



AREA DISEASE MANAGEMENT PLAN NORTH 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 North 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.

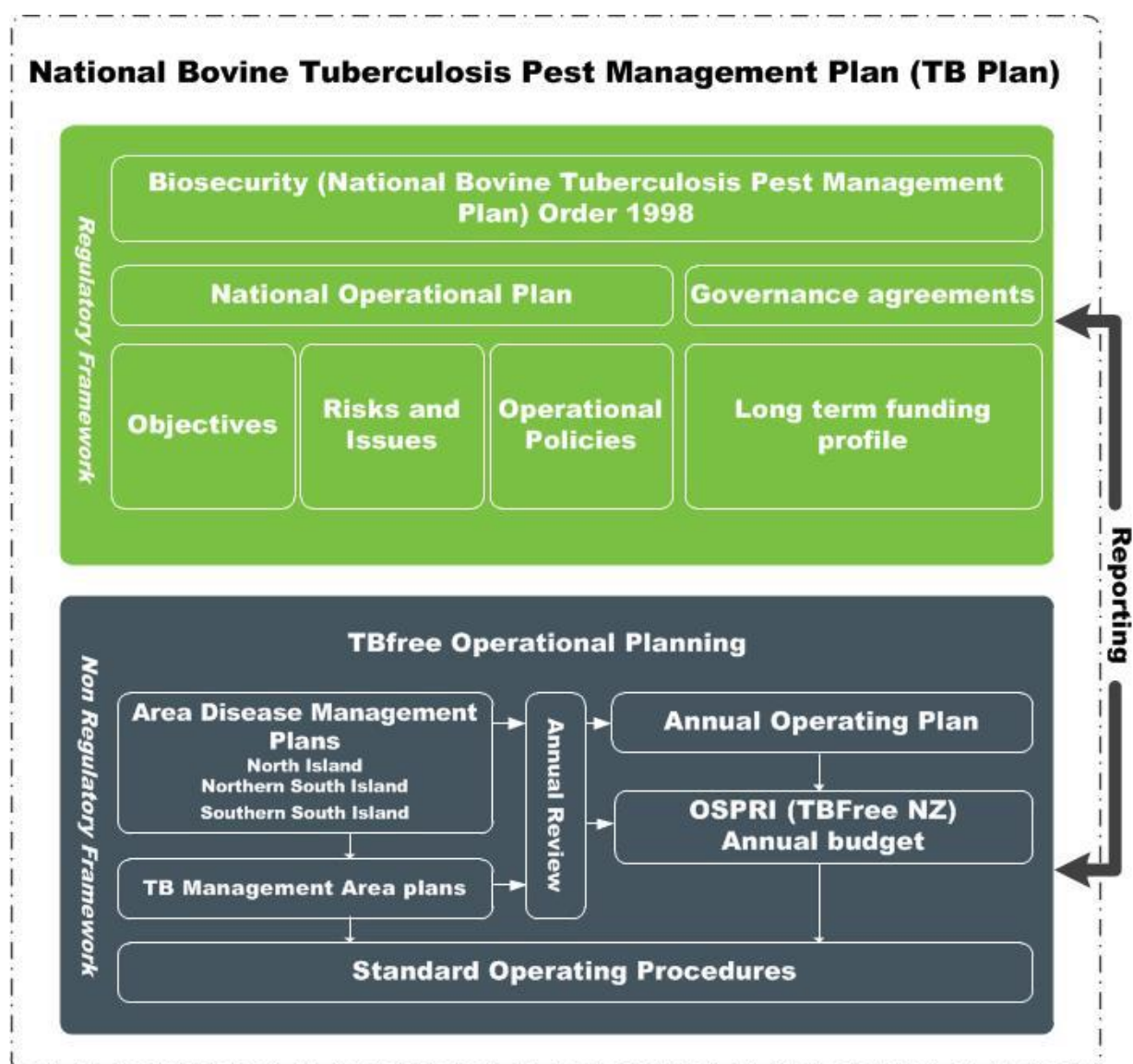


Figure 1: The Statutory and Operational hierarchy of the National Pest Management Plan.

2 DESCRIPTION OF VECTOR RISK AREAS

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

Central North Island VRA (1,397,585ha)	The Central North Island VRA has had significant control north of Lake Taupo and this area has already largely had TB freedom declared from wildlife, or it will occur in the next few years. The VRA contains areas of extensive mountainous or forested wilderness terrain, such as the Central Plateau, Kaimanawa and Kaweka Ranges. Parts of these areas have yet to receive significant control and will take a longer time frame to eradicate. To the East of the ranges control has been undertaken for a number of years and good progress has been made towards TB freedom in wildlife.
North Waikato (13,365ha)	North Waikato is the smallest of the VRAs and is planned to be eradicated by 2018/19
Southern North Island VRA (708,327ha)	Large portions of Southern North Island VRA adjacent to farmland are planned to be declared TB free within the next decade. The Southern portions of the Tararua Range and Rimutaka Range have yet to have control operations undertaken. Furthermore, there are some areas adjacent to urban areas in the Wellington region which are likely to have associated operational difficulties. As such, these areas will take a considerable amount of time to eradicate the disease from the wildlife and will be the last VRA nationally to have freedom proved.

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
North Island	11	10	6	5	4	4	3	2	2	1	0

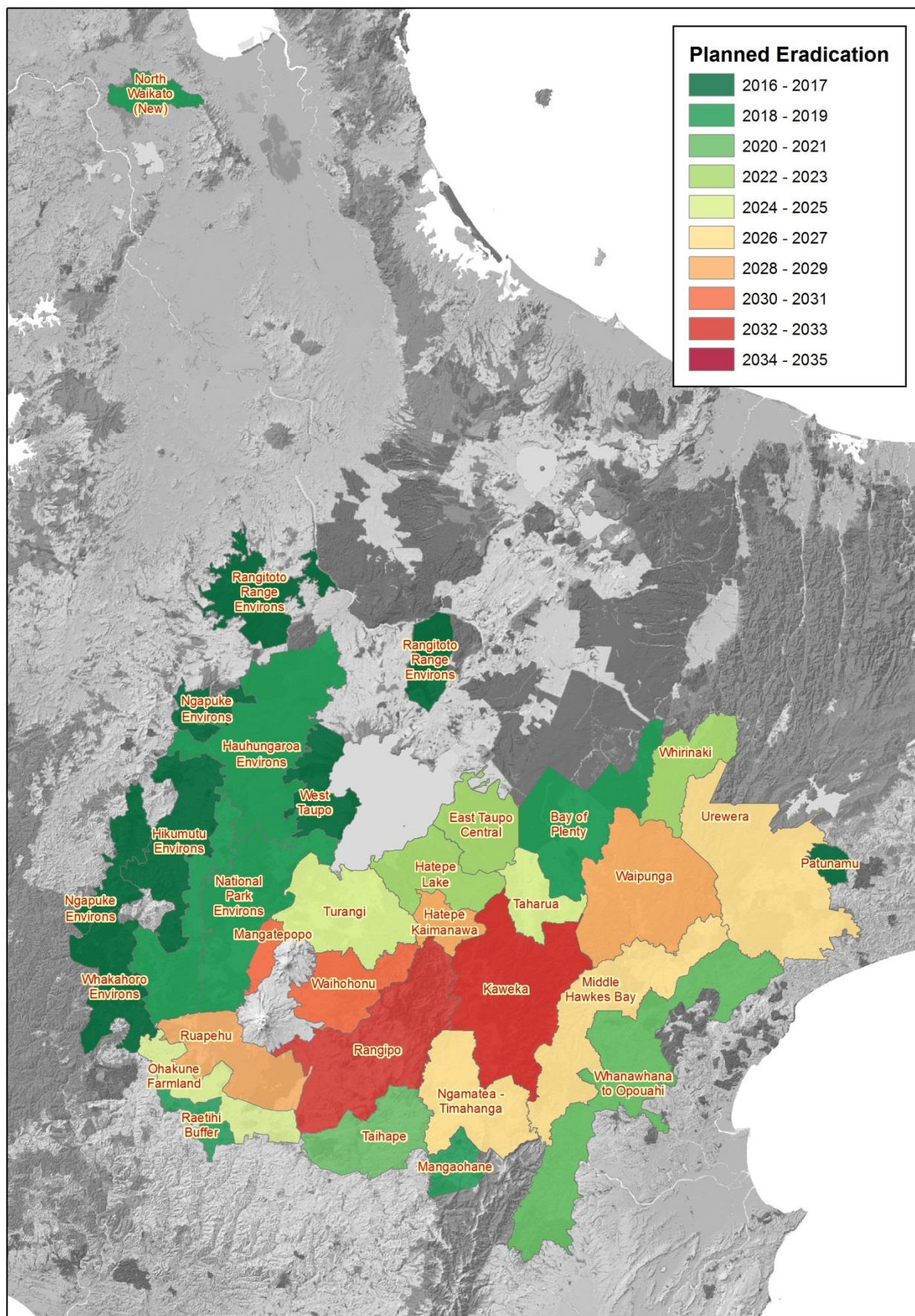
Table 1: Planned reduction of infected herds for the period 2016-2026, calculated at the commencement of the plan year.

TB FREEDOM IN POSSUMS BY 2040

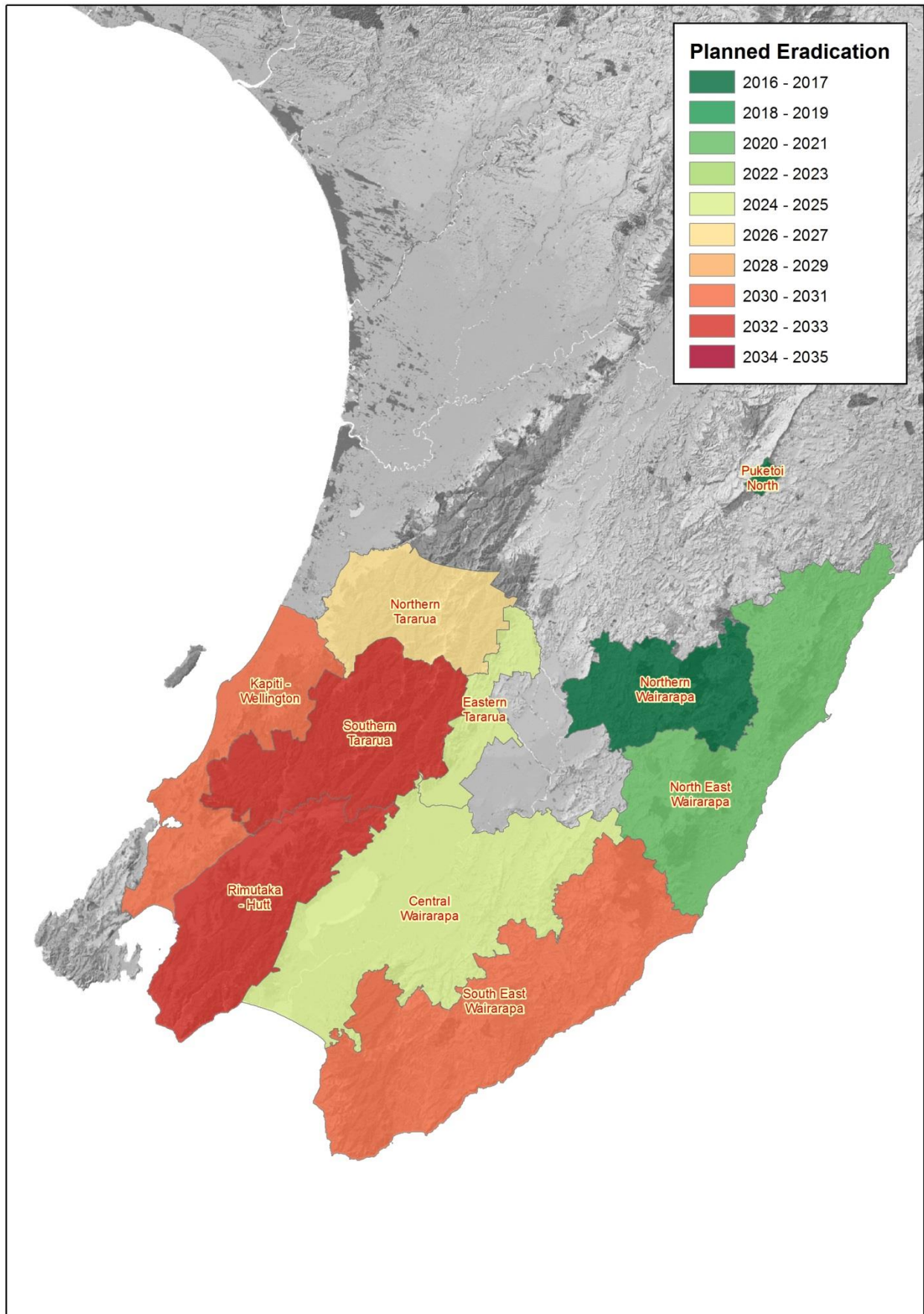
The second primary objective milestone is to achieve TB freedom in possums by 2040. While the term TB freedom is defined under clause 5(1A) of the (National Bovine Tuberculosis Pest Management) Plan Order 1998, a proxy measure of the number of VRA hectares will be used for the second milestone. The objectives 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
North Island	2.12	1.69	1.33	1.26	1.11	0.84	0.67	0.44	0.34	0	0

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



Map 1: Central North Island Vector Risk Area/TB Management Areas and planned timeframes for possum TB freedom 2016-2035



Map 2: Southern North Island Vector Risk Area/TB Management Area and planned timeframes for possum TB freedom 2016-2035

The table below shows the planned possum TB freedom timeframes for North 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 Possum TB Freedom Date	VRA Possum TB Freedom Date
Central North Island	1,397,634	Hikumu Enviro	50,773	2016	2033
		Kirikau Enviro	38,028	2016	
		Rangitoto Range Enviro	55,300	2016	
		West Taupo	27,326	2016	
		Whakahoro Enviro	38,144	2016	
		Patunamu	6,726	2017	
		Hauhungaroa Enviro	91,004	2018	
		Mangaohane	8,151	2018	
		Retaruke Enviro	44,062	2018	
		Bay of Plenty	43,668	2018	
		National Park Enviro	65,967	2018	
		Raetihi Buffer	11,263	2019	
		East Taupo Central	31,790	2021	
		Taihape	39,995	2020	
		Whanawhana to Opouahi	95,485	2020	
		Hatepe Lake	34,720	2022	
		Whirinaki	13,543	2023	
		Ohakune Farmland	31,561	2024	
		Taharua	22,868	2024	
		Turangi	52,899	2024	
		Urewera	103,219	2026	
		Middle Hawkes Bay	73,114	2027	
		Ngamatea-Timahanga	51,926	2027	
		Ruapehu	44,306	2028	
		Hatepe Kaimanawa	15,064	2029	
		Waipunga	81,886	2029	
		Mangatepopo	8,614	2031	
		Waihohonu	35,786	2031	
		Kaweka	91,657	2033	
		Rangipo	88,737	2033	
North Waikato	13,365	North Waikato	13,365	2018	2018
Southern North Island	713,128	Northern Wairarapa	50,521	2017	2033
		Puketoi North	1,985	2017	
		North East Wairarapa	107,046	2020	
		Central Wairarapa	125,960	2025	
		Eastern Tararua	23,629	2025	
		Northern Tararua	50,863	2026	
		South East Wairarapa	140,276	2030	
		Kapiti-Wellington	58,337	2031	
		Southern Tararua	80,402	2032	
		Rimutaka-Hutt	74,109	2033	

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

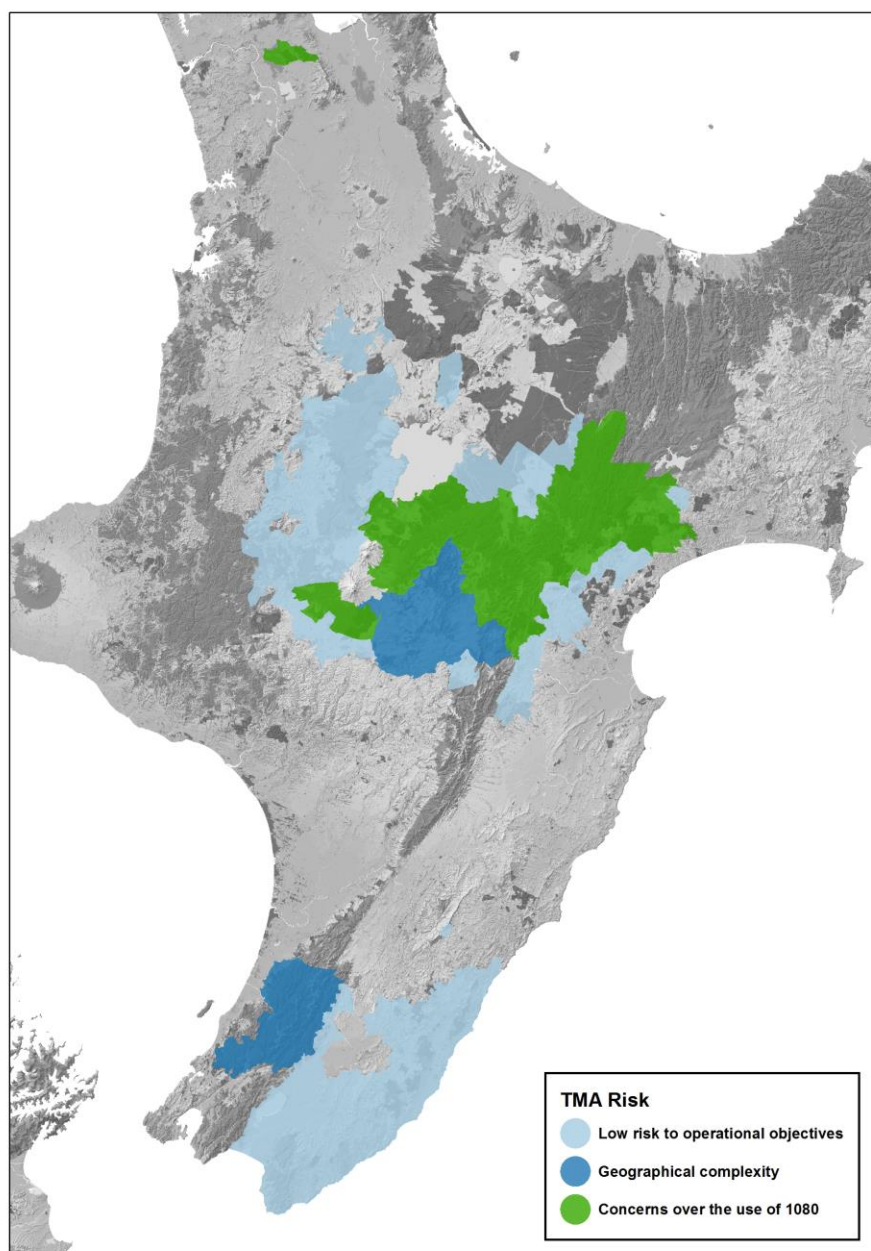
4 RISK MANAGEMENT

RISKS AT TB MANAGEMENT AREA LEVEL

Localised risks which could impact individual operations in the North 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

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: North Island areas of localised risk

5 TB MANAGEMENT AREA PLANS

The Vector Risk Areas (VRAs) are made up of one or more TB Management Areas (TMAs).

Each TMA has an operational plan and objectives for TB freedom in livestock (if applicable), Tb freedom in possums, and the total area of VRA reduction in hectares.

TMAs are areas with similar epidemiological and geographical characteristics which can enable wildlife control and disease surveillance activities to be contracted in an efficient and cost effective 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 VRA TB freedom.

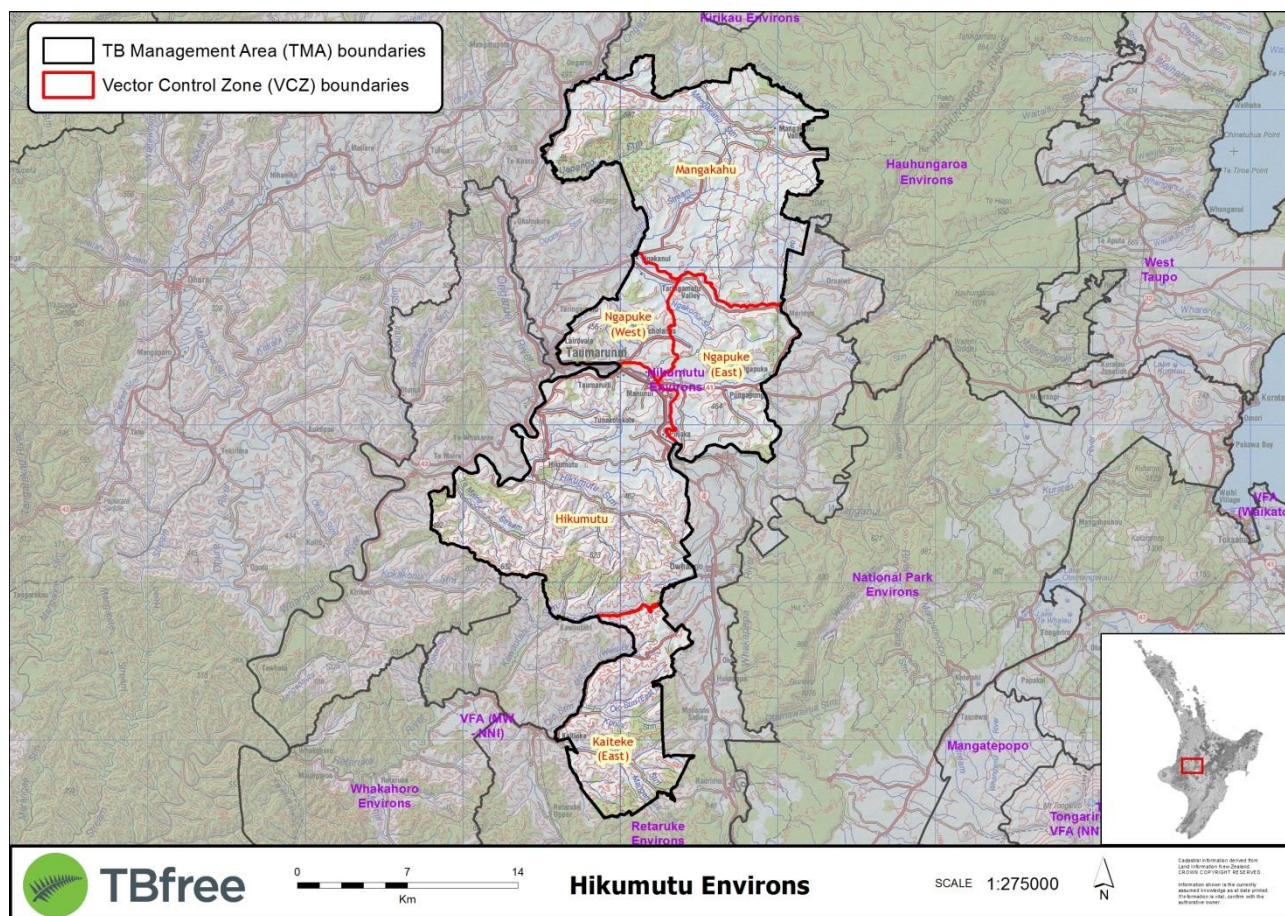
TMAs themselves are made up of one or more Vector Control Zones (VCZs). Each VCZ will have a milestone date when possum TB freedom is declared. This date will be determined when a predetermined probability-of-freedom (POF) from TB in possums is reached for that VCZ.

When the last VCZ within a TMA achieves possum TB freedom, the TMA will have achieved VRA TB freedom.

The order of the TB Management Areas in this document follows the order that is shown in Table 3 on page 10. This allows the reader to be able see the TMAs grouped within their respective Vector Risk Areas.

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5.1 HIKUMUTU ENVIRONS



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2016
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 50,773

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Hikumutu	17,263	2016
Kaitieke East	7,563	2016
Mangakahu	15,683	2016
Ngapuke East	6,849	2016
Ngapuke West	3,415	2016
Total	50,773	

DESCRIPTION OF TB MANAGEMENT AREA

The Hikumutu Environs TMA is located in northern part of the Manawatu/Whanganui Region. The northern most point is Ongarue and the eastern boundary of the TMA follows the Hauhungaroa Ranges boundary heading south to the southern-most point just south of the Raurimu-Kaitieke Road. The western boundary of the TMA goes from Kaitieke north to Taumarunui township then on to the Ongarue River at Te Koura north to Ongarue.

The TMA has a mixture of intensive farmland, extensive hill country, native and exotic forest, and river valleys.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Possum control started in this TMA in 1996 and has kept the possum population low since that time.

PLANNED VECTOR RISK AREA REDUCTION

Hikumutu Environs	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	50,773	0	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected herd activities

There are no infected herds within the TMA.

Summary of Operations Planned

The final possum control operation was carried out in 2015/16. In 2016/17 will be the final possum survey and POF analysis.

Innovations, Initiatives and Research and Development

None planned.

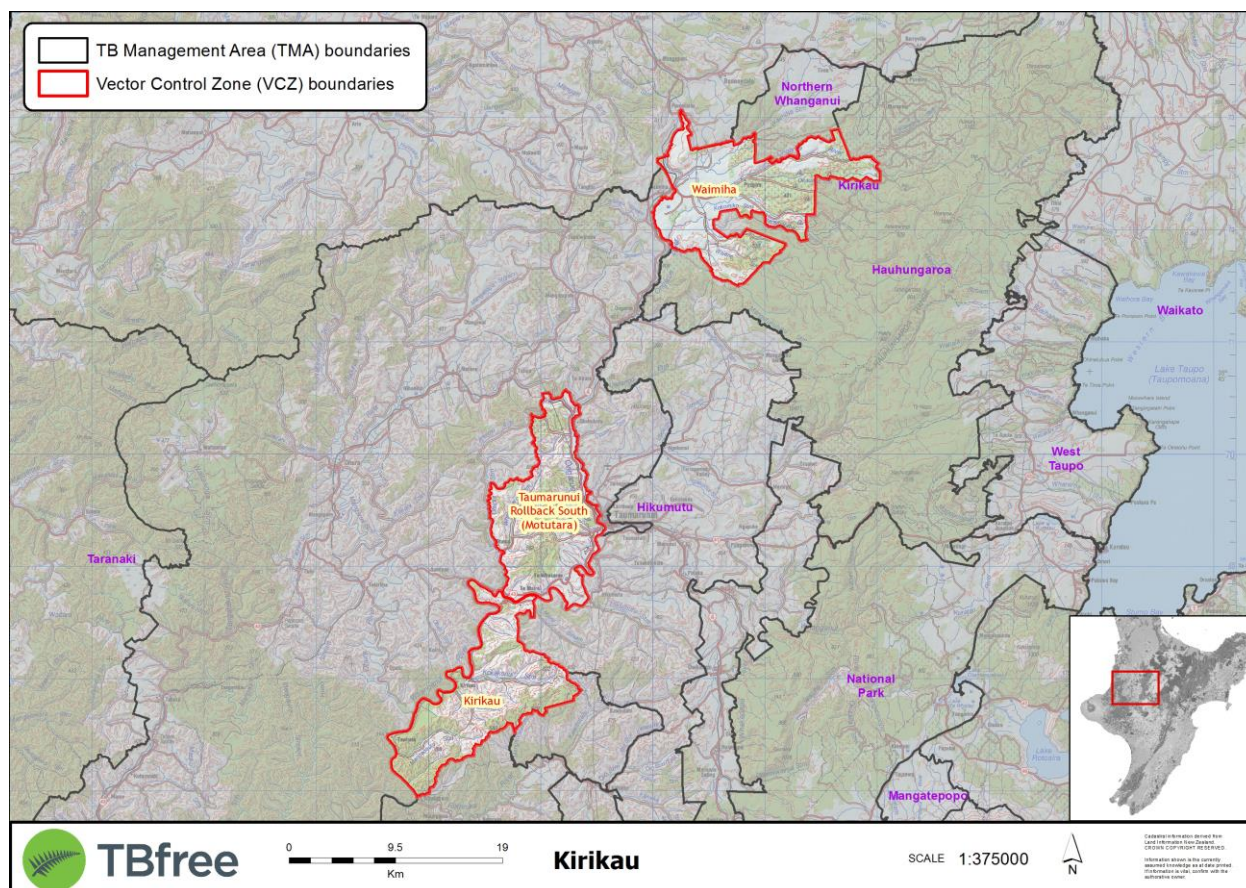
RISK MANAGEMENT

There are no specific risks associated with this TMA.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

The Hikumutu TMA is well covered in livestock farming and so ongoing TB testing of livestock will provide the required assurance that TB is eradicated.

5.2 KIRIKAU ENVIRONS



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2016
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 38,028

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Kirikau	12,065	2016
Taumarunui Rollback South (Motutara)	11,827	2016
Waimiha	14,136	2016
TMA Total	38,028	

DESCRIPTION OF TB MANAGEMENT AREA

The Kirikau Environs TMA is located in the northern part of the Manawatu/Whanganui Region and is to the immediate west of Taumarunui township.

The TMA has a mixture of intensive farmland, extensive hill country, native and exotic forest, and river valleys.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

All the VCZ's have been under vector control for at least 10 years and have all completed their final control and survey for data for POF.

PLANNED VECTOR RISK AREA REDUCTION

Kirikau Environs	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	38,028	0	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected herd activities

There are no infected herds in the Kirikau Environs TMA.

Summary of Operations Planned

There is no further vector control work planned for the Kirikau Environs TMA. In 2016/17 the final POF analysis will be undertaken.

Innovations, Initiatives and Research and Development

None planned.

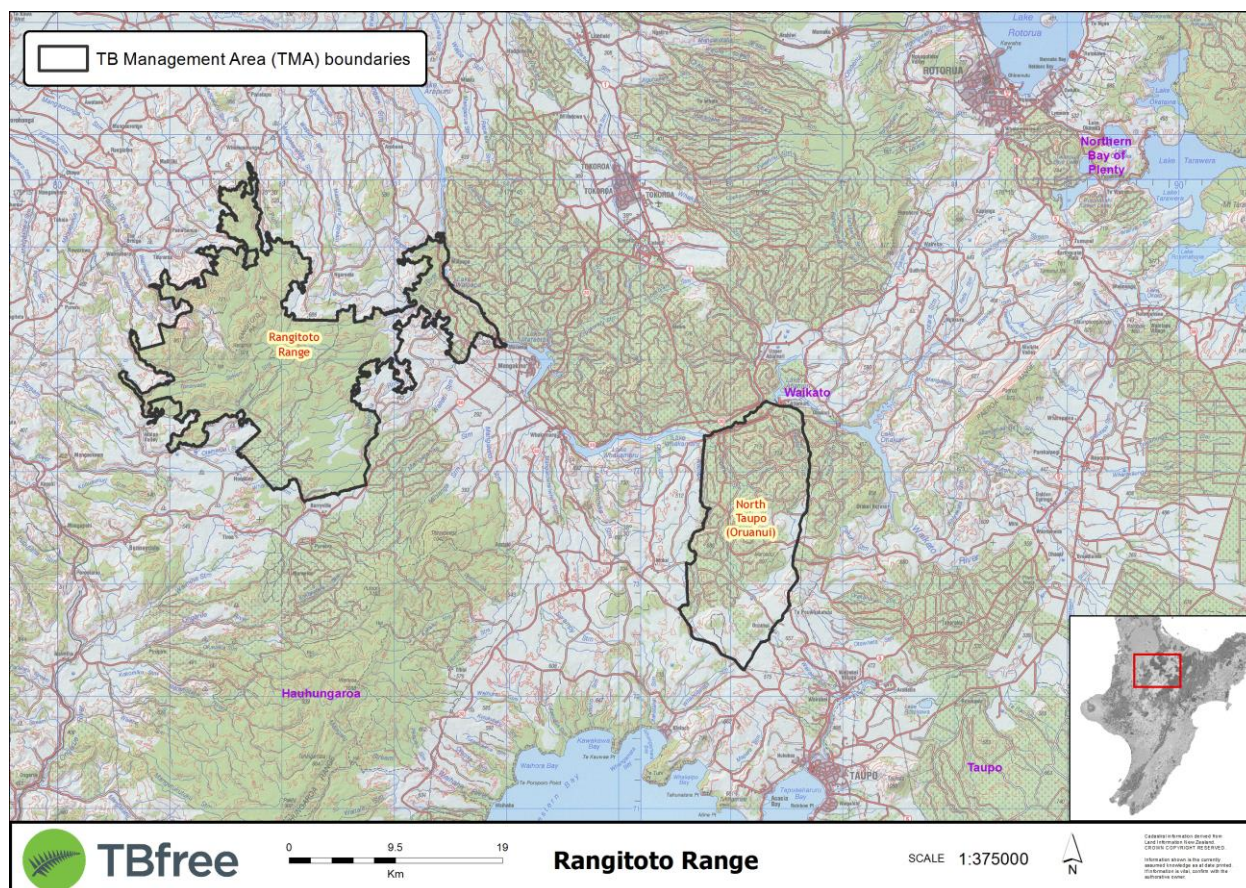
RISK MANAGEMENT

There are no specific risks associated with this TMA.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Livestock testing and pig surveys will supply the necessary confidence that the area is confirmed to be TB free.

5.3 RANGITOTO RANGE ENVIRONS



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2016
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 55,300

VCZ Name	Hectares (VRA)	Planned year of TB freedom
North Taupo (Oruanui)	18,708	2016
Rangitoto Range	36,592	2016
TMA Total	55,300	

DESCRIPTION OF TB MANAGEMENT AREA

The Rangitoto Range Environs TMA is located in the southern Waikato region. The Rangitoto Range is covered in native bush with some areas of exotic forest. The TMA extends from Wharepuhunga in the north to the Waikato River in the east, south to Barryville and west to the Waipa River. The North Taupo East component of the Rangitoto Environs TMA is located 30 km to east of the main range and south of the Waikato River and is mainly exotic pine forest.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

The Rangitoto Range had its first aerial control in the 1987 and final control in August 2014. It was the centre of a very high rate of infection in domestic herds especially in Ngaroma in the 1990's. The POF analysis for Rangitoto Range and North Taupo East were completed in 2015/16 and shown them to be above the threshold but have not been approved for

revocation of Vector Risk status until more pigs are caught from areas with low sensitivity of detection. This work is being completed in 2016/17.

PLANNED VECTOR RISK AREA REDUCTION

Rangitoto Range	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	55,300	0	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds in the Rangitoto Range Environs TMA as at August 2016.

Summary of Operations Planned

In 2016/17, final POF surveillance activity (pig surveys) will be carried out and final POF analysis completed.

Innovations, Initiatives and Research and Development

None planned.

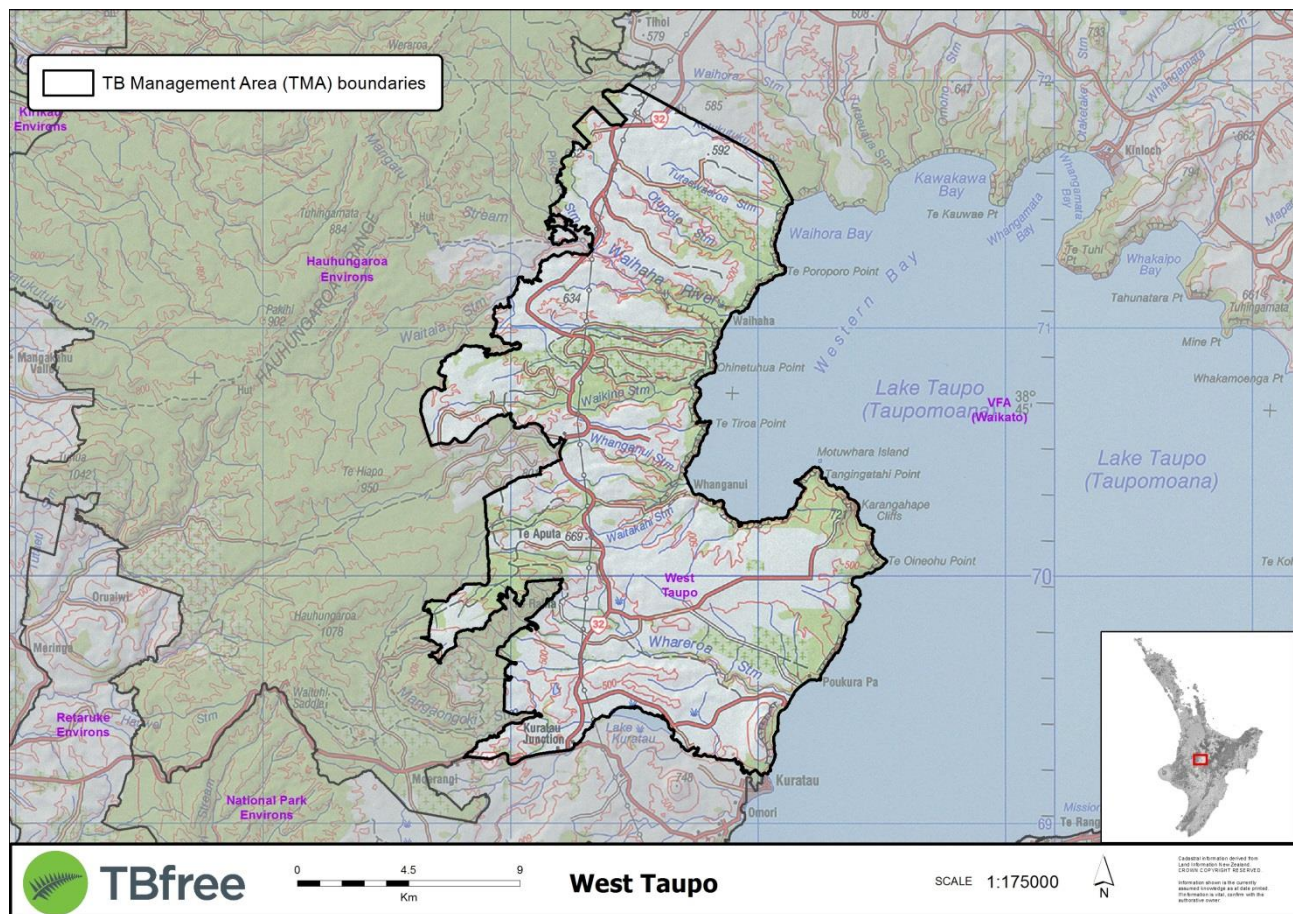
RISK MANAGEMENT

There are no known risks specific to this TMA.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

The Rangitoto Range Environs TMA will be well served with pig surveys due to the abundance of pigs in the area for future assurance of TB freedom.

5.4 WEST TAUPO



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2016
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 27,326

VCZ Name	Hectares (VRA)	Planned year of TB freedom
West Taupo	27,326	2016
Total	27,326	

DESCRIPTION OF TB MANAGEMENT AREA

The West Taupo TMA is located in the northern north island in the Waikato region and is the strip of farmland known as the “Western Bays” that runs between the Hauhungaroa Ranges on the west and Lake Taupo on the east. It is extensively farmed hilly beef country with a strip of native bush against the lake edge. The northern boundary is the Kotukutuku Stream in the north and the southern boundary is from Kuratau township on the lake edge.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Possum control started in the West Taupo TMA in 1988 in response to the high number of infected herds in the area and has had regular ground and aerial control since that time.

PLANNED VECTOR RISK AREA REDUCTION

West Taupo	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	27,326	0	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

In 2015/16 the final ground control was completed and the final aerial control undertaken. In 2016/17, the final POF surveillance activity (possums and pigs) will be carried out and final POF analysis completed.

Innovations, Initiatives and Research and Development

None planned.

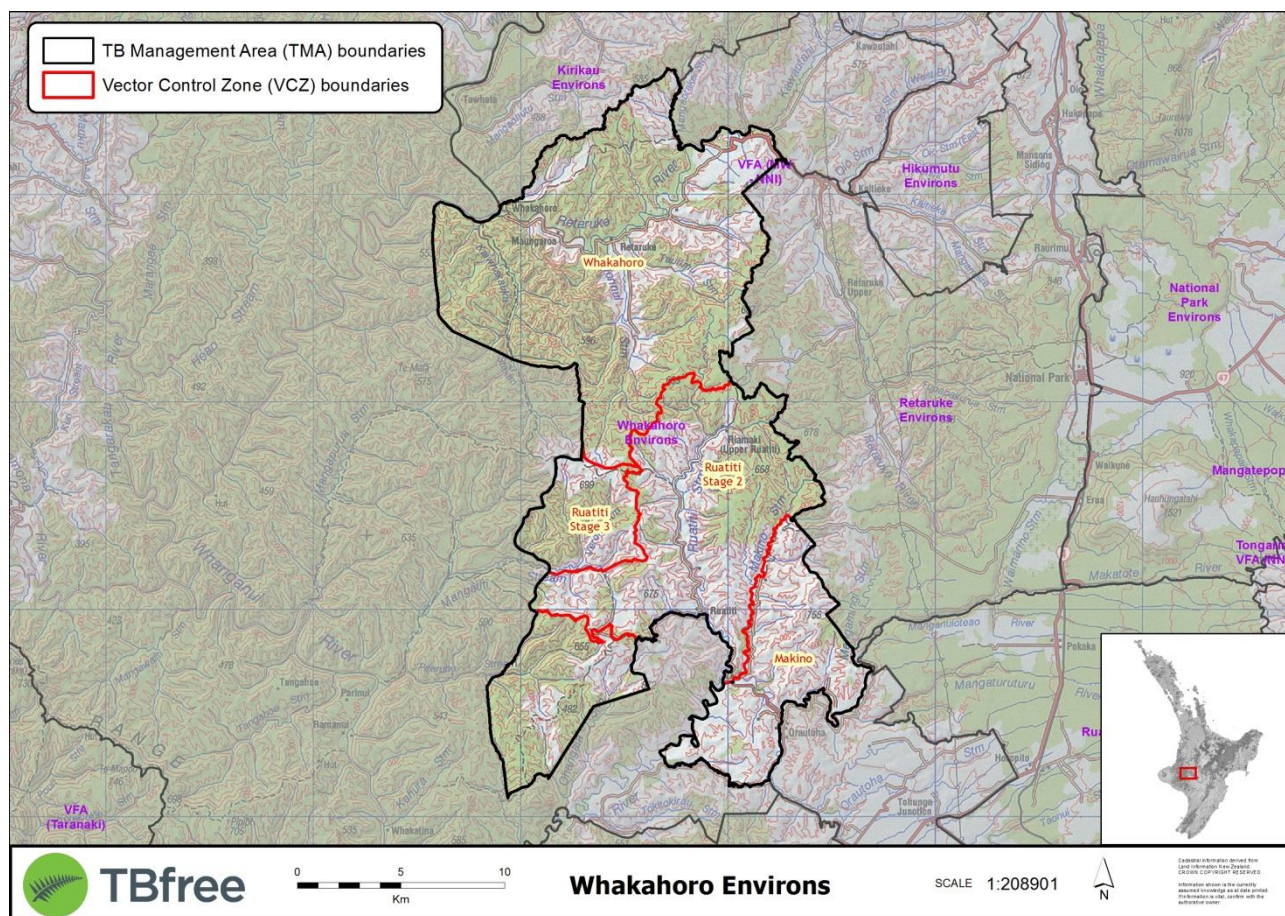
RISK MANAGEMENT

There are no risks identified as being specific to this TMA.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

The livestock testing in the Western Bays farming and pig surveys in the bush in both the lake edge and the Hauhungaroa Ranges will provide assurance that this TMA remains free of TB.

5.5 WHAKAHORO ENVIRONS



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2016
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 38,144

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Makino	5,104	2016
Ruatiti Stage 2	9,355	2016
Ruatiti Stage 3	6,198	2016
Whakahoro	17,487	2016
Total	38,144	

DESCRIPTION OF TB MANAGEMENT AREA

The Whakahoro Environs TMA is located in the northern Manawatu/Whanganui region. It is hill country just north and west of the Whanganui River. Its northern most point is just north of Pukerata with the eastern boundary being the Mangaorakei Stream and south-east along the Retaruke River to Ruatiti on Whanganui River. The western boundary of the Whakahoro Environs TMA is deep bush with very little in the way of distinguishing features.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

The vector control started in the area in Makino in 1994, Ruatiti Stage 3 in 1996 and Whakahoro in 2001 and has continued until the final control in 2015/16. There have been two infected pigs found within the TMA in the Ruatiti Stage 3 Vector Control Zone; one was found in 2006/07 and the other in 2007/08.

PLANNED VECTOR RISK AREA REDUCTION

Whakahoro Environs	2014	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	38,144	0	0	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

In 2015/16 the final ground control was completed and the final aerial control undertaken. In 2016/17, the final POF surveillance activity (possums and pigs) will be carried out and final POF analysis completed.

Innovations, Initiatives and Research and Development

None planned.

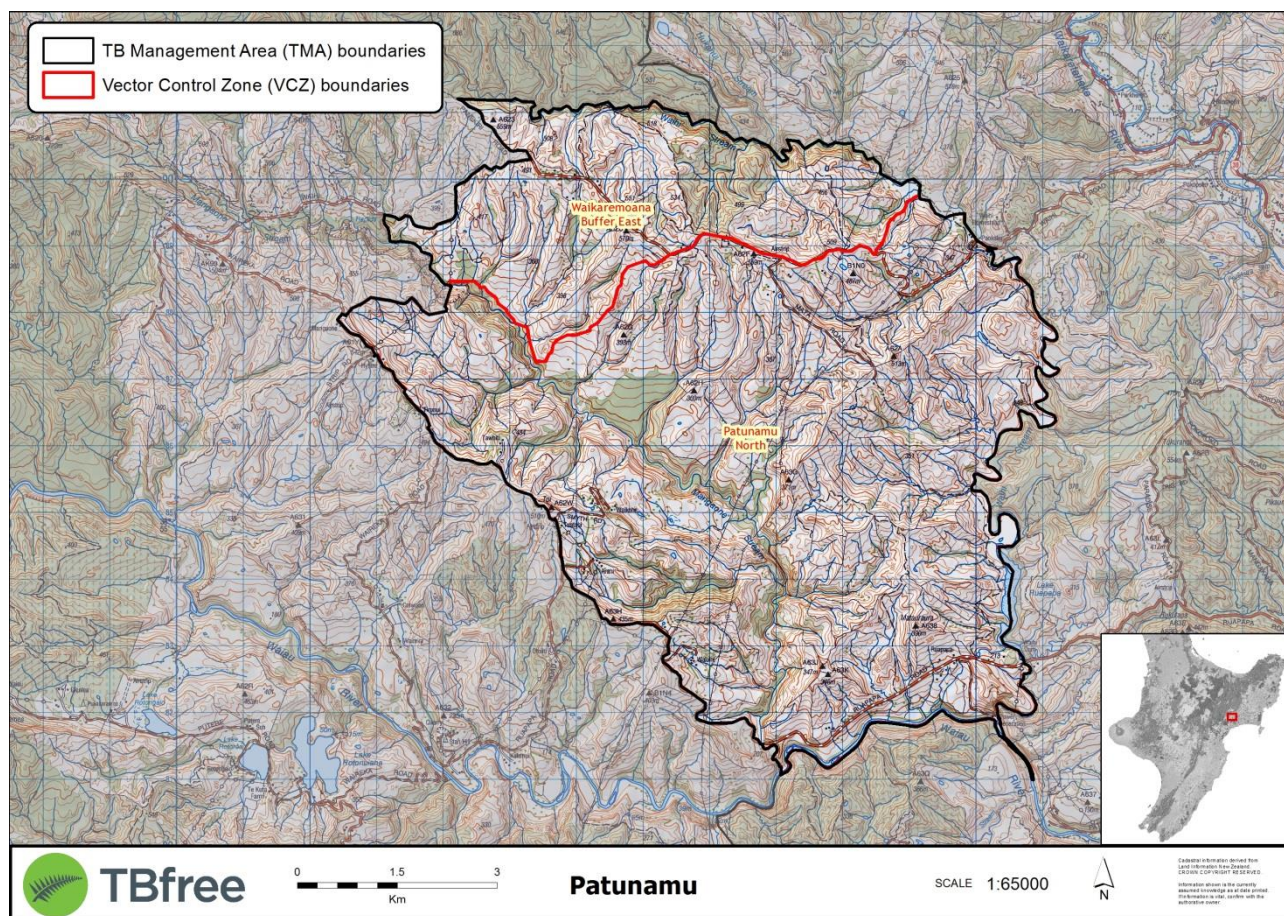
RISK MANAGEMENT

There are no known risks specific to this TMA.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

There will be pig surveys in the bush portions of the TMA and livestock surveillance on the farmland to provide assurance that the TMA remains TB free.

5.6 PATANAMU



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2017
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 6,726

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Patunamu North	5,216	2017
Waikaremoana Buffer East	1,510	2017
Total	6,726	

DESCRIPTION OF TB MANAGEMENT AREA

Patunamu is a small TMA on the eastern edge of the Central North Island Vector Risk Area. The Waiau River forms its southern boundary and Waihi Stream its northern and eastern boundaries. It is steep hill country with cover being principally close to streams and in gullies. There is also a small area of forestry in its south west corner. This is an extensively farmed area with a low number of herds.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

There is no record of infected herds or tuberculous vectors within this TMA.

Patunamu North has had several years of output-based possum control bringing the possum population to low levels. In 2015/16 a detection/detection based control and concurrent survey was undertaken with no TB detected. Waikaremoana

Buffer East has also had vector control for a number of years; this has been input control and more recently intensive output control. A detection/detection-based control and concurrent survey is being undertaken in this VCZ early in the 2016/17 year.

Pig surveys have been undertaken in this TMA for several years with no cases of TB detected.

PLANNED VECTOR RISK AREA REDUCTION

Patunamu	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	6,726	0	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herds Activity

There are no infected herds within the TMA.

Summary of Operations Planned

In 2015/16, the final POF surveillance activity (possums) was carried out in Patunamu North. During 2016/17, the final POF surveillance activity (possums and pigs) will be carried out in Waikaremoana Buffer East. On the basis of no TB findings, final POF analysis will be completed in 2017/18.

Innovations, Initiatives and Research and Development

None planned.

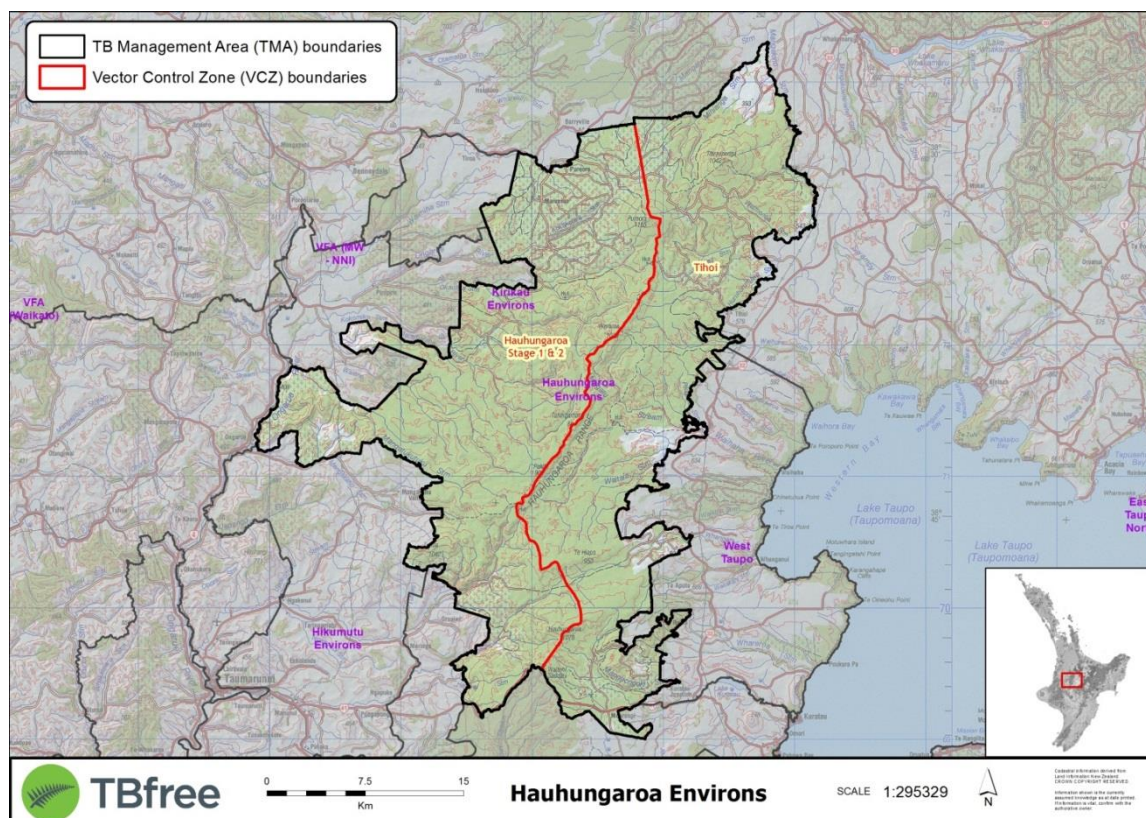
RISK MANAGEMENT

There are no issues or risks that are unique to the Patunamu TMA.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys and herd surveillance will be undertaken to prove biological eradication of TB.

5.7 HAUHUNGAROA ENVIRONS



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2018
- Herd TB freedom date: N/A
- Total area of VRA reduction (hectares): 91,004

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Tihoi	41,939	2018
Hauhungaroa	49,065	2018
Total	91,004	

DESCRIPTION OF TB MANAGEMENT AREA

The Hauhungaroa Environs TMA is located in the southern Waikato and northern Manawatu/Whanganui Regions. The TMA is essentially the Hauhungaroa Ranges, including the Pureora Forest Park, and lies on the western side of Lake Taupo. Northern boundary is southern edge of the Rangitoto Ranges and State Highway 30 between Te Kuiti, Bennydale and Mangakino. Habitat is primarily native bush. State Highway 41 between Taumarunui and Turangi is the southern boundary.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

The first aerial of the Hauhungaroa Ranges was completed in 1994 but it wasn't until a better coordinated aerial in 2005 across the whole ranges at the same time that a really good outcome was achieved. There have been aerals in 2000, 2005, 2011 and 2016.

PLANNED VECTOR RISK AREA REDUCTION

Hauhungaroa Environs	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	90,160	0	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activity

There are no herds within the Hauhungaroa Environs TMA.

Summary of Operations Planned

In 2015/16, the final aerial across the Hauhungaroa Ranges was completed. In 2016/17, POF surveillance (pig and deer surveys) will be undertaken across the whole area aerially treated in 2015/16. In 2017/18, final POF surveillance (pig and deer surveys) will be undertaken to ensure good coverage for the POF analysis. On the basis of no TB findings, final POF analysis will be completed in 2018/19.

Innovations, Initiatives and Research and Development

The Hauhungaroa Ranges has been one of the “Proof-of-Concept” TB eradication areas under the previous NPMP. It has been the site for multiple Landcare Research projects over the past five years, which have been used to trial new and innovative techniques. The final innovation is the “survey-then-control” concept that will be run in conjunction with the standard POF analysis.

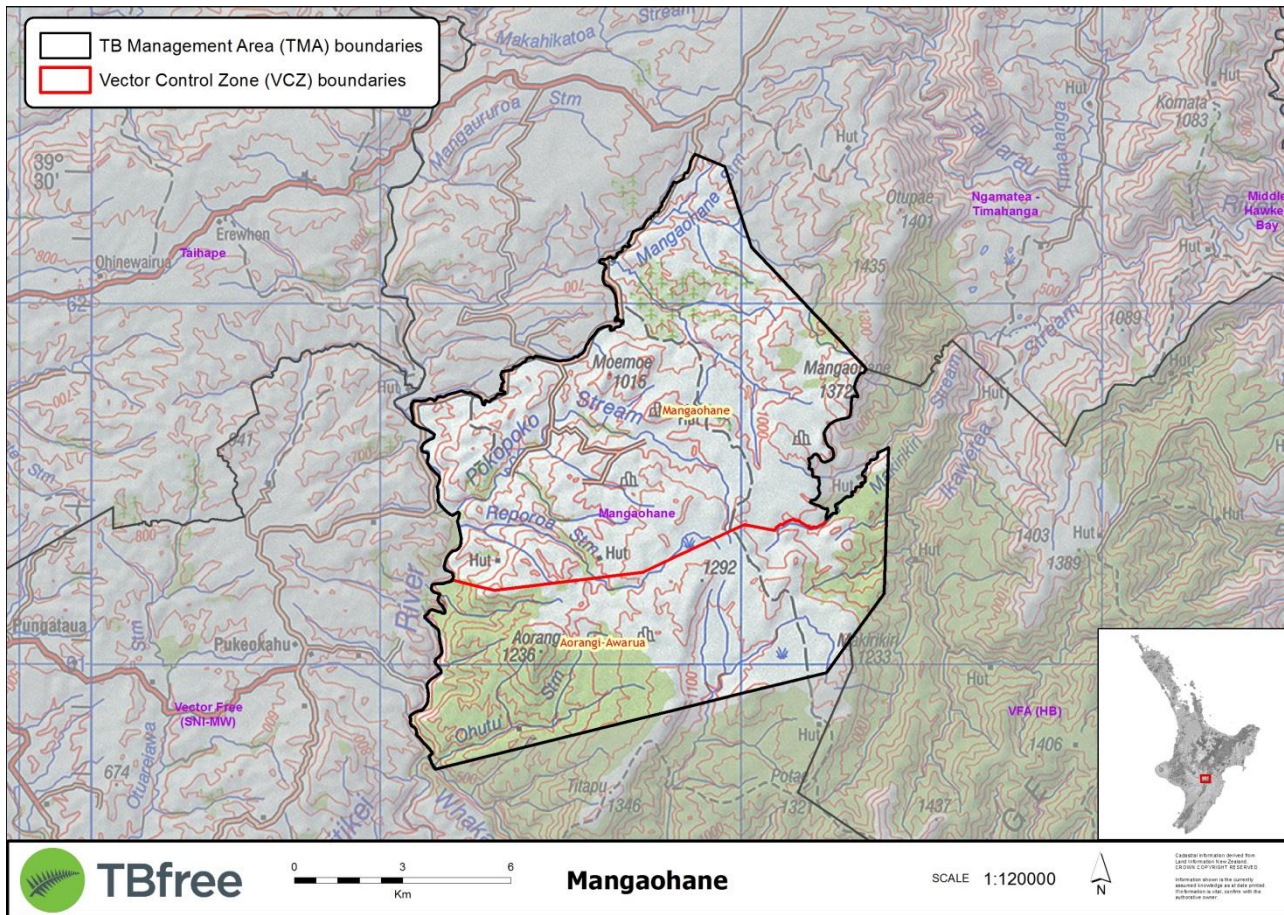
RISK MANAGEMENT

There are no specific risks with the Hauhungaroa Environs TMA over and above those associated with steep terrain and dense bush.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

As there are no herds within the Hauhungaroa Environs TMA then assurance will need to be provided with ongoing pig surveys.

5.8 MANGAOHANE



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2018
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 8,151

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Mangaohane	8,151	2018
Total	8,151	

DESCRIPTION OF TB MANAGEMENT AREA

The Mangaohane TMA is north east of Taihape. Its western boundary is the Rangitikei River, the northern boundary is Mangaohane Rd and east and south are the northern Ruahine Range. The Mangaohane VCZ is steep hill country which rises to over 1,000 metres. It is grazed by two large farms and is predominantly pasture with vegetation in gullies, along streams etc. The Aorangi Awarua VCZ is not grazed and is mainly bush-covered steep hill country, again rising to over 1000 metres. At the higher altitudes it has areas of only low vegetation.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Historically the herds grazing within the Mangaohane VCZ have been infected with the most recent episode being in 2004. There is no record of TB being found in the vector population.

The Mangaohane VCZ has had regular ground control output based work over several years plus some input control with concurrent surveys. More recently output based work with very low targets has been undertaken and a

detection/detection-based control with concurrent survey completed in one stratum. Aorangi Awarua has had targeted control in the past.

PLANNED VECTOR RISK AREA REDUCTION

Mangaohane	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	13,676	0	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds in the TMA.

Summary of Operations Planned

Aorangi Awarua gained a vector free status in 2016 and no further control work will be undertaken. A detection/detection-based control with concurrent possum survey will be completed in the second Mangaohane stratum in 2016/17 and potentially 2017/18 if determined necessary. If no TB is found, a case for freedom from TB in possums will be proposed in 2018/19.

Innovations, Initiatives and Research and Development

None planned.

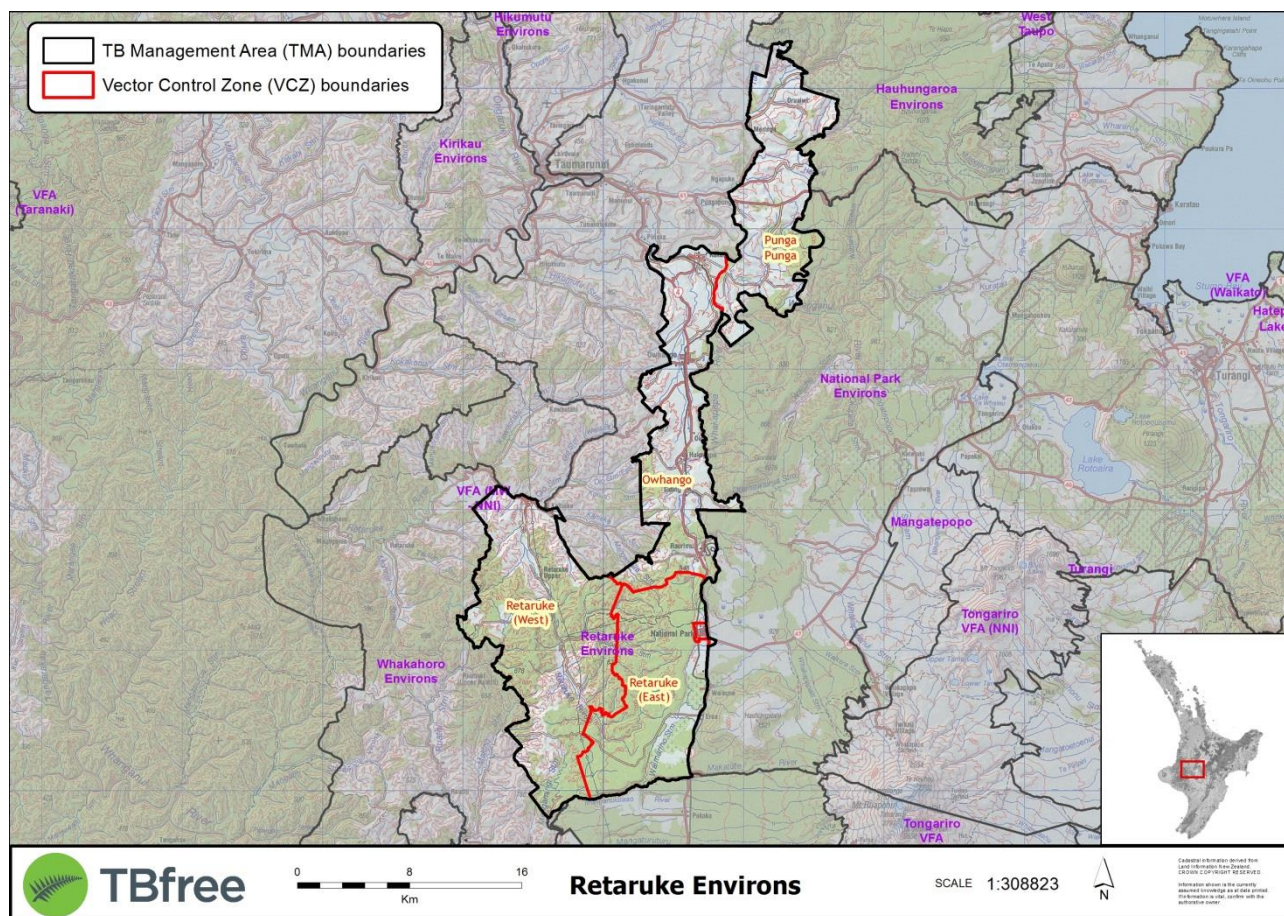
RISK MANAGEMENT

The principal issue in this area is the high altitude that the VCZs rise to. This makes time of year and weather an important factor in completion of control.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys and herd surveillance will be undertaken to prove biological eradication of TB.

5.9 RETARUKE ENVIRONS



TB MANAGEMENT AREA OBJECTIVES

- Possum TB freedom date: 2018
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 44,062

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Owango	10,144	2018
Punga Punga	9,015	2018
Retaruke East	9,752	2018
Retaruke West	15,151	2018
Total	44,062	

DESCRIPTION OF TB MANAGEMENT AREA

The Retaruke Environs TMA is located west of the Central North Island plateau in the northern Manawatu/Whanganui region. It is bounded by the Hauhungaroa Ranges in the north and east, and includes the more intensively farmed beef and dairy areas south of Taumarunui through to Owango and Raurimu. Southern boundary is at National Park, and Erua and western extent is Upper Ruatiti, Upper Retaruke and to Kaiteke.

The TMA has a mixture of intensive farmland, extensive hill country, native forest and river valleys.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Vector control started in the northern part of the TMA in 1990/91 and in the southern area in 2002. The possum numbers have been kept low for the past 10 years across the whole TMA.

PLANNED VECTOR RISK AREA REDUCTION

Retaruke Environs	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	44,062	0	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds in the TMA.

Summary of Operations Planned

In 2016/17, final output-based possum control will be carried out in all ground strata and the final aerial controls carried out in aerial strata.

In 2017/18 and 2018/19, POF surveillance (possum and pig surveys) will be carried out. If no TB is found, a case for freedom from TB in possums will be proposed in 2018/19.

Innovations, Initiatives and Research and Development

None planned.

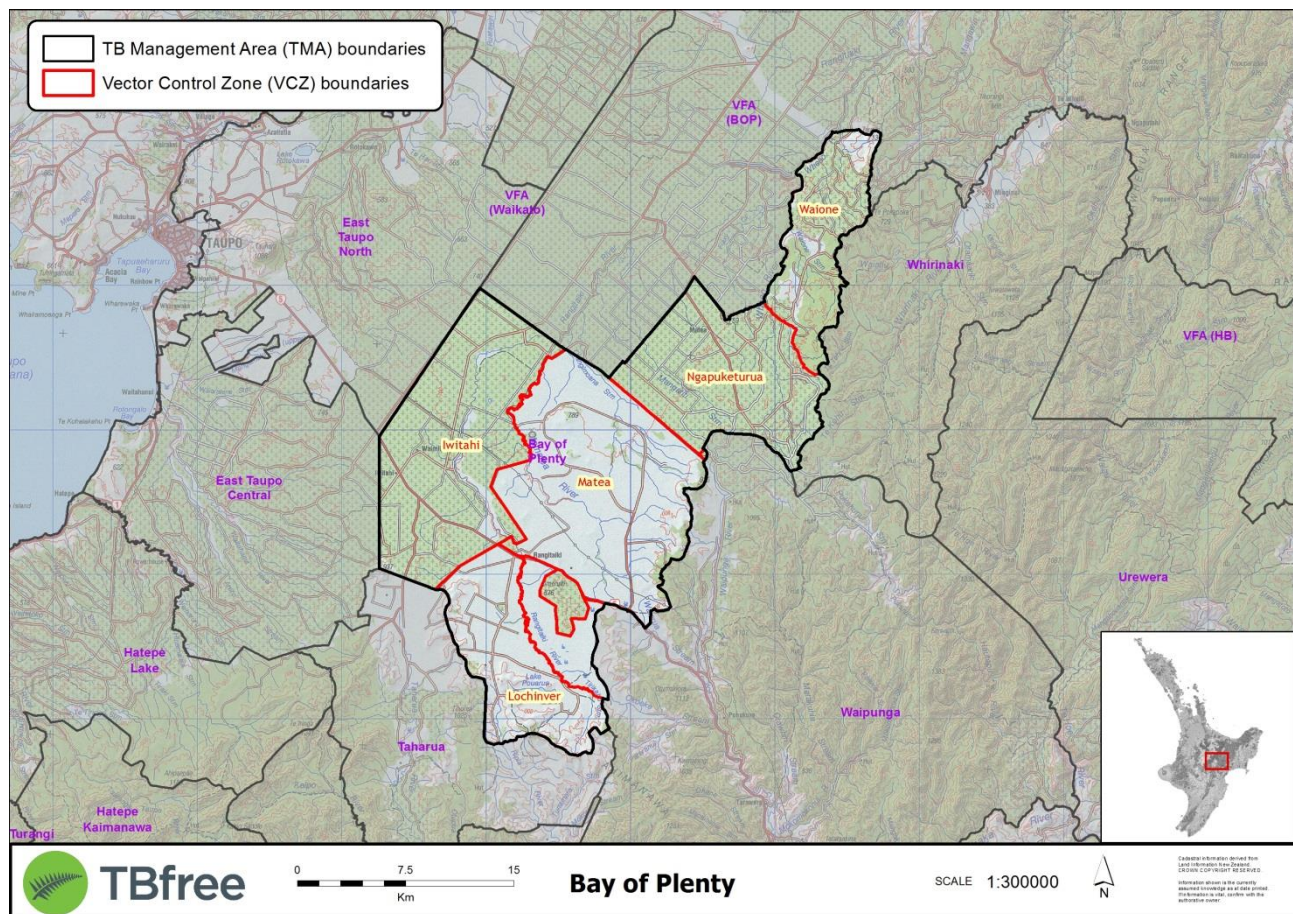
RISK MANAGEMENT

There are no specific risks associated with the Retaruke Environs TMA

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

There will be livestock surveillance throughout the Retaruke Environs TMA and pigs can contribute to the assurance of TB freedom.

5.10 BAY OF PLENTY



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2019
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 43,668

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Iwitihi	15,254	2019
Lochinver	8,022	2019
Matea	16,942	2019
Rangitaiki Frost Flats	2,580	2019
Rangitaiki Pines	870	2019
TMA Total	43,668	

DESCRIPTION OF TB MANAGEMENT AREA

The Bay of Plenty TMA is located in the south-eastern area of the Bay of Plenty region, from the Kaiangaroa forest in the west to the Whirinaki/Te Urewera forests in the east, with the northern most point being Taupiri mountain. The southern boundary is Lochinver Station.

It is a mixture of exotic forest and intensive farmland.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

There has been vector control undertaken in the Bay of Plenty TMA since 2000 and has been kept below 2% for the past 10 years to prevent the migration of TB out of the uncontrolled land to the south.

There have been several infected vectors (pigs and ferrets) found within the Bay of Plenty TMA with the most recent find being a ferret on Lochinver Station in 2006 and a pig in 2008.

PLANNED VECTOR RISK AREA REDUCTION

Bay of Plenty	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	43,668	43,668	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

In 2016/17, aerial control will be carried out in Iwitihi and a pig survey for POF carried out on Lochinver. In 2017/18, aerial control will be accrued out in Ngapuketurua, with final output-based possum undertaken in all ground strata across the whole TMA. A pig survey for POF will be carried in Iwitihi.

In 2018/19, POF surveillance (possum and pig surveys) across all ground control and aerial control strata respectively will be undertaken for final POF analysis.

Innovations, Initiatives and Research and Development

None planned.

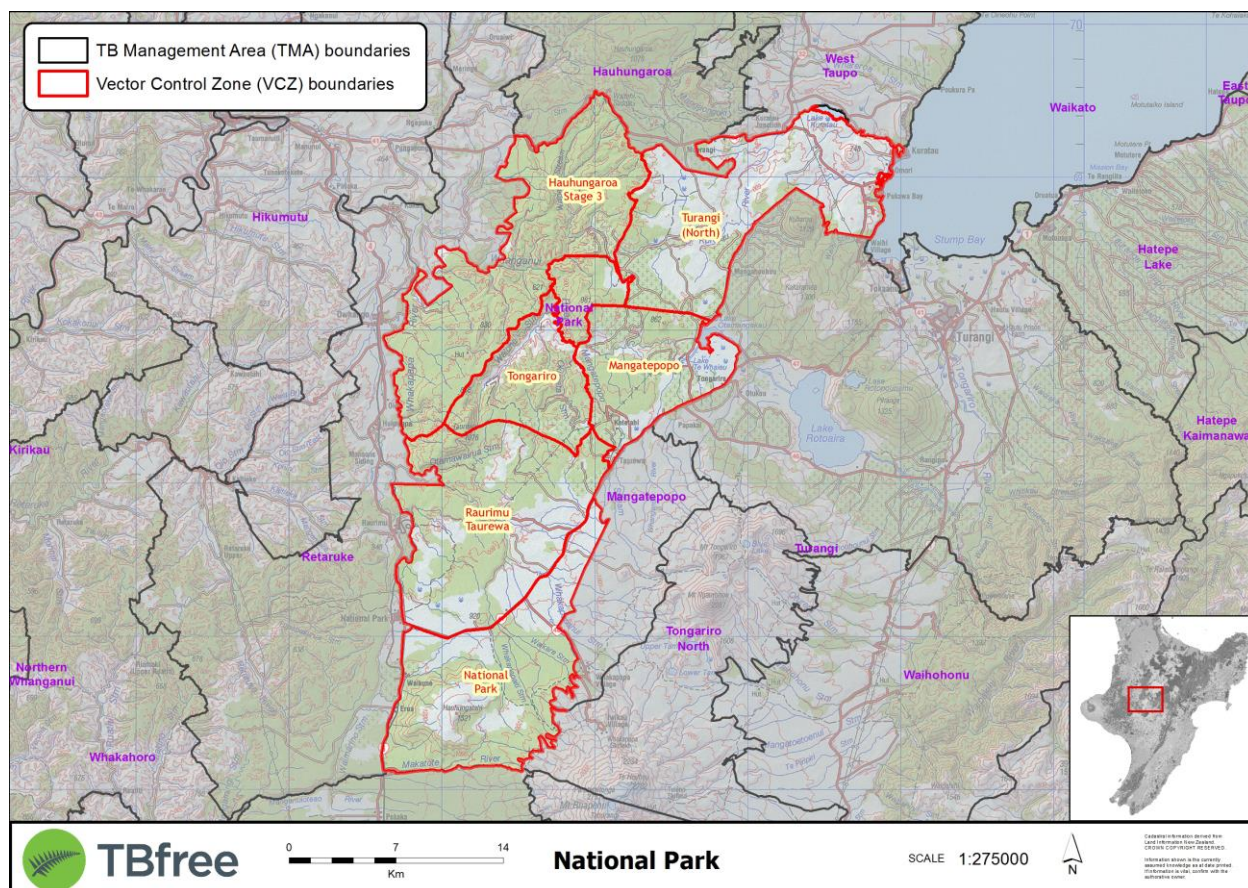
RISK MANAGEMENT

There are not any problems anticipated in this TMA.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys in suitable habitat throughout the Bay of Plenty TMA will provide ongoing assurance that the area remains TB free after its Proof of Freedom analysis.

5.11 NATIONAL PARK ENVIRONS



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2018
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 65,967

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Mangatepopo DOC	1,919	2018
Hauhungaroa Stage3	14,038	2018
Mangatepopo	6,507	2018
National Park	11,757	2018
Turangi (North)	12,916	2018
Rarimu Tauwera	13,608	2018
Tongariro	5,222	2018
Total	65,967	

DESCRIPTION OF TB MANAGEMENT AREA

The National Park Environs TMA is located in the northern Manawatu/Whanganui Region and is to the south of the Hauhungaroa Ranges below State Highway 41. It extends east to Lake Taupo and south to State Highway 4 at Makakote Viaduct. It includes the area through Lake Otamangakau and Whakapapa Village through to western boundary west of Raumiru/Taurewa and National Park.

The area is a mixture of native bush and scrub, sparse alpine habitat and some extensive farmland.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Vector control started in the National Park Environs TMA between 1991 and 1996 and has aimed at keeping the possum population low and more recently below 2%. There was an infected possum located in the Raurimu-Tauwera VCZ in 1970.

PLANNED VECTOR RISK AREA REDUCTION

National Park Environs	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	65,967	0	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

In 2016/17, aerial control will be undertaken in National Park and Hauhungaroa Stage 3 AS1. All ground strata to have output-based possum control. Pig surveys for POF within TMA. In 2017/18, aerial control will be undertaken in Hauhungaroa Stage 3 AS2, Mangatepopo and Rarimu Tauwera AS1. All ground strata to have output-based possum control. Pig surveys for POF within TMA

In 2018/19, POF surveillance (pig and possum pig surveys) will be undertaken for final POF analysis.

Innovations, Initiatives and Research and Development

None planned.

RISK MANAGEMENT

There are no specific risks associated with this TMA apart from the high altitude weather risks.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

A combination of livestock surveillance and pig surveys will provide the confidence that TB remains out of the TMA.

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- VRA TB freedom date: 2019
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 11,263

VCZ Name	Hectares (VRA)	Planned year of TB freedom
East Whangaeahu Waipapa	2,955	2017
Raetihi Buffer Stage 1 North	8,308	2019
Total	11,263	

The Raetihi Buffer TMA lies east of Raetihi, abutting the township on the TMAs north west boundary. The area is a mixture of flat terrain and rolling to steep hills. Most of the area is pasture land but there are areas of bush and scrub and also cover along the Whangaehu River which runs between the East Whangaehu North and Raetihi Buffer Stage 1 North VCZs. Herds are predominantly beef breeding and beef dry herds. Control has been underway for a number of years and since 2008/09 the TMA has received output control every second year.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Historically there have been a low number of infected herds in the TMA and there are no records of infected vectors being found.

PLANNED VECTOR RISK AREA REDUCTION

Raetihi Buffer	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	11,263	8,308	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds in the TMA.

Summary of Operations Planned

Detection/detection-based control with concurrent possum survey is underway in East Whangāehu North in 2016/17 and if no TB is found a case for freedom from TB in possums will be proposed. Ground control output-based possum control with a low target is being undertaken in Raetihi Buffer Stage 1 North during 2016/17 with detection/detection-based control with concurrent survey planned for 2017/18 and potentially into 2018/19.

Final POF surveillance and final POF analysis would be undertaken in 2019/20.

Innovations, Initiatives and Research and Development

None planned.

RISK MANAGEMENT

There are no issues or risks unique to this particular TMA

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Herd surveillance will be undertaken to prove biological eradication of TB.

TB Management Area (TMA) boundaries

Vector Control Zone (VCZ) boundaries

East Taupo (Central)

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- VRA TB freedom date: 2020
- Herd TB freedom date: N/A
- Total area of VRA reduction (hectares): 31,790

VCZ Name	Hectares (VRA)	Planned year of TB freedom
East Taupo (Waitahanui)	16,363	2020
East Taupo (Te Arero)	15,427	2020
Total	31,790	

The East Taupo Central TMA is located in the northern north island and is the Waikato region to the south of the Napier Taupo Road (State Highway 5) on the north eastern aspect of Lake Taupo and is predominantly exotic pine forest. It extends southerly down the shores of Lake Taupo from Taupo township to Hatepe and then easterly to the farmland of Tararua and northerly to Iwitahi on State Highway 5.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Vector control started in 2001 and has been planned to maintain the possum population below 2% for the past 15 years. There have been multiple infected pigs and a ferret over the years with the most recent infected pig being found in 2009.

PLANNED VECTOR RISK AREA REDUCTION

East Taupo Central	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	31,790	12,989	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no herds within the East Taupo Central TMA.

Summary of Operations Planned

During 2015/16, the East Taupo Central TMA was aerially controlled. In 2016/17, POF surveillance (pig surveys) will be carried out throughout the whole of the TMA, particularly 7A & 8 strata for POF analysis. In 2017/18, undertake final POF surveillance (pig surveys) from 7A & 8 and final POF analysis.

In 2018/19, a trigger monitor will be done in strata 7B with final aerial control in this strata being undertaken in 2020/21. In 2021/22, final POF surveillance (pig survey) and final POF analysis to be done on basis of negative results up to that point.

Innovations, Initiatives and Research and Development

None planned.

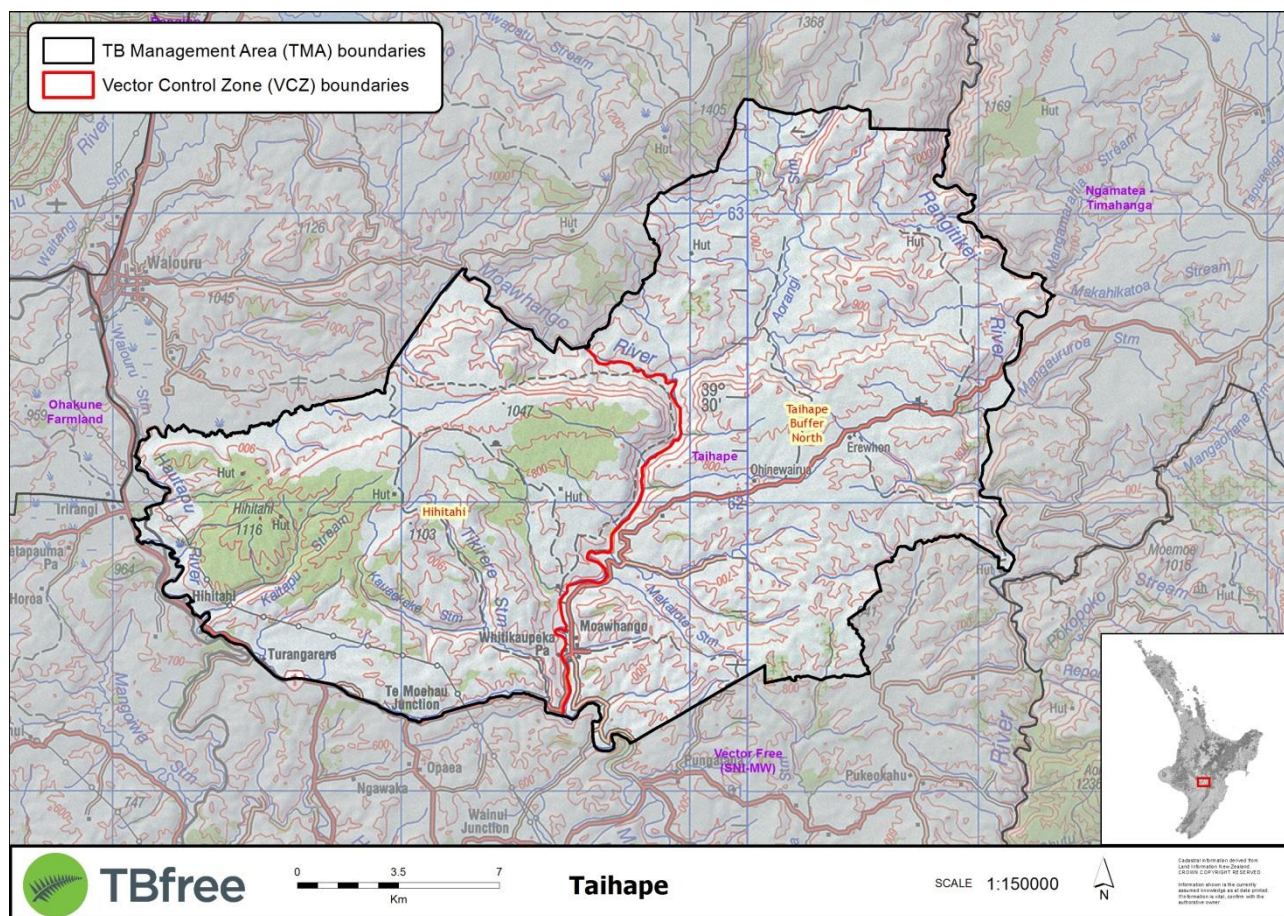
RISK MANAGEMENT

As all of the East Taupo Central TMA has received aerial vector control in the past there it is not envisaged that there will be any problems to finish the programme.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

As the entire East Taupo Central TMA is forestry then ongoing pig surveys will provide confirmation that it remains free of TB.

5.14 TAIHAPE



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2020
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 39,995

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Hihitahi	17, 151	2020
Taihape Buffer North	22, 844	2020
TMA Total	39,995	

DESCRIPTION OF TB MANAGEMENT AREA

The western boundary of the Taihape TMA is SH1, between Taihape and Waiouru, and the eastern boundary is the Rangitikei River. The area is predominantly pastoral but the Hihitahi VCZ includes the DOC Hihitahi Forest Sanctuary, plus another large area of bush. The Taihape Buffer North VCZ is relatively clear of habitat. The topography varies from rolling hills to very steep hill country with some very steep areas besides rivers and streams. The herds present are primarily beef breeding and meat production herds.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

There has been a low number of infected herds in both VCZs but no record of infected vectors being found.

Control has been regular output control with aerial control in the Hihitahi aerial stratum.

PLANNED VECTOR RISK AREA REDUCTION

Taihape	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	39,995	39,995	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA

Summary of Operations Planned

Control plus surveillance will be used to achieve possum TB freedom. Aerial control is due to be undertaken in the Hihitahi aerial stratum (Hihitahi Forest Sanctuary) during 2016/17. Detection/detection-based control with concurrent possum survey is also being undertaken in the most southerly strata of Taihape North during 2016/17. The remaining ground strata in the TMA will receive at least one more output-based possum control during 2017/18-2018/19 to maintain the possum population at very low levels followed by detection/detection-based possum control with concurrent survey during 2019/20-2020/21. A pig survey is planned for the TMA in to add additional POF surveillance data.

Innovations, Initiatives and Research and Development

None planned.

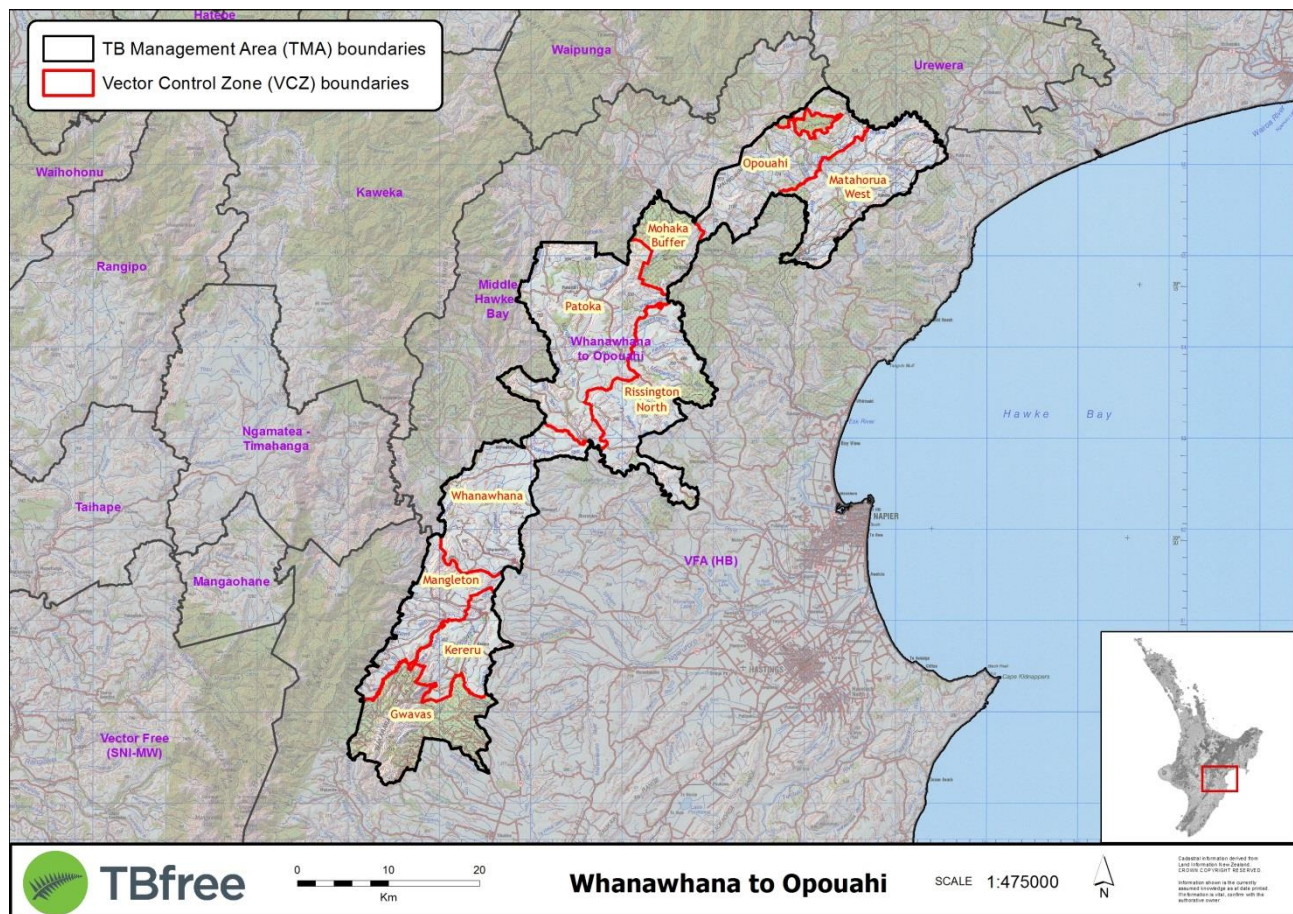
RISK MANAGEMENT

The main risk to this TMA is its location next to the uncontrolled Rangipo VCZ. Re-stratification will be undertaken so that the low risk areas can gain TB freedom earlier.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys and herd surveillance will be undertaken to prove biological eradication of TB.

5.15 WHANAWHANA TO OPOUAHİ



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2020
- Herd TB freedom date: 2017
- Total area of VRA reduction (hectares): 95,485

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Kereu	6,869	2017
Mangleton	8,226	2017
Rissington North	14,386	2017
Whanawhana	13,692	2018
Matakhorua West	13,090	2019
Boundary Stream	948	2020
Mohaka Buffer	4,993	2020
Opoouahi	11,622	2020
Patoka	21,659	2020
TMA Total	95,485	

DESCRIPTION OF TB MANAGEMENT AREA

Whanawhana to Opouahi is a long TMA that runs from the Gwavas forest and Gwavas Conservation area, south west of Hastings to the Boundary Stream Mainland Island Reserve to the north west of Napier. It is mainly easy to medium hill country with the steep Wakarara Range at its southern end. There are a number of cattle herds which are predominantly beef breeding and meat production with a small number of dairy herds. There are also areas of forestry, especially in the Gwavas and Mohaka Buffer VCZs.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

The only infected wildlife caught in this TMA was a tuberculous feral pig caught in the Gwavas VCZ in 2006. There has been a low level of infected herds over time with the most recent being in 2008/09. The highest concentration of infected herds has been in the Matahorua West VCZ. A cluster of infected herds was also detected in the Patoka/ Puketitiri area in 2000-2006. The Whanawhana to Opouahi TMA has a history of both ground control output and ground control input work with use of bait stations in some of the VCZs. Detection/detection control concurrent surveys have been undertaken in Kereru, Mangleton, Rissington North and Matahorua West in 2015/16. Aerial control has been undertaken regularly in the Gwavas VCZ and this VCZ gained a TB free status in 2016.

PLANNED VECTOR RISK AREA REDUCTION

Whanawhana to Opouahi	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	95,485	52,312	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There is one infected herd within the TMA.

Summary of Operations Planned

Control plus surveillance will be undertaken to achieve freedom from TB in possums. Output –based ground control is being undertaken in the TMA during 2016/17. A detection/detection-based control with concurrent survey for POF surveillance will be completed in the Whanawhana VCZ in the same year and the following year (2017/18). It is planned to carry out further output-based possum control work in the Mohaka Buffer, Opouahi and Patoka VCZs in 2017/18 followed by detection/detection-based control with concurrent surveys for POF surveillance in 2018/19 and 2019/20. POF analysis for Keruru, Mangleton and Rissington North will be completed in 2017/18. Work in Boundary Stream will be done in conjunction with DOC.

Innovations, Initiatives and Research and Development

None planned.

RISK MANAGEMENT

There are no issues or risks unique to this particular TMA

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys and herd surveillance will be undertaken to prove biological eradication of TB.

TB Management Area (TMA) boundaries

Hatepe Lake

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Km

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- VRA TB freedom date: 2022
- Herd TB freedom date: N/A
- Total area of VRA reduction (hectares): 34,720

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Hatepe Lake	34,720	2022
Total	34,720	

The Hatepe Lake TMA is located in the south-eastern Waikato Region and is on the eastern edge of Lake Taupo. The TMA extends south from Hatepe on the lake edge, east towards Clements Mill Road and into the Kaimanawa Ranges to Te Iringa.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

The Hatepe Lake TMA is the last area in the Northern North Island management area to start receiving possum control and infected possums were found at Motupoa in 2010 and again in 2012. There was an infected deer in 2013 and most recently an infected pig found in 2015. Most of the area has now had one aerial control as at August 2016.

PLANNED VECTOR RISK AREA REDUCTION

Hatepe Lake	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	34,720	34,720	34,720	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no herds in this TMA.

Summary of Operations Planned

In 2016/17, aerial control will be undertaken in Hatepe 3 and initial POF surveillance (pig surveys) commenced across the balance of the TMA that received aerial control in the 2015/16 (Hatepe 1A, 1B and 4). In 2017/18 it is proposed to commence initial POF surveillance (pig survey) in Hatepe 3.

During the two-year period 2018/19-2019/20, it is proposed to do trigger monitors in Hatepe 1A, 1B, 4 and 3 to determine optimum timing of final aerial treatment. It is anticipated that this indicate timing of final aerals as being 2020/21 for Hatepe 1A, 1B and 4, and 2021/22 for Hatepe3.

In 2021/11, final POF surveillance (pig surveys) will be conducted in Hatepe 1A, 1B and 4 for POF analysis. In 2022/23, final POF surveillance (pig survey) will be undertaken in Hatepe 3 and final POF analysis for the TMA concluded.

Innovations, Initiatives and Research and Development

None planned.

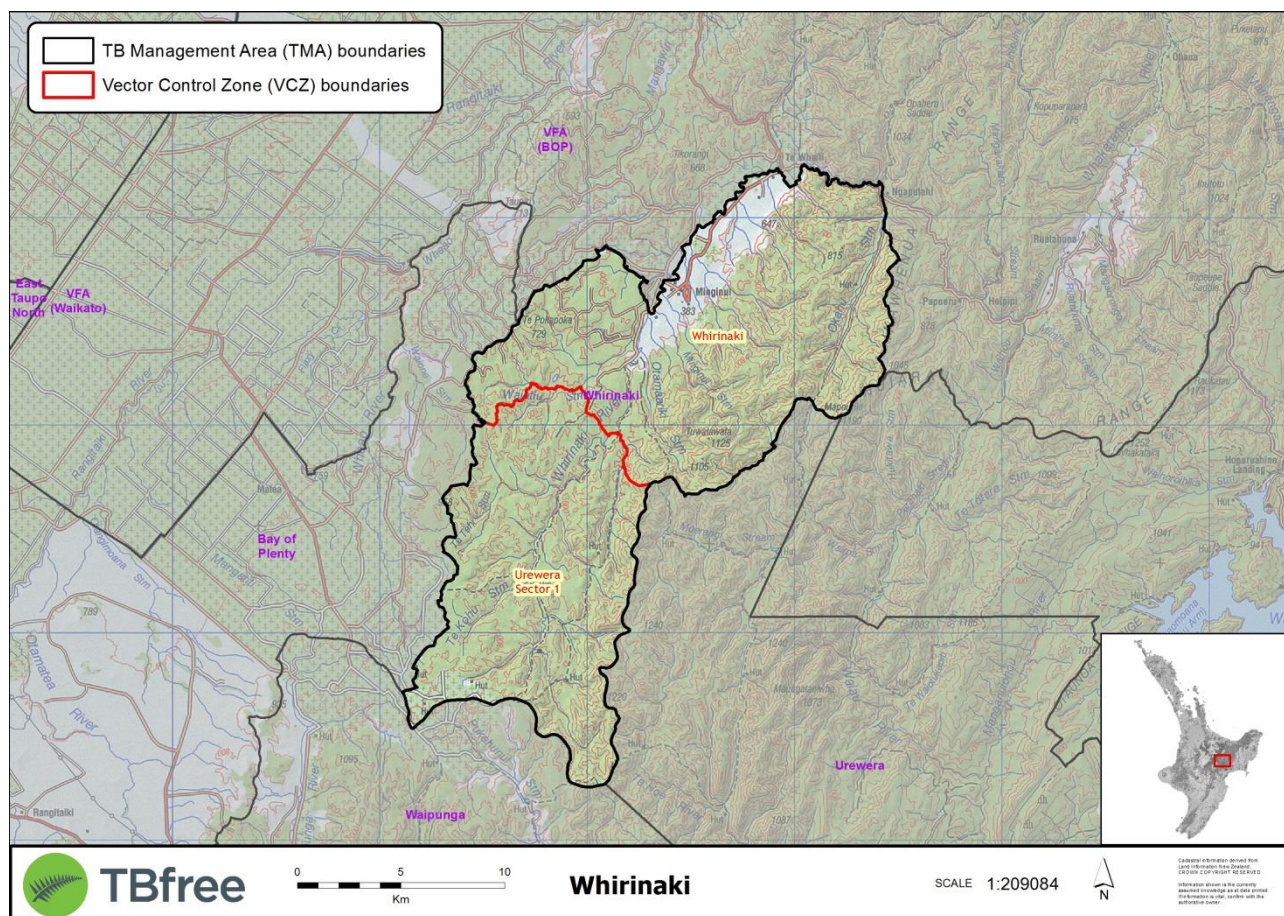
RISK MANAGEMENT

There will need to be continued good communication with local Iwi to enable the completion of the aerial programme but they have been very supportive in the past so no problems are envisaged.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

As the whole of the Hatepe Lake TMA is forested there will be continued surveillance of pigs from this area to give the required assurance that it remains TB free.

5.17 WHIRINAKI



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2023
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 13,543

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Te Urewera AS1	13,543	2023
Total	13,543	

DESCRIPTION OF TB MANAGEMENT AREA

The Whirinaki TMA is located in the south-eastern Bay of Plenty Region and consists of extensive native bush habitat. From Minginui, the TMA extends east and south to include the southern portion Te Urewera National Park.

The adjacent Whirinaki VCZ is within the VFA and has been in place as a buffering strategy.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

There has been vector control in Whirinaki for many years with aerial and ground control commencing in 2003. A young TB infected pig found in the Whirinaki in 2013. The latest aerial control was in 2015/16. The Ruatahuna/Hanamahihi area to the north has been surveyed for pigs for many years to make sure that there has been no migration of infected vectors north. No further TB cases have been found.

There are very few herds in the Whirinaki TMA and there has never been a TB breakdown in any of them.

PLANNED VECTOR RISK AREA REDUCTION

Whirinaki	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	13,543	13,543	13,543	13,543	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds in the TMA.

Summary of Operations Planned

During 2016/17-2018/19, output-based possum control with concurrent survey in later years (in the non-aerial strata) and POF pig surveillance (in the aerial strata) will be undertaken in the adjacent VFA Whirinaki VCZ buffer. The results of this work will determine the need for any further work in this buffer.

In 2017/18, aerial control is proposed in Te Urewera VCZ, with initial POF surveillance (pig surveys) being done in the Te Urewera in 2018/19.

In 2022/23, the final aerial control will be carried out in Te Urewera. In 2023/24, final POF surveillance (pig survey) will be undertaken in Te Urewera and final POF analysis concluded.

Innovations, Initiatives and Research and Development

None proposed.

RISK MANAGEMENT

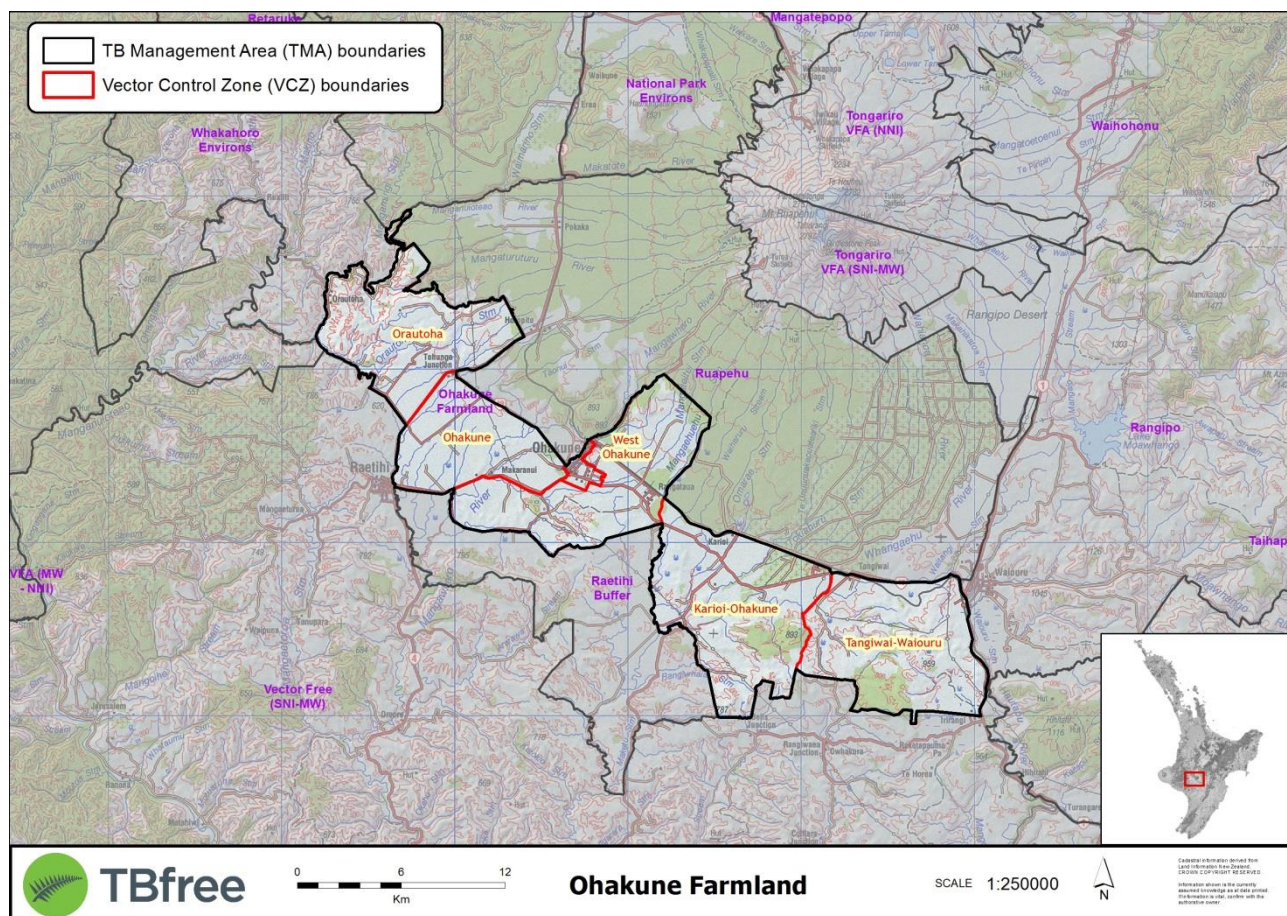
As management of Te Urewera has been returned to Tuhoe in a Crown settlement, their acknowledged opposition to the aerial use of 1080 may well pose a problem with ongoing aerial control within this TMA. A planned and coordinated approach to communication is required to be established to address the issue well before the next round of aerial control is required.

The adjacent VFA Whirinaki VCZ buffering strategy has served to prevent spread of infection out of the VRA after the finding of the young TB infected pig in 2013. Termination of possum control within this buffer before there is confidence of possum TB freedom within the Te Urewera VCZ represents a risk. This risk will be mitigated by a three-year (2016/17-2018/19) POF surveillance strategy for the Whirinaki VFA VCZ.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

As this is mainly a forested area with an ample pig population then ongoing pig surveys would provide the required assurance that disease remains out of the Whirinaki TMA, including the adjacent Whirinaki VFA VCZ, after control has ceased.

5.18 OHAKUNE FARMLAND



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2024
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 31,561

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Karioi-Ohakune	7,474	2023
Tangiwai-Waiouru	6,838	2023
Ohakune	4,330	2024
Ohakune Township Exclusion	315	2024
Orautoha	6,113	2024
West Ohakune	6,491	2024
Total	31,561	

DESCRIPTION OF TB MANAGEMENT AREA

The VCZs in this TMA lie to the south and south west of the base of Mt Ruapehu. The TMA runs from the small settlement of Orautaha in the west to Waiouru in the east and includes Ohakune township. Much of the area is flat to rolling and bisected by streams. Herds are predominantly beef dry and beef breeding herds with a small number of dairy and deer breeding herds.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Historically the Orautaha, Ohakune and West Ohakune VCZs have had a high number of infected herds. In 1993 a tuberculous pig was caught in the Orautaha VCZ and in 1995 a tuberculous possum was caught very close in the adjacent Orautaha DOC VCZ. All VCZs have received regular output control except for Ohakune Township Exclusion.

PLANNED VECTOR RISK AREA REDUCTION

Ohakune Farmland	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	31,561	31,561	31,561	31,561	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds in the TMA.

Summary of Operations Planned

Control plus surveillance will be undertaken to achieve freedom from TB in possums. Over the next five years (2016/17-2020/21) output-based possum control work will be undertaken throughout the TMA.

From 2021/22, POF surveillance using detection/detection-based possum control with concurrent surveys will be carried out to POF analysis.

Innovations, Initiatives and Research and Development

None planned.

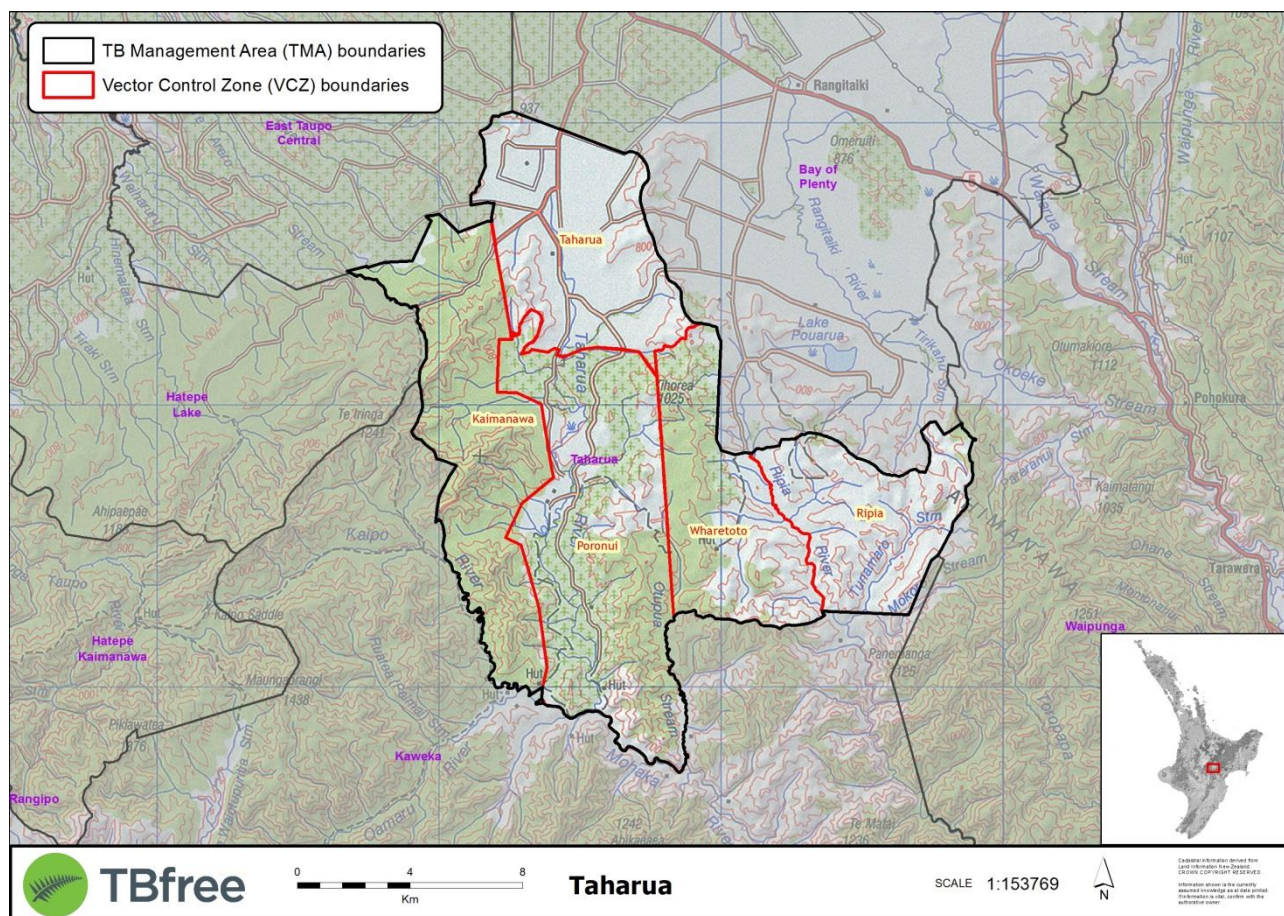
RISK MANAGEMENT

There are no issues or risk unique to this particular TMA

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Herd surveillance will be undertaken to prove biological eradication of TB.

5.19 TAHARUA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2024
- Herd TB freedom date: 2018
- Total area of VRA reduction (hectares): 22,868

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Kaimanawa	5,014	2024
Poronui	6,607	2024
Ripia	3,217	2024
Taharua	4,475	2024
Whareroto	3,555	2024
Total	22,868	

DESCRIPTION OF TB MANAGEMENT AREA

Taharua lies in the Hawkes Bay section of the Taupo District and is to the west of the Napier Taupo Highway. The TMA is a mix of native bush, pine plantations and intensively managed pasture land. The Kaimanawa VCZ is all native bush and is part of the Kaimanawa Forest Park. The adjoining Taharua VCZ has little habitat and although there are only a small number of herds these are large dairy and beef herds. Deer breeding herds and a Game Estate are present in the Poronui VCZ.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Infected herds have been present in the past in the Taharua VCZ and a tuberculous ferret was found in the VCZ in 1999/00. A further infected ferret was found on the boundary with the Lochinver VCZ in 2003/04.

Targeted output control has been undertaken over most of the area for a number of years. The Kaimanawa VCZ received aerial control in 2010/11 and has had a subsequent trend monitor.

PLANNED VECTOR RISK AREA REDUCTION

Taharua	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	22,868	22,868	22,868	22,868	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There is one infected herd within the TMA.

Summary of Operations Planned

Control plus surveillance will be undertaken to achieve freedom from TB in possums. Aerial control in the Kaimanawa VCZ is to be undertaken in 2016/17. As ground control was completed in the Poronui, Ripia, Taharua and Wharetoto VCZs in 2015/16 these strata have no immediate work programmed. Prior to the next aerial control in the Kaimanawa VCZ intensive output control will be undertaken in these ground strata before being followed by detection/detection-based control and concurrent surveys to gain surveillance data. Pig surveys will be required for surveillance data in the aerial strata.

Innovations, Initiatives and Research and Development

None planned.

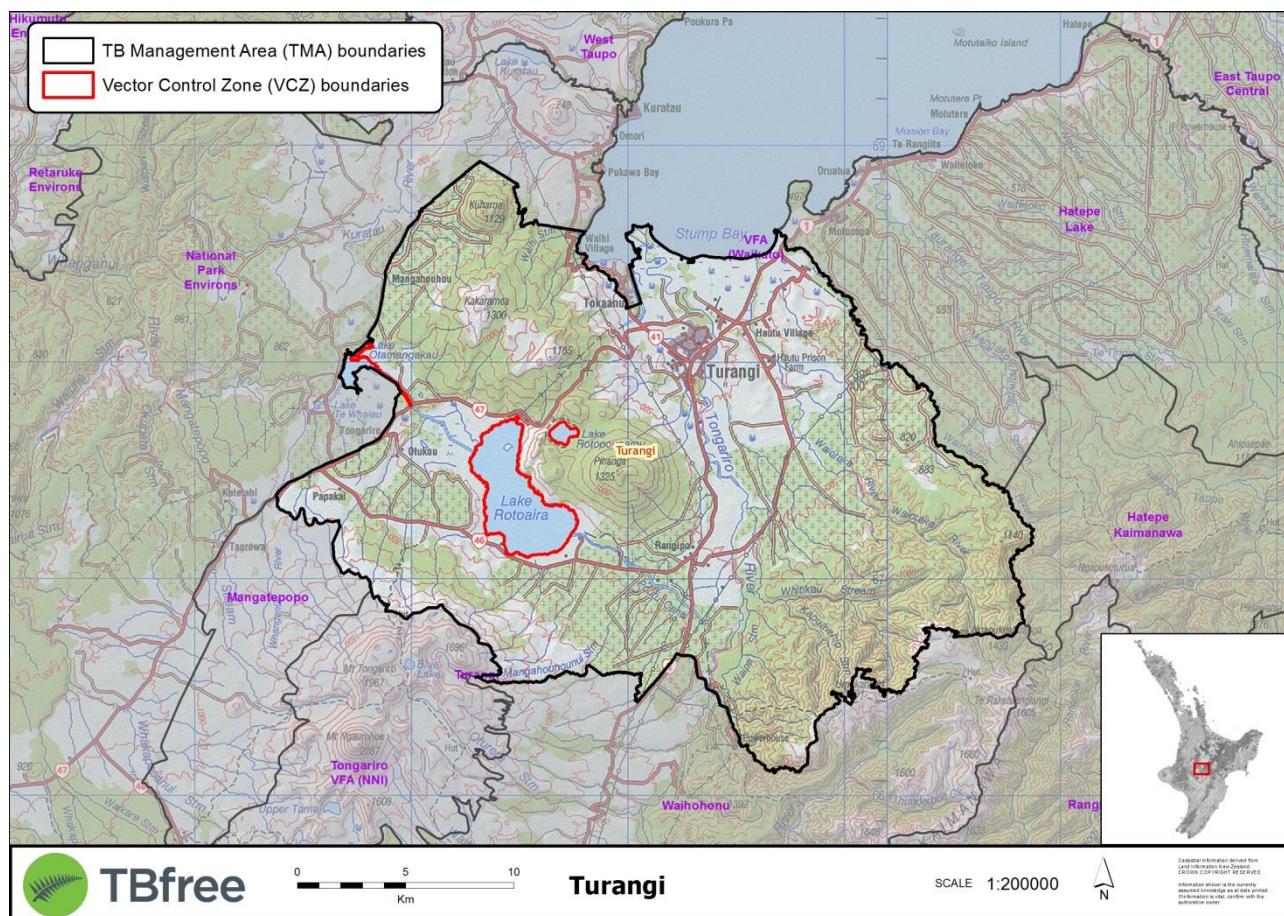
RISK MANAGEMENT

Timing of the aerial operation due to the resident Sika herd is an issue in this TMA and good communication is very important.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys, herd surveillance and possibly localised ferret surveys will be undertaken to prove biological eradication of TB.

5.20 TURANGI



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2024
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 52,899

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Turangi	52,899	2024
Total	52,889	

DESCRIPTION OF TB MANAGEMENT AREA

The Turangi TMA is located in the southern Waikato region and is south of Lake Taupo. The TMA covers the Turangi delta, the Tongariro River catchment and the southern foothills of the Kaimanawa Ranges to the south-east, west through Tokaanu to the Kuratau River, and south-west through Lake Rotoaira and State Highway 46 to the foothills of Mount Tongariro.

The TMA is a mix of native bush and scrub, exotic forest, river catchments, and a mixture of intensive and extensive farmland.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Vector control started in the Turangi TMA in various parts between 1990-1995 and has continued until the present. It has been acting as a protection of the large uncontrolled area in behind it of the Hatepe and Kaimanawa Ranges. There has been a lot of disease in the herds over the years and infected vectors have been found as recently as June 2015

PLANNED VECTOR RISK AREA REDUCTION

Turangi	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	52,899	52,899	52,899	52,899	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds in the TMA.

Summary of Operations Planned

In for the next three years (2016/17-2018/19), output-based possum control in ground strata, trigger monitors in aerial strata (to demine the optimum timing of final aerial treatments) and initial POF surveillance (pig surveys) in aerial strata will be undertaken.

For the following four years (2019/20-2022/23), the final round of aerial controls in aerial strata, output then input-based possum control with concurrent survey in ground strata, and further POF surveillance (pig surveys and the concurrent possum surveys) will be undertaken.

In 2023/24, the final round of POF surveillance (pig surveys) will be carried out and final POF analysis will be concluded.

Innovations, Initiatives and Research and Development

None planned.

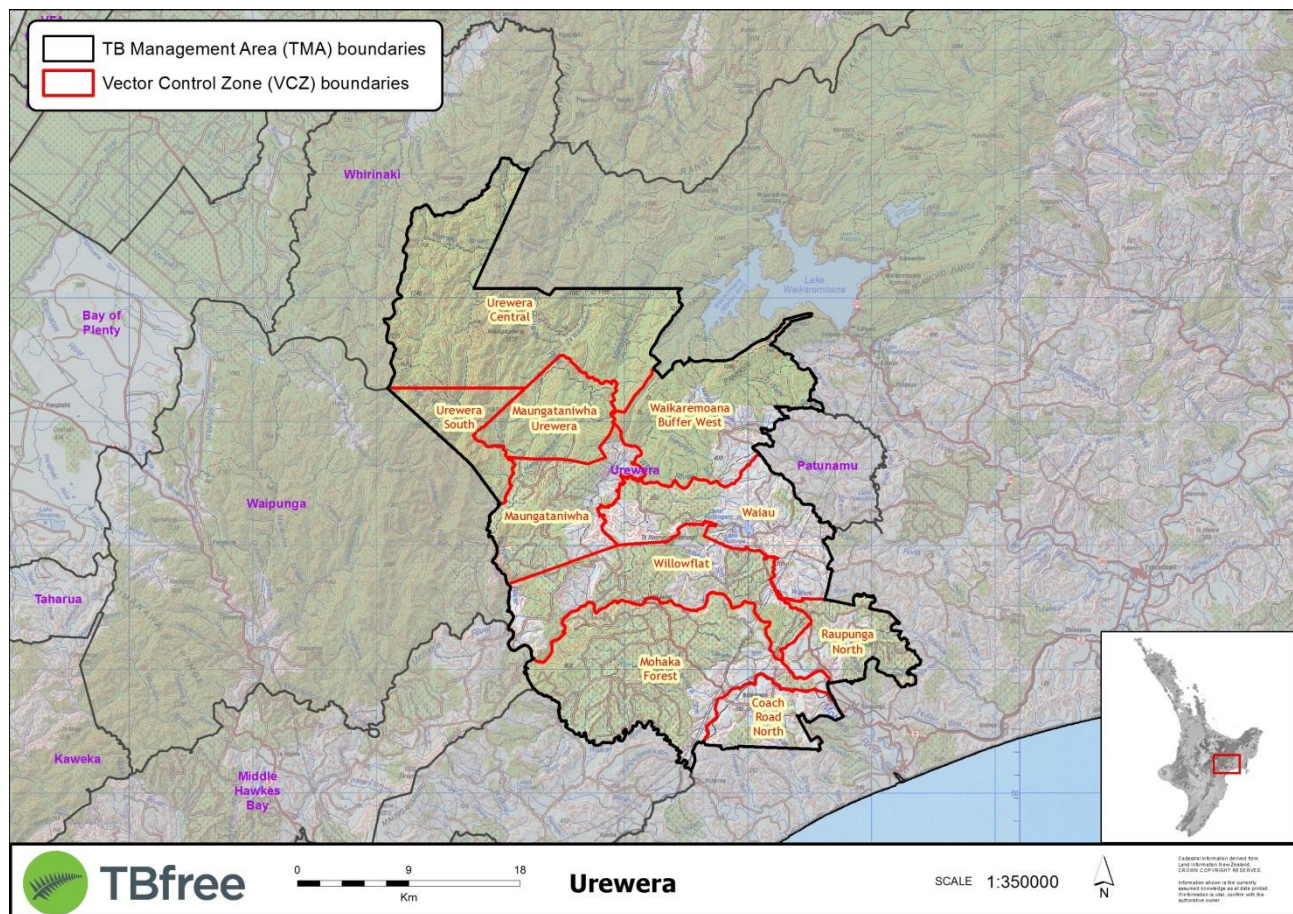
RISK MANAGEMENT

There are no known risks specific to this TMA.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

As there are very few herds in this TMA the main assurance of continued TB freedom will come from pig surveys.

5.21 UREWERA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2026
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 103,219

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Coach Rd North	4,294	2019
Rapunga North	5,388	2019
Urewera Central	22,370	2023
Urewera South	4,080	2023
Waiau	10,393	2023
Waikaremoana	12,159	2023
Maungataniwha	8,600	2024
Maungataniwha Urewera	6,176	2024
Mohaka Forest	17,825	2025
Willowflat	11,934	2026
TMA Total	103,219	

DESCRIPTION OF TB MANAGEMENT AREA

This large rugged TMA lies just west of Lake Waikaremoana and runs northwest from Raupunga, close to the east coast, through to the headwaters of the Waiau River. Most of the northern section lies within the DOC managed Te Urewera. There are large areas of pine forestry within the Mohaka Forest, Maungataniwha and Willowflat VCZs. There are also farmed areas within the TMA with herds being principally beef breeding and meat production.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

There have historically been a low number of infected herds and TB infected deer and pigs in this TMA. The most recent case of TB was a tuberculous pig caught in the Mohaka Forest VCZ in November 2009.

Control to date has been targeted with periodic output control in ground strata and regular aerial control in those strata where extensive bush and difficult terrain has made ground control unpractical. Detect, detection-based control and concurrent surveys were carried out in Raupunga North and Coach Rd North in 2015/16. Pig surveys have also been undertaken in this TMA.

PLANNED VECTOR RISK AREA REDUCTION

Urewera	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	103,219	103,219	93,537	93,537	29,759	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

Control plus surveillance will be undertaken to achieve freedom from TB in possums. During 2016/17-2017/18 it is planned to do aerial control within the Mohaka Forest, Maungataniwha, Maungataniwha Urewera, Urewera Central and Urewera South VCZs. Output-based possum control will also be done in ground strata with detection/detection-based control and concurrent surveys being undertaken just prior to achieving TB freedom. Pig surveys will be undertaken over several years.

Innovations, Initiatives and Research and Development

None planned.

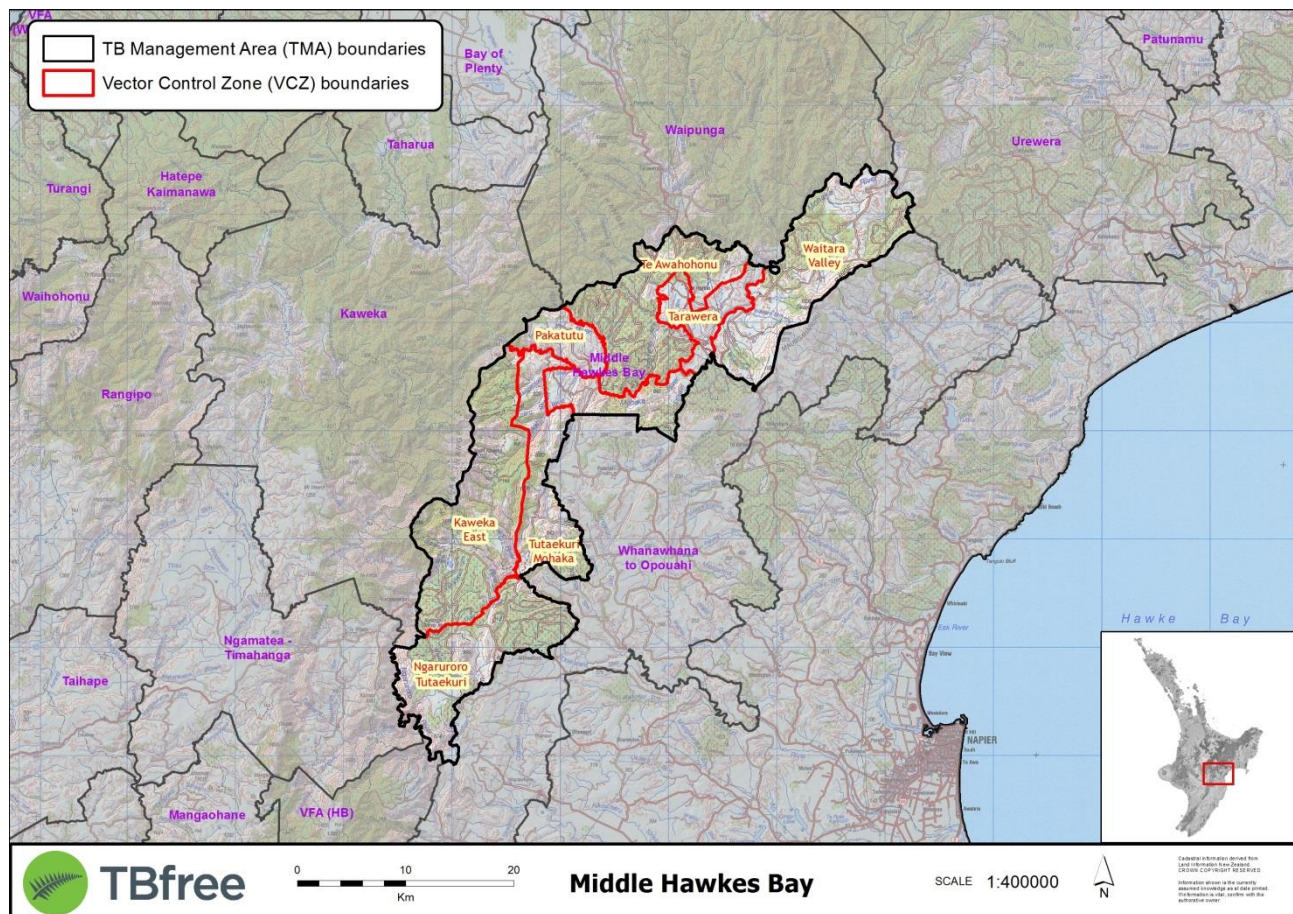
RISK MANAGEMENT

Access issues are a major problem in parts of this TMA. Ongoing communication will be required to ensure that control is undertaken as planned.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys and herd surveillance will be undertaken to prove biological eradication of TB.

5.22 MIDDLE HAWKES BAY



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2027
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 73,114

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Kaweka East	15,634	2025
Ngaruroro Tutaekuri	11,580	2025
Tutaekuri Mohaka	8,000	2025
Waitara Valley	14,427	2026
Makahu Inangatahi	4,651	2026
Pakatutu	3,154	2027
Tarawera	3,980	2027
Te Awahohonu	11,688	2027
TMA Total	73,114	

DESCRIPTION OF TB MANAGEMENT AREA

The Middle Hawkes Bay TMA is a long TMA running in a north easterly direction. It runs from the Ngaruroro River in the south to the Te Hoe River in the north. The Mohaka River runs through the northern section of the TMA. In the west it takes in part of the Kaweka Range and three aerial VCZs ie Kaweka East, Ngaruoro Tutaekuri and Tutaekuri Mohaka, contain DOC conservation land. The TMA also includes part of the Kaweka Recreational Hunting Area (RHA). Much of this TMA is forested hill country and there aren't a high number of herds. The highest concentration is in the Waitara Valley and surrounding area and these are predominantly beef breeding, meat production and grazing herds..

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

The Tarawera and Waitara Valley VCZs have a long history of TB in the local herds and in the vector population (pigs, ferrets and possums). TB pigs have also been caught in the Te Awahohonu and Makahu Inangatahi VCZs. Control has been underway for a number of years and is a mix of targeted output ground control and aerial operations. The Kaweka East VCZ has had no vector control to date.

PLANNED VECTOR RISK AREA REDUCTION

Middle Hawkes Bay	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	73,114	73,114	73,114	73,114	73,114	18,822	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

A combination of control plus surveillance and surveillance-only will be used to prove freedom from TB in possums. Aerial control is planned in aerial strata in Ngaruoro Tutaekuri, Te Awahohonu, Tutaekuri Mohaka, Kaweka East and Waitara Valley during 2016/17-2017/18. Trigger monitors will be carried out to confirm timing of the operations. In combination with the aerial control targeted output-based possum control will be undertaken in the ground control strata to maintain possum low populations. Surveillance will be undertaken in Kaweka East and may include a combination of deer surveys, pig surveys and low-intensity possum surveillance

Innovations, Initiatives and Research and Development

None planned.

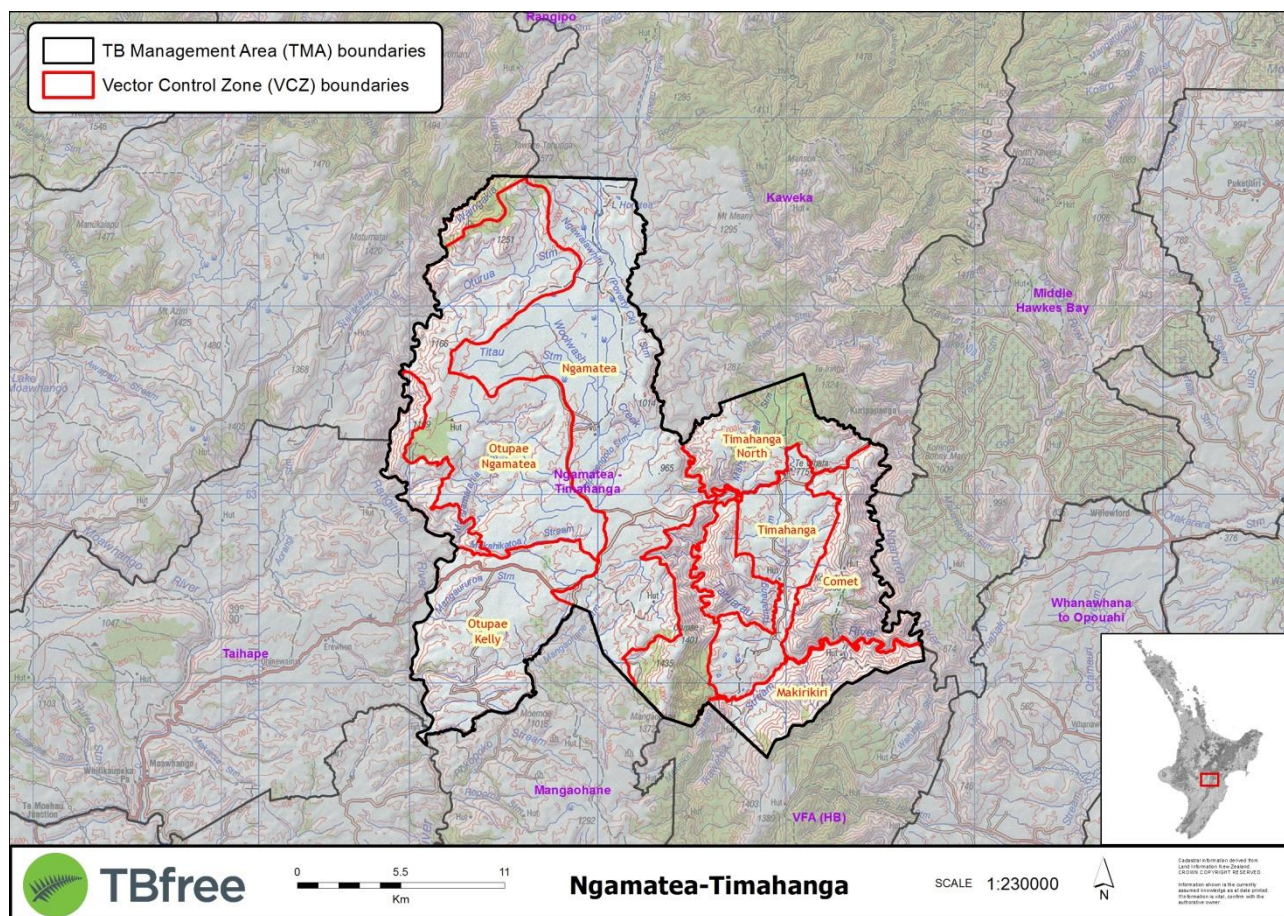
RISK MANAGEMENT

The principal issue in this TMA is the presence of Sika deer in the Kaweka East VCZ resulting in hunters being very concerned about the aerial operation and its timing. Ongoing communication with the various groups is critical.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys, herd surveillance and possibly deer surveys will be undertaken to prove biological eradication of TB.

5.23 NGAMATEA-TIMAHANGA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2027
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 51,926

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Comet	3,811	2027
Makirikiri	2,570	2027
Ngamatea	13,826	2027
Oyupae Kelly	6,224	2027
Otupae Ngamatea	11,223	2027
Rangitikei Waingakia Faces	2,169	2027
Sparrowhawk	1,728	2027
Timahanga	4,076	2027
Timahanga Ngamatea	2,807	2027
Timahanga North	3,492	2027
TMA Total	51,926	

DESCRIPTION OF TB MANAGEMENT AREA

The Ngamatea-Timahanga TMA is situated on both sides of the Napier Taihape Rd, in high altitude country approximately half way between Napier and Taihape. It is adjacent to the Kaweka Range in the north and the Ruahine Range in the south. The majority of the TMA belongs to two extensive beef and sheep properties, Ngamatea and Timahanga. In addition the Comet and Makirikiri VCZ's are predominantly DOC land. There are several habitats within the TMA: extensive areas of tussock country well developed grassland plus large areas of bush/ scrub.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Both Ngamatea and Timahanga have a history of TB in their cattle herds and in the feral vector population. Tuberculous ferrets were found on Ngamatea in the 1990's and early 2000's and a tuberculous sika deer was found on Ngamatea in 2005/06. Tuberculous feral deer were also found on Timahanga in 1992/93 and in Comet in 2008/09. Aerial control has been undertaken in Rangitikei Waingakia Faces and the aerial strata of Sparrowhawk, Timahanga Ngamatea and Timahanga North. The remainder of the area has received ongoing output and input ground control with extensive use of bait stations on Ngamatea Station.

PLANNED VECTOR RISK AREA REDUCTION

Ngamatea-Timahanga	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	51,926	51,926	51,926	51,926	51,926	51,926	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

Control plus surveillance will be undertaken to achieve freedom from TB in possums. It is planned to undertake aerial control in Comet and Sparrowhawk in 2017/18. Trigger monitors will be done to confirm the timing of aerial control in Makirikiri, Rangitikei Waingakia Faces, Timahanga Ngamatea and Timahanga North but this work is currently planned for 2020. Output-based possum control is planned for ground strata adjoining aerial operations and control is planned for all ground strata in Ngamatea and Otupae Ngamatea VCZs in 2022/23.

Innovations, Initiatives and Research and Development

None planned.

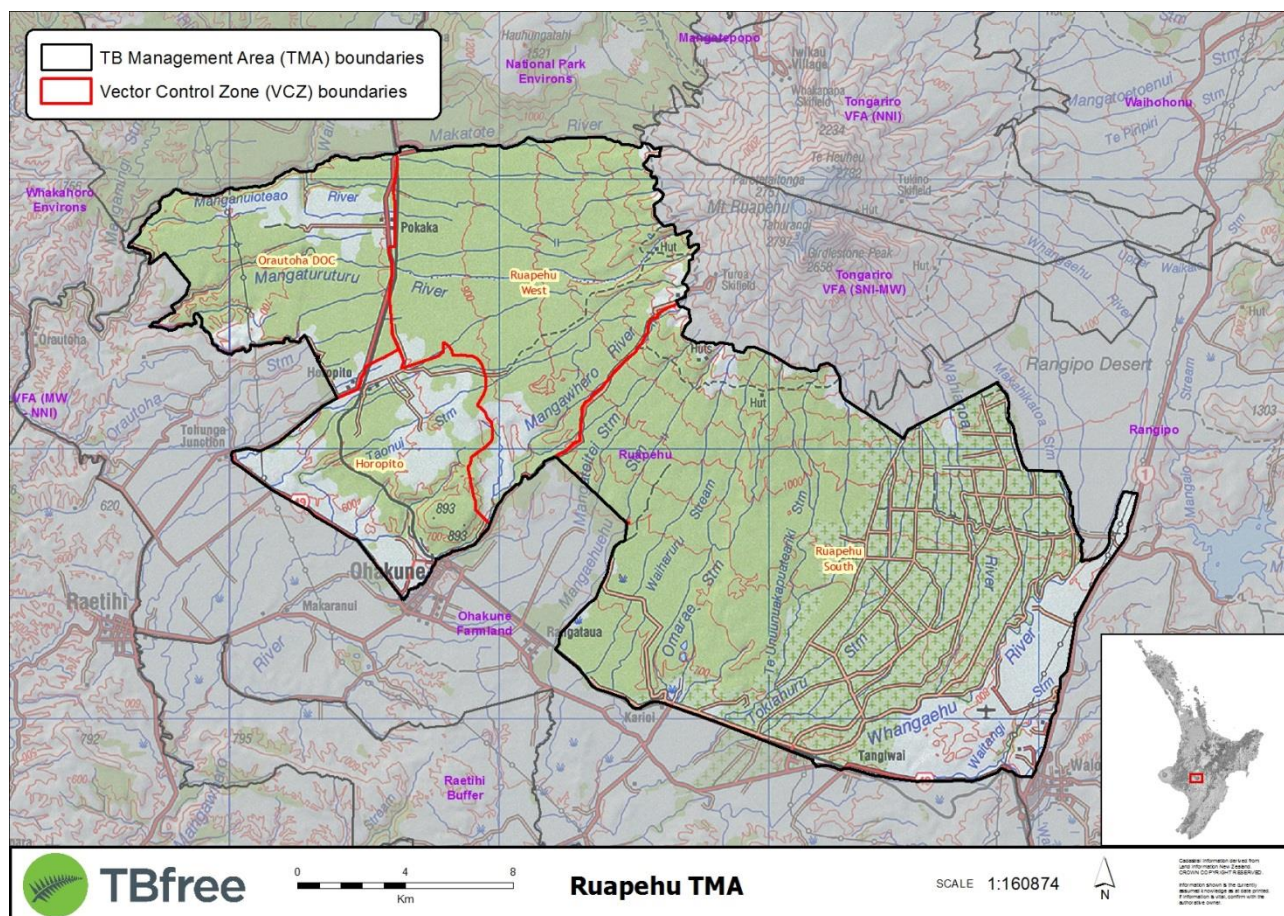
RISK MANAGEMENT

There are no issues or risks unique to this particular TMA

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig, deer and ferret surveys and herd surveillance may all be undertaken to prove biological eradication of TB.

5.24 RUAPEHU



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2028
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 44,306

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Horopito	4,846	2027
Oratoha DOC	5,550	2027
Ruapehu West	9,783	2027
Ruapehu South	24,127	2028
TMA Total	44,306	

DESCRIPTION OF TB MANAGEMENT AREA

The Ruapehu TMA is on the bush covered slopes of the western and southern aspect of Mt Ruapehu. Native bush is a large component of the habitat in the TMA and there is also a large area of exotic forestry in the eastern section of the Ruapehu South VCZ. The TMA runs up the side of Mt Ruapehu as high as the bush/ alpine level, just below 1500 metres. There are a small number of herds in the TMA which include beef breeding, meat production and deer breeding herds plus a Game Estate herd.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Historically there have been a small number of infected herds, principally in Orautoha DOC and Horopito. A tuberculous possum was found in the Orautoha DOC VCZ in 1995. Aerial control has previously been undertaken in Orautoha DOC and the ground strata in the TMA have had maintenance control for a number of years. Control in Horopito GS3 has principally been bait stations on the bush perimeter. Ruapehu West and Ruapehu South have received no control to date.

PLANNED VECTOR RISK AREA REDUCTION

Ruapehu	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	44,306	44,306	44,306	44,306	44,306	44,306	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

Control plus surveillance will be undertaken to achieve freedom from TB in possums. Aerial control is planned for 2016/17 in Horopito GS3, Ruapehu West and Ruapehu South. The possum population will be monitored and the control repeated when numbers rise. Future aerial control is also planned for Orautoha DOC. Output-based ground control will be undertaken when adjacent aerial operations are flown.

Innovations, Initiatives and Research and Development

None planned.

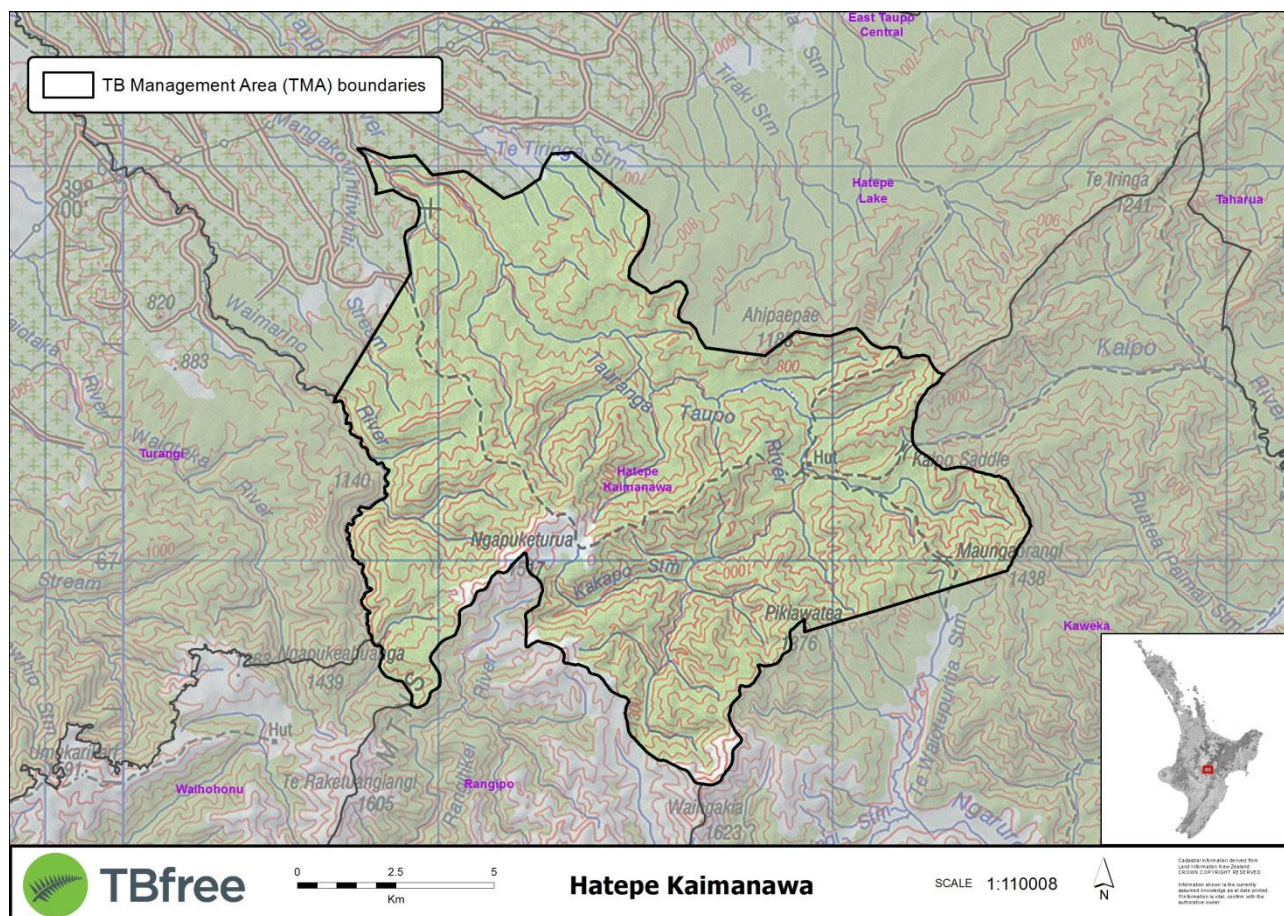
RISK MANAGEMENT

Access issues to undertake aerial operations are a risk in this TMA.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig and possibly deer surveys in conjunction with herd surveillance will be undertaken to prove biological eradication of TB.

5.25 HATEPE KAIMANAWA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2030
- Herd TB freedom date: N/A
- Total area of VRA reduction (hectares): 15,064

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Hatepe 2	5,474	2030
Hatepe 5	9,590	2030
TMA Total	15,064	

DESCRIPTION OF TB MANAGEMENT AREA

The Hatepe Kaimanawa TMA is located in the eastern border of the Waikato region, inland from Lake Taupo and Hatepe. It is bounded by the Kaipo River at the Kaipo Saddle in the east, the bush line delineating the exotic forest of Hatepe to the west and the Ignibrite saddle to the south. 100% of the TMA is native bush of the Kaimanawa Ranges.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

There has been no possum control conducted by OSPRI in this TMA as at August 2016 and it is surrounded by history of infected wildlife (pigs, deer and possums) in the TMA's all around it.

PLANNED VECTOR RISK AREA REDUCTION

Ruapehu	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	15,064	15,064	15,064	15,064	15,064	15,064	15,064	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no herds in the Hatepe Kaimanawa TMA.

Summary of Operations Planned

For the first three years will involve a pig survey (2016/17) to establish area TB prevalence followed by the first aerial control (2017/18) then a follow-up pig survey (2018/19). After that, a pattern of five-yearly aerial control (with associated trigger monitors) and pig surveys at five-yearly intervals will be put in place. 2027/28 will see the final aerial control and 2028/29 will have the final pig survey and data analysis for Proof of Freedom. Possum TB freedom will be declared in 2030.

Innovations, Initiatives and Research and Development

None planned.

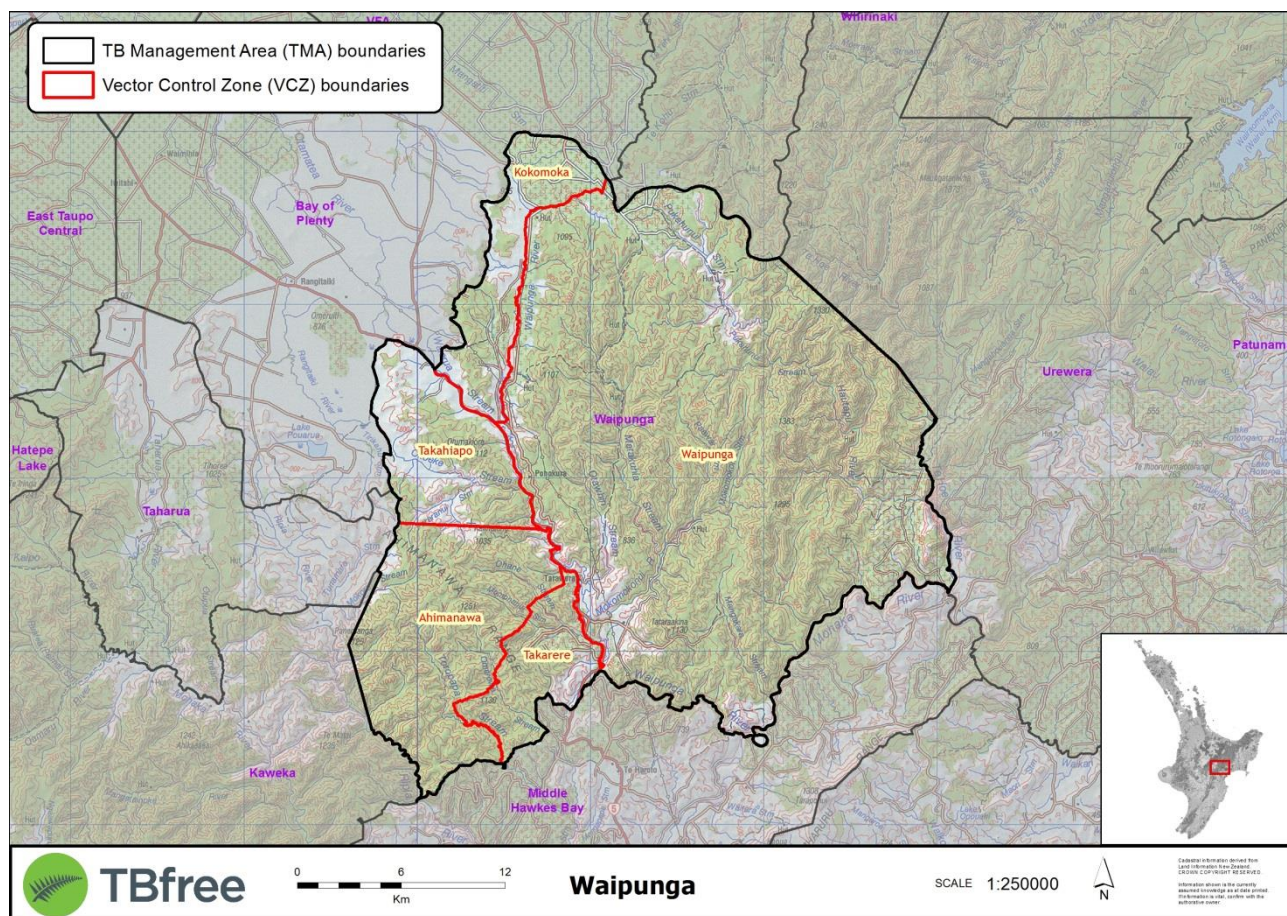
RISK MANAGEMENT

The Hatepe Kaimanawa TMA is home to a Sika deer herd that has particular importance as it is the only one in New Zealand and is very popular with recreational hunters.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

There will need to be ongoing pig surveys in the Hatepe Kaimanawa TMA as there are no livestock in the TMA to act as sentinels for disease reappearance.

5.26 WAIPUNGA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2029
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 81,886

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Ahimanawa	11,541	2029
Kokomoka	5,437	2029
Takahiapo	6,382	2029
Takarere	4,016	2029
Waipunga	54,510	2029
TMA Total	81,886	

DESCRIPTION OF TB MANAGEMENT AREA

Waipunga is located approximately half way between Napier and Taupo and is bisected by the Napier Taupo highway. To the south it is bounded in part by the Mohaka River. It is steep rugged country predominantly covered by native bush. There are very few herds in this area.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Despite the small number of herds there is a history of herds having an infected status, especially in the Waipunga and Takarere VCZs. A number of infected pigs, deer and possums were found in Takahiapo, Waipunga and Ahimanawa VCZs in the early 2000's.

All VCZs within this TMA have received at least one aerial control operation except Takarere which has had no vector control to date. Ground control has also been undertaken in a small number of strata. Access issues meant that Waipunga AS6, GS5 and GS7 were not controlled in 2014/15 when the aerial control was undertaken in the rest of the Waipunga VCZ.

PLANNED VECTOR RISK AREA REDUCTION

Waipunga	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	81,886	81,886	81,886	81,886	81,886	81,886	81,886	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA

Summary of Operations Planned

Control plus surveillance will be undertaken to achieve freedom from TB in possums. During 2016/17-2017/18 aerial control will be undertaken within the Ahimanawa, Kokomoka, Takahiapo, Takarere and Waipunga VCZs in combination with control in ground control strata. There will be no control undertaken during the following three years but there will be trigger monitors done to assess the possum population. Further aerial control will then be undertaken as determined by the possum density. Pig surveys will be undertaken to gain surveillance data.

Innovations, Initiatives and Research and Development

Following standard practice as per Pest Management Design Guideline

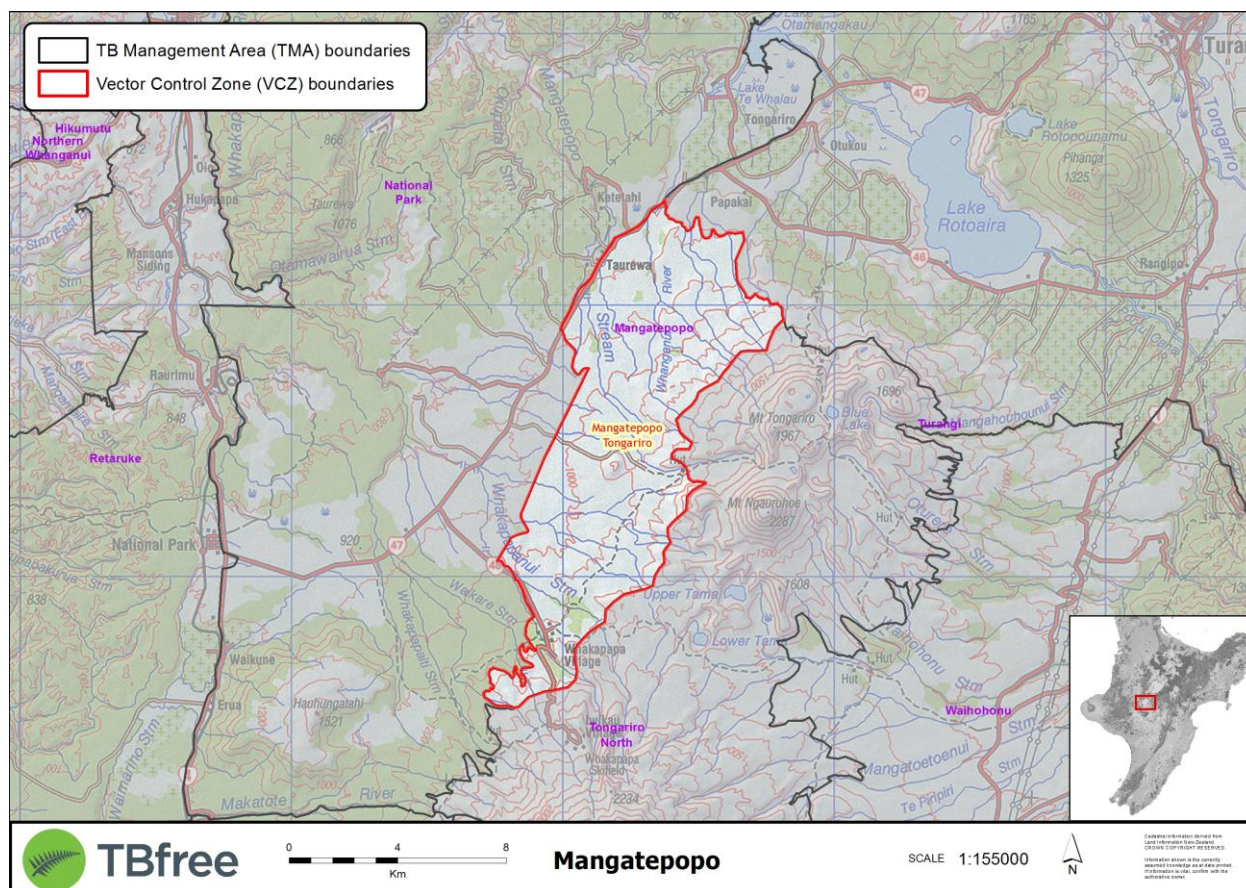
RISK MANAGEMENT

The principal issue with this area is access to some strata to undertake ground and aerial control.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig and possibly deer surveys will be undertaken to prove biological eradication of TB.

5.27 MANGATEPOPO



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2031
- Herd TB freedom date: N/A
- Total area of VRA reduction (hectares): 8,614

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Mangatepopo Tongariro	8,614	2031
TMA Total	8,614	

DESCRIPTION OF TB MANAGEMENT AREA

The Mangatepopo TMA is located the northern north island in the Manawatu/Whanganui region and is in the Tongariro National Park on the western slopes of the three mountains of Ruapehu, Ngaruahoe and Tongariro. The eastern boundary is the 1,200m contour line along the western flanks of these three mountains and the southern boundary is the headwaters of the Maketote River. Heading north around the bush line to Whakapapa Village then down State Highway 48 and turning right onto State Highway 47 to just past Tauwera.

The habitat in this TMA is mainly high altitude scrub that ranges from knee to head height.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

The Mangatepopo TMA has not received any previous possum control and was formerly known as the Mangatepopo No Control VCZ of 16,065 hectares. It therefore contains an unknown level of possum density which is of an unknown disease status. However this TMA is contiguous with native bush on its western flank where disease is known to have existed in the

past. An infected possum was located in the Raurimu Tauwera VCZ in 1970 which is only 6.7km's away. The area of the VCZ was reduced by 7,451 hectares when the high altitude area (above 1,200m) was removed as being unsuitable for sustaining a high enough possum population to maintain TB.

PLANNED VECTOR RISK AREA REDUCTION

Mangatepopo	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	8,614	8,614	8,614	8,614	8,614	8,614	8,614	8,614	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no herds in the Mangatepopo TMA.

Summary of Operations Planned

In 2016/17 an assessment of possum density and disease status will be carried out by survey. In 2017/18 control of possum population (included in work programmed for the neighbouring Mangatepopo DOC VCZ) will be undertaken. In 2018/19 a further possum survey and assessment of need for further work or Proof of Freedom analysis will be undertaken. From 2019/20 there will either be a declaration of TB freedom or a plan developed for further work to enable this to be made. On a conservative basis, this possum control work is projected to extend through to 2027/28. Possum TB freedom would be declared in 2029 at the latest.

Innovations, Initiatives and Research and Development

As the Mangatepopo TMA is quite a unique TMA in the north island in that it is high and the habitat marginal for supporting sufficient possums to maintain TB so it will be assessed after the initial control to determine the future requirements to be able to declare disease freedom.

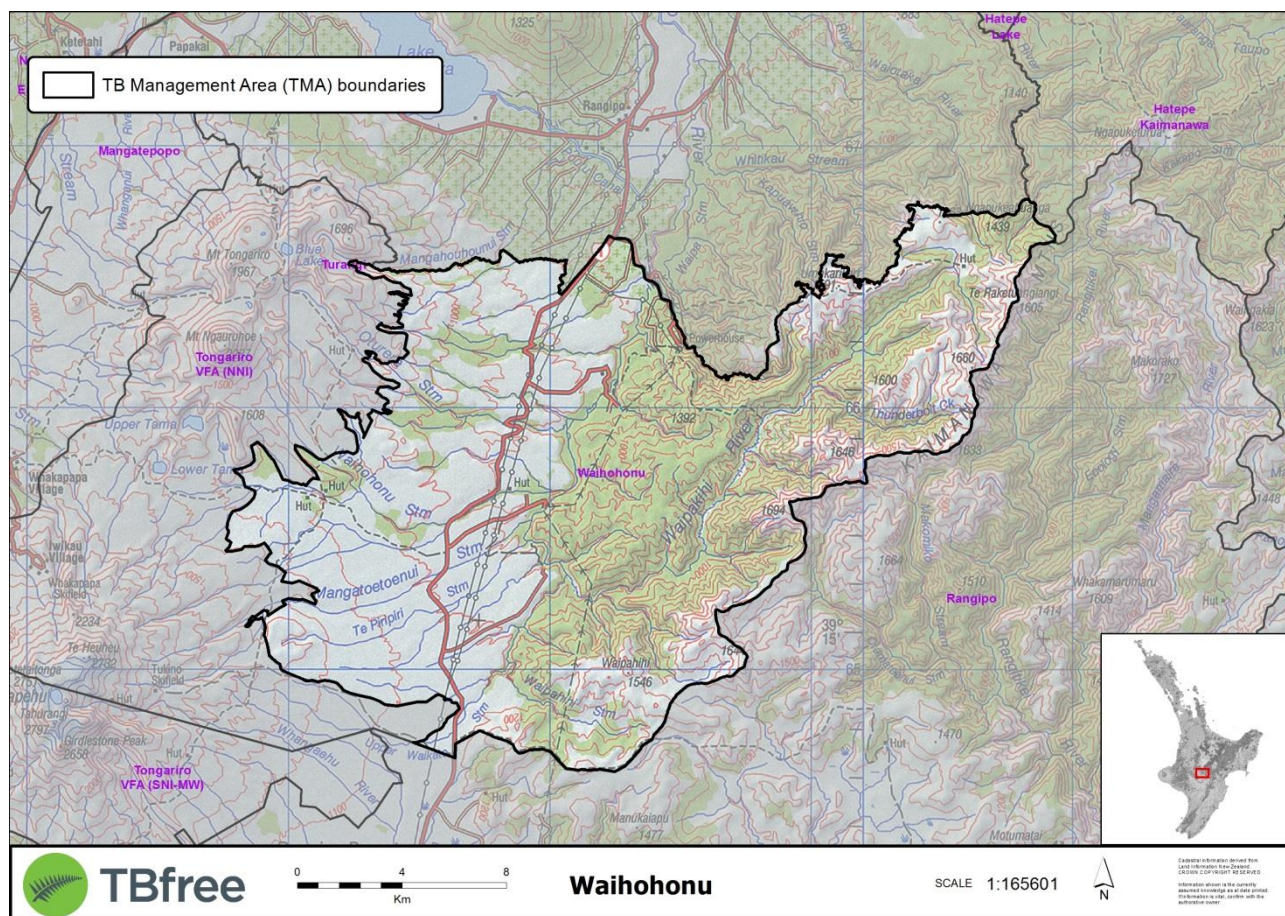
RISK MANAGEMENT

The unique risks of this TMA are its altitude and potential for adverse weather events.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

There are neither livestock nor pigs in the TMA so ongoing surveillance will be problematic and so there will need to be a very high level of confidence that disease does not remain before declaring disease freedom in this TMA.

5.28 WAIHOHONU



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2031
- Herd TB freedom date: N/A
- Total area of VRA reduction (hectares): 35,786

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Waihoihonu	35,786	2031
TMA Total	35,786	

DESCRIPTION OF TB MANAGEMENT AREA

The Waihoihonu TMA is located in the northern north island in the Waikato region on the eastern slopes of the three Central North Island mountains of Ruapehu, Ngaruahoe and Tongariro across the Desert Road and into the Kaimanawa Forest Park, basically straddling the ridges either side of the Waipakihi River basin

The habitat in the TMA ranges from beech forest, alpine scrub and high altitude desert.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

There has been no possum control by OSPRI in the Waihoihonu TMA as at August 2016. It is however next to a very large area to the west that will have undergone its Proof of Freedom and there is a potential corridor for possum migration directly from an un-controlled area into the western VFA. That means that this must be managed carefully to ensure that there is no risk of disease migration.

PLANNED VECTOR RISK AREA REDUCTION

Waihohonu	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	35,786	35,786	35,786	35,786	35,786	35,786	35,786	35,786	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no herds in the Waihohonu TMA.

Summary of Operations Planned

For the first three years (2016/17 -2018/19), activities will be focused around pig surveys and field assessments to determine the area requiring vector control (ground and aerial). On the basis that TB is detected and/or possum control is required to meet TMA objectives, possum control will be initiated from 2019/20, based on a pattern of five-yearly aerial control (with associated trigger monitors), ground control at biennial intervals until 2028/29 and pig surveys at five-yearly intervals. 2029/30 will see the final aerial control and final ground control, and 2030/31 will have the final pig survey and possum survey for data for Proof of Freedom. Possum TB freedom will be declared in 2031.

Innovations, Initiatives and Research and Development

None planned.

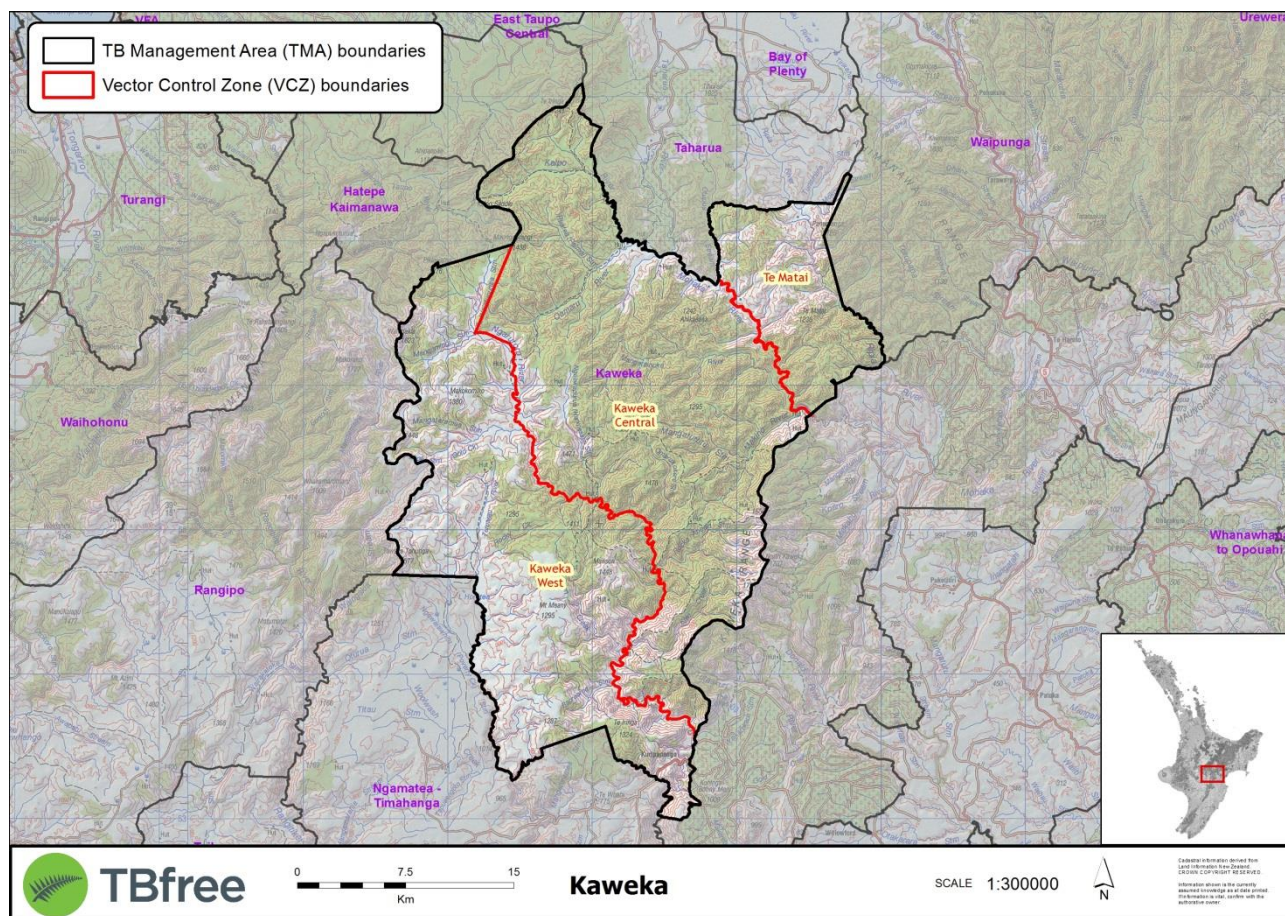
RISK MANAGEMENT

There are no known specific risks associated with this TMA.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

As there is no livestock farming in this TMA the pigs in the eastern portion of this TMA will have to provide the necessary surveillance for ongoing confidence in the TB freedom of this TMA.

5.29 KAWEKA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2033
- Herd TB freedom date: N/A
- Total area of VRA reduction (hectares): 91,657

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Kaweka Central	45,679	2033
Kaweka West	36,097	2033
Te Matai	9,881	2033
TMA Total	91,657	

DESCRIPTION OF TB MANAGEMENT AREA

The Kaweka TMA includes parts of the Kaimanawa and Kaweka Ranges that lie between Lake Taupo and Hawkes Bay; it also abuts the Ahimanawa Range. A large part of the TMA is included in the Kaimanawa and Kaweka Forest Parks plus there are large areas of privately owned land. Vegetation is varied with alpine shrublands, tussock valleys, beech forests and regenerating manuka and kanuka. There are no herds within the TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

There are no records of infected vectors in this TMA although very few surveys have been undertaken. Infected vectors have been found in neighbouring TMAs.

PLANNED VECTOR RISK AREA REDUCTION

Kaweka	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	91,657	91,657	91,657	91,657	91,657	91,657	91,657	91,657	91,657	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no herds within the Kaweka TMA.

Summary of Operations Planned

A combination of control plus surveillance and surveillance-only will be used to prove freedom from TB in possums over the next three years (2016/17-2018/19). Surveillance will include a combination of deer surveys, pig surveys and low-intensity possum surveillance. If TB is found during the surveillance phase a control operation will be undertaken.

Innovations, Initiatives and Research and Development

Landcare Research initiatives may be used in this area.

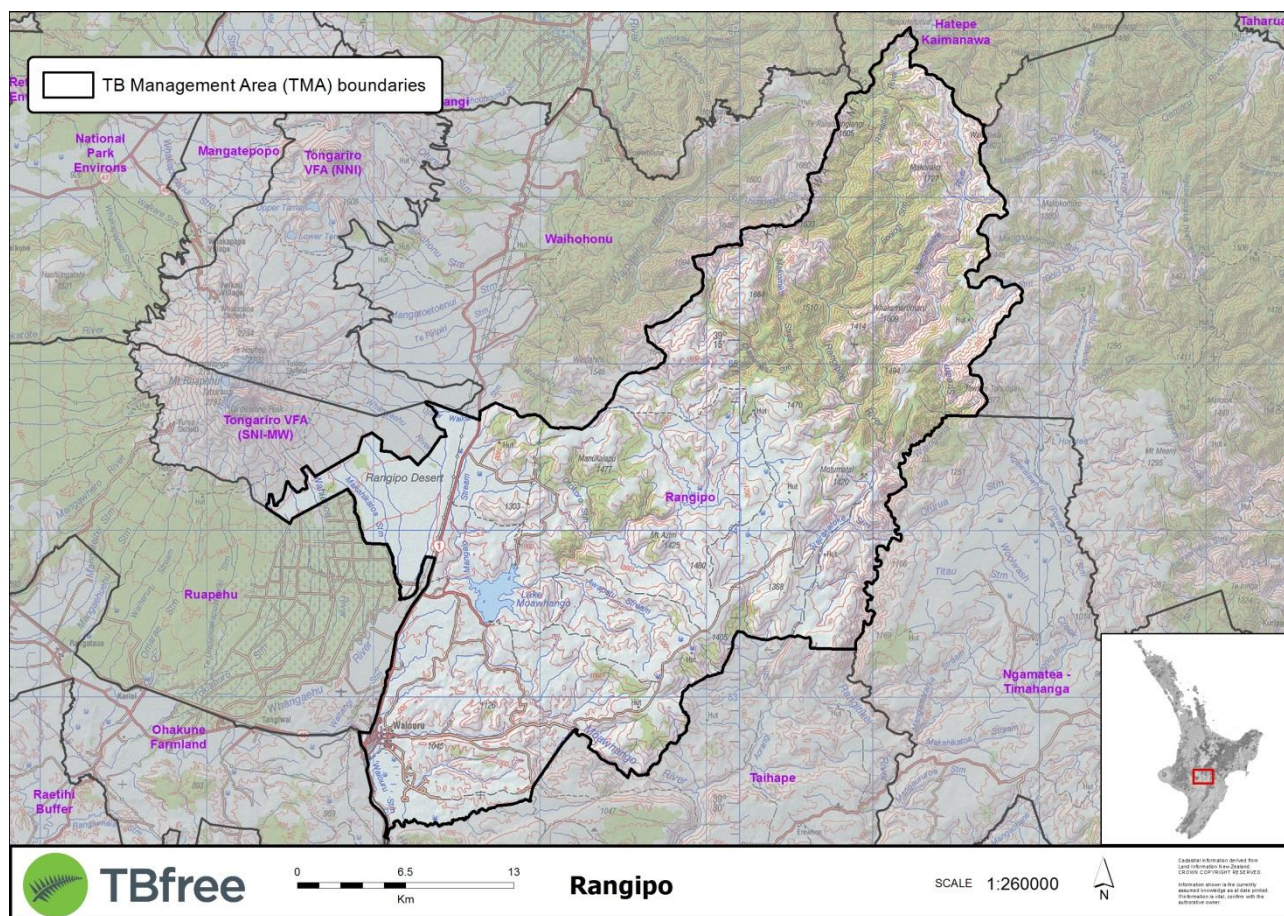
RISK MANAGEMENT

A Sika herd is present in this area and the TMA includes the Kaweka RHA and some of the Kaimanawa RHA. There may be issues if 1080 is to be used and good communication is essential.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Surveillance-only will be undertaken to prove biological eradication of TB.

5.30 RANGIPO



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2033
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 88,737

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Rangipo	88,737	2033
TMA Total	88,737	

DESCRIPTION OF TB MANAGEMENT AREA

The Rangipo TMA lies to the east of Mt Ruapehu with the majority of the area lying east of SH1. Waiouru township lies on the south west boundary. The area includes Defence Force land and part of the Kaimanawa Forest Park, including the Rangitikei Remote Experience Zone. The habitat varies from volcanic dunes (the area known as the Rangipo Desert) to mountains covered in beech, podocarp broadleaved forest and alpine herb fields. Most of the area is over 1000 metres in height. There are no herds within the Rangipo TMA.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Little is known about the TB prevalence in this TMA as there is no herd surveillance and very few vectors have been surveyed. To date no TB has been detected but the TMA does bound Ngamatea where infected ferrets and deer have been caught.

PLANNED VECTOR RISK AREA REDUCTION

Rangipo	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	88,737	88,737	88,737	88,737	88,737	88,737	88,737	88,737	88,737	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

A combination of control plus surveillance and surveillance-only will be used to prove freedom from TB in possums. Surveillance will include deer surveys, pig surveys and low-intensity possum surveillance. If TB is found during the surveillance phase a control operation will be undertaken.

Innovations, Initiatives and Research and Development

Landcare Research initiatives may be used in this TMA.

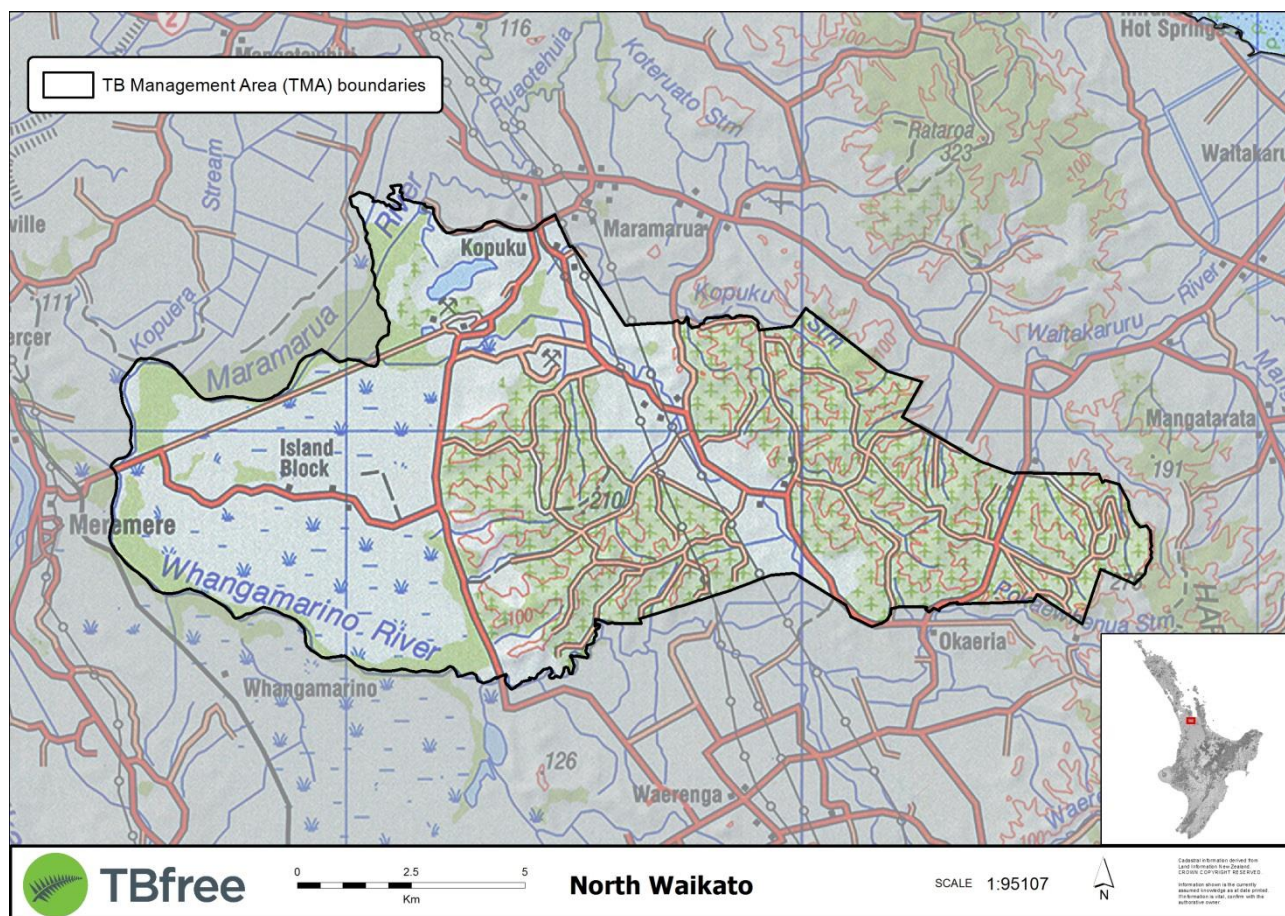
RISK MANAGEMENT

The TMA includes Defence Force Land that has limited access. Kaimanawa wild horse's free range in the area and the presence of Sika deer may cause issues with hunters. Good communication with interested parties is essential.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig and deer surveys will be undertaken to prove biological eradication of TB.

5.31 NORTH WAIKATO



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2018
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 13,365

VCZ Name	Hectares (VRA)	Planned year of TB freedom
North Waikato	13,365	2018
TMA Total	13,365	

DESCRIPTION OF TB MANAGEMENT AREA

The North Waikato TMA is located in the northern north island in the north of the Waikato region. The TMA encompasses the Whangamarino swamp that surrounds Island Block Road in the west and the eastern boundary is the Maramarua forest. The northerly boundary is the Maramarua River and follows south of State Highway 2, around the exotic pine Maramarua forest heading south to the peaks of Okaeria and Pukeamaka continuing around the southern boundary of the forest to Kopuku Road across the farmland to the next block of exotic forest. The southern TMA boundary then crosses Falls Road and follows the Whangamarino River west to the main trunk line at Meremere.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

The North Waikato Vector Risk Area (VRA) is an area where infected possums were found in the 1990's and underwent considerable vector control. The bulk of the original North Waikato VRA (46,621 ha) was declared a VFA in

2014/15. However this portion of the VRA had a vector related TB herd breakdown in 2009 and two infected ferrets were found on the northern property boundary in the Whangamarino swamp. That meant that control had to be re-instated and an eradication programme planned.

Very high possum numbers were present when the area re-commenced vector control in 2009. The aerial portion of exotic forest was completed alongside the Hapuakohe Ranges in 2010/11 and it has taken several years to get the ground control down to satisfactorily low possum density.

PLANNED VECTOR RISK AREA REDUCTION

North Waikato	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	13,365	0	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

An aerial is planned for the Whangamarino swamp in 2016/17 as it is proving to be too difficult to control by ground control methods. TBfree is working closely with the Department of Conservation on this operation. During 2016/17 and 2017/18, output-based possum control will be undertaken on the areas suitable for ground control. A pig survey will be undertaken in the Maramarua forest in 2016/17 and 2017/18. Surveys of possums and pigs will be undertaken for the Proof of Freedom analysis in 2018/19.

Innovations, Initiatives and Research and Development

None planned.

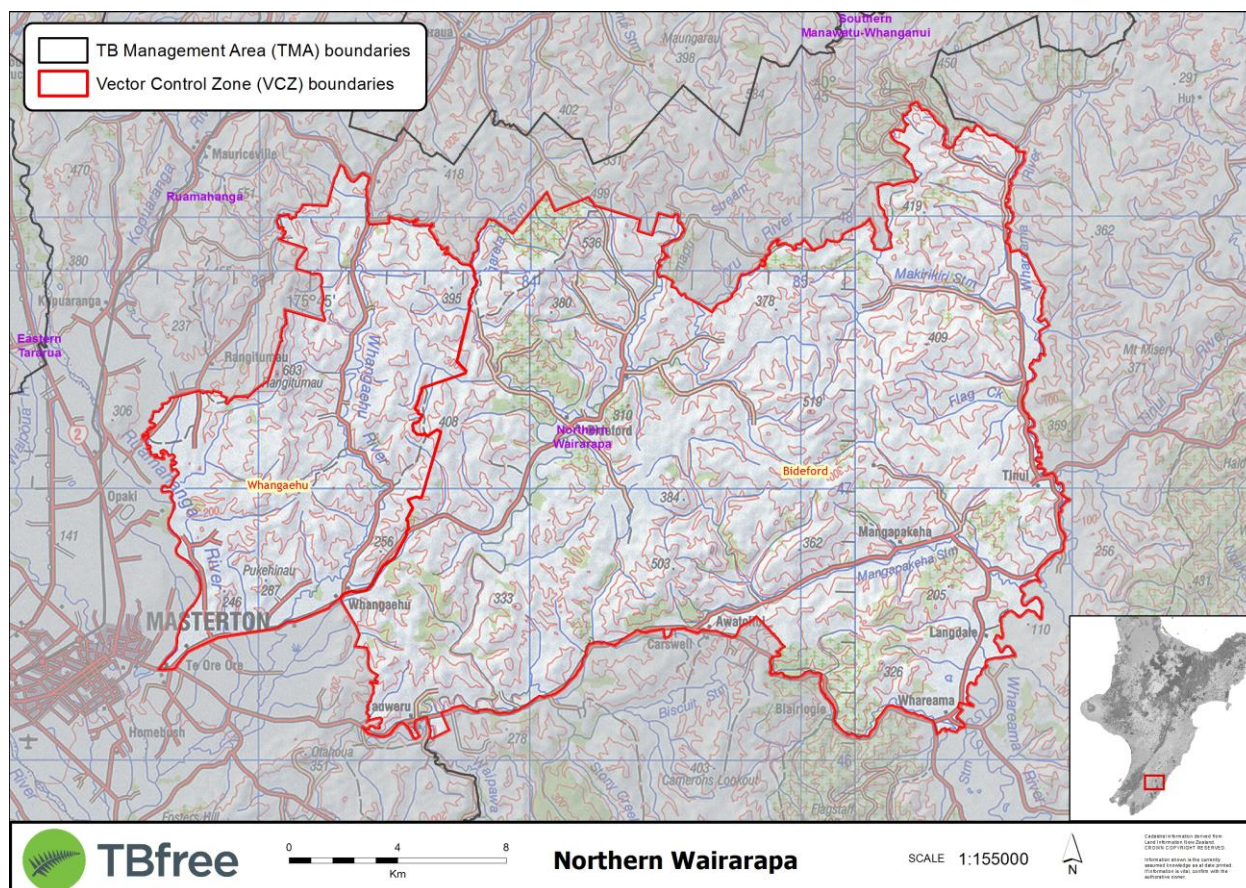
RISK MANAGEMENT

The Whangamarino swamp is an international Ramsar site and also has areas in the south that are used for duck shooting and so any aerial control will need to be handled carefully.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig and possibly deer surveys in conjunction with herd surveillance will be undertaken to prove biological eradication of TB.

5.32 NORTHERN WAIRARAPA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2017
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 50,521

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Bideford	39,046	2017
Whangaehu	11,475	2017
TMA Total	50,521	

DESCRIPTION OF TB MANAGEMENT AREA

Located within the Masterton District of Wellington Region this TMA lies to the north east of Masterton Township. The majority of the area is hill country. Whangaehu Eradication 2 is predominantly cleared pasture while Bideford has some large areas of pine forestry plus areas of bush in gullies. Herds within the TMA are predominantly beef breeding and meat production herds with only one dairy herd present.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Historically infected herds were scattered over the TMA with the highest numbers being present in the 1990's; when initial control was undertaken there were more than 30 infected herds present. The last infected herd gained a clear status in 2007.

A low number of tuberculous vectors have been found in the past. The last TB wild animals found in this TMA were three feral pigs caught within the Bideford VCZ in 2009/10.

Maintenance control has been undertaken in the Northern Wairarapa TMA since the 1990's. More recently intense output control has been undertaken followed by detection/detection based control and concurrent surveys to obtain surveillance information to prove TB freedom. A Bideford Pig survey has been underway for a number of years.

PLANNED VECTOR RISK AREA REDUCTION

Northern Wairarapa	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	50,521	0	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

2016/17 is the final year of POF surveillance and POF analysis.

Innovations, Initiatives and Research and Development

None planned.

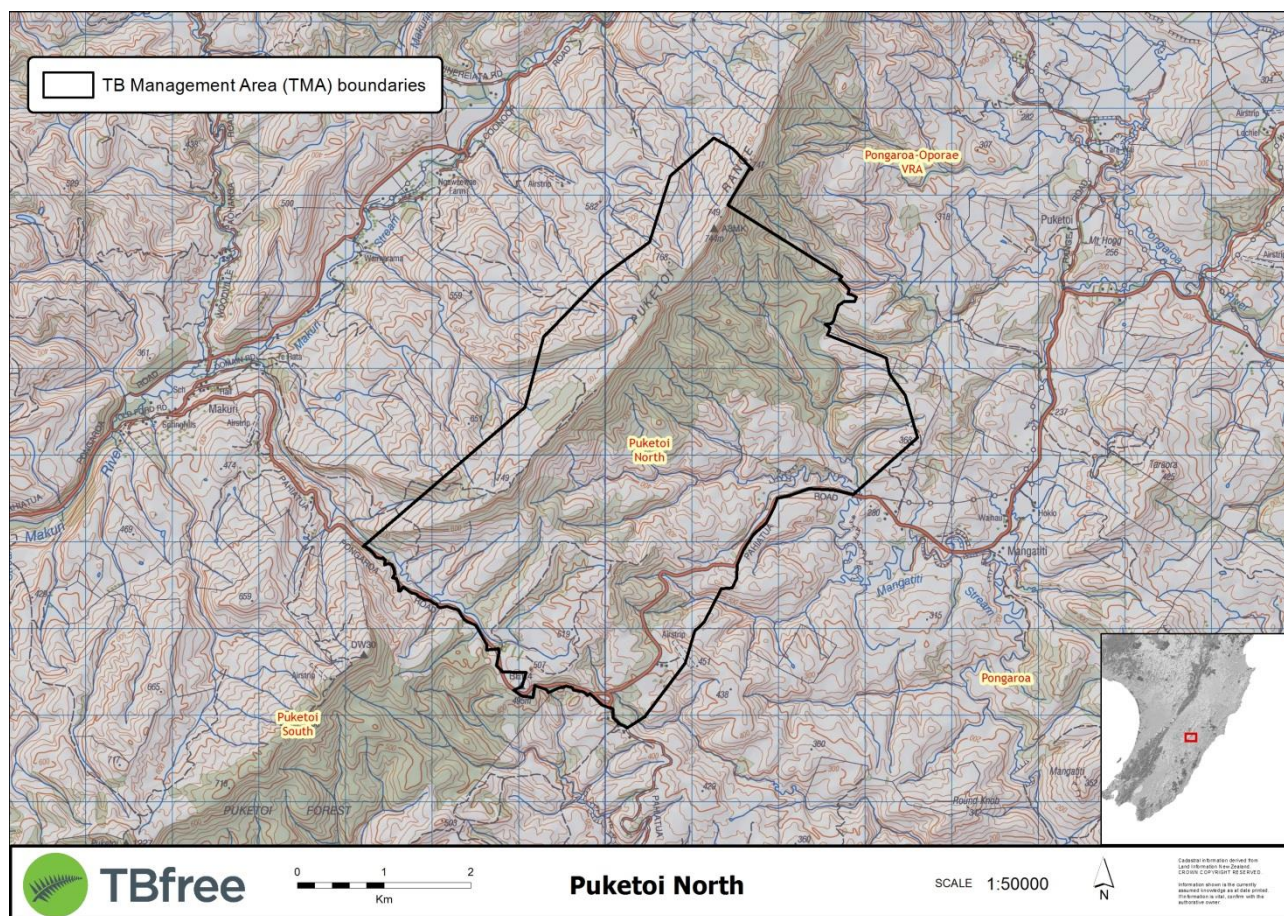
RISK MANAGEMENT

No major issues or risks

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Herd surveillance over the whole TMA plus pig surveys within the Bideford VCZ will be undertaken to prove biological eradication of TB.

5.33 PUKETOI NORTH



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2017
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 1,985

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Puketoi North	1,985	2017
TMA Total	1,985	

DESCRIPTION OF TB MANAGEMENT AREA

Puketoi North lies between Pahiatua and Pongaroa. It is designed around the northern section of the DoC Puketoi Conservation Area within the Puketoi Range and incorporates a margin of grazing land. The topography is hill country rising steeply to a pronounced ridgeline.

There are no herds located within the area but neighbouring properties graze up to the DoC boundary and provide some livestock surveillance.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

No infected wildlife has been found in the Puketoi North VCZ and there have been no infected herds. The aerial stratum has had one control operation which was in 2002/03. Output control was undertaken in the ground stratum in 2002/03 and 2003/04 and input concurrent surveys were undertaken in 2007/08 and 2015/16.

PLANNED VECTOR RISK AREA REDUCTION

Puketoi North	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	1,985	0	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

A pig survey is underway in 2016/17 to gain further surveillance data in this area for POF analysis.

Innovations, Initiatives and Research and Development

None planned.

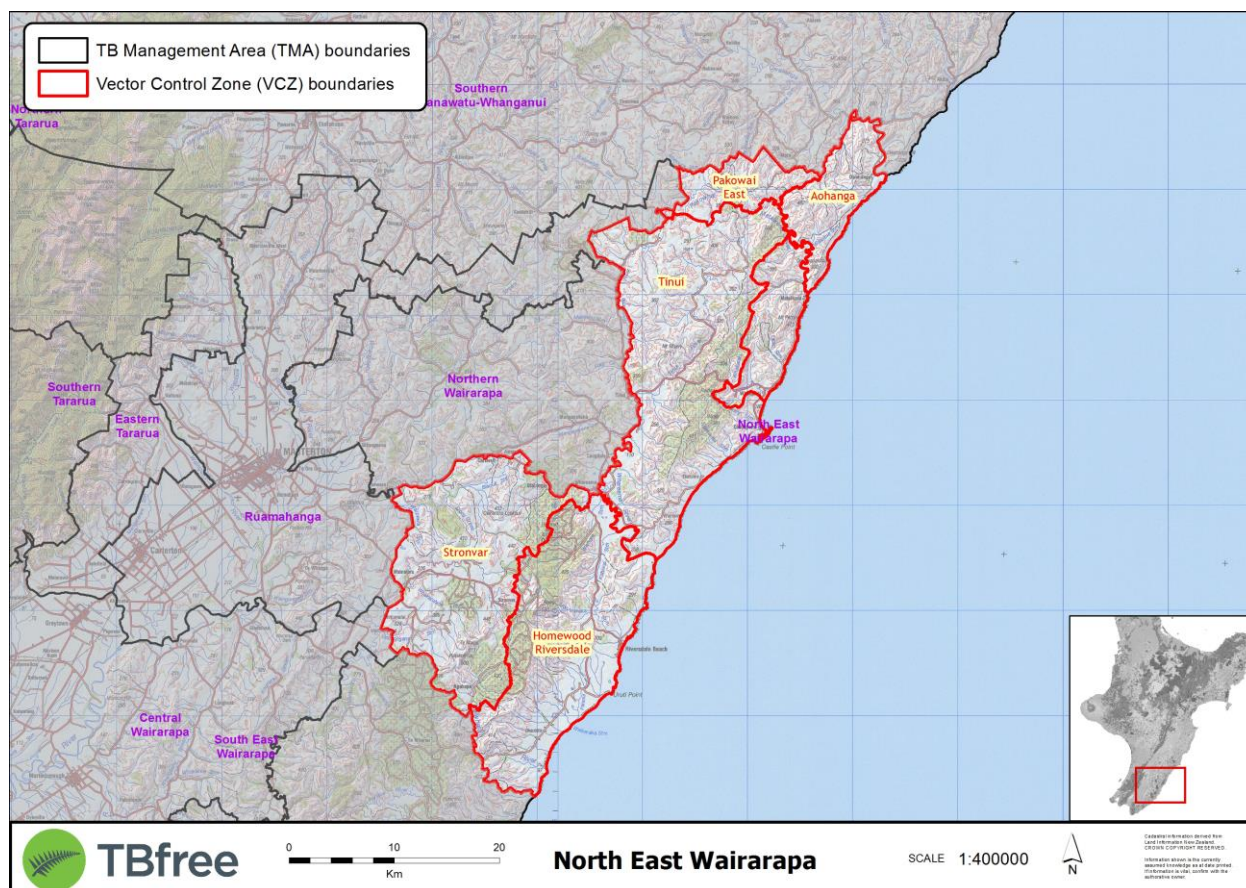
RISK MANAGEMENT

The VCZ has very steep country with few wild pigs to use for surveillance purposes.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys and possibly ferret surveys may be undertaken to prove biological eradication of TB.

5.34 NORTH EAST WAIRARAPA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2020
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 107,046

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Aohanga	7,337	2019
Mataikona	6,784	2019
Pakowai East	5,085	2019
Stronvar	25,989	2019
Homewood Riversdale	26,151	2020
Tinui	35,700	2020
TMA Total	107,046	

DESCRIPTION OF TB MANAGEMENT AREA

The North East TMA is located on the Wairarapa east coast and runs from just south of the Kaiwhata River up to the Owahanga River. The coastal settlements of Riversdale, Castlepoint and Mataikona lie within this TMA. It has a mix of rolling and steep hill country and coastal and river flats. It is predominantly a sheep and beef farming area with some extensive areas of forestry.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

The North Eastern TMA has a history of TB in the cattle and deer herds with a high number of infected herds in the 1990's and early 2000's. The last infected cattle herd gained a clear status in 2011. Historically infected wild animals have been caught in all the VCZs with the highest number being in Tinui and Mataikona. Within the last ten years tuberculous pigs have been caught in the Mataikona, Tinui and Pakowai Eradication 2 VCZs.

All the VCZs within the TMA have had maintenance control since the 1990's using a range of techniques. Recently this has included bait stations, aerial control, kill traps and ground control output. Pig surveys have also been undertaken within the TMA.

PLANNED VECTOR RISK AREA REDUCTION

North East Wairarapa	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	107,046	61,851	0	0	0	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

Control-plus-surveillance management activities will be undertaken during the next five years (2016/17-2020/21). This will be output-based possum control to maintain low possum numbers followed by detection/detection-based control with concurrent surveys to gather information on the likely absence of TB in possums. Pig surveys are planned in all VCZs to add more surveillance data.

Innovations, Initiatives and Research and Development

None planned.

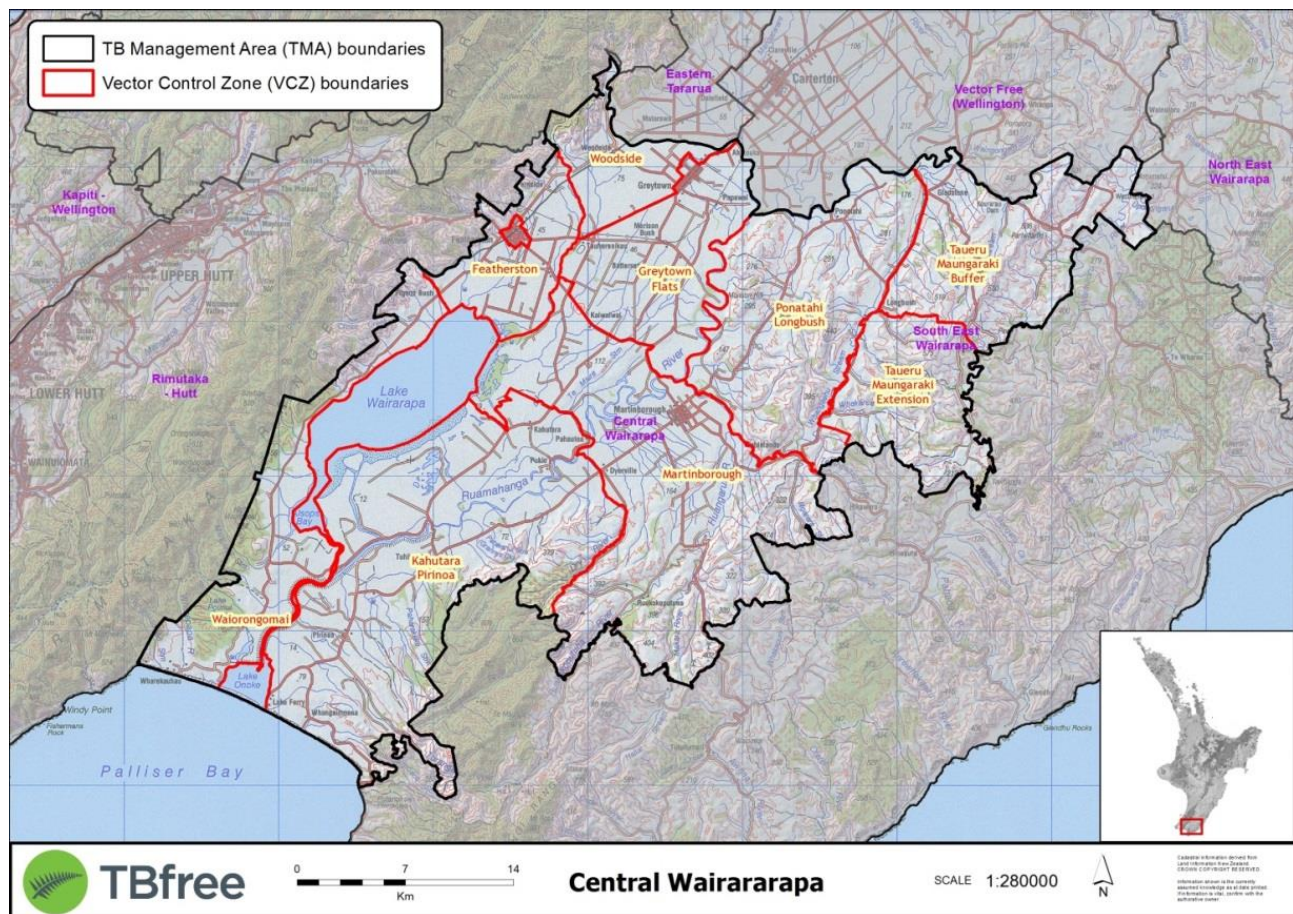
RISK MANAGEMENT

Access into forestry is a potential problem which may have an impact on output control coverage plus coverage of the detection/detection based control, concurrent surveys. This is especially a problem when logging is underway which may take place over an extended time period. Contacting the forestry companies to find out where they are planning to log in the next couple of years will give us an indication of the size and location of the problem. This can then be brought to the attention of the control contractor. Pig surveys are proposed for these VCZs and as the pigs will principally come from the forestry areas they will help to increase survey sensitivity where access denied. If we know in advance the areas of forestry where we may have access problems during our possum surveys we can emphasise the importance of increasing pig captures in these areas

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys and herd surveillance will be undertaken to prove biological eradication of TB.

5.35 CENTRAL WAIRARAPA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2025
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 125,960

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Taueru Maungaraki Ext	8,291	2022
Woodside	4,800	2022
Greytown Flats	10,059	2022
Ponatahi Longbush	16,898	2022
Taueru Manngaraki Buffer	12,432	2022
Martinborough	26,159	2023
Kahutara Pirinoa	30,090	2024
Featherston	5,949	2025
Waiorongomai	11,282	2025
TMA Total	125,960	

DESCRIPTION OF TB MANAGEMENT AREA

The Central Wairarapa TMA runs from the Waiohine River, just north of Greytown, to Palliser Bay in the south. The western boundary is the southern Tararua Range and the Rimutaka Range. The eastern boundary is the east coast hill country VCZs and the Aorangi Range. Land use is predominantly pastoral and cropping with some horticulture near Greytown and grape growing around Martinborough.

Habitat is scattered except for the scrub and bush on the foothills of the Tararua, Rimutaka and Aorangi Ranges. The herds are predominantly beef breeding and meat production herds. There are also a number of dairy herds, mainly in the lower valley in the productive low lying land close to Lake Wairarapa.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

The Central TMA has a history of TB in the cattle and deer herds with a high number of infected herds in the 1990's and early 2000's. The last infected cattle herd gained a clear status in 2010. There is a long history of infected vectors in the area with a number of tuberculous possums and ferrets caught adjacent to Lake Wairarapa and also close to the Tararua and Rimutaka Ranges. The most recent infected vectors were a ferret caught in the Ponatahi Longbush VCZ in 2002/03 and an infected wild pig which was caught in the Tararua foothills in the Featherston VCZ in 2003/04.

Apart from Greytown Flats the VCZs in the Central TMA have been under control for ten years or more. Control has been staggered with generally two to three years between ground control output operations. One stratum, Kahutara Pirinoa HMR4, is part of the Aorangi Project and has received aerial control.

PLANNED VECTOR RISK AREA REDUCTION

Central Wairarapa	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	125,960	125,960	125,960	73,480	17,231	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

Control-plus-surveillance management activities will be undertaken during the next five years (2016/17-2020/21). This will be output-based possum control to maintain low possum numbers followed by possum surveillance to gather information on the likely absence of TB in possums. In some VCZs a possum survey will be incorporated into the last output operation and in others detection/detection based-control with concurrent surveys will be undertaken after the completion of output control.

Innovations, Initiatives and Research and Development

None planned.

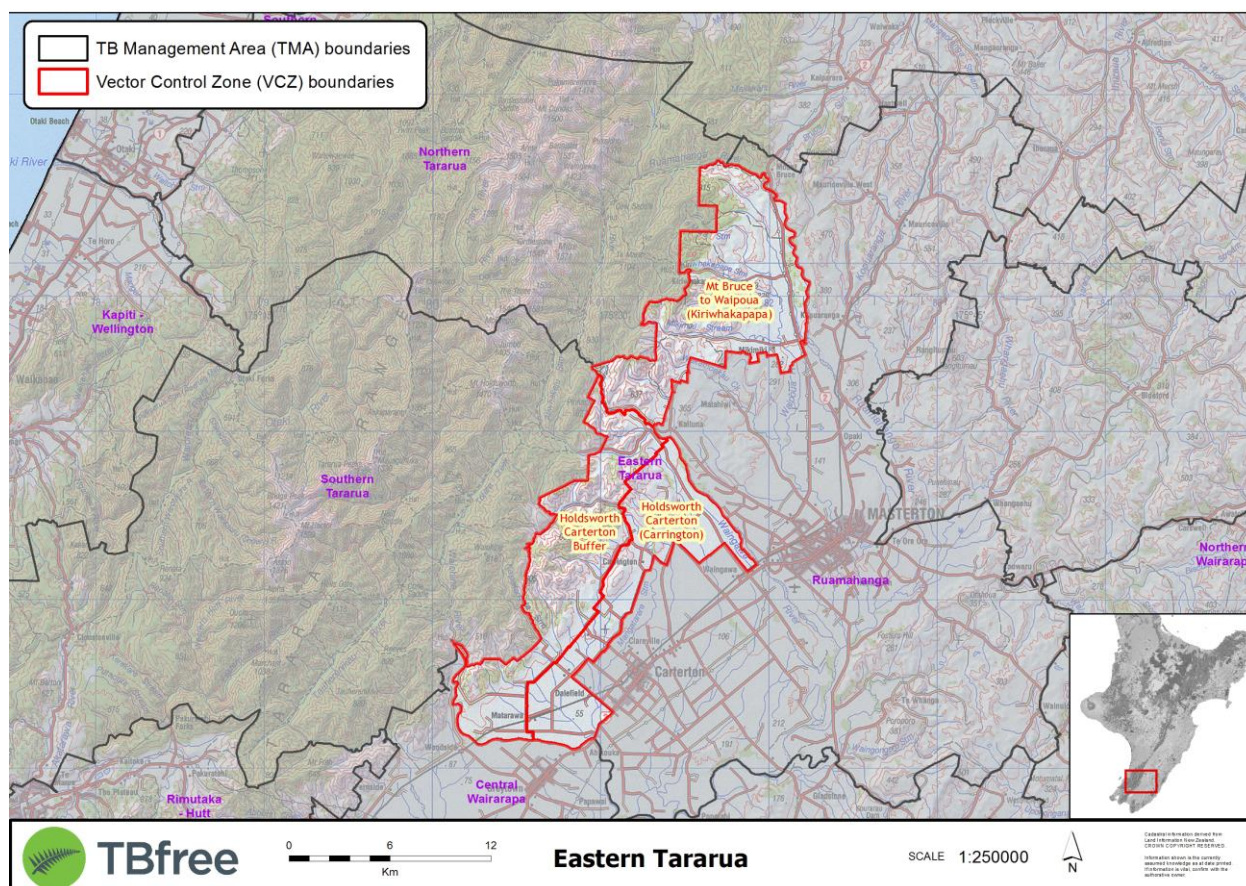
RISK MANAGEMENT

The main risk to the Central TMA is the potential movement of infected vectors from the adjacent Tararua, Rimutaka and Aorangi Ranges. This risk is being mitigated by aerial control in the Aorangi Range, the Featherston to Wairongomai Crown VCZ, the Holdsworth to Woodside Crown VCZ and the planned aerial control in the Tararua Range Core VCZ.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Herd surveillance plus ferret surveys around Lake Wairarapa. Pig surveys in the bush margins in the Kahutara Pirinoa, Featherston and Wairongomai VCZs.

5.36 EASTERN TARARUA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2025
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 23,629

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Holdsworth Carterton Buffer	8,138	2025
Holdsworth Caterton (Carrington)	6,252	2025
Mt Bruce to Waipoua (Kiriwhakapapa)	9,239	2025
TMA Total	23,629	

DESCRIPTION OF TB MANAGEMENT AREA

This long, narrow TMA is situated on the eastern edge of the Tararua Range and includes some of the Tararua foothills. It runs from the Ruamahanga River in the north to the Waiohine River in the south. Most of the western boundary is the Tararua Forest Park and to the east lay Masterton and Carterton townships.

The western side of the TMA lies within the Tararua foothills and has a higher habitat cover with scrub and some forestry. This cover is contiguous with the adjoining Southern Tararua and Northern Tararua TMAs. Towards the east the topography becomes flatter and the farming more intensive.

The majority of the herds in the TMA are beef herds with approximately 70% of these being Meat Production herds. There are also a number of dairy herds. Most of the herds are located in the Holdsworth Carterton Eradication VCZ.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

This area has an extensive history of TB in the local herds. Historically infected vectors have been found either in, or very close to, all of the VCZs within the TMA. The area with the most history of tuberculous vectors is the Holdsworth Carterton Buffer, especially close to the Waiohine River. A TB pig was found in this VCZ in 2012/13.

The VCZs in this TMA have been under vector control since the 1990's and most strata have had consistent control since 2008/09.

PLANNED VECTOR RISK AREA REDUCTION

Eastern Tararua	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	23,629	23,629	23,629	23,629	23,629	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

Control-plus-surveillance management activities will be undertaken during the next five years. This TMA has contiguous bush with the adjacent VCZs in the Tararua Forest Park where TB has been detected. Aerial control in these adjoining areas is planned for 2019/20 and 2020/21 and in conjunction with the aerial work two years of intensive output ground control will be undertaken in Eastern Tararua TMA to maintain low possum numbers. This control will be followed by possum surveillance to gather information on the likely absence of TB in possums; in some VCZs a possum survey will be incorporated into the last output control operation and in others detection, detection based control with concurrent survey will be undertaken after the completion of output control.

Pig surveys will also be undertaken during this period.

Innovations, Initiatives and Research and Development

None planned.

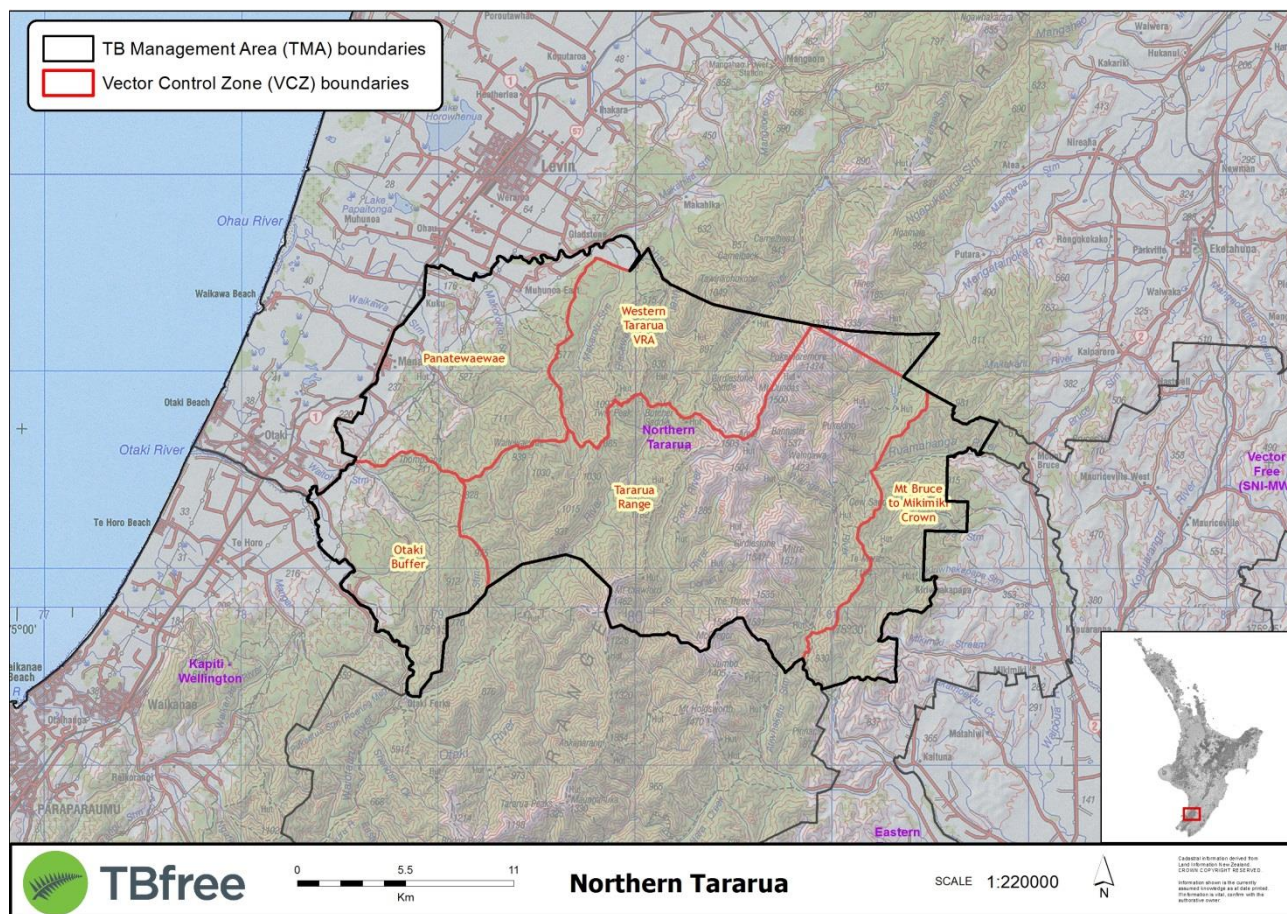
RISK MANAGEMENT

The principal risk to this TMA is the movement of infected vectors from the adjoining Tararua Range. Aerial control has been undertaken in the adjacent Crown strata and further aerial control is planned. This will reduce the risk and ongoing pig surveys will give information on any areas that require more intensive work.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys and herd surveillance will be undertaken to prove biological eradication of TB.

5.37 NORTHERN TARARUA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2026
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 50,863

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Mt Bruce to Miki Miki Crown	5,338	2025
Otaki Buffer	6,252	2025
Panatewaewae	9,440	2025
Tararua Range	21,555	2026
Western Tararua VRA	8,278	2026
TMA Total	50,863	

DESCRIPTION OF TB MANAGEMENT AREA

The Northern Tararua TMA lies within both Wellington Region and Manawatu Wanganui Regions and includes the most northern section of the Tararua Range that is within the VRA.

A high proportion of this TMA lies within the Tararua Forest Park and is part of the bush covered and mountainous Tararua Range. A small area of the western side is farmland including lifestyle properties plus there is a small area of pine forestry

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

A cluster of infected herds were present in the Panatewaewae VCZ in the 1990s and tuberculous ferrets and possums were found in the area at this time. Tuberculous pigs have been caught in the Otaki Buffer and Mt Bruce to Miki Miki Crown VCZs.

In the past aerial and ground control has been undertaken in the Otaki Buffer, Panatewaewae and Mt Bruce to Miki Miki Crown VCZs. There has been no control undertaken in the Tararua Range and Western Tararua VRA VCZs.

PLANNED VECTOR RISK AREA REDUCTION

Northern Tararua	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	50,863	50,863	50,863	50,863	50,863	0	0	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

A combination of control plus surveillance and surveillance-only will be used to prove freedom from TB in possums during the next five years (2016/17-20/21). Surveillance will include a combination of deer surveys, pig surveys and low-intensity possum surveillance.

It is planned to undertake aerial control in the aerial strata within the Mt Bruce to Mikimiki Crown, Otaki Buffer and Panatewaewae VCZs during the next five years in conjunction with control in the adjacent ground control strata.

Innovations, Initiatives and Research and Development

None planned.

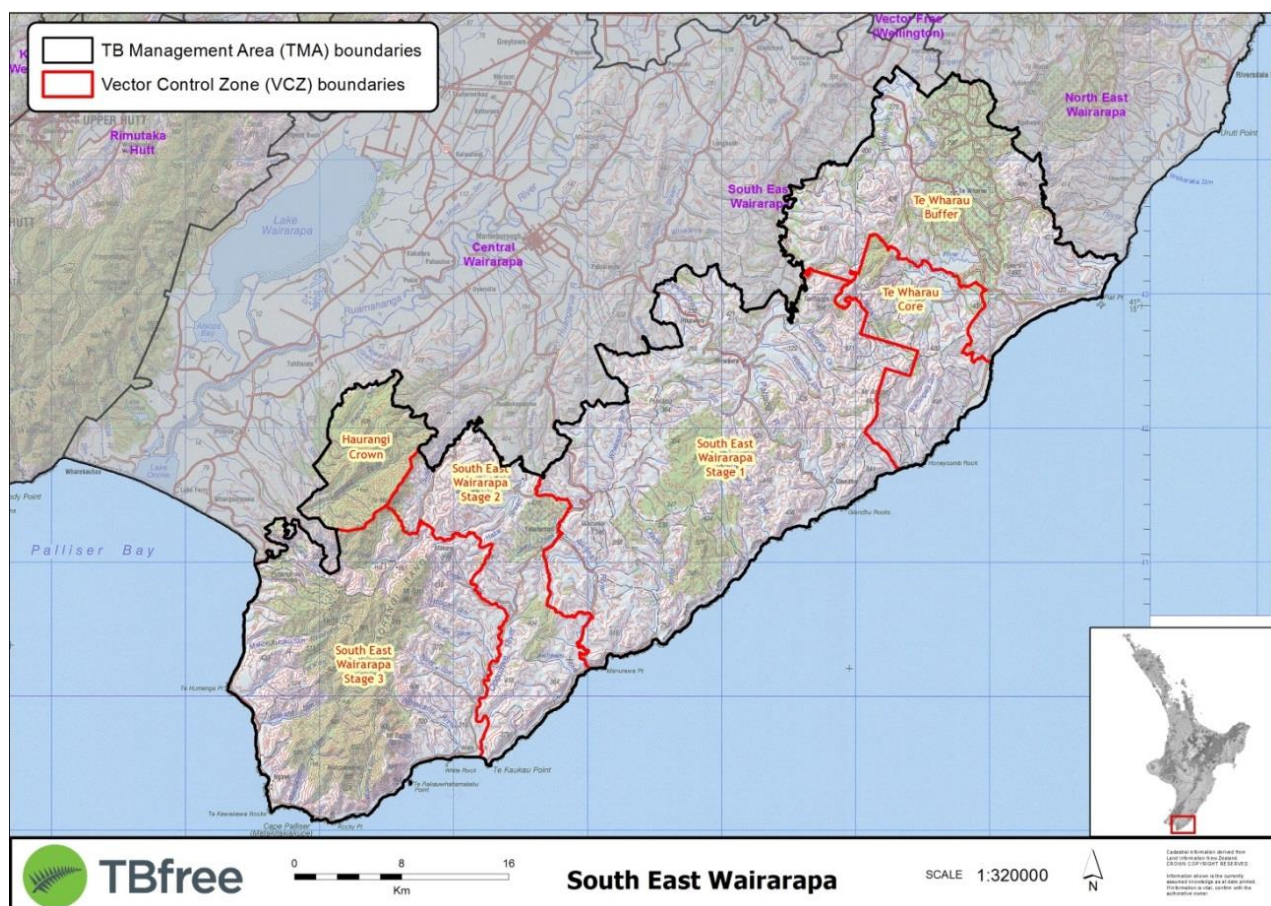
RISK MANAGEMENT

The usual risks and mitigations for large aerial control projects with extensive areas of difficult terrain apply to this TMA.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig and deer surveys in conjunction with herd surveillance will be undertaken to prove biological eradication of TB.

5.38 SOUTH EAST WAIRARAPA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2030
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 140,276

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Haurangi Crown	6,427	2025
SE Wairarapa Stage 3	33,951	2025
SE Wairarapa Stage 2	15,532	2026
Te Wharau Buffer	25,533	2027
Te Wharau Core	10,770	2027
SE Wairarapa Stage 1	48,063	2030
TMA Total	140,276	

DESCRIPTION OF TB MANAGEMENT AREA

The South East Wairarapa TMA bounds the east coast of the southern Wairarapa, running from just below the Kaiwhata River in the north to Cape Palliser in the south. The western boundary is the central Wairarapa Valley. This TMA is predominantly hard hill country with some large areas of scrub and bush plus scrub in gullies and along streams. The properties are largely extensive beef and sheep farms and there are also some large pine plantations, especially in Te Wharau Buffer. There are a couple of DOC reserves present (Rocky Hill Sanctuary and Tora Bush Scenic Reserve) and the

Aorangi Forest Park which is classified as a Recreational Hunting Area. There are some extensive and rugged properties within the area and some have been left as bush and are used by their owners as hunting estates.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Historically infected herds have been present over the whole TMA with the most recent infected herds being close to the Aorangi Range. TB has been detected in the ferret and possum population and also in deer and pigs. Wild cattle caught in the foothills of the Aorangi Range were also found to be tuberculous. Past control has largely been targeted output control. Aerial control was undertaken in South East Wairarapa Stage 3 and Haurangi Crown in 14/15 as part of the Aorangi Project.

PLANNED VECTOR RISK AREA REDUCTION

South East Wairarapa	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	140,276	140,276	140,276	140,276	140,276	99,898	84,366	0	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

Control-plus-surveillance management activities will be undertaken during the next five years (2016/17-2020/21). Aerial control is planned to be carried out in the South East Wairarapa Stage 3 and Haurangi Crown VCZs in 2017/18 and 2020/21. Aligned with this will be ground control in the adjoining strata. At least two years of output-based possum control will be undertaken in all VCZs with the final output control followed by detection/detection-based control, concurrent survey.

Pig surveys will be undertaken over the whole TMA.

Innovations, Initiatives and Research and Development

Multispecies control in the Aorangi Range and neighbouring strata will be achieved by undertaking aerial control more frequently to maintain low rat numbers and the use of OSKAR bait stations to target possums, rats, mustelids and cats in the one activity.

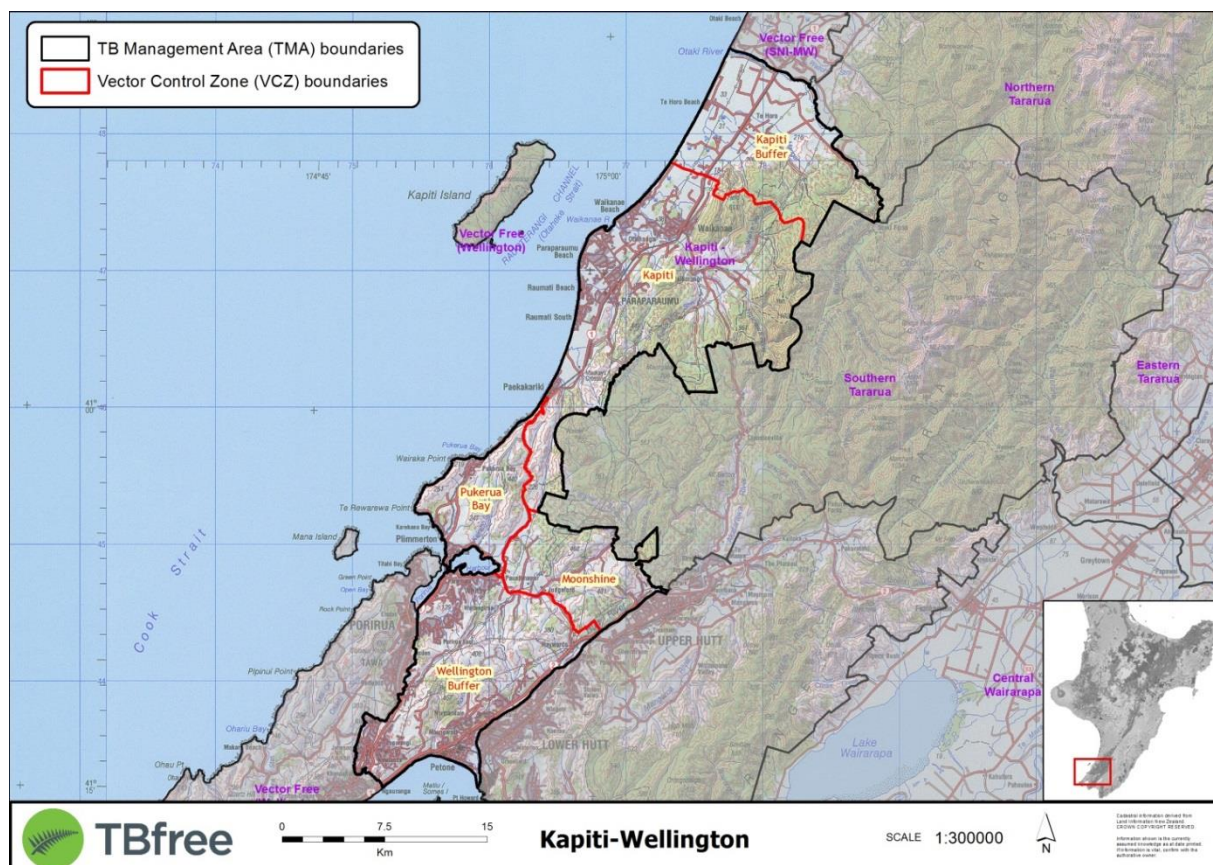
RISK MANAGEMENT

Wild cattle have been present in this area and TB has been detected in them in the past. These will need to be considered as a potential reservoir of infection and some form of control may be required in the future.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys and herd surveillance will be undertaken to prove biological eradication of TB.

5.39 KAPITI-WELLINGTON



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2031
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 58,337

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Wellington Buffer	13,767	2028
Pukerua Bay	5,142	2029
Kapiti Buffer	10,754	2030
Kapiti	22,632	2030
Moonshine	6,042	2031
TMA Total	58,337	

DESCRIPTION OF TB MANAGEMENT AREA

Located on the west coast of the southern North Island this long TMA runs from the suburbs of Wellington and Porirua Cities in the south to the Otaki River in the north. This TMA incorporates coastal flats and hill country. It bounds the sea to the west and the Hutt Valley and the Taranaki Range to the east. This is a highly populated TMA which includes parts of Porirua and Lower Hutt Cities as well as townships such as Waikanae. In addition to the built up areas there are numerous lifestyle blocks. There are approximately 500 herds in the TMA with 65% being meat production herds and 30% beef breeding

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Historically there has been a low level of infected herds in this TMA. However, infected vectors are present with seven tuberculous pigs being caught in the last nine years.

Control has been targeted in this area with output ground control over parts of the TMA and aerial control in Kapiti Buffer. The Kapiti and Pukerua Bay VCZs have had no TBfree possum control to date.

PLANNED VECTOR RISK AREA REDUCTION

Kapiti-Wellington	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	58,337	58,337	58,337	58,337	58,337	58,337	44,570	6,042	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

Control-plus-surveillance management activities will be undertaken during the next five years (2016/17-2020/21). The aerial operation in Kapiti Buffer will be repeated in conjunction with the adjoining Otaki Buffer aerial strata; initial control will also be undertaken in the Kapiti aerial strata, timed with aerial control in adjoining VCZs. Ground strata will receive control at the same time as adjacent aerial operations. Pig surveys will be ongoing.

Innovations, Initiatives and Research and Development

A bait station regime may be used to keep possums at a continuous low level.

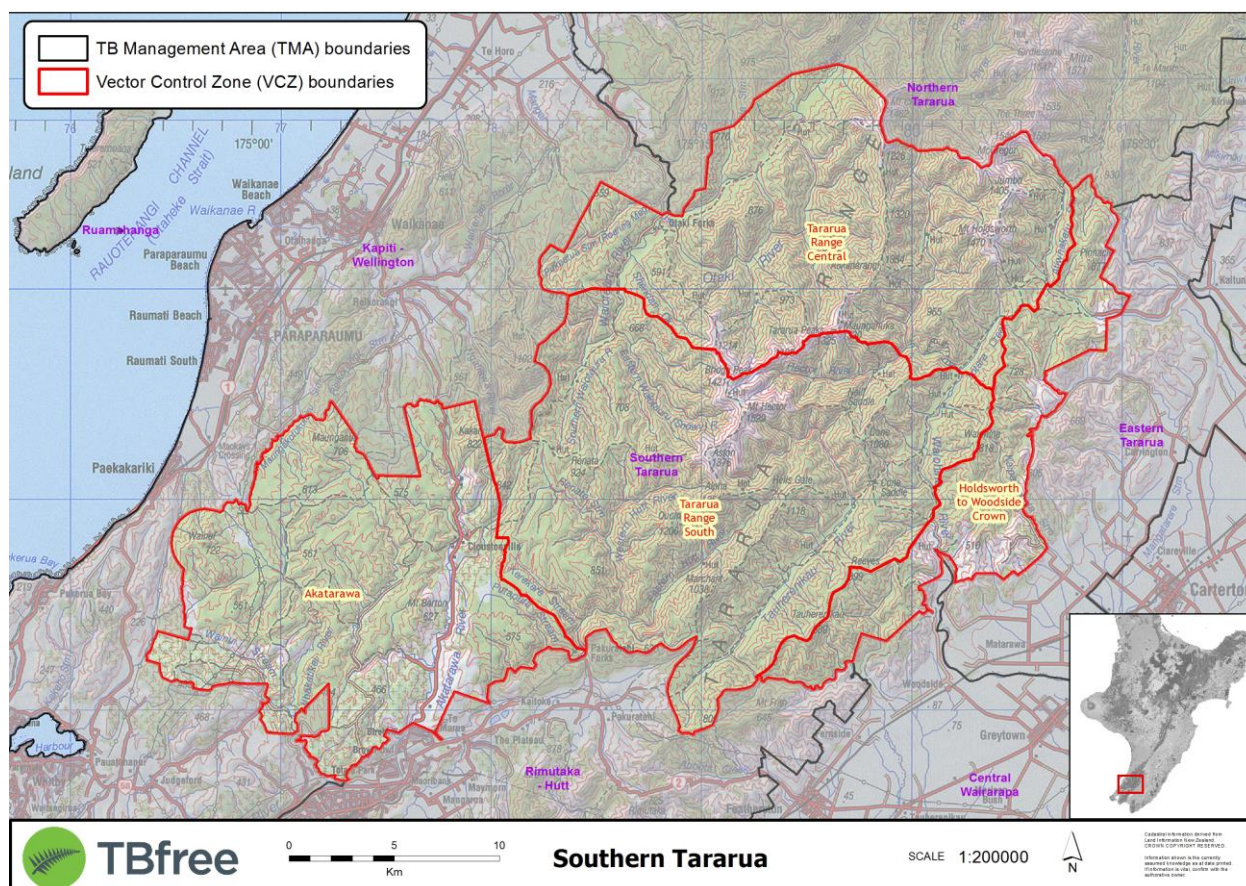
RISK MANAGEMENT

The Transmission Gully road works will make access to some areas difficult. Landowner issues in other areas of the TMA may also be a problem.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys and herd surveillance will be undertaken to prove biological eradication of TB.

5.40 SOUTHERN TARARUA



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2032
- Herd TB freedom date: 2016
- Total area of VRA reduction (hectares): 80,402

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Holdsworth to Woodside Crown	8,598	2027
Tararua Range Central	22,150	2027
Tararua Range South	29,114	2031
Akatarawa	20,540	2032
TMA Total	80,402	

DESCRIPTION OF TB MANAGEMENT AREA

The Southern Tararua TMA includes the southern half of the Tararua Range; it also takes in the Akatarawa Valley and the adjacent hill country.

A high proportion of this TMA is in the Tararua Forest Park. To the south it also includes land owned by GWRC, part of this is in pine plantations plus the land which is to the north of the Akatarawa Valley is a water catchment area. Apart from the Akatarawa Valley and the GWRC pines the rest of the area is basically native bush. The eastern section of the Akatarawa Valley is quite populated with lifestyle blocks and houses. There are a small number of herds in the TMA which are predominantly Meat Production.

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

Historically there have been infected herds in the Akatarawa Valley. A number of infected vectors have been found in this TMA. Most recently they have been pigs, with a number of TB pigs caught in the Akatarawa VCZ.

The VCZs in this TMA have had a mixed history of control. Holdsworth to Woodside Crown has had regular aerial control operations since 94/95. Tararua Range Buffer has had two DOC aerial control operations (Project Kaka). The Akatarawa Valley strata (HR1, HR6 and HR7 have each had ground control output in 08/09 and 09/10. The aerial strata in the Akatarawa VCZ have been controlled by GWRC. An area in the Tararua Range Core VCZ has also been controlled by GWRC but the majority of the VCZ has had no control.

PLANNED VECTOR RISK AREA REDUCTION

Southern Tararua	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	80,402	80,402	80,402	80,402	80,402	80,402	49,654	49,654	0	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There are no infected herds within the TMA.

Summary of Operations Planned

Control-plus-surveillance management activities will be undertaken during the next five years (2016/17-2020/21). Aerial operations will be undertaken in the majority of this area and where applicable these will be timed to work in with control operations undertaken by GWRC and DOC. Trigger monitors will be completed prior to the aerals to ensure that the control is done at the correct time. Ground control will be done in strata adjacent to aerial operations. Pig surveys are planned to supply surveillance data.

Innovations, Initiatives and Research and Development

In the Akatarawa HR1 stratum a bait station regime may be utilised to reduce the possum population over a longer time period and prior to output control. This area has difficult terrain with a long boundary with an aerial stratum and contractors are not willing to take it on as output control.

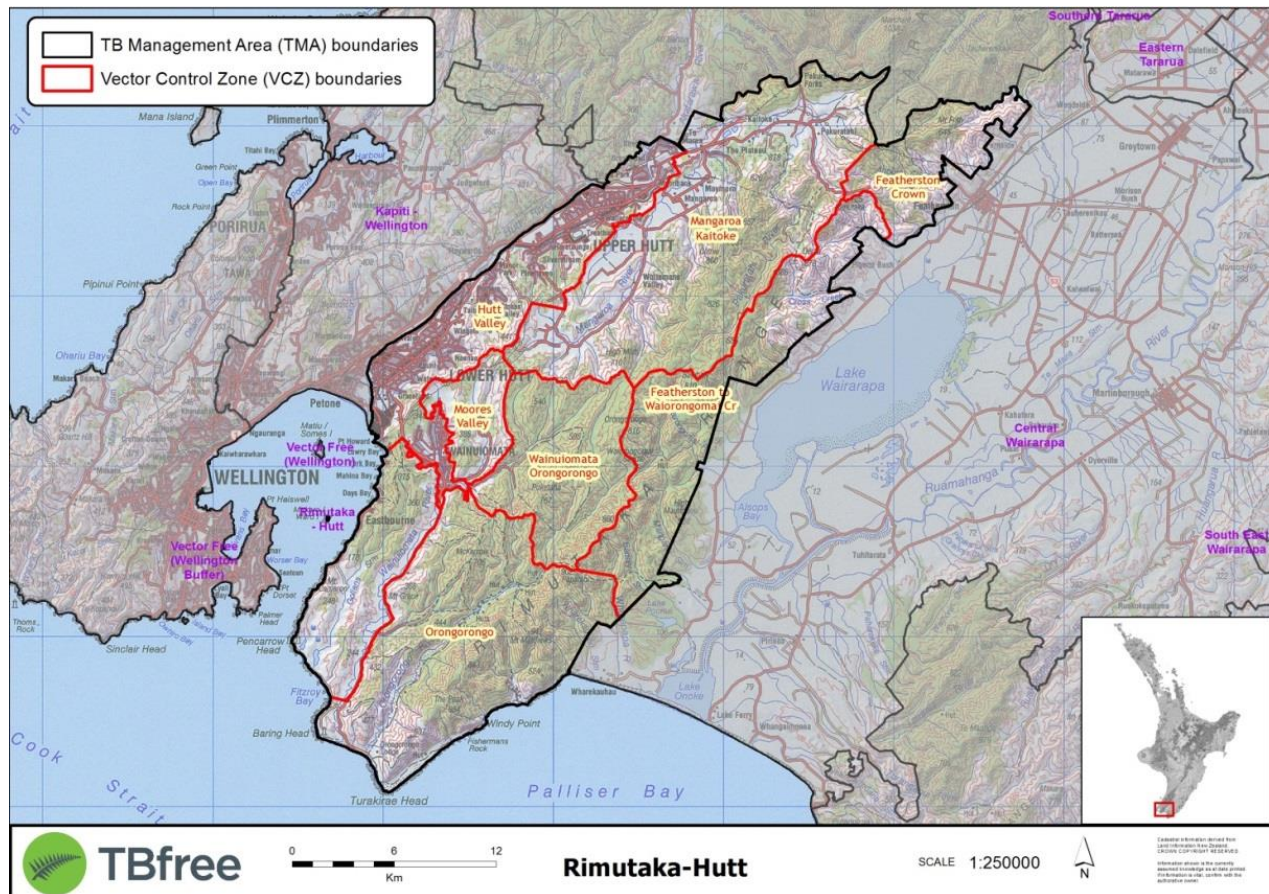
RISK MANAGEMENT

The Akatarawa Valley has a number of houses and lifestyle properties. This means that aerial control cannot be used but the terrain is very difficult for output control and results in a low number of contractors prepared to take on the work and only at very high prices.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Pig surveys and herd surveillance will be undertaken to prove biological eradication of TB.

5.41 RIMUTAKA-HUTT



TB MANAGEMENT AREA OBJECTIVES

- VRA TB freedom date: 2033
- Herd TB freedom date: 2018
- Total area of VRA reduction (hectares): 74,109

VCZ Name	Hectares (VRA)	Planned year of TB freedom
Featherston Crown	4,293	2031
Featherston to Waiongoma Cr	9,831	2031
Hutt Valley	9,342	2033
Mangaroa Kaitoke	19,716	2031
Moores Valley	2,508	2033
Orongorongo	15,320	2033
Wainuiomata Orongorongo	7,425	2033
Wainuiomata South	5,674	2033
TMA Total	74,109	

DESCRIPTION OF TB MANAGEMENT AREA

The Rimutaka-Hutt TMA runs from Kaitoke in the north to Pencarrow Head, Baring Head and Turakirae Head in the south. Most of the western boundary is the Hutt River and in the east much of the boundary is the eastern boundary of the Rimutaka Forest Park. On the eastern side of the TMA are the bush covered hills and mountains of the Rimutaka Range. The western side of the TMA is made up of Hutt City and Upper Hutt City and includes housing on the edges of the scrub and gorse covered Eastern Hutt hills. Mangaroa Valley, Whiteman's Valley and Moores Valley are included within the TMA

SUMMARY OF DISEASE AND VECTOR CONTROL HISTORY

TB has been found in cattle herds in all farmed areas of the TMA with the highest number of infected herds being in the Mangaroa Kaitoke Vector Control Zone (VCZ). Infected vectors have been found either in, or very close to, all of the VCZs within the TMA. A number of infected possums and pigs have been caught in the Orongorongo Valley inside the Rimutaka Forest Park within the last 10 years, as well as a TB pig found in Mangaroa Kaitoke in 2010/11.

Past control has been targeted. Aerial control has been undertaken in the Featherston Crown VCZ, Featherston to Waiorongomai Crown VCZ and parts of the Mangaroa Kaitoke VCZ. Some areas such as Hutt Valley, Orongorongo, Moores Valley and Wainuiomata South have had very little or no control.

PLANNED VECTOR RISK AREA REDUCTION

Rimutaka-Hutt	2016	2018	2020	2022	2024	2026	2028	2030	2032	2034	2036
Hectares	74,109	74,109	74,109	74,109	74,109	74,109	74,109	74,109	9,342	0	0

SUMMARY OF ACTIVITIES

Infected Herd Activities

There is one infected herd within the TMA. Testing is planned every six months until the herd has achieved a clear status

Summary of Operations Planned

Control-plus-surveillance management activities will be undertaken during the next five years (2016/17-2020/21). At this stage of eradication this will be output- and input-based possum control plus aerial control to maintain low possum numbers. Over 2016/17 and 2017/18 it is planned to do aerial and ground control in Orongorongo, Wainuiomata South, Featherston to Waiorongomai, Mangaroa Kaitoke and Wainuiomata Orongorongo. Ground control in adjoining VCZs and strata will be undertaken in the 2016/17- 2018/19 period.

Innovations, Initiatives and Research and Development

Bait stations will be used in areas that are difficult to access such as parts of the Hutt Valley VCZ. The aim of the bait stations is to lower possum numbers prior to output control being undertaken.

RISK MANAGEMENT

Within this TMA there are areas of very difficult terrain with thick cover (including dense gorse on steep hills). It is also located next to suburban areas and includes a high number of lifestyle blocks. The mitigation is to utilise aerial control and bait stations, to start consultation early and ensure that all interested parties are made aware of the control proposed.

SURVEILLANCE ACTIVITY 2040-2055 TO ACHIEVE BIOLOGICAL ERADICATION OF TB

Once TB freedom has been achieved pig surveys in conjunction with herd surveillance will provide further information to prove biological eradication of TB.

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.
Special Testing Area	Special Testing Areas (STAs) are defined geographical areas which specify the TB testing regime of cattle and deer. The frequency of the testing is determined by the area risk, or the need to obtain surveillance data for Proof of Freedom purposes.
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)	TMAs are a contiguous area with broadly similar: <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.