Proposal for
inclusion of Mustelids

Regional Pest Management Plan for Taranaki

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Taranaki
Regional Council

Proposal for inclusion of mustelids

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Taranaki Regional Council

Private Bag 713

Stratford 4352

November 2020

Document number: 2437760

Foreword

This is a proposal to amend the *Regional Pest Management Plan for Taranaki*. The intent of the proposal is to declare mustelids to be pests in the Taranaki region and to incorporate a new chapter (Section 6.6A) and programme that includes rules for land occupiers to control ferrets, stoats, and weasels.

The proposal does not otherwise amend the *Regional Pest Management Plan for Taranaki*, except for minor consequential changes necessary to update the Plan and reflect the inclusion of the new chapter.

Where applicable, content that may result in an addition or change to the current RPMP will be highlighted in underlined text. How the proposed programme would look inserted into Part 2 of the operative RPMP can also be seen in Appendix 2.

In brief, the following highlights and significant changes are noted:

- The identification of mustelids as a pest
- Application of rules to control mustelids.

On behalf of the Taranaki Regional Council, I am pleased to present this proposal to the people of Taranaki, and now call for your submissions. The Council will consider all submissions received, in detail, before making amendments to the Plan.

This is your opportunity to influence pest management in the Taranaki region. I look forward to receiving your submission on the proposal. Please send any submissions to:

The Chief Executive

Taranaki Regional Council

Private Bag 713

STRATFORD

By **5pm, 4 December 2020**.

David MacLeod

Chair, Taranaki Regional Council

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1. Introduction

This document is a proposal to amend part of the Regional Pest Management Plan for Taranaki. Other than the amendments identified in full in sections 2.2 to 2.5 of this Proposal, changes, the Regional Pest Management Plan for Taranaki remains unchanged and is not part of this proposal.

1.1 Proposer

The Taranaki Regional Council (Council) has a regional leadership role under the *Biosecurity Act 1993* (the Act). As such, in accordance with section 100D(2)(b) of the Act, Council proposes to undertake a **partial** review of the *Regional Pest Management Plan for Taranaki*[1] (RPMP) by way of amending it to incorporate an additional programme. The additional programme relates to the sustained control of mustelids.

1.2 Reasons for the Proposal

The purpose of the document is to present, for the public's consideration, a proposal that mustelids be added to the RPMP in order to:

- minimise the actual or potential adverse or unintended effects associated with mustelids; and
- maximise the effectiveness of individual pest management actions for mustelids by way of a regionally coordinated approach.

The notification of this Proposal is the first formal step in seeking amendment to the current operative RPMP. If the Proposal is adopted, the RPMP will be amended to declare mustelids to be 'pests' and empower the Council to exercise the relevant advisory, service delivery, regulatory and funding powers available under the Act to deliver mustelid control in defined parts of Taranaki.

1.3 Scope and structure of the proposal

The Act contains prerequisite criteria that must be met to justify regional intervention in the form of rules. Accordingly, this document sets out proposed amendments to the RPMP and supporting information pertaining to adding a sustained control programme for mustelids to the RPMP.

Section 1 introduces the Proposal and background information.

Section 2 sets out a reader's guide and the proposed amendments, in full, to the RPMP to include a new sustained control programme for mustelids.

Section 3 presents the cost benefit analysis to support the adoption of the proposed sustained control programme for mustelids.

A glossary of key terms used in this proposal and references used in its preparation are presented at the back.

In accordance with section 100D(5)(d) of the Act, the scope of this review is confined to proposed amendments set out in section 2 of this Proposal. **No other part of the current RPMP is subject to this review.**

1.4 Consultation overview

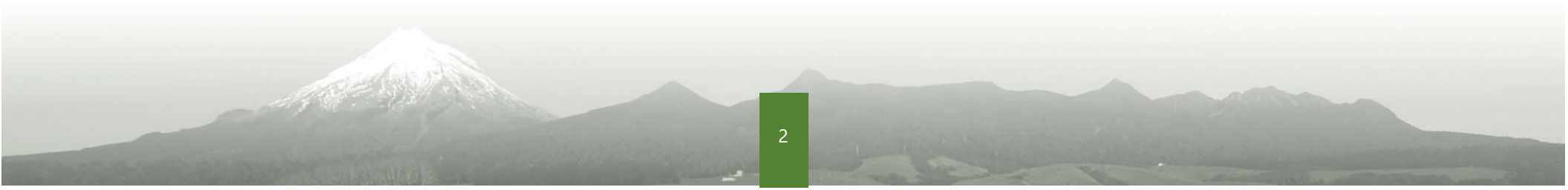
In the development of this Proposal, early engagement has been undertaken with iwi authorities and key stakeholders (refer Table overleaf). Further consultation on this Proposal will now occur in accordance with the consultation requirements set out in the BSA.

[1] *The Regional Pest Management Plan for Taranaki became operative on 20 February 2018.*

Pre-notification consultation

Party	Type	Date	Feedback received
Federated Farmers	Summary, including proposed rule provided, meeting with Executive and subsequent email/verbal correspondence	29 July 2020	Verbal feedback, expect written feedback during submission process
Department of Conservation	Summary, including proposed rule provided	22 September 2020	Written feedback
Project Mounga	Summary, including proposed rule provided, meeting with board and subsequent email/verbal correspondence.	27 August 2020	Verbal feedback
Iwi authorities	Summary, including proposed rule provided	8 September 2020	Nil

This Proposal has been publicly notified for public submissions to confirm community expectations and policy directions to be incorporated into the final plan.



2. Proposed amendments to the RPMP

2.1 Reader's guide to amendments to the RPMP

This section sets out proposed amendments to the current operative RPMP to include a sustained control programme for mustelids.

In brief, the following significant changes to the RPMP are highlighted:

- an amended section 4 [Organisms declared as pests] that declares and identifies mustelids control ferrets, stoats, and weasels as a pest in Table 1 of the RPMP[2]
- a new section 6.6A setting out a mustelid sustained control programme and which includes rules for land occupiers within a Predator Control Area to control mustelids
- an amended section 9.1[Measuring what the objectives are achieving] to incorporate mustelid monitoring programmes in the RPMP
- an amended glossary to introduce a definition for a new term in the RPMP – 'Predator Control Area'.

The proposal does not otherwise amend the RPMP, except for minor consequential changes necessary.

How amended or new provisions inserted into the operative RPMP would look, once adopted, and are shown in grey. Specific wording amendments to the current RPMP are identified by underlined text in blue.

2.2 An amended section 4 [Organisms declared as pests]

Amend Table 1 of section 4 [Organisms declared as pests] of the RPMP to read as follows:

[2] *Other inconsequential changes include updating the RPMP recognising the inclusion of mustelids as a pest are also noted in the Plan's foreword.*

4. Organisms declared as pests

The organisms listed in Tables 1 and 2 below are classified as pests. The tables also indicate what management programme or programmes will apply to the pest and if a rule, including a Good Neighbour Rule (GNR), applies. **Attention is also drawn to:**

- The general administrative powers of inspection and entry, contained in Part 6 of the Act, which would be made available to the Council;
- The statutory obligations of any person under sections 52 and 53 of the Act. These sections ban anyone from selling, propagating or distributing any pest, or part of a pest, should they be specified as such in a Plan. Not complying with sections 52 and 53 is an offence under the Act and may result in the penalties noted in section 157(1) of the Act; and
- Exemptions to any Plan rule may apply under Section 78 of the Act.

Table 1: Animal organisms classified as pests

Common name	Scientific name	Programme	GNR	Page
Mustelids – ferret, stoat, weasel	*Mustela furo, Mustela ermine, Mustela nivalis*	Sustained Control		XYZ
Possum	*Trichosurus vulpecula*	Sustained control	√	XYZ

Table 2: Plant organisms classified as pests

Common name	Scientific name	Programme	GNR	Page
Climbing spindleberry	*Celastrus orbiculatus*	Eradication		XYZ
Giant reed	*Arundo donax*	Eradication		XYZ
Madeira (Mignonette) vine	*Anredera cordifolia*	Eradication		XYZ
Senegal tea	*Gymnocoronis spilanthoides*	Eradication		XYZ
Giant buttercup	*Ranunculus acris*	Sustained control	√	XYZ
Giant gunnera	*Gunnera manicata, Gunnera tinctoria*	Sustained control	√	XYZ
Gorse	*Ulex europeaus*	Sustained control	√	XYZ
Nodding, Plumeless and Variegated thistles	*Carduus nutans, C. acanthoides, Silybum marianum*	Sustained control	√	XYZ
Old man's beard	*Clematis vitalba*	Sustained control	√	XYZ
Wild broom	*Cytisus scoparius*	Sustained control	√	XYZ
Wild ginger (Kahili and Yellow)	*Hedychium gardnerianum, Hedychium flavescens*	Sustained control	√	XYZ
Yellow ragwort	*Jacobaea vulgaris*	Sustained control	√	XYZ

2.3 The new proposed programme to be inserted into section 6 of the RPMP

Amend section 6 of the RPMP to include a new section 6.6A that sets out a sustained control programme for mustelids. Section 6A reads as follows:

6.6A Predators (ferret, stoat and weasel)

Ferret (*Mustela furo*)

Stoat (*Mustela ermine*)

Weasel (*Mustela nivalis*)

Towards Predator Free Taranaki

As discussed in the possum programme (section 6.5), since the 1990s, the Council has been achieving effective sustained possum control over large parts of the Taranaki region through the Self-help Possum Control Programme.

With the implementation of the *Towards Predator Free Taranaki programme* (TPFT) across Taranaki, the Council aims to achieve the same for mustelid control.

The Council will identify Predator Control Areas where land occupiers in a locality agree to participate in the programme and undertake long term predator control maintenance.

Subject to 75% or more of land occupiers, covering at least 75% of the land area targeted, agreeing to be part of the programme, the Council will undertake initial predator control work within the Predator Control Area targeting mustelids and rats.

After initial predator control work has been undertaken, occupiers within the area will be required (through the rule in this section) to ensure they undertake regular ongoing control to maintain mustelid populations at very low levels.

A Predator Control Area refers to areas identified as such once the 75% land area threshold has been reached and initial control work has been undertaken within the area.

Thereafter occupiers within that mapped area will be required to comply with the rule in this section of the Plan.

Adverse effects

Ferrets, stoats, weasels are part of the mustelid family, which is a group of small to medium sized carnivores. Mustelids have large home ranges and are active day and night. They are opportunistic predators and have a strong musk odour.

Ferrets are the largest mustelid in New Zealand. Male ferrets grow up to 44cm and females up to 37cm in length. The undercoat is creamy yellow with long black guard hairs that give the ferret a dark appearance. A characteristic black face mask occurs across the eyes and above the nose.

Stoats have long, thin bodies with smooth pointed heads. Ears are short and rounded. They are smaller than ferrets. Males grow up to 30cm and females up to 25cm in length. Their fur is reddish- brown above with a white to yellowish underbelly. Stoats have relatively long tails with a distinctive bushy black tip.

Weasels are the smallest and least common mustelid in New Zealand. Males grow to about 20cm. Their fur is brown with white undercoat, often broken by brown spots. Their tails are short, brown and tapering.

Mustelids were introduced in New Zealand in the 1880's in an attempt to manage growing rabbit populations. This introduction had minimal impact on rabbit densities.

Mustelids now pose a significant threat to our indigenous biodiversity, particularly indigenous fauna species. Skinks, flightless birds (such as kiwi) and birds that nest in holes (e.g. penguins and parakeet) are particularly vulnerable. Mustelids have been implicated in the extinction of some indigenous bird species and as the major cause of decline of many others.

Mustelids can also have considerable negative impact on primary production. Mustelids are a threat to poultry farms and carry parasites and toxoplasmosis, which can cause illness in humans and livestock. Ferrets are also a vector (carrier) of bovine tuberculosis.

Mustelids are distributed throughout the Taranaki region.

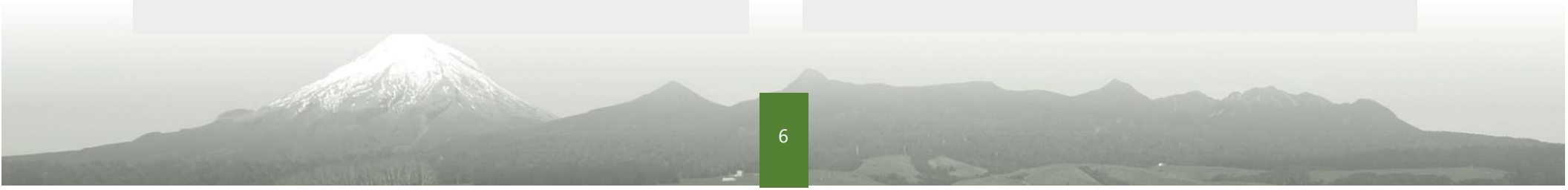
Objective

Over the duration of the Plan, sustainably control mustelids numbers on land within a Predator Control Area, and elsewhere as appropriate, to avoid or minimise adverse effects on indigenous biodiversity values in the Taranaki region.

Principal measures

To achieve the objective for mustelids, the following principal measures will be applied:

- **Requirement to Act:** Land occupiers will comply with the rules specified in this section of the Plan.
- **Extension programme:** Council will implement the *Towards Predator Free Taranaki* programme and provide sustained predator control on the ring plain and coastal terraces by:
  - undertaking initial direct control on rateable properties that lie in an area where at least 75% of land occupiers, covering at least 75% of the land area targeted, indicate, or have indicated, that they wish to be included in a Predator Control Area and will accept land occupier obligations; installation and contribution to the cost of traps for land occupiers in the programme; and
  - providing ongoing technical advice, information, and support to land occupiers in the programme Predator Control Area.
- **Inspections and enforcement:** Council will inspect and monitor properties in Predator Control Areas for land occupier compliance with the Plan rule and to identify any remedial action that needs to be undertaken.
- **Advocacy and education:** Council will:
  - provide advice and information to land occupiers in Predator Control Areas to coordinate and promote effective mustelid control;
  - provide a broad suite of general purpose education, advice, awareness and publicity activities to other interested parties to promote effective predator control; and



- undertake liaison and advocacy to promote effective integrated predator control.

- **Service delivery:** Council will:
  - undertake additional initial direct control, as necessary, of mustelids on properties in Predator Control Areas;
  - undertake additional initial direct control, as necessary, on properties in urban predator control programmes; and
  - undertake site-led predator control on Key Native Ecosystems as part of an agreed site-led response.

Plan Rules

Plan rule 3: General Rule for Predator Control Areas

A land occupier within a Predator Control Area must maintain ferrets, stoats, and weasels numbers present on their land by:

(a) servicing permanent mustelid traps a minimum of ten times per calendar year and record trap catch information in the TrapNZ database; and

(b) servicing any activated 'remote sensor mustelid trap' within 30 days of activation.

Note:

'Servicing' means the removal of dead animals, inspection of trap to make sure it is functioning properly, grass/obstacles removed from around the trap entrance and trap rebaited with fresh bait.

'Remote sensor mustelid traps' refers to kill traps fitted with remote sensor technology capable of sending trap catch information to the user wirelessly.

Explanation of rule

The establishment of Predator Control Areas, underpinned by the above rules enables areas and communities seeking to achieve enhanced biodiversity outcomes through sustained predator control, to do so.

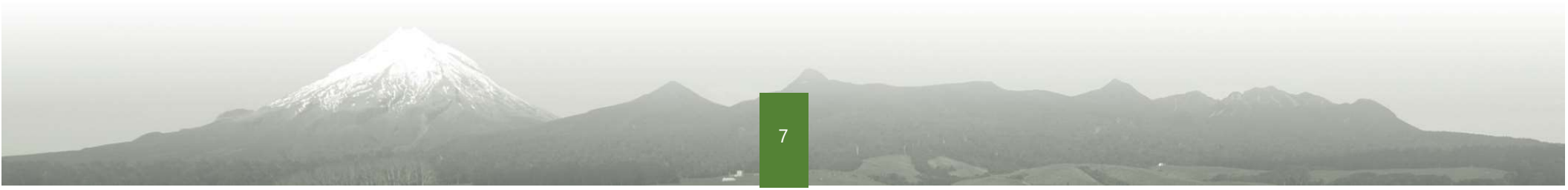
Where a community decides to form a Predator Control Area (as demonstrated by 75% of land occupiers covering 75% of the land area), it is critical that there is a rule to sustain the benefits of initial control. Such a rule is only triggered after considerable public investment and targets the exacerbators of the problem (i.e. land occupiers not undertaking regular and effective control needed to maintain low mustelid numbers.

All land occupiers within a proposed Predator Control Area will be consulted with to discuss the programme and to ascertain their willingness (or otherwise) to sign up to a management agreement.

Initial predator control work will not commence until the 75% land occupier and area threshold has been met. The initial control involves the Council establishing the predator trap network and infrastructure, including wireless traps where possible, followed up by at least four rounds of control and checking of traps that, over time, contributes to achieving a 95% reduction in mustelid numbers.

Upon completion of initial predator control, land occupiers within a Predator Control Area become responsible for maintaining stoats, ferrets, and weasels in accordance with Plan Rule 3.

Contravention of rules 3 and 4 create an offence under section 154N (19) of the Act.



2.4 An amended section 9.1 [Measuring what the objectives are achieving]

Amend section 9.1 of the RPMP to include new provisions addressing the monitoring of the sustained control programme for mustelids. The amended section 9.1 reads as follows:

6.6A Measuring what the objectives are achieving

The Taranaki Regional Council shall monitor the extent to which the objectives set out in Part Two of this Plan are being achieved by:

(a) annually mapping the implementation of the Self-help Possum Control Programme;

(b) monitoring possum population densities and trends, over time, in areas included in the Self-help Possum Control Programme;

(ba) annually mapping the implementation of the Towards Predator Free Taranaki programme, including establishment of Predator Control Areas;

(bb) monitoring mustelid population densities and trends, over time, in areas included in the Predator Control Areas;

(c) developing agreed collaborative monitoring, reporting and management programmes addressing possum control within and around Egmont National Park;

(d) monitor, for each pest, the effectiveness of direct control undertaken by the Taranaki Regional Council;

(e) recording the number of public complaints pertaining to individual pests and instances of non-compliance with the plan rules;

(f) recording the number of public enquiries in relation to individual pests, including requests for information; and

(g) annually surveying at release sites and mapping the distribution of biological control agents.

2.5 An amended glossary

Amend the glossary of the RPMP to include a new definition for a key term introduced in the mustelid sustained control programme for mustelids. The new definition reads as follows:

Predator Control Area means an area identified as a Predator Control Area in accordance with section 6,6A of this Plan.

3. Cost benefit analysis for sustained control programme for mustelids

The proposal to include a sustained control programme for mustelids has no ramifications for the overall anticipated cost of implementing the RPMP. Current costs associated with the implementation of the *Towards Predator Free Taranaki programme* have already been budgeted for through long term planning processes as part of the Council's biosecurity funding.

This section sets out, information in relation to mustelids (ferret, stoat and weasel) for which a Sustained Control Programme - involving the imposition of land occupier rules - is proposed.

Ferret (*Mustela furo*)

Stoat (*Mustela ermine*)

Weasel (*Mustela nivalis*)

3.1 Mustelid attributes and distribution

Relevant biology

Attribute	Description
Form	Ferrets are the largest mustelid in New Zealand. Male ferrets grow up to 44cm and females up to 37cm in length. The undercoat is creamy yellow with long black guard hairs that give the ferret a dark appearance. A characteristic black face mask occurs across the eyes and above the nose. Stoats have long, thin bodies with smooth pointed heads. Ears are short and rounded. They are smaller than ferrets. Males grow up to 30cm and females up to 25cm in length. Their fur is reddish- brown above with a white to yellowish underbelly. Stoats have relatively long tails with a distinctive bushy black tip. Weasels are the smallest and least common mustelid in New Zealand. Males grow to about 20cm. Their fur is brown with white undercoat, often broken by brown spots. Their tails are short, brown and tapering. Mustelids have a strong musk odour.
Habitat	Mustelids have large home ranges and are active day and night. Ferrets are uncommon in forest but frequently found in association with rabbits on farmland habitats, where they are more abundant than stoats. Ferrets rarely occur in areas with more than 1500 mm annual rainfall. Stoats are the more common forest species and are distributed across most habitats. Weasels prefer disturbed habitats and thick ground cover. They will favour overgrown patches of any habitat from suburban gardens to agricultural land, in scrub and cutover native or exotic forest, or at the margins between these and open country.
Regional distribution	Established and widespread throughout the region. Weasels are the least common mustelid in New Zealand. They are rarely seen and are very 'patchy' in their distribution. Male mustelids generally have a larger home range than females. The average home ranges for male ferrets is 200ha, for stoats it is 147 ha and for weasels it can be up to 192 ha.

Attribute	Description
Competitive ability	Ferrets, stoats, weasels are small to medium sized carnivores. Mustelids pose a significant threat to indigenous fauna species. They are aggressive opportunistic predators and have been implicated in the extinction of some indigenous bird species and as the major cause of decline of many others. Flightless birds (such as kiwi) and birds that nest in holes (such as penguins) are particularly vulnerable.
Reproductive ability	Females breed from age one. Usual litter size for ferrets is 4-8, for stoats it is 8-10, and for weasels it is 3-6.
Resistance to control	Controlled by poisoning (including secondary poisoning), trapping, shooting, fumigation, dogging, control of predator species, and exclusion fences. Control needs to be continuous and cover large spatial areas to be effective. Of these options, shooting is considered the least efficient.
Benefits	Mustelids were introduced in New Zealand in the 1880's in an attempt to manage growing rabbit populations. Ferrets were also once farmed for their fur.

Where are mustelids a problem?

Mustelids are established throughout Taranaki.

In Taranaki, ferrets and stoats are more common than weasels (which are quite scarce). They are present in small densities across most land use types (see table below). They are found in a diverse range of habitats, including fertile pasture, rough grassland, tussock, scrubland and the fringes of nearby forest (forest fragments) and on any land where there are high numbers of rabbits. However, even in low numbers, mustelids can have a major impact.

Land use type	Current land use infested*	Potential land use infested*	Pest significant problem on this land type**
Dairy	High	High	True
Sheep and beef (intensive)	High	High	True
Hill country (sheep)	High	High	True
Forestry	High	High	True
Horticulture	Low	Low	False
Native / conservation	High	High	True
Urban / Non productive	Low	Low	False

* High = Most infested/preferred land use(s), Low = Less infested/preferred land use(s), - = Unsuitable land use. Source: Wildlands 2017

** True = Most 'at risk' or impacted land use(s), False = Less 'at risk' or impacted land use(s) based upon impact assessment overleaf.

3.2 Impact evaluation

How are mustelids a problem?

	Category	Current impact	Potential impact	Comment	Source
Production	Dairy	L	M	Threat to animal health. Mustelids potential vector for bovine tuberculosis (Tb)	1
	Sheep and beef	L	M	May carry bovine Tb, and parasites and toxoplasmosis	1
	Forestry	-	-		
	Horticulture	-	-		
	Other	-	-	Major threat to chickens on lifestyle blocks and in urban backyards. Mustelids will also target pets such as guinea pigs or rabbits	1
	International trade	L	M	Presence of Tb in cattle herds is a risk to dairy and meat exports	2, 3
Environment	Soil resources	-	-		
	Water quality	-	-		
	Species diversity	H	H	Major threat to the health of indigenous fauna populations. Skinks, flightless birds (such as kiwi) and birds that nest in holes (e.g. penguins and parakeet) are particularly vulnerable	1, 2
	Threatened species	H	H	Major predator of nationally threatened species in Taranaki, including kiwi, penguin, pied oystercatcher and dotterel species. Mustelids have been implicated in the extinction of up to 30 bird species across New Zealand	2
Social	Human health	L	L	Could transmit Tb to humans	2
	Recreation	-	-		2
	Māori culture	M	H	May predate on taonga fauna species	2

L – 'low' impact; **M** – 'moderate' impact; **H** – 'high' impact.

Source: 1: National Pest Control Agencies (2018), 2: King (2005), 3: TBfree New Zealand (2013),

What is the regional cost of mustelids?

As noted from the preceding table, the regional impact of mustelids are principally environmental, particularly in relation to predation effects on the abundance and distribution of native fauna species. This in turn may impact on Māori culture whereby mustelids can predate on species considered by Māori to be a taonga species. A review of iwi management plans highlights iwi concerns at the impact of introduced predators, including mustelids, on biodiversity values and taonga species. [3]

For the purposes of this proposal, the cost of mustelids on the region are not monetarised. While Council could potentially monetarised the cost of mustelid impacts on production values – should they become a vector of Tb in the region (noting dairying represents the largest portion of land area in the programme) – the 'real' cost of mustelids is their impact on species diversity and threatened species (and these cannot be monetarised).

The regional cost of mustelids in terms of their impacts on species diversity and threatened species impacts can be best surmised by the biodiversity outcomes that can be realised when they are absent or present only in low numbers. Mustelids predate on fledglings. Research confirms that, in mustelid trapping control areas, the survival rate of native bird fledglings increases by up to 10 times. In the case of the bellbirds, the survival rate of fledglings increased from 8% (without trapping) to 80% (with trapping). Mustelids are also likely to have a similar impact on the survival rates of other native species of interest to this region, including blue duck (whio), tui, North Island robin (toutouwai), bellbird, goldstripe gecko, and New Zealand pigeon (kereru).[4]

Mustelids, in particular stoats, are the major cause of kiwi chick death accounting for approximately 65 percent of wild born kiwi chicks within the first weeks of life. [5]

Through their predation impacts, the survival rate of indigenous fauna significantly drops. This, in turn, impacts on the viability (resilience) and distribution of remnant fauna populations noting that they might already be under stress from other influences in Taranaki such as fragmented habitats and the impacts of other invasive weeds and animals.

[3] *Refer to iwi management plans prepared by Te Atiawa, Taranaki, Ngati Ruanui and Ngaa Rauru.*
[4] *Refer https://www.bionet.nz/assets/Uploads/A8-Pest-Mustelids-2018-04-LR.pdf.*
[5] *Refer https://cdn.boprc.govt.nz/media/417991/pa11-mustelid-control-web.pdf.*

3.3 Cost-benefit analysis

CBA assessment of the preferred approach

Mustelids have reached their maximum potential extent in the region. Regional intervention is not about preventing the spread of the species but is about managing mustelid population densities.

General rule

The general rules focus on intensively farmed areas on the ring plain and coastal terraces where private land occupier in declared Predator Control Areas will be required to keep mustelids at very low levels (following Council-funded initial control).

The CBA assessment confirms that, in the absence of regional intervention, mustelid numbers will remain at present levels with continued high impacts on indigenous biodiversity values across the ring plain and coastal terraces and have the potential to be a vector for Tb (addressing these impacts represents the benefits of this intervention)..

The Council has calculated a cost-benefit scenario over 10 years and 50 years for mustelid control, within Predator Control Areas. These calculations have been annualized and are based upon a general (whole of property) rule to control mustelids.

The cost of the proposal has two component parts (and assumes a 4% discount rate):

- **Council costs:** This covers the costs incurred by the Council for its initial mustelid control, extension, advisory, monitoring, and enforcement and compliance activities. For years 1 to 10 (the years that cover new areas being included in the programme and initial mustelid control), Council costs are estimated to be an average of $2,314,754 per annum. For years 10 to 50 (the years where the focus is on the ongoing maintenance of the programme), Council costs will reduce to approximately $510,000 per annum (based upon estimated staff time and costed at $6 per ha year).
- **Land occupier compliance cost:** This covers the combine costs incurred by all private land occupiers in the programme resulting from requirements to trap and control mustelids. For years 1 to 10, total land occupier compliance costs across the programme are estimated to be in the order of $2,077,920 per annum.[6] In year 1, the combined compliance costs will be $360,000 but will progressively increase over time (an average of 10% as new properties join the programme). From year 10, the ongoing annual cost is estimated to be $3,600,000 noting the programme has reached its full spatial extent.

Summary of CBA assumptions

Pest assumptions	Values	Programme assumptions	Values
Current area infested:º	240,000 ha	Proposed Programme:	**Sustained Control**
Maximum potential area infested:	240,000 ha	Proposed rule application:	Whole property (private land only)
Council costs: Annual expenditure in first 10-yrs	$2,314,754	**Compliance costs:** Annual land occupier costs in first 10 yrs	$2,077,920
Ongoing annual expenditure by Council (after 10-yr rollout)	$510,000	Ongoing annual costs by land occupiers (after 10-yr rollout)	$3,600,00
Current impacts ($):*	Reduced distribution and abundance of native fauna species	Current benefits ($):	$0 / ha
Discount rate:	4%		

º Refers to that part of the region projected to be covered by the Predator Control Areas over the life of the Plan.

Consideration of alternatives

- **Good neighbour rule:** As part of this review, consideration was given to the development of a good neighbour rule requiring control of mustelids on properties adjacent to Predator Control Areas The intent of any good neighbour rule is to minimise externality impacts on properties in Predator Control Areas. However, given the dispersal range of mustelids is up to 200 hectares the 'buffer' distance required to address externality impacts was considered disproportionate to the added costs to be imposed, i.e. compliance costs would be imposed on all

[6] *This is based on the following assumptions – average 1 trap per 10 ha, programme operational area is 240,000ha. Approx. 15min per trap check (4 trap checks per hour) Land occupier time calculated at $60/hour, 4 trap checks per hour checked 10 time per year as per rule equals to $3.6 million per annum (when programme at full capacity). This is an over-estimate, as landowners become familiar with their traps, time spent trap checking would be greatly reduced.*

neighbouring properties in a two kilometre radius of Predator Control Areas). Further, a good neighbour rule is arguably unnecessary given programme's intent to incrementally include new (neighbouring) areas in the programme over time.

- **Non regulatory regional intervention:** Another option would be to rely on land occupiers voluntarily coordinated and undertaking mustelid control as part of a non-regulatory *Towards Predator Free Taranaki* programme. However, without regulation, there is considerable risk of hot spots of mustelid infestations occurring over time as a result of irregular/ineffective control. In short, mustelids will continue to have high impacts on biodiversity values in this region.
- **No regional intervention:** Another option is no regional intervention and instead rely on ad hoc voluntary control. However, to date such control has not been sufficient to reduce mustelid numbers and their effects (noting that their large home range means that populations can quickly replenish following any localised control).

3.4 CBA statement and risks to success

Mustelids have a continuing and significant impact on environmental and social/cultural values, and, to a lesser extent, production (dairy and intensive sheep and beef). They are widespread across all habitat types in Taranaki.

Sustained mustelid control through the imposition of land occupier obligations in Predator Control Areas is technically achievable in urban areas and on those parts of the region that are intensively farmed. Rules requiring land occupiers to reduce and then maintain mustelid numbers at low levels in Predator Control Areas are necessary to support the programme.

Sustained mustelid control through the imposition of land occupier obligations in Predator Control Areas is also cost beneficial through the avoidance of mustelid impacts and the protection of remnant biodiversity values on the ring plain and coastal terraces plus the 'halo' benefits that accrue to the Egmont National Park. The benefits include the protection (and recovery) in the distribution and abundance of some nationally threatened or regionally distinctive native species in Taranaki that would otherwise be impacted upon by mustelids.[7]

The net monetarised cost of regional intervention (over the first 10 years is estimated to be in the order of $4,380,000 per annum. Council costs are estimated to be an average of $2,314,754 per annum while land occupier compliance cost are estimated to be in the order of $2,077,920 per annum.

Pursuant to section 70(2)(c)(v) and (vi) of the Act, there are no alternative means of achieving the proposed objective (refer section 2.3 above)which reads as follows:

"*…Over the duration of the Plan, sustainably control mustelids numbers on land within a Predator Control Area, and elsewhere as appropriate, to avoid or minimise adverse effects on indigenous biodiversity values in the Taranaki region.*"

Risks of the proposed programme being unsuccessful in achieving objectives

Risk	Level of risk	Explanation
Technical risk	Low to Medium	New technologies are constantly being worked on in an effort to develop cost effective tools for controlling mustelids at a landscape-scale.
Operational risk	Low	Programme is modelled on the Self-help Possum Control Programme, which has been demonstrated to be sustainable and cost-effective in addressing the externality impacts of possums on intensively-farmed land. However, effective sustained mustelid control will be dependent upon co-ordinated land occupier action.
Legal risk	Low to medium	Success of mustelid control will rely on regular boundary control measures in the Egmont National Park (as part of the Project Mounga project) to reduce risks of re-infestation.
Socio-political risk	Low	The proposed programme will be tested through the Plan review process but it is based on a similar approach adopted to manage another predator (possums) and for which there has been significant public support to date.
Other risks	Low	Programme is dependent upon funding support from central government and/or philanthropic providers.

[7] *Council and Landcare Research studies have identified a 90% reduction in the level of mustelids in Taranaki under sustained control.*

3.5 Who should pay?

Mustelids are a major threat to indigenous biodiversity values in the Taranaki region and, to a lesser extent, production values.

Land occupiers with infestations are the principal exacerbators of the problem. All land occupiers with infestations will be 'exacerbating' the problem and are therefore best placed to undertake and pay for the costs of any control and ensure that infestations are not impacting on biodiversity and production values and/or spreading to their neighbours. This includes the Crown and in particular, the Department of Conservation, which manages the public conservation estate (which represents 20% of the region), including the *Taranaki Mounga* project.

The regional community is the principal beneficiary given that managing mustelids for the protection of biodiversity values is a 'public good'. The Department of Conservation, given their statutory responsibilities for indigenous biodiversity and managing the public conservation estate is also a major beneficiary of any mustelid control.

Rural land occupiers may also be a beneficiary where production values are affected (e.g. through avoiding animal health impacts and risks). Urban land occupiers will not generally be a major beneficiary of any control (other than where it is a public good).

In terms of managing mustelids on private land for the public good, there is general acceptance that the wider regional community is a beneficiary and that Council support is appropriate to maximise the effectiveness of individual control across the region. The regional community is able to assess the cost and benefits and effectiveness of the programme through the annual planning and reporting processes under the *Local Government Act 2002* and through the review of future pest management plans

Beneficiaries and Exacerbators

Group	Beneficiary	Exacerbator	Change behaviour	Assess costs & benefits	Control cost effectively
Private land occupiers		Minor	Yes	Yes	Yes
Crown land occupiers	Major	Minor	Yes	Yes	Yes
Dairy / sheep and beef	Minor	Minor	Yes	Yes	Yes
Regional community	Major		No	Yes	Yes

Glossary

Various technical and planning terms used in this proposal are defined in this Glossary. Unless the context indicates otherwise, the following definitions apply.

Act means the *Biosecurity Act 1993*.

Adjacent means, for the purpose of the Plan, a property that is next to, or adjoining, another property.

Beneficiary means the receiver of benefits accruing from the implementation of a pest management measure or the Plan.

Biological diversity (or **biodiversity**) means the variability among living organisms, and the ecological complexes of which they are a part, including diversity within species, between species, and of ecosystems.

Bovine tuberculosis means the state of being infected with *Mycobacterium bovis*. *Mycobacterium bovis* is an infectious, zoonotic, bacterial disease, characterised by the formation of tubercle lesions on affected animals.

Council means Taranaki Regional Council.

Costs and benefits includes costs and benefits of any kind, whether monetary or non-monetary.

Crown

(a) means her Majesty the Queen in right of New Zealand; and

(b) includes all Ministers of the Crown and all departments; but

does not include:

(c) an Office of Parliament;

(d) a Crown entity; or

(e) a State enterprise named in the First Schedule to the *State-Owned Enterprises Act 1986*.

Exacerbator means a person who, by their activities or inaction, contributes to the creation, continuance or makes worse a particular pest management problem.

Externality Impacts, in relation to pest management, are adverse and unintended effects imposed on others.

Fauna refers to all the animals of a particular region or period.

Good neighbour rule means a rule that seeks to manage the externality impacts arising from pests spilling over from one property to a neighbouring property that is free of, or being cleared, of that pest.

Indigenous means native to New Zealand.

Key Native Ecosystems refers to terrestrial sites (sites on land) identified by the Taranaki Regional Council to have regionally significant indigenous biodiversity values.

Means of achievement means the general management options, tactics, or technical methods by which the Taranaki Regional Council or land occupiers will achieve an objective or objectives.

Occupier means

(a) in relation to any place physically occupied by any person, means that person; and

(b) in relation to any other place, means the owner of the place; and

(c) in relation to any place, includes any agent, employee, or other person, acting or apparently acting in the general management or control of the place.

Pest means an organism specified as a pest in a pest management plan.

Pest management plan and **Plan** means a Plan made under Part V of the Act, for the exclusion, eradication or management of a particular pest or pests.

Predator Control Area means an area identified as a Predator Control Area in accordance with section 6.6A of this Plan.

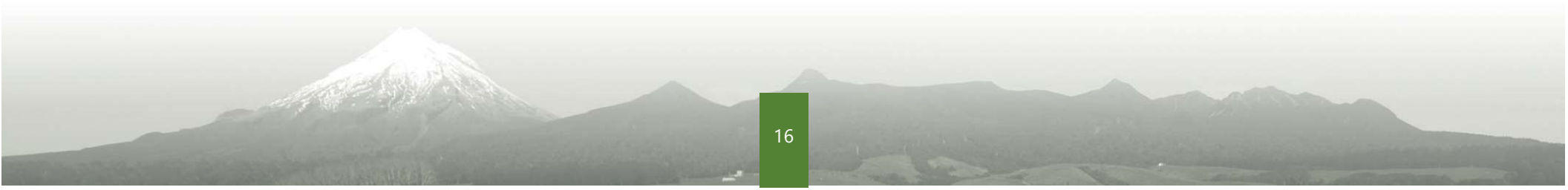
Private land means any land which is for the time being held in fee simple by any person other than Her Majesty; and includes any Māori land.

Region, in relation to a regional council, means the region of the regional council as determined in accordance with the *Local Government Act 2002*.

Rule means a rule included in a pest management plan or a pathway management plan.

Sustained control pest programme means a management programme for which the intermediate outcome for the programme is to provide for ongoing control of the subject, or an organism being spread by the subject, to reduce its impacts on values and spread to other properties.

Taonga means treasure, property: taonga are prized and protected as sacred possessions of the tribe. The term carries a deep spiritual meaning and taonga may be things that cannot be seen or touched. Included for example are te reo Māori (the Māori language), wāhi tapu, the air, waterways, fishing grounds and mountains.



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