.8 Management history

Pest operations to protect pukunui have run since the 1990s around breeding habitat and nests. All these operations have used ground-based methods.

This long-term management on the island, while beneficial in areas where it has been intensified, has not been at sufficient scales to protect the pukunui population from threat of extinction. More recent context suggests that intensification of ground-based methods improved dotterel survivorship in areas

where applied but was insufficient overall as the population subsequently fell by 19%.

Feral cat predation is the main agent of decline for pukunui. Norway rats are also known to attack adults on the nest, and it is thought that rat predation could be contributing to population decline. Over recent years, the pukunui population has decreased year on year (Fig. 1). In May 2024, the Department reported that the annual flock count of pukunui was 101 birds – a 19 per cent decline from 126 birds in 2023 (DOC, 2024). This is following a 13% population decline the previous season, from 144 birds 2022 to 126 birds in 2023 (DOC, n.d.). Population diversity in the population is significantly reduced (genetic bottleneck) as has happened before when the population fell to ~60 birds in 1992.

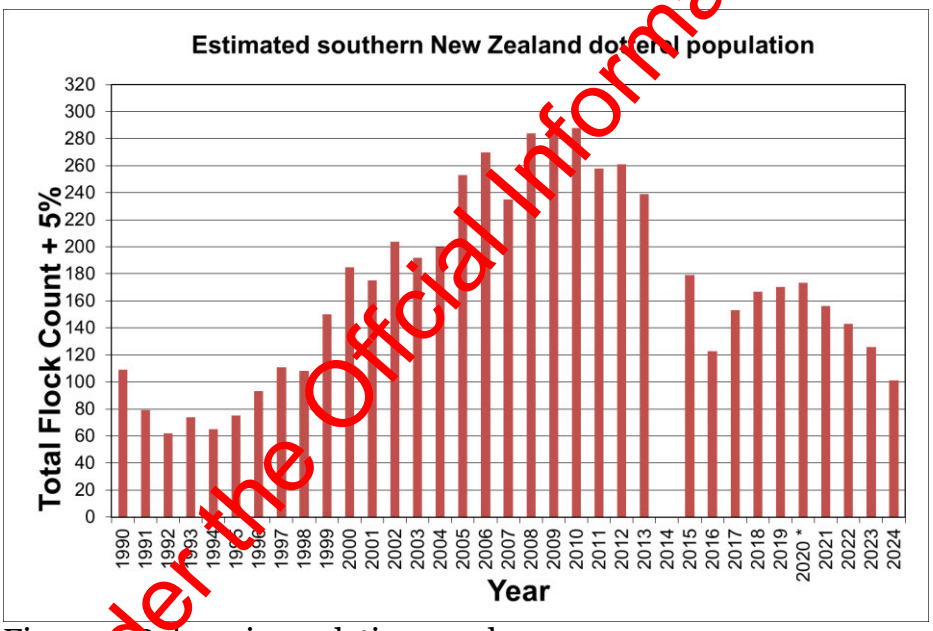


Figure 1: Pukunui population graph.

As current ground-based predator management is limited to approximately 30% of known pukunui nesting range (being the most accessible parts), continuing to rely on this approach with current resourcing is unlikely to be successful. This species has a high capacity for recovery given a relatively high productivity, provided adults and nests are successfully protected.

A change in management approach is needed to achieve sufficient scale to protect pukunui from extinction.

Management history:

Management around pukunui breeding habitat primarily targets feral cats, as well as kiore, ship and Norway rats. Key habitat where operations occur are Table Hill, Mt Rakeahua, spot height 511 and Rocky Mountain. Other habitat areas (e.g. Hananui | Mt Anglem) are not under feral cat control. In October 1992, bait stations were installed every 50m in a 10km length around the edge of the Table Hill breeding grounds (200 bait stations). Bait stations were 4-litre square-section liver pails, filled with fish meal 1080 baits (0.1% 1080) to target feral cats. In 1996-97 bromodiolone was placed into these bait stations along with fishmeal 1080 bait, to reduce the rat population as it was thought that rats were eating the 1080 bait before cats could get to it. These bait stations were used up until 2022 using 1080 baits, bromodiolone and brodifacoum. There has been no 1080 or brodifacoum deployment around pukunui breeding grounds since 2022.

Currently the only ground-based control of feral cats is through trapping, and some night hunting. Cat trapping has occurred for many years around the pukunui breeding grounds on Table Hill, Mt Rakeahua, spot height 511 and Rocky Mountain.

There has also been control of spur-winged plover and black backed gull populations around pukunui breeding areas, as these species are also a threat.

Possum control has been carried out on Rakiura to reduce browsing pressure on native vegetation. Control operations since 2002 have included hand lay 1080, 1080 bait bags, cyanide, and cholecalciferol. Possum control is cyclical on Rakiura - for example, Mt Rakeahua has a suggested pest control rotation of 6 years. It was managed for possum control in 2010/11, and 2018. In 2021 there was a pre-monitoring RTC of 14.6% (ground set equivalent), post-RTC was 1.16% (ground set equivalent).

2. Outcomes and targets

2.1 Conservation outcome(s)

The project outcome for the suppression blocks is:

1. Reduce, halt, or reverse the population decline of Pukunui for the 2025/26 breeding season.

The project outcome for the trial block is to:

2. Understand the effectiveness of the 1080 to Zero approach with a new suite of target predators.

3. Understand the effectiveness of secondary poisoning on feral cats after an aerial 1080 operation.
4. Understand the effectiveness of 1080 *with* deer repellent (Prodeer) on rat eradication where all three rat species coexist, and the impact on non-target white tailed deer.
5. Understand the effectiveness of 1080 *without* deer repellent on rat eradication where all three rat species coexist, and the impact on non-target white tailed deer.

2.2 Target(s)

The results target for the suppression block is:

- A reduction in cats, which are an expected by-kill of the operation specifically targeting rats and possums, as shown by NPCP monitoring cameras & DOC traplines.

The results target for the Eradication Trial treatment area is:

- A reduction in cats, which are an expected by-kill of the operation specifically targeting rats and possums, as shown by ZIP monitoring cameras
- Zero detections of possums and rats underneath the Eradication Trial treatment area for 1-2 months after the operation (following which reinvasion will occur back into the trial block), or if eradication is not achieved with these methods, gain learnings on which species survive and at what proportions.

3. Consultation and consents

3.1 Consultation

For this application, ZIP and DOC are consulting with the following key partners and other interested groups: (note that consultation is ongoing). A summary is below, please see communications record for more details.

Iwi:
Iwi consultation with Ngāi Tahu around Pukunui management and extinction risk has been ongoing for several years. Pukunui have been under intensive management since 1994.

The DOC Rakiura operations manager leads consultation on effects with Papatipu Rūnaka ki Murihiku (see consultation

record), made up of representatives from the four Southern Ngāi Tahu hapū;

- Waihōpai Rūnaka. Murihiku Marae
- Te Rūnaka o Awarua. Te Rau Aroha Marae
- Te Rūnanga o Ōraka-Aparima. Takutai O Te Titi Marae
- Hokonui Rūnaka. Ō Te Ika Rama Marae

Kaitiaki Rōpū ki Murihiku meet regularly with Rakiura DOC operations manager to consult and work together on projects on Rakiura.

ZIP has also met with a subset of the Kaititaki Rōpū O Murihiku that form the Ngāi Tahu Leadership for Predator Free Rakiura. This group has indicated support for the operation to protect pukunui. See the communication record for further details.

ZIP + DOC have also been in contact with representatives from the Rakiura Tītī Island Administering Body and the Rakiura Tītī Committee, who are kaitiaki of the Rakiura Tītī Islands along with, and on behalf of, all Rakiura Māori, and with the representatives of the Rakiura Māori Lands Trust, which holds land in trust for many Rakiura Māori descendants.

Hunting interests:
ZIP + DOC have met several times with representatives for the New Zealand Deerstalkers Association and the Game Animal Council, as well as several experienced local hunters. They understand the need and urgency to protect pukunui. Their requests were: Avoid bookable hunting blocks where possible, keep bookable hunting blocks open even if the operational area includes them (with direct communications with each party to manage the conflict); and use deer repellent in all areas possible. It was suggested that there is likely to be less impact on hunting activities in the open hunting area (which typically has lower usage at this time of year).

Fisheries interest:
ZIP have met several times with representatives for wild fishers and Southland Marine Farmers Association. They understand the need and urgency to protect pukunui. Their main requests were not sowing toxic bait into the coastal marine area; undertaking the operation from a land-based site (including bait and fuel), and managing market perception if bait/toxin did end up in the ocean environment.

Adjacent Landowners:

There are three private landowners adjacent (within 1 km) to the proposed treatment area. ZIP has been in contact with each of these landowners, and these discussions are ongoing. All have expressed support for the work.

DOC Concessionaires:
All concessionaires within the proposed consent area have been identified, and have been sent information regarding the proposed operation with invitations to engage. See communications record for more information.

Local community:
A fact sheet about this Pukunui operation was circulated widely within communities of interest on Friday 7th March 2025. There was a follow up community meeting in Oban on 25 March to provide additional detail and respond to questions that arose from this information sheet. DOC and ZIP hosted drop-in sessions in Oban on 10 April to provide further opportunity to hear from potentially affected and interested parties.

ZIP, DOC and Te Puka Rakiura Trust have been circulating information about planning towards the first operational stage of the Predator Free Rakiura project since August 2024.

All relevant communications to date will be documented on the Communications Record attached to this application. Future updates of the Communications Record will be provided as consultation continues.

3.2 Consents

☐ Public health permission application form will be attached upon submission to Te Whatu Ora.

4. Methods

4.1 Treatment Block 1 (Eradication Trial – Non-Repellent Bait)

Pesticides-Aerial Operations

Eradication Trial Phase 1

Pesticide use #1 HRS002424	**Target pest**

Sodium fluoroacetate 1.5g/kg Cereal pellet Aerial (0.15% 1080 Pellet)	Rats and possums

Brand name of pesticide	Phase One: PRONATURE Possum & Rodent Bait – Wet Forest
Lure/mask (& %)	Double orange 0.3% w/w
Type of pre-feed (lure/dye)	6 g cereal pellets lured with double strength orange, undyed.
Number of pre-feeds	1-2 (weather dependent)
Sowing rates for pre-feed	Helicopter sowing: 2kg/ha target rate, being 2 kg/ha sowing rate with 20m swath overlap, but up to 2 kg/ha allowing for overlaps between blocks
Sowing rates for toxic	Helicopter sowing: 4kg/ha target rate, being 2 kg/ha sowing rate with 50% swath overlap, but up to 6 kg/ha allowing for overlaps between blocks

Other details about this method

The Eradication Trial operation will be completed in two phases, following ZIP's '1080 to Zero' methodology. Each phase will involve 1-2 applications of non-toxic pre-feed pellets (weather depending) followed by an application of toxic bait.

'Phase I' will be completed as above with treatment blocks 1 & 2, using higher sowing rates and orange lured bait.

'Phase II' will be completed as part of the Pukunui Predator Control Operation, described in subsequent treatment blocks 3 & 4. This will use lower sowing rates and cinnamon lured bait.

Therefore, the Eradication Trial treatment area, will receive a total treatment of approximately 4kg/ha prefeed over two phases, with approximately 2-5 weeks between phases dependent on weather (around 2 kg/ha for Phase I, 1-2 kg/ha for Phase II) and 6 kg/ha toxin (around 4 kg/ha for Phase I, 2 kg/ha for Phase II).

Phase I is planned to begin in June 2025. Non-toxic pre-feeds will be ideally sown c. 5-7 days apart, to be followed c. 7-10 days later by an application of toxic pellets (1080).

Ideally there would be a 4-5-week gap before commencing with Phase II (Pukunui Predator Control Operation).

The aerial application of bait will primarily be applied by helicopter using standard broadcast buckets, calibrated to the target sowing rates.

Bait will be transported to the island by marine transport, and moved onto a land-based loading site (see maps) for operations. Operating from a land-based site (including bait and fuel) was requested by wild fishers and the Southland Marine Farmers Association. From this land-based site, mechanical loading will be used to transfer bait into heli buckets (broadcast, trickle or fixed trickle), or moved in small quantities in buckets or drybags to be used in hand-lay.

In the eradication context, it is critical to ensure that all individuals have access to bait. To minimise the potential for sowing gaps in the operation, delivery of the Eradication Trial operation will be sown with overlaps between adjacent swaths, 20 m for prefeed and 50% for toxic.

Broadcast is very effective for achieving coverage over large, landscape-scale applications. Helicopter broadcast swaths can throw bait up to 240 m (maximum swath based on bucket calibrations) either side of the helicopter, although will be achieving effective coverage over c. 170-180 m of this. However, it is not well suited to precision bait application adjacent to sensitive boundaries of the coastal edge. A safeline approach will be used with broadcast methods near the coastal edge, to ensure that no bait will enters the ocean, as agreed through consultation with wild fishers and the Southland Marine Farmers Association.

In the small area where the proposed Eradication Trial treatment area reaches the coastal edge in areas where we need to ensure no gaps in habitat are left, our intention is to use precision bait application techniques (trickle and fixed trickle sowing, hand lay) to ensure that no bait enters the ocean.

Trickle baiting may be completed using a standard trickle bucket, or an alternative 'fixed' trickle bucket design may also be used (in accordance with all applicable CAA regulations). The new bucket design is essentially a 'fixed trickle bucket', the idea being to increase the precision of a standard trickle bucket by removing bucket swing.

'Fixed' heli buckets

Standard heli buckets are suspended below the helicopter, causing them to sway when the helicopter is manoeuvring. This means that helicopters cannot be used close to sensitive boundaries where an extremely high degree of precision is required. Typically, these boundaries then need to be treated by hand, which carries a high labour cost. In order to maximise the coverage we are able to achieve using helicopters, and therefore to improve the overall efficiency of predator eradication aerial operations, we have developed a trickle sowing heli bucket that is fixed to the helicopter. Improving the precision of sowing by removing the sway caused by the movement of the helicopter.

Pesticides-handlaying Operations

Pesticide use #2	**Target pest**
Sodium fluoroacetate 1.5g/kg Cereal pellet Handlaying (0.15% 1080 pellet)	Rats and possums

Brand name of pesticide	Orillion PRONATURE Wet Forest
Lure/mask (& %)	Double orange 0.3% w/w
Type of pre-feed (lure/dye)	6 g cereal pellets lured with double strength orange, undyed
Number of pre-feeds	1-2 (weather dependent)
Sowing rates for pre-feed	Up to 3kg/ha per prefeed
Sowing rates for toxic	Up to 5kg/ha
Hand lay is an alternative to trickle sowing may be used to apply bait with high precision to sensitive boundaries. Hand lay is application of bait by hand, completed by walking and throwing a set number of baits on the ground at set intervals to achieve target coverage. Any hand lay operation will be completed alongside an aerial operation and will use the same bait type and sowing rate. Hand-lay of bait may be completed	

	alongside both the Eradication Trial operation and subsequent Pukunui Predator Control Operation. To achieve effective coverage and reduce any gaps in the coverage in the proposed Eradication Trial operation, hand-lay methods may be used between the aerial treatment boundary and the coast to ensure no bait enters the ocean.

4.2

Justification for proposed method (Eradication Trial -Non-Repellent Bait)

More intensive sowing methods are proposed for the Eradication Trial operation to test the efficacy of ZIP's '1080 to Zero' predator Eradication methods in the Rakiura ecosystem. In these zones, we are aiming for complete removal of rats and possums, and anticipate there will be high secondary poisoning rates of feral cats.

Monitoring data collected from this trial will answer questions regarding efficacy of eradication methods on the suite of predator species on Rakiura (kiore, ship rats, Norway rats, possums, feral cats), and the impact on non-target white-tailed deer.

This part of the operation will build on the research and development ZIP has undertaken as part of the Predator Free South Westland and Te Manahuna Aoraki projects. Incorporating this trial alongside suppression work will build on our understanding of rat population dynamics on Rakiura, thus better informing eradication operations towards Predator Free Rakiura.

4.3

Treatment Block 2 (Eradication Trial – Deer Repellent)

Pesticides-Aerial Operations

Pesticide use #155	**Target pest**
Sodium fluoroacetate 1.5g/kg Cereal pellet Aerial (Prodeer WF)	Rats, Possums

Brand name of pesticide	Orillion ProDeer Possum & Rat Bait
Lure/mask (& %)	Orange
Type of pre-feed (lure/dye)	6 g cereal pellets lured with orange, undyed
Number of pre-feeds	1-2 (weather dependent)

Sowing rates for pre-feed	Helicopter sowing: 2kg/ha target rate, being 2 kg/ha sowing rate with 20m swath overlap, but up to 4 kg/ha allowing for overlaps between blocks
Sowing rates for toxic	Helicopter sowing: 4kg/ha target rate, being 2 kg/ha sowing rate with 50% swath overlap, but up to 6 kg/ha allowing for overlaps between blocks
Other details about this method Approximately 2,055 ha of Deer Repellent will be used within this block (application area), targeted around the bookable hunting blocks. It is proposed that deer repellent is used to reduce impact on white-tail deer populations within bookable hunting blocks, and to test efficacy of deer repellent on eliminating target predator species (kiore, ship rat, Norway rat, possum). See Section 4.4 Justification for more information. Application will follow the same methods described above for Pronature Wet Forest bait.	

Pesticides-handlaying Operations

Pesticide use #156	**Target pest**
Sodium fluoroacetate 1.5g/kg Cereal pellet Handlaying (Prodeer WF)	Rats and possums

Brand name of pesticide	Orillion ProDeer Possum & Rat Bait
Lure/mask (& %)	Orange
Type of pre-feed (lure/dye)	6 g cereal pellets lured with Orange, undyed
Number of pre-feeds	1-2 (weather dependent)

Sowing rates for pre-feed	Up to 3kg/ha
Sowing rates for toxic	Up to 5kg/ha
Other details about this method Hand-lay application will follow the same methods describe above for Pronature Wet Forest bait	

4.4

Justification for proposed method (Eradication Trial – Deer Repellent)

It is proposed that deer repellent be used for bookable hunting blocks under the treatment area. Deer repellent has been requested for use in all areas possible by leadership for the New Zealand Deerstalkers Association, and Game Animal Council, along with experienced local hunters, to reduce impact on deer populations in the blocks. It should be noted that the impact of using deer repellent with white-tailed deer populations is not well understood.

Creating the best opportunity for a successful predator control operation is critical to give pukunui a chance at a good breeding season this year. However, the efficacy of using deer repellent on the target rat species (especially Norway rat and kiore) and the expected by kill of feral cats is unknown. In comparison, non-repellent bait is known to be effective at targeting ship rats and possums, and can be assumed to be likely to generate high feral cat by kill. However, acknowledging the need to recognise the value of the hunting resource to Rakiura, it is generally proposed that deer repellent is used within bookable hunting blocks only, and use non-repellent bait in the open hunting zone, including around pukunui breeding grounds. Using deer repellent in bookable hunting blocks aims to mitigate impacts on white-tailed deer hunting opportunities, where the highest deer numbers and hunting value is. Additionally, this design provides the opportunity to learn about the differences in target and non-target outcomes between repellent and non-repellent blocks (which is expected to have significant benefit for the planning of proposed future Predator Free Rakiura operations).

The bookable blocks make up 1,553 ha of the wider Eradication Trial. This proposed deer repellent block is 2,055 ha to make a flyable design while not sowing any non-repellent bait into the hunting blocks. For more information, see section 4.8. ZIP is also applying for permission to use non-deer repellent bait across the entire proposed area, an avenue which will be considered in the event that permission is not given for the use of deer repellent.

4.5 Treatment block 3 – Pukunui Predator Control Operation – Non-Repellent Bait

Pesticides-Aerial Operations

Pesticide use #1	**Target pest**
Sodium fluoroacetate 1.5g/kg Cereal pellet Aerial (0.15% 1080 Pellet)	Rats and possums
Brand name of pesticide	Orillion PRONATURE Dry Forest
Lure/mask (& %)	Single or Double cinnamon 0.3% w/w
Type of pre-feed (lure/dye)	6 g cereal pellets lured with single or double strength cinnamon, undyed
Number of pre-feeds	1-2 (weather dependent)
Sowing rates for pre-feed	Helicopter sowing: 2kg/ha target rate, being 2 kg/ha sowing rate with 20m swath overlap, but up to 4 kg/ha allowing for overlaps between blocks
Sowing rates for toxic	Helicopter sowing: 2kg/ha target rate, being 2 kg/ha sowing rate with 20m swath overlap, but up to 4 kg/ha allowing for overlaps between blocks 50% swath overlap will be used were this block overlaps with the Eradication Trial treatment area.
Application methods are the same as above (broadcast, trickle, or fixed trickle).	

Pesticides-handlaying Operations

Pesticide use #2	**Target pest**
Sodium fluoroacetate 1.5g/kg Cereal pellet Handlaying (0.15% 1080 pellet)	Rats and possums

Brand name of pesticide	Orillion PRONATURE Dry Forest
Lure/mask (& %)	Single or Double cinnamon 0.3% w/w
Type of pre-feed (lure/dye)	6 g cereal pellets lured with single or double strength cinnamon, undyed
Number of pre-feeds	1-2 (weather dependent)
Sowing rates for pre-feed	Up to 3 kg/ha per prefeed
Sowing rates for toxic	Up to 3 kg/ha
Hand lay application method is the same as above.	

4.6 Justification for proposed method Pukunui Predator Control Operation Non-Repellent Bait)

Landscape scale predator management is needed now to save pukunui from the brink of extinction. Current ground-based methods are not achievable at the scale needed to halt the decline of the population. Each breeding season that does not include this degree of feral cat control significantly increases the risk to dotterel persistence. An estimated 101 dotterel remain with a maximum of 39 breeding pairs possible, as males are disproportionally impacted as they are more vulnerable incubating at night, the true number is certainly smaller and any delay or reduction in predator control poses significant risk.

Aerial application is the only current feasible option to provide effective control at a landscape scale. Due to the scale of feral cat home ranges, aerial methods are necessary to achieve the level of landscape protection to effectively protect pukunui this breeding season.

The timing of this aerial operation aims to remove predation pressure from pukunui during the 2025/26 breeding season, a time where the adults and chicks are most vulnerable.

This suppression operation is proposing to use 2kg/ha as this is the standard sow rate for a suppression operation.

4.7 Treatment Block 4 (Pukunui Predator control Operation – Deer Repellent)

Pesticides-Aerial Operations

Pesticide use #145	**Target pest**
Sodium fluoroacetate 1.5g/kg Cereal pellet Aerial (Prodeer Possum and Rat Bait)	Rats, Possums

Brand name of pesticide	Orillion ProDeer Possum & Rat Bait
Lure/mask (& %)	Cinnamon
Type of pre-feed (lure/dye)	6 g cereal pellets lured with cinnamon, undyed
Number of pre-feeds	1-2 (weather dependent)
Sowing rates for pre-feed	Helicopter sowing: 2kg/ha target rate, being 2 kg/ha sowing rate with 20m swath overlap, but up to 4 kg/ha allowing for overlaps between blocks
Sowing rates for toxic	Helicopter sowing: 2kg/ha target rate, being 2 kg/ha sowing rate with 20m swath overlap, but up to 4 kg/ha allowing for overlaps between blocks 50% swath overlap will be used were this block overlaps with the Eradication Trial treatment area.
Other details about this method Approximately 8,290 ha of Deer Repellent will be used within this block (application area), targeted around the balloted hunting blocks. Justification same as above (Blocks 1 & 2).	

Application will follow the same methods describe above for Pronature Dry Forest bait.

Pesticides-handlaying Operations

Pesticide use #146	**Target pest**
Sodium fluoroacetate 1.5g/kg Cereal pellet Handlaying (Prodeer Possum & Rat Bait)	Rats and possums

Brand name of pesticide	Orillion ProDeer Possum & Rat Bait
Lure/mask (& %)	Cinnamon
Type of pre-feed (lure/dye)	6 g cereal pellets lured with cinnamon, undyed
Number of pre-feeds	1-2 (weather dependent)
Sowing rates for pre-feed	Up to 3kg/ha per prefeed
Sowing rates for toxic	Up to 3kg/ha
Hand lay application method is the same as above.	

4.8 Justification for proposed method (Pukunui Predator Control Operation – Deer Repellent)

As above, ZIP is proposing that deer repellent be used for bookable hunting blocks under the treatment area. Deer repellent has been requested for use in all areas possible by leadership for the New Zealand Deerstalkers Association, and Game Animal Council, along with experienced local hunters, to reduce impact on deer populations in the blocks. It should be noted that the impact of using deer repellent with white-tailed deer populations is not well understood.

The bookable blocks make up 6,147 ha of the wider Pukunui Predator Control Operation. The proposed deer repellent blocks total 9,654 ha to allow buffers in some areas (as described below) and make a flyable design while not sowing any non-repellent bait into the hunting blocks. ZIP is also applying for permission to use non-deer repellent bait across the entire proposed area, an avenue

which will be considered in the event that permission is not given for the use of deer repellent.

Following consultation, we are proposing the implementation of buffer zones around certain high value hunting blocks in line with the intent to reduce the impact on the hunting in the bookable blocks and recognising that deer home ranges will go beyond the hunting blocks. It is important to note that these buffers will only be applied if they do not compromise the effectiveness of our efforts to protect key pukunui habitat or impede the valuable data we can gather from feral cat monitoring

ZIP proposes applying buffer of deer repellent buffer around the North Pegasus hunting block 19. Through consultation, this hunting block is recognised as a high value hunting area.

For the Doughboy Bay hunting block 18, our proposal is to add a buffer to the north western edge of the Doughboy Bay block. We plan to use cameras in this area to monitor white-tailed deer under deer repellent (described in more detail below). A buffer of deer repellent around these cameras will allow effective understanding to be gained. However, we propose that there will be no buffer on the southern and south western end of the block, near Doughboy Creek. This area is designated for feral cat monitoring, which is a critical component of this operation. A key objective is to assess the reduction in feral cat numbers in an area without repellent, as they pose the primary threat to pukunui. Therefore, expanding deer repellent buffers in this area would negatively affect our ability to conduct this essential monitoring.

We are proposing no additional buffer will be applied around the Rakeahua block 32 and South West Arm block 31. These blocks are situated near the significant pukunui breeding areas of spot height 511 and Table Hill. Given the uncertain effectiveness of deer repellent on target species, using non-repellent bait around these areas creates the best opportunity for successful predator control and optimal pukunui outcomes. Additionally, the Rakeahua hunting block has been identified through consultation with the hunting leadership as having fewer animals and lower use compared to other blocks.

ZIP is proposing to monitor white-tailed deer populations under both repellent and non-repellent areas of the Pukunui Predator Control Operation, to quantify the effect of using deer repellent to mitigate impact on the resident white-tailed deer population. This will include deer monitoring cameras 1) under the deer repellent area, 2) under the non-repellent area and 3) in a non-treatment area. In addition, intensive camera monitoring grids are proposed within the deer repellent and non-deer repellent areas to monitor

the impact of the operation on the target rat species, under both the single and double phase blocks.

5. Further information

Details of contractor or principle

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

ZIP has been engaged by DOC to deliver this operation, under a partnership agreement.

DOC and ZIP are working as partners to design this operation, and share responsibility in holding communications & consultation for these operations (see communications record).

Company/organisation:	Zero Invasive Predators
Contact person:	9(2)(g)(ii)
Contact number:	9(2)(g)(ii) Level 3, 5 Willeston Street Rawlinsons House Wellington 6011 New Zealand

Further information

Provide any other information or comments you would like to have considered.

Operational Details

Bait transport plan:
Bait will be manufactured and put into pods. It will be stored at a certified facility in the South Island before being transported to Bluff for transportation via marine transport to the island. Bait will be flown to a land-based load site from the vessel.

Loading: A land-based loading site at Island Hill will be used for operations (see maps, pending final DOC permission). We are working with WorkSafe to obtain a location compliance certificate for the Island Hill site. Mechanical loading on site

will occur off a wooden platform using gantry cranes to load the heli buckets (broadcast, trickle or fixed trickle), or moved in small quantities in buckets or drybags to be used in hand-lay.

Security measures:
9(2)(g)(ii) have been engaged to provide loading site security 9(2)(g)(ii)

Emergency Plan:
A health and safety plan & emergency plan is in place, and will be verified by both DOC and ZIP prior to operations beginning. This will include plans through from bait on load site to vessel management.

Management of Hunting Concerns

See communications record for details on how consultation with hunting leadership informed management of hunting concerns.

Hunting blocks will remain open during operations. All hunters who have bookings in affected blocks will be contacted directly to inform them of operations. Any new bookings will be informed of operations around the area through messaging on the DOC website and through direct communications immediately upon booking. After toxic sowing, there will be a caution period of 4 months minimum in which hunters will be allowed to book the hunting block but will be made aware of this at the time of booking, including notification of the hunting caution advisory not to eat meat from the area. If the caution period needs to extend due to carcass and bait monitoring, then we will inform hunters at the time of booking.

Any DOC or hunting huts in the treatment area will have signage to inform of the operation. Warning signs will remain in place until the carcass and bait monitoring end points have been reached as per DOC national performance standards.

Public huts and private DOC Bivvies will be sown over during operations, and their water supplies managed by ZIP, with agreement from DOC. Water supplies will be disconnected prior to operations, and roofs, gutters and hut surroundings cleared before reconnection.

Monitoring information

ZIP has worked with the local DOC staff, Pukunui Technical Advisory Group and National Predator Control Programme team to discuss type and location of monitoring underneath these operations. This has involved regular meetings between groups to understand aims, constraints and how to optimise monitoring between groups.

Results targets for the Eradication Trial Operation will be monitored using

- Intensive grids of cameras to monitor rat activity, and determine if all rats in that grid area are removed following the two phases.
- Traps within these grids to determine species of any surviving rats
- One grid will monitor operation efficacy under non-repellent bait, and one grid will monitor under deer repellent.

Results targets for the pukunui predator control operation will be measured using

- Cameras to monitor cat, rat and possum knockdown
- Traps to monitor rat knockdown
- Monitoring devices will be placed in both repellent and non-repellent bait areas
- The pukunui team will continue with usual monitoring of the pukunui population, including banding, nest searching and yearly flock counts.

Impact on non-target white-tailed deer will be monitored using

- Grids of ungulate cameras monitoring pre and post operation
- One grid under non-repellent bait area, one under deer repellent and one in a control area which will allow for correction in white-tailed detections pre and post op due to seasonal movements in deer

Appendix 1: DOC Performance Standards

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

Location of operation
Rakiura, treatment blocks 1 & 3

Caution Period
The estimated caution period for this operation is *[assessor to complete]* 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 of 6g or more, 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)

Information Needs

*Compulsory for **all** operations*

Nil

Compulsory for this operation

Operational Planning & Design Considerations

These are considerations used during planning and assessment of an operation.

Assessor to delete this section from the approved performance standard sheet for the operation.

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

_____.

[Name of approving manager]

[Position]

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

Location of operation

Rakiura, treatment blocks 1 & 3

CSL REQUIRED

Caution Period

The estimated caution period for this operation is *[assessor to complete]* 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. The DOC Code of practice for aerial 1080 in kea habitat DOC-2612859 must be followed.
2. For operations targeting rats, prefeed with this pesticide use.
3. For operations targeting possums, baits will have a mean size of 6g or more, and 95% of baits should weigh more than 4g.
4. The baits must be dyed green or blue.
5. The product must only be used as specified on the manufacturer's product label.

Information Needs

*Compulsory for **all** operations*

Nil

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

Operational Planning & Design Considerations

These are considerations used during planning and assessment of an operation. Assessor to delete this section from the approved performance standard sheet for the operation.

- 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.

_____.

[Name of approving manager]

[Position]

Pesticide Use #145	Sodium fluoroacetate 1.5g/kg Cereal pellet Aerial (Prodeer Possum and Rat Bait)	Target Pests: Possums, Rats

Location of operation
Rakiura, treatment blocks 2 & 4

CSL REQUIRED

Caution Period
The estimated caution period for this operation is *[assessor to complete]* 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.

Compulsory Restrictions

Do not use in kea habitat as defined in the DOC Code of practice for aerial 1080 in kea habitat DOC-2612859.

Performance Standards

*Compulsory for **all** operations*

1. 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.
2. 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).
3. For operations targeting possums, baits will have a mean size of 6g or more, and 95% of baits should weigh more than 4g.
4. The baits must be dyed green or blue.
5. 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.
6. 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.
7. 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)

Information Needs

*Compulsory for **all** operations*

Nil

Compulsory for this operation

Operational Planning & Design Considerations

These are considerations used during planning and assessment of an operation. Assessor to delete this section from the approved performance standard sheet for the operation.

- Apply bait in coldest months of year.
- For operations targeting possums, do not repeat aerial operations within 4 years using the same bait.
- Possum control methods current agreed best practice – Method best practice – Aerial Application of 1080 Cereal Pellets DOC-7487883
- Rat control methods current agreed best practice – Method best practice – Aerial Application of 1080 Cereal Bait DOC-2749355

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

_____.
[Name of approving manager]

[Position]

Pesticide Use #146	Sodium fluoroacetate 1.5g/kg Cereal pellet Handlaying (Prodeer Possum & Rat Bait)	Target Pests: Possums, Rats

Location of operation
Rakiura, treatment blocks 2 & 4

CSL REQUIRED

Caution Period
The estimated caution period for this operation is *[assessor to complete]* 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.

Compulsory Restrictions

Do not use in kea habitat as defined in the DOC Code of practice for aerial 1080 in kea habitat DOC-2612859.

Performance Standards

*Compulsory for **all** operations*

6. Pre-feed with this pesticide use.
7. For operations targeting possums, baits will have a mean size of 6g or more, and 95% of baits should weigh more than 4g.
8. The baits must be dyed green or blue.
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)

Information Needs

*Compulsory for **all** operations*

Nil

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

Operational Planning & Design Considerations

These are considerations used during planning and assessment of an operation. Assessor to delete this section from the approved performance standard sheet for the operation

- Possum control methods current agreed best practice – Method best practice Hand broadcast of 1080 cereal pellets DOC-7487883.

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

_____

[Name of approving manager] *[Position]*

♦ INCLUDE ONE SHEET PER PESTICIDE USE ♦ COMPLETE SHADED AREAS ♦

Pesticide Use #155	Sodium fluoroacetate 1.5g/kg Cereal pellet Aerial (Prodeer WF)	Target Pests: Possums, Rats

Location of operation

Rakiura, treatment block 2

CSL REQUIRED

Caution Period

The estimated caution period for this operation is *[assessor to complete]* 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.

Compulsory Restrictions

Do not use in kea habitat as defined in the DOC Code of practice for aerial 1080 in kea habitat DOC-2612859.

Performance Standards

*Compulsory for **all** operations*

8. 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.
9. 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).
10. For operations targeting possums, baits will have a mean size of 6g or more, and 95% of baits should weigh more than 4g.
11. The baits must be dyed green or blue.
12. 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.
13. 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.
14. 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)

15. Minimise the period of time that bait is exposed at the loading site and able to be discovered by honeybees. Only open bags just prior to being loaded.

Information Needs

*Compulsory for **all** operations*

Nil

Compulsory for this operation

1. Monitoring: Pre and post control result monitoring to estimate percentage kill for rats and report results in a report.

Operational Planning & Design Considerations

These are considerations used during planning and assessment of an operation.
Assessor to delete this section from the approved performance standard sheet for the operation.

- Apply bait in coldest months of year.
- For operations targeting possums, do not repeat aerial operations within 4 years using the same bait.
- Possum control methods current agreed best practice – Method best practice – Aerial Application of 1080 Cereal Pellets DOC-7487883
- Rat control methods current agreed best practice – Method best practice – Aerial Application of 1080 Cereal Bait DOC-2749355

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

_____.
[Name of approving manager] [Position]

♦ INCLUDE ONE SHEET PER PESTICIDE USE ♦ COMPLETE SHADED AREAS ♦

Pesticide Use #156	Sodium fluoroacetate 1.5g/kg Cereal pellet Handlaying (Prodeer WF)	Target Pests: Possums, Rats

Location of operation

Rakiura, treatment block 2

CSL REQUIRED

Caution Period

The estimated caution period for this operation is *[assessor to complete]* 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.

Compulsory Restrictions

Do not use in kea habitat as defined in the DOC Code of practice for aerial 1080 in kea habitat DOC-2612859.

Performance Standards

*Compulsory for **all** operations*

10. Prefeed with this pesticide use.
11. For operations targeting possums, baits will have a mean size of 6g or more, and 95% of baits should weigh more than 4g.
12. The baits must be dyed green or blue.
13. 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)

14. *[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)

1. Monitoring: Pre and post control result monitoring to estimate percentage kill for rats and report results.

Operational Planning & Design Considerations

These are considerations used during planning and assessment of an operation.
Assessor to delete this section from the approved performance standard sheet for the operation.

- Possum control methods current agreed best practice – Method best practice Hand broadcast of 1080 cereal pellets DOC-7487883.

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

[Name of approving manager] [Position]

Appendix 2: Maps

Both of the following must be supplied:

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

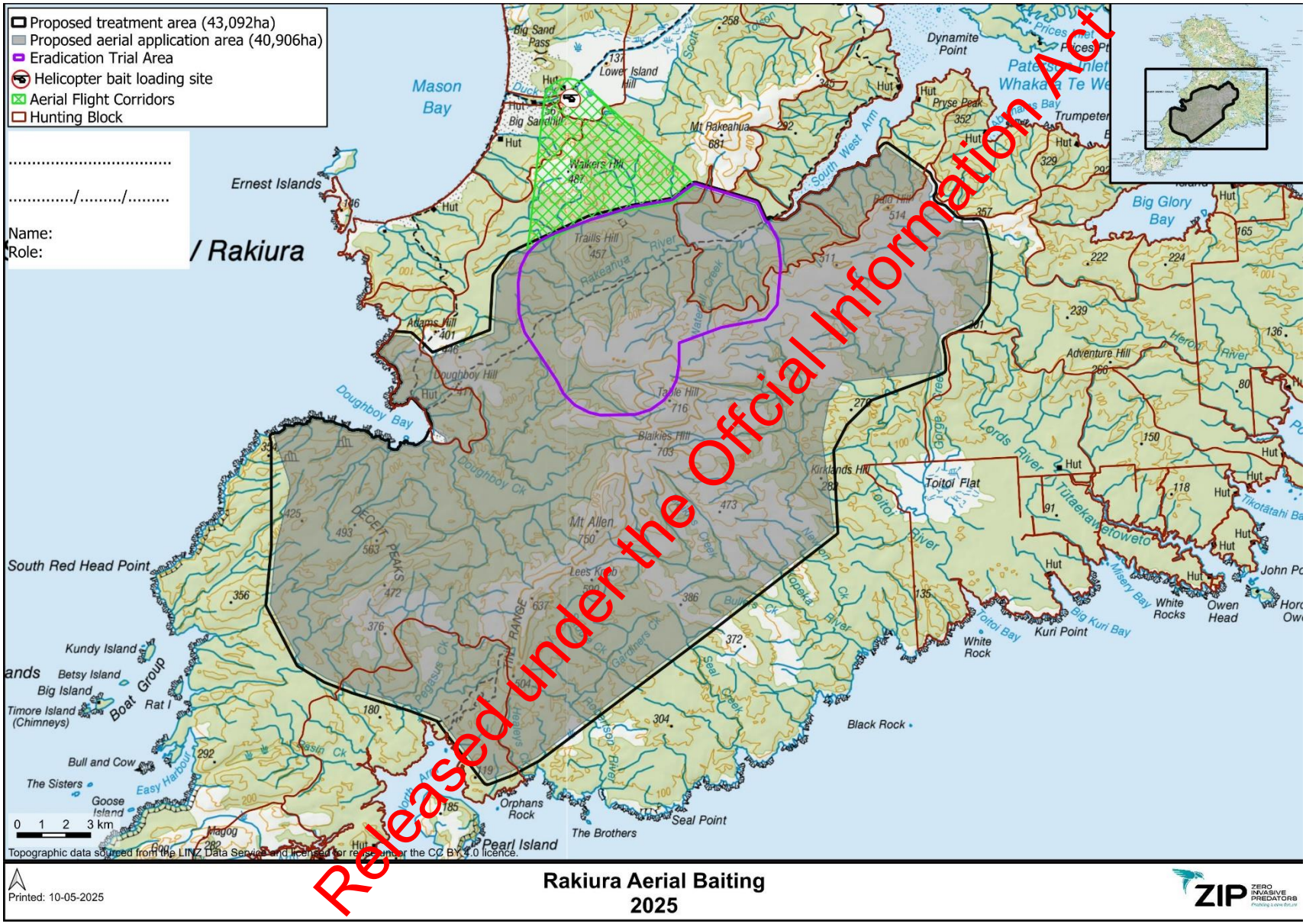
Your DOC permission map(s) must show the following as a minimum:

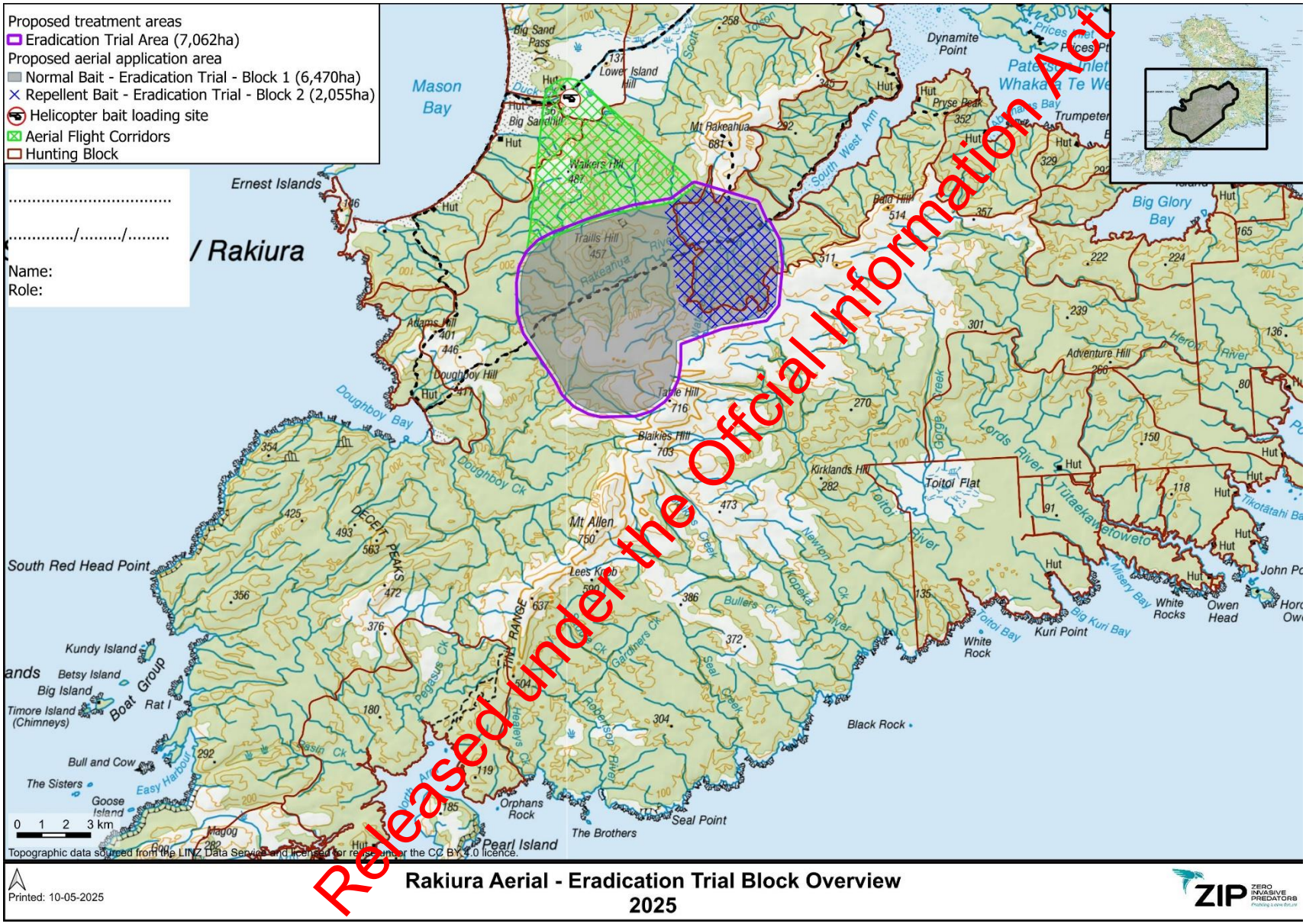
- The external boundary of the treatment area or those treatment blocks included in this operation
- Legal boundaries of land managed by DOC
- Name of treatment area
- Land tenure and adjacent owners, including leased land
- Any areas excluded from the treatment area (such as around public water supplies,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

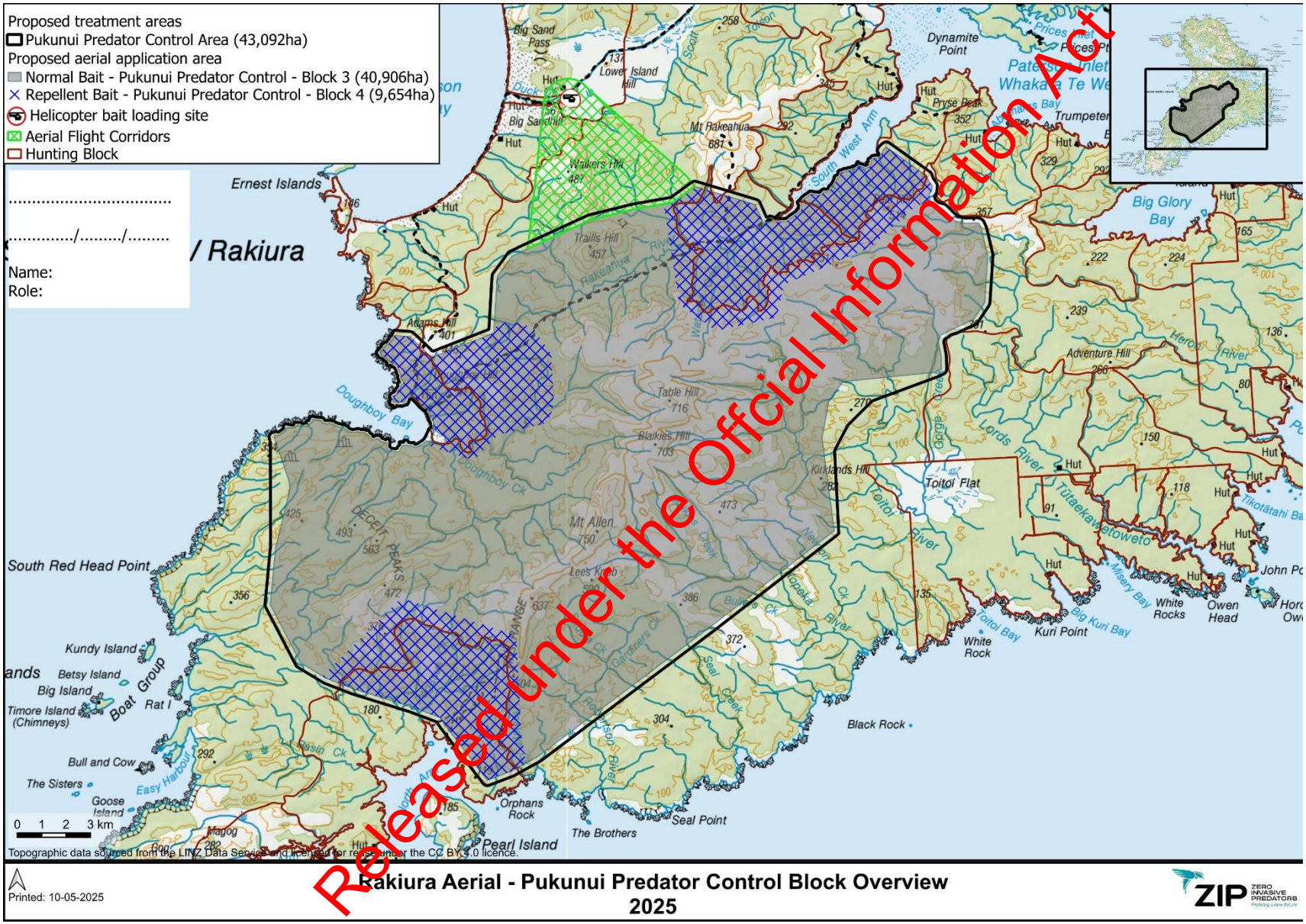
NOTE: 1:50,000 is the preferred scale. Use more than one map if the amount of detail becomes to visually cluttered to be clearly understood.

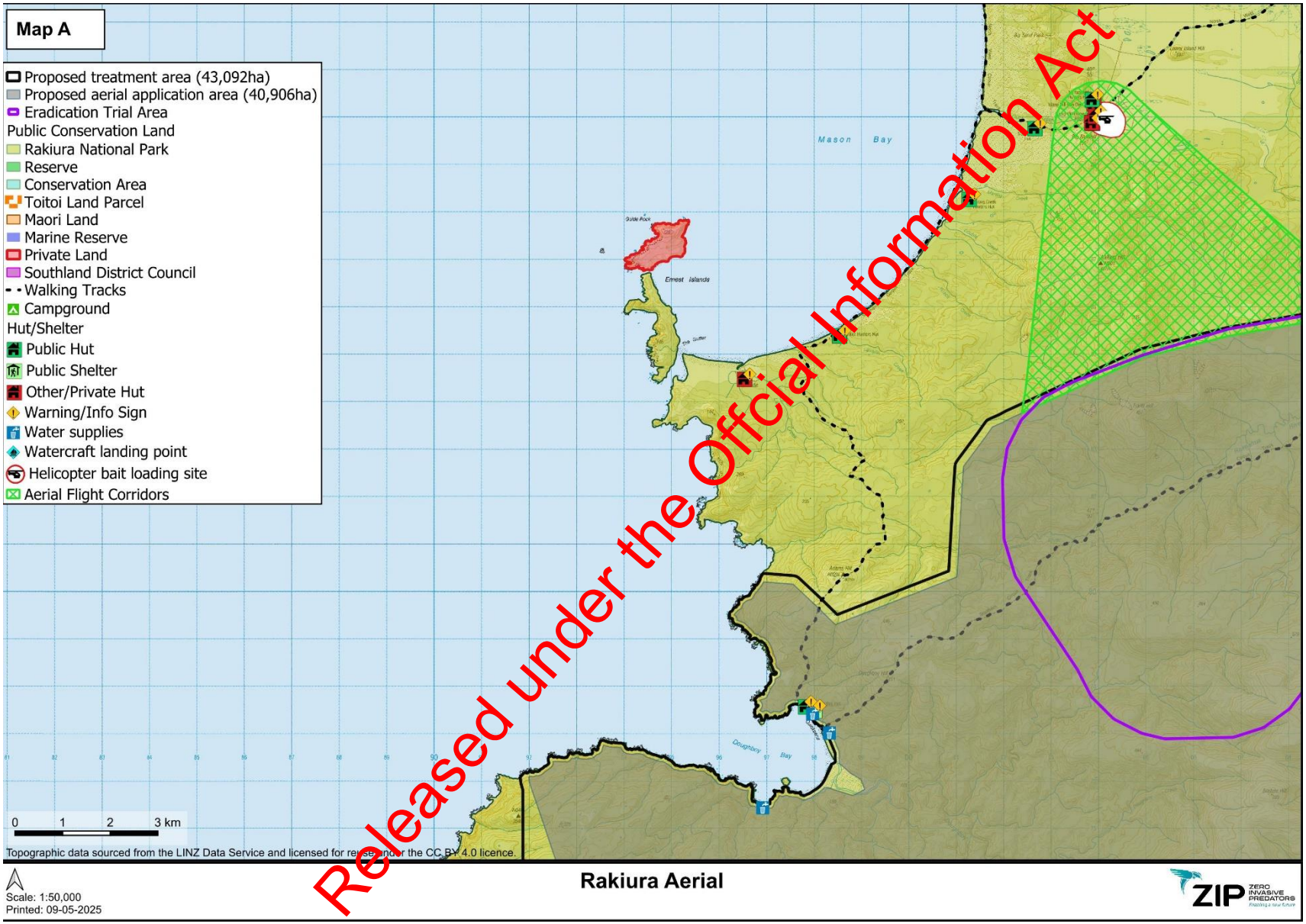
The DOC Pesticide Summary shapefile(s) will be published on the DOC Pesticide Summary website, initially as a proposed operation. It must be obvious which control methods are proposed for each treatment block. The shape files must also show all boundaries relating to the operation (treatment area/block,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

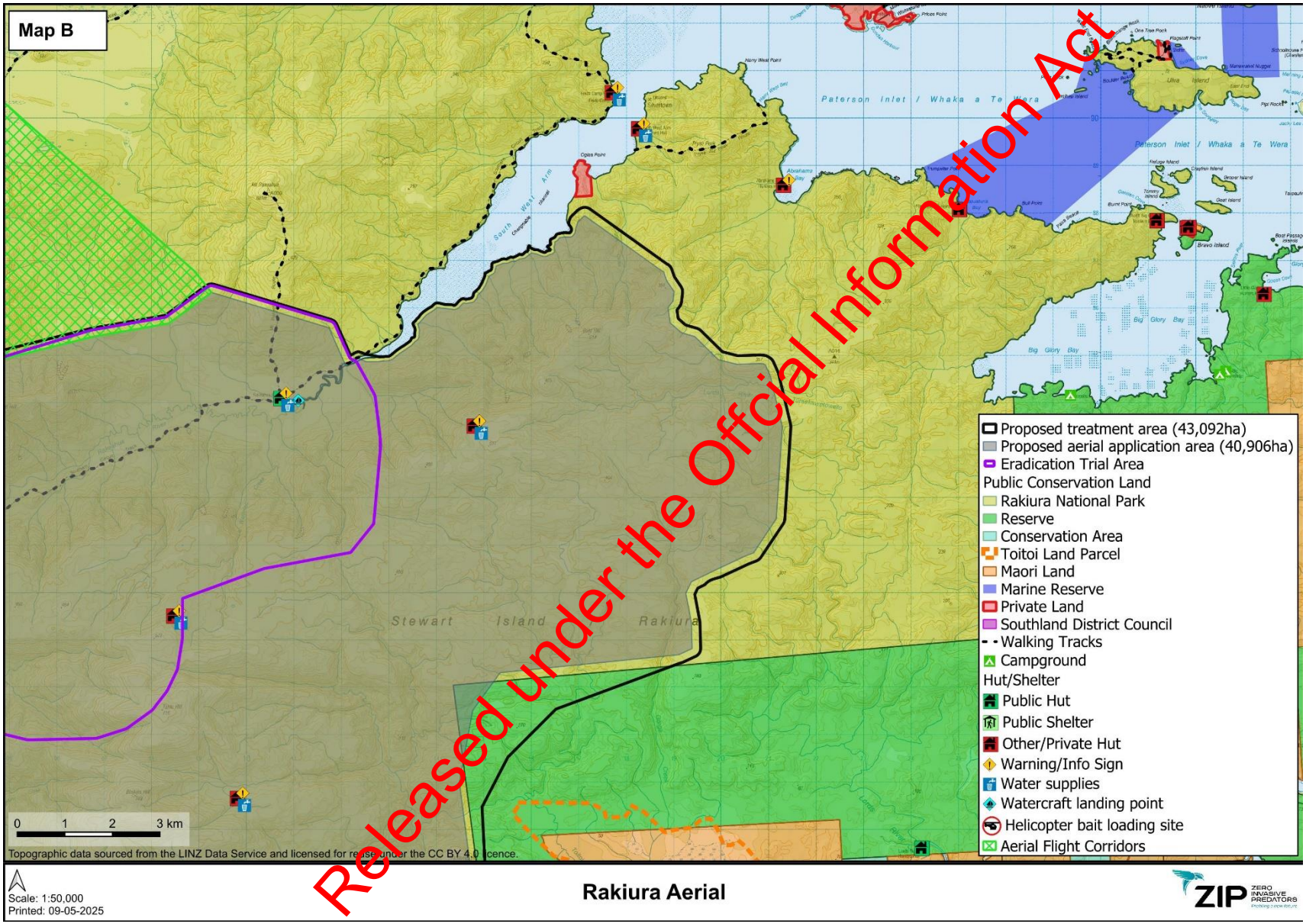
Maps are attached to this application. Please note maps may be updated as ground truthing + planning continues.

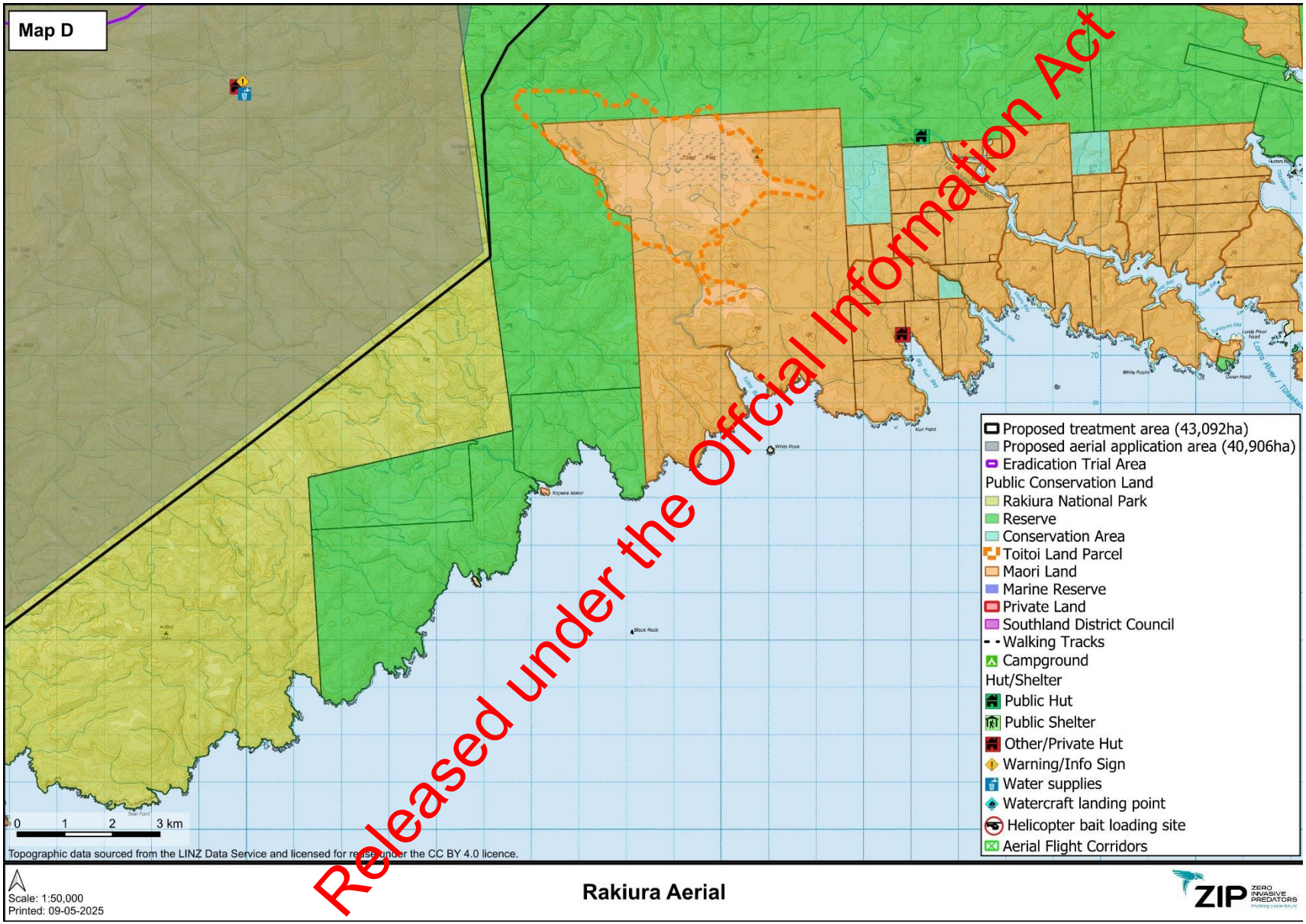












Appendix 3: Communication Record

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

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

If using another format, information must include:

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

Communication record is attached. Please note that communications are ongoing. ZIP will provide an updated communications record closer to operation start dates.

Appendix 4: Consents

Insert copies of all consents you specified in Section 3.2.
Landowner/occupier consents are recorded in the Consultation record whether or not written consent is obtained.

Communication record is attached. Please note that communications are ongoing. ZIP will provide an updated communications & consents record closer to operation start dates.

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

The primary species that prompted this control work is pukunui/Southern New Zealand Dotterel (*Charadrius obscurus obscurus,* Threatened – Nationally Critical).

Other key species which will benefit from this operation are:

- Harlequin gecko – *Tukutuku rakiurae*. Nationally Vulnerable. Endemic to Rakiura.
- Stewart Island flightless chafer beetle – *Prodontria grandis*. Naturally Uncommon. Endemic to Rakiura.
- Stewart Island fernbird | Mātātā – *Bowdleria punctata stewartiana*. Nationally Vulnerable. Endemic to Rakiura.
- Small-eared skink – *Oligosoma stenotis*. Naturally Uncommon. Endemic to Rakiura.
- South Island brown kiwi | Rakiura tokoeka – *Apteryx australis lyalli*. Nationally Vulnerable. Juvenile kiwi likely threatened by feral cat predation. Island endemic sub-species.
- Banded dotterel | Pohowera –*Charadrius bicinctus* - Declining.

Decades of research and monitoring across Aotearoa indicates that all native species on Rakiura will benefit from a reduction in rats, possums and feral cats. References to many of these research papers are included in the by-species risk assessment below, as well as a list of key species known to be present.

Predator Free Rakiura (PFR) aims to completely remove introduced predators from the landscape and prevent their reestablishment, which will have ecosystem-wide benefits for many native species in the future. The knowledge gained from monitoring within the Eradication Trial operation, alongside this proposed operation, is expected to inform the design of future PFR operations.

Non-target native species

List of native species that are known to be present in the project area and common (as opposed to not common, rare/very rare or visitor, based off the list compiled by Ron Tindall & Updated by Matt Jones (2018)). Less common species naturally have much lower risk profiles.

Threatened forest and wetland native bird species:

COMMON NAME	SPECIES	THREAT RANK
New Zealand Dotterel (Southern)	*Charadrius obscurus*	Nationally Critical
Matuku-hūrepo | Australasian Bittern	*Botaurus poiciloptilus*	Nationally Critical
Kārearea | New Zealand Falcon	*Falco novaeseelandiae "southern"*	Nationally Endangered
Kākā | South Island Kākā	*Nestor meridionalis meridionalis*	Nationally Vulnerable
Koekoeā | Long-tailed Cuckoo	*Eudynamys taitensis*	Nationally Vulnerable
Mātātā | Stewart Island Fernbird	*Bowdleria punctata stewartiana*	Nationally Vulnerable
Pārera | Pacific Black Duck	*Anas superciliosa*	Nationally Vulnerable
Kākāriki | Yellow-crowned Parakeet	*Cyanoramphus auriceps*	At Risk - Declining
Kotoreke| Baillon's Crake / Marsh Crake	*Porzana pusilla affinis*	At Risk - Declining
Pīhoihoi | New Zealand Pipit	*Anthus novaeseelandiae*	At Risk - Declining

Kākāriki | Red-crowned Parakeet	*Cyanoramphus novaezelandiae novaezelandiae*	At Risk - Relict
Rakiura Tokoeka | Stewart Island Brown Kiwi	*Apteryx australis lawryi*	Naturally Uncommon

Threatened native sea- and shore- bird species

(excluding albatross)

COMMON NAME	SPECIES	THREAT RANK
Hoiho| Yellow-eyed Penguin	*Megadyptes antipodes*	Nationally Endangered
Tarapirohe | Black-fronted Tern	*Sterna albostriata*	Nationally Endangered
Hākoakoa | Brown Skua	*Stercorarius antarcticus*	Nationally Vulnerable
Kaikōura tītī | Hutton's Shearwater	*Puffinus huttoni*	Nationally Vulnerable
Kawau tikitiki | Spotted Shag	*Phalacrocorax punctatus*	Nationally Vulnerable
Mapo |Foveaux Shag	*Leucocarbo stewarti*	Nationally Vulnerable
Antarctic Tern	*Sterna vittata*	Nationally Increasing
Kororā |Blue Penguin	*Eudyptula minor*	At Risk - Declining
Kuaka | Bar-Tailed Godwit	*Limosa lapponica*	At Risk - Declining
Pohowera | Double-Banded Plover	*Charadrius bicinctus*	At Risk - Declining
Tara | White-fronted Tern	*Sterna striata*	At Risk - Declining
Tarāpunga | Red-billed Gull	*Larus scopulinus*	At Risk - Declining

Tawaki | Fiordland Crested Penguin	*Eudyptes pachyrhynchus*	At Risk - Declining
Tītī | Sooty Shearwater	*Ardenna grisea*	At Risk - Declining
Tōrea | South Island Pied Oystercatcher	*Haematopus finschi*	At Risk - Declining
Kāruhiruhi | Pied Shag	*Phalacrocorax varius*	At Risk - Recovering
Pāngurunguru | Northern Giant Petrel	*Macronectes halli*	At Risk - Recovering
Tōrea pango | Variable Oystercatcher	*Haematopus unicolor*	At Risk - Recovering
Kawaupaka | Little Pied Shag	*Phalacrocorax melanoleucos*	At Risk - Relict
Kōrure | Mottled Petrel	*Pterodroma inexpectata*	At Risk - Relict
Kuaka | Common Diving Petrel	*Pelecanoides urinatrix*	At Risk - Relict
Reoreo | Grey-backed Storm-Petrel	*Garrodia nereis*	At Risk - Relict
Tītī | Cook's Petrel	*Pterodroma cookii*	At Risk - Relict
Tītī wainui| Fairy Prion	*Pachyptila turtur*	At Risk - Relict
Karetai hurukoko | Cape Petrel	*Daption capense*	Naturally Uncommon
Kōtuku ngutupapa | Royal Spoonbill	*Platalea regia*	Naturally Uncommon
Short-tailed Shearwater	*Ardenna tenuirostris*	Migrant

Other non-threatened native bird species:

COMMON NAME	SPECIES	THREAT RANK

Karoro | Southern Black-backed Gull	*Larus dominicanus*	Not Threatened
Kahu| Swamp Harrier	Circus approximans	Not Threatened
Kererū | New Zealand Pigeon	Hemiphaga novaseelandiae	Not Threatened
Korimako | New Zealand Bellbird	Anthornis melanura	Not Threatened
Kōtare | Sacred Kingfisher	Todiramphus sanctus	Not Threatened
Masked Lapwing	*Vanellus miles*	Not Threatened
Ngirungiru | South Island Tomtit	Petroica macrocephala macrocephala	Not Threatened
Poaka | Pied Stilt	*Himantopus himmantopus leucocephalus*	Not Threatened
Pīpipi | Brown Creeper	Mohua novaeseelandiae	Not Threatened
Pīpīwharauroa |Shining Bronze Cuckoo	Chrysococcyx lucidus	Not Threatened
Pīwakawaka | New Zealand Fantail	Rhipidura fuliginosa	Not Threatened
Pūtangitangi | Paradise Shelduck	Tadorna variegata	Not Threatened
Riroriro | Grey Warbler	Gerygone igata	Not Threatened
Ruru | Morepork	Ninox novaeseelandiae novaeseelandiae	Not Threatened
Tauhou| Silvereye	Zosterops lateralis	Not Threatened
Titipounamu | South Island Rifleman	Acanthisitta chloris chloris	Not Threatened

Tūī	Prosthemadera novaeseelandiae	Not Threatened
Karetai kauae mā | White-chinned Petrel	*Procellaria aequinoctialis*	Not Threatened
Matuku moana | White-faced Heron	*Egretta novaehollandiae*	Not Threatened

Native lizard species:

COMMON NAME	SPECIES	THREAT RANK
Harlequin Gecko	*Tukutuku rakiurae*	Nationally Endangered
Small-eared Skink	*Oligosoma stenotis*	Nationally Vulnerable
Stewart Island green skink	*Oligosoma cf. Chloronoton "Stewart Island"*	Nationally Vulnerable
Southern Skink	*Oligosoma notosaurus*	At Risk - Declining
Southern Grass Skink	*Oligosoma aff. polychroma Clade 5*	At Risk - Declining
Green Skink	*Oligosoma chloronoton*	Gradual Decline
Jewelled Gecko	*Naultinus genus sp*	Gradual Decline
Cloudy Gecko	*Hoplodactylus nebulosus*	Sparse

Native mammal species:

COMMON NAME	SPECIES	THREAT RANK
New Zealand Sea Lion	*Phocarctos hookeri*	Nationally Critical
Long-tailed Bat	*Chalinolobus tuberculatus*	Nationally Critical

Leopard Seal	*Hydrurga leptonyx*	Naturally Uncommon
Fur Seal	*Arctocephalus forsteri*	Least Concern

Key native insect species:

COMMON NAME	SPECIES	THREAT RANK
Herekōpare wētā	*Deinacridia carinata*	Nationally endangered
Flightless chafer beetle	*Prodontria grandis*	Naturally uncommon
Flightless chafer beetle	*Prodontria rakiurensis*	Naturally uncommon
Snail	Rhytida australis	Declining

Key freshwater aquatic species:

COMMON NAME	SPECIES	THREAT RANK
Gollum galaxias	*Galaxias gollumoides*	Gradual decline
Giant kōkopu/kaiwharu	*Galaxias argenteus*	Gradual decline
Southern flathead galaxias	*Galaxias "Southern sp."*	Gradual decline
Long fin eel	*Anguilla dieffenbachia*	Gradual decline
Kōura | Freshwater crayfish	*Paranephrops zealandicus*	Declining

Key native plant species:

COMMON NAME	SPECIES	THREAT RANK

-	*Tetrachondra hamiltonii*	Nationally vulnerable
Tree Daisy	*Brachyglottis stewartiae*	Naturally uncommon
Tree Daisy	*Brachyglottis stewartiae*	Naturally uncommon
Snow Tussock	*Chionochloa lanea*	Naturally uncommon
-	*Ranunculus stylosus*	Naturally uncommon
-	*Ranunculus kirkii*	Naturally uncommon
-	*Ranunculus ternatifoliu*	Declining
Tree Daisy	*Olearia lineata*	Declining
Blood wood	*Coprosma tuallii*	Declining
-	*Tetrachondra hamiltonii*	Nationally vulnerable

Effect of operation on native species

General benefit of 1080

Native bird populations are expected to benefit from the operation following reduced predation due to the reduced populations of possums and rats. Though some individual birds from various species have been known to die from 1080 poisoning (both reported and anecdotal), research has shown that 1080 operations have a net-positive effect on native species populations where non-target deaths in the short-term are counter-balanced by increased survival of the population in the mid- to long-term (Powlesland et al. 1999a).

Paragraphs below summarise studies following different native species through 1080 operations, an assessment of potential effects or risks identified through these studies and, where relevant, appropriate mitigations.

Most studies referenced are based on sowing rates of 1.5-2kg/ha. The Eradication Trial treatment area will be sown at 4kg/ha, which will significantly increase the encounter rate of native species with baits. However, since most native species are not known to preferentially

eat baits, and the Eradication Trial treatment area is relatively small in relation to the area of habitat on the island, we have assessed the increased risk as minimal.

Pukunui | Southern New Zealand Dotterel

There has never been aerial 1080 used on Rakiura near **pukunui**.

The proposed aerial operation area, timing and methodology in this permission has been approved by the Pukunui Technical Advisory Group (TAG), following an assessment of the potential effects on pukunui.

Our primary aim for this operation is to increase survivorship and recruitment of pukunui by reducing the population of rats, possums and feral cats, which are the main predators for this species.

Pukunui begin to return to breeding ground from coastal flocking sites in August. Breeding begins in September, and peak breeding occurs in October. Pukunui begin laying their first clutch of eggs as early as the 9th of September. Most birds will have made their first nesting attempt by late October and birds may re-nest up until December. Chick rearing may extend into January. Our target window for the operation is August–September, before dotterels return in full numbers to their alpine breeding grounds and prior to egg-laying.

Pukunui primarily feed on live or recently dead invertebrates and occasionally small fish, and are therefore very unlikely to consume cereal baits. While we've identified the potential risk to pukunui of secondary poisoning from invertebrates that have ingested 1080, this risk is considered extremely low. This assessment of low risk is partly due to the selection of 1080 as the proposed predator control method, as the risk of secondary poisoning for insectivorous species is significantly lower for 1080 than for alternatives such as brodifacoum. To date, there are no recorded incidents of waders being harmed during cereal bait 1080 operations.

We recognise a potential risk of disturbance to pukunui through operations. In response, the DOC pukunui team will have staff stationed near key pukunui breeding habitat during initial operations, to observe the behaviour of the birds. If we determine that the birds are being disturbed during initial operations, we will alter our approach to mitigate these effects.

The DOC pukunui team will complete monitoring of the birds throughout the breeding season to understand the outcomes of this management.

Rakiura tokoeka

All studies which have followed radio-tagged kiwi through 1080 operations have found no evidence of deaths caused by 1080. Therefore, the risk to **Rakiura tokoeka** is assessed as very low. As with other bird species, Rakiura tokoeka will benefit from a reduction in the possum, rat and feral cat populations.

46 Rowi were monitored during an aerial 0.15% 1080 Wanganui #7 pellet operation at Ōkārito in November 1998, with no deaths being reported (Veltman & Westbrooke 2011). 19 Haast tokoeka were monitored during an aerial 0.15% 1080 Wanganui #7 pellet operation (2 kg ha-1 prefeed, 3 kg ha-1 toxic) in the Haast Kiwi Sanctuary in May 2001, with no deaths being recorded (H Robertson pers. comm.).44 radio-tagged great spotted kiwi have been monitored through four 0.15% 1080 pellet aerial operations and none died from 1080 poisoning (see table below).

Great spotted kiwi monitored during aerial 1080 operations using 0.15% 1080 pellets.

Operation	No. Of Birds Exposed	No. Killed By Poison	Sowing Rate (Kg Ha1)		Ref.
			Prefeed	Toxic	
1994 (Aug) Saxon River	9	0		5	1
1994 (Dec) Karamea	7	0		5	2
2009 (Sept) Gouland Downs	8	0	1	2	3
2009 (Sept) Hawdon	20	0	1	2	4

1 Walker (1997); 2 Robertson et al. (1999); 3 S. Forder pers. comm. Pestlink: 0809GDB08; 4 Veltman & Westbrooke (2011)

A total of 243 North Island brown kiwi have been monitored through eight aerial and handlaid 1080 pellet operations, and none have died from 1080 poisoning (see table below). Kiwi call count monitoring during the Waipoua operation did not indicate significant 1080 related mortality (Pierce & Montgomery, 1992).

NI brown kiwi monitored during aerial and handlaid 1080 operations using 0.15% or 0.08% 1080 pellets.

Operation			Sowing Rate (kg ha^{-1})	Ref

	No. of Birds Exposed	No. Killed by Poison	Prefeed	Toxic	
1990 (June) Waipoua	5	0		5[a]	1
1990 (Sept) Waipoua	6	0		5	1
1995 Rewarewa	22	0		3[b,c]	2
2001 (Sept) Tongariro Forest	27	0	2	3[b]	3
2006 (Sept) Tongariro Forest	68	0	2	4[b]	3
2011 (Sept) Tongariro Forest	44	0	1.5	2[b]	3
2014 (Aug) Tongariro Forest	39	0	0.75	0.75[b] (strip sowing)	3
2017 (Aug) Tongariro Forest	32	0	1.5	1.5[b]	3

[a] toxic loading of baits 0.8 g kg^{-1}; [b] toxic loading of baits 1.5 g kg^{-1}; [c] baits were handlaid.

1 Pierce and Montgomery (1992); 2 Robertson et al. (1999); 3 H. Robertson & J. Guillotel pers. comms.

Based on a meta-analysis of 199 kiwi (all species) from 10 surveys between 1994 and 2009, Veltman and Westbrooke (2011) calculated the upper bound of the 95% confidence interval for an estimate of zero mortality at 1.5%.

Based on this assessment, no additional mitigations are proposed.

Mātātā/Fernbird

A total of 59 mātātā were monitored over three operations using 1080, and seven have disappeared following treatment. Based on this, the mortality of mātātā due to 1080 poisoning was estimated at 9.4% (2.4-22.6% 95% CI). The authors concluded that the impact of aerial 1080 operations on mātātā numbers is small, and the survival and improved breeding success that would have resulted from introduced predators being reduced during the 1080 operation would have outweighed the losses (van Klink et al. 2013).

Fernbirds monitored during aerial and handlaid 1080 operations using 0.15% or 0.08% 1080 pellets.

Operation			Sowing Rate (Kg Ha1)	Ref.

	No. Of Birds Exposed	No. Killed By Poison	Prefeed	Toxic	
1990 Waipoua	14d	0		5[a]	1
1994 Gouland Downs	9	4c		5[b]	2
2010 Ianthe Forest	36	3	1	2[b]	3

[a] toxic loading of baits 0.8 g kg^{-1}; [b] toxic loading of baits 1.5 g kg^{-1}; [c] due to the banded birds not being roll called immediately prior to the poisoning this study was inconclusive about cause of disappearance; [d] includes 2 banded birds.

1 Pierce and Montgomery (1992); 2 Walker (1997); van Klink et al. (2013)

A 2022 study by Kilner, Kemp & Elliott found that none of 14 banded mātātā exposed to an aerial 1080 operation on the West Coast died of poisoning. This study also found that aerial 1080 improved nest survival for the breeding season.

Based on this assessment, no additional mitigations are proposed.

Kākā

60 radio-tagged kākā were monitored over four operations and none have died from poisoning (see table below). Additionally, 38 radio tagged birds have been exposed to 0.08% carrot baits over two operations, and none have died from poisoning.

Based on a meta-analysis of the kaka monitored through five pellet and carrot operations between 1994 and 2008, Veltman and Westbrooke (2011) calculated the upper bound of the 95% confidence interval for an estimate of zero mortality at 3.5%.

Kākā monitored during aerial 1080 operations using 0.15% 1080 pellets.

Operation	No. Of Birds Exposed	No. Killed By Poison	Sowing Rate (Kg Ha^{-1})		Ref.
			Prefeed	Toxic	
Windbag (1998)	15	0		5	1
Waipapa (2001)	20	0		5	1
Waipapa (2008)	10	0	1	1.5	2
Waitutu (2010)	15	0	1	2	3

1 Powlesland et al. (2003); 2 Veltman & Westbrooke (Veltman & Westbrooke 2011); 3 Greene et al. (2013)

Based on this assessment, no additional mitigations are proposed.

Ruru/Morepork

As ruru are predators, there is a possibility that they are susceptible to secondary poisoning. However, results from the studies below show that this risk is not large, and therefore any individual losses will be balanced with a greater positive population-level benefit through removal of introduced predators of ruru.

A total of 47 radio-tagged ruru have been exposed to aerial 1080 over six operations, and none have died from poisoning (see table below). Call count monitoring at Waipoua (Pierce & Montgomery, 1992) did not indicate significant 1080 related mortality.

Ruru monitored during aerial and handlaid 1080 operations using 0.15% or 0.08% 1080 pellets.

Operation	No. Of Birds Exposed	No. Killed By Poison	Sowing Rate (Kg Ha^{-1})		Ref.
			Prefeed	Toxic	
1990 Waipoua	2	0		5[a]	1
1994 Saxon River	6	0		5[b]	2
1994 Tennyson Inlet[c]	1	0		5[b]	2
1998 Pureora	3[d]	0		5[a]	3
2010 Waitutu	11	0	1	2[b]	4
2014 Hokonui	24	0	Yes	Unknown	5

1 Pierce & Montgomery (1992); 2 Walker (1997); 3 Powlesland et al. (1999b); 4 Greene et al. (2013); 5 Batley & van Neikerk (2017).

Based on this assessment, no additional mitigations are proposed.

Kakaruai/South Island Robin

21 colour-banded and five unbanded kakaruai monitored during two aerial 1080 pellet operations all survived (see table below).

Robins monitored during aerial and handlaid 1080 operations using 0.15% 1080 pellets.

OPERATION	No. OF BIRDS EXPOSED	No. KILLED BY POISON[a]	SOWING RATE (kg ha^{1})		REF.
			Prefeed	Toxic	

1994 Saxon River	2	0		5	1
1998 Waitotara	38	10		4	2
1998 Long Ridge, Pureora	17	0		5	2
2011 Silver Peaks, Dunedin	24	0	1.5	2	3

[a] monitoring method assumes birds which disappear have died from poisoning.

Not included here is monitoring of robins using the 5 minute count method which can only reliably detect very large population changes (Powlesland et al. 1999).

1 Walker (1997); 2 Powlesland et al. (1999b); 3 Schadewinkel et al. (2014).

Transect counts of SI robin before and after a 1080 operation (1 kg ha^{-1} prefeed followed by 2kg/ha^{-1} 0.15% 1080 pellets) found that counts were similar between operational and non-treatment sites, with the authors concluding that there was no evidence for population-level impacts from 1080 on any of these species (Greene et al., 2013)

Based on this assessment, no additional mitigations are proposed.

Ngirungiru/South Island Tomtit

Overall, there is evidence that 1080 operations using large (12g) cereal baits with low sowing rates (3-5 kg/ha $^{-1}$) have little short-term impact of numbers of male **ngirungiru**.

A total of 29 colour-banded North Island tomtit (miromiro) have been monitored during two non-prefed aerial 1080 cereal pellet operations, with one bird disappearing (see table below).

Tomtits monitored during aerial and handlaid 1080 operations using 0.15% or 0.08% 1080 pellets

OPERATION	No. OF BIRDS EXPOSED	No. KILLED BY POISON[a]	SOWING RATE (kg ha[1])		REF.
			Prefeed	Toxic	
1998 Pureora	14	0		5[a]	1
2001 Tongariro	15	1		3[b]	2

[a] toxic loading of baits 0.08%; [b] toxic loading of baits 0.15%. 12 g baits used; [c] monitoring method assumes birds which disappear have died from poisoning.

Not included here is monitoring of tomtit using the 5-minute count method which can only reliably detect very large population changes (Powlesland et al. 1999).

1 Powlesland et al. (2000); 2 Westbrooke et al. (2003).

A monitoring study in Tongariro Forest (2001) using distance sampling found no significant difference in the mortality of North Island tomtit (miromiro) between the treatment (2 kg/ha^{-1} prefeed followed by 3 kg/ha^{-1} 0.15% 1080 pellets) and non-treatment sites (Westbrooke et al., 2003). Distance sampling of tomtits also occurred during an aerial 1080 operation (2 kg/ha^{-1} prefeed followed by 2kg/ha^{-1} 0.08% 1080 pellets) on Mt Pureora in 2003. There was no decline in male tomtits counts in this operation (Westbrooke and Powlesland, 2005). These results led the Westbrooke and Powlesland (2005) to conclude that aerial poisoning operations using cereal pellets at low sowing rates causes "...little, if any..." short-term impacts on tomtit populations.

In 2008, ngirungiru were monitored during an aerial operation using deer repellent coated pellets (2 kg/ha^{-1} prefeed followed by 2 kg/ ha^{-1} 0.15% 1080 pellets) in the Waianakarua Scenic Reserve southwest of Oamaru and at a nearby non-treatment site when no possum control occurred. At both these sites ngirungiru increased by similar amounts (~13%) during the post control monitoring (Oates, 2008).

Transect counts of ngirungiru, riroriro/grey warbler, kakaruai, and titipounamu/rifleman were conducted before and after the 2010 Waitutu aerial 1080 operation (1 kg/ ha^{-1} prefeed followed by 2 kg/ ha^{-1} 0.15% 1080 pellets). The transects were located at five sites, three within the operational area and two in a non-treatment area. While the numbers of ngirungiru and riroriro detected on the transects changed following the application of the 1080, the scale and direction of the changes (decreases for ngirungiru and increases for riroriro) was similar at all five sites. The pre- and post-control counts of titipounamu and kakaruai were similar between the operational area and non-treatment sites. The authors therefore concluded there was no evidence for population level impacts from 1080 on any of these species (Greene et al., 2013).

VanVianen et al. (2018) monitored bellbird, silvereye, SI tomtit, rifleman, brown creeper, grey warbler and fantail using five-minute bird counts pre- and post- aerial 1080 operations (1 kg/ ha^{-1} prefeed followed by 2 kg/ ha^{-1} 0.15% 1080 pellets) in the Rolleston Range and Alexander Range in 2012. The five-minute bird count monitoring occurred in the operational areas and at nearby non-treatment areas. None of the monitored species declined significantly more within the operational areas compared to the non-treatment sites, indicating 1080 did not have an impact on the populations.

Based on this assessment, no additional mitigations are proposed.

Kārearea/NZ Falcon

As **kārearea** are predators, there is a possibility that they are susceptible to secondary poisoning. However, results from the studies below show that this risk is not large, and therefore any individual losses will be balanced with a greater positive population level benefit through removal of introduced predators.

21 marked (8 radio-tagged and 13 banded) adult kārearea were monitored through three 0.15% 1080 cereal pellet operations undertaken in Kaingaroa Forest during 2013-2014 by Horikoshi et al. (2018). All the marked kārearea survived the operations. Using the live-recaptures model in Program MARK 8.1, the researchers estimated of the 95% C.I. survival of adult kārearea through the operations at 84-100%.

Seaton et al. (2009) collected productivity data from 87 kārearea nests in Kaingaroa pine plantation during three breeding seasons, 2003 - 2006. During this time 1080 pellets and carrots were ground laid or aerially applied in forest compartments where kārearea bred. The numbers of chicks successfully fledged was not related to time since 1080 application (1 month to >3 years), application method or bait type. During the study the breeding kārearea population increased from 20 to 36 pairs, leading to the authors concluding that 1080 did not have a negative impact on kārearea, and probably had a positive impact by reducing predation pressure on them.

Kārearea territories have remained occupied, presumably by the resident birds, during four aerial 1080 operations using cereal pellets (Pureora 1984, Mapara 1990-92) and one using carrot bait (Waihaha 1994) (Spurr & Powlesland 1997). The total number of kārearea involved in this monitoring is about 13, although the Mapara birds (three pairs) were exposed in three consecutive years (Calder & Deuss 1985; Bradfield 1993; Greene 1998).

Based on this assessment, no additional mitigations are proposed.

Kākāriki/Parakeet

Kākāriki nests have been monitored during two aerial cereal 1080 operations. Fifteen nests were monitored during the October 2007 Hurunui Valley operation and a further seven nests were monitored during a 1080 operation in the Dart Valley (Rhodes et al., 2008).

Dead chicks in a failed nest in the Hurunui Valley operation contained 1080 residues and the female was not seen after the nest failed. All the monitored nests in the Dart Valley operation were successful, however two unmonitored kākāriki were found dead with 1080 residues in their tissues. The combined estimate of mortality of nesting parakeets from these operations was 2.27% (0.1-12 % 0.95 CI). The authors concluded that while some kākāriki were killed

during the 1080 operations, given the rate of nest predation observed in areas where no predator control was carried out, the net benefit from the 1080 operations was positive.

No detectable impact could be determined through five-minute bird count monitoring before and after four aerial 1080 operations using carrot or cereal pellet baits (Spurr & Powlesland 1997). Additionally, following an intensively monitored aerial 1080 operation in Waihaha in 1994 using carrot bait, Greene (1998) observed "...kākāriki remained common within the study area...".

Based on this assessment, no additional mitigations are proposed.

Weka

A total of 132 **weka** have been exposed to this method and bait type over eight operations, and four have died from poisoning (see below). The pooled mortality rate from monitoring 90 Western weka across four pre-fed aerially applied 1080 cereal pellet operations is 3.3% (0.7–9.4% CI) (Tinnemans et al. 2019).

Weka monitored during aerial and handgun 1080 operations using 0.15% 1080 pellets.

Operation	No. of Birds Exposed	No. Killed by Poison	Sowing Rate (kg ha^{-1})		Ref.
			Prefeed	Toxic	
1994 Saxon River	7	0		5	1
1994 Tennyson inlet	17	1		5	1
1994 Rotumanu	8	0		5	2
2000 Copland	10	0		3	3; 4
2012 Pukaki block (Central Westland)	12	1	1	2	5
2012 Marsden block (Central Westland)	20	1	1	1	5
2013 Tennyson	26	1	1	1	6
2014 Tennyson	32	0	1	1	6

1994 Saxon River	7	0		5	1
1994 Tennyson inlet	17	1		5	1

1 Walker (1997); 2 Spurr and Powlesland (1997); 3 van Klink and Tansell (2003); 4 Pestlink: 02/03SWS22; 5 van Klink (2013); 6 Tinnemans et al. (2019).

There is evidence of sub-lethal effects of 1080 on weka: Tinnemans et al (2019) found that for three days following a 1080 operation, Western weka (*Gallirallus australis australis*) fitted with diagnostic transmitters had an average daily activity drop of 31.2% ± 4.6% (standard error of the mean) in the treatment block (N = 10) and 8.0% ± 4.3% (N = 6) in the non-treatment blocks. This daily activity reverted to normal within 7 days.

Based on this assessment, no additional mitigations are proposed.

Pekepeka (long-tailed bat)

It is thought that native bat species are unlikely to eat cereal-based baits, based on findings of a lab study where non-toxic cereal baits were offered to short-tailed bats (Lloyd, 1994).

Native bats may be vulnerable to secondary poisoning through feeding on insects that have consumed toxic bait. Lloyd & McQueen (2000) found that the mean concentration of 1080 in arthropods collected after a possum control operation was 57 µg g^{1}, meaning that a short-tailed bat would have received the LD_{50} dose in 0.7% of its daily food intake (0.04g) (Lloyd, 2001). However, there is no indication that 1080 operations have resulted in serious impacts on lesser short-tailed bats. Monitoring by Edmonds et al. (2017) of individually marked less short-tailed bats (*Mystacina tuberculata*) in Eglinton Valley, Fiordland, found that survivorship was high. Of the 764 bats marked, 771 (99.1%) were alive a week after application of toxin and the survival rate of the season following the 1080 operation was 91.5% (above the average survival rate over a 7-year monitoring period of 0.83%). While one bat pup was found dead with 1080 detected in its muscle tissues, it is not known if 1080 caused this death. It was concluded that the overall the survival of the population was likely enhanced by the 1080 operation, as survival was higher than average after the 1080 operation.

Other studies have also shown that 1080 operations do not cause major mortality in lesser short-tailed bats (not present on Rakiura). Monitoring of lesser short-tailed bats during 11 days after a 1080 operation (by catching a sample of 269 bats and holding them in captivity for 48 hours) found that all captured bats survived and none displayed poisoning symptoms (Lloyd & McQueen, 2002).

While no tracking of long-tailed bats has been done, population modelling using multi-state mark-recapture models (date collected over 22 summers from 1993-2015) estimate that survival was higher in years where predators were managed, and colonies under predator management will increase, whereas unmanaged colonies will decline (O'Donnell et al., 2017).

Based on this assessment, no additional mitigations are proposed.

Tukutuku (Harlequin gecko) and other native lizard species

There is very limited research on the effects of toxin on native New Zealand lizards. Toxicity of 1080 has been tested in a range of Australian reptiles by McIlroy et al. (1985), who found that, over a range of taxa, reptiles had very high LD50s (LD50 = amount of material given in one go that will cause death to 50% of test animal group), averaging between 43.6-543.2 mg kg^{-1} depending on species.

Due to this evidence from other taxa, the toxicity of 1080 for native New Zealand lizards has not been tested further, and it is thought that the risk to native lizards from 1080 bait itself is low (Weir et al., 2016). One study of captive feeding trial found that native McCann's skinks (*Oligosoma maccanni*) consumed an average of 0.01 g of 1080 RS5 bait per day, a level of consumption unlikely to lead to lethal doses (Freeman et al., 1996). However sub-lethal effects were not investigated. A study of wild grand skinks and Otago skinks (*Oligosoma grande and O. otagense*) found that both species would consume small pieces of wet non-toxic RS5 bait (Marshall & Jewell, 2007). However overall, there is a research gap on lethal and sub-lethal effects of brodifacoum and other toxins to native New Zealand lizards.

Predator removal operations using 1080 (and ground-based methods) can negatively affect native lizard populations through a related increased in populations of mice, which are a key predator of native lizards. Control or eradication of rats and possums (as is the goal with Predator Free Rakiura) is known to result in an increase in mouse populations, due to less predation and competition for resources ('mesopredator release') (Goldwater et al., 2012; Ruscoe et al., 2011).

It is possible that mice are present in low numbers on Rakiura and have avoided detection. Detection networks monitoring outcomes in the trial blocks will allow visibility of the presence of mice following the aerial operation.

Based on this assessment, no additional mitigations are proposed.

Invertebrates:

Invertebrate populations have been monitored during eight 1080 aerial operations using cereal pellets. None of these studies suggest significant population effects on any species studied nor is there evidence to suggest poisoned invertebrates are a significant factor in secondary poisoning of other animals.

Powlesland et al. (2005) monitored effects on invertebrates on artificial refuges after an aerial operation in Whirinaki Forest Park. Invertebrates were monitored every second or third month for a year before the poison operation, and then for two years afterwards. Numbers of tree wētā, cave wētā, cockroaches, spiders, harvestmen, and leaf-veined slugs did not decline substantially in refuges in the treatment area relative to those in the non-treatment area immediately after the operation. Spurr and Berben (2004) in a similar experiment found no significant impact of numbers of invertebrate species monitored.

Based on this assessment, no additional mitigations are proposed.

Freshwater aquatic species:

There is a large body of research that shows 1080 is highly water soluble, and baits are quickly rendered non-toxic when exposed to water through a combination of dilution and water flow. Microorganisms then break the diluted toxin down to below detectable levels. Water monitoring data is supported by results of laboratory and field-based research, which together demonstrate that dilution and biodegradation work in tandem to greatly reduce the concentration of 1080 as soon as it enters natural waterways.

Suren (2006) examined the fate of submerged 1080 baits in a laboratory flow tank (12 g W#7 bait). 1080 was rapidly leached from submerged baits: almost 50% of original 1080 had leached after 5h, and >90% after 24h. No 1080 was detected in any baits after 36 hours. 1080 breaks down more slowly in still water than in flowing water, but it does eventually break down due to the activity of microorganisms.

Suren & Lambert (2006) conducted research where bait was deliberately placed in small streams (<3m wide), using ten times the number of pellet baits that would be expected to enter streams during standard aerial operations. It was found that 1080 was undetectable in the water after only eight hours. There was no detectable effect on aquatic life in those streams; three species of native fish (longfin eels, kōaro and upland bullies) were placed in cages in a waterway below where the 1080 baits were added, and no mortality or biological effects was shown. The macroinvertebrate communities of these

streams were also measured before and after the operation. No change in community composition was found.

The effect of 1080 on freshwater crayfish (koura) was studied by Suren & Bonnett (2006) in the laboratory. There was evidence that koura would consume 1080 baits, however, there was no mortality. 1080 concentrations in koura tail muscle declined over time, suggesting that sub-lethal doses of 1080 could be successfully metabolised.

It has been shown in lab trials with eels that freshwater fish can uptake 1080 through consuming toxic carcasses – however the 1080 metabolises quickly and leaves their system, and there was no mortality recorded (Lyver et al., 2005).

Based on this assessment, no additional mitigations are proposed.

Sea lions & fur seals:

Sea lions are found throughout the coastal areas of Stewart Island, with the main breeding occurring in Port Pegasus. It is unknown how many sea lions are breeding around Paterson inlet. Sea lions on Rakiura are known to travel at least 1km inland.

There are no fur seal colonies within the proposed operational area. The closest colonies to South West Arm are at The Neck and on the Tītī Islands. Fur seals are generally found on the rocky coast, but may occasionally haul out or feed on some of the beaches in the Paterson Inlet.

It is thought that the risk to sea lions and fur seals from 1080 operations is very low to non-existent, due to unattractive cereal baits and breakdown and dilution of baits and 1080. 1080 does not bioaccumulate in the environment, and the fate of 1080 in sea water is thought to be to be the same as has been shown in freshwater; that is, toxin leaches from bait within hours and is diluted to undetectable levels. Based on observed feeding behaviours, we assess that the risk of sea lions or fur seals eating dead/decomposing toxic carcasses is very low.

Based on this assessment, no additional mitigations are proposed.

Other ocean species

As a result of consultation, this proposed operation will use ZIP's safeline method or targeted baiting techniques (handlay) to ensure that baits do not enter the marine environment. Therefore, a risk assessment for the direct ingestion of 1080 pellets to ocean species

such as blue cod, mussels and crayfish is not included. Similarly, a risk assessment for sea and shore birds is not included.

The community has voiced concern about potential risk to aquatic species through secondary poisoning via carcasses that wash into the ocean. 1080-poisoned carcasses do contain residual toxin for a time as they degrade. ZIP's toxic rodent trials have shown an 80% reduction in residual toxicity in a rat carcass within 14 days of death. The poison's persistence in carcasses is long enough to pose a hazard to scavenging animals on land, which is why we expect by kill of feral cats after operations specifically targeting rats and possums.

It is thought that the risk of commercially valuable fish like blue cod finding, consuming, and retaining harmful levels of 1080 from a poisoned carcass that drifts into the ocean is extremely low.

Based on this assessment, no additional mitigations are proposed.

Performance standards and information needs

No additional Performance Standards proposed.

Techniques developed in recent years and outlined in the standard Performance Standards have decreased the risk to birds. Baits will be dyed green and cinnamon or orange to red.

There are no kea on Rakiura so the Aerial 1080 in Kea habitat COP does not apply.

Effects on non-target domestic and feral animals

Non-target species

White-tailed Deer – *Odocoileus virginianaus*

Red Deer – *Cervus Elaphus*

Red Deer

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 by-kill fall between 30 and 60% (Morriss et al., 2020). 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 likely negated within a couple of years.

Field trials have indicated that deer-repellent baits can reduce the level of deer mortality relative to when non-repellent baits

are used. The effect of ProDeer Possum & Rat bait (deer-repellent 1080 cereal pellet manufactured by Orillion) on incidental red deer mortality was studied during a 54,188 hectare possum control operation at Molesworth and Muller stations in May and June 2021. Prefeed bait (ProDeer, cinnamon-lured, 6 g pellets) was applied at 1.0kg/ha and toxic bait (ProDeer, cinnamon-lured, 0.15% 1080, 6g pellets) at 2kg/ha 19-21 days later. Of 39 radio-collared deer that were alive and present in the treatment area just before 1080 baiting, two died, indicating a deer kill of 5.1% (95% CI 0.6–18.7%) (Morriss et al 2021). No study has been completed on the effect of ProDeer on White-tailed deer.

White-tailed Deer

By-kill of white-tailed deer was estimated for an August 2014 aerial 1080 operation covering 15,215ha of the Dart and Routeburn catchments. This operation applied 1kg/ha 6 g RS5 0.15% cereal pellets, pre-fed four days earlier. Four 100 ha areas within the treatment block were searched over four days following toxin application, with a total of 190km of search effort. The search success rate was estimated at 78% using simulated carcasses (paper sacks) placed in the search areas beforehand and used to adjust the number of deer found dead. Overall, the estimated mortality was 0.96 deer/km² but this method did not allow a population estimate to be determined (Pinney et al 2021). It is thought that white-tailed deer may be at higher risk to 1080 compared to red deer, due to their smaller size.

By-kill of white-tailed deer under operations using deer repellent has not been tested. There are also many unknowns surrounding the white-tailed population on Rakiura, such as home range and deer density. Based on these unknowns, and consultation with hunting leadership, monitoring of white-tailed deer is proposed. Monitoring underneath the Pukunui Predator Control area will provide an important learning opportunity to understand 1) the impact of non-repellent toxic bait on white-tailed populations and 2) the effectiveness of ProDeer deer-repellent toxic bait at reducing population impact.

Note on dog risk

Note that the entirety of the treatment area is National Park, and therefore dogs are prohibited.

Performance standards and information needs	No other performance standard measures are recommended

Further information

Further information	N/A

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Department of Conservation
Te Papa Atawbai

23 May 2025

Director-General of Conservation
C/ Zero Invasive Predators
Level 3,5 Willeston Street
Rawlinsons House
Wellington 6011

CC: permissions@epa.govt.nz
Regional Pesticide Summary Coordinator

ATTENTION: 9(2)(g)(ii)

PERMISSION ID 10317435:
RAKIURA PREDATOR CONTROL OPERATION
SUBSTANCE APPROVAL NUMBER: HSR002424

Having considered application final version DOC-10326662 and Decision Support Document DOC-10312405, and having considered the adverse effects of the use of sodium fluoroacetate on DOC managed or administered land, I have decided to grant this permission subject to conditions. I consider that granting this permission is in accordance with the purpose of the Hazardous Substances and New Organisms Act 1996, recognizing the life-supporting capacity of ecosystems and the wellbeing of people and communities, and taking into account the principles and other matters in sections 5, 6, 7 and 8 of that Act. I consider that the conditions imposed in this permission are consistent with the approval of the substance.

I also consider that the controlling of pests is in accordance with the General Policy for National Parks (particularly Policy 4.3) and the Conservation General Policy (see Section 4.2). These General Policies have been given effect to through various conservation planning documents and are in line with the purposes of the conservation legislation. I also understand that the controlling of pests and the protection of indigenous biodiversity generally gives effect to the principles of the Treaty of Waitangi. I, therefore, consider that permission to control pests on public conservation land can be granted.

Permission is granted, to take immediate effect, under:

- Section 95A of the Hazardous Substances and New Organisms Act 1996
- Section 53 of the Wildlife Act 1953
- Section 5 and 51A of the National Parks Act 1980
- Section 50 of the Reserves Act 1977

for the Director-General of Conservation C/ Zero Invasive Predators, or any other person acting under their authority (including contractors) to apply:

- Sodium fluoroacetate, 1.5 g/kg, cereal pellets aerial and hand laid

on or after the date of this letter until 15 May 2026; and

to undertake the actions approved under the above Acts on the lands managed or administered by the Department of Conservation and to undertake action on the other

land as authorised by the Wildlife Act 1953, on the lands listed below and shown on the **attached map:**

Public conservation land, managed by the Department of Conservation:

1. 42,600 ha approximately of the Rakiura National Park, a National Park under the National Parks Act 1980
2. 479 ha approximately of the Rakiura Scenic Reserve, a Scenic Reserve under the Reserves Act 1977

Other land:

3. 13 ha approximately Hydro Parcel managed by LINZ

Non-toxic prefeed may be applied no earlier than the date of this letter.

This operation is approved for the purpose of controlling rats and possums (with an expected by-kill of feral cats) to protect protect pukunui from predation this coming 25/26 breeding season. It also presents an opportunity to gain critical insights into predator behaviour and control methods on Rakiura using trials of ZIP's "1080 to Zero" methodology and deer repellent in selected areas. It is recognized that this operation may kill other pests.

The permission is given subject to the requirement that the operation:

- Is carried out as generally described in the Application Form submitted on 5 May 2025
- Meets the conditions shown in the attached sheets of DOC Performance Standards for Pesticide Use Numbers #1, #2, #145, #146, #155, #156 and the substance is used in accordance with the EPA's approval of that substance
- Receives an approved Public Health permission from the relevant authority
- Has a readiness check completed to the satisfaction of the Operations Manager Rakiura prior to any application of non-toxic or toxic bait

In addition to the above conditions, approximately 10,345 ha of the operational area may be treated with baits containing deer repellent within the areas shown on the attached map(s) as deer repellent areas.

Notwithstanding that the permission holder must comply with these requirements, it is acknowledged that indigenous animals may be killed and so this permission authorises such deaths for the greater protection of indigenous species.

Auditing may occur to establish whether those conditions are being met. If not, the permission may be revoked and further action may ensue. It is an offence to breach this permission's conditions.

The permission may be revoked, or conditions added, deleted or otherwise varied at any time.

9(2)(g)(ii)

9(2)(g)(ii) Director Operations, Southern South Island Region

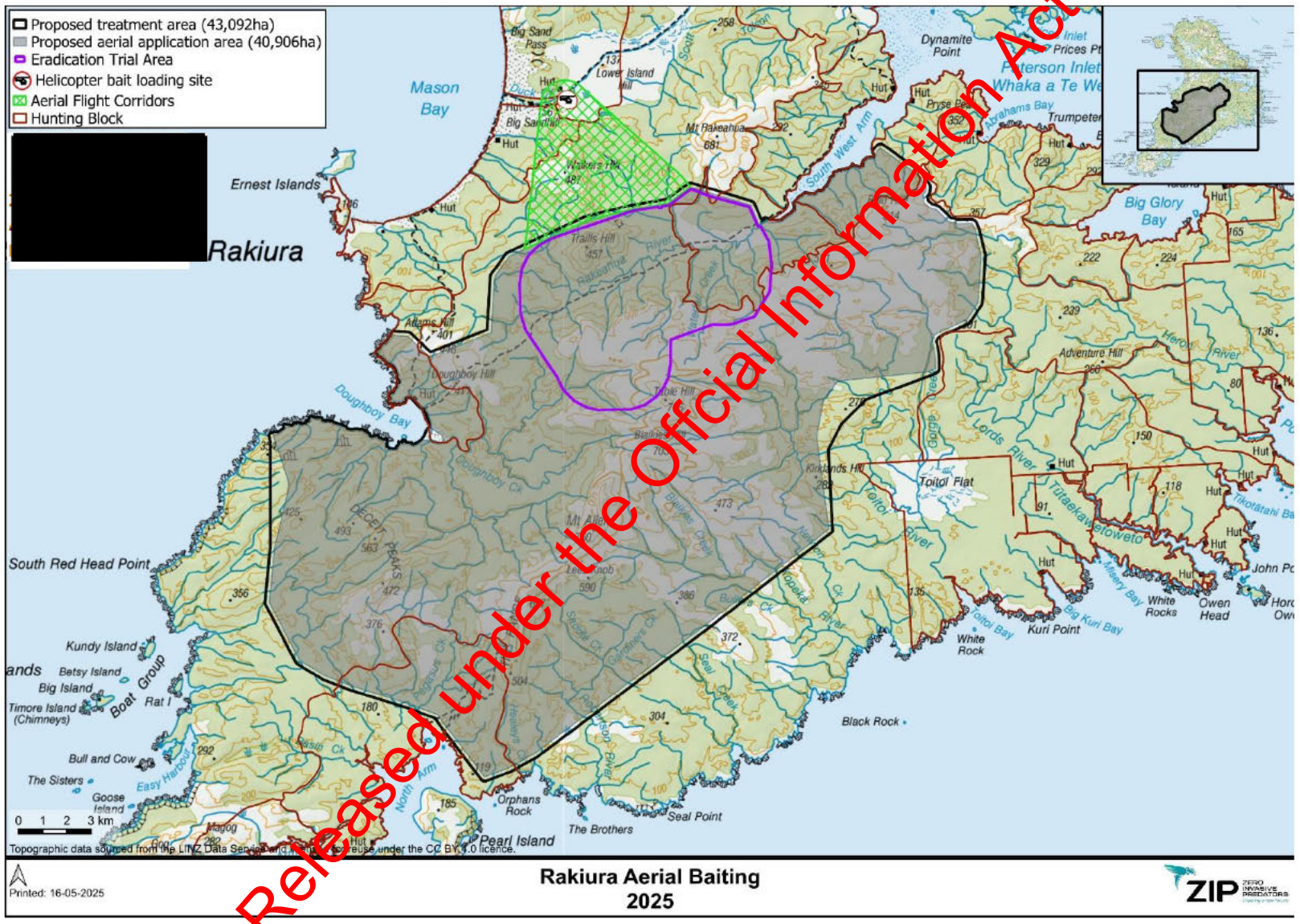
Pursuant to a written delegation from:

- The Chief Executive, Environmental Protection Authority for section 95A of the Hazardous Substances and New Organisms Act 1996
- The Director-General of Conservation for section 53 the Wildlife Act 1953
- The Minister of Conservation for sections 5 and 51A of the National Parks Act 1980
- The Minister of Conservation for section 50 of the Reserves Act 1977

Enc: **Maps** (below)
DOC Performance Standards (below)
Decision Support Document DOC-10312405

Ref: 119746-PCO

DOC Permission Letter



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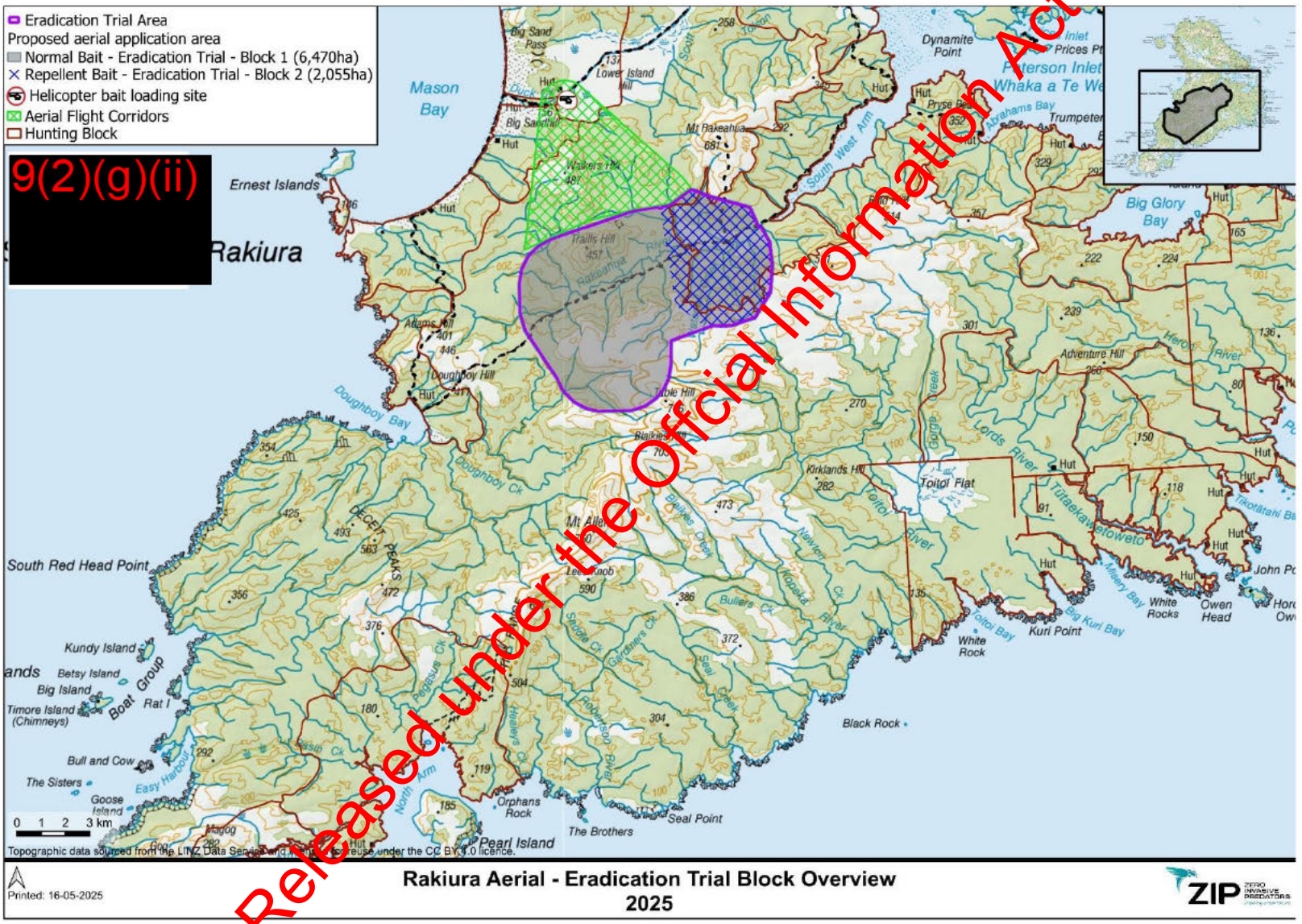
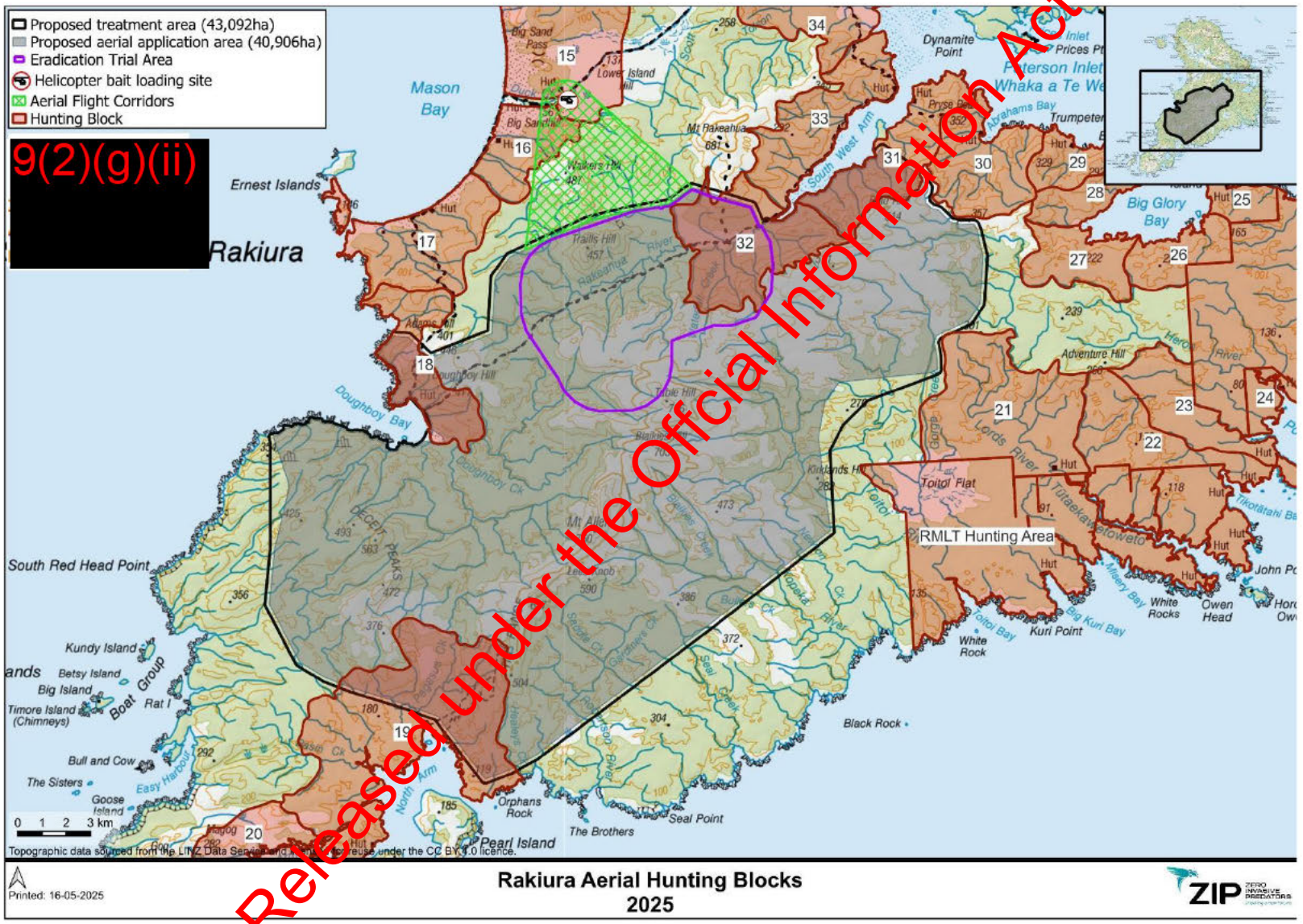
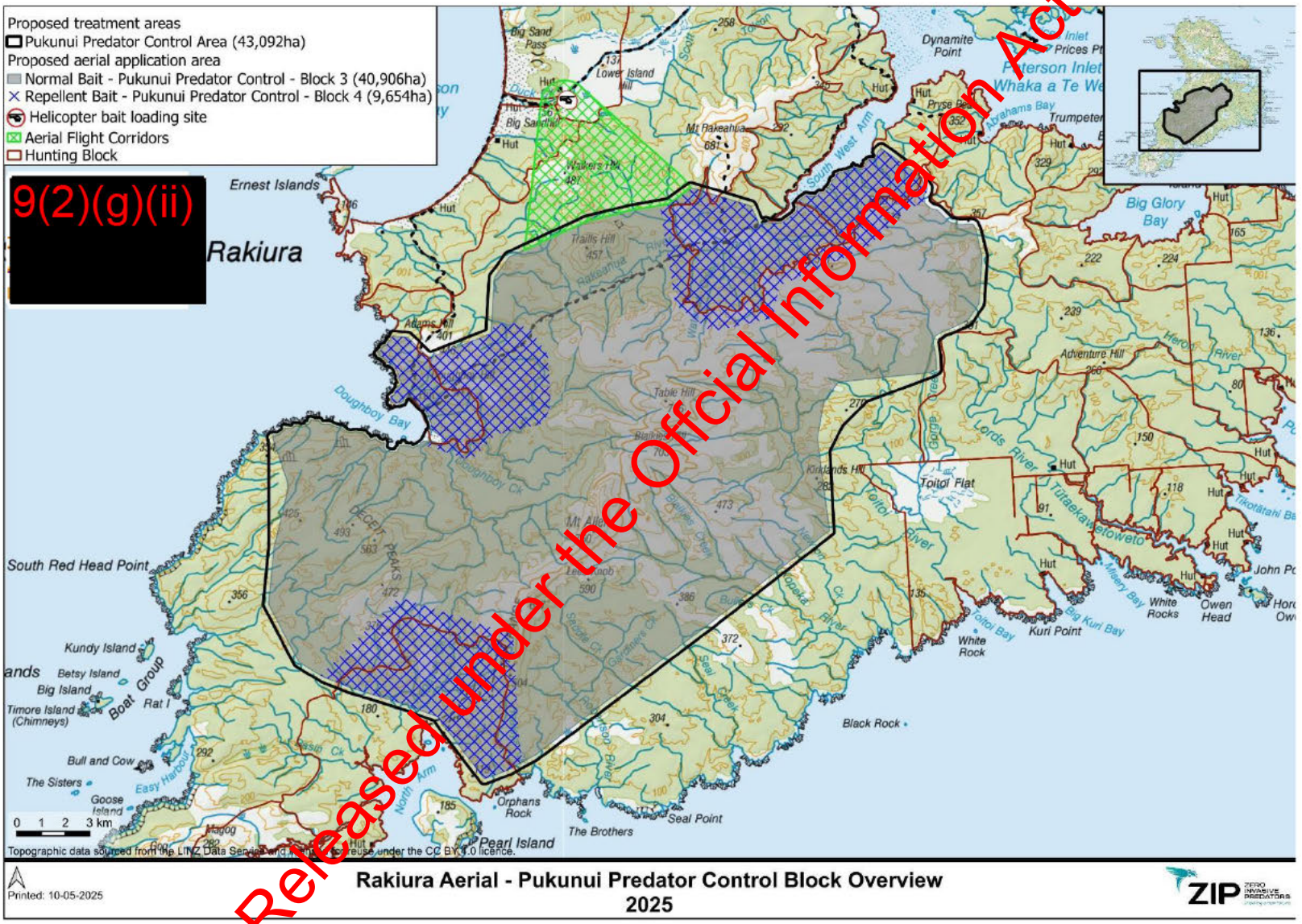
33 Don Street
Invercargill 9810



Rakiura predator control 2025 DOC Permission Letter
DOC-10317435



Rakiura predator control 2025 DOC Permission Letter
DOC-10317435



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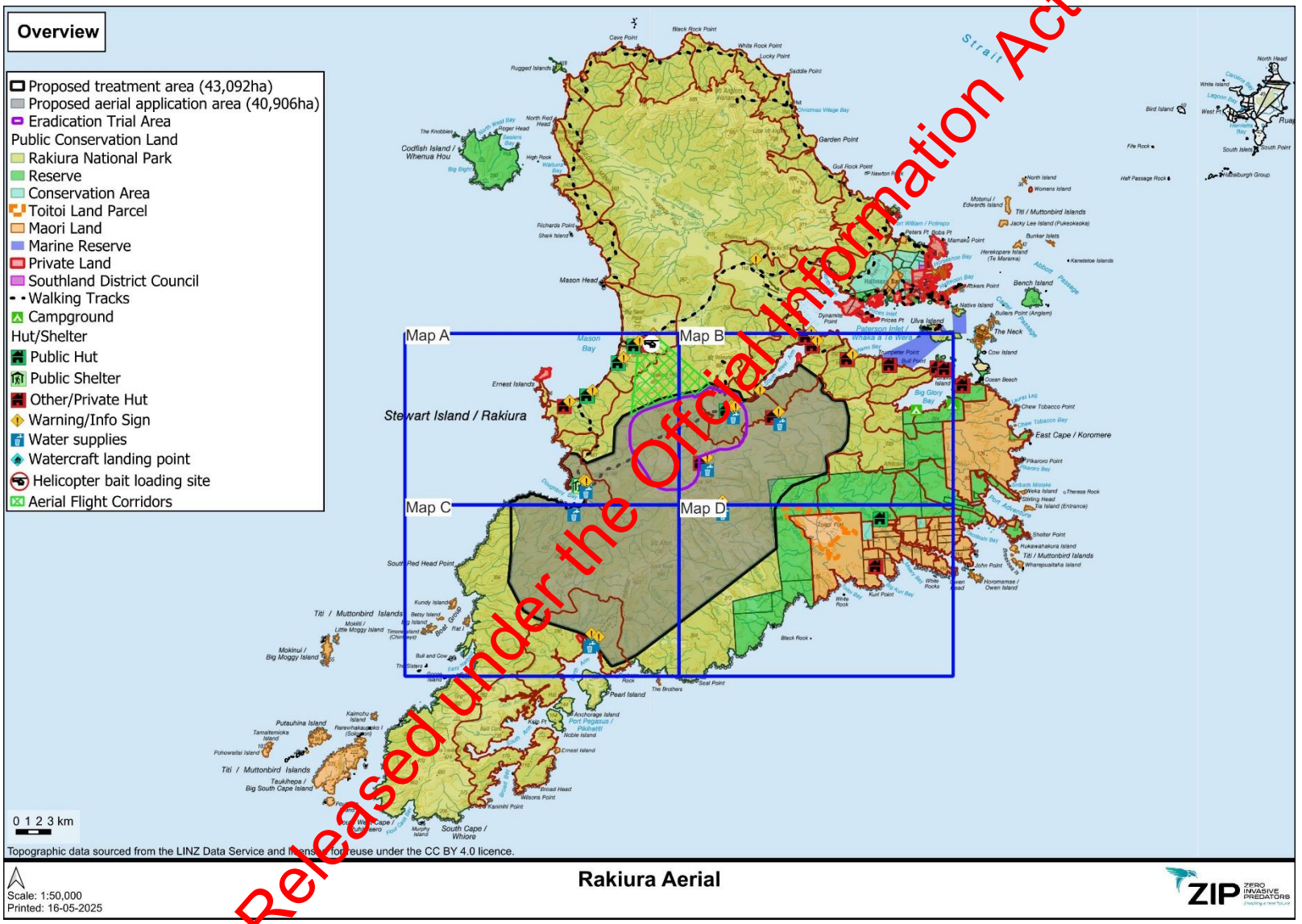

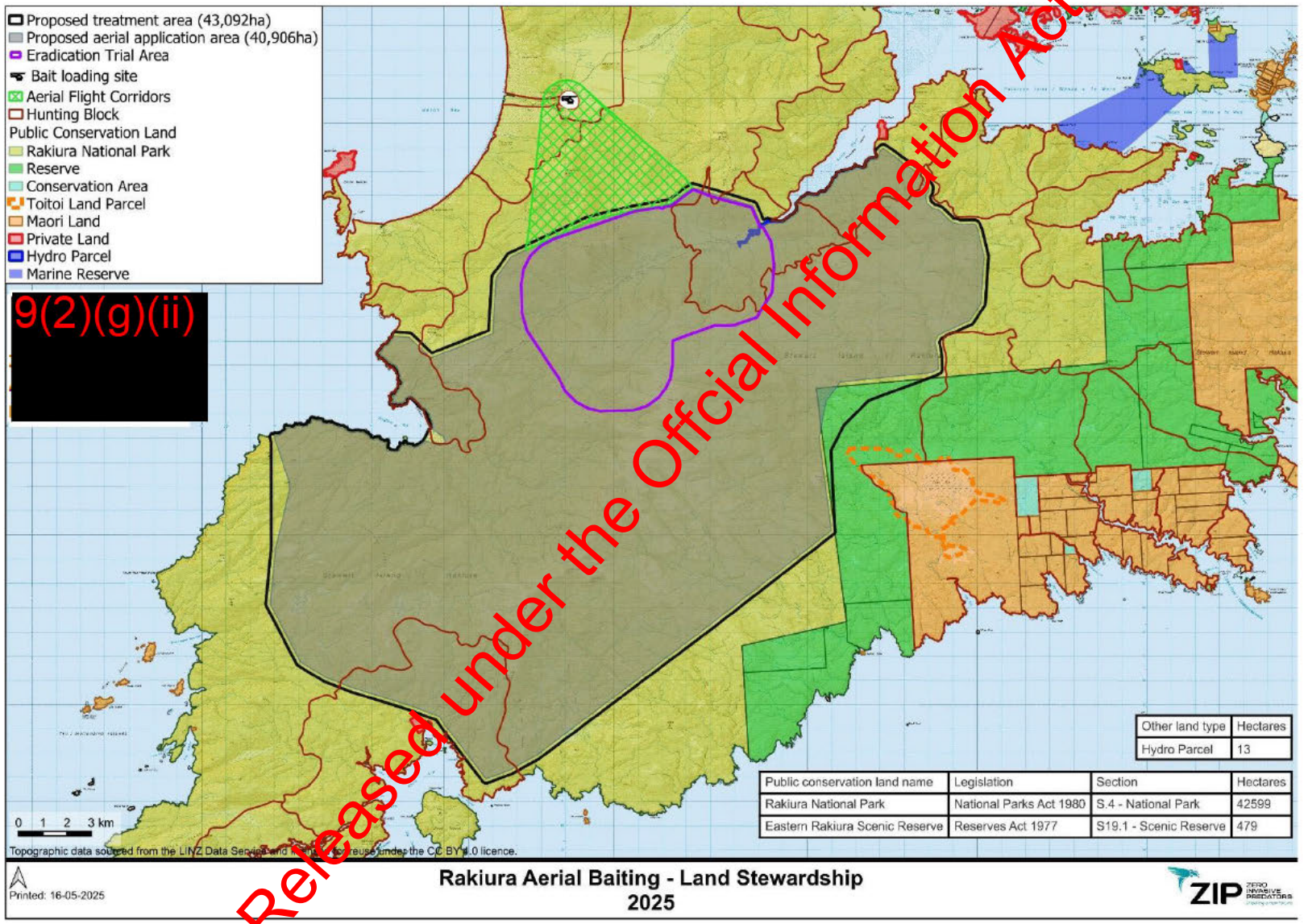

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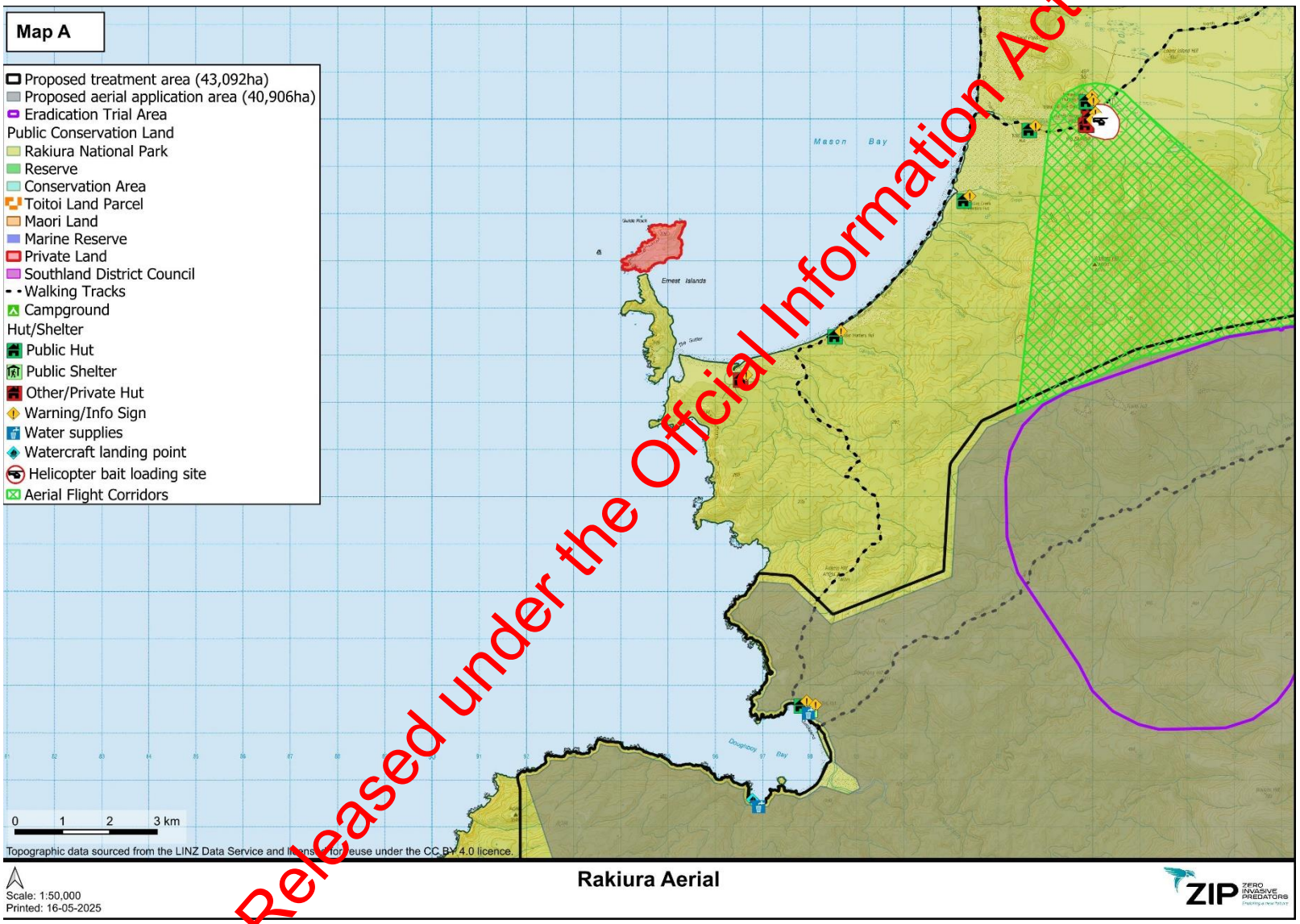
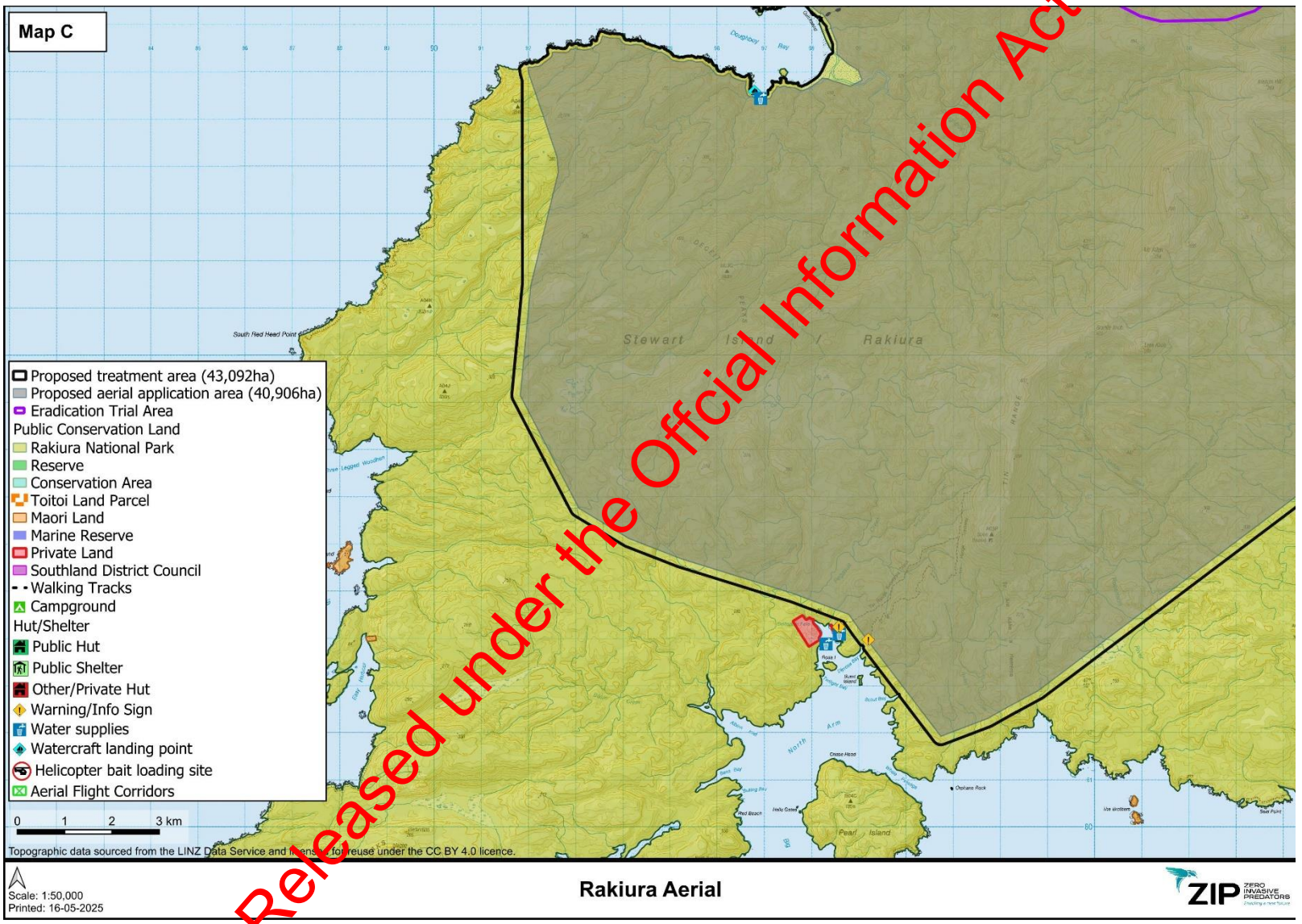
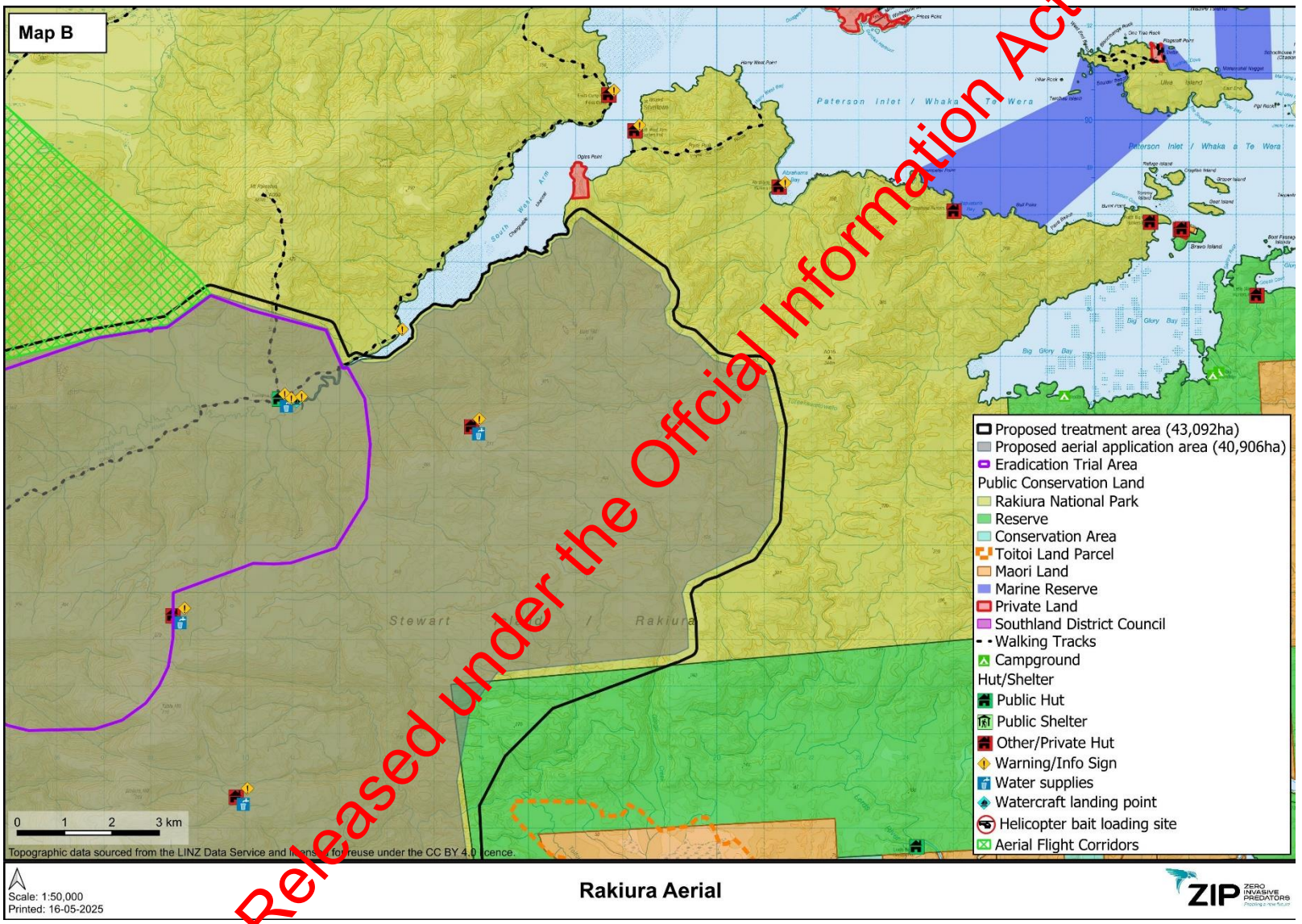
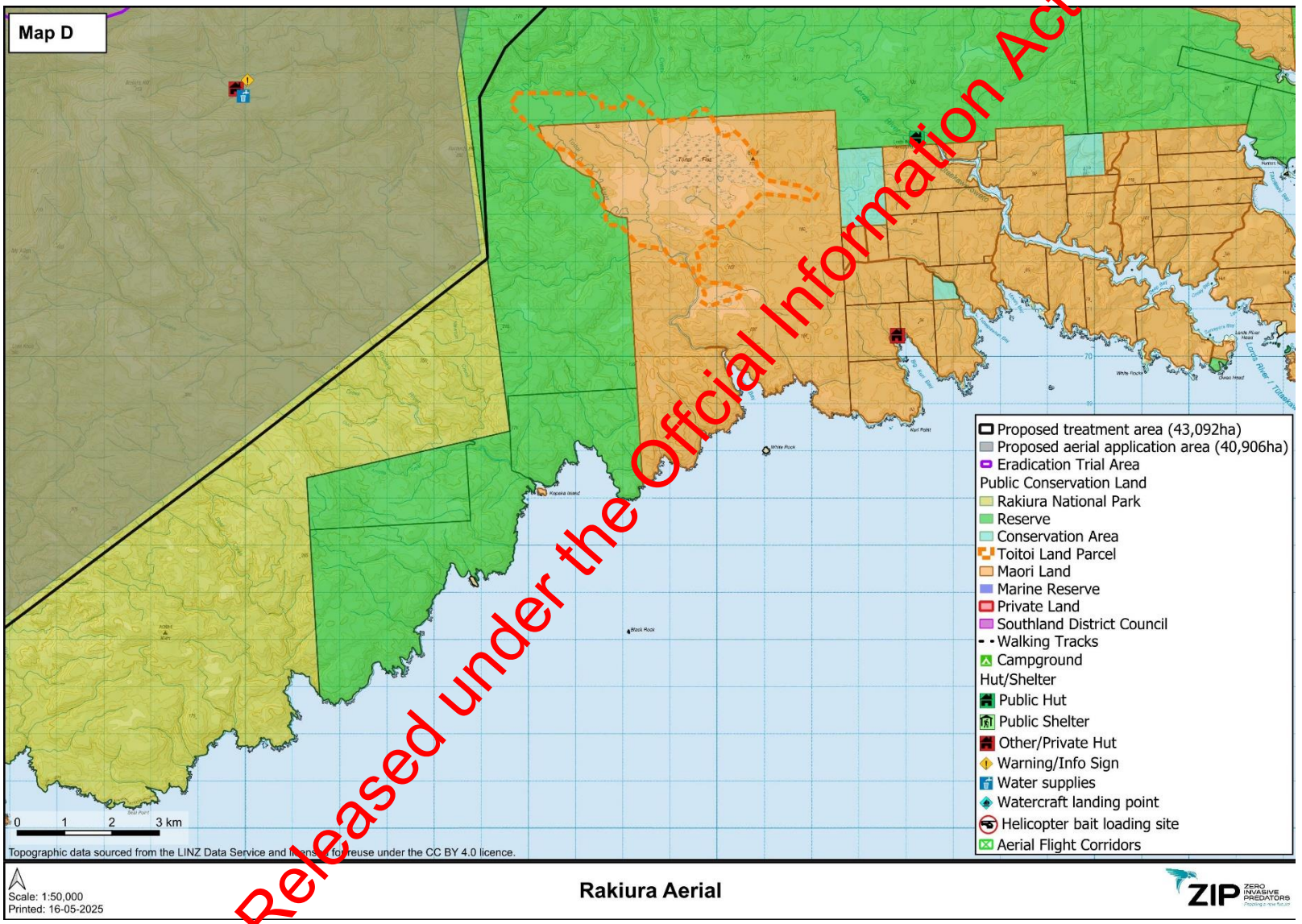



Map C
Proposed treatment area (43,092ha)
Proposed aerial application area (40,906ha)
Eradication Trial Area
Public Conservation Land
Rakiura National Park
Reserve
Conservation Area
Toitoi Land Parcel
Maori Land
Marine Reserve
Private Land
Southland District Council
Walking Tracks
Campground
Hut/Shelter
Public Hut
Public Shelter
Other/Private Hut
Warning/Info Sign
Water supplies
Watercraft landing point
Helicopter bait loading site
Aerial Flight Corridors
0 1 2 3 km
Topographic data sourced from the LINZ Data Service and licensed for reuse under the CC BY 4.0 licence.
Scale: 1:50,000
Printed: 16-05-2025
Rakiura Aerial
Stewart Island / Rakiura
Released under the Official Information Act





Pesticide Use #1	Sodium fluoroacetate 1.5g/kg Cereal pellet Aerial (Pronature Possum & Rodent Bait)	Target Pests: Possums, Rats, Dama wallabies

Location of operation

Rakiura

CSL REQUIRED

Caution Period

The estimated caution period for this operation is 8 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. The DOC Code of practice for aerial 1080 in kea habitat DOC-2612859 must be followed.
2. 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.
3. 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).
4. For operations targeting possums, baits will have a mean size of 6g or more, and 95% of baits should weigh more than 4g.
5. The baits must be dyed green or blue.
6. 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 this area. The fence and signs remain in place until the area is decontaminated.
7. 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.
8. Prefeed with this pesticide use.
9. The product must only be used as specified on the manufacturer's product label.

Compulsory for this operation

10. Bait sowing rate must be no greater than 4kg/ha for 6gm baits (or equivalent bait density per hectare for other bait sizes) for the pukunui suppression block to allow for overlaps
11. Bait sowing rate must be no greater than 6kg/ha for 6gm baits (or equivalent bait density per hectare for other bait sizes) for the eradication trial blocks.
12. Minimise the period of time that bait is exposed at the loading site and able to be discovered by honeybees. Only open bags just prior to being loaded.

Information Needs

*Compulsory for **all** operations*

Nil

Compulsory for this operation

My approval dated 23 May 2025 is subject to these performance standards being met. Compliance monitoring may occur.

9(2)(g)(ii) Operations, SSI

♦ INCLUDE ONE SHEET PER PESTICIDE USE ♦ COMPLETE SHADED AREAS ♦

Pesticide Use #2	Sodium fluoroacetate 1.5g/kg Cereal pellet Handlaying (Pronature Possum & Rodent Bait)	Target Pests: Possums, Rats, Dama wallabies

Location of operation
Rakiura

CSL REQUIRED

Caution Period

The estimated caution period for this operation is 8 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. The DOC Code of practice for aerial 1080 in kea habitat DOC-2612859 must be followed.
2. For operations targeting possums, baits will have a mean size of 6g or more, and 95% of baits should weigh more than 4g.
3. The baits must be dyed green or blue.
4. Prefeed with this pesticide use.
5. The product must only be used as specified on the manufacturer's product label.

Compulsory for this operation

6. Bait sowing rate must be no greater than 4kg/ha for 6gm baits (or equivalent bait density per hectare for other bait sizes) for the pukunui suppression block to allow for overlaps
7. Bait sowing rate must be no greater than 6kg/ha for 6gm baits (or equivalent bait density per hectare for other bait sizes) for the eradication trial blocks

Information Needs

*Compulsory for **all** operations*

Nil

Compulsory for this operation

1.

My approval dated 23 May 2025 is subject to these performance standards being met. Compliance monitoring may occur.

9(2)(g)(ii), Director Operations, SSI

Pesticide Use #145	Sodium fluoroacetate 1.5g/kg Cereal pellet Aerial (Prodeer Possum and Rat Bait)	Target Pests: Possums, Rats

Location of operation

Rakiura

CSL REQUIRED

Caution Period

The estimated caution period for this operation is 8 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.

Compulsory Restrictions

Do not use in kea habitat as defined in the DOC Code of practice for aerial 1080 in kea habitat DOC-2612859.

Performance Standards

*Compulsory for **all** operations*

1. 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.
2. 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).
3. For operations targeting possums, baits will have a mean size of 6g or more, and 95% of baits should weigh more than 4g.
4. The baits must be dyed green or blue.
5. 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.
6. 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.
7. The product must only be used as specified on the manufacturer's product label.

Compulsory for this operation

8. Bait sowing rate must be no greater than 4kg/ha for 6gm baits (or equivalent bait density per hectare for other bait sizes) for the pukunui suppression block to allow for overlaps
9. Bait sowing rate must be no greater than 6kg/ha for 6gm baits (or equivalent bait density per hectare for other bait sizes) for the eradication trial blocks.
10. Minimise the period of time that bait is exposed at the loading site and able to be discovered by honey bees. Only open bags just prior to being loaded.

Information Needs

*Compulsory for **all** operations*

Nil

Compulsory for this operation

Nil

My approval dated 23 May 2025 is subject to these performance standards being met. Compliance monitoring may occur.

9(2)(g)(ii) , Director Operations, SSI

Pesticide Use #146	Sodium fluoroacetate 1.5g/kg Cereal pellet Handlaying (Prodeer Possum & Rat Bait)	Target Pests: Possums, Rats

Location of operation

Rakiura

CSL REQUIRED

Caution Period

The estimated caution period for this operation is 8 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.

Compulsory Restrictions

Do not use in kea habitat as defined in the DOC Code of practice for aerial 1080 in kea habitat DOC-2612859.

Performance Standards

*Compulsory for **all** operations*

1. Prefeed with this pesticide use.
2. For operations targeting possums, baits will have a mean size of 6g or more, and 95% of baits should weigh more than 4g.
3. he 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. Bait sowing rate must be no greater than 4kg/ha for 6gm baits (or equivalent bait density per hectare for other bait sizes) for the pukunui suppression block to allow for overlaps
6. Bait sowing rate must be no greater than 6kg/ha for 6gm baits (or equivalent bait density per hectare for other bait sizes) for the eradication trial blocks.

Information Needs

*Compulsory for **all** operations*

Nil

Compulsory for this operation

Nil

My approval dated 23 May 2025 is subject to these performance standards being met. Compliance monitoring may occur.

9(2)(g)(ii), Director Operations, SSI

♦ INCLUDE ONE SHEET PER PESTICIDE USE ♦ COMPLETE SHADED AREAS ♦

Pesticide Use #155	Sodium fluoroacetate 1.5g/kg Cereal pellet Aerial (Prodeer WF)	Target Pests: Possums, Rats

Location of operation

Rakiura

CSL REQUIRED

Caution Period

The estimated caution period for this operation is 8 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.

Compulsory Restrictions

Do not use in kea habitat as defined in the DOC Code of practice for aerial 1080 in kea habitat DOC-2612859.

Performance Standards

*Compulsory for **all** operations*

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.

1. 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).
2. For operations targeting possums, baits will have a mean size of 6g or more, and 95% of baits should weigh more than 4g.
3. The baits must be dyed green or blue.
4. 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.
5. 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.
6. The product must only be used as specified on the manufacturer's product label.

Compulsory for this operation

7. Bait sowing rate must be no greater than 4kg/ha for 6gm baits (or equivalent bait density per hectare for other bait sizes) for the pukunui suppression block to allow for overlaps
8. Bait sowing rate must be no greater than 6kg/ha for 6gm baits (or equivalent bait density per hectare for other bait sizes) for the eradication trial blocks.
9. Minimise the period of time that bait is exposed at the loading site and able to be discovered by honeybees. Only open bags just prior to being loaded.

Information Needs

*Compulsory for **all** operations*

Nil

Compulsory for this operation

1.

My approval dated 23 May 2025 is subject to these performance standards being met. Compliance monitoring may occur.

9(2)(g)(ii) , Director Operations, SSI

♦ INCLUDE ONE SHEET PER PESTICIDE USE ♦ COMPLETE SHADED AREAS ♦

Pesticide Use #156	Sodium fluoroacetate 1.5g/kg Cereal pellet Handlaying (Prodeer WF)	Target Pests: Possums, Rats

Location of operation

Rakiura

CSL REQUIRED

Caution Period

The estimated caution period for this operation is 8 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.

Compulsory Restrictions

Do not use in kea habitat as defined in the DOC Code of practice for aerial 1080 in kea habitat DOC-2612859.

Performance Standards

*Compulsory for **all** operations*

1. Prefeed with this pesticide use.
2. For operations targeting possums, baits will have a mean size of 6g or more, 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 thisoperation

5. Bait sowing rate must be no greater than 4kg/ha for 6gm baits (or equivalent bait density per hectare for other bait sizes) for the pukunui suppression block to allow for overlaps
6. Bait sowing rate must be no greater than 6kg/ha for 6gm baits (or equivalent bait density per hectare for other bait sizes) for the eradication trial blocks.

Information Needs

*Compulsory for **all** operations*

Nil

Compulsory for this operation

My approval dated 23 May 2025 is subject to these performance standards being met. Compliance monitoring may occur.

9(2)(g)(ii), Director Operations, SSI