



AREA DISEASE MANAGEMENT PLAN

NORTHERN SOUTH ISLAND

2016-2055 NATIONAL BOVINE TUBERCULOSIS PEST MANAGEMENT PLAN

Version 1.0

VERSION CONTROL

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1 INTRODUCTION

Bovine tuberculosis (TB) is a disease of farmed cattle and deer in New Zealand which, if left to spread would lead to production losses and animal health issues. This disease can also affect humans. Managing TB supports New Zealand's pastoral industries to increase productivity and access foreign markets – key elements of Government and industry strategies. A healthy farming sector is a vital component of New Zealand's economic wellbeing.

This document is the Area Disease Management Plan (ADMP) for the Northern South Island. The document provides details on how the objectives that have been instructed as part of the National Operational Plan (NOP) will be met, and the detailed measurements that will be reported on to confirm TB freedom from livestock in New Zealand by 2026.

Area Disease Management Plans (ADMPs) are key components of the NPMP and the National Operational Plan (NOP), and provide the operational planning framework for disease and pest management activities to be implemented at a regional level.

The 2015 NPMP review found that TB can be eradicated from both farmed cattle and deer herds, and from wildlife species (principally possums) that act as a reservoir and vector of the disease, and determined that eradication of TB from New Zealand should be the overall long term objective of the National Pest Management Plan (NPMP).

The diagram below details the Statutory and Operational Hierarchy of the National Pest Management Plan, and highlights that the ADMP is part of the Non Regulatory Framework of Operational Planning.

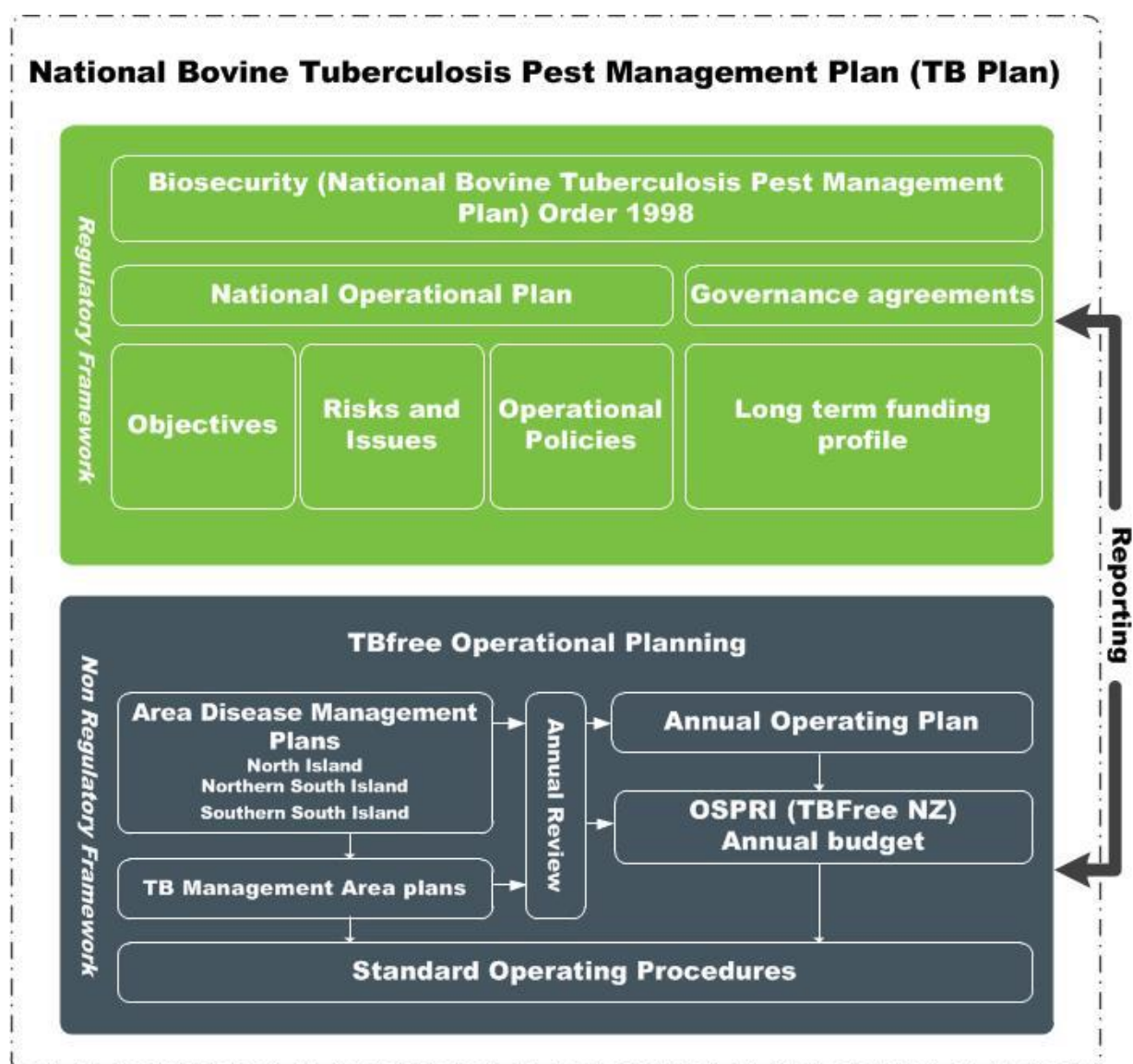


Figure 1: The Statutory and Operational hierarchy of the National Pest Management Plan.

2 DESCRIPTION OF VECTOR RISK AREAS

There are 3 Vector Risk Areas (VRAs) contained within the Southern South Island which make up the area that will be targeted for possum TB freedom as part of this Area Disease Management Plan's objective:

North Canterbury/Marlborough VRA (1,266,858ha)	<p>The North Canterbury/Marlborough Region is situated on the east coast of the South Island. The boundaries of the region include the Ure River in the north, the lower altitudes of the Main Divide and the Hurunui River to the south. The southern exception is the coastal strip between the Waipara and the Hurunui Rivers which is made up of 3 VCZ (Vector Control Zones) including Blythe Valley. The entire area is prone to drought but there are local variations and microclimates along the foothills and the where rainfall is slightly higher than the plains or coastal areas. Habitat types range from flat, irrigated, intensively farm land with few tree lines to rolling hills and mountainous areas with increasingly extensive bush areas. The Marlborough component of the area tends to be dry unirrigated grasslands with bush restricted to gullies and discrete zones. The high country is also generally dry, tussock and native grasslands that is extensively farmed or locked up for conservation purposes (as is St James Station). Most of the lower altitude areas are rabbit prone which supports moderate ferret populations, feral pigs are well distributed within the boundaries and the habitat has supported stable possum populations before introduction of possum control activities. TB has been well established in the area and was first identified in Hanmer and Amuri Range and radiated out from there. Pig dumping has been a common practice over time and it is likely TB has been move from one place to another by this mechanism in the early days. Possum control activities have successfully reduced the TB risk and the North Canterbury Marlborough VRA has been reduced by more than 400,00Ha through the Poof of Freedom process. Most recent evidence of TB infection in wildlife have been in the Coastal strip between the Waipara and Hurunui Rivers (Sporadic finding of TB ferrets), Venison recovery deer in the western high country (unfarmed areas) and pigs and ferrets from the Upper and mid Awatere, Clarence Reserve and lower catchment and Molesworth. The area is not planned to be declared TB free until 2033/34.</p>
Rolleston Range (55,648ha)	<p>Rolleston Range is the most recent VRA to be created in the Northern South Island Region.</p> <p>The VRA includes the Rolleston Range and the catchments of the Wilberforce and Mathias Rivers.</p> <p>It is a relative small, separate area where TB was located in a single herd at the same time as it was identified in wildlife (resident possums and feral pigs). Although the origin of this infection is not known, the control effort appears to have contained the infection to a single herd and no subsequent TB wildlife have has been identified.</p>
West Coast/Tasman VRA (1,812,616ha)	<p>The West Coast/Tasman VRA has large areas of native forest of which parts have yet to have received any official possum control. Furthermore, significant tracts of farmland adjoin forested areas where infected possum/livestock interactions occur. It is therefore not until 2031/32 before the entire VRA is planned to be declared TB free.</p> <p>The area extends from below Cape Farewell at the top of the South Island includes the Kahurangi National Forrest and associated farmland to the east and covers the area between the Tasman Sea and the western side of the Main Divide further south as far as Whataroa.</p>

The Vector Risk Areas (VRAs) have been divided into TB Management Areas (TMAs).

Each TMA has an operational plan and objectives for TB freedom in livestock (if applicable) by 2026, possum TB freedom in VRA by 2040 and biological eradication of TB from all livestock and wildlife by 2055.

The TMA structure enables possum control and disease surveillance to be contracted in an efficient manner utilising scales of economy, while still maintaining areas at a manageable size in relation to the disease; i.e. similar methods of control and surveillance can be used in an area. TMA therefore are contiguous areas with similar epidemiological and geographical characteristics.

A TMA's operational needs are such that the areas have an approximate planned target date for its eradication. When the last TMA within the VRA reaches possum TB freedom, the VRA will have reached possum TB freedom.

3 PLAN OBJECTIVES AND TARGETS

TB FREEDOM IN LIVESTOCK BY 2026

The first National Pest Management Plan (NPMP) primary objective milestone is to achieve TB freedom in domestic livestock populations by 2026. While the term TB freedom is defined under clause 5(1A) of the Biosecurity (National Bovine Tuberculosis Pest Management) Plan Order 1998, a proxy measure of the number of infected status herds will be used to assess progress toward this milestone. The objectives for the infected herd reduction for the North Island are shown in Table 1.

Number of infected herds	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Northern South Island	19	17	16	16	11	9	6	6	3	2	0

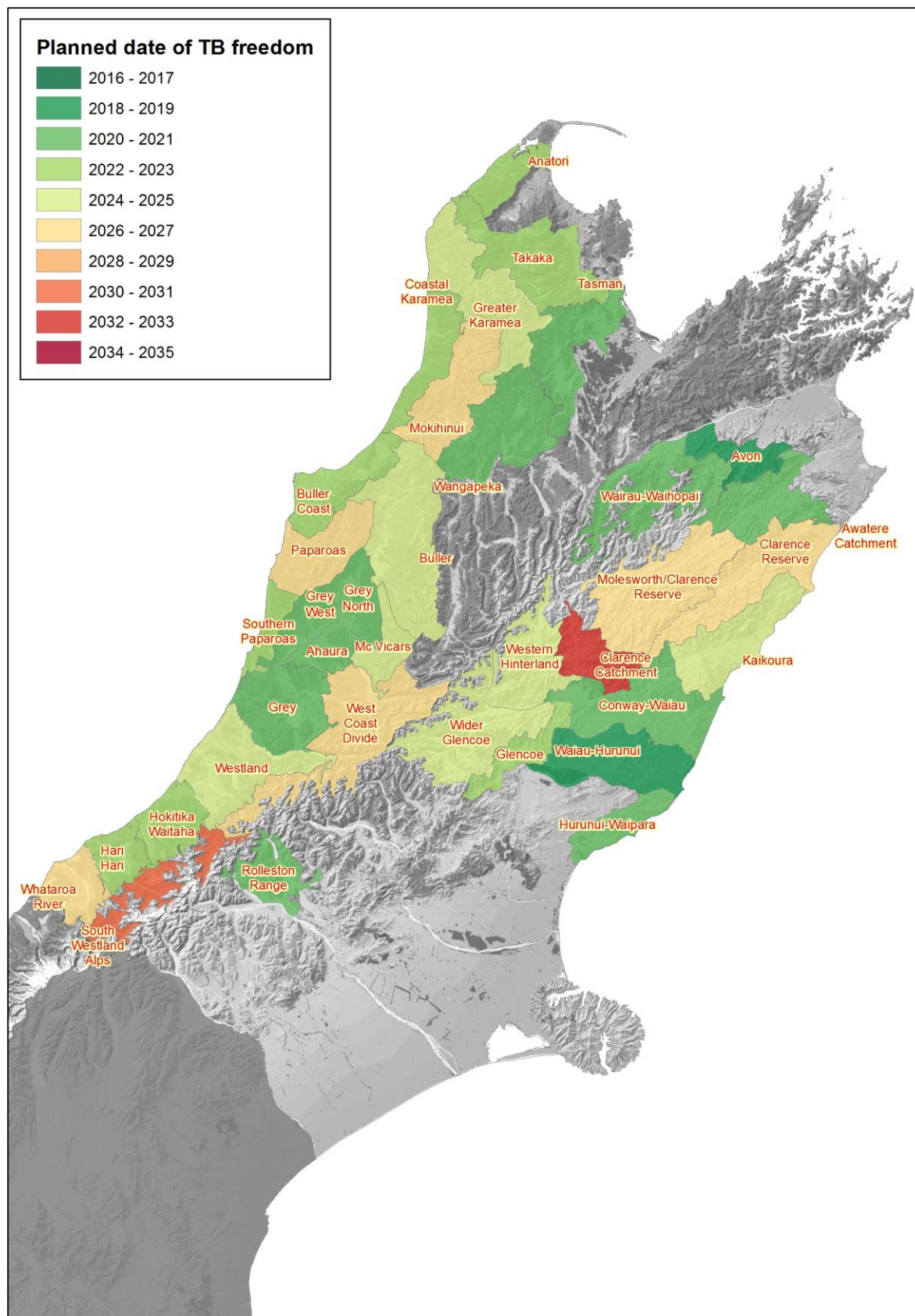
Table 1: Planned reduction of infected herds for the period 2016-2026, calculated at the commencement of the plan year.

TB FREEDOM IN POSSUMS BY 2040

The second primary objective milestone is to achieve TB freedom in possums by 2040. While the term TB freedom is defined under clause 5(1A) of the (National Bovine Tuberculosis Pest Management) Plan Order 1998, a proxy measure of the number of VRA hectares will be used for the second milestone. The objectives for VRA hectares reduction for the North Island are shown in Table 2.

Total VRA (M hectares)	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Northern South Island	3.13	3.13	2.70	1.81	0.97	0.53	0.11	0.11	0.06	0	0

Table 2: Expected VRA reduction over the plan period 2016-2036, calculated at the commencement of the plan year.



Map 1: Northern South Island Vector Risk Area/TB Management Area and planned timeframes for TB freedom 2016-2035

The table below shows the planned possum TB freedom timeframes for Northern South Island VRAs and associated TB Management Areas (TMAs).

Each TMA will have a milestone date for the achievement of possum TB freedom.

When the last TMA within the VRA reaches possum TB freedom, the VRA will have reached possum TB freedom.

VRA Name	VRA Total Hectares	TMA Name	TMA Hectares VRA	TMA TB Freedom Date	VRA TB Freedom Date
North Canterbury/Marlborough	1,266,858	Avon	46,267	2019	2033
		Waiau-Hurunui	114,600	2019	
		Awatere Catchment	90,396	2021	
		Conway-Waiau	137,834	2021	
		Hurunui-Waipara	45,444	2021	
		Wairau-Waihopai	115,418	2021	
		Glencoe	44,276	2022	
		Wider Glencoe	132,798	2024	
		Kaikoura	104,378	2025	
		Western Hinterland	89,358	2025	
		Clarence Reserve	127,656	2026	
		Molesworth/Clarence Reserve	159,512	2027	
		Clarence Catchment	58,921	2033	
Rolleston Range	55,648	Rolleston Range	55,648	2020	2020
West Coast/Tasman	1,812,674	Ahaura	35,730	2020	2031
		Grey	99,224	2020	
		Tasman	86,697	2020	
		Grey North	51,658	2021	
		Grey West	42,557	2021	
		Wangapeka	123,354	2021	
		Anatori	42,233	2022	
		Hokitika Waitaha	61,274	2022	
		Takaka	130,324	2022	
		Buller Coast	76,284	2023	
		Coastal Karamea	47,938	2023	
		Hari Hari	42,706	2023	
		Southern Paparoas	30,347	2023	
		Buller	172,909	2027	
		Greater Karamea	179,219	2024	
		McVicar's	40,659	2024	
		Westland	114,834	2024	
		Mokihinui	74,347	2026	
		Whataroa River	51,788	2026	
		Paparoa Ranges	84,714	2027	
		West Coast Divide	167,917	2027	
		South Westland Alps	55,961	2031	

Table 3: Planned possum TB freedom timeframes for Northern South Island Vector Risk Areas and associated TB management Areas.

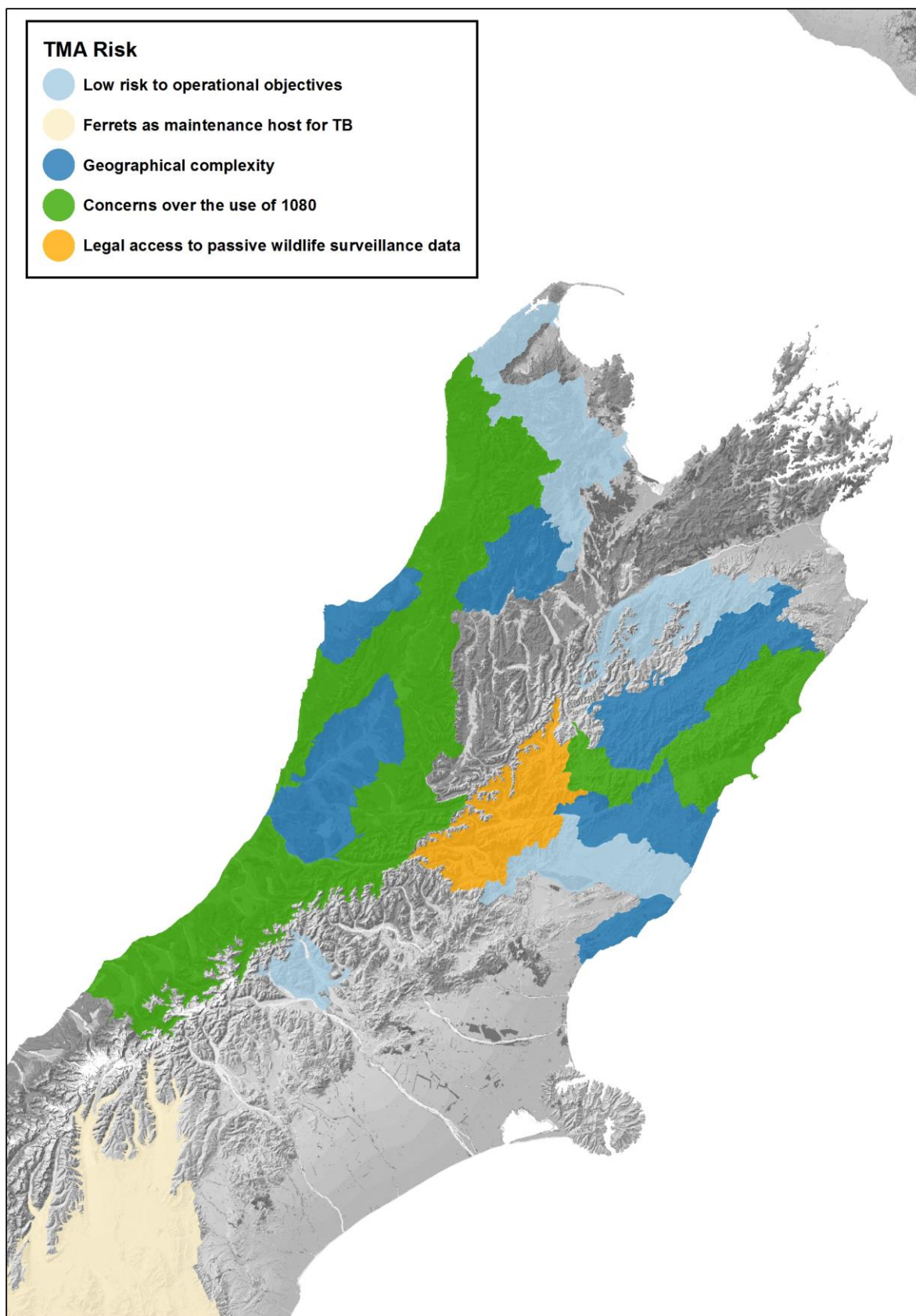
4 RISK MANAGEMENT

RISKS AT TB MANAGEMENT AREA LEVEL

Localised risks which could impact individual operations in the Northern South Island include:

- Landowner access issues due to 1080 – areas where individual landowners are potentially denying use of aerial application of 1080 on their land and there are no other cost-effective means of controlling possums
- Concerns from hunting groups - areas where there is a risk of non-target by-kill impacting on recreational activity
- Geographical complexity– areas which due to their habitat/topography cause difficulties in the implementation of even possum population reduction
- Proximity to urban areas – control in peri-urban areas where there are a large number of residential property adjacent to continuous forested areas
- Access to passive wildlife surveillance data including the legality and ability of accessing hunting post mortem records from helicopter hunting companies

Specific details of relevant risks are contained within the individual TMA Plans, and a national risk profile can be viewed in the National Operational Plan document.



Map 3: Northern South Island areas of localised risk

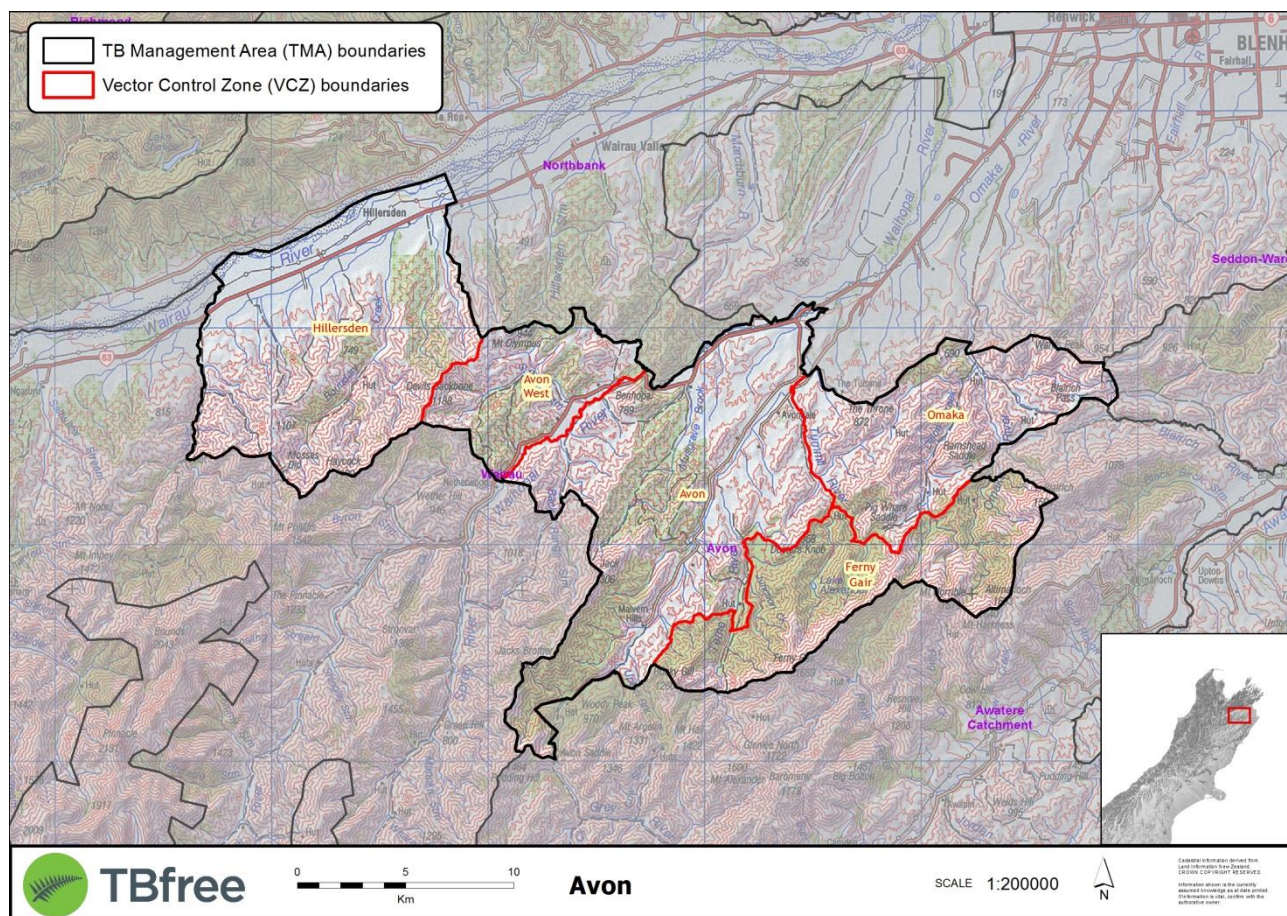
5 TB MANAGEMENT AREA PLANS

The VRAs are made up of one or more TB Management Areas (TMAs). Each TMA has an operational plan and objective (section 4) for TB freedom in livestock (if applicable) by 2026, TB freedom in possums by 2040 and biological eradication of TB from all livestock and wildlife by 2055. TMAs are areas with similar epidemiological and geographical characteristics which can enable wildlife control and disease surveillance activities to be contracted in an efficient manner. This allows utilising scales of economy while still maintaining areas at a manageable size in relation to the disease, i.e. similar methods of control and surveillance can be used in an area. When the last TMA within the VRA achieves possum TB freedom, the VRA will have achieved possum TB freedom.

TMAs themselves are made up of one or more Vector Control Zones (VCZs). Each VCZ will have a milestone date when possum TB freedom is declared. This date will be determined when a predetermined probability-of-freedom (P_{free}) from TB in possums is reached for that VCZ. When the last VCZ within a TMA achieves possum TB freedom, the TMA will have achieved possum TB freedom.

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5.1 AVON



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2019
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 46,267

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Avon	14,735	2019
Avon West	4,098	2019
Ferny Gair	7,382	2019
Hillersden	12,681	2019
Omaka	7,371	2019
Total	46,267	

DESCRIPTION OF TB MANAGEMENT AREA

The Avon TMA lies to south east of the Wairau River and South of Blenheim within Marlborough District. The area includes Ferny Gair Forest block which is a well utilised recreational hunting asset. The habitat type is arid Marlborough grasslands interspersed with commercial forests and patches of scrub and bush. Altitude ranges from 50m above sea level to 1600m but most of land area is below 1000m. There are 48 herds within the Avon TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Two TB pigs were captured in the TMA in 2009 but there has been no further evidence of TB in either herds or pigs collected since that date. The latest herd breakdown due to a wildlife source was in 2002. There are only 48 herds currently located within this TMA and 20 of these are dry stock herds. Area received annual ground control from 2009 -2015. Avon Five Mile aerial block return a low trigger monitor result in 2011/12. Possum numbers expected to be very low after concerted control effort.

PLANNED VECTOR RISK AREA REDUCTION

Avon	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	46,267	46,267	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected herd activities

There are currently no infected herds within this TMA.

Summary of Operations Planned

As pigs are abundant through out this VCZ pig surveys will be carried out in 2016/17 and 2017/18 to provide evidence for proof of TB freedom. A low intensity possum survey will be carried out in the second half of 2017/18 to fill in any coverage gaps.

Innovations, Initiatives and Research and Development

Pig coverage survey design is being applied to ensure reasonable coverage by contractors and good data for proof of freedom cases.

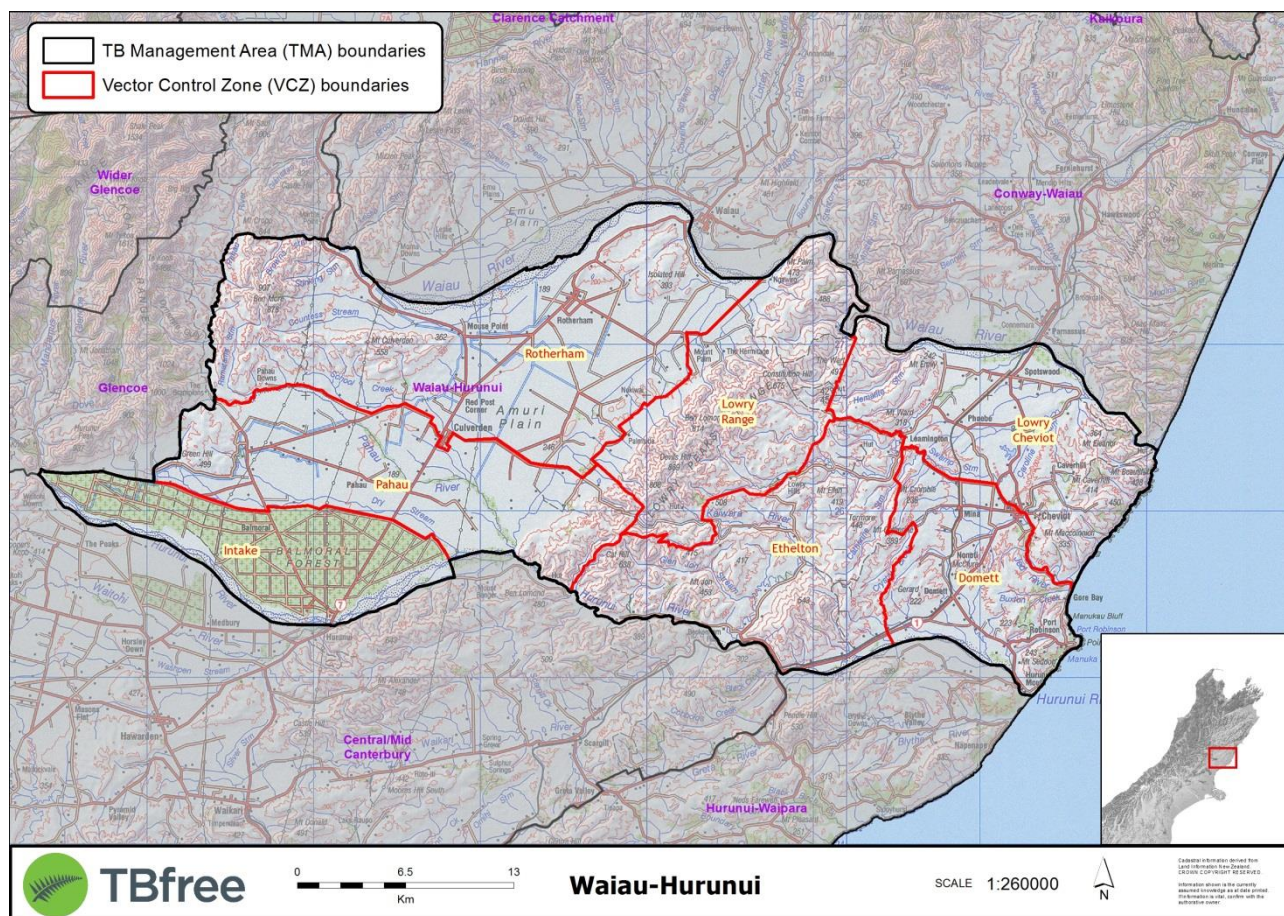
RISK MANAGEMENT

There have been no recent infected herds due to wildlife infection and possum populations have remained low since control ceased. The risk of not achieving TB freedom for this TMA is considered to be low. Dumping of infected carcasses by hunters or liberation or chasing animals from a high risk area could lead to further TB being discovered.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Passive surveillance through slaughter premises. Pig surveys in this area should be considered as a cost effective measure to provide continued evidence of TB freedom. Low intensity surveys can be spread over several years to maintain resolve capacity. Surveys should commence in 2038 and be completed, with good geographic coverage, in 2045.

5.2 WAIUAU-HURUNUI



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2019
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 114,600

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Domett	10,049	2018
Ethelton	16,750	2018
Intake	11,011	2018
Lowry Cheviot	15,092	2019
Lowry Range	14,784	2019
Pahau	17,480	2018
Rotherham	29,434	2018
TMA Total	114,600	

DESCRIPTION OF TB MANAGEMENT AREA

The Waiau-Hurunui TMA is situated between the Hurunui and Waiau Rivers from the coast to the foothills. The area includes Culverden township and the associated intensive dairy area separated from the townships of Cheviot and Domett by the Lowry Range. The habitat type is flat, irrigated arable farmland with rolling hill country to the east (towards coast) and the

west (foothills). Altitudes range from plains at 180m above sea level to the hill tops at around 880m. There are 243 herds within the Waiau-Hurunui TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB in livestock and wildlife was widespread in the TMA through the 1990s and early 2000s. Ferrets were regularly captured with TB but there have been no recent TB cases. The latest TB breakdowns were as a result of stock movements (most recent herd cleared in 2012) and the latest wildlife related case cleared in 2006. Possum control has been reintroduced over the past 3 years for all VCZs within this TMA. Possum abundance is generally low due to recent control effect and removal of habitat.

PLANNED VECTOR RISK AREA REDUCTION

Waiau-Hurunui	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	114,601	29,876	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected herd activities

There are currently no infected herds within this TMA.

Summary of Operations Planned

Pig and ferret data is being collected for proof of freedom cases for these VCZs in 2016/17. Any coverage gaps will be filled with low intensity possum surveys in 2017/18.

Innovations, Initiatives and Research and Development

Nothing proposed at this stage.

RISK MANAGEMENT

The risk is considered to be low for this TMA as possum numbers are extremely low throughout, there have been no wildlife related infection in herds for 10 years and all surrounding areas are under control. Adjacent Glencoe has had a recent TB breakdown

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock surveillance through TB testing and slaughter surveillance will be used to provide evidence of freedom. This is considered to be an adequate form of surveillance for this TMA

TB Management Area (TMA) boundaries

Vector Control Zone (VCZ) boundaries

Wairau
Avon
Castle-Hodder
Grey-Medway
Ure-Medway West
Seddon-Ward
Molesworth/Clarence Reserve
Awatere Catchment
CLARENCE RIVER

TBfree

0 6 12 Km

Awatere Catchment

SCALE 1:250000

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Catchment information derived from land information New Zealand. Crown Copyright © 2018. All rights reserved.

- Possum TB freedom date: 2021
- Herd TB freedom date: 2019
- Total area of VRA reduction (hectares): 90,396

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Awatere Extension	11,437	2019
Castle-Hodder	26,011	2019
Grey-Medway	38,211	2021
Ure-Medway West	14,737	2020
TMA Total	90,396	

The Awatere Catchment TMA lies to west and north of the Inland Kaikoura Range. The Awatere River is the main feature of this area with farming enterprises located along it and historic TB cases located within its catchment. The habitat type is arid Marlborough grasslands interspersed with commercial forests and patches of scrub and bush. Altitudes vary from ~400m to over 2000m along the Inland Kaikoura Range. There are 20 herds within the Awatere Catchment TMA.



TB wildlife has been found as recently in ferrets as recently as 2013 and 2015 in the Mid Awatere. There is a history of sporadic TB infection in livestock. The most recent TB herd coincides with the discovery of TB infected ferrets. Ground and aerial control of possums has been regularly applied to this TMA. Possum abundance is considered to be low throughout most of this area.

PLANNED VECTOR RISK AREA REDUCTION

Awatere Catchment	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	90,396	90,396	38,211	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds in this area.

Summary of Operations Planned

Ground control will continue in the Grey Medway VCZ where TB has most recently been found. All VCZs will received pig surveys for 2016/17 and 2017/18 and any gaps in coverage and confidence of TB freedom will be filled in through low intensity possum surveys from 2018/19.

Innovations, Initiatives and Research and Development

Nothing proposed at this stage.

RISK MANAGEMENT

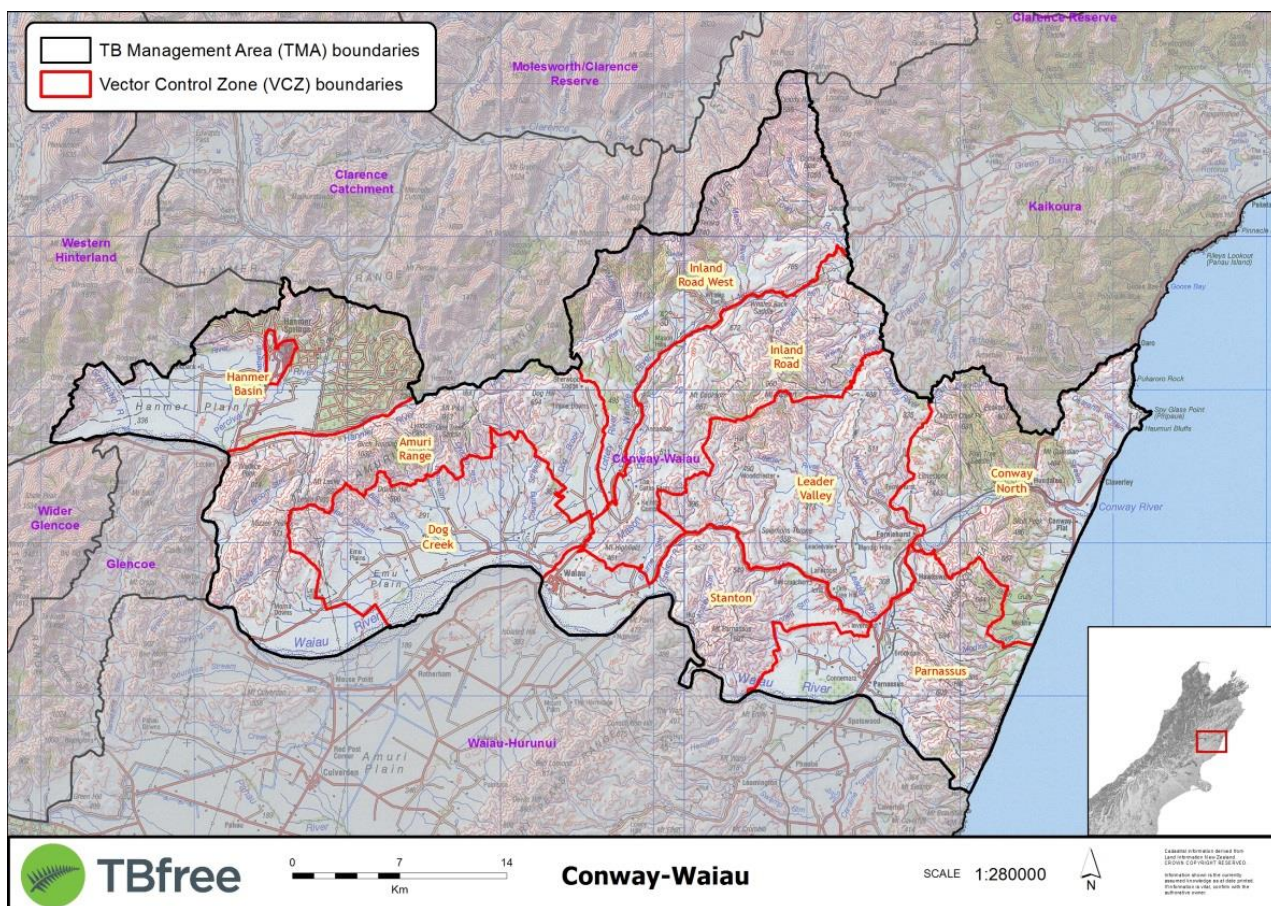
The Upper Awatere still carries a risk of TB and numerous TB ferrets are often caught whenever the area is surveyed. Migrating infected wildlife pose a risk to the mid and lower Awatere areas. Mitigation of this risk includes continued control of the Upper Awatere. Pig carcass dumping may also pose a risk to the goal of TB freedom in this area.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Surveillance will include ongoing slaughter surveillance of livestock and a ferret survey in 2024/25. There are reasonable numbers of deer removed from the area for venison recovery and these will continue to be monitored.

Pig surveys in this area should be considered as a cost effective measure to provide continued evidence of TB freedom. Low intensity surveys can be spread over several years to maintain resolve capacity. Surveys should commence in 2038 and be completed, to provide good geographic coverage, in 2045.

5.4 CONWAY-WAIAU



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2021
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 137,834

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Amuri Range	19,526	2021
Conway North	16,380	2021
Dog Creek	13,771	2021
Hanmer Basin	15,075	2021
Inland Road	14,792	2021
Inland Road West	17,503	2021
Leader Valley	16,937	2020
Parnassus	13,325	2020
Stanton	10,525	2020
Total	137,834	

DESCRIPTION OF TB MANAGEMENT AREA

The Conway-Waiau TMA lies between the Waiau and Conway Rivers in the North Canterbury District. The area includes Waiau township and Amuri Range which was one of the earliest areas of North Canterbury to become infected. The Lottery River particularly has a long history of TB infection. The habitat type is dry (drought-prone) North Canterbury rolling farm land. Scrub and bush is present in gullies and patches. Altitudes range from sea level to under a 1000m for Mt Stewart in the center of the TMA. There are 160 herds within the Conway-Waiau TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB wildlife have been found from the Amuri Range and Lottery Rivers, and Cheddar Valley. Nothing has been seen since 2004 (although we have not recently been looking). Persistently infected herds were present from the 1990s into the 2000s from the foothills throughout the TMA except in the coastal Hawkeswood herds. Latest infected herd was in 2013 which may have been residual infection in an old cow. Long history of disease and of control. After many years of control the area was spelled for approximately seven years. Most areas have had at least one recent year of control since the control hiatus. Hawkeswood Range, along the coast, has never received official control as there has never been a TB issue there.

PLANNED VECTOR RISK AREA REDUCTION

Conway-Waiau	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	137,834	137,834	97,047	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds within this TMA.

Summary of Operations Planned

Pig surveys are expected to provide good coverage of the area over the first two years of the new TB plan (2016/17-2017/18). These will be followed by low intensity possum trapping with concurrent survey to fill in any gaps in coverage and confidence of TB freedom from 2018/19-2020/21.

Innovations, Initiatives and Research and Development

Nothing proposed at this stage.

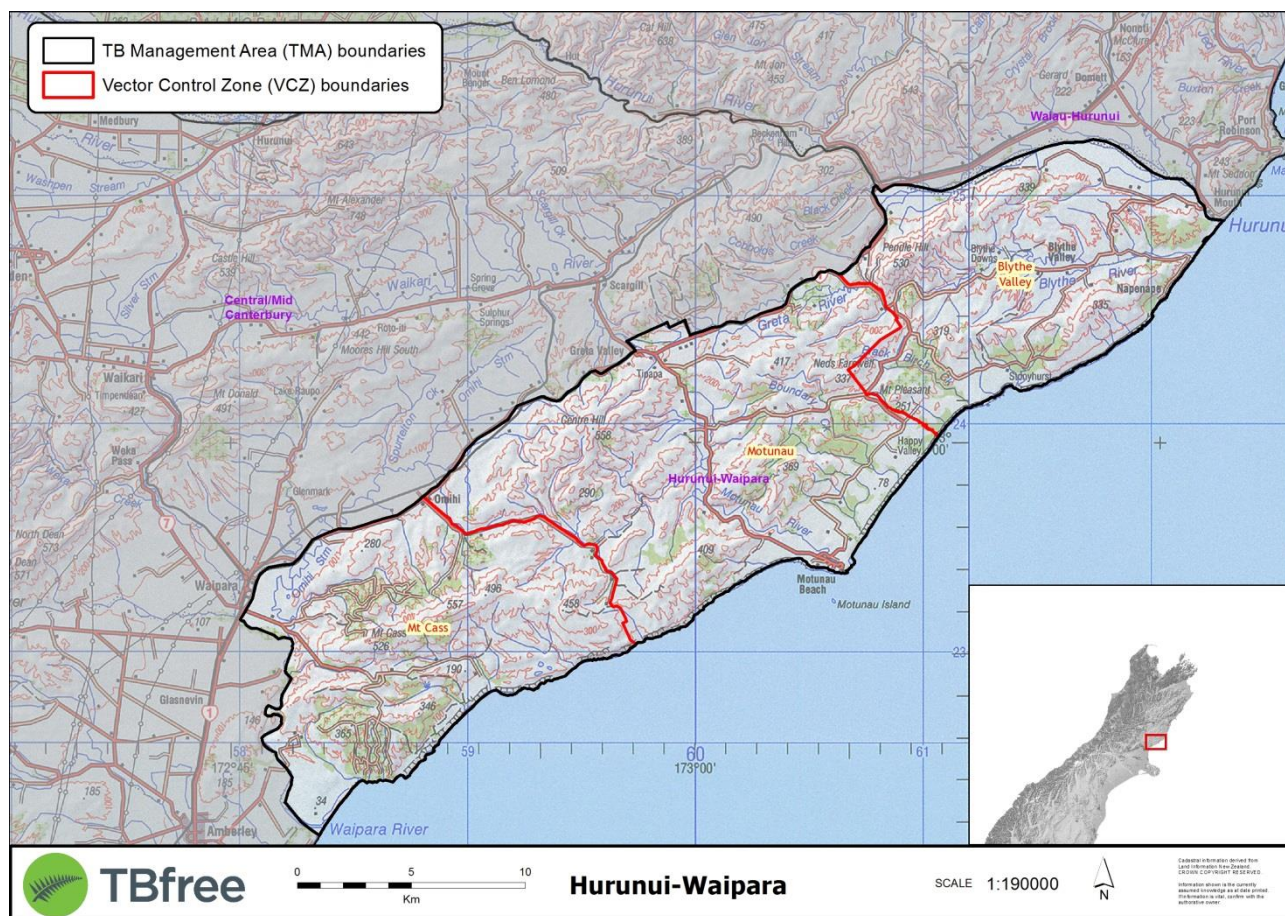
RISK MANAGEMENT

Risk of failure in this area is considered to be low given the lack of evidence of infected herds despite recovery of the possum populations over the spelling period.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys in this area should be considered as a cost effective measure to provide continued evidence of TB freedom. Low intensity surveys can be spread over several years to maintain resolve capacity. Surveys should commence in 2038 and be completed, to provide good geographic coverage, in 2045.

5.5 HURUNUI-WAIPARA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2021
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 45,444

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Blythe Valley	12,899	2021
Motunau	18,760	2020
My Cass	13,785	2020
Total	45,444	

DESCRIPTION OF TB MANAGEMENT AREA

The Hurunui-Waipara TMA remaining VRA is a strip of coastal VCZs from Main south Road to the coast between Waipara and Hurunui Rivers. The area includes the Tiromoana exotic forest, Motunau village. Ferret prone limestone hills and sheer coastal cliffs along much of the coastline. The habitat type is coastal broken limestone, open rolling hills farmland with patches of bush and tiger scrub. Altitudes range from sea level to approximately 550m. There are 97 herds within the Hurunui-Waipara TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

This area has a long history of infection in wildlife. TB ferrets have regularly been captured over time. The most recent TB cases have been ferrets captured from the Blythe Valley in 2014 and prior to that in Motunau close to the boundary with Blythe Valley VCZ. Over time herds have been infected through out this coastal area . The last TB herds were within the Motunau(2011) and Blythe Valley (2010) VCZs. Regular control of possums and surveillance of ferrets have be applied to this TMA. Possums have been controllled again in 2013/14 and 2014/15 after a hiatus and ferrets are being surveyed within the current financial year(2016/17). Possum numbers are considered to be low.

PLANNED VECTOR RISK AREA REDUCTION

Hurunui-Waipara	2014	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	45,444	45,444	12,899	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds within this TMA.

Summary of Operations Planned

Ferret surveys are planned to be carried out of the next 3 years (2016/17-2018/19) to provide evidence of TB freedom. Pigs are only present in part of the Mt Cass VCZ and these will be sampled to provide local evidence of freedom. A final low intensity possum survey will be initiated from 2018/19 to fill in any gaps not covered by pigs or ferrets.

Innovations, Initiatives and Research and Development

Sampling the resident feral deer herd in the Blythe Valley if further TB ferrets are found.

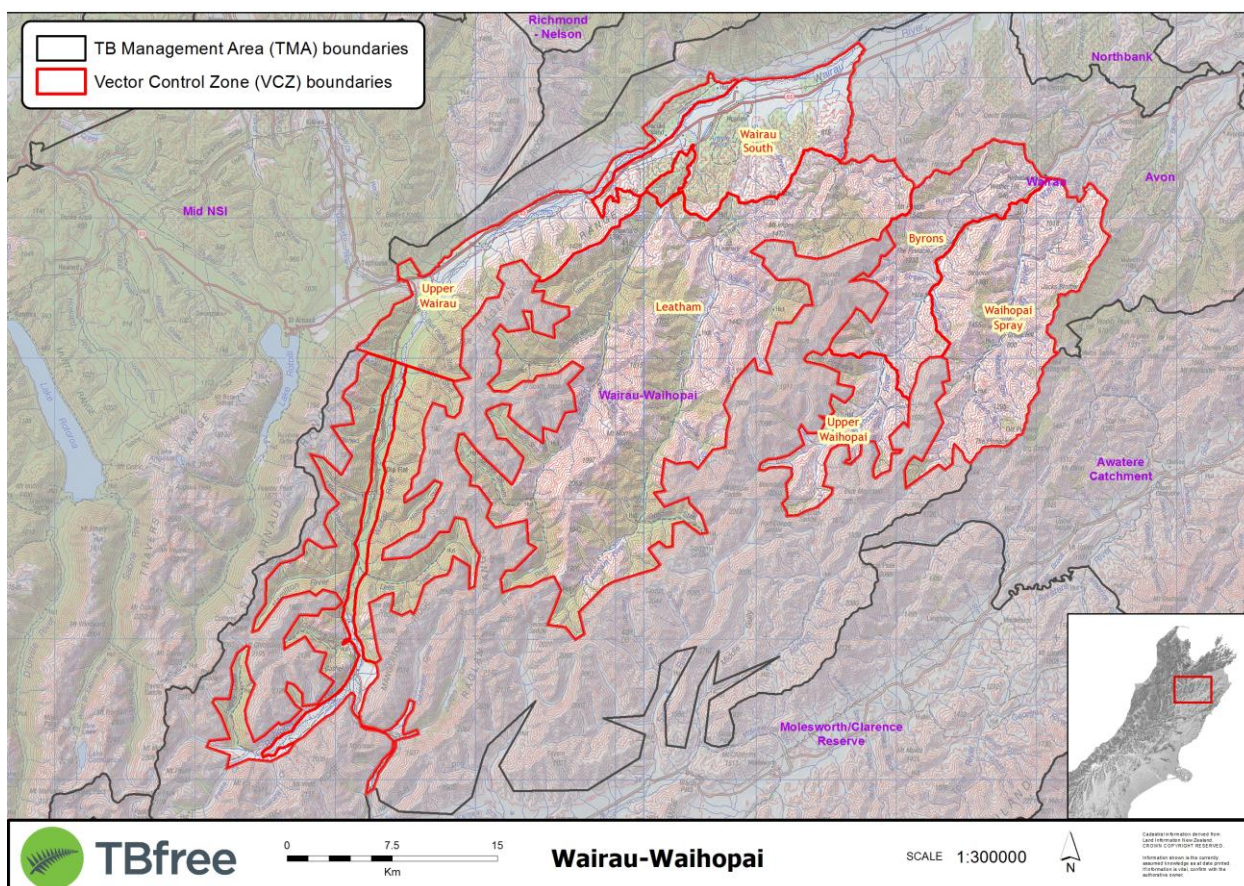
RISK MANAGEMENT

There is an uncontrolled feral deer population in Blythe Valley that tracks between Motunau and Blythe Valley VCZs. It is suspected that the death old deer and scavenging of their carcasses is responsible for the sporadic findings of TB in the modest ferret population.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Assurance suveillance will be based on slaughter surveillance of livestock, farmer hand-ins and potentially a ferrets survey in 2025. If further infection is found in ferrets but not livestock then a feral deer cull/survey should be considered. Local pig and ferret surveys should be carried out regularly (3-5 years apart) to assess the wildlife disease status (2025, 2030, 2035, 2040).

5.6 WAIRAU-WAIHOPAI



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2021
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 115,418

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Byrons	8,629	2021
Mangerturk	15,776	2020
Marlborough	58,239	2020
Upper Waihopai	4,745	2020
Upper Wairau	8,727	2020
Upper Wairau Rainbow	2,287	2020
Waihopai Spray	10,148	2020
Wairau South	6,867	2021
Total	115,418	

DESCRIPTION OF TB MANAGEMENT AREA

The Wairau-Waihopai TMA lies to the south east of the Wairau River. The area includes very low stocking rates and few herds are present. The area contains the catchments of the Waihopai, Leatham, Upper Wairau and Branch Rivers. The habitat type is arid Marlborough grasslands interspersed with Commercial forests and patches of scrub and bush. Altitudes range from several hundred metres above sea level to over 2000m. There are 27 herds within the Wairau-Waihopai TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB ferrets were found in the Upper Wairau-Rainbow VCZ (Molesworth end) in 2008. TB pigs were captured in the Byrons and Waihopai Spray VCZs in 2005. Nothing has been recorded as infected since then. No recent history of infection in herds. Last TB case due to wildlife was. This area has received regularly controlled. Possum abundance will be variable dependent on the last date of control but the carrying capacity is generally lower than other areas.

PLANNED VECTOR RISK AREA REDUCTION

Wairu-Waihopai	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	115,418	115,418	15,496	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herds Activity

There are currently no infected herds within this TMA.

Summary of Operations Planned

Pig and ferret surveys from 2017/18-2019/20 will provide data to cover much of the area for freedom assessment purposes. Low intensity possum surveys will be carried out during 2018/19 and 2019/20 to fill any coverage gaps.

Innovations, Initiatives and Research and Development

Nothing proposed at this stage.

RISK MANAGEMENT

The risk of failure is considered to be low but this is a large area and there has been TB wildlife at the Molesworth end of Wairau River and in the Waihopai River Catchment. If any of these areas identify TB in young pigs or ferrets further possum control may need to be planned.

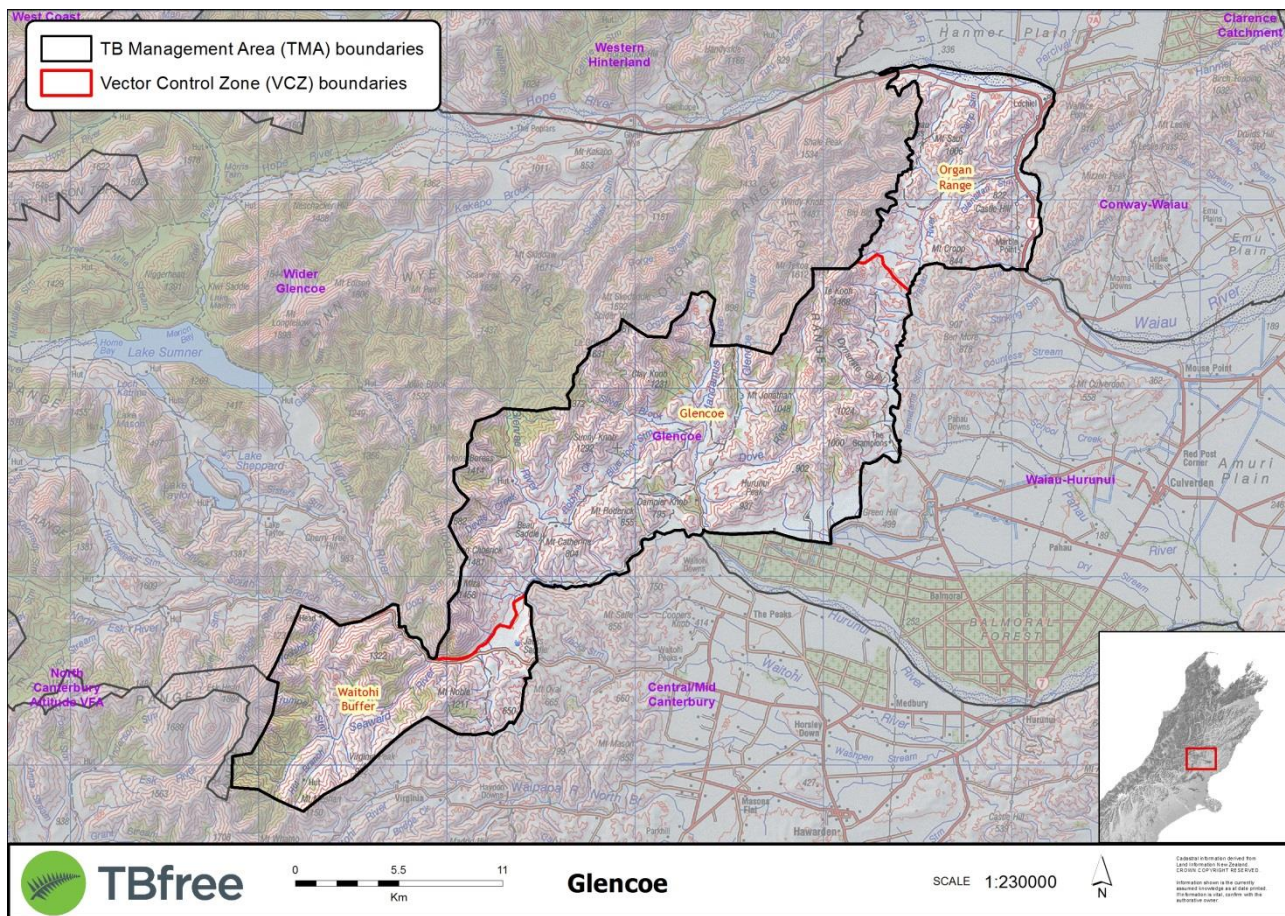
SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Surveillance of livestock through slaughter premises will continue and an assurance pig survey in 2026/27 may be considered.

Pig surveys in this area should be considered as a cost effective measure to provide continued evidence of TB freedom. Low intensity surveys can be spread over several years to maintain resolve capacity. Surveys should commence in 2038 to provide good geographic coverage and be completed by 2045.

To provide evidence of TB eradication along the Wairau River Catchment ferrets surveys in the locations where TB was historically found would be a sound investment (i.e. Molesworth end of Wairau River).

5.7 GLENCOE



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2022
- Herd TB freedom date: 2018
- Total area of VRA reduction (hectares): 44,276

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Glencoe	26,179	2022
Organ Range	7,937	2022
Waitohi Buffer	10,160	2022
Total	44,276	

DESCRIPTION OF TB MANAGEMENT AREA

The Glencoe TMA is situated in the foothills between the Hurunui and Waiau Rivers. It backs onto previously uncontrolled Western Hinterland. The area includes Glens of Tekoa , Island Hills and The Grampians. The habitat type is rolling hill farmland with bush and scrub coverage. Area regularly experiences droughts but has a slightly higher rain fall than the drier flat farmland to the east. Altitudes range from 400 to 1600m. There are 13 herds within the Glencoe TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Historically TB has been found in pigs, ferrets and possums. No infected wildlife have been identified recently except for a venison recovery hind for which the capture coordinates are uncertain. Most recent infected herd is believed to be residual infection from previous exposure to bacteria in an old animal. Aerial control has been undertaken before and ground control has been carried out at regular intervals (annually). Possum abundance is on the increase as the benefits of the previous aerial have lapsed.

PLANNED VECTOR RISK AREA REDUCTION

Glencoe	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	44,276	44,276	44,276	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activity

Latest herd just cleared of infection had a history of TB infection on the property. The infected herd will continue to test annually for up to seven years.

Summary of Operations Planned

Aerial control is to be carried out in 2017/18, with a significant extension to previous area covered. Ground control will complement the aerial operation and aerial exclusions will be worked each year for three years (2017/18-2019/20). Low intensity possum survey will be undertaken in 2021/22.

Innovations, Initiatives and Research and Development

Nothing proposed at this stage.

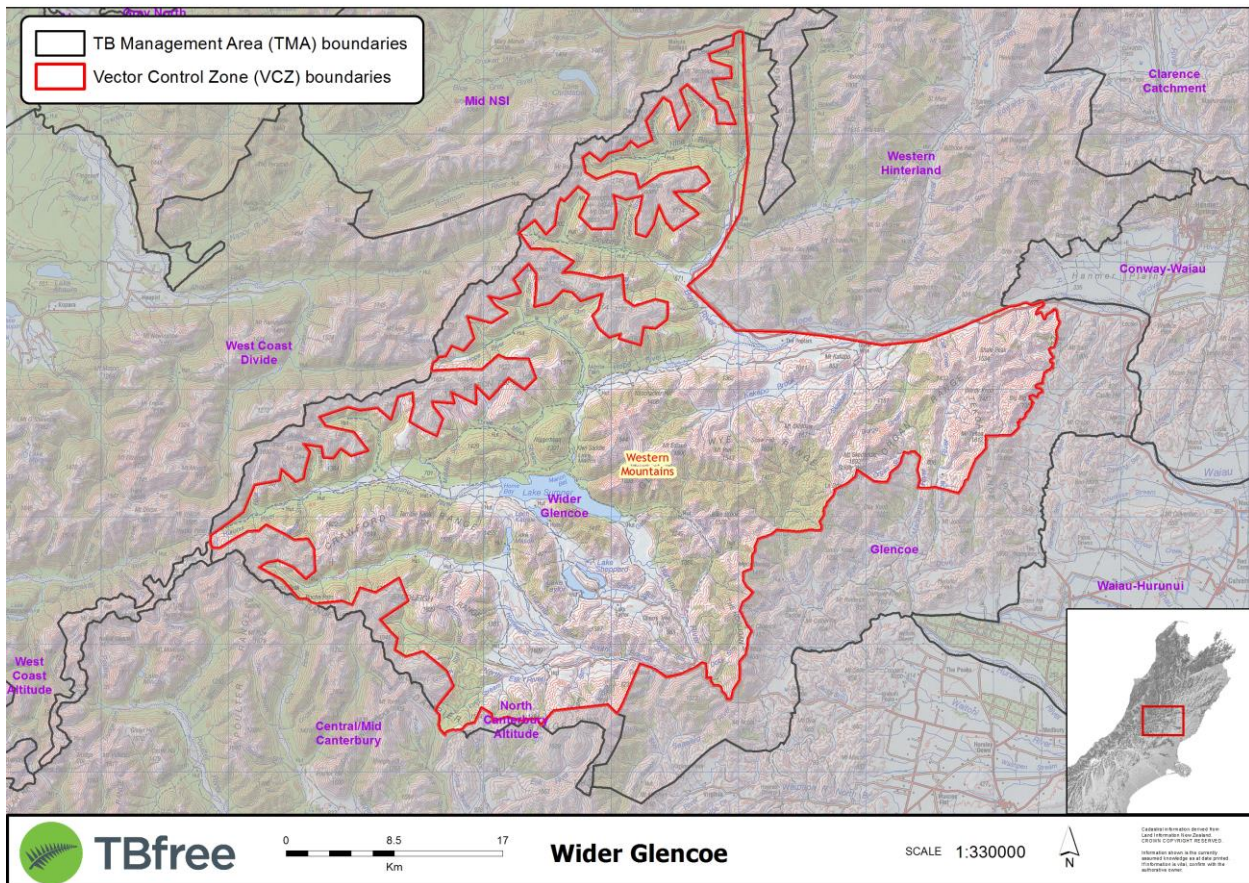
RISK MANAGEMENT

The true location of the TB venison recovery animal is unknown and we have little information from the uncontrolled area. Mitigations included the current aerial operation and ongoing control. The venison recovered from the property will continue to be monitored through game packing houses.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Passive surveillance, venison recovery animals and livestock inspection at slaughter including herd testing data will be used to provide confidence that TB has truly been eradicated from this area.

5.8 WIDER GLENCOE



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2024
- Herd TB freedom date: 2019
- Total area of VRA reduction (hectares): 132,798

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Western Mountains	132,798	2024
Total	132,798	

DESCRIPTION OF TB MANAGEMENT AREA

The Wider Glencoe TMA lies to west of the North Canterbury farmland and extends to the Main Divide. The area includes several large extensive Farming Stations and the Department of Conservations Hurunui Mainland Island between branches of the Hurunui River. Also includes Lakes Sumner and Taylor. The terrain becomes increasing mountainous from east to west with gullies and hill faces of scrub and large patches of bush. Altitudes from Valley floor at about 500m above sea level and mountainous peaks around 1800m. There are 5 herds within the Wider Glencoe TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Occasional venison recovery deer have been identified with North Canterbury strain TB but these are rare events and the varacity of the location data is not verifiable. None of the few extensive cattle herds present in the area have had an infected status in the last 25 years. Other than Department of Conservation focal activities the area is largely uncontrolled for possums. Pigs have been historically collected from areas near farmland and venison recovery for commercially purposes occurs occasionally. Possum populations are likely to be close to carrying capacity.

PLANNED VECTOR RISK AREA REDUCTION

Wider Glencoe	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	132,798	132,798	132,798	132,798	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds in this area.

Summary of Operations Planned

Pig surveys will be carried out over the next five years (2016/17-2020/21) and will target possum habitat including valley floors. Venison recovery data from game packing houses will be collated over multiple years and strategic low intensity possum surveys will be undertaken, if required, in 2021/22-2022/23 where other species do not provide adequate coverage..

Innovations, Initiatives and Research and Development

Nothing proposed at this stage.

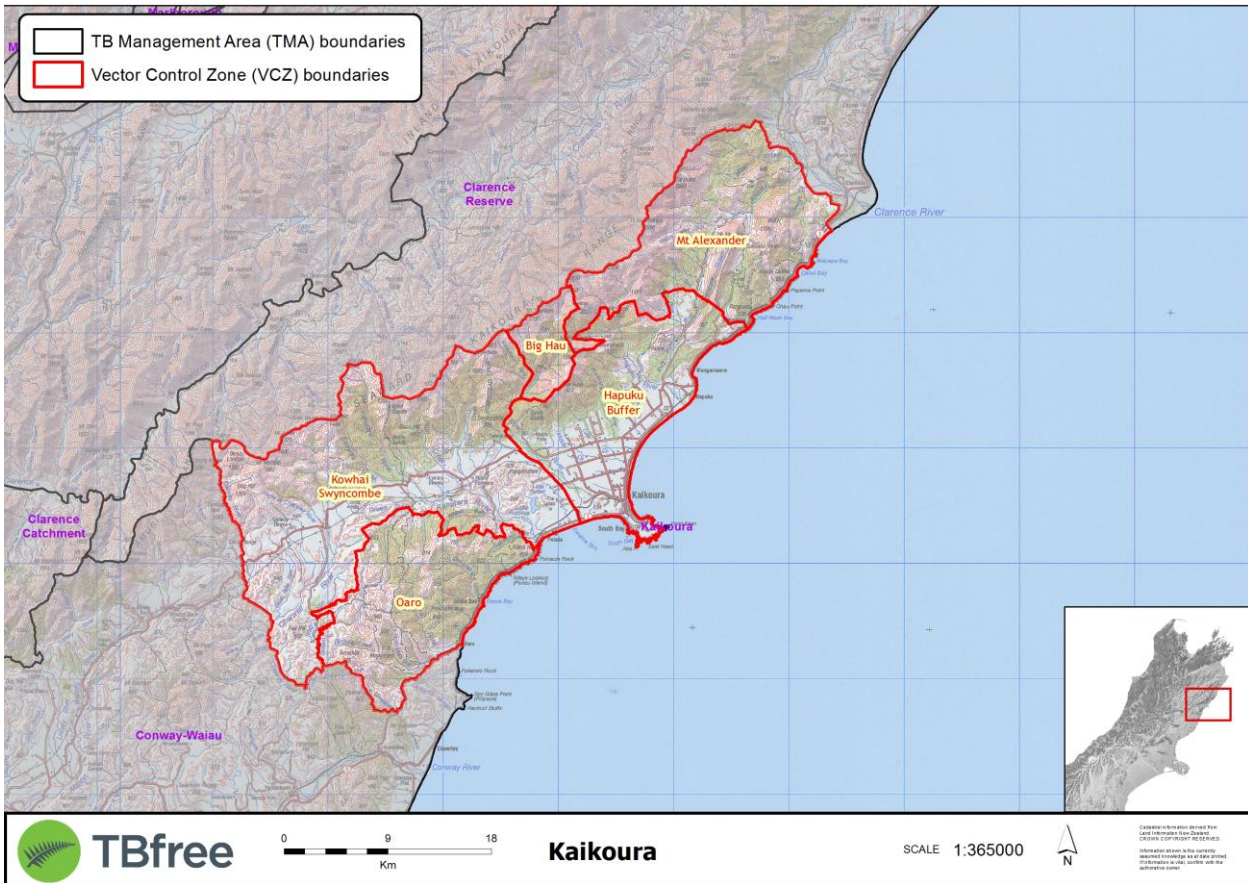
RISK MANAGEMENT

Availability of venison recovery data (both accuracy and availability can vary) presents a risk especially if false information identifies TB that actually represents another location. Mitigation will include later use of possum surveys and targeted surveys if TB is found.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Passive surveillance through venison recovery (provided accurate location data is available) and slaughter surveillance of domestic animals from adjacent VCZs. A cost effective pig survey carried out over 3 years from 2040 is recommended but may not be necessary.

5.9 KAIKOURA



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2025
- Herd TB freedom date: 2019
- Total area of VRA reduction (hectares): 104,378

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Big Hau	3,409	2025
Hapuku Buffer	19,692	2025
Kowhai Swyncombe	41,092	2025
Mt Alexander	22,798	2025
Oaro	17,387	2025
Total	104,378	

DESCRIPTION OF TB MANAGEMENT AREA

The Kaikoura TMA is situated on the east coast of South Island from Conway to Clarence River. The area includes Kaikoura township and Puhi Puhi Valley. The habitat type in the centre of the TMA is flat, sparsely treed dairy country near the township. The most scrub and native bush areas are at the northern Puhi Puhi Valley end and also around Goose Bay at the southern end of the TMA. Altitudes range from sea level at the coastline up to the ridge line of the Seaward Kaikoura Range with peaks between 1400-2300m. The lowest pass is approximately 950m. There are 237 herds within the Kaikoura TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB Wildlife have historically been found in this TMA but not for many years. There are currently no infected farms in the TMA but there have been 2 infected herds in the Inland road region within the past 5 years. A lot of control has been applied to this area overtime. Mt Fyfe aerial was last flown with 1080 poison in 2002. The Puhi Puhi Valley, which is currently uncontrolled, has very low possum numbers due to some disease other than TB, possibly Wobbly virus.

PLANNED VECTOR RISK AREA REDUCTION

Kaikoura	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	104,378	104,378	104,378	104,378	104,378	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

Currently no infected herds.

Summary of Operations Planned

Pig surveys will be carried out in the previously uncontrolled areas at Big Hau and Oaro in 2016/17-2017/18 to assess the disease status of these areas. Low intensity possum surveys will be implemented in areas of low coverage by pigs. If aerial control operations are determined to be required, these will be programmed for 2018/19.. Hapuku Buffer, and the previously uncontrolled Puhi Puhi and Blue Duck catchments, will receive ground control followed by possum surveys from 2017/18.

Innovations, Initiatives and Research and Development

Nothing proposed at this stage.

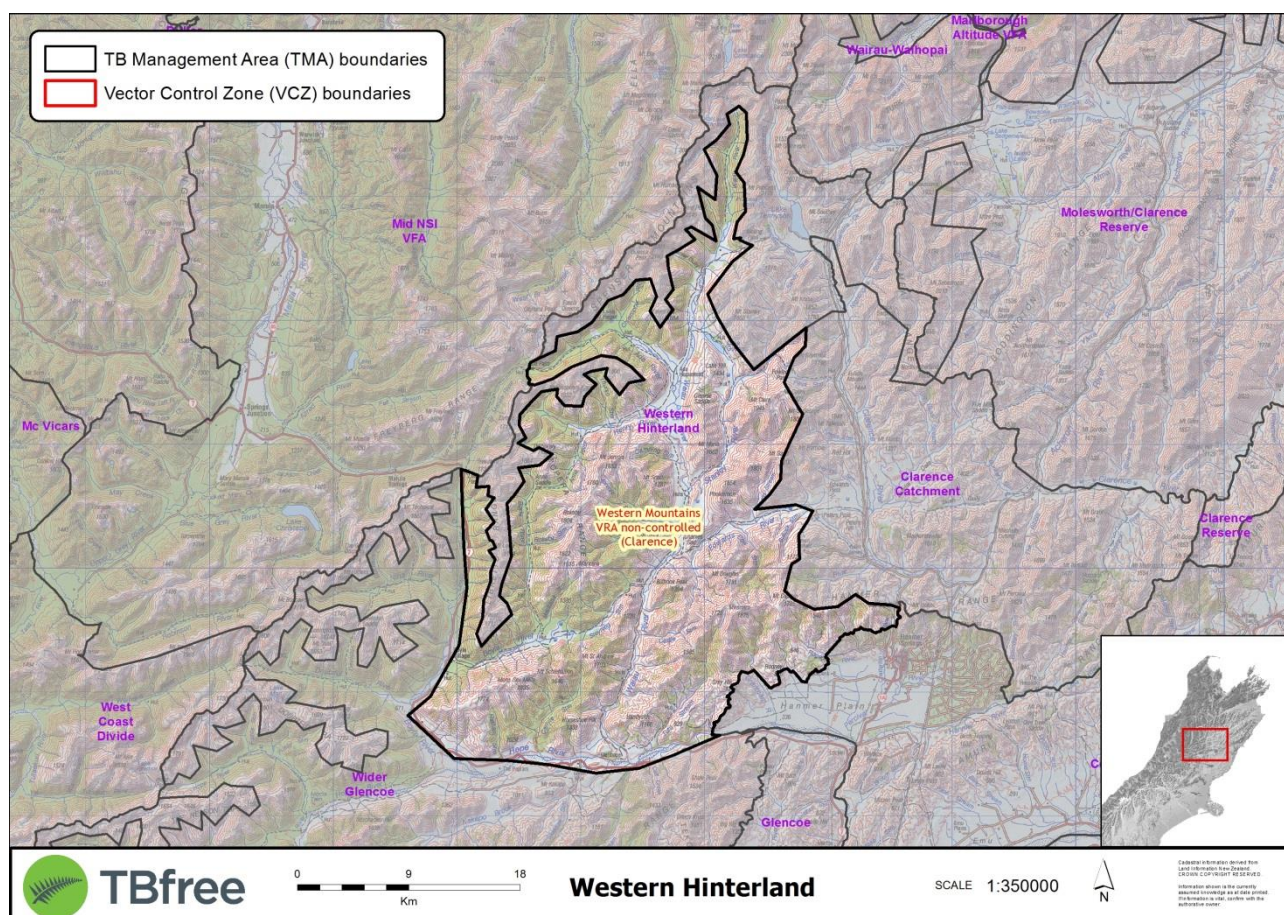
RISK MANAGEMENT

Availability of venison recovery data (both accuracy and Availability can vary) presents a risk especially if false information identifies TB that actually represents another location. Mitigation will include later use of possum surveys and targeted surveys if TB is found.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Passive surveillance through venison recovery (provided accurate location data is available) and slaughter surveillance of domestic animals from adjacent VCZs. A cost effective pig survey (carried out over 3 years from 2040) is recommended, but may not be necessary.

5.10 WESTERN HINTERLAND



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2025
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 89,358

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Western Mountains (Clarence)	89,358	2025
TMA Total	89,358	

DESCRIPTION OF TB MANAGEMENT AREA

The Western Hinterland TMA lies to northwest of Hanmer Springs and east of the road to Lewis Pass and extends to the Spenser Mountains. The area includes Glenhope Station and the Department of Conservation owned St James Station which straddles the Upper Waiau River. Also includes the Liberty and Opera Ranges. The terrain becomes increasingly mountainous from east to west with gullies and hill faces of scrub and patches of bush. Bush is denser further west with greater rainfall. Altitudes range from Valley floor at about 500m above sea level and mountainous peaks around 1800m. There are 4 herds within the Western Hinterland TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Occasional venison recovery deer have been identified with North Canterbury strain TB but these are rare events and the veracity of the location data is not verifiable. None of the few extensive cattle herds present in the area have had an infected status in the last 10 years. The area has not received official possum control. Pigs have been historically collected

from areas near farm land and venison recovery for commercially purposes also occurs occasionally. Possum populations are likely to be a carrying capacity as there has been little official control (Dept. of Conservation).

PLANNED VECTOR RISK AREA REDUCTION

Western Hinterland	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	89,358	89,358	89,358	89,358	89,358	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds in this area.

Summary of Operations Planned

Pig surveys will be carried out over the next 5 years (2016/17-2020/21) will target possum habitat including valley floors. Venison recovery data from game packing houses will be collated over multiple years and strategic low intensity possum surveys will be undertaken, if required, in 2021/22-2022/13 where other species do not provide adequate coverage.. Design of possum surveys will be based on intensity required to provide confidence of freedom.

Innovations, Initiatives and Research and Development

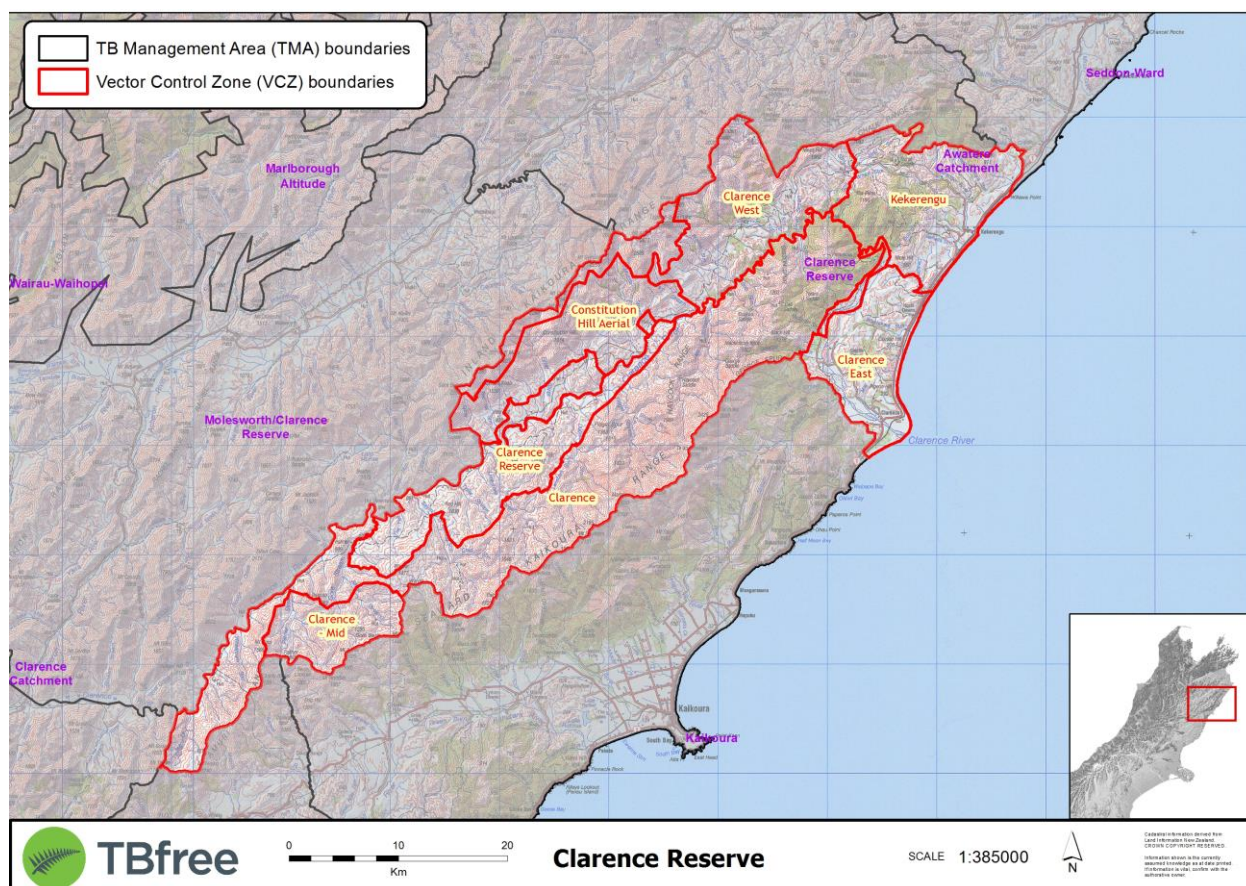
NOTHING PROPOSED AT THIS STAGE.RISK MANAGEMENT

Availability to accurate venison recovery data (accuracy and availability can vary) presents a risk especially if false information identifies TB from another location.Mitigation will include later use of possum surveys and targeted surveys if TB is found.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Passive surveillance through venison recovery (provided accurate location data is available) and slaughter surveillance of domestic animals from adjacent VCZs. Targeted possums surveys may be required around any deer TB cases (especially young deer) that are identified after the VRA status is revoked.

5.11 CLARENCE RESERVE



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2026
- Herd TB freedom date: 2023
- Total area of VRA reduction (hectares): 127,656

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Clarence – Mid	6,557	2023
Clarence East	10,356	2022
Clarence Reserve	13,113	2026
Clarence	51,360	2026
Total	129,656	

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Clarence West	15,497	2025
Constitution Hill Aerial	10,282	2025
Kekerengu	15,857	2022
Upper Clarence	4,634	2025

DESCRIPTION OF TB MANAGEMENT AREA

The Clarence Reserve TMA lies at the northern end of the Canterbury Region. It includes the catchment of the Clarence River from the mouth to the Spay Stream and the southern end of the Clarence Reserve between the Seaward and the Inland Kaikoura Ranges. The area includes the Clarence River, Clarence Reserve, and Kekerengu.. The habitat type is river flats and rolling hills to high snow covered ridgelines. Scrub and bush fill gullies as well as areas of solid bush. Altitudes range between sea level and 2,500m. There are 29 herds within the Clarence Reserve TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Wildlife collected for venison recovery, research purposes or survey from ground control have regularly been found to have TB lesions from this TMA. Species examined include possums, deer, pigs and ferrets. TB has been found as recently as 2016/17. The last longstanding infected herd in Canterbury is located within this TMA. Vector control has only started on the property in the last couple of years and the rate of reactors has declined significantly as a result. Northern and coastal areas have received regular annual to biennial possum control. Although official control within the two Kaikoura Ranges has only been initiated in the last 2 years and there are still areas have not yet received any control. Possum abundance is expected to be high in non controlled areas but where control has been applied should be moderate to low.

PLANNED VECTOR RISK AREA REDUCTION

Clarence Reserve	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	127,656	127,656	127,656	101,443	95,868	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There is currently a single infected herd within the bounds of the Kaikoura Ranges and an intensive management plan is to be developed during the 2016/17 year how that control of the wildlife source is beginning to be addressed. The herd is expected to be cleared of infection by 2021. There are not anticipated to be any herds under movement restrictions as a result of residual or wildlife related disease after 2024.

Summary of Operations Planned

This is a large area with a common source of TB infection (disease tracking along the Clarence River) so there is a spread of revocation dates for the VCZs contained within. Annual ground control is expected for most areas during the first 3 years (2016/17-2018/19). Aerial control is planned to be initiated in the as yet to be controlled country from 2017 to 2019. Pig and ferret data will be collected where this is possible to provide confidence that TB freedom targets are likely to be met. Significant aerial exclusions will be worked every year for at least three years. Possum surveys will be carried out in the penultimate years preceeding proposed revocation. A pre-aerial survey will be carried out on Waiau-toa as this should facilitate access for necessary aerial control (hunting interests may conflict with necessary control methods).

Innovations, Initiatives and Research and Development

Low sow aerial treatment will be trialled.

RISK MANAGEMENT

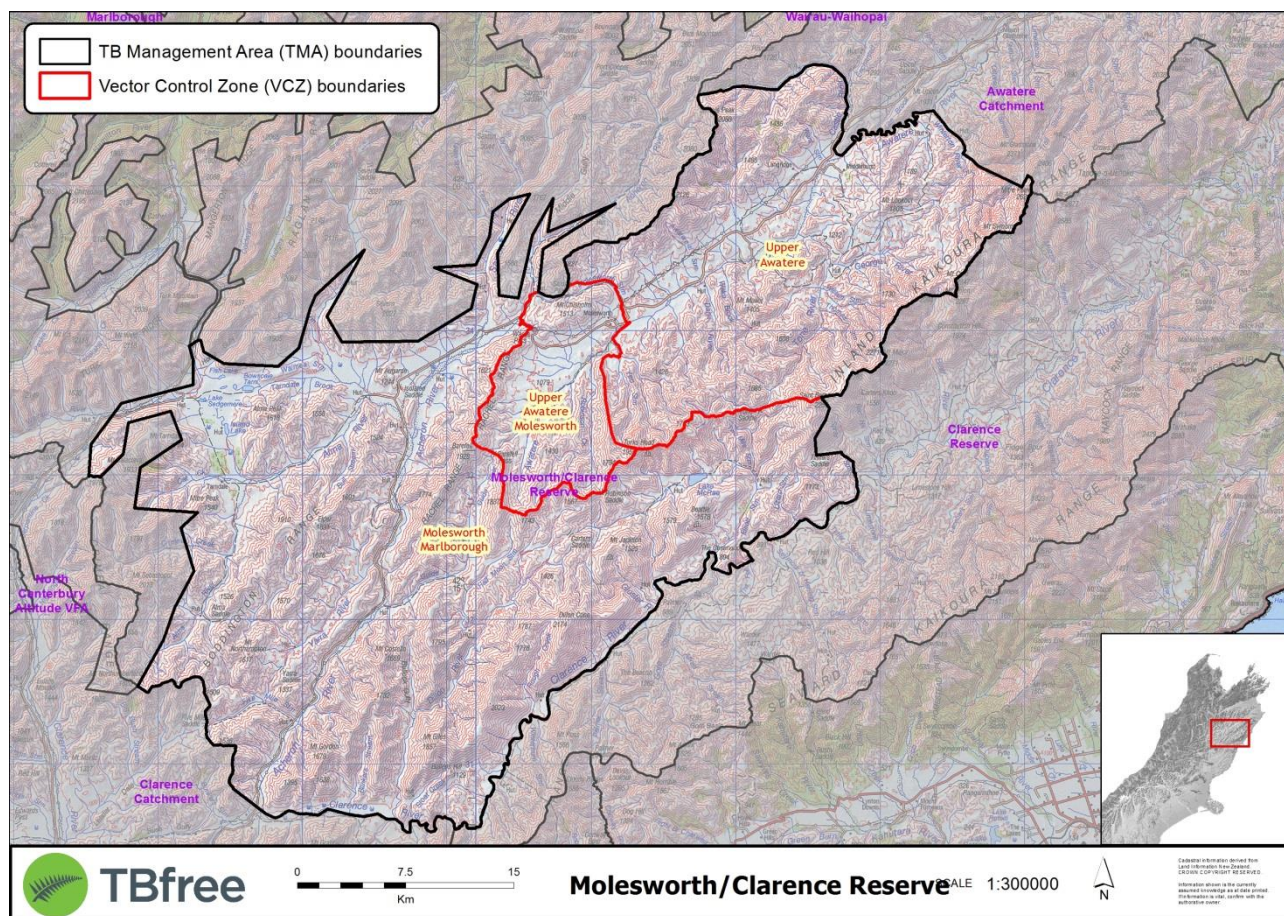
Aerial exclusions and denied access for aerial control are a risk to the achievement of TB freedom within the timeframes stated in this document. Inaccurate data from venison recovery operates may affect the level of confidence that freedom has been achieved.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Passive surveillance through venison recovery, TB testing of livestock, and farm hand-ins will provide a degree of confidence freedom has been achieved plus a pig and ferret survey should be considered for the Clarence Reserve and river margins and coastal areas around 2035-36.

Pig surveys in this area should be considered as a cost effective measure to provide continued evidence of TB freedom. Low intensity surveys can be spread over several years to maintain resolve capacity. Surveys should commence in 2038 and be completed , to provide good geographic coverage, in 2045.

5.12 MOLESWORTH/CLARENCE RESERVE



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2027
- Herd TB freedom date: 2020
- Total area of VRA reduction (hectares): 159,512

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Molesworth Marlborough	102,339	2027
Upper Awatere	45,824	2027
Upper Awatere Molesworth	11,349	2027
Total	159,512	

DESCRIPTION OF TB MANAGEMENT AREA

The Molesworth/Clarence Reserve TMA lies to the west of the southern end of the Inland Kaikoura Mountain Range and the Clarence Reserve and River Catchment. The area includes Marlborough component of Molesworth Station and the west side of the Clarence Reserve and the Upper Awatere area. The habitat type is arid Marlborough grasslands interspersed with patches of scrub and bush. Altitudes range from 500m-2200m but most of the peaks are around 1500-1700m and valley floors on Molesworth are 800m+. There are three herds within the Molesworth/Clarence Reserve TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Whenever wildlife is surveyed infection is found. Most recent cases have been ferrets in 2013 and pigs on Molesworth in 2015. Solid history of infection in livestock in the TMA. Official control has been carried out in the Upper Awatere and at the Molesworth homestead. Also aerial control and focal ground control and surveillance has been carried out in partnership with the landowner to good effect. Possums are abundance where there has been no control effort.

PLANNED VECTOR RISK AREA REDUCTION

Molesworth/ Clarence reserve	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	159,512	159,512	159,512	159,512	159,512	159,512	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There is a single infected herd at present with a declining number of TB animals identified each year.

Summary of Operations Planned

A three-year rotational aerial control programme is planned starting in the east in the first year (2017/18), moving to the west in the second year and then the central Acheron area in the third year. Ground control with concurrent survey, along with ferret surveillance, will be undertaken in 2016/17-2018/19 in the Upper Awatere Molesworth (Homestead) VCZ. Aerial control will be carried out during 2019/20 in the Upper Awatere North and South strata. Aerial exclusion control will start around the time of the aerial control and extend for at least three years. Pigs and ferrets will periodically be surveyed to check progress and to determine if an early TB freedom date is possible.

Innovations, Initiatives and Research and Development

Low dose aerial treatment will be trialled.

RISK MANAGEMENT

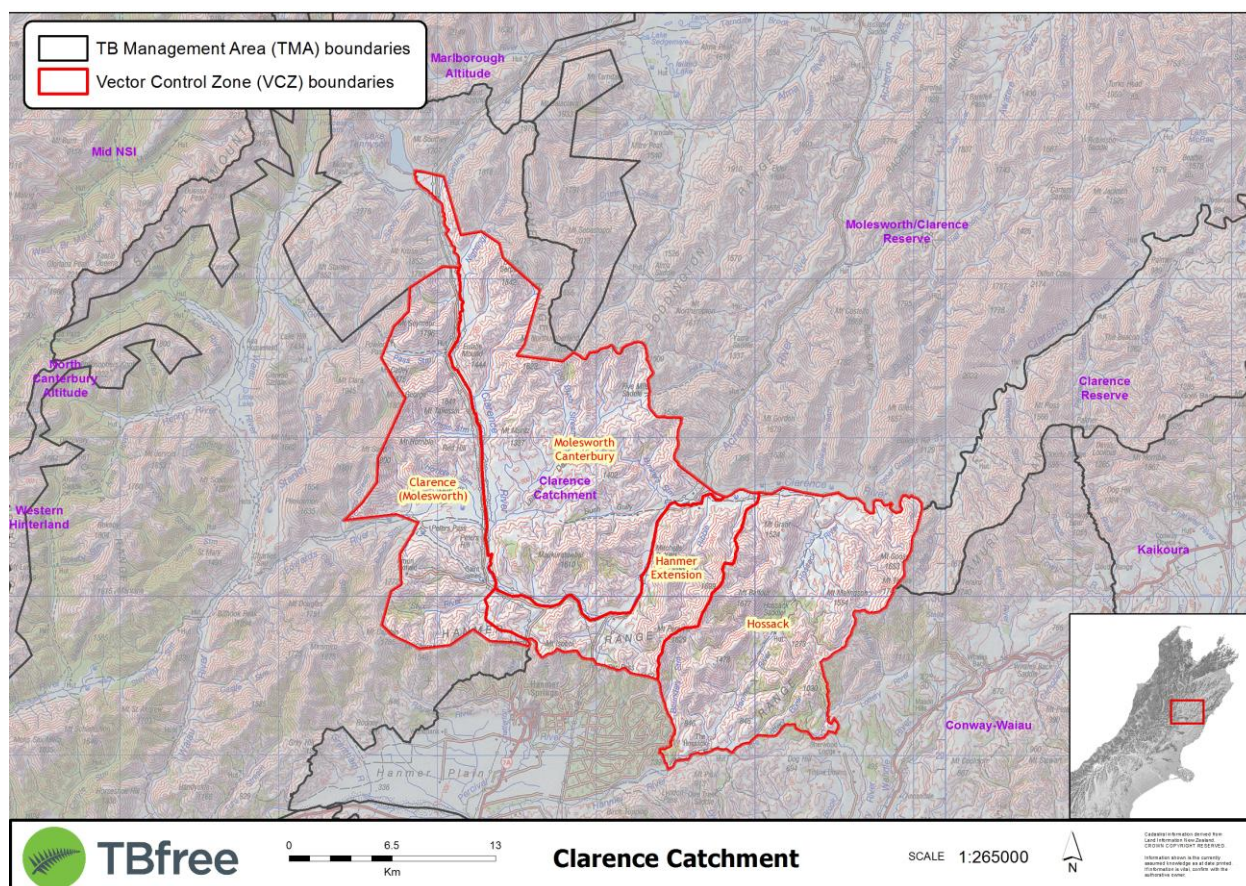
This area is vast and the potential to miss a cluster of infection is real. Cost effective control is essential to effect total eradication. This means 1080 toxic bait is essential to the successful revocation of this area. There are long-lived infected deer and pigs on the properties which could prolong the period of infection if found and interpreted as a failure of the plan. Mitigation would be to carry out a focal possum survey should be carried out if an adult deer or pig is captured.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Slaughter surveillance of livestock will continue and infected and previously infected herds will receive a highly level of testing pressure.

Pig surveys in this area should be considered as a cost effective measure to provide continued evidence of TB freedom. Low intensity surveys can be spread over several years to maintain resolve capacity. Surveys should commence in 2038 and be completed, to provide good geographic coverage, in 2045.

5.13 CLARENCE CATCHMENT



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2033
- Herd TB freedom date: 2025
- Total area of VRA reduction (hectares): 58,291

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Clarence VRA Molesworth)	12,487	2033
Hanmer Extension	7,349	2026
Hossack	16,721	2026
Molesworth Canterbury	21,734	2033
Total	58,291	

DESCRIPTION OF TB MANAGEMENT AREA

The Clarence Catchment TMA lies to the north and northwest of Hanmers Springs settlement. The area includes the Hanmer Range and Upper Clarence Catchment (part of three large Stations). Major waterways include Percival, Leaderdale, Styx, Hanmer Rivers on the southern side of the Clarence and the Leaderdale, Bush Gully and Five Mile Saddle to the north. The habitat type is predominantly rolling to steep terrain with tussock, native grasses, scrub and bush isolated to patches and gullies. Generally has a dry, draught-prone climate. Altitudes range from around 800 to 1800m with numerous valley floors and associated water courses. Several low passes (Edwards, Jacks, Jollies Passes) are present. There are 2 active herds within the Clarence Catchment TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB ferrets were historically found along the Clarence and Hossack Rivers and more recently TB pigs in the Five Mile catchment on Molesworth 2014/15. There are few farms within this TMA but there is a long history of TB infection. No TB livestock have been identified on the eastern side of the Clarence since 2008 (but this could reflect a lack of surveillance activities). Aerial control and associated ground based possum control has only been carried out in the Hossack VCZs within this TMA but the last operation was 2010 - 11. Possums populations are expected to have recovered as there has been no recent official control.

PLANNED VECTOR RISK AREA REDUCTION

Clarence Catchment	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	58,291	58,291	58,291	58,291	58,291	34,221	34,221	34,221	34,221	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There is currently one large infected herd that grazes within this TMA.

Summary of Operations Planned

Aerial control will be applied to the Molesworth part of the TMA with up to three aerial control operations four years apart. Initially, local pigs are to be collected with accurate capture location information recorded.. This will be followed within five years by possum surveys to ensure complete coverage. Possum monitors, to assess the efficacy of the areial controls, will be carried out after two years after each aerial operation and final TB freedom surveillance will be implemented after all control work has ceased. These surveys will target a combination of pigs, ferrets and possums.

Innovations, Initiatives and Research and Development

Low sow aerial treatment will be trialled.

RISK MANAGEMENT

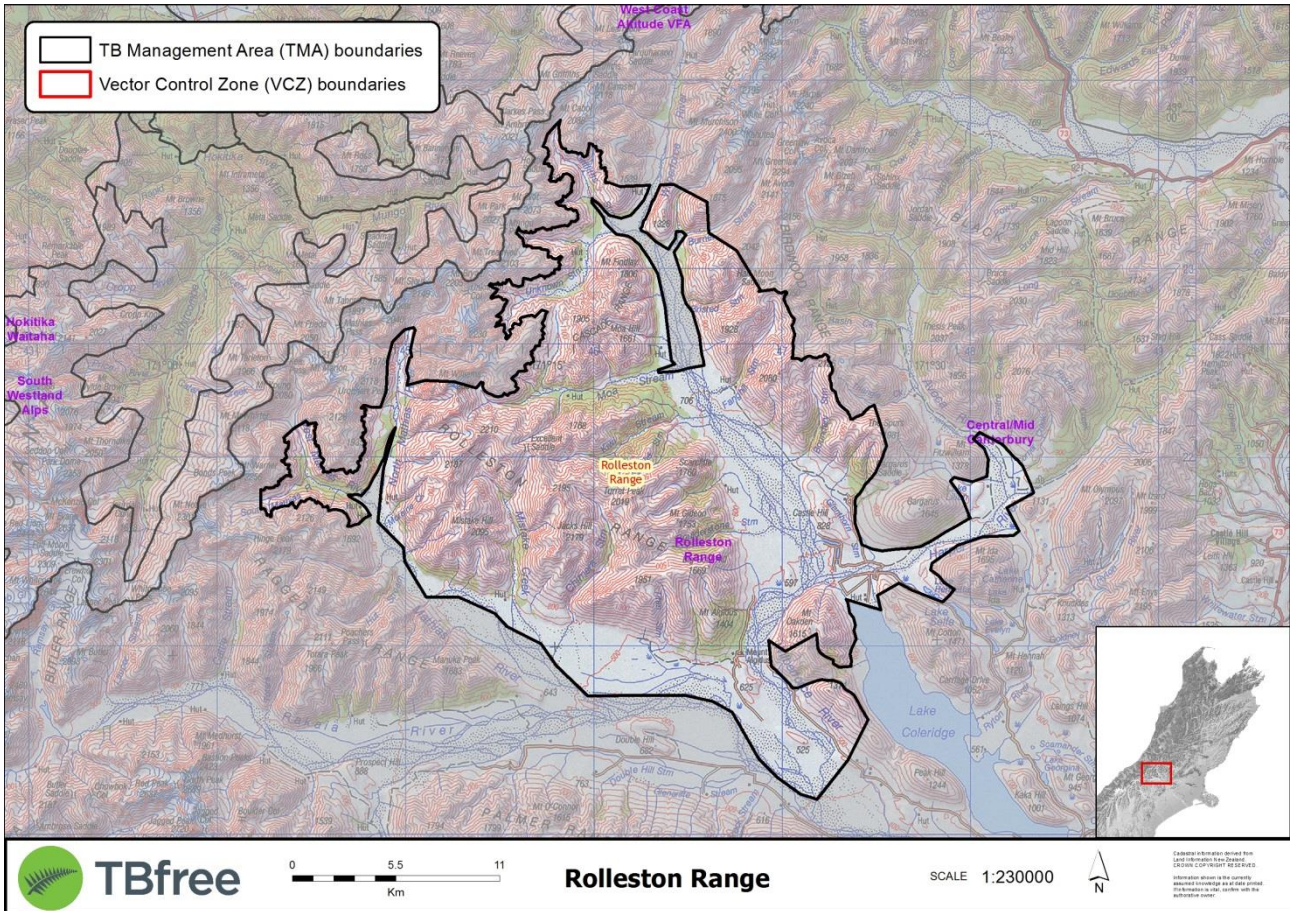
Local hunting interests may restrict access to some properties and encouragement may be required with assistance from the Biosecurity Act.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Passive surveillance through venison recovery (provided accurate location data is available) and slaughter surveillance of livestock animals from adjacent VCZs.

Pig surveys in this area should be considered as a cost effective measure to provide continued evidence of TB freedom. Low intensity surveys can be spread over several years to maintain resolve capacity. Surveys should commence in 2038 and be completed , to provide good geographic coverage, in 2045.

5.14 ROLLESTON RANGE



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2020
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 55,648

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Rolleston Range	55,648	2020
TMA Total	55,648	

DESCRIPTION OF TB MANAGEMENT AREA

The Rolleston Range TMA lies to east of the Main Divide nestled in among the foothills. The area includes the catchments of the Wilberforce, Rakaia and Mathias Rivers and the Rolleston Range. The habitat type is grassy river flats to bush covered mountain ranges with a regular risk of snow falls. Altitudes range from ~500m in river beds to the tops of the Rolleston Range at around 2000m.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB pigs and possums were found at the same time as TB cattle were identified. A single local herd was infected as a result of wildlife in 2011 and subsequently broke down again as a result of residual within herd infection. Annual ground control and a single aerial application of 1080 cereal bait on the Rolleston Range has been applied. Possum abundance is generally low as a result of control efforts. Numbers are highest adjacent to uncontrolled boundaries such as the Harper River Catchment.

PLANNED VECTOR RISK AREA REDUCTION

Rolleston Range	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	55,648	55,648	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

The single infected herd has completed its first clear whole herd test since the lastest TB case was identified in 2015. The herd will have a whole herd parallel test and continue to be monitored through annual TB testing and slaughter surveillance. After clearance , any animals moving to any place other than directly to slaughter will be tracked and tested to the level of the home herd.

Summary of Operations Planned

A further pig survey is planned for 2016/17 and low intensity possum surveys will follow during 2017/18-2018/19 covering any gaps. Venison recovery deer will also be used to provide both coverage (especially higher altitude areas) and a level of confidence that the disease is not present in the wild deer population.

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

RISK MANAGEMENT

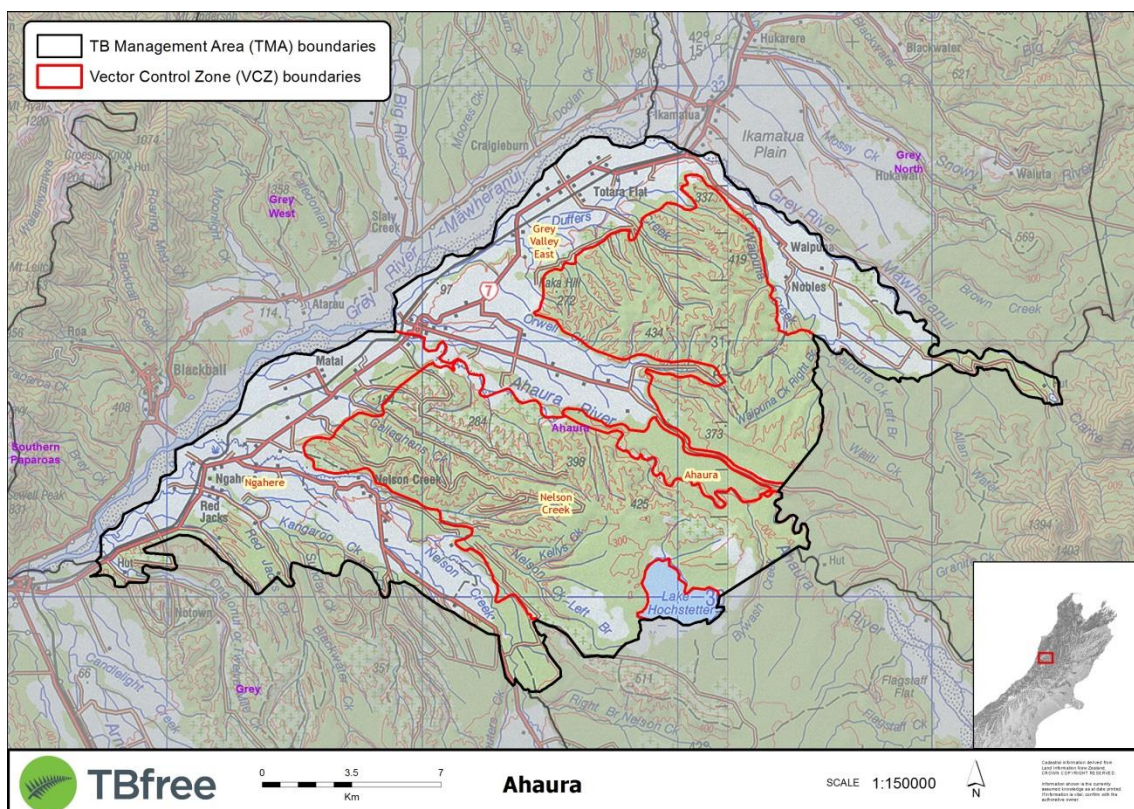
The primary source of the infection is currently not known. For this reason we do not know where TB may return from. Mitigation includes continued monitoring of venison recovery animals from the Rolleston Range and an intensive pig survey.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

A single assurance pig survey will be carried out in 2025. Venison recovery animals and farmer "hand-in" pig heads will continue to be monitored each year that they are collected until 2040 . Beyond this date slaughter surveillance will rely on slaughter surveillance of livestock.

Venison recovery data should be collected, collated and analysed to improve confidence of eradication through to 204

5.15 AHAURA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2020
- Herd TB freedom date: 2018
- Total area of VRA reduction (hectares): 35,730

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Ahaura	7,739	2020
Grey Valley East	9,527	2020
Nelson Creek	9,751	2019
Ngahere	8,713	2019
TMA Total	35,730	

DESCRIPTION OF TB MANAGEMENT AREA

The Ahaura TMA lies to east of the Grey River and is located to the north of Greymouth. The area includes the townships of Ngahere, Nelson Creek and Ahaura. The habitat type is relatively narrow fingers of open farmland interspersed with strips of West Coast Bush and areas of blackberry, gorse and broom. Altitudes range from just above sea level to 900m. There are 86 herds within the Ahaura TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB pigs and possums have been captured out of the adjacent Hochstetter Forest but this area has been thoroughly controlled over a series of years. Livestock have been infected in the area as a result of both wildlife and livestock movement infection. The most recent wildlife related infection was in 2011. This TMA has received regular possum control ; both aerial and ground control.

Possum abundance is low due to control effort but the habitat available could support a large possum population after control ceases.

PLANNED VECTOR RISK AREA REDUCTION

Ahaura	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	35,730	35,730	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds in this TMA. Any herds that are identified as infected will intensively managed through Skin and blood testing and movement of stock after clearance will be monitored.

Summary of Operations Planned

Possum surveys will be carried out in 2017/18 and 2018/19 to provide evidence of possum TB freedom. In the interim, pigs will be collected where they are available, for TB surveillance, to reduce the intensity and cost of possum surveys.

Innovations, Initiatives and Research and Development

PIG SURVEILLANCE TO TARGET POSSUM SURVEYS.RISK MANAGEMENT

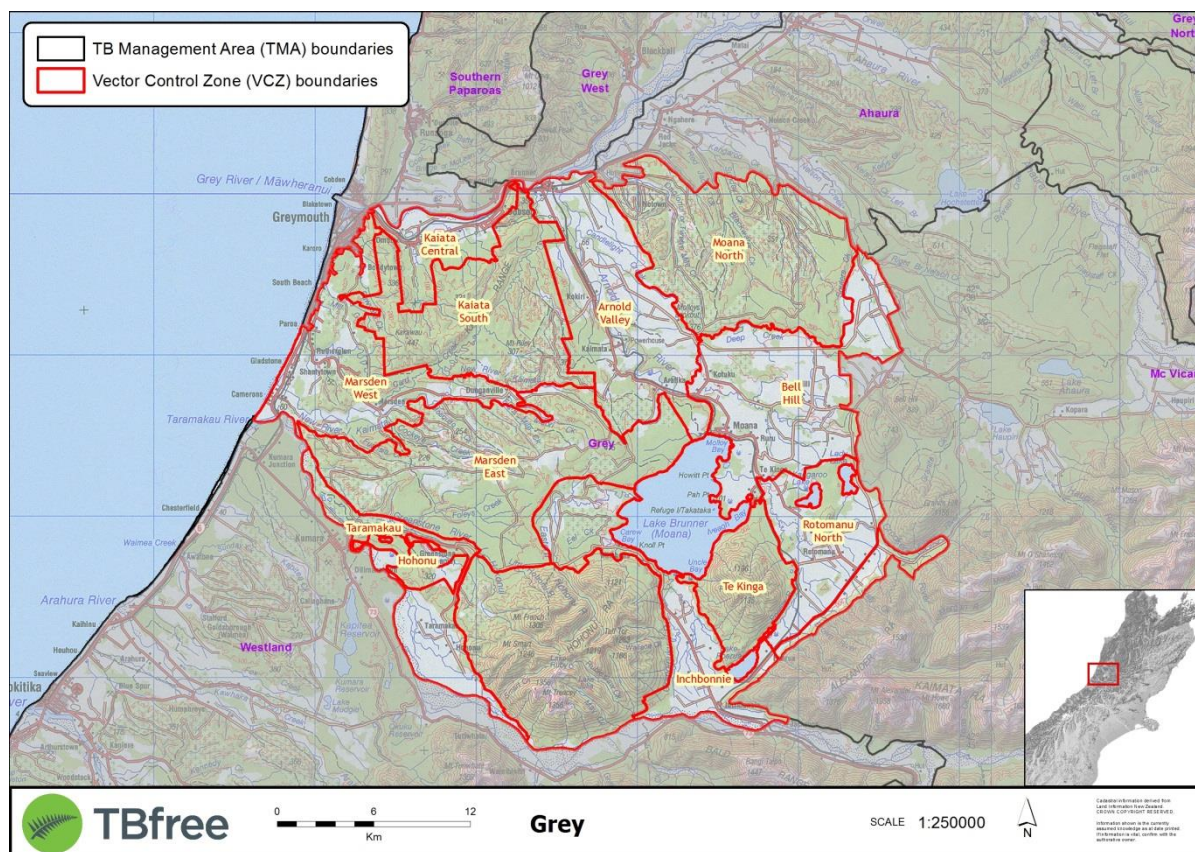
The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote presistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038 , aim to provide good geographic coverage and be completed by 2045.

5.16 GREY



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2020
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 99,224

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Arnold Valley	9,579	2019
Bell Hill	9,836	2019
Hohonu	13,302	2020
Inchbonnie	6,207	2019
Kaiaata Central	2,786	2020
Kaiaata South	9,388	2020
Marsden East	14,011	2020
Total	99,224	

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Marsden West	7,753	2020
Moana North	11,790	2020
Rotomanu Buffer	1,272	2020
Rotomanu North	4,971	2017
Taramakau	4,548	2019
Te Kinga	3,781	2017

DESCRIPTION OF TB MANAGEMENT AREA

The Grey TMA lies to east of Greymouth, between the Taramakau and Grey Rivers. The area includes Arnold Valley, Lake Brunner, Inchbonnie, Taramakau Valley, and Moana Township. The habitat type is narrow strips of farmland interspersed by moderate hills covered with nature podocarp bush and areas scrub. Altitudes range from sea level to 1200m (Hohonu Range). There are 140 herds within the Grey TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB possums have been found in behind Greymouth (Boddytown; 2007) and a TB pig was identified from Hohonu Range in 2009/10. The last wildlife related infected herd was in Inchbonnie but was acquired while away at grazing at Jacksons along the Taramakau River. The entire area has been under possum control for many years, Ground based possum control has been carried out mostly on an annual basis. Aerial control has been utilised in Hohonu, Marsden, Kaiata and Bell HillVCZs. Possum abundance is considered to be low as a result of the possum control that has been undertaken.

PLANNED VECTOR RISK AREA REDUCTION

Grey	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	99,224	90,472	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

Currently there is one infected herd in this VCZ. Infected herds will be actively managed using skin and blood testing, slaughter surveillance and animal official ear tags to keep track of the herd. Animals leaving the herd post clearance will be tracked to ensure that they are appropriately tested.

Summary of Operations Planned

Ground control operations will be undertaken in Kaiata, Rotmanu buffer and Marsden between 2017/18 and 2019/20. Possum surveys will follow collection of pigs (where available) from 2016/17. Pig captures will reduce the required intensity of subsequent possum surveys. Final possum surveys for the Proof of Freedom process will be carried out 2017/18-2020/21 in Arnold Valley, Bell Hill, Inchbonnie, Taramakau Settlement and Hohonu.

Innovations, Initiatives and Research and Development

Pig surveillance to target possum surveys.

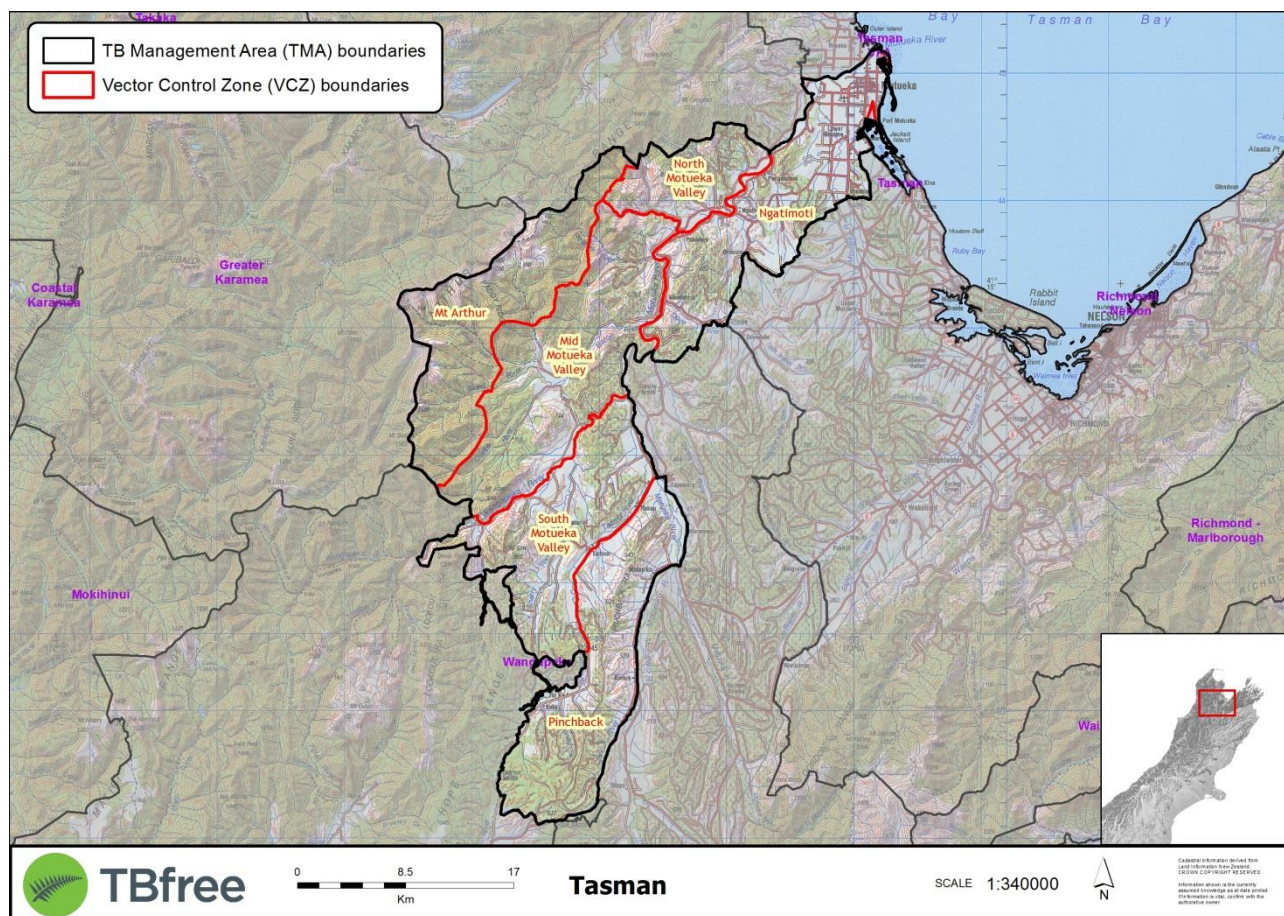
RISK MANAGEMENT

The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested. A low intensity targeted assurance pig and possum surveys will need to be carried four years after revocation of Vector Risk status and repeated twice between 2040 and 2045. The ability to undertake possum surveillance will be dependent on the progress of PredatorFree New Zealand whose goal is to eradicate possums (among other pests) by 2050.

5.17 TASMAN



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2020
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 86,697

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Mid Motueka Valley	19,392	2019
Mt Arthur	15,152	2020
Ngatimoti	15,896	2019
North Motueka Valley	6,051	2020
Pinchback	15,703	2019
South Motueka Valley	14,503	2019
Total	86,697	

DESCRIPTION OF TB MANAGEMENT AREA

The Tasman TMA lies to east of the Kahurangi National Park within the Tasman District. The area includes Motueka River, Mt Arthur VCZ and commercial forests. The habitat type is Tasman Farm land adjacent to moderate hills covered with bush cover, commercial forests and areas of scrub. Altitudes range from sea level to 1800m. There are 139 herds within the Tasman TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

No recent wildlife have been found with TB but historically large numbers of pigs were collected and some were found to have TB. Occasionally infected herds have been found within this VCZ but there have not been any recent herd breakdowns. Regular possum control has been applied; both ground and aerial control. Possum abundance is considered to be moderate to low as a result of historic possum control.

PLANNED VECTOR RISK AREA REDUCTION

Tasman	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	86,697	86,697	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds within this TMA.

Summary of Operations Planned

Pig surveys (from 2016/17) are planned. These will be followed by low intensity possums surveys from 2017/18 to fill in any gaps not covered by pigs surveillance.

Innovations, Initiatives and Research and Development

Optimising the rate of possum captures following detection surveys will be carried out in Ngatimoti, North Motueka Valley and South Motueka Valley.

RISK MANAGEMENT

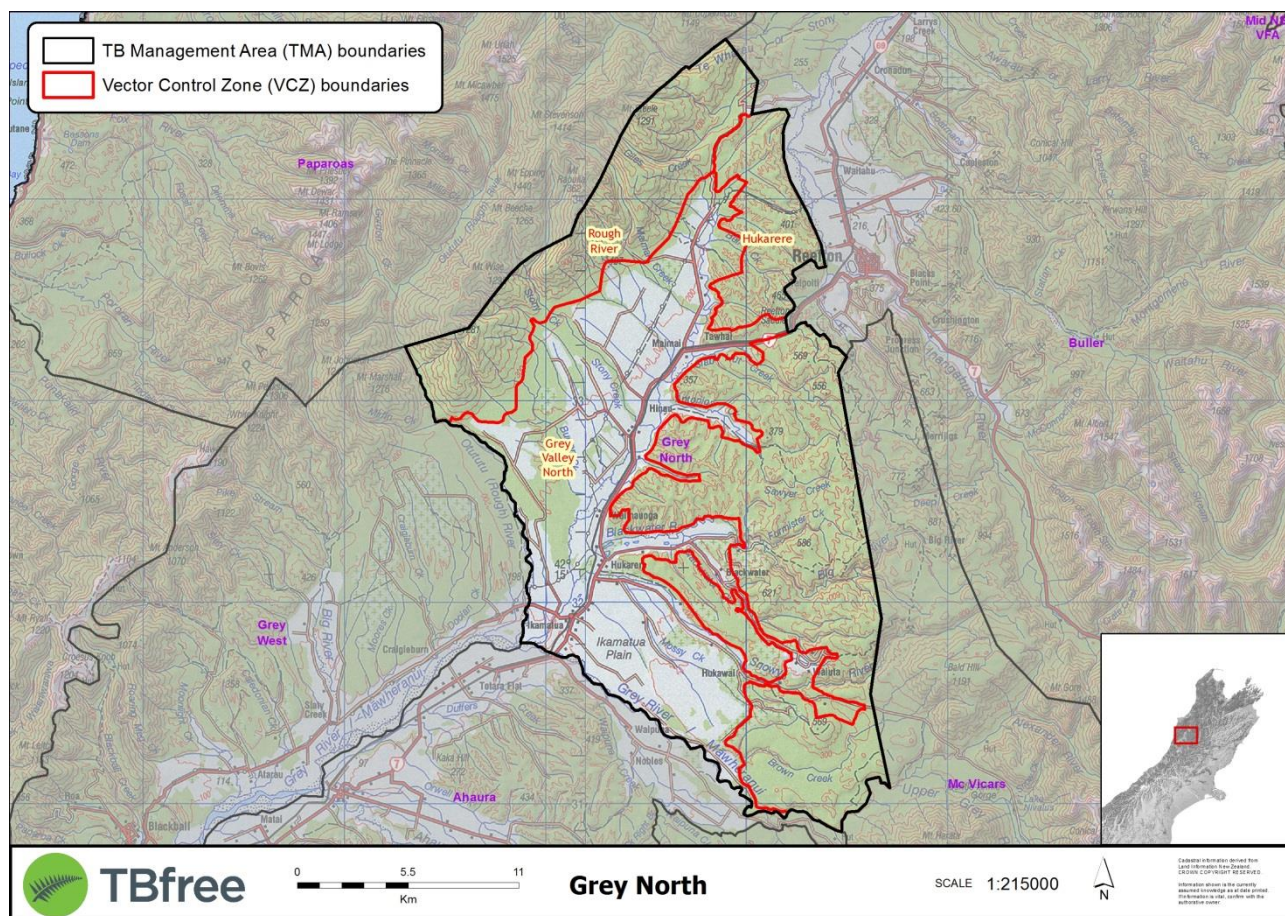
The potential possum carrying capacity of the adjacent area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control in the adjacent (Kahurangi) National forest could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Passive surveillance through slaughter premises. A low intensity pig survey would be a cost effective measure to confirm freedom and should be carried out around 2024-25.

Pig surveys in this area should be considered as a cost effective measure to provide continued evidence of TB freedom. Low intensity surveys can be spread over several years to maintain resolve capacity. Surveys should commence in 2038 and be completed, to provide good geographic coverage, in 2045.

5.18 GREY NORTH



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2021
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 51,658

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Grey Valley North	21,654	2020
Hukarere	21,315	2021
Rough River	8,689	2021
Total	51,658	

DESCRIPTION OF TB MANAGEMENT AREA

The Grey North TMA lies to north of Ikamatua and south west of Reefton. The area includes Mawheraiti and Maimai Valley and the Rough River and Hukarere aerial blocks. The habitat type is narrow strips of farmland interspersed by moderate hills covered with nature podocarp bush and areas scrub. Altitudes range from 200m-1200m. There are 51 herds within the Grey North TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

No recent TB wildlife have been identified within this VCZ but there have been no recent surveys. Tb infected herds have historically been found up the Maimai Valley and at Mawheraiti. Annual TB control has been carried until recent years. Possum abundance is considered to be low due to frequency possum control activities.

PLANNED VECTOR RISK AREA REDUCTION

Grey North	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	51,658	51,658	51,658	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds in this area.

Summary of Operations Planned

Any available pigs will be sought each year to reduce the required intensity of subsequent possum surveys. Possum surveys will be carried out in the Grey Valley North in 2018/19 and in the aerial block in 2019/20 to provide data for the Proof of Freedom process.

Innovations, Initiatives and Research and Development

Pig surveillance to target possum surveys.

RISK MANAGEMENT

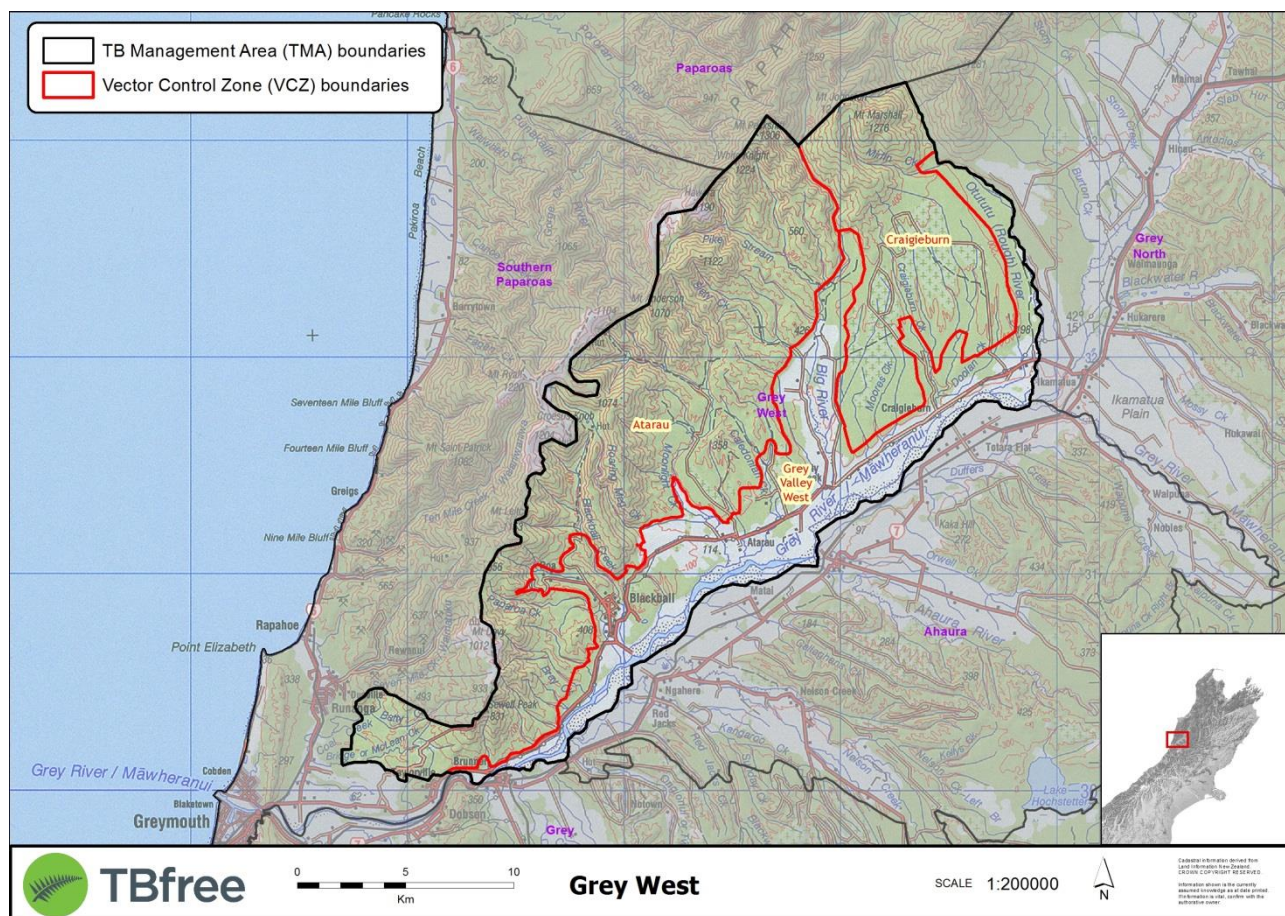
The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control in adjacent areas could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested. A low intensity targeted assurance possum survey will be carried 3 -4 years after revocation of Vector Risk status, and repeated prior to 2040.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote presistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038 , aim to provide good geographic coverage and be completed by 2045.

5.19 GREY WEST



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2021
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 42,557

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Atarau	20,720	2021
Craigieburn	8,575	2021
Grey Valley West	13,262	2021
Total	42,557	

DESCRIPTION OF TB MANAGEMENT AREA

The Grey West TMA lies to the west of the Grey River, backing onto the Southern Paparoas. The area includes Blackball township, a Kiwi sauntary, and commercial exotic forest at Craigieburn. The habitat type is typical of the West Coast; narrow strips of farmland interspersed by moderate hills covered with nature podocarp bush and areas scrub. Altitudes range from 100m - 1300m (Paparoa Range). There are 41 herds within the Grey West TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB infected wildlife have not been recently sought in this area. Like most West Coast areas this is sparsely populated by herds (mainly to the east and south). There have been a small number of recent infected herds; the most recent was at Blackball 2013 prior to the last aerial. Regular possum control has been carried out. Last aerial was extended to include the area around Blackball that had previously been excluded (There were sizeable exclusions to this area for perceived risk to town water supply). Possum abundance is low due to intensive possum control.

PLANNED VECTOR RISK AREA REDUCTION

Grey West	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	42,558	42,558	42,558	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds within this TMA.

Summary of Operations Planned

Ground control for Grey Valley West and a possum monitor for Atarau to assess the effectiveness of the last aerial are being carried out in the 2016/17 year. Ground control with PDAs and concurrent carcass collection will be carried out in 2017/18. Proof of freedom possum surveys will be carried out from 2019/20-2021/22 (which includes aerial block surveys in Craigieburn and Atarau).

Innovations, Initiatives and Research and Development

Nothing proposed at this stage.

RISK MANAGEMENT

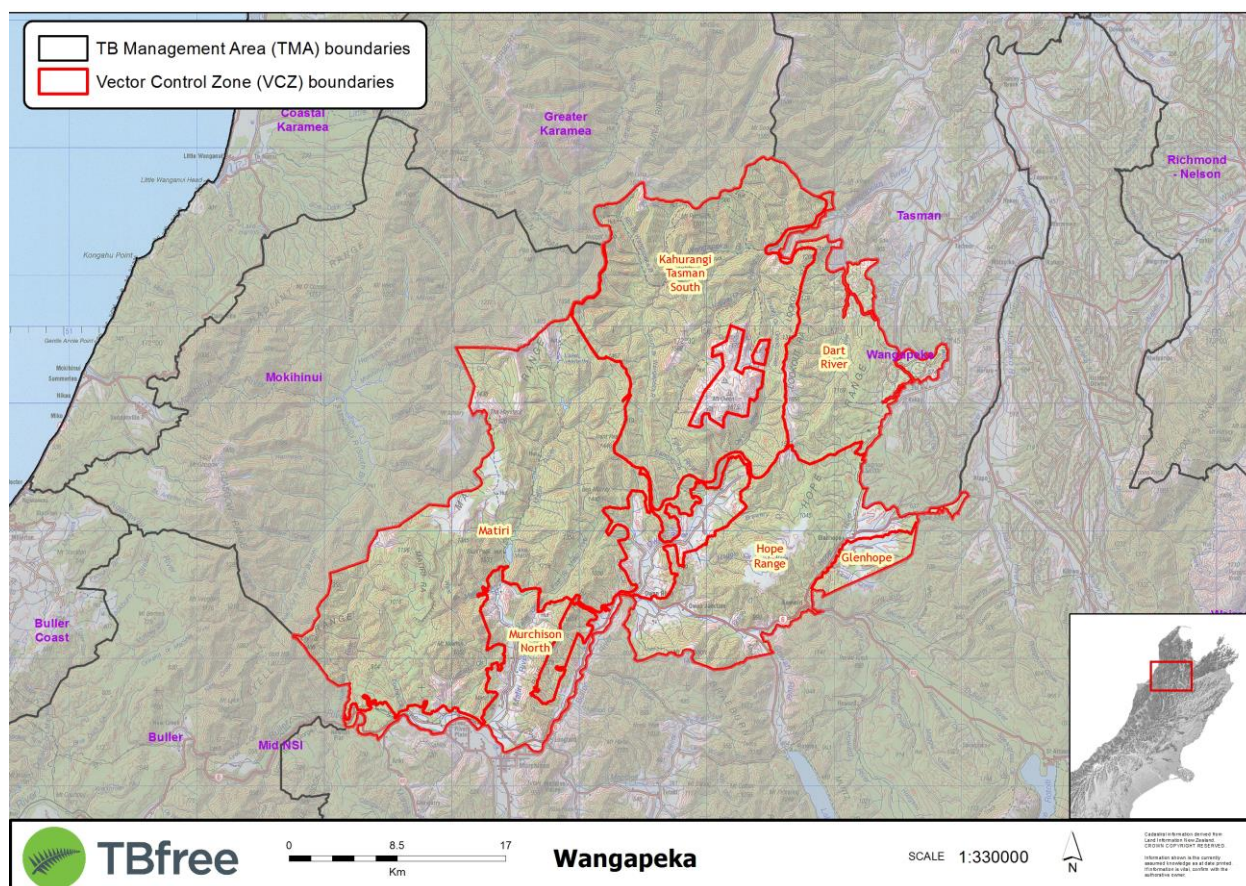
The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control in adjacent areas could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested. A low intensity targeted assurance possum survey will be carried 3-4 years after revocation of Vector Risk status.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote persistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038, aim to provide good geographic coverage and be completed by 2045.

5.20 WANGAPEKA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2021
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 123,354

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Dart River	12,296	2020
Glenhope	1,986	2020
Hope Range	18,561	2019
Matiri	42,709	2020
Murchison North	13,704	2020
Wangapeka Mt Owen	3,357	2021
Kahurangi Tasman South	30,741	2020
Total	123,354	

DESCRIPTION OF TB MANAGEMENT AREA

The Wangapeka TMA lies to the south east of the Kahurangi National Forest and south of the Tasman TMA. The area includes Mt Owen, Murchison, Matiri, Dart River and Hope Range. The habitat type is Tasman Farmland adjacent to

moderate hills covered with native bush, commercial forests and areas of scrub. Altitudes range from 300 to 1900m. There are 47 herds within the Wangapeka TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB was found in a white feral fallow deer that was associated with a local herd that had TB found in a cattle beast around the same time. Historically, large numbers of pigs were collected and some were found to have TB. TB herds have been identified sporadically but none in recent years. Regular possum control has been applied; both ground and aerial control. Possum abundance is considered to be moderate to low as a result of historic possum control.

PLANNED VECTOR RISK AREA REDUCTION

Wangapeka	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	123,346	123,346	46,066	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds within this TMA. Any infected herd identified will be intensively managed and every effort made to determine the source.

Summary of Operations Planned

Pig surveys (from 2016/17) will be undertaken. These will be followed by possum surveys from 2017/18 to fill the gaps in coverage where there were not enough pigs. Follow up aerals are planned for the Wangapeka and Matiri in 2020/21, along with intensive control of aerial exclusions, depending on Battle for our Birds programme by the Department of Conservation in the area.

Innovations, Initiatives and Research and Development

NOTHING PLANNED AT THIS STAGE.RISK MANAGEMENT

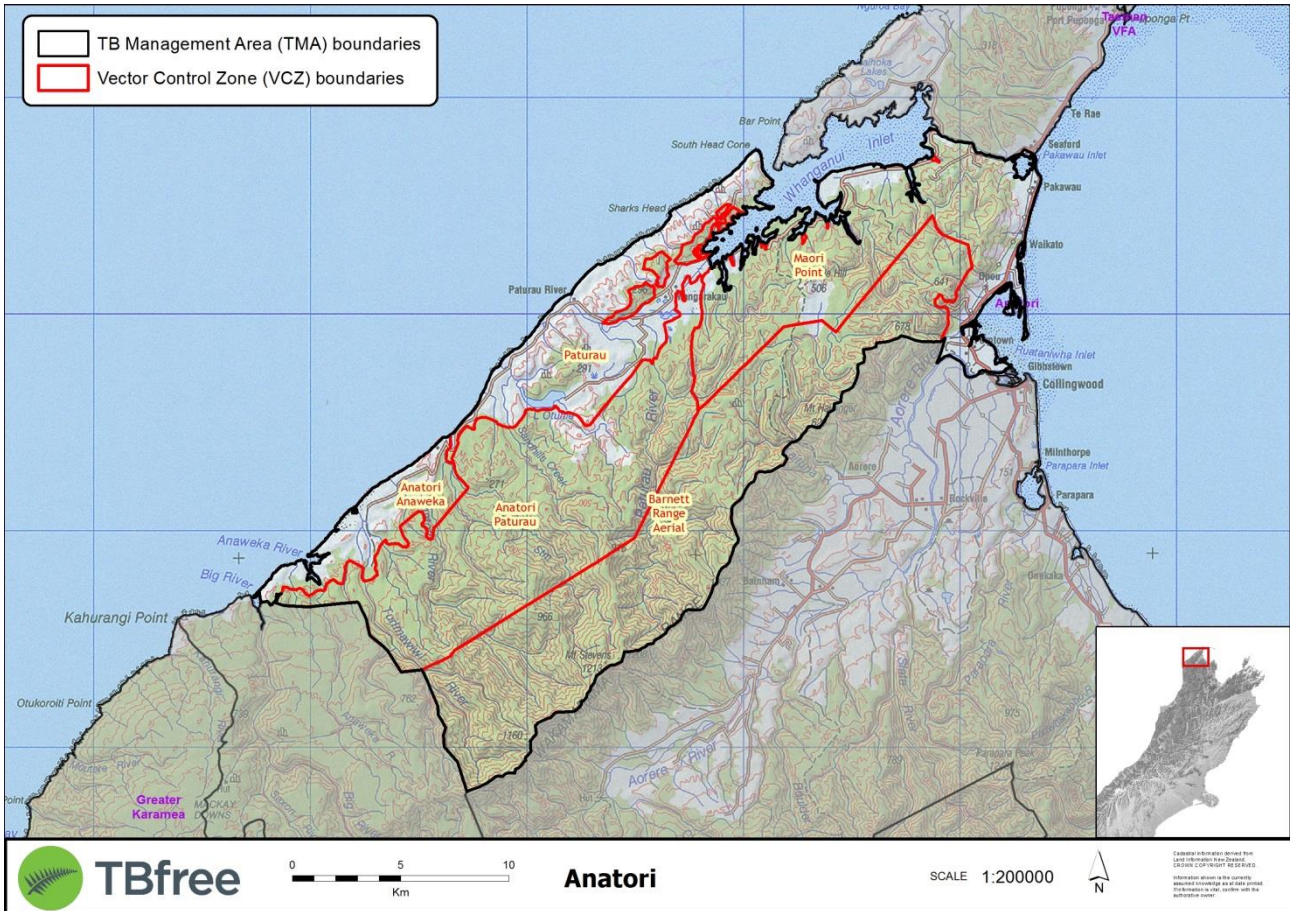
The potential possum carrying capacity of the adjacent area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control in the adjacent (Kahurangi) National forest could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Passive surveillance through slaughter premises. A low intensity pig survey would be a cost effective measure to confirm freedom around 2024/25.

Pig surveys in this area should be considered as a cost effective measure to provide continued evidence of TB freedom. Low intensity surveys can be spread over several years to maintain resolve capacity. Surveys should commence in 2038 and be completed, to provide good geographic coverage, in 2045.

5.21 ANATORI



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2022
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 42,233

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Anatori Anaweka	2,276	2020
Anatori Paturau	12,059	2022
Barnett Range Aerial	13,791	2020
Maori Point	8,822	2019
Paturau	5,285	2019
TMA Total	42,233	

DESCRIPTION OF TB MANAGEMENT AREA

The Anatori TMA lies to west of the Takaka and north of Kahurangi Point. The area includes Wakamarama & Burnett Ranges Lagoon and a long coast line. The habitat type is West Coast-like bush with relatively small areas of farmland. Altitudes range from sea level to 1200 (Mt Stevens). There are 20 herds within the Anatori TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB historically found in possums but nothing has been found or looked for recently. There have been no recently infected herd. Anatori Paturau aerial was flown in 2015. Possum abundance is area dependent on the area as possum control has not been carried out everywhere.

PLANNED VECTOR RISK AREA REDUCTION

Anatori	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	42,178	42,178	12,059	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds in this TMA.

Summary of Operations Planned

Initially pig surveys are being carried out followed by possum surveys from 2017/18 to cover the gaps in coverage. Aerial block (Anatori Paturau) will have a possum monitor in 2018/19, to assess the efficacy of the previous aerial control, followed by surveys in 2020/21 to collect data for the Proof of Freedom process.

Innovations, Initiatives and Research and Development

Landcare Research initiatives and survey design will be used in this TMA. Optimising the rate of possum captures following detection surveys will be carried out in Maori Point.

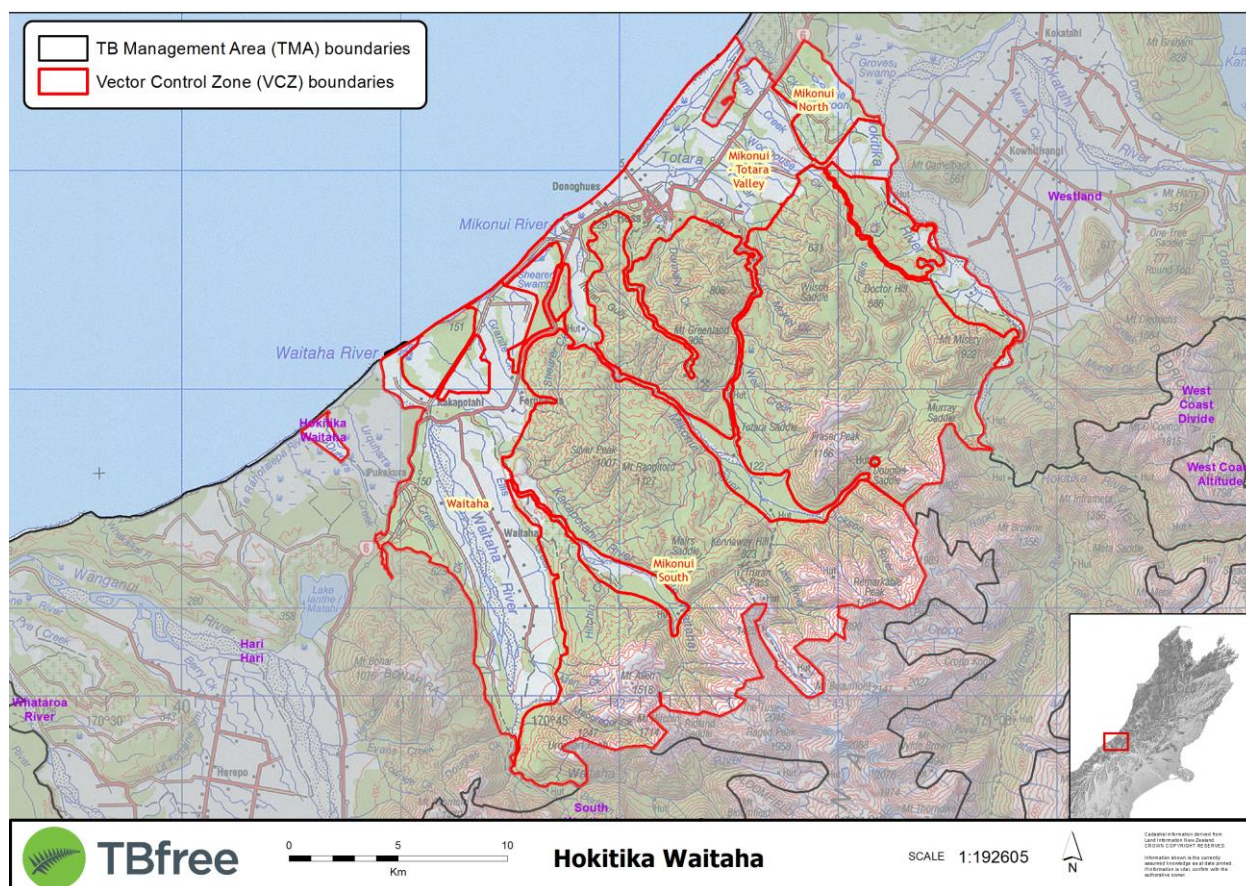
RISK MANAGEMENT

The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as needed. The success of eradication is dependent on the effective use of aerial 1080 to control the Kahurangi National Forest.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested post clearance.

5.22 HOKITIKA WAITAHA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2022
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 61,274

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Mikonui – Totara Valley	9,150	2022
Mikonui North	20,746	2022
Mikonui South	22,016	2022
Waitaha	9,362	2022
TMA Total	61,274	

DESCRIPTION OF TB MANAGEMENT AREA

The Hokitika Waitaha TMA lies to south of the Hokitika River with the Main divide to the east and the Coastline to the west. The area includes include the Township of Ross, the Waitaha Valley, Rangitoto, Purcell and Bonar Ranges. Also includes the Mikonui, Kakapotahi and Waitaha River Catchments. The habitat type is West Coast farmland and podocarp forest within the Southern Beech Gap. Altitudes range from sea level to 1000m. There are 38 herds within the Hokitika Waitaha TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

A TB possum was captured in 2009 near the Mikonui Flat Hut (Wheelers Gully). Two herds have had an infected status in recent years as a direct result of contact with infected wildlife. Regular ground based possum control has been undertaken

on an annual basis for many years. Aerial control in the Mikonui has been undertaken at least twice with the last control operation in 2010. Possum abundance is considered to be low to moderate where regular possum control has been undertaken.

PLANNED VECTOR RISK AREA REDUCTION

Hokitika Waitaha	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	61,274	61,274	61,274	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds within this TMA. Any herds breakdowns in this area will be actively managed with additional skin and blood testing.

Summary of Operations Planned

Ground control will be carried out in 2016/7 in Mikonui -Totara Valley and in exclusions zones of the Mikonui VCZs (north and south) which will be subjected to aerial control in 2017/18. Aerial exclusions will be worked every year for at least three years. Ground based possum control (input) will be carried out in Waitaha in 2018. Proof of Freedom possum surveys will begin in 2019/20.

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

RISK MANAGEMENT

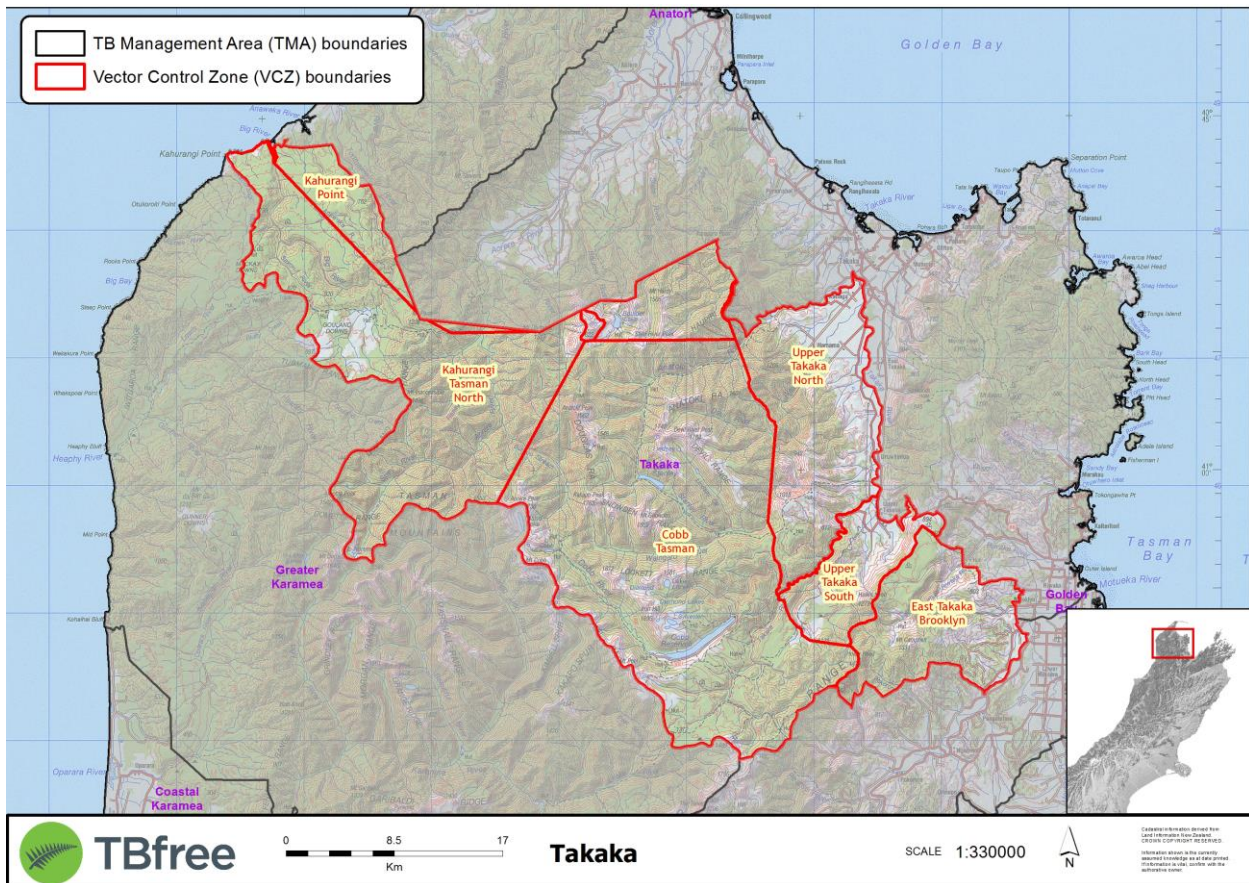
The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control in adjacent areas could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested. A low intensity targeted assurance possum survey should be carried 3 years after revocation of Vector Risk status. Targeted surveys in locations where TB wildlife have been found historically (Mikonui) should be carried out prior to 2040.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote persistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038, aim to provide good geographic coverage and be completed by 2045.

5.23 TAKAKA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2022
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 130,324

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Cobb Tasman	53,129	2022
Kahurangi Tasman North	36,928	2021
East Takaka Brooklyn	11,448	2020
Kahurangi Point	5,094	2022
Upper Takaka North	17,145	2020
Upper Takaka South	6,580	2020
TMA Total	130,324	

DESCRIPTION OF TB MANAGEMENT AREA

The Takaka TMA lies to the north of the West Coast Regional boundary within the remaining VRA. The area includes Northern part of Kahurangi National Forest and Battle For Our Birds Project. The habitat type is hilly farmland to mountainous areas of contiguous native forest. Altitudes range from sea level to 1900m. There are 75 herds within the Takaka TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

No recent wildlife have been found with TB, Historically large numbers of pigs were collected from the area and TB cases were identified. Sporadic infected herds have been found within this VCZ. The lastest infected herd was in 2015 and is believed to be the result of residual infection acquired years before in a very old cow. The next most recent case was in 2006. A combination of aerial and ground control has be carried out for some years. Due to a beech mast the Department of Conservation is funding Aerial control of the Kahurangi National Forest. Abundance of possums will vary based on the level of control already applied.

PLANNED VECTOR RISK AREA REDUCTION

Takaka	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	130,318	130,318	95,145	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are curently no infected herds within this TMA.

Summary of Operations Planned

Surveillance starting with pigs from 2016/17 is to be followed by possum surveys to fill the coverage gaps from 2018/19. Aerial control is to be carried out as part of Battle for our Birds by the Department of Conservation in the current year (2016/17). The aerial blocks will have exclusions worked every year for at least three years after aerial control and the areas that have only received a single aerial control operation will be treated again in 5 years' time (if not reworked by the Department of Conservation in the interim).

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

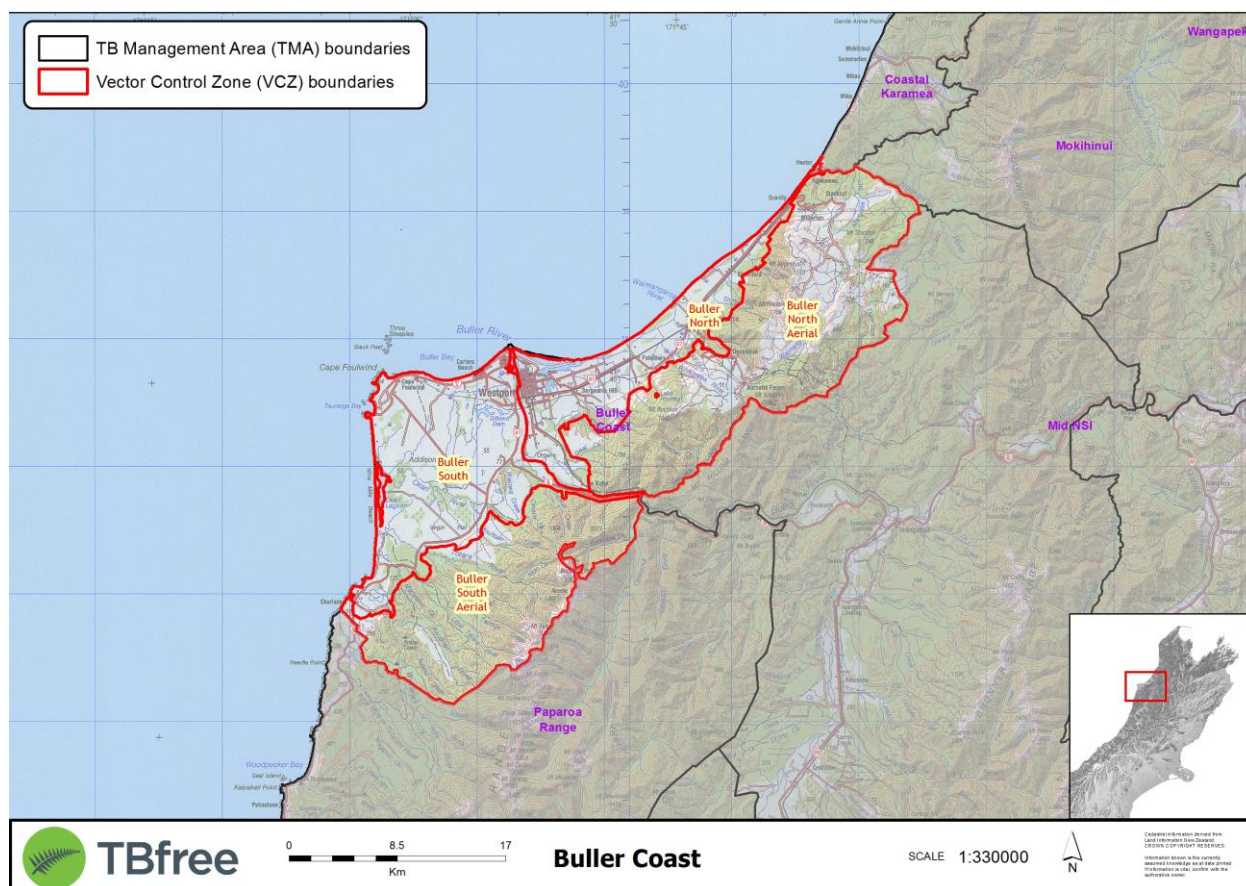
RISK MANAGEMENT

The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Passive surveillance of livestock through slaughter premises. A low intensity pig survey would be a cost effective measure to confirm freedom around 2030. A general Tasman pig survey should be carried out in 2042 to provide confidence that TB has been eradicated.

5.24 BULLER COAST



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2023
- Herd TB freedom date: 2019
- Total area of VRA reduction (hectares): 76,284

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Buller North	11,521	2023
Buller North Aerial	28,063	2023
Buller South	17,766	2021
Buller South Aerial	18,934	2021
TMA Total	76,284	

DESCRIPTION OF TB MANAGEMENT AREA

The Buller Coast TMA comprises the farmed area of Buller District from Mohikinui to Charleston. It extends from the coast to hills. The area includes Cape Foulwind, Westport, Waimangaroa, Granity, Hector, Nikau and Mohikinui. Within the boundary are resource mines on the Buller Range and the farmed flood plains north of the Buller River. The habitat type is Coastal West Coast habitat, generally narrow strips of farm land and steep faces covered in bush. Altitude ranges from sea level to 1000m. There are 150 herds within the Buller Coast TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB has not been actively looked for in wildlife in recent years as the focus has been possum population reduction where there was evidence of wildlife infection in livestock. Closed herds and young animals with TB infection provide evidence of wildlife related infections. The most recent wildlife related infection was in 2013. This area has received control over a long period; both aerial and ground control. Possum abundance is considered to be low due to intensive possum control.

PLANNED VECTOR RISK AREA REDUCTION

Buller Coast	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	76,284	76,284	76,284	39,584	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds within this TMA.

Summary of Operations Planned

Ground control will continue every two years but data will be collected (PDAs) and possum carcasses retrieved (concurrent survey). Intensive possum surveys will be carried out from 2018/19-2023/24 for Proof of Freedom purposes.

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

RISK MANAGEMENT

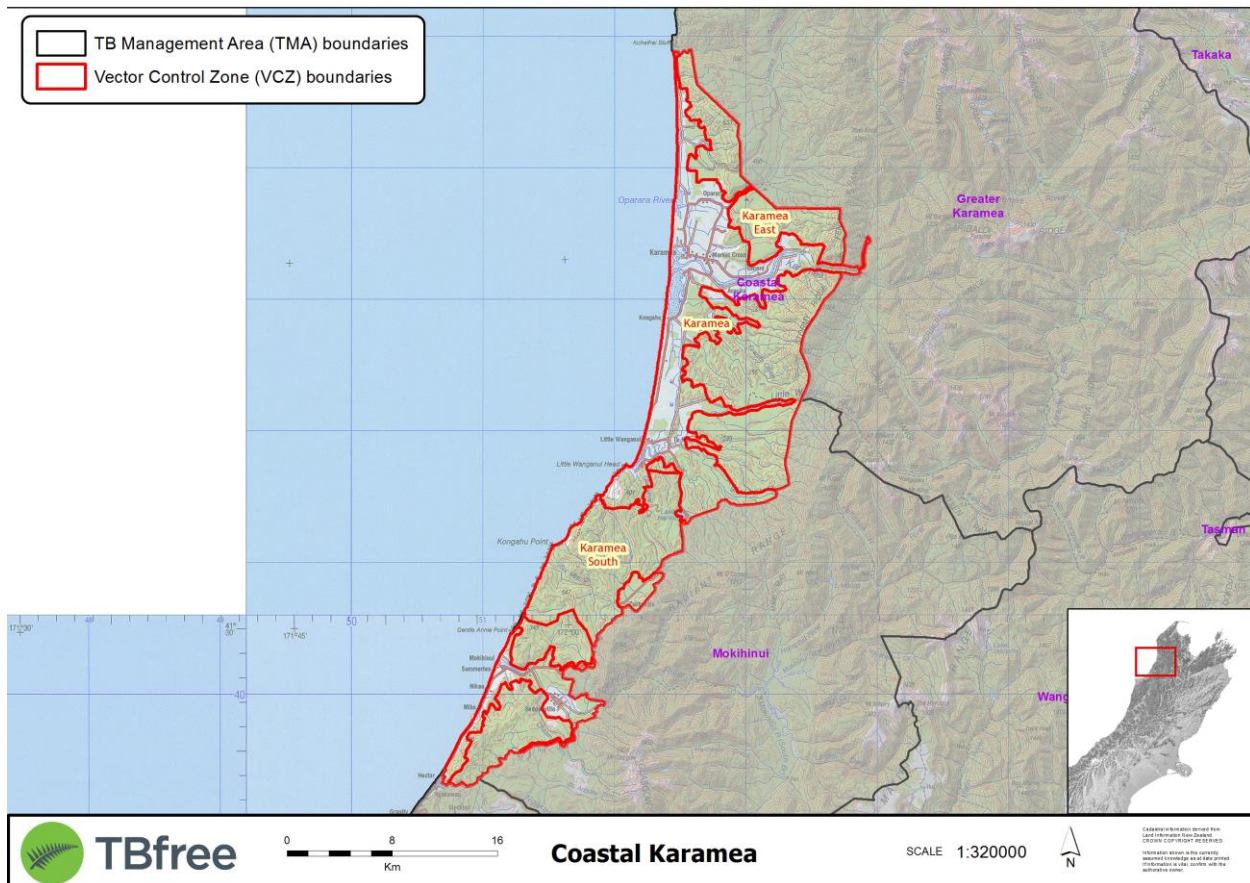
The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote persistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038, aim to provide good geographic coverage and be completed by 2045.

5.25 COASTAL KARAMEA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2023
- Herd TB freedom date: 2023
- Total area of VRA reduction (hectares): 47,938

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Karamea East	16,854	2023
Karamea	15,346	2023
Karamea South	7,724	2023
Seddonville East	5,084	2023
Seddonville West	2,930	2023
TMA Total	47,938	

DESCRIPTION OF TB MANAGEMENT AREA

The Coastal Karamea TMA lies to north of Mohikinui and the Karamea Bluffs is situated the Coastal Karamea developed farmland. The area includes Market Cross, Little Wanganui start of the Heaphy Track. The habitat type is typical Coastal West Coast habitat, narrow strip of farmland which becomes relatively steep faces covered in bush to the east. The area includes swamps/estuaries and small commercial forests. Altitudes range from sea level at the beach to 600m. There are 64 herds within the Coastal Karamea TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

To find TB infected wildlife all one has to do is look. Four TB possums found in 2012 adjacent to farmland and more were found beyond the extent of the previous aerial in 2014. Karamea has a long history of TB infection in livestock and wildlife up to 23 herds have been infected at the same time. A clear herd bought in from another West Coast location broke down within 5 years of moving. The strain type revealed a specific Karamea strain. The area has received control over a very long period (40+ years) but there are areas where possums and disease seem to persist in large enough clusters. Possum abundance is moderate despite intensive possum control.

PLANNED VECTOR RISK AREA REDUCTION

Coastal Karamea	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	47,937	47,937	47,937	47,937	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently 5 infected herds in Karamea. These herds will be managed intensively in an attempt to permanently clear them (as vector control will be stepping up). Herds will continue to be tested annually post clearance under case manager supervision and any stock movements will also be scrutinised (traced and tested).

Summary of Operations Planned

Aerial possum control will be carried out twice (in 2017/18 and again from 2021 to 2023). Aerial exclusions and ground control areas will be intensively controlled collecting data of control effort on PDAs. Possum surveys will be undertaken from 2020/21 (starting with the ground control blocks).

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

RISK MANAGEMENT

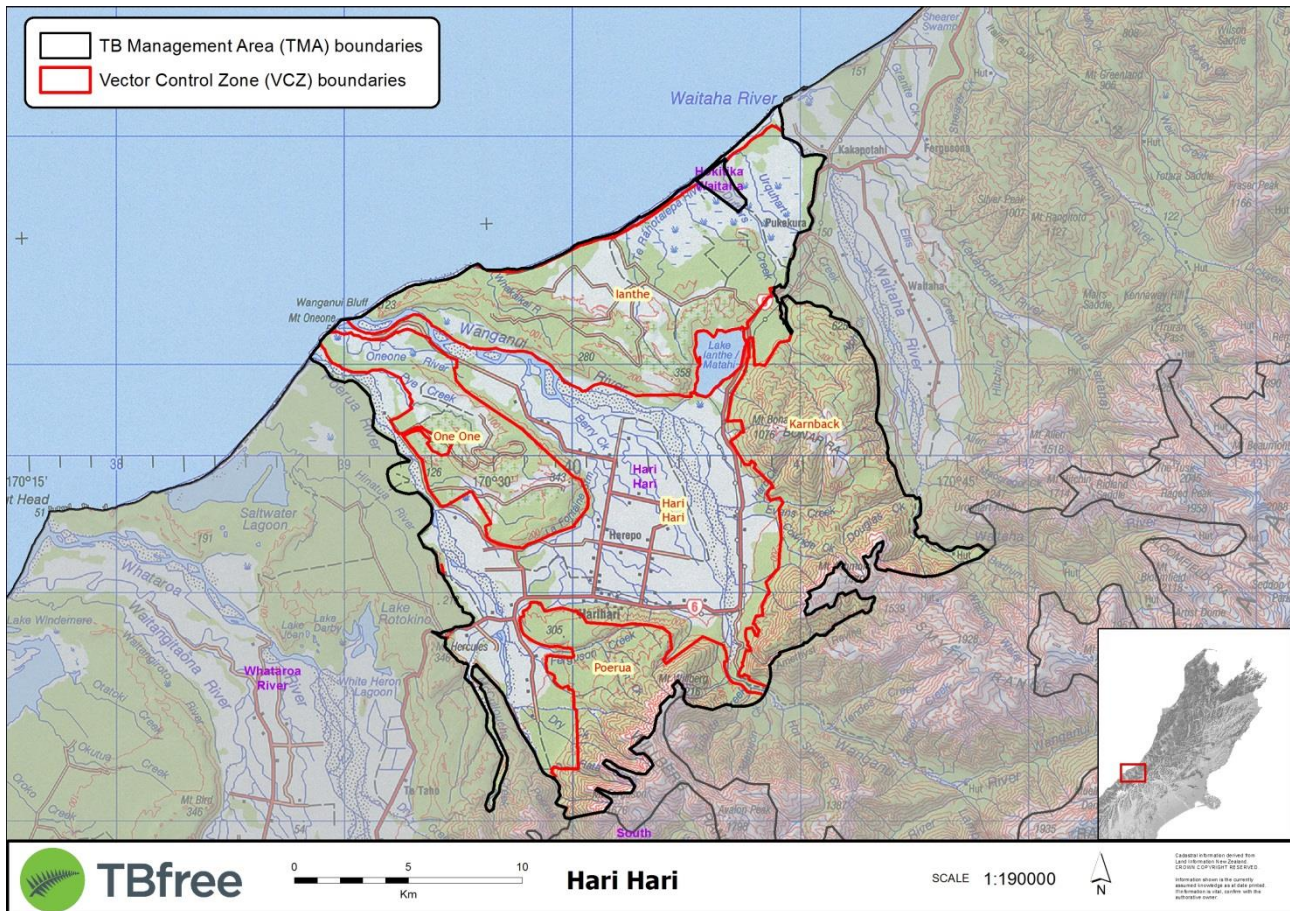
The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested. A low intensity targeted assurance possum survey will be carried 3 years after revocation of Vector Risk status and then approximately every 5 years until 2038.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote presistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038, aim to provide good geographic coverage and be completed by 2045.

5.26 HARI HARI



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2023
- Herd TB freedom date: 2019
- Total area of VRA reduction (hectares): 42,706

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Hari Hari	16,407	2022
Ianthe	9,938	2022
Karnback	7,991	2022
One One	4,237	2023
Poerua	4,133	2022
TMA Total	42,706	

DESCRIPTION OF TB MANAGEMENT AREA

The Hari Hari TMA lies to north of Whataroa and south of Waitaha. The area includes flat, predominantly dairy country and the Harihari Township. The habitat type is farmland interspersed by moderate hills covered with nature podocarp bush and areas of scrub. Altitudes range from sea level to 350 m (Oneone). There are 49 herds within the Hari Hari TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Recently a TB deer and subsequently TB possums in the Wanganui River catchment (Jones Flat) 9-13 km away from nearest official control boundary (in adjacent South Westland Alps TMA). Most recent herds in this area were all residual or movement related infections. Regularly possum control has been carried out with spelling of some blocks. . Possum abundance is low due to intensive possum control.

PLANNED VECTOR RISK AREA REDUCTION

Hari Hari	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	42,706	42,706	42,706	4,237	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds within this TMA.

Summary of Operations Planned

Ground control will be applied to Hari hari in 2017/18. Low intensity possum surveys will be undertaken for Proof of freedom purposes from 2019/20-2022/23. Pigs and possums will be surveyed in lanthe and possums will be surveyed in One One to determine if further aerial control is necessary on these blocks. Final aerial operations will be carried out from 2018/19- 2020/21 at Karnback and Poerua and at lanthe & One One if required.

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

RISK MANAGEMENT

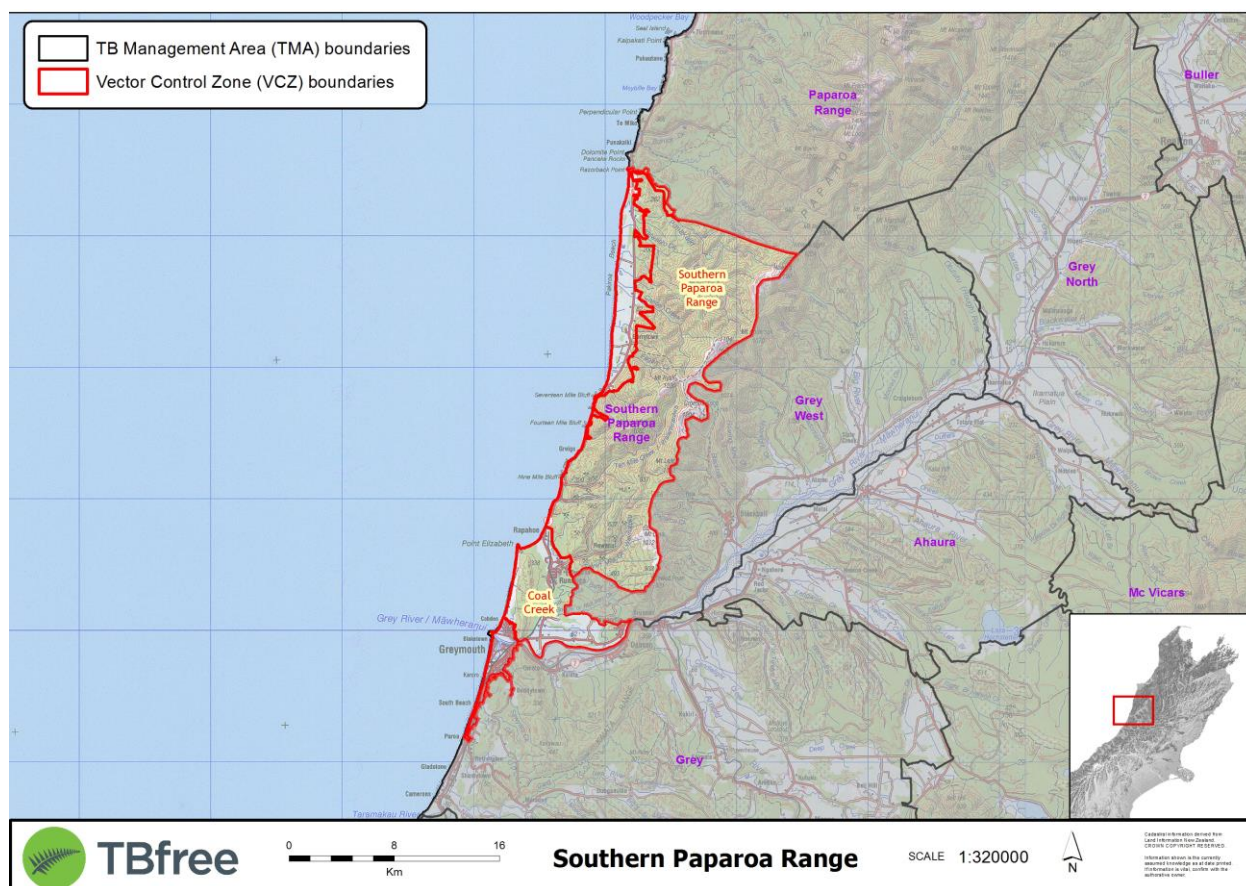
The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control in adjacent areas could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested. A low intensity targeted assurance possum survey will be carried 3 years after revocation of Vector Risk status and repeated prior to 2040.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote persistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038 , aim to provide good geographic coverage and be completed by 2045.

5.27 SOUTHERN PAPAROA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2023
- Herd TB freedom date: 2019
- Total area of VRA reduction (hectares): 30,347

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Barrytown West	3,174	2022
Coal Creek	4,319	2023
Greymouth	904	2023
Southern Paparoa Range	21,950	2022
TMA Total	30,347	

DESCRIPTION OF TB MANAGEMENT AREA

The Southern Paparoa TMA lies to east of Barrytown and extends to Paroa South of Greymouth. The area includes the southern end of Paparoa Range, Barrytown, Blackball, Atarau, the 12 Apostles Range, Rapahoe, Runanga and Greymouth. Various mining sites are present including Pike River. The habitat type is typical West Coast bush; podocarp and beech forests with some patches of scrub. Altitudes range from sea level to 1200m (Paparoa Range). There are 42 herds within the Southern Paparoas TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB possums have been historically caught around the 12 Apostles Range and in the Greymouth Township. Infected herds attributed to wildlife infection have been identified in Barrytown, Blackball and Coal Creek. Part of the Southern end of the Paparoa Range have already been treated before (Barrytown Aerial) where as others have not. The 12 Apostles has also been treated with aerial 1080 several times and the ground control has been applied to Coal Creek and Barrytown. The urban nature of the Greymouth Township is problematic for effective control. Possum abundance is expected to be close to possum carrying capacity in areas where control has yet to be started and elsewhere possum numbers will be low to moderate.

PLANNED VECTOR RISK AREA REDUCTION

Southern Paparoa	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	30,347	30,347	30,347	5,223	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently one infected herd that grazes within this TMA.

Summary of Operations Planned

Aerial control of the Southern Paparoa Range will be undertaken in 2016/17 and exclusions and associated ground control will be applied annually until 2019/20. A possum monitor will be undertaken in 2019/20 to determine the efficacy of the previous aerial control and possum surveys in both ground and aerial strata will be undertaken in 2020/21 and 2021/22.. Ground control will continue in alternate years for Barrytown and Coal Creek. A control strategy will be initiated for Greymouth Township-associated habitat.

Innovations, Initiatives and Research and Development

Working in urban environment with integrated habitat.

RISK MANAGEMENT

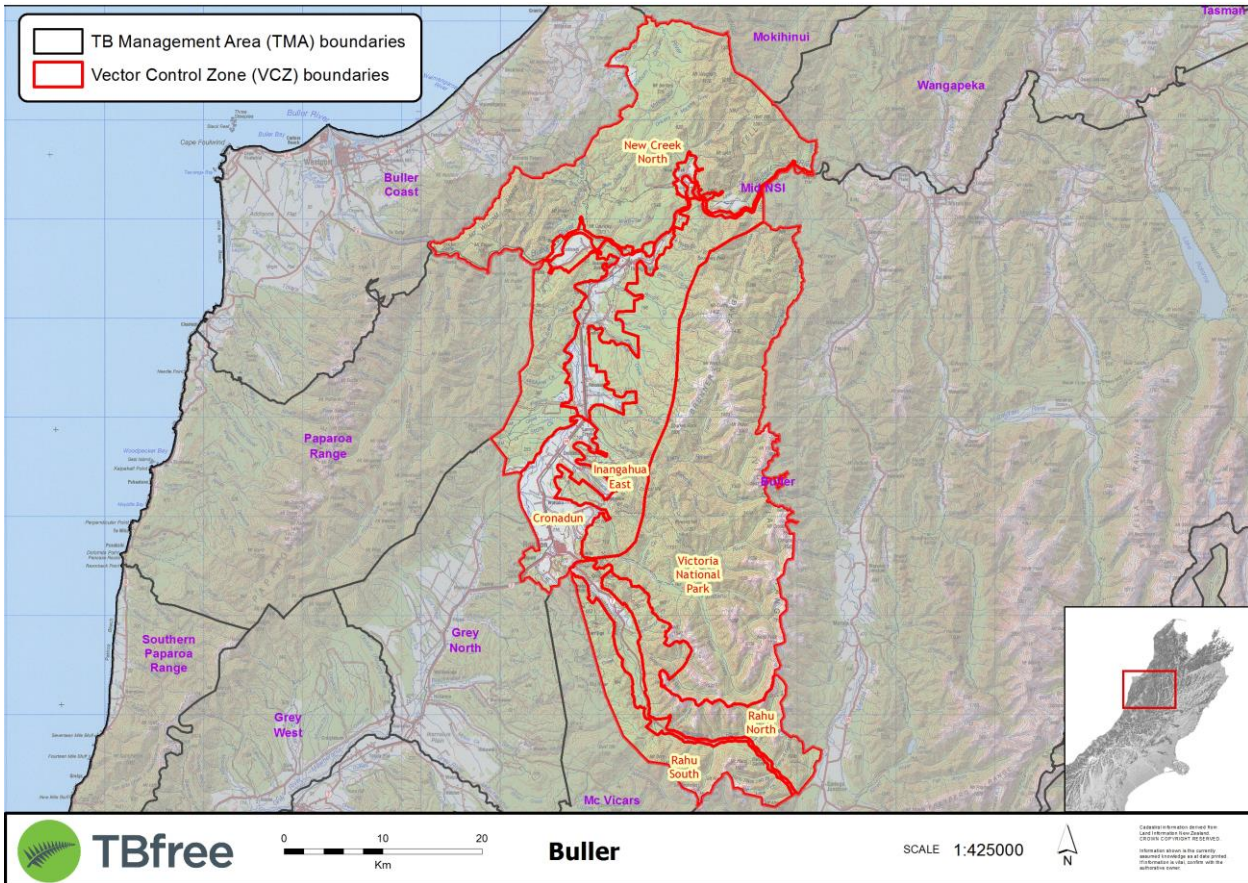
The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested. A low intensity targeted assurance possum survey will be carried 3 years after revocation of Vector Risk status. Locations proximal to previous cases of confirmed TB should be surveyed before 2040 to confirm that TB has not persisted.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote persistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038, aim to provide good geographic coverage and be completed by 2045.

5.28 BULLER



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2027
- Herd TB freedom date: 2019
- Total area of VRA reduction (hectares): 172,909

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Blacks Point	4,071	2024
Cronadun	9,025	2023
Inangahua	8,649	2023
Inangahua East	21,878	2023
Inangahua West	10,468	2023
Iron Bridge	202	2024
TMA Total	172,909	

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Mackley	606	2023
New Creek North	41,115	2024
New Creek South	662	2024
Rahu North	11,017	2024
Rahu South	10,143	2024
Victoria National Park	55,073	2027

DESCRIPTION OF TB MANAGEMENT AREA

The large Buller TMA lies to north of Reefton between the northern end of the Paparoa Range and Victoria Ranges. The area includes much of the Inangahua and Buller River catchments and the townships of Crondun, Reefton and Inangahua. It also includes Ironbridge and New Creek. The habitat type is rolling west Coast farmland with stands of bush interspersed and continues bush at the foot hills. Altitudes range from several hundred metres up to 1500m. There are 73 herds within the Buller TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Although there have not been recent TB cases in wildlife (through a lack of surveillance activities) there is clear evidence that TB is present in wildlife. Recently infected herds grazing in the area of Fletchers Creek (Perseverance) have been closed herds with no potential movement links to explain introduction. Three herds have been infected in this specific area since 2012. Possum abundance is generally low due to intensive possum control. The greater area has received control over a long period but there are areas such as Perseverance where the residual possum population seems to be big enough to maintain the disease.

PLANNED VECTOR RISK AREA REDUCTION

Buller	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	172,909	172,909	172,909	172,909	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently 3 infected herds in this TMA. All are due to wildlife. (One may be a residual infection from a initial wildlife related infection). These herds will be intensively managed and tested using skin and blood testings. Any stock leaving the farms post clearance will be monitored.

Summary of Operations Planned

Ground control will continue every two years with data collected (PDAs) and possum carcasses recovered (concurrent survey). Intensive possum surveys will be carried out from 2019/20-2023/24 and pigs will be collected from Victoria range to reduce the size of possum surveys that will be required for Proof of Freedom. Aerial operations will be carried out from 2019/2020-2021/22.

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

RISK MANAGEMENT

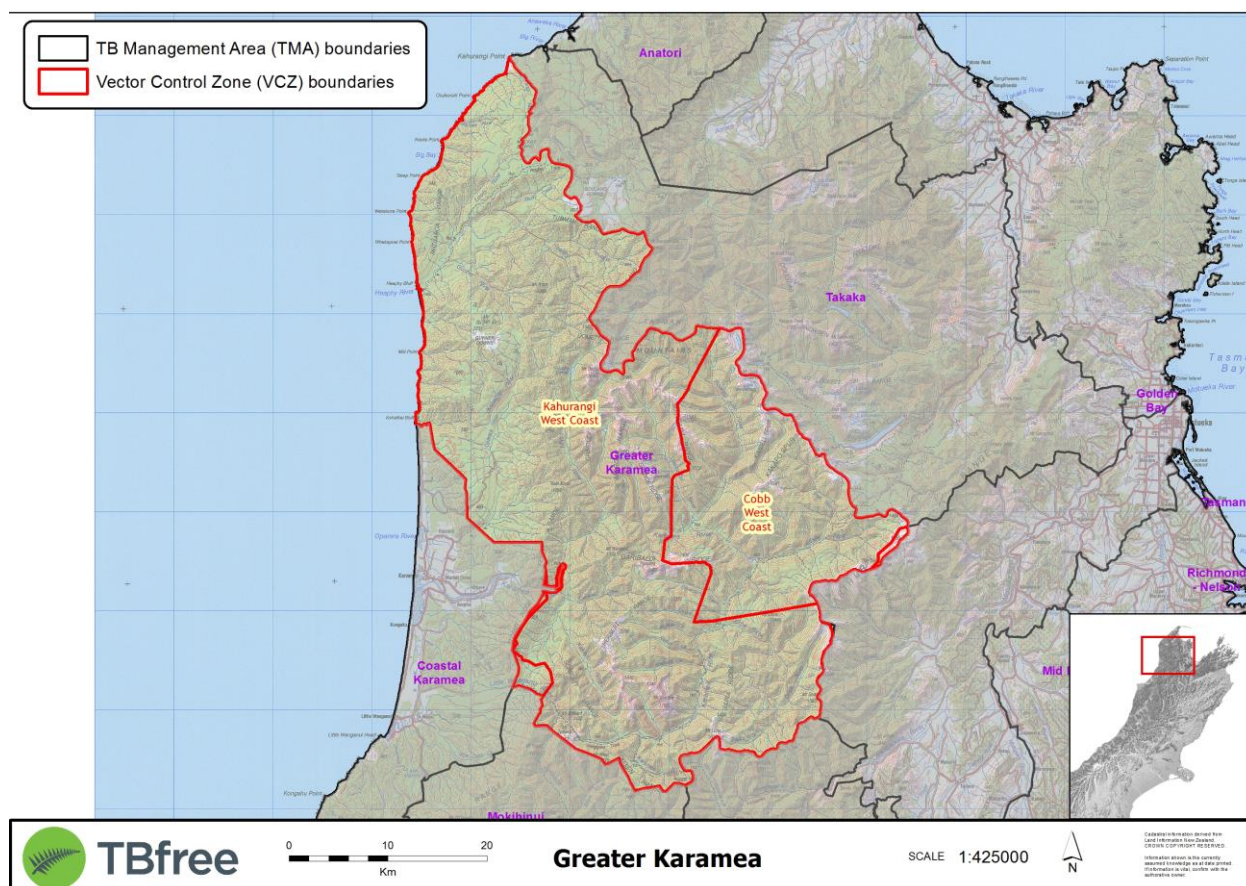
The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested. Focal possum surveys will be carried out in locations where that disease had previously persisted to provide assurance of effective eradication; locations such as Mackley, Ironbridge and Perseverance.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote persistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038, aim to provide good geographic coverage and be completed by 2045.

5.29 GREATER KARAMEA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2024
- Herd TB freedom date: 2024
- Total area of VRA reduction (hectares): 179,219

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Cobb West Coast	37,683	2024
Kahurangi West Coast	141,213	2024
Kahurangi National Park	323	2024
TMA Total	179,219	

DESCRIPTION OF TB MANAGEMENT AREA

The Greater Karamea TMA lies to the east of Karamea and is mostly the Kahurangi National Forest located between Karamea and Tasman. The area includes the Heaphy track, Karamea River catchment, Wangapeka, Beautiful and Ugly Rivers. The habitat type is Typical West Coast Bush; podocarp and beech forest with some patches of scrub. Altitudes range from ~100 to 1600m. There are no herds within the Greater Karamea TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB possums have been captured in a 2015/16 survey beyond the extent of the Karamea Aerial which was flown in 2008. There are no infected herds in this TMA. Aerial operations carried out by Dept of Conservation in recent "Beech Mast" years to

combat predators have benefited TB Plan significantly. Most of the Kahurangi National Forest will have been flown twice by the end of the 2017/18 year. Abundance will be high in uncontrolled areas and lower in those areas already treated under the Battle for Our Birds.

PLANNED VECTOR RISK AREA REDUCTION

Greater Karamea	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	179,219	179,219	179,219	179,219	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no herds within this TMA.

Summary of Operations Planned

Department of Conservation will carry out aerial control in 2016/17. OSPRI will apply control activities to the appropriate aerial exclusions and in most instances these will require rework annually for at least three years. Possum monitors will be carried out in 2019/20 to assess the efficacy of the aerial control. Aerial control is planned to be repeated in 2020/21 (if the Department of Conservation has not repeated this work for conservation purposes before then). This will be followed by possum surveys for Proof of Freedom process.

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

RISK MANAGEMENT

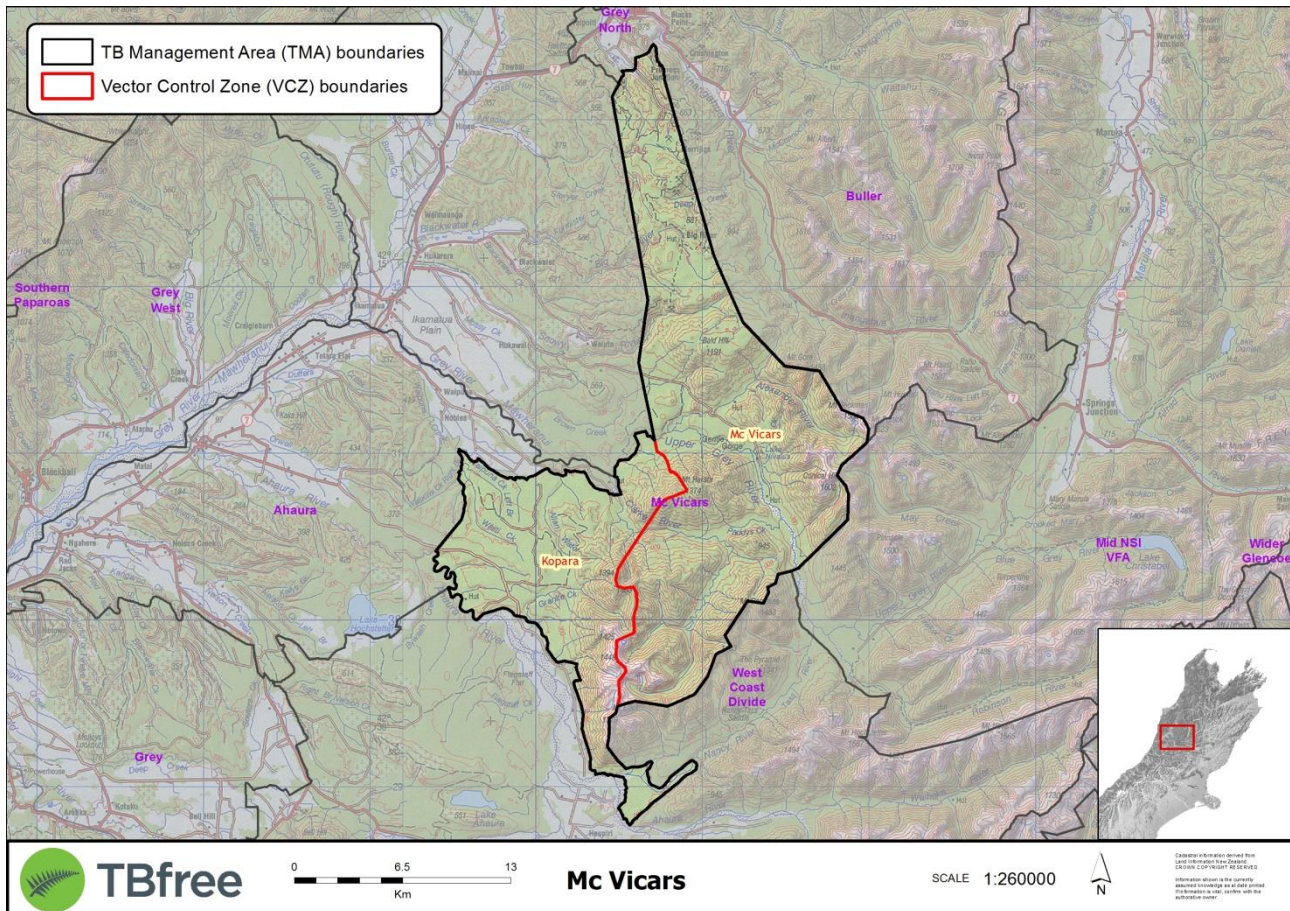
The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested although there are no herds within this TMA. Venison recovery deer are collected from time to time and these provide some information on the disease status of the area although the time of transmission of infection is not easily determined.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote persistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038, aim to provide good geographic coverage and be completed by 2045.

5.30 MC VICARS



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2024
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 40,659

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Kopara	13,438	2023
McVicers	27,221	2024
TMA Total	40,659	

DESCRIPTION OF TB MANAGEMENT AREA

The Mc Vicars TMA lies to west of the Rahu and Springs Junction. Situated between Reefton and the Kopara, this is predominantly a second tier buffer separated from farmland by the Hukarere and Ahaura aerial VCZs. The area includes the Upper Grey River, Lower Nancy River near the confluence with the Ahaura River and the Alexander River. The habitat type is Typical West Coast bush; podocarp and beech forests with some patches of scrub. Altitudes range from ~150m to 1100m. There are only 2 herds within the Mc Vicars TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB possums have historically been found in the Nancy clearing across the Ahaura River from Haupiri. Animals that historically grazed in this area become infected as a result of the practice. McVicers aerial was flown in 2013 And Kopara was flown

2011 and trigger monitored in 2015. Possum populations will be recovering within the TMA as both aerial blocks have not been worked since 2013.

PLANNED VECTOR RISK AREA REDUCTION

Mc Vicars	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	40,659	40,659	40,659	40,659	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds within this TMA.

Summary of Operations Planned

McVicar VCZ will be possum monitored in 2016/17 to assess the efficacy of the last aerial control. Kopara will be possum monitored 2017/18 for the same reasons. Both areas will be proposed to be treated with aerial control during 2018/19-2019/20- McVicar has been worked once before so a third aerial operation is planned for 2022/23. Surveys will be carried out in conjunction with the aerals for Proof of Freedom purposes.

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

RISK MANAGEMENT

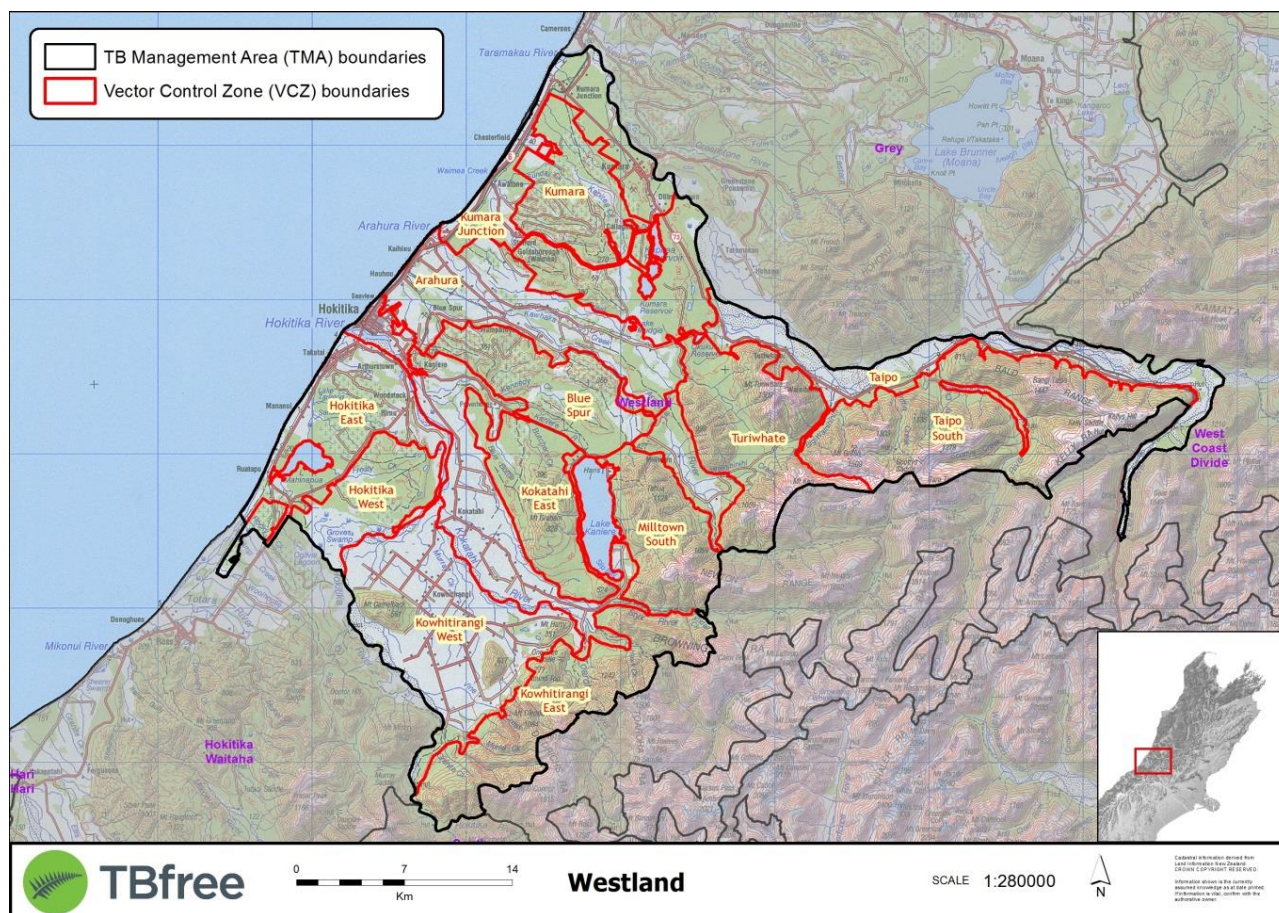
The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock from adjacent areas will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested. Locations proximal to previous cases of confirmed TB should be surveyed before 2040 to confirm that TB has not persisted.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote persistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038, aim to provide good geographic coverage and be completed by 2045.

5.31 WESTLAND



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2024
- Herd TB freedom date: 2021
- Total area of VRA reduction (hectares): 114,834

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Arahura	8,764	2021
Blue Spur	5,684	2021
Hokitika	961	2021
Hokitika East	6,801	2022
Hokitika West	4,894	2022
Kohatahi East	5,433	2021
Kohatahi West	7,939	2021
Kowhitirangi East	8,900	2024
Kowhitirangi West	11,959	2022
TMA Total	114,834	

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Kumara	10,756	2021
Kumara Junction	5,911	2021
Milltown North	2,337	2023
Milltown South	5,390	2024
Ruatapu	19	2021
Taipo	7,169	2024
Taipo South	13,433	2024
Turiwhate	8,484	2022

DESCRIPTION OF TB MANAGEMENT AREA

The Westland TMA lies between the Taramakau and Hokitika Rivers. The area includes Waimea Forest, Hokitika Township, Old Christchurch Road and Kawhaka, Arahura, Lake Kaniere, Kokatahi and Kowhitirangi. The habitat type is farmland interspersed by moderate slope hills covered with nature podocarp bush and areas of scrub (in the beech gap). Altitudes range from Sea level to 1450m. There are 229 herds within the Westland TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB wildlife have been historically found along the Hokitika River, along the bush edge of Kokatahi and in the Arahura Valley. There have been a large number of infected herds in this area over time and a large number recently as a result of wildlife related infection (especially in Kokatahi, Arahura, and along the coast strip from the Serpentine to the Arahura). This area has been under regular possum control with a mixture of ground and aerial based control methods. Aerial operations have been carried out in Kawhaka/Waimea, Milltown, Taipo, Kokatahi/Kowhitirangi and south of the Hokitika River. Possum abundance is likely to be low due to the control activities that have been undertaken to date.

PLANNED VECTOR RISK AREA REDUCTION

Westland	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	114,834	114,834	114,834	37,229	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds within this TMA. But herd numbers are expected to fluctuate. Any herd breaking down will be thoroughly investigated to determine the source and rigorously tested to remove infection from the herd. Any animals moving from the herd post clearance will be tracked and tested to mitigate the risk of undetected infection.

Summary of Operations Planned

Biennial ground control with PDAs for collecting data about methods and possum captures will be applied. Possum surveys will begin from 2018/19 and spread through the area until 2022/23. Final aerial operations will be carried out from 2019/20-2021/22.

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

RISK MANAGEMENT

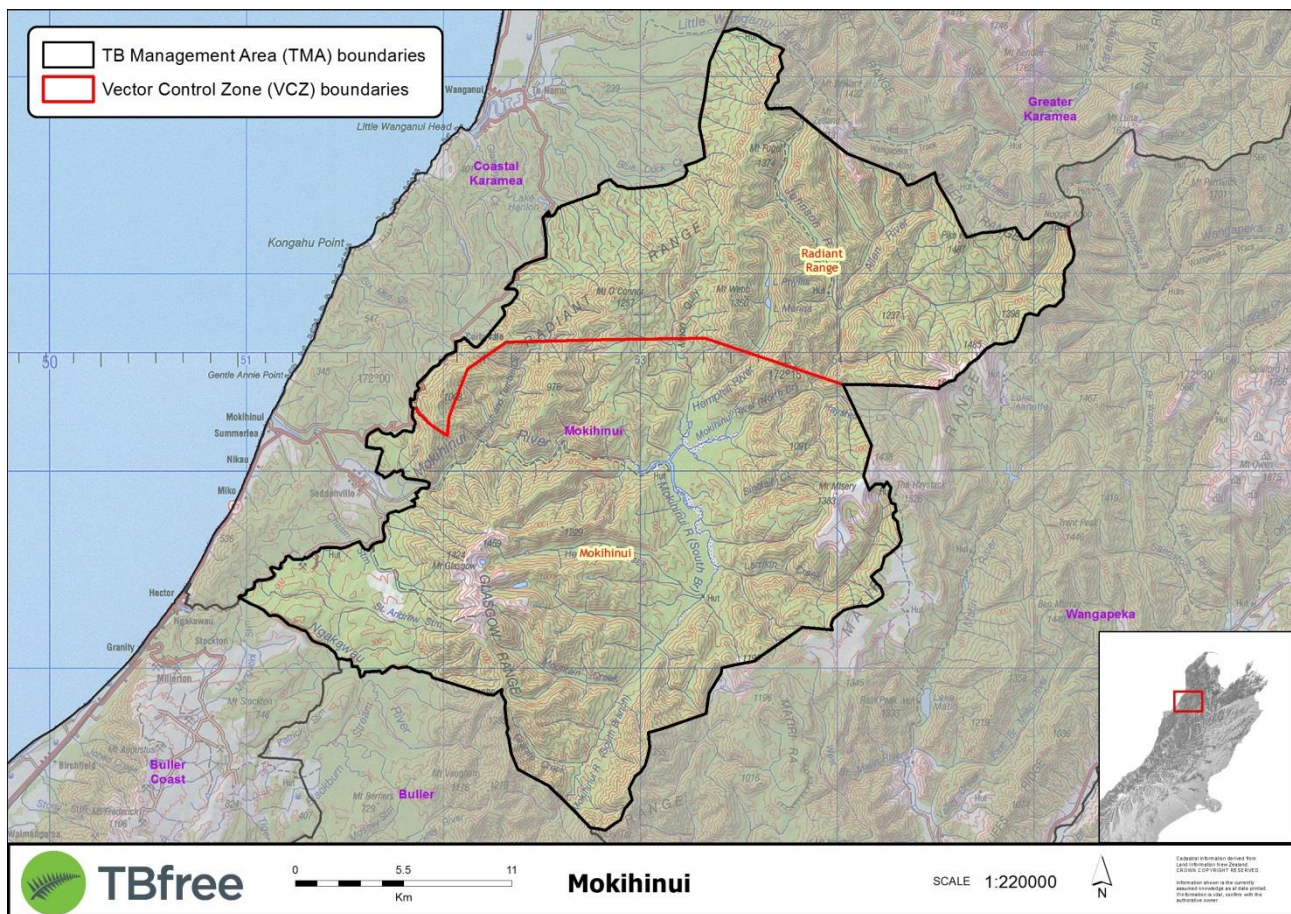
The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock in adjacent VCZs will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested. Passive monitoring of venison recovery deer. Focal Possum surveys, in historically problematic areas, will be carried out from 2027.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote persistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038, aim to provide good geographic coverage and be completed by 2045.

5.32 MOKIHINUI



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2026
- Herd TB freedom date: 2020
- Total area of VRA reduction (hectares): 74,347

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Mokihinui	46,017	2026
Radiant Range	28,330	2026
TMA Total	74,347	

DESCRIPTION OF TB MANAGEMENT AREA

The Mokihinui TMA lies to south of the Karamea Bluffs and north of the Nikau Coastal area. The area includes forms the Southern extent of the Kahurangi National Forest which has been a component of the Department of Conservation "Battle for our Birds" project. The area includes the Glasgow Range and Mokihinui River catchment. The habitat type is typical West Coast Bush; podocarp and beech forest with some patches of scrub. Altitudes range from 50m to 1450m. There are no herds within the Mokihinui TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB possums captured in Bush flat survey (2014) behind the previous flown Karamaea Aerial operational area. Under “Battle for Our Birds” the Mokihinui aerial was flown in 2014. Adjacent ground control is ongoing. No other official control has been undertaken. Possum abundance is believed to be low where aerial possum control has been carried out and at carrying capacity where no control has yet been applied.

PLANNED VECTOR RISK AREA REDUCTION

Mokihinui	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	74,347	74,347	74,347	74,347	74,347	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no herds within this TMA.

Summary of Operations Planned

Most control activities within this TMA will be aerial control with associated exclusions (minimal). The next aerial is planned for 2017/18 (Radiant Range). Further aerial operations will be conducted in 2019/20 (Mokihinui) and 2021/22 (Radiant Range).

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

RISK MANAGEMENT

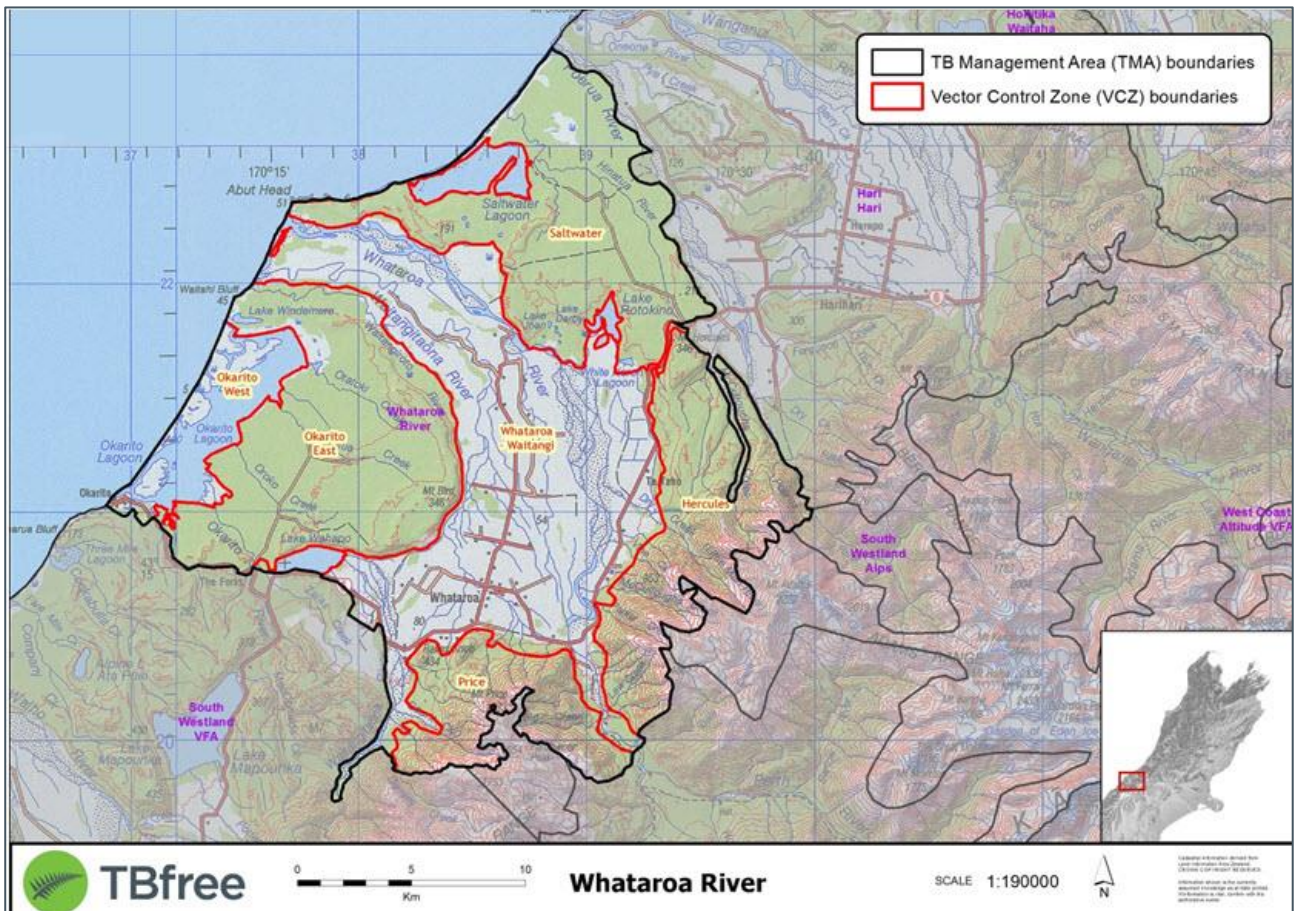
The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock from adjacent areas will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested. Locations proximal to previous cases of confirmed TB should be surveyed before 2040 to confirm that TB has not persisted. Passive monitoring of venison recovery deer will continue where available.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote persistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038, aim to provide good geographic coverage and be completed by 2045.

5.33 WHATAROA RIVER



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2026
- Herd TB freedom date: 2018
- Total area of VRA reduction (hectares): 51,788

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Hercules	7,098	2023
Okarito East	10,389	2024
Okarito West	2,882	2024
Price	3,891	2023
Saltwater	9,609	2026
Whataroa-Waitangi	17,919	2024
TMA Total	51,788	

DESCRIPTION OF TB MANAGEMENT AREA

The Whataroa River TMA lies to south of Harihari and north of Franz Joseph Township. The area includes the Saltwater swamp, Okarito Kiwi and Heron sauntuaries and predominantly Dairy and beef farmland. The habitat types include narrow strips of farmland interspersed by moderate hills covered with nature podocarp bush, swamp, pakihi and areas scrub. Altitudes range from Sea level to 1,300. There are 55 herds within the Whataroa River TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY¹⁰

A TB possum capture at Donovans Flat in 2009 on the north side of the Whataroa River. Last wildlife related TB herd breakdown is considered to be 2013. Annual ground based possum control has been carried out to date. Aerial control has been undertaken in the Saltwater swamp, Mount Hercules and around Okarito Lagoon and Waitangitona. Possum abundance is low due to intensive possum control.

PLANNED VECTOR RISK AREA REDUCTION

Whataroa River	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	51,788	51,788	51,788	51,788	9,609	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently no infected herds within this TMA.

Summary of Operations Planned

Aerial control operations are to be repeated from 2018/19-2021/22 and associated annual ground based control of aerial exclusions. Ground control is planned for 2017/18 and 2019/20 and again in 2020/21 then Proof of Freedom surveys are planned for all areas from 2021/22-2025/26.

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

RISK MANAGEMENT

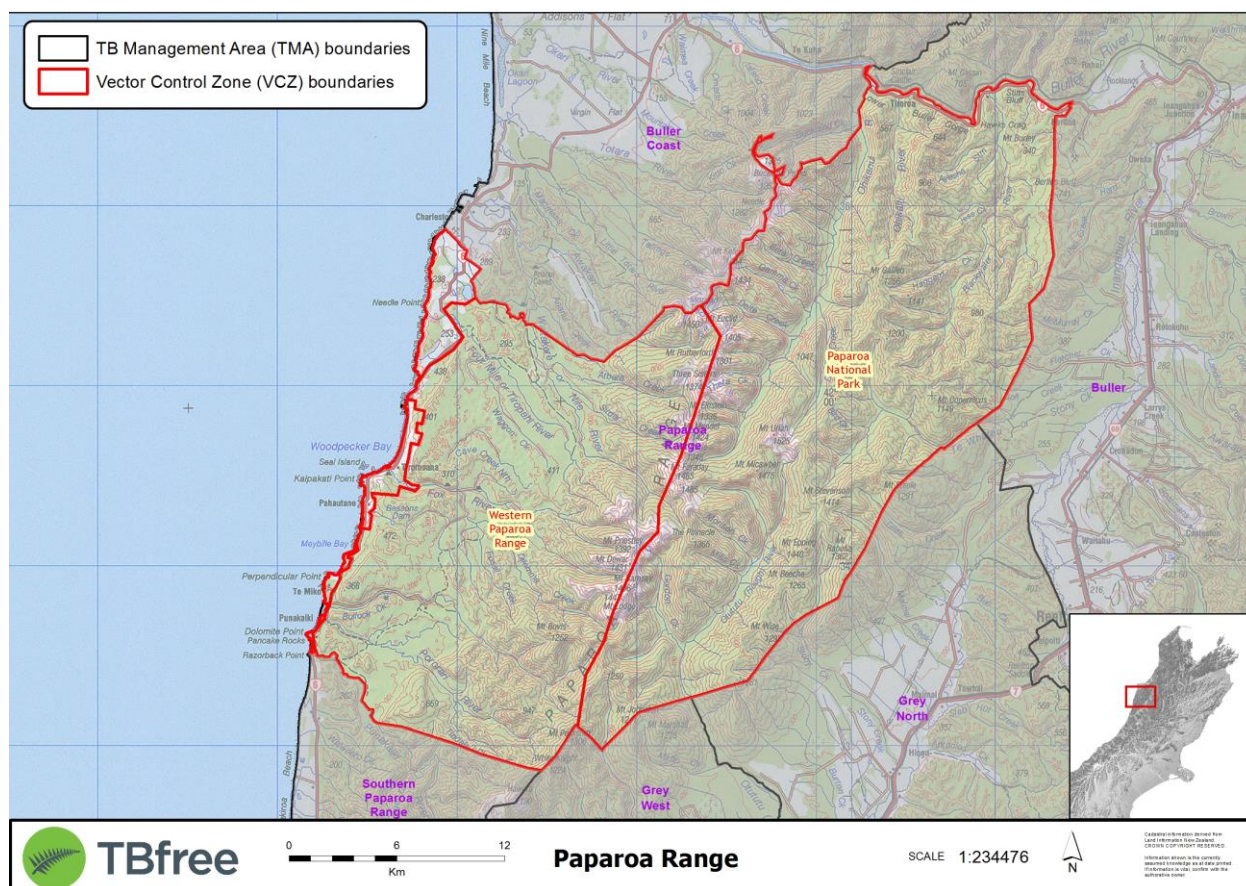
The West Coast habitat has a high possum carrying capacity and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. The use of 1080 is vital to achieve the goal of eradication for this area.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested. Focal possum surveys will be carried out in 2035 and 2040 to provide assurance of freedom from possum TB.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote persistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038, aim to provide good geographic coverage and be completed by 2045.

5.34 PAPAROA RANGE



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2027
- Herd TB freedom date: 2019 (07/01/2019)
- Total area of VRA reduction (hectares): 84,714

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Paparoa National Park	49,893	2027
Western Paparoa Range	34,821	2027
TMA Total	84,714	

DESCRIPTION OF TB MANAGEMENT AREA

The Paparoa Range is located on the West Coast from the Buller River to Mt Pecksniff. The TMA includes Paparoa Range and the catchments of the Otututu (Rough) , Ohikanui, Blackwater River, Nile, Fox and Pororari Rivers. The habitat type is typical West Coast bush with podocarp and beech forest with some patches of scrub. Altitudes range from around 200 to 1480m. There are no herds within the Paparoa Range TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

No official surveillance activities of wildlife have been undertaken in this TMA to date. Historically infection has been associated with the Bullock Creek, occasional breakdowns in Barrytown and Charleston. No official control has been undertaken in this area. Possum abundance is expected to be close to possum carrying capacity as this area has not received official control.

PLANNED VECTOR RISK AREA REDUCTION

Paparoa Range	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	84,714	84,714	84,714	84,714	84,714	84,714	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no herds within this TMA.

Summary of Operations Planned

Initial aerial control to be undertaken in 2019/20 and repeated four years later. Aerial exclusions will have ground control undertaken. Possum monitors will be carried out for each aerial block two years after control is implemented to determine the efficacy of control. Proof of Freedom Possum surveys will be undertaken in 2025/26-2026/27.

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

RISK MANAGEMENT

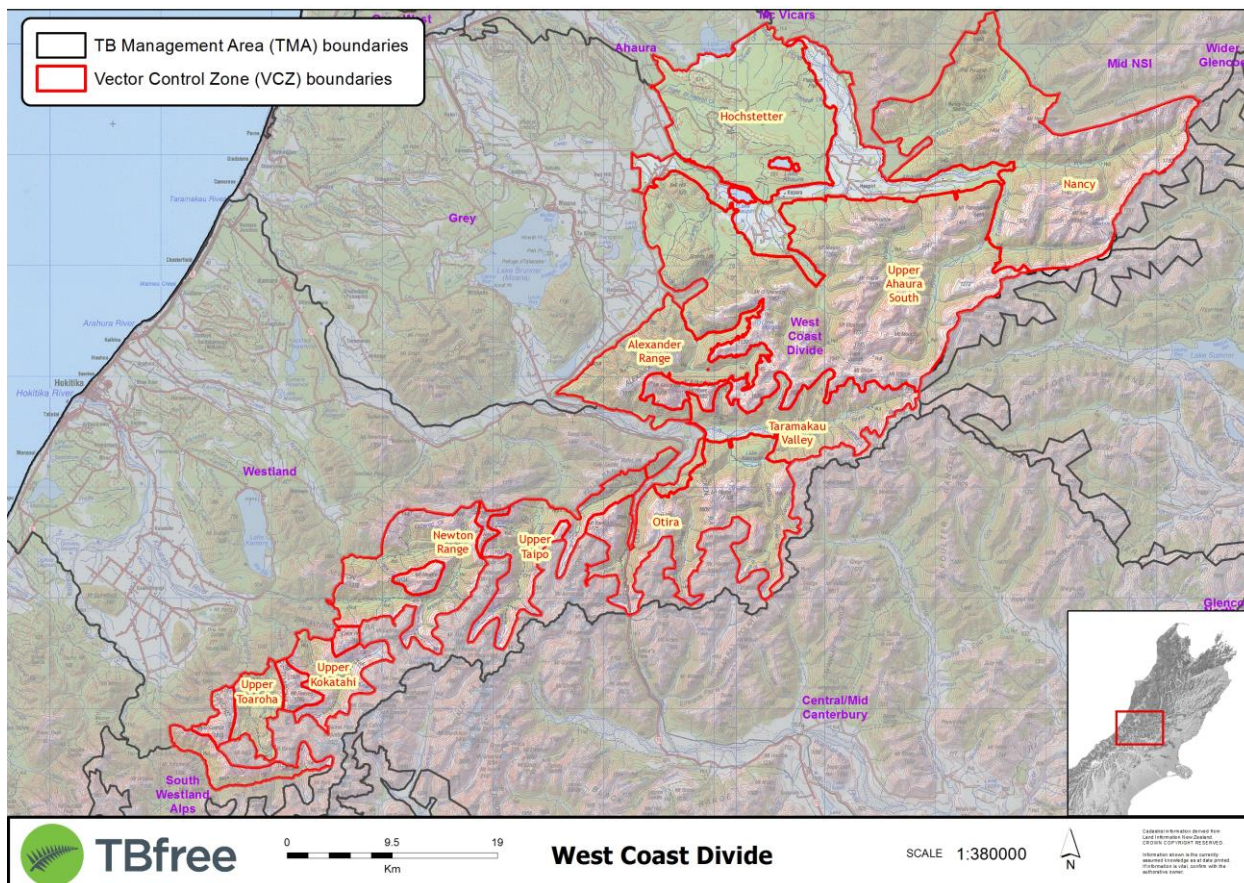
The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock in adjacent VCZs will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested. Locations proximal to previous cases of confirmed TB should be surveyed before 2040 to confirm that TB has not persisted.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote persistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038, aim to provide good geographic coverage and be completed by 2045.

5.35 WEST COAST DIVIDE



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2027
- Herd TB freedom date: 2020
- Total area of VRA reduction (hectares): 167,917

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Alexander Range	9,207	2025
Arahura Southern Alps	4,223	2027
Hochstetter	16,945	2023
Nancy	29,185	2026
Taipo East	1,057	2026
Taramakau Valley	8,967	2026
Upper Ahaura North	11,711	2026
TMA Total	167,917	

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Upper Ahaura South	44,429	2027
Upper Toaroa	2,725	2027
Upper Kokatahi	4,122	2027
Newton Range	10,146	2027
Mungo	2,753	2027
Otira	15,276	2027
Upper Taipo	7,171	2027

DESCRIPTION OF TB MANAGEMENT AREA

West of the Main Divide from the Upper Grey River, and the ridge line south of the Robinson River, to the Hokitika and Mungo Rivers. The area includes Hochstetter Forest and the catchments of the Haupiri, Waiheke, Tutikuri, Trent, Upper Taramakau Rivers. Also includes Alexander, Kelly, Aicken, Campbell, Bald, Newton and Toaroha Ranges. The habitat type is typical West Coast bush; podocarp and beech forests with some patches of scrub. high alpine and subalpine plant types at higher altitudes. Altitudes range from 100m to 2000m. There are 24 herds within the West Coast Divide TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Wildlife surveys have been carried out recently and TB has been confirmed in the possum populations in the Waiheke, Haupiri, Upper Taramakau Catchments. Venison recovery deer have been found with TB infection in similar locations over time. Herds have had TB infection due to a wildlife source from Haupiri, Upper Taramakau (and further west along the Taramakau River). Aerial control has been carried out in Alexander Range, Nancy and Upper Ahaura. Ground control has been carried out in around Haupiri and Taramakau farmland. The Taramakau Valley was treated with aerial control methods for the first time this year. Possum abundance is expected to be at carrying capacity where no control has been applied (through much of this extensive country).

PLANNED VECTOR RISK AREA REDUCTION

West Coast Divide	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	167,918	167,918	167,918	167,918	150,973	90,846	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are currently 2 infected herds in this TMA. Both are potentially due to wildlife (residual infection within one herd is also possible). The number of infected herds in this area is likely to fluctuate over the next few years as the required vector control comes on-line. Intensive herd management will be applied and risk animals that leave the properties will be tracked and tested to mitigate the risk of spread post clearance.

Summary of Operations Planned

Surveys of Hochstetter forest will be carried out (first pigs followed by possums) to confirm freedom of TB. Possum surveys will be undertaken from 2020/21-2022/23. Aerial control in the Upper Ahaura/Nancy area will be undertaken in 2017/18 and the previously uncontrolled areas will be aerially treated in 2020/21. Aerial control will continue until 2024/25 as will possum surveys to provide data for the Proof of Freedom Process (surveys from 2021/22 to 2025/26).

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

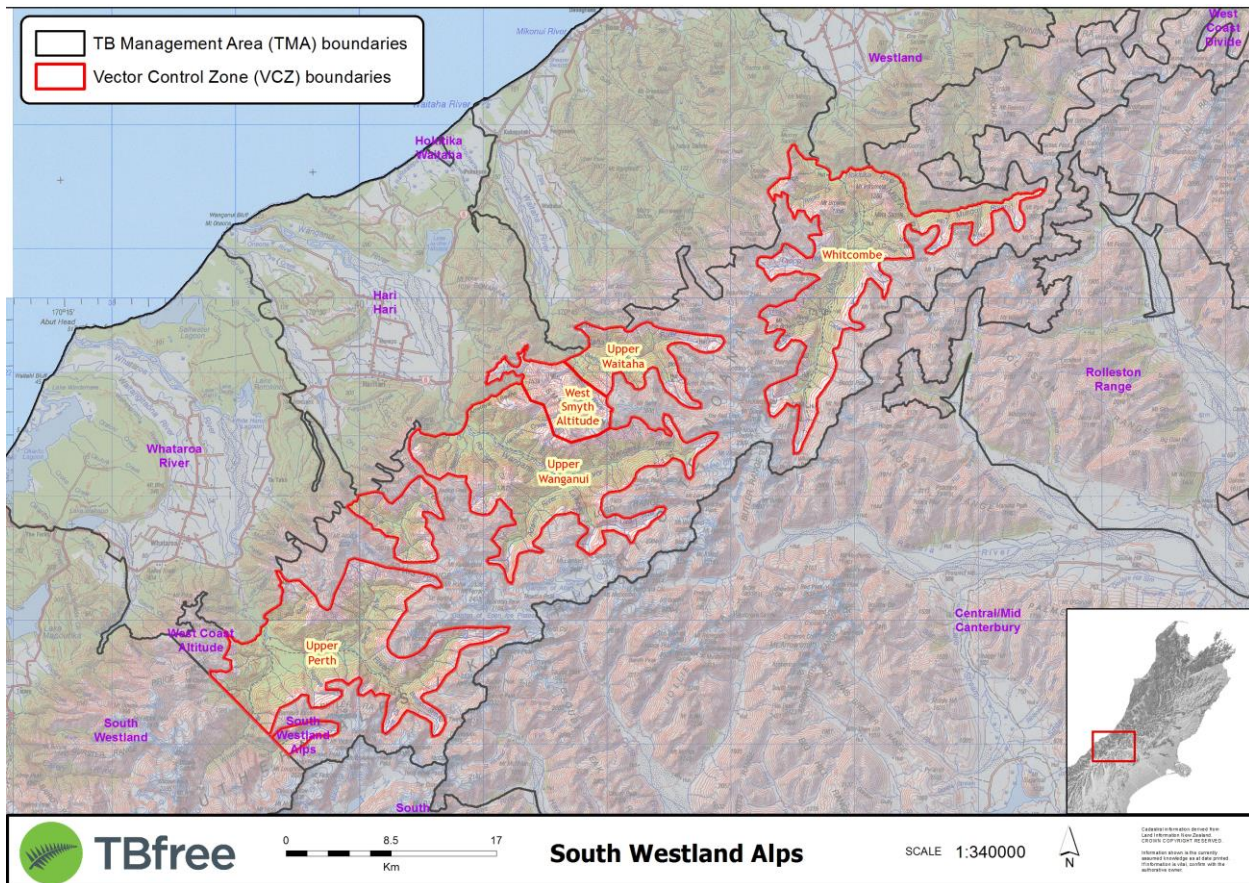
RISK MANAGEMENT

The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock in adjacent VCZs will be monitored through slaughter premises and previously infected herds will continue to be intensively TB tested. Passive monitoring venison recovery deer will also provide some information on the area status. Focal possum surveys, in historically problematic areas (e.g Haupiri River), will be carried out for assurance of freedom in 2035 and again in 2045.

5.36 SOUTH WESTLAND ALPS



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2031
- Herd TB freedom date: 2020 (07/01/2020)
- Total area of VRA reduction (hectares): 55,961

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Upper Wanganui	15,905	2031
Upper Waitaha	4,321	2031
Upper Perth	16,661	2031
West Smyth Altitude	3,386	2031
Whitcombe	12,849	2031
Willbug Range	2,839	2031
TMA Total	55,961	

DESCRIPTION OF TB MANAGEMENT AREA

The South Westland Alps TMA lies adjacent to the Main divide and extends south of the Bloomfield Range and extends south east of Whararoa. The area includes Valleys with good possum habitat Catchments include. Upper Waitaha, Wanganui River. The habitat type is Multiple separate blocks of aerial habitat up toward the main divide. West Coast bush covered faces interspersed by high altitude steep mountains with glaciers. Mountainous altitudes are in excess of 2300m but and

area over 1200m has been excluded as these areas are not considered to harbour sufficient sized possum populations to sustain TB infection. There are no herds within the South Westland Alps TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB was found recently in a venison recovery deer and subsequently in possums surveyed in the valley floor below where the deer had been captured. No livestock with these VCZ as this is all Department of Conservation land. No previous official control has been undertaken so the possum populations are expected to be close to carrying capacity.

PLANNED VECTOR RISK AREA REDUCTION

South Westland Alps	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	55,961	55,961	55,961	55,961	55,961	55,961	55,961	55,961	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no herds within this TMA.

Summary of Operations Planned

Aerial control begins for all VCZ in 2018/19 and will be repeated once more at five year intervals. Possum monitors will be undertaken 2-3 years after aerials to determine the efficacy of the control carried out. Possum surveys for Proof of Freedom will be undertaken in 2029/30 and 2030/31.

Innovations, Initiatives and Research and Development

Nothing planned at this stage.

RISK MANAGEMENT

The potential possum carrying capacity of the area is high and therefore there is a greater risk that the disease could survive in an isolated uncontrolled population. Mitigation is to apply coordinated control on adjacent areas maintaining buffers as necessary to prevent reinvasion. Any limitations to the effective use of 1080 aerial control could jeopardise the target milestone of TB freedom from herds by 2026.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock will be monitored through slaughter premises and previously infected herds in adjacent VCZs will continue to be intensively TB tested. Passive information from venison recovery will also be utilised as necessary.

A Whole-of-West-Coast eradication surveillance strategy will be required given the risk of remote presistence. This will include pig surveys where pigs are present and widespread low intensity sampling of residual possum populations (this may depend on and be facilitated by Predator free New Zealand activities). Surveys should commence in 2038 , aim to provide good geographic coverage and be completed by 2045.

Appendix 1: Glossary of Terms

Biological eradication	The complete absence of TB in wildlife and livestock (but not humans) from a particular management unit, such as a Vector Control Zone, with a near zero chance of disease reinvasion. A declaration of biological eradication follows a declaration of TB freedom.
Breakdown/Infected Herd	Refers to TB being diagnosed in a Clear or Suspended status cattle or deer herd.
Herd	A group of cattle or deer, or cattle and deer that is, (a) managed as 1 unit; or (b) kept within the same enclosure or behind the same fence.
Infected herd annual period prevalence (also herd infection rate)	Is the number of cattle and deer herds classified as infected at the start of the financial year, together with the number of cattle and deer herds found infected during the financial year, divided by total cattle and deer herds, expressed as a percentage.
Livestock TB freedom	A TB Plan milestone where cattle and deer herds are largely free of TB infection, with the exception of a very small number of isolated breakdowns which would require mopping up.
Management agency	Is defined in the Biosecurity Act as “a management agency responsible for implementing a national pest management plan”. The management agency for the TB Plan is TBfree NZ, a subsidiary of OSPRI New Zealand.
Movement Control Areas (MCA)	Defined geographical areas used under the current Plan to control the risk of TB transmission through cattle or deer movements from areas with the highest wildlife infection risk, being those areas where infected herd annual period prevalence (as a proxy for wildlife infection risk) is greater than one per cent.
National Operational Plan (NOP)	The set of operational measures and policies developed by the management agency to give effect to the Minister’s decision and the TB Plan Order. The NOP is required under s100B of the Biosecurity Act 1993 to be produced by the management agency within 3 months of the TB Plan Order (or amended Order) coming into effect. It must be reviewed by the management agency annually, with a report on performance and any amendments provided to the Minister.
Passive surveillance	The use of data from different sources to provide inference about the likelihood of presence or absence of TB. These data may come from unplanned incidental observations (such as the detection of TB in pigs or deer by recreational and commercial hunters or possum fur trappers) or from information collected for other primary purposes (such as the use of slaughterhouse inspection of cattle and deer for TB, and the use of livestock testing data collected to determine TB presence in livestock, not wildlife <i>per se</i>).
Probability of freedom (POF)	The probability that TB has been eradicated from the possum population in a defined area.
Stopping rule	Means the level at which possum control stops in an area because the possum population is considered to be TB free. The level is currently set at a probability of TB freedom of 0.95. At that level, it is expected that one in 20 areas declared TB free will still contain TB possums and herds in such areas would be vulnerable to becoming infected. These areas would receive additional possum control to eradicate the identified infection.
Surveillance	The process of conducting formal field surveys to detect the continued presence of TB in possums. It includes direct necropsy surveys of possums (usually by trapping) and/or necropsy of sentinel species such as pigs, ferrets, and deer, which are known to largely be spillover hosts

	in which the presence of TB indicates the probable presence of TB in possums.
TB	Used as an abbreviation for bovine tuberculosis. <i>Mycobacterium bovis</i> , is the bacterium that causes the disease of bovine tuberculosis and is the 'pest' managed by the TB Plan.
TB Management Areas (TMA)	<p>TMA's are a contiguous area with broadly similar:</p> <ul style="list-style-type: none"> • habitat and geography • level of control and surveillance • disease history and risk
TB Pest Management Plan	The set of objectives, measures and operational policies established to manage bovine TB in New Zealand. It is given effect to through the TB Plan Order and operationalised through the National Operational Plan (a requirement under s100B of the Biosecurity Act). References to the 'current Plan' mean the TB Plan as currently enacted and implemented through the TB Plan Order and the National Operational Plan.
TB Plan Order	Is the Biosecurity (National Bovine Tuberculosis Pest Management Plan) Order 1998 that gives effect to the regulatory elements of the TB Plan.
TB freedom	Freedom from bovine tuberculosis means that the statistical likelihood of bovine tuberculosis being present in the population of the species concerned is assessed by TBfree New Zealand as being no greater than 0.0001% throughout the preceding 12-month period.
Vector Control Zone (VCZ)	A defined geographical area in which activities are undertaken to control or survey the population of wild animals for the purposes of managing bovine tuberculosis.
Vector Free Area (VFA)	A defined geographical area where bovine tuberculosis is not maintained in the wildlife populations.
Vector Risk Area (VRA)	A defined geographical area where bovine tuberculosis is being maintained in the wildlife population as indicated by either epidemiological information from infected cattle and deer herds, or the finding of tuberculosis in wildlife animals that are classed as bovine tuberculosis maintenance hosts.