OSPRI

National Operational Plan 2021

2016–2055 National Bovine Tuberculosis Pest Management Plan

1 October 2016 | Amended December 2021

TBfree

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Contents

Section 1: National Operational Plan

A. Executive Summary

This document is the National Operational Plan (NOP) for the National Pest Management Plan (NPMP) for Bovine Tuberculosis. It has been prepared by TBfree New Zealand Ltd (TBfree NZ) as required under Section 100B of the Biosecurity Act 1993 to give operational effect to the Biosecurity (National Bovine Tuberculosis Pest Management Plan) Order 1998 (the Order).

TBfree NZ, a wholly owned subsidiary of OSPRI NZ Ltd, is the Management Agency for the NPMP pursuant to Section 100 of Biosecurity Act 1993 and Clause 6 of the Order.

Development of this NOP followed a statutory review of the NPMP and consequent amendments to the Order which came into effect on 1 July 2016. The NOP itself was amended in May 2019, November 2020, and in December 2021, pursuant to S 100B (1) (c) of the Biosecurity Act.

The pest to be managed under the NPMP is *Mycobacterium bovis* (*M. bovis*), the causal agent of the zoonotic disease bovine tuberculosis (TB).

The amended Order introduced new objectives for the NPMP which in summary are:

- Eradication of *M. bovis* from New Zealand by 2055, with milestone objectives of:
  - TB freedom in cattle and deer by 2026.
  - TB freedom in possums by 2040.
- Containment of disease in cattle and deer to a national infected herd period prevalence of no more than 0.2% until such time as *M. bovis* is eradicated.

Livestock disease management approaches towards the achievement of NPMP objectives are based on:

- Surveillance for TB in cattle and deer through routine application of approved diagnostic tests and inspection of carcasses at slaughter premises.
- Controls on the movement of cattle and deer from individual herds or geographic areas of higher TB risk, to prevent transmission of TB from herd to herd via livestock movement.
- Application of test and slaughter plans to eradicate within-herd infection.
- Wildlife vector control, principally of possums, and in some cases ferrets, to prevent wildlife-vectored infection of herds.

Wildlife pest management operations required to meet NPMP objectives involve:

- Intensive possum control within and around designated Vector Risk Areas (VRAs) where it is considered that TB is being maintained in possum populations.
- Surveillance to determine presence/ absence of TB in possums or other wildlife.
- Application of a Proof of Freedom (POF) framework in which data is compiled from possum control history, possum population density measures, wildlife disease surveillance and history of wildlife-vectored infection in livestock, which is then analysed to provide a statistical estimate of the probability that the possum population is free of TB.
- The use of POF determinations to guide decisions as to the continuation and intensity of further vector control or surveillance, including decisions to cease active management.

Progress toward achievement of the milestone of TB freedom in livestock will be monitored through annual targets for reduction in the number of TB infected herds, based on stated assumptions.

Progress toward achievement of the milestone of TB freedom in possums will be monitored through annual targets for reduction in the national extent of VRAs, based on stated assumptions.

The NOP is delivered through sub-division of VRAs into approximately 100 Tuberculosis Management Areas (TMAs). Each TMA is mapped with a defined timeframe for achievement of possum TB freedom, under management plans to be developed for each area.

Key challenges, risks and issues that may impact on achievement of NPMP objectives include those related to:

- Effective implementation of new vector control and pest management approaches sufficiently early in the term of the NPMP.
- Reprioritisation of vector control to maximise cost effective achievement of eradication goals, which may increase the risk of possum-related herd TB breakdowns in the short term.
- Unpredictable TB outbreaks in disease free areas caused by long-distance movement or human translocation of infected wildlife.
- A 1 in 20 chance of incorrect determination of TB freedom in possums, requiring resumption of active control.
- Effective phased implementation of new risk-based livestock TB testing policies, with significant dependencies on NAIT livestock location and movement data.
- Continued availability and acceptance of aerial 1080 baiting for possum control.
- The continuation of funding shares and arrangements as set out in the Order.
- Sufficient access to land where vector management activities are required.
- Assumptions and uncertainty as to the role of ferrets as a TB maintenance host and vector.

A range of policies is specified to support delivery of the NPMP, especially where this requires or may lead to the imposition of legal obligations or costs. Inclusion of these within the NOP is based on the possible need for greater clarity or detail than is provided for by the broad legal framework of the Order. These policies describe or provide for:

- Orderly and transparent classifications of organisms and places subject to management.
- Surveillance for, and diagnosis of, TB in livestock and wildlife.
- Procedures for slaughter of livestock when required for disease management and provisions for compensation of owners of such livestock.
- Restrictions on movement of cattle and deer.
- Certain obligations to provide information.
- The use of powers under the Biosecurity Act 1993 for wildlife control and survey.

The inclusion of these policies within the NOP does not preclude further specification of NPMP delivery though subsidiary or related plans or operational procedures.

B. Introduction

Bovine tuberculosis (TB) is a disease of farmed cattle and deer in New Zealand which, if left to spread, it 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 National Operational Plan (NOP) for the National Bovine Tuberculosis (TB) Pest Management Plan (NPMP). It has been prepared by TBfree New Zealand Limited to meet the requirements for an Operational Plan under Section 100B of the Biosecurity Act 1993. It follows a statutory review of the NPMP in 2015 which led to amendments to the Biosecurity (National Bovine Tuberculosis Pest Management Plan) Order 1998, effective from 1 July 2016.

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 NPMP.

Consequently, the NPMP implemented through the NOP, now aims to achieve TB freedom in livestock in New Zealand by 2026, and TB freedom in possums by 2040. Eradication of *Mycobacterium bovis* (the causal agent of bovine tuberculosis) from New Zealand will be achieved by 2055.

The NOP provides the detail on how the NPMP objectives will be met, and the key performance indicators against which progress towards the achievement of the objectives will be measured. Operational policies which guide the technical and procedural implementation of TB control activities are documented in Section 4 Operational Policies.

Pursuant to Sections 100B (1) (b) and (c) of the Biosecurity Act 1993, the NOP is subject to annual review by the Management Agency and any necessary amendments required as a result of such review. This review and amendment process will allow for further development and refinement of operational measures and policies towards effective achievement of NPMP objectives.

Annual reporting on the NOP (as required under S 100B (2) (a) of the Biosecurity Act) is provided for in the Annual Report of OSPRI NZ Ltd.

This document was prepared by TBfree New Zealand, a wholly owned subsidiary of OSPRI NZ Ltd, acting as the Management Agency for the National TB Pest Management Plan pursuant to Section 100 of the Biosecurity Act 1993.

Section 2: Objectives of Management

A. Strategic Context

The NPMP is implemented through a mix of regulatory and non-regulatory instruments (regulation, operational policies, funding agreements, and area-based plans), see Figure 1.

i. National TB Pest Management Plan

The current NPMP took effect on 1 July 2016 and supersedes the previous Plan, which had a primary objective of eradicating TB from at least 2.5 million hectares of Vector Risk Area (VRA) by 2026. Progress toward this objective was well ahead of schedule, which led to a fundamental shift in approach – from rolling back and containing the disease, to active eradication in livestock and wildlife.

The primary objective of the NPMP is now the eradication of *M. bovis* from New Zealand by 2055. Key milestones towards this objective are:

- TB freedom in livestock by 2026, and
- TB freedom in possums by 2040.

TB freedom is defined as the statistical likelihood of TB being present in the population of the species being no greater than 0.0001% throughout the preceding 12 month period.

As at 2016, approximately 8.2 million hectares of New Zealand was classified into 15 different Vector Risk Areas (VRAs) where TB is likely to be present in possums and other wildlife species. TB will need to be eradicated from wildlife within each of these VRAs in order to achieve the primary objective of the NPMP.

The secondary objective is to contain the disease in livestock to a national herd period prevalence <0.2% – the World Animal Health Organisation (OIE) threshold for declaring a country TB free – until such time as the disease is completely eradicated.

The objectives will be achieved through:

- The sound use of a scientific approach to disease management.
- Programmes of work designed for cost-effective disease surveillance (livestock and wildlife).
- Livestock movement controls.
- Management and control of TB in wildlife vectors.

ii. National Operational Plan

This National Operational Plan (NOP) describes the objectives and targets of the NPMP at a more granular and area specific level and provides measures of progress towards the achievement of these objectives. It also sets out the statutory technical policies and control tactics and methods for implementing the TB Plan.

National Bovine Tuberculosis Pest Management Plan (TB Plan)

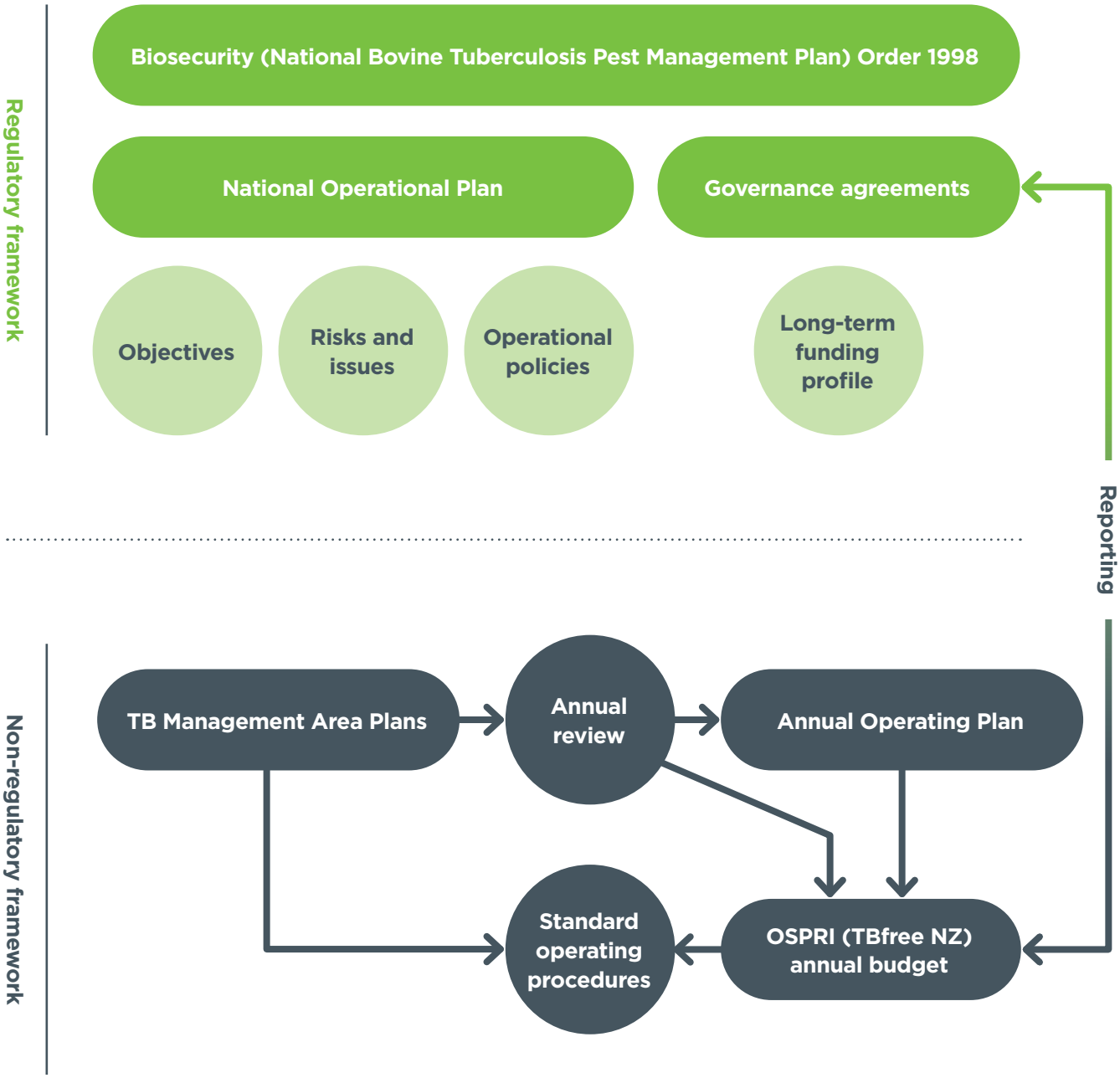


Figure 1: The Statutory and Operational hierarchy of the National Pest Management Plan.

B. TB Disease Management Approach

i. Surveillance

The principal tools for disease surveillance are the routine TB testing of cattle and deer for TB infection, routine surveillance of cattle and deer carcasses through slaughter premises for granulomas, and surveillance of wild animals to detect TB infection. Routine testing of livestock is carried out via the application of approved diagnostic tests that detect the presence of TB. Schedules for routine testing are based on herd location, risk of wildlife infection and availability of information on livestock movement and herd management. Information from wild animal surveys is used to establish the TB status of wildlife populations, provide information for designing the disease and vector control programmes, and to assist in the case for proving an area is free from TB in possums.

TB surveillance strategies will be applied through the following methods:

- TB testing of farmed cattle and deer.
- Post-mortem inspection of all cattle and deer carcasses processed at registered slaughter premises and game packing houses.
- Post-mortem inspection of test-positive and reactor cattle and deer slaughtered other than at registered slaughter premises and game packing houses.
- TB surveillance of Game estates.
- Direct surveys of specified wildlife populations.
- Reporting of clinical or pathological evidence of TB in any species by registered veterinarians, diagnostic laboratories, farmers, hunters, trappers and members of the general public.

ii. Movement Control

Movement of cattle and deer from areas or herds with a higher risk of TB infection is controlled to minimise the risk of infection spreading via the movement of infected livestock to other herds and locations.

The control of movement is managed through two methods:

- Designated Movement Controlled Areas (MCAs), and
- Individual herd movement control.

Specific controls on the movement of cattle and deer, irrespective of location, are applied to herds where TB infection has been confirmed, or it is deemed:

- There is a high risk of TB being present,
- TB is suspected, or
- Testing obligations have not been met.

The type of control set will ensure the risk of moving TB infected animals is minimised.

iii. Vector Control

To minimise the transmission of TB to domestic cattle and deer from wild animals that are known carriers of the disease (vectors), possum populations (the main maintenance host) are controlled to low levels. This control is carried out in and around land areas where it is thought that TB is being maintained in the possum population, or in locations where wild animals are under investigation as a possible source of TB infection. In some situations, ferret control may also be required.

C. Pest Operations Management

New Zealand is divided up into Vector Risk Areas (VRA), where local wildlife populations have been or remain infected with TB, and Vector Free Areas (VFA), where TB freedom has been achieved or the disease was never suspected to be present.

The plan objective is to eradicate TB from all wild animal populations on land within Vector Risk Areas (VRAs), and to ensure the continued absence of TB in wildlife in these areas.

The Vector Risk Areas targeted for eradication are located in a number of regions throughout New Zealand. Under the NPMP, the timing of pest operations will be based on the following broad prioritisation principles:

- Application of control measures to areas that have been identified as posing a high risk of vector-related TB herd infections.
- Application of control measures to target reservoirs of wildlife TB that hold the potential to infect herds and prevent sustainable TB freedom.
- Application of control measures to buffer zones surrounding high risk areas and wildlife TB reservoirs to prevent the spread of TB to herds and areas considered free of TB.

Progress towards eradication of TB from a VRA is measured by the probability that bovine TB has been eradicated from the wild animal population within a defined geographic area. This probability is established within a Proof of Freedom (POF) framework, in which data is compiled on:

- Possum control history.
- Possum population density measures.
- Surveys for the presence/absence of TB in possums and other wildlife.
- Results from TB tests of any cattle or deer herds in the vicinity.

This data is analysed using epidemiological and ecological models, developed to provide a statistical estimate of the probability that the possum population is TB free. The calculated probability guides the pest control and wildlife surveillance activities that are conducted within the VRA. Control activities take place when the probability of TB freedom in possums is low, and surveillance activities take place when the probability of TB freedom in possums is high. The POF determinations guide decisions as to the continuation and intensity of further vector control or surveillance, including decisions to cease active management.

Once a VRA has met the statistical requirements (known as POF stopping rule) for possum TB freedom, it is reclassified as a Vector Free Area (VFA).

Pest operations will be planned through the development of Disease Eradication Plans. These plans will be developed at a Vector Control Zone (VCZ) level and will stipulate the disease management outcomes required to achieve TB freedom in the VCZ. Specific pest management activities will align to the disease eradication plans so that they deliver the required disease management outcomes once completed.

Pest management activities are delivered by specialist pest control organisations. A collection of contiguous VCZs into Tuberculosis Management Areas (TMAs) will be used to contract and deliver the pest management activities. This will enable possum control, and disease surveillance to be contracted in an efficient manner and also utilising scales of economy, while still maintaining areas at a manageable size in relation to the disease; and so that similar methods of control and surveillance can be used in an area.

Detailed maps and descriptions of all TMAs are available at **ospri.co.nz/tb-and-pest-control/tb-management-areas**.

D. National Operational Plan Objectives and Targets

i. TB Freedom in Livestock by 2026

The first 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. Table 1 below shows the original projection of infected herd numbers made in 2016.

Table 1: Predicted National Infected Herd Numbers at 30 June 2020–2026

	2020	2021	2022	2023	2024	2025	2026
*2016 Projected Infected herds	19	17	13	10	7	4	0

*The 2016 predictions did not account for either the Hawke's Bay or Hari Hari outbreaks which has resulted in the current number of infected herds exceeding the forecast. The Programme is still tracking toward the goal of sustainable freedom from herds by 2026.

The projected reduction in infected herds is based on the following assumptions:

- Adequate funding is provided for the required level of possum control in key VRAs where possum infection is still the principle cause of new herd TB breakdowns or persistence of infection in existing infected herds.
- A targeted risk-based testing framework provides for efficient and effective targeting of livestock TB surveillance effort towards area risk, residual animal/herd risk and movement risk.
- An efficient and effective individual animal attribute, tracking and traceability system enables animals-of-interest, at risk of harbouring TB infection, to be quickly found and managed.
- Restrictions on the movement of cattle and deer from Infected status herds are sufficient to prevent herd to herd disease transmission.
- Some herds that have been previously cleared of infection prior to the commencement of the NPMP will have recurrent breakdowns, but this will progressively diminish as residual infection is detected under a risk-based testing framework.
- Robust and cost-effective parallel testing technology is available and used on eligible infected herds prior to clearance, thus minimising the risk of residual infection persisting post-clearance.
- Slaughter surveillance sensitivity is at an optimum level to detect true TB infection if present.
- TB will be re-detected in possum populations in some Vector Control Zones (VCZs) after they have been declared TB free, but this is expected to occur in fewer than 1 in 20 cases. In addition, surveillance processes are expected to detect TB before it escalates in wildlife. Infrequent possum TB cases (no more than one every five years based on previous outbreaks) are expected to occur in VFAs. Surveillance processes will detect these quickly, and a rapid eradication response will be implemented before the disease can escalate within the wider livestock population.
- Required timely access to land for ground and aerial control activities is ensured.
- Infrequent possum TB cases (no more than one every five years based on previous outbreaks) are expected to occur in VFAs. Surveillance processes will detect these quickly, and a rapid eradication response will be implemented before the disease can escalate within the wider livestock population.

ii. 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 Biosecurity (National Bovine Tuberculosis Pest Management Plan) Order 1998, a proxy measure of the number of VRA hectares will be used for the second milestone.

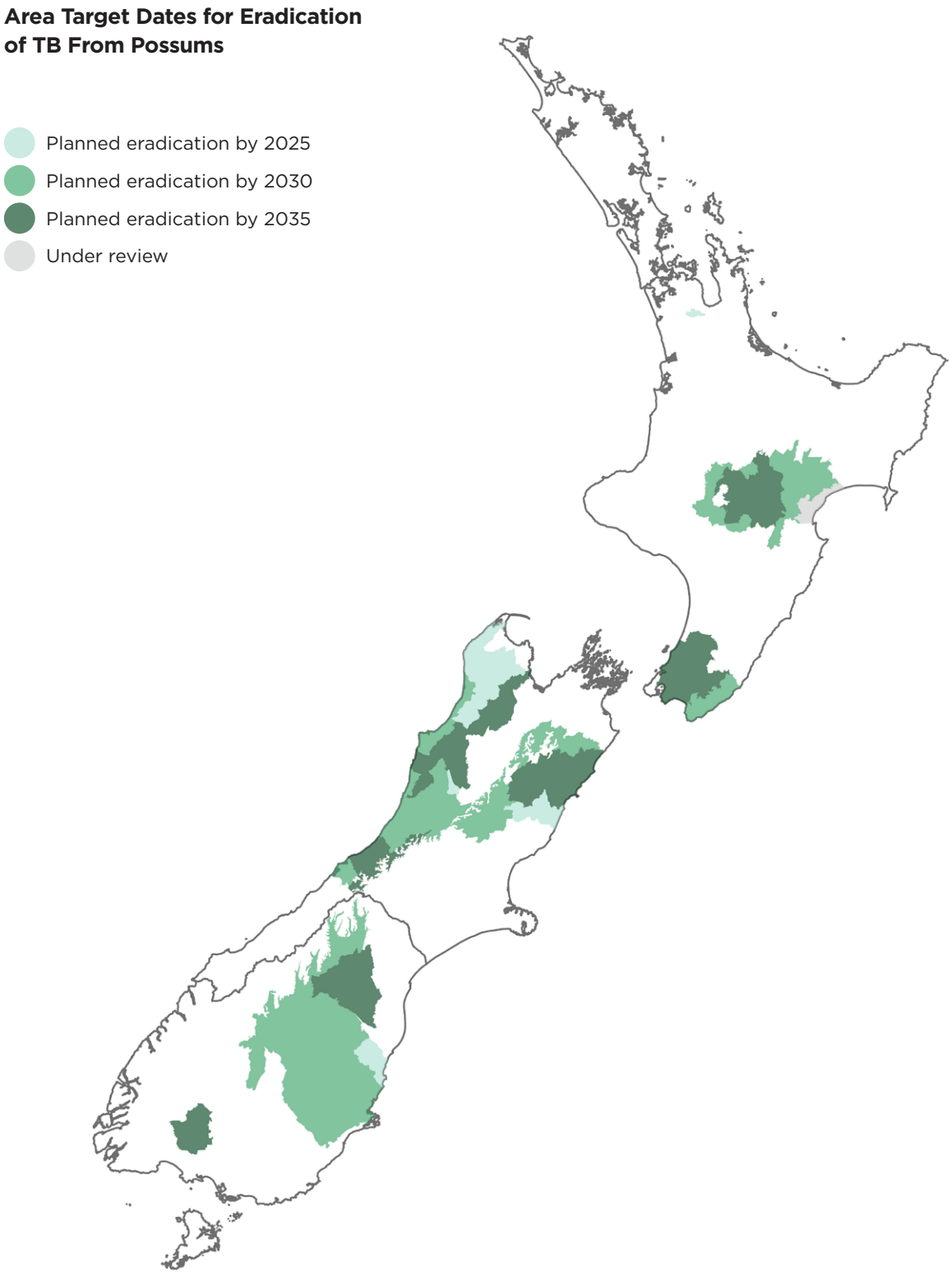
The projected reduction in VRA hectares is based on the following assumptions:

- Funding available for the pest management programme within the NPMP is consistent with both the total amounts and annual cash-flows projected within the 2015 TB Plan Review proposal.
- Pest programme design and planning is effective and consistent with the requirements of TBfree's Technical Design Guidelines.
- Implementation of the pest programme through efficient and cost-effective delivery mechanisms continues.
- The use of aerial 1080 baiting for possum control remains available throughout the term of the NPMP.
- Required timely access to land for ground and aerial control activities is ensured.
- A plan of continuous improvement that is in-line with OSPRI's Annual Operating Plan and Research and Development processes is implemented, incorporating pest programme design, and programme delivery.
- TB will be re-detected in some VCZs after they have been declared TB free but is expected to occur in fewer than 1 in 20 cases, and surveillance processes will detect this before the disease can escalate within the wider wildlife population.
- Infrequent possum TB cases (no more than one every five years based on previous outbreaks) are expected to occur in VFAs. Surveillance processes will detect these quickly, and a rapid eradication response will be implemented before the disease can escalate within the wildlife population.

Broad national area targets for eradication of TB from possums and VRA reduction at five year intervals are shown in Map 1 right and Table 2 below.

Table 2: Predicted Residual Hectares of Vector Risk Areas for the Period 2025–2035

Year	2025	2030	2035
Total VRA (ha)	6,251,007	2,639,233	0



Map 1: Planned Timeframes for TB Freedom in Possums in TMAs Across New Zealand 2016–2035.

E. Reviewing and Reporting

The successful implementation of the NPMP will be assessed against achievement of plan objectives within the following cascading geographic hierarchy:

- The statutory objectives and associated milestones contained in clause 5 of the Biosecurity (National Bovine Tuberculosis Pest Management Plan) Order 1998.
- The National Operational Plan objectives and targets contained in Section 2(D) of the National Operational Plan.
- TMA objectives and targets within each Area Disease Management Plan.

While the TB freedom milestones for the primary NPMP objective are defined under clause 5(1A) of the Order-in-Council, proxy measures for possum TB freedom (hectares of VRA) and livestock TB freedom (number of infected status herds) will be used. Objectives and targets for these proxies will be set respectively in the National Operational Plan and in TMA plans.

Possum TB freedom is determined at Vector Control Zone level through the results of control and surveillance activity combined to achieve a predetermined probability level that possums are TB free, objectively assessed through the Proof of Freedom (POF) utility, or similar methodology for deriving the probability. When each Vector Control Zone within a TMA has achieved the predetermined probability of freedom, the possum population within the TMA will be deemed to have achieved TB freedom; when the possum population of all the TMAs that together comprise the VRA have achieved the predetermined probability of TB freedom, the possum population within the VRA as a whole will be deemed to have achieved TB freedom.

A formal process for review and reporting on the achievement of objectives, milestones and targets has been developed for each level within the planning hierarchy. This includes quarterly Board reporting. Progress towards the achievement of the secondary objective of the NPMP, i.e. to contain the disease in livestock to a national herd prevalence of less than 0.2% until such a time as the disease is fully eradicated, is tracked nationally and reported in the annual National Operational Plan review and the OSPRI Annual Report.

Further Key Performance Indicators, e.g., herd TB breakdown/clearance rates, numbers of reactor animals and their status at post-mortem, and pest management activity measurements, are reported on as required under governance and funding agreements between TBfree New Zealand and its funders/ stakeholders and within the OSPRI Annual Report. This ensures that stakeholders and the wider public are informed on progress relative to milestones and targets.

There will also be additional goals and objectives to be reviewed and reported on within OSPRI's Annual Operating Plan.

Any significant changes in operational and policy matters specified within the NOP will be introduced and documented through annual review (and amendment where necessary) of the NOP pursuant to Sections 100B (1) (b) and (c) of the Biosecurity Act 1993. This will allow for further development and refinement of operational measures and policies towards effective achievement of NPMP objectives.

Figure 2: Planning Hierarchy and Objectives

Planning hierarchy and objectives		
TB Plan Objectives	Eradication of TB in wildlife and livestock by 2055. Disease prevalence in national herd maintained < 0.2% period prevalence.	
TB Plan Intermediate Objectives (Milestones)	TB freedom in possums by 2040	TB freedom in livestock by 2026
National Operational Plan Objectives	VRA reduction objectives	Infected herd reduction objectives
TB Management Area Objectives	VRA reduction objectives by TMA	Infected herd reduction targets by TMA

Figure 3: National Pest Management Plan Objectives, Measures, Reporting and Review Framework

Objectives	Measures	Targets
TB Plan Objectives	Presence of disease in wildlife	Absence of disease in wildlife by 2055
	Presence of disease in livestock	Disease prevalence in national herd maintained <0.2% Absence of disease in livestock by 2055
TB Plan Intermediate Objectives (Milestones)	Presence of disease in possums	TB freedom in possums by 2040
	Presence of disease in livestock	TB freedom in livestock by 2026 Disease prevalence in national herd maintained <0.2%
National Operational Plan Objectives	Presence of disease in possums/region/time	Annual targets for VRA hectare reduction met nationally
	Presence of disease in livestock/region/time	Annual targets for infected herd reduction met nationally
TB Management (TMA) Area Objectives	Presence of disease in possums/TMA/time	Annual targets for VRA hectare reduction by VCZ met
	Presence of disease in livestock/TMA/time	Annual targets for VRA infected herd reduction by VCZ met

Section 3: Risks and Issues

Challenges, Risks and Issues

There are a number of challenges, risks and issues that may impact on the achievement of the plan objectives.

i. Challenges to Implementation of New Vector Control and Disease Management Approaches

There is a risk that TBfree New Zealand will not be able to implement the proposed changes in vector control and disease management soon enough to achieve the milestones and eradication objective in the timeframes set.

We consider that this risk can be effectively mitigated by:

- A planned 'health check' by TBfree New Zealand and funding parties after the first three years of implementing the amended TB Plan; this was carried out during the 2019/20 financial year.
- Efficiencies gained through removal of a previous funding model which constrained funding allocation to specific regions or programme outputs.
- Heads of Agreement arrangements with funders has included the planned 'health check' and strong commitment by funders to supporting TBfree New Zealand's implementation of the new approaches.
- Increased emphasis on monitoring and surveillance to inform adaptive decision-making in vector control; and
- A less risk-averse approach to probability of freedom decisions, allowing vector control to be stopped earlier.

ii. Risk of Increased Incidence of Herd TB Breakdowns

Vector control priorities established on the introduction of this plan have been directed towards a quicker and more cost-effective route to eradication of TB from infected possum populations in New Zealand. However, this approach introduced a higher risk of some possum-related disease breakdowns occurring in herds in those areas not prioritised for immediate control.

The early analysis indicated that it would be more cost-effective to accept some level of this risk and to control occasional breakdowns as they occur, rather than undertaking control across all risk areas until they are declared TB free. However, the greater than expected scale and rapidity of the 2019–2020 Hawke's Bay outbreak has forced reconsideration of this assessment.

The TB Plan Health Check thus included a review of vector control planning, which identified 9 management areas where disease history and recent levels of vector control indicated significant herd breakdown risk. These areas will be prioritised for survey and/or control to mitigate this risk.

iii. An Outbreak Occurs in Vector Free Area

Experience has shown that there is a pattern of new outbreaks in VFAs occurring approximately once every five years. Outbreaks in VFAs have occurred at Mt Algidus in 2011, Mt Cargill in 2016 and Hawke's Bay in 2019/20. These outbreaks can be caused by unpredictable factors such as:

- Infected non-vector wildlife (deer/pigs) travelling large distances before dying and spreading infection into VFA.
- Human activities, such as hunters unwittingly translocating and releasing infected game animals into a VFA.

Such outbreaks are expected periodically, and the risk of widespread infection is expected to be largely mitigated by detecting it through routine slaughter surveillance of cattle and farmed deer. Once found, localised wildlife control and whole herd testing will be used to first contain and then eradicate the infection. Publicity and advocacy will be aimed at discouraging risky translocation of game animals by hunters.

iv. Failure of Previously Eradicated Vector Free Area

The amount of wildlife surveillance conducted is intended to be cost effective and it cannot be 100% precise, which predicates that there will some incorrect determinations of TB freedom in possums. The current 'stopping rules' for surveillance are modelled in such a way that failure to detect TB when present in the possum population is expected to occur in fewer than 1 in 20 Vector Control Zones.

Detection of any failure may take considerable time after the area's VRA status has been revoked, as immediately following control the possum population density will be low. It will take time for possum density to increase to a level where it will be able to express any residual infection and for it to be detected by routine surveillance of livestock or wildlife.

The risk of periodic wildlife TB detection failures is partially mitigated by on farm TB testing and livestock slaughter surveillance, along with wildlife surveys in selected areas, and followed up by localised wildlife control where TB is detected.

v. NAIT and Risk-Based Testing

Under the previous plan, different TB livestock testing policies were applied across broad geographical areas based on associated infected wildlife TB risk. The current plan will progressively target livestock TB testing to smaller geographic areas, or to specific herds or cohorts of animals, using 'risk-based testing'. The methodology for this takes into account the risk of disease posed by the herd's location, its previous history of TB and movement of stock. This will include modelling work, design of a testing framework that can be applied in practice, provision of clear explanations and guidance to farmers, and changes to existing contract arrangements for testing. A key feature of risk-based testing is the increasing use of livestock animal movement data to inform the appropriate TB testing policy for individual herds because the extent and pattern of this movement are important determinants of TB risk. NAIT livestock location and movement data will, therefore, play a key role and will be required to be timely and accurate.

vi. Continued Use of 1080 within the TB Plan

The plan is based on the continued availability of aerial 1080 baiting or practical cost-effective alternatives for possum control. The move to eradication will require a significant increase in the amount of aerial 1080 usage during the early phases of this plan but is expected to fall away to zero by 2030. Ground control is neither a practical nor an economically viable alternative for aerial 1080 control of possums in many areas.

It is also noted that there have been considerable improvements in aerial control methods, baiting technology and reduced levels of bait use over the years, which are expected to continue. Science reviews have supported this view. Research is currently being undertaken into alternative toxins that, subject to the results of further research and assessment work, may at some time in the future be approved for aerial application. Research and new technologies have also identified improvements for multi-species ground control. It is expected that the new technologies and tools will be adopted into future work programmes.

Until any new technologies are available and found to be cost-effective, the safeguards for the use of 1080 and other toxins for possum control will continue to be applied. These safeguards principally operate through the Hazardous Substances and New Organisms Act 1993 and include requirements to obtain approval for all 1080 operations from landowners and required regulatory agencies. TBfree New Zealand will continue to ensure that there is:

- Strict application of standard operating procedures to all operations to ensure full regulatory compliance, effective consultation with affected parties and communities of interest, and minimisation of any adverse effects.
- Continued focus on technical improvements in bait quality and application methods, to see if toxic bait application rates can be reduced further.
- Cooperation with Department of Conservation (DOC) and other parties to maximise biodiversity benefits from TB control operations.
- Carefully planned and managed communications to the public, stakeholders and communities of interest about the need for and benefits of targeted 1080 application for TB control and biodiversity management.

vii. Vector Control Funding Provided is Less than the Assumed Estimates

The design of the proposed vector control and wildlife surveillance programme has been based on an agreed annual funding amount.

Any reduction in funding will result in an inability to meet aspects of the vector control programme and may impact on the ability to achieve targets or milestone within the NPMP objectives.

The impact of any fund reduction, and the effects of inflation, may be mitigated by improvements in the effectiveness and efficiency of operations.

viii. Access to Land

Access to land is crucial to the success of ground and aerial vector control activities. Any inability to access land within a VRA limits the effectiveness of possum control, which must achieve uniformly low and even possum densities without gaps in land coverage.

Any sections of land where access is denied may continue to harbour populations of possums at a high enough density to maintain infection. Any remaining clusters of TB possums pose a potential source of infection to neighbouring cattle and deer herds, other wild animals and, through migration, adjacent TB free possum populations.

Where land access is critical to meeting NPMP objectives, then use of legal powers may be required to ensure the prescribed level/form of control is achieved.

This risk can be mitigated by maintaining a high level of consultation with landowners, including education into the benefits of achieving consistent even control of possums.

ix. Ferrets as a Significant TB Maintenance Host

The implicit assumption within the NPMP is that possums are the only wildlife host capable of independently sustaining TB for more than a few years. That crucial fundamental assumption has been valid for the majority of Vector Risk Areas. In those areas where there has been some doubt as to the role of ferrets in the TB transmission cycle, historically there has not been an objective or funding for full eradication.

With the influence of Rabbit Haemorrhagic Disease (RHD) waning, both rabbit and ferret numbers in large parts of South Island VRAs are again high, meaning that it is possible that in some areas ferret densities now probably exceed the TB persistence threshold. A number of recent observations in the Southern South Island suggest that TB is indeed persisting in ferrets but not in possums.

If so, then the current operational paradigm of implementing or continuing intensive possum control whenever TB is found in ferrets is likely to be both ineffective and wasteful. This will be exacerbated if ferrets are not simultaneously subject to control because there would be no eradication pressure on TB infection in ferrets, thereby allowing TB to continue to persist or decline only slowly, therefore placing the eradication objective at risk.

This risk will be mitigated by undertaking applied research and operational studies into the epidemiology of TB in ferrets as a maintenance host of TB in several areas of the Southern South Island. If proven to be a significant maintenance host of TB, further studies into effective means of controlling ferret populations will become a research priority.

x. Risks at the TB Management Area Level

Localised risks which could impact individual operations 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.
- Ferrets as a TB maintenance host – areas where ferret densities are high enough to self-sustain TB infection for long periods in the absence of concurrent possum TB infection.
- Proximity to urban areas – control in peri-urban areas where there are a large number of residential properties adjacent to continuous forested areas.
- Access to passive wildlife surveillance data including the legality and ability of accessing hunting post-mortem records from helicopter hunting companies.

Section 4: Operational Policies

Policy 1: Livestock and Herd Classification

Policy

To effectively manage the control of bovine TB in individuals and groups of cattle and deer, individual animals and herds will be classified according to TB risk or to facilitate management.

Any proposed variations to policy specifications must be approved by the Chief Advisor Disease Management.

During the term of this Operational Plan, new animal and herd classifications may be phased in to support the introduction of risk-based testing and disease management policies which will take account of more detailed risk analysis based on herd and animal location, disease history and livestock movement patterns.

Implementation Statement

The following classifications for individual cattle and deer, and herd status will be applied:

Cattle and Deer

- In-contact animal
- Test-positive animal
- Reactor
- Test-negative animal
- Tuberculous animal
- Animal of interest

Herd Status

- Infected status, followed by a sequential numerical index.
- Clear status is currently followed by a sequential numerical index or other descriptor.
- Suspended status has no sequential index (represented only by the capital letter “S”).

Specification

1.1 Classification of Cattle and Deer

1. **In-contact animal:**
   An animal that has or is suspected of having been in close and direct contact with a reactor, animal of interest or tuberculous animal.
2. **Test-positive animal:**
   An animal that responds to an approved test with a positive result to that test at specified criteria. Such animals are to be identified with official Reactor ear tags which are only to be removed under Management Agency direction after the animals are subsequently negative to ancillary TB testing.
3. **Reactor:**
   An animal that is positive to an approved TB test or tests and which is directed to be slaughtered and examined. Such animals are to be identified with official Reactor ear tags up to the time of slaughter.
4. **Test-negative animal:**
   An animal which is deemed negative to an approved test under specified criteria for that test.

5. **Tuberculous animal:**
   With respect to farmed animals, domestic cattle or deer may be classified as tuberculous (infected with TB) when any of the following apply to that animal:

   - *Mycobacterium bovis* has been successfully cultured from the animal's tissues.
   - A positive PCR test and/or lesions histologically typical of TB are found at slaughter.
     - This may be used where no fresh tissue is available to attempt culture or at the discretion of the Veterinarian, Disease Management (**VDM**).
   - An animal is positive to at least two different approved TB tests.
   - A test-positive animal is slaughtered or dies without an approved post-mortem examination carried out by a registered veterinarian, an official assessor under the Animal Products Act 1999 who has attained competency in necropsy for the species, or any other person who has demonstrated competency in post-mortem technique and lymph node identification for the species through a training programme acceptable to the Management Agency

6. **Animal of interest:**
   Cattle or deer may be classified, identified and their movements traced as animals of interest. Such classification will be based on herd infection, testing results or location history, to enable further testing or management of such animals for a set period or throughout their lifetime.

1.2 Classification of Herd Status

1.2.1 Infected Status:

i. An Infected TB status (I) will be applied to a herd in which one or more tuberculous livestock animals (see 1.1) have been detected.

ii. A herd's Infected TB status will numerically increase to reflect the number of years that the herd remains infected.

   - For herds undergoing testing, a herd will remain with an Infected TB status until the completion of at least two clear whole herd tests of eligible animals at a minimum interval of six months following the slaughter of any tuberculous cattle or deer, after which the herd can be classified as Clear, unless section 1.2.1 (iv) applies.
   - For cattle herds the final clear whole herd test must include a clear caudal fold test and may require a clear parallel blood (Interferon-gamma) test as provided for in the Suspect and Infected Herd Bovine TB Vet Manual.

iii. For herds monitored solely by slaughter surveillance, a herd will remain under an Infected TB status until at least 12 months after the slaughter of the last tuberculous cattle or deer, provided 100% of in-contact animals have either been slaughtered or tested clear to the satisfaction of the VDM, after which the herd can be classified as Clear.

iv. Infected cattle herds being forced to move because of farm sales or legally binding agreements (e.g., sharemilker agreement) may be eligible for the Short Interval Testing (**SIT**) procedure to enable the herd to move to a Clear status within a shorter timeframe than in 1.2.1 (ii) above. Approval to apply the SIT procedure to an infected herd is dependent on assessed risk and must come from the Chief Advisor Disease Management. SIT procedures are documented in the Suspect and Infected Herd Bovine TB Vet Manual.

v. For any infected herd, if subsequent testing, e.g., DNA-typing of non-*Mycobacterium bovis* strains, indicates TB is no longer, or never was, present in the herd, the herd can be classified as Clear. Such cases should be discussed with the Chief Advisor Disease Management before moving to a Clear status.

1.2.2 Clear Status:

i. A Clear 1 (C1) TB status will be applied to previously Infected herds when disease status has been reclassified according to clauses in section 1.2.1 above.

ii. Herd status may be elevated from C1 to Clear 2 (C2) following a minimum period of 12 months during which the herd has been free of any evidence of TB, based on use of standard TB testing techniques, unless the conditions of (iii) below apply.

iii. Elevation of herd status from C1 to C2 will require a herd to be free of any evidence of TB, based on use of standard TB testing techniques over a minimum period of 36 months after reaching C1 status, when any of the following historical risk factors apply:

- The TB lesion incidence at any on-farm tests has been 3% or greater.
- Five or more animals from the herd have been diagnosed with TB within any 12 month period.
- TB has previously been diagnosed in the herd at two or more sequential tests.
- The herd has a history of two or more separate periods under an Infected status.

iv. For all herds under regular on-farm testing after reaching C2 status, the herd's Clear status index number will numerically increase at each successive clear whole herd test by the number of whole years between tests, to a maximum of Clear 10 (C10).

v. For drystock herds which are predominantly non-breeding herds (usually less than 25% of adult animals being breeding stock) the Clear herd status will be described as Clear Monitored (CM).

vi. For Game estate herds (as defined in Policy 8 Game Estate Herds) the Clear herd status will be described as Clear Monitored (CM).

vii. For herds exempted from on-farm testing due to the low risk associated with their location, the herd status will be described as Clear Monitored (CM).

1.2.3 Suspended Status (For Disease and Compliance Related Reasons):

i. A Suspended (S) TB status may be applied to herds by a VDM to manage disease risk for (but not restricted to) any of the following conditions:

- TB reactors are awaiting slaughter and uncontrolled stock movements from that herd may present an infection risk to other herds.
- Test-positive cattle or deer have no visible TB lesions when slaughtered but there is epidemiological evidence to suggest the animal(s) are infected with TB.
- Cattle or deer are found with lesions histologically typical or suspicious of TB at slaughter.
- Test-positive animals have not been re-tested or slaughtered as directed by an Authorised Person.
- Whole herd tests have not been completed as directed by an Authorised Person.
- There has been contact with an Infected status cattle or deer herd, or with cattle or deer of unknown or unconfirmed TB status, including during the formation of a new herd.
- Cattle or deer from an Infected status herd have been introduced into the herd.

ii. A herd will remain with a Suspended status (S) until either the herd owner has complied with a directive issued by an Authorised Person, or the VDM is satisfied the herd is not infected with TB.

1.2.4 Establishing Herd Status for New Herds:

i. All newly created herds will be assigned a Suspended (S) status unless herd is made up entirely of stock from an Infected status herd which will be assigned a status of Infected, unless as approved otherwise by the Chief Advisor, Disease Management.

ii. Suspended status may be changed to either Clear 2 (C2) or Clear Monitored (CM) depending on herd type and local testing policy for the disease control area, after one or more of the following conditions are met:

- The herd has completed a clear whole herd test, *or*
- The herd owner has provided the Management Agency with sufficient evidence of low disease risk in the founding livestock cohort.

iii. In addition to the conditions of 1.2.4 (ii) above, if any of the animals that make up the new herd have moved under a Permit to Move issued in accordance with this Operational Plan, or which should have been moved under such Permit, then any conditions applying to such Permit must be met before herd status is changed from S to C2 or CM.

iv. For herds which are eligible to be assigned a C2 status, herd owners may apply to the Management Agency for a higher Clear herd status index if they can provide evidence that all the founding stock originated from herds of a higher Clear status.

1.2.5 Updating the Status of an Existing Herd Receiving Animals

i. Apart from the circumstances covered by Policies 12 and 13, the herd status index for an existing herd that has introduced animals that account for 25% or greater of the herd size may reflect the lowest herd status of the introduced animals based on a risk assessment by a VDM.

ii. Herds receiving any animals under permit from Infected status herds will have their status set to suspended (S). The herd will be required to complete whole herd testing as specified by the VDM based on the level of risk associated with the cohort of animals. This will include a post movement test 90–120 days after the premovement test applied on the infected herd. This test may be followed by a whole herd test not less than six months later before the status changes to C2, CM, or otherwise as determined by the Chief Advisor, Disease Management based on a risk assessment.

iii. Herds receiving any animals under permit from C1 status herds may have their status set to suspended (S). The herd will be required to complete TB testing as specified by the VDM based on the level of risk associated with the cohort of animals. This will include a post movement testing at a date set by the VDM. If the animals move to a third property before post movement testing is complete they will require a TB test along with any in-contact animals on that property.

Policy 2: Disease Control Area Classifications

Policy

To enable effective application of livestock testing and movement control measures, geographical areas will be classified according to disease risk, which includes risk of infection from wildlife (vector) sources. These areas are referred to as Disease Control Areas.

Any proposed variations to policy specifications must be discussed with the Chief Advisor Disease Management.

Implementation Statement

Three classes of Disease Control Area will be created. Details of these areas will be described in Management Agency plans which will be reviewed and updated annually. The Disease Control Area classes are as follows:

Movement Controlled Areas

The purpose of these areas is to control the risk of transmission of TB through cattle or deer movements and provide surveillance for the presence of infected vector species via an intensive testing programme.

High Risk Movement Controlled Areas

Defined parts of Movement Controlled Areas may be further classified as High Risk Movement Controlled Areas to enable the application of additional livestock movement or testing requirements, which may also apply to herds in other areas which receive livestock from these High Risk Movement Controlled Areas.

Special Testing Areas

These areas have the purpose of providing additional TB surveillance, via testing livestock as a sentinel species, mainly to detect the presence and location of TB wild animals.

Surveillance Areas

These areas contain the balance of New Zealand's land area outside of Movement Controlled Areas and Special Testing Areas and are free of known or suspect TB wild animals.

General herd testing and movement control policies for each Disease Control Area class are described in the 'On-Farm Testing Programme' policy.

Specifications

2.1 Movement Controlled Areas

i. Criteria for defining a Movement Controlled Area will be based on the following:

- A smoothed three year infected herd TB period prevalence of ≥ 1.00% for a spatially defined area at an appropriate cell size, such as 64 km2 grids, and
- Will take into consideration any wildlife infection responsible for transmitting TB into livestock that has yet to be adequately controlled to mitigate the transmission risk.

ii. Further classification of Movement Controlled Areas as High-Risk Movement Controlled Areas will take account of the density of Infected herds, concurrent identification of infected wildlife and DNA strain typing of *M. bovis* cases in livestock and wildlife. Animals moving from these areas may be subject to a post-movement test.

iii. Consideration is to be given to herd management factors when defining the boundary.

iv. When declaring a new Movement Controlled Area, or when extending an existing one, the annual herd period prevalence must be expected to remain above the minimum criteria in (i) above for at least 12 months after the declaration of the area.

v. Consideration for revoking part or all of a Movement Controlled Area can be made when the smoothed three year infected herd TB period prevalence, based on a spatially defined area (64 km2 grids) falls below 1.00% and is not expected to exceed this level in the next 12 month period.

vi. Movement Controlled Areas will be legally declared pursuant to Section 131 of the Biosecurity Act 1993.

2.2 Special Testing Areas

i. Special Testing Areas will be created in or adjacent to areas where TB exists or is suspected in wild animal populations, but which do not meet the herd infection prevalence criteria for establishing a Movement Controlled Area. They may also be created where there is uncertainty as to whether herd breakdowns are related to wild animal infection or other factors, where there is an industry requirement for additional testing of herds or following the revocation of the VRA status of VCZs as a means of providing assurance that the possum (or ferret) population is TB free.

ii. The size and boundaries of Special Testing Areas will take account of historic information on presence of TB vectors, the extent of relevant vector habitat, movement patterns of likely TB vectors, geographic features that may affect the movement of vectors and the history of vector control or surveillance.

iii. When a Special Testing Area is established where there is uncertainty as to whether herd breakdowns are related to wild animal infections or other factors, the special requirements will be applied for a limited and defined period (2–3 years) during which the period prevalence within the defined Special Testing Area should return to 0.2% or less.

2.3 Surveillance Areas

i. Surveillance Areas will make up the balance of New Zealand's land area outside of Movement Controlled Areas and Special Testing Areas. They are free of and beyond the likely natural migration range of known or suspect TB wild animals.

ii. Within Surveillance Areas, herd TB surveillance will be carried out with sufficient intensity to detect infection in herds caused by possible movement of infected livestock or translocation of infected wildlife into the area.

Policy 3: Classification of Vector Risk Areas

Policy

New Zealand's land area is classified according to the presence or absence of TB in wildlife. This classification will be used as a geographic descriptor for the purposes of reporting progress towards the achievement of plan objectives and the design of vector control programmes.

Any proposed variations to policy specifications must be discussed with the Chief Advisor Disease Management.

Implementation Statement

This policy will provide for classification of New Zealand's land area into one of two classes:

- TB Vector Risk Area
- TB Vector Free Area

Specifications

3.1 TB Vector Risk Areas are those Areas of New Zealand where any one of the Following Conditions Apply

- The finding of *Mycobacterium bovis* infection which persists [or is deemed likely to persist] in a maintenance host (usually possums).
- The finding of *Mycobacterium bovis* infection in both wild animal(s) and domestic livestock, where there is evidence that they are of a related DNA strain type, within the vicinity of where the infected wild animal was found, considering the host status of the wild animal species.
- There is a clustering of infected cattle/deer herds both in time (up to three years) and space (up to 5 kms from the boundary of one infected herd to another) and there is an absence of other non-vector related factors for these breakdowns.

i. The boundaries of Vector Risk Areas will take account of the ecology of the suspect/ confirmed TB vectors, the presence or absence of natural barriers to movement of vectors in relation to relevant infected herds and the estimated time TB has been present in the wild animal population.

ii. Revocation of a Vector Risk Area classification will be considered when the Probability of Freedom (PFree) from TB in the possum population, as assessed via the Proof of Freedom Framework, or similar proven methodologies, exceeds the prescribed Pfree percentage set for the area-of-interest under consideration.

iii. TB Vector Free Areas will be all areas of New Zealand outside of the TB Vector Risk Areas.

Policy 4: Approved Tb Tests for Live Cattle and Deer

Policy

Diagnostic tests for TB must be approved by the Chief Technical Officer (CTO) of the Ministry for Primary Industries. The CTO may approve tests for a specific purpose, such as to restrict the use of a test or allow the test to be used for the purpose of research.

Approved TB tests may only be applied by Inspectors, Authorised Persons or Accredited Persons who are appointed under the Biosecurity Act 1993, or by veterinarians who may in the ordinary course of their work apply approved TB tests when diagnosing illness in an animal.

Any variations to testing specifications must be approved by the Chief Advisor Disease Management.

All tests and test results are to be recorded and reported in a format prescribed by the Management Agency. Reporting times and procedures stated in this document are indicative and may be varied in contract agreements between the Management Agency and its service providers.

Implementation Statement

Diagnostic tests will be applied to live cattle and deer for the following purposes:

- To obtain surveillance data on the presence or absence of TB in cattle and deer herds.
- As screening tests to limit the risk of TB transmission via movements of cattle and deer.
- To eradicate TB from herds or groups of cattle and deer through test and slaughter programmes usually applied under an Infected Herd Management Plan.
- To provide an interim diagnosis of TB where necessary for legal implementation of further TB control measures.

Diagnostic tests are functionally classified as follows:

- Primary Tests: generally applied as initial surveillance or screening tests in cattle and deer herds.
- Serial Ancillary Tests: generally applied to primary test-positive cattle and deer to provide more reliable diagnosis and to reduce unnecessary slaughter where the primary test is believed to be a false positive result.
- Parallel Ancillary Tests: generally applied to identify suspected infection in primary test-negative cattle or deer.

The following diagnostic tests are approved for live cattle and deer:

A. Diagnostic tests in cattle

a. Primary Tests:

- Caudal Fold test
- Comparative Cervical test

b. Serial Ancillary Tests:

- Interferon-gamma (ancillary serial) test
- ESAT-6/CFP-10 Interferon-gamma “Special Antigen” (ancillary serial) test
- Comparative Cervical test

c. Parallel Ancillary Tests:

- Interferon-gamma (ancillary parallel) test

B. Diagnostic tests in deer

a. Primary tests:

- Mid Cervical Test
- Comparative Cervical Test

b. Ancillary Serial Tests:

- Comparative Cervical Test
- IgG1 ELISA (ETB)
- Modified-ETB

NB: With diagnostic tests conducted on the live animal, care must be exercised in testing animals that may be in an immuno-compromised state, e.g., late pregnancy, early lactation, poor condition, etc. Testing should be avoided in breeding females three weeks before and/or three weeks after giving birth.

Test Specifications

4.1 Caudal Fold Test (CFT) – Cattle

i. The Caudal Fold Test (CFT) is approved as a primary diagnostic test for tuberculosis in cattle.

ii. The test is not to be applied to any cattle beast within 60 days of any previous tuberculin test (either another Caudal Fold Test or Comparative Cervical Test).

iii. The test may be applied in either the animal's right or left caudal fold.

iv. The test is applied by the intradermal injection of 0.1 ml of bovine tuberculin into the caudal fold.

v. A testing syringe capable of delivering 0.1ml accurately and consistently must be used.

vi. The tuberculin to be used on cattle is to be bovine purified protein derivative (PPD) tuberculin, registered for use in New Zealand by the MPI ACVM Group.

vii. The Chief Advisor Disease Management will determine any variation from the registered concentration of tuberculin to be used in any intradermal diagnostic tests in herds with an Infected or Suspended status.

viii. The caudal fold skin test is to be read 72 hours (± 6 hours) after the injection of tuberculin.

ix. A test-positive result of the CFT is any palpable or visible reaction at the site of the injection.

x. All test-positive animals are either to be ancillary serial tested with an approved test, or declared reactors and slaughtered, at the direction of the VDM.

xi. Test results are to be recorded and submitted as required by the Management Agency within five working days of the testing episode if no test-positives are detected, or to the VDM within one working day if test-positives are detected, unless the VDM directs otherwise.

4.2 Comparative Cervical Test (CCT) – Cattle

i. The Comparative Cervical Test (CCT) is approved for use both as a primary test and as an ancillary serial test in cattle. While the CCT will remain as an approved test for the purposes of the NPMP, routine use has essentially been discontinued.

ii. The CCT can only be used as a primary test in cattle with the approval of the Chief Advisor Disease Management.

iii. The test is not to be applied to any cattle beast within 60 days of any previous tuberculin test (either a CFT or CCT).

iv. The test is applied in the middle of the neck (i.e. the mid cervical region) using 2 injection sites.

v. The hair at each injection site is to have a mean length of 2 mm and is to be evenly clipped.

vi. Each injection site is to be a minimum size of 100 x 100 mm and the distance between the centres of each site is to be a minimum of 120 mm.

vii. Prior to the injection of tuberculin, the thickness of a double skin fold at each site is to be measured (to the nearest 0.5 mm) and recorded.

viii. The test is to use 0.1 ml of bovine tuberculin and 0.1 ml of avian tuberculin injected intradermally, using testing syringes capable of delivering 0.1 ml accurately and consistently. Separate syringes must be used for the avian and the bovine tuberculins.

ix. The tuberculins are to be purified protein derivatives (PPD) and registered for use in New Zealand by the MPI ACVM Group.

x. The bovine and avian tuberculins to be used in the CCT are to be biologically balanced.

xi. The avian tuberculin is to be injected into the centre of the anterior or dorsal site and the bovine tuberculin into the centre of the posterior or ventral site (i.e. the rule: avian over bovine).

xii. The CCT is to be read 72 hours (± 6 hours) after the injection of tuberculin.

xiii. The test is to be read by re-measuring the double fold skin thickness at each of the injection sites. The result of these measurements may be interpreted in one of two ways.

xiv. Standard Interpretation: A positive test is any reaction at the site of the bovine injection that is greater than any reaction at the site of the avian tuberculin.

xv. Modified Interpretation: A positive test is any reaction at the site of the bovine tuberculin which is at least 4 mm larger than the reaction at the site of the avian tuberculin.

xvi. When measuring the size of reactions, callipers with an accuracy of ± 0.5 mm are to be used.

xvii. When the CCT is applied as an ancillary serial test, all test-positive animals are to be declared reactors and slaughtered.

xviii. Where the CCT has been approved for use as a primary test, test-positive animals may be ancillary serial tested with an approved test at the direction of the VDM.

xix. Test results are to be recorded and submitted as required by the Management Agency within five working days of the testing episode if no test-positives are detected, or to the VDM within one working day if test-positives are detected, unless directed otherwise by the VDM.

4.3 Interferon-gamma (Ancillary Serial) Test

i. Apart from the circumstances covered by clause (ii) below, the test is restricted for use in cattle positive to a caudal fold (CF) test in Clear status herds.

ii. If there is a known history of suspected non-specific reactivity to the caudal fold test, the interferon-gamma serial test may be used in Infected status herds provided this is documented in the herd's Case Management Plan and is subject to the approval of the Chief Advisor Disease Management.

iii. The test may only be applied 10 to 30 days following the Read day of the CF test.

iv. The test requires that at least 5 ml of blood is taken in a heparin tube and submitted for culture within 30 hours of collection. Until bloods are processed, they are to be kept between 10 and 26°C.

v. The tuberculin used in the interferon gamma test are to be balanced bovine and avian purified protein derivative (PPD) tuberculin, registered for use in New Zealand by the MPI ACVM Group; or be included by the manufacturer as part of the Interferon Gamma test kit.

vi. Using absorbencies multiplied by 1000, the interpretation of the Interferon-gamma ancillary serial test is as follows (unless otherwise approved by Chief Advisor, Disease Management):

- **Positive:** Bovine minus avian ≥ 100
- **Negative:** Bovine minus avian < 100

vii. Interferon-gamma testing is to be completed, and test results are to be reported and submitted as required by the Management Agency (TBfree New Zealand), within five working days of receipt of the blood samples by the laboratory.

viii. All test-positive animals are to be declared reactors and slaughtered.

4.4 Interferon-gamma (Ancillary Parallel) Standard Test

i. The test is restricted for use in cattle negative to a caudal fold (CF) test in Infected status herds provided this is documented in the herd's Case Management Plan and is subject to the approval of the Chief Advisor Disease Management.

ii. Bloods for the test are to be taken 10 to 30 days following the Read day of the CF test.

iii. The test requires that at least 5 ml of blood is taken in a heparin tube and submitted for culture within 30 hours of collection. Until bloods are processed, they are to be kept between 10 and 26°C.

iv. The tuberculin used in the interferon gamma test are to be balanced bovine and avian purified protein derivative (PPD) tuberculin, registered for use in New Zealand by the MPI ACVM Group; or be included by the manufacturer as part of the Interferon Gamma test kit.

v. Using absorbencies multiplied by 1000, the interpretation of the Interferon-gamma ancillary parallel test is as follows:

- **High value:** Bovine minus avian ≥ 70
- **Medium value:** Bovine minus avian ≥ 40 and < 70

vi. Interferon-gamma testing is to be completed, and test results are to be reported and submitted as required by the Management Agency, within five working days of receipt of the blood samples by the laboratory.

vii. Animals with a high value test result are to be declared reactors and slaughtered.

viii. If TB is diagnosed in the majority of animals with High value test results, the next highest Medium value test result animals are to be declared reactors and slaughtered. This process should continue until no further TB is diagnosed.

4.5 ESAT-6/CFP-10 Interferon-gamma Special Antigen (Ancillary Serial) Test – Cattle

i. The test is restricted for use in cattle positive to a caudal fold (CF) test in the following herds:

- The herd must have a CM or C2 status and above; and
- There is evidence to suggest the herd has non-specific reactivity to either the CFT or interferon-gamma test, and
- The VDM has confidence that the herd has not received TB risk animals for a minimum of three years.

ii. Heparinised blood samples (8 ml minimum, i.e., full 10 ml tube) for the Special Antigen Test are to be taken during the period 10 to 30 days following the Read day of the CF test and are otherwise handled in the same way as for the standard Interferon-gamma Test.

iii. In addition to the Special Antigen test (using the eSAT-6/CFP-10 fusion protein), the Interferon-gamma test, is also to be conducted on the same blood samples.

iv. Using absorbencies multiplied by 1000, test interpretation will be based on the difference between the absorbency readouts of the eSAT-6/CFP-10 fusion protein and the control (i.e., Nil) result, interpreted in series with the difference between the bovine antigen minus avian antigen results. Test interpretation is as follows, unless otherwise approved by Chief Advisor, Disease Management:

- **Positive:** ESAT-6/CFP10 minus nil ≥ 40 AND Bovine minus Avian ≥ 100
- **Negative:** ESAT-6/CFP10 minus nil < 40 OR Bovine minus Avian < 100

v. Testing is to be completed, and test results are to be reported and submitted as required by the Management Agency, within five working days of receipt of the blood samples by the laboratory.

vi. All test-positive animals are to be declared reactors and slaughtered.

4.6 Mid Cervical Test (MCT) – Deer

i. The Mid Cervical Test (MCT) is approved for use as a primary TB test.

ii. The test is not to be applied to any deer within 90 days of any previous tuberculin test (either another Mid Cervical Test or CCT).

iii. The test may be applied on either side of the animal's neck in the mid cervical area.

iv. The hair at the injection site is to have a mean length of 2 mm and is to be evenly clipped.

v. The site where the injection is to be placed is to have a minimum size of 100 x 100 mm.

vi. The test is applied by injecting 0.1 ml of bovine tuberculin intradermally.

vii. A testing syringe capable of delivering 0.1ml accurately and consistently must be used.

viii. The tuberculin is to be a purified protein derivative (PPD) and registered for use in New Zealand by the MPI ACVM Group.

ix. The Chief Advisor Disease Management will determine any variation from the standard concentration of tuberculin to be used in deer.

x. The Mid Cervical test is to be read 72 hours (± 6 hours) after the injection of tuberculin.

xi. A positive test is any palpable/visible reaction at the site of the injection.

xii. All test positive animals will either be ancillary tested with an approved test, or be declared reactors and slaughtered, at the direction of the VDM.

xiii. Test results are to be recorded and submitted as required by the Management Agency within five working days of the testing episode if no test-positives are detected, or to the VDM within one working day if test-positives are detected, unless directed otherwise by the VDM.

4.7 Comparative Cervical Test – Deer

i. The Comparative Cervical Test (CCT) may be used both as a primary test and as an ancillary serial test in deer.

ii. The CCT is not approved for use in herds with either an Infected or Suspended status (where the suspension is the result of a suspect TB case or the owner/manager has failed to slaughter/retest TB positive deer as directed) unless authorised by the Chief Advisor Disease Management.

iii. The test is not to be applied to an animal within 90 days of any previous tuberculin test (either a MCT or CCT).

iv. The test is applied in the middle of the neck (i.e., the mid cervical region).

v. The hair at each injection site is to have a mean length of 2 mm and is to be evenly clipped.

vi. Prior to the injection of tuberculin, the skin thickness of a double skin fold at each site is to be measured (to the nearest 0.5 mm) and recorded.

vii. Each injection site is to be a minimum size of 100 x 100 mm and the distance between the centres of each of site, is to be a minimum of 120 mm.

viii. The test is applied by injecting 0.1 ml of bovine tuberculin intradermally at the posterior or ventral site and 0.1 ml of avian tuberculin intradermally at the anterior or dorsal site, using testing syringes capable of delivering 0.1ml accurately and consistently. Separate syringes must be used for each of the avian and bovine tuberculins.

ix. The bovine and avian tuberculins to be used in the CCT are to be biologically balanced.

x. The tuberculins are to be purified protein derivatives (PPD) and registered for use in New Zealand by the MPI ACVM Group.

xi. The CCT is to be read 72 hours (± 6 hours) after the injection of tuberculin.

xii. The test is to be read by re-measuring the double fold skin thickness at each of the injection sites.

xiii. A positive test is any reaction at the site of the bovine tuberculin which is 2 mm or more and this reaction is equal to or greater than any reaction at the site of the avian tuberculin.

xiv. Where the CCT has been used as a primary test, test-positive animals may be ancillary serial tested with an approved test at the direction of the VDM.

xv. Where the CCT has been used as an ancillary serial test, all test-positive animals are to be declared reactors and slaughtered.

xvi. Test results are to be recorded and submitted as required by the Management Agency within five working days of the testing episode if no test-positives are detected, or to the VDM within one working day if test-positives are detected, unless directed otherwise by the VDM.

4.8 IgG1 ELISA (ETB) Test – Deer

i. An IgG1 ELISA is approved for use as an ancillary serial test for deer positive to the Mid Cervical Test (MCT).

ii. MCT-positive animals are to be re-tested in the period 10 to 30 days following the Read day of the MCT.

iii. Bloods are to be drawn using plain blood tubes from the MCT-positive deer and must reach the laboratory within 24 hours of being drawn.

iv. The concentrations of the bovine and avian PPDs used within the IgG1 ELISA Test are 12.5ug/ml.

v. Using absorbencies multiplied by 100, the interpretation of the IgG1 ELISA Test is as follows:

- **Positive:** Bovine minus Avian ≥ 20
- **Negative:** Bovine minus Avian < 20

vi. Testing is to be completed, and test results are to be reported and submitted as required by the Management Agency, within eight working days of receipt of the blood samples by the laboratory.

vii. All test-positive animals are to be declared reactors and slaughtered.

4.9 Modified ETB Test – Deer

i. The Modified ETB Test is approved for use as an ancillary serial test for deer positive to the Mid Cervical Test (MCT).

ii. The test is restricted for use in deer positive to a mid-cervical test (MCT) test in the following herds:

- The herd must have a CM or C2 status and above; AND
- The herd has a diagnosed history of infection with *Mycobacterium avium paratuberculosis*; AND
- The VDM has confidence that the herd has not received TB risk animals for a minimum of three years.

iii. MCT-positive deer are to be bled in the period 10 to 30 days following the Read day of the MCT.

iv. Bloods are to be drawn using plain blood tubes from the MCT-positive deer and must reach the laboratory within 24 hours of being drawn.

v. The Modified ETB test includes bovine PPD, avian PPD, *Mycobacterium avium paratuberculosis* and the MPB70 antigens.

vi. The concentrations of the bovine and avian PPDs used within the Modified ETB Test are 12.5ug/ml.

vii. The concentrations of the *Mycobacterium avium paratuberculosis* and MPB70 antigens used within the Modified ETB Tests are 0.5ug/ml and 2.0ug/ml respectively.

viii. Using absorbencies multiplied by 100, the interpretation of the Modified ETB Test is as follows:

1. **Positive**:
   - Bovine minus Avian ≥ 20 ***AND*** MPB70 ≥ 50; *or*
   - Bovine minus Avian ≥ 20 ***AND*** *paratuberculosis* ≤ 50; *or*
   - Bovine minus Avian ≥ 20 ***AND*** Bovine minus *paratuberculosis* ≥ 0
2. **Negative**:
   - Bovine minus Avian < 20; *or*
   - Bovine minus Avian ≥ 20 ***AND*** MBP70 < 50 ***AND*** *paratuberculosis* > 50 ***AND*** bovine minus *paratuberculosis* < 0

ix. Testing is to be completed, and test results are to be reported and submitted as required by the Management Agency, within eight working days of receipt of the blood samples by the laboratory.

x. All test-positive animals are to be declared reactors and slaughtered.

Policy 5: Post-Mortem Diagnostic Tests for Cattle, Deer and Wildlife

Policy

Diagnostic tests for TB, including post-mortem diagnostic tests, must be approved by the Chief Technical Officer (CTO) of the Ministry for Primary Industries. The CTO may approve tests for a specific purpose such as to restrict the use of a test or allow the test to be used for the purpose of research.

Approved TB tests may only be applied by Inspectors, Authorised Persons or Accredited Persons who are appointed under the Biosecurity Act 1993, by approved persons conducting tests on any blood, serum or tissue in an approved diagnostic laboratory, or by veterinarians who may in the ordinary course of their work apply approved TB tests when diagnosing illness in an animal.

Any variations to testing specifications must be approved by the Chief Advisor Disease Management.

All tests and test results are to be recorded and reported in a format prescribed by the Management Agency. Reporting times and procedures stated in this document are indicative and may be varied in contract agreements between the Management Agency and its service providers.

Implementation Statement

Post-mortem tests to diagnose TB will be applied to samples from slaughtered cattle and deer to confirm preliminary diagnosis of TB obtained from tests on live animals or from post-mortem inspection of carcasses. Post-mortem tests will also be applied to samples from wildlife species to assist in confirming the presence or absence of TB in wildlife populations.

The following post-mortem diagnostic tests or technologies are approved:

- Histopathological examination to detect lesions of bovine tuberculosis.
- Methods for culturing *Mycobacterium bovis* and other mycobacterial species.
- Nucleic Acid Amplification methods including Polymerase Chain Reaction (PCR) tests for the detection of Mycobacteria in tissue and confirmation of the Mycobacterial type.

Strain typing of *Mycobacterium bovis* isolates may also be employed using recognised DNA typing methods (e.g., Whole Genome Sequencing). Strain typing or DNA-typing techniques employed in this programme do not require CTO approval.

Test Specifications

5.1 Histopathology Tests to Detect Lesions of Bovine Tuberculosis in Domestic Animals and Wildlife

i. Permanent, stained sections of tissue, in which there has been no distortion or alteration, are to be prepared for microscopic study. The exact technique used by the laboratory must be documented within the laboratory's quality assurance system and will need to be validated.

ii. Embedded tissue blocks remaining after slide preparation are to be stored by the laboratory for a minimum of 12 months (longer if the laboratory's quality assurance system requires it) to enable the case to be re-examined if required.

iii. Both haematoxylin and eosin (H & E), and Ziehl-Neelsen (ZN) stained slides are to be prepared. Validated techniques are to be used and must be documented within the laboratory's quality assurance system.

iv. Slides are to be examined by a pathologist skilled in the examination of tuberculosis cases, particularly domestic animal and feral/wild animal species. The pathologist shall use a high-quality binocular microscope in the transmitted light mode capable of Kohler illumination.

v. A histopathological diagnosis of tuberculosis is to be made based on standard guidelines. These guidelines are to be documented in the laboratory's quality assurance system.

vi. For the purposes of differential diagnosis, other stains should be used. Validated techniques are to be used and must be documented within the laboratory's quality assurance system.

vii. Case slides should be retained at the laboratory for at least 12 months (longer if the laboratory's quality assurance programme requires this) for audit purposes.

viii. All records relating to the case are to be retained by the laboratory for a minimum period of three years.

ix. The pathologist shall produce a histopathological report in a standard format detailing:

- Laboratory accession number.
- Sample identification number or code assigned by the Management Agency.
- Name and address of owner.
- Name and address of submitter.
- Species of animal examined.
- Identification of animal(s) if provided.
- The tissues examined.
- A description of the lesions present (or the absence of lesions).
- The presence or absence of acid-fast organisms.
- A diagnosis including one of three broad diagnostic categories:

    a. Typical of tuberculosis: Typical lesions of tuberculosis for the species concerned; or

    b. Suspicious of tuberculosis: Some but not all of the features of tuberculosis are present; or

    c. Not tuberculosis

x. The report must include both a description and a diagnosis. Descriptions and diagnosis, and the terminology used shall be consistent with the description of lesions and disease as given in the referenced texts.

xi. Where a diagnosis cannot be made or the results require an explanation, a “Comment” section should be added. This should cover likely possible diagnoses or causes, and any follow-up tests needed.

xii. Histopathology reports (in the standard format) must be issued to the person or persons nominated by the Management Agency, including the submitter, within a mean time of three working days and a maximum of five working days from the date of receipt of samples.

xiii. If the submitter requires priority processing of a submitted case and a more urgent report, e.g., for a detained carcass at a slaughter premises, this shall be indicated on the original laboratory submission form. In this case the pathologist may phone or fax a hand-written report to the submitter, but this must be followed up with a standard report as above.

5.2 Methods for Culturing *Mycobacterium bovis*

5.2.1 Laboratory Methodology – Conventional Culture Using Solid Media

i. Tissue processing: The lesion must be dissected away from normal tissue and homogenised using an appropriate apparatus.

ii. Half of the homogenate is to be stored at –20°C for a minimum of one year.

iii. A smear is to be made of the lesions from all animals. The smear is to be stained using a validated method for identifying acid-fast organisms which must be specified in the application for approval of the laboratory's mycobacterial culturing method. An oil immersion objective is to be used to examine a minimum of three lengths of the smear for approximately five minutes for acid-fast organisms. A minimum of three acid-fast organisms must be seen if the smear is to be reported as "acid-fast" positive.

iv. The homogenised tissue is then decontaminated using a validated procedure that suppresses contaminants without adversely affecting the viability of any mycobacteria present in the lesion. This procedure is to be specified in the application for approval of the laboratory's mycobacterial culturing method.

v. The decontaminated homogenate is centrifuged, and the spun deposit inoculated onto a minimum of two different types of media that have been demonstrated to support the primary isolation of small numbers of *M. bovis*. The types of media are to be specified in the application for approval of the laboratory's mycobacterial culturing method. A minimum of three slopes should be used for each sample.

vi. The media are incubated at 37°C and inspected weekly for growth of mycobacteria.

vii. Any colonies of mycobacteria are identified using validated methods which are to be specified in the application for approval of the laboratory's mycobacterial culturing method. These methods can be either conventional biochemical/ growth tests or the use of DNA probes.

viii. If no mycobacteria are isolated, media must be incubated for 12 weeks before being reported as negative.

ix. If cultures are overgrown with contaminants, the stored homogenate must be cultured using an alternative and validated decontamination procedure. This procedure is to be specified in the application for approval of the laboratory's mycobacterial culturing method.

5.2.2 Laboratory Methodology – Culture Using Liquid Media

i. Tissue processing: The lesion must be dissected away from normal tissue and homogenised using an appropriate apparatus.

ii. Half of the homogenate is to be stored at –20°C for a minimum of one year.

iii. A smear is to be made of the lesions from all animals. The smear is to be stained using a validated method for identifying acid-fast organisms which must be specified in the application for approval of the laboratory's mycobacterial culturing method. An oil immersion objective is to be used to examine a minimum of three lengths of the smear for approximately five minutes for acid-fast organisms. A minimum of three acid-fast organisms must be seen if the smear is to be reported as "acid-fast" positive.

iv. The homogenised tissue is then decontaminated using a validated procedure that suppresses contaminants without adversely affecting the viability of any mycobacteria present in the lesion. This procedure is to be specified in the application for approval of the laboratory's mycobacterial culturing method.

v. The liquid culture system must have been validated for primary isolation of low numbers of *M. bovis* from tissues. The method must be specified in the application for approval of the laboratory's mycobacterial culturing method.

vi. In addition to the liquid culture vial, an additional slope of solid medium must be inoculated. This medium must have been shown to support the primary isolation of low numbers of *M. bovis* and is to be specified in the application for approval of the laboratory's mycobacterial culturing method.

vii. Liquid cultures are to be read at intervals recommended by the manufacturer or those shown to be optimal for the culture of *M. bovis*.

viii. Liquid cultures showing evidence of bacterial growth must be checked for contaminating bacteria and the presence of acid-fast organisms.

ix. Any cultures containing mycobacteria (acid-fast positive) must be speciated using validated methods which are to be specified in the application for approval of the laboratory's mycobacterial culturing method.

x. Identification of Mycobacteria as belonging to the Mycobacterium Tuberculosis Complex is acceptable.

xi. The liquid culture vial must be incubated for a minimum of 30 days before being reported as "no mycobacterium isolated".

xii. The solid medium must be incubated for 12 weeks before being discarded.

5.2.3 Laboratory Method – Isolation and Identification of Mycobacteria other than *M. bovis*

i. Procedures for isolating and identifying species of mycobacteria other than *M. bovis* must be validated for these additional species.

ii. These procedures are to be specified in the application for approval of the laboratory's mycobacterial culturing method.

5.2.4 Reporting of Culture Results

i. A report shall be issued that contains the following information:

- Laboratory accession number
- Management Agency sample identification number or code
- Name and address of owner
- Name and address of submitter
- Species of animal examined
- Tissue examined
- Result of examination
- Official identification of animal examined

ii. Interim reports should be issued to contain the following information:

- Report stating that the "sample" is being cultured and the result of the ZN smear if it has been carried out.
- Report if a mycobacterium has been isolated. The sending out of this report is not necessary if a rapid procedure, such as the use of DNA probe, is used to speciate the isolated mycobacterium.

iii. A final report shall be issued stating either the identity of the isolated mycobacterium or that no mycobacteria have been isolated.

iv. An approved signatory shall sign the reports.

v. Testing is to be completed and results are to be reported to the submitter within 37 days of receipt of samples by the laboratory for liquid media where *Mycobacterium bovis* is detected and within 75 days of receipt of samples by the laboratory for other results from valid liquid cultures, unless otherwise negotiated.

vi. Due to the very strong agreement between liquid and solid media results, the liquid media result is to be used as the definitive culture result, all other factors (e.g. herd history, other diagnostic criteria and risk factors) being taken into consideration.

vii. Final negative results from solid media are to be reported to the submitter within 97 days of receipt of samples by the laboratory.

viii. Copies of the report must also be sent to the VDM, if different from the submitter, within the same working day.

5.3 Polymerase Chain Reaction Tests for the Detection of Mycobacteria in Tissues from Domestic Animals and Wildlife

i. Tissue processing: The lesion must be dissected away from normal tissue and homogenised using an appropriate apparatus. Half of the homogenate is to be frozen in case there is a need for culture subsequently.

ii. Saved homogenates from culturing can be used for PCR. The saved homogenate from PCR is not taken through a decontamination step so if used for a subsequent culture step it must be decontaminated.

iii. A smear is to be made of the lesions. The smear will be stained using a validated method for identifying acid-fast organisms which will be specified in the application for approval of the laboratory's PCR testing method. An oil immersion objective is to be used to examine a minimum of three lengths of the smear for approximately five minutes for acid-fast organisms. A minimum of three acid-fast organisms must be seen if the smear is to be reported as "acid-fast" positive.

iv. DNA extraction and purification. The procedure used for DNA extraction must be validated on tissue samples from lesions. This procedure must be specified in the application for approval of the laboratory's PCR testing method and documented in the laboratory's quality assurance system.

v. The primers used in the PCR test must be validated as being appropriate for the species of mycobacterium being detected. This must be specified in the application for approval of the laboratory's PCR testing method and documented in the laboratory's quality assurance system.

vi. Ideally the primers should be derived from a multi-copy sequence to ensure the maximum sensitivity of the test. Identification of mycobacteria as belonging to the Mycobacterium tuberculosis complex is acceptable. The DNA sequence of the primers used for Mycobacterium avium subspecies *Paratuberculosis* (MAP) should be unique to this organism and should not be present in other members of the M. avium complex.

vii. Optimal temperatures and, when used, optimal Mg++ concentration for running the PCR must be determined and validated for each PCR. These must be specified in the application for approval of the laboratory's PCR testing method and documented in the laboratory's quality assurance system.

viii. Procedures must be implemented to reduce the possibility of contamination with amplified product and must be specified in the application for approval of the laboratory's PCR testing method and documented in the laboratory's quality management system.

ix. A negative tissue extraction control, an internal positive control, a positive DNA control and a positive control tissue must be examined for each PCR test.

x. A validated procedure must be used for detecting the amplified product. This procedure must be specified in the application for approval of the laboratory's PCR testing method and documented in the laboratory's quality assurance system.

xi. A valid test is one where all the control tests give the appropriate results. If any of the controls do not give appropriate results the test is invalid and must be repeated.

xii. A report shall be issued that contains the following information:

- Laboratory accession number
- Management Agency sample identification number or code
- Name and address of owner
- Name and address of submitter
- Species of animal examined
- Tissue examined
- Result of examination
- Official identification of animal

xiii. If PCR tests are used on acid-fast negative tissues, negative results should be reported with the qualification that the result does not preclude the presence of low numbers of the mycobacterial species which the test was designed to detect.

xiv. An approved signatory shall sign the reports.

xv. Testing is to be completed and results are to be reported to the submitter, and to the VDM, if different from the submitter, within seven working days of receipt of samples by the laboratory.

5.4 Variable Number Tandem Repeat (VNTR) as a Method for DNA Typing of *Mycobacterium bovis*

i. Cultured isolates of *Mycobacterium bovis*, suitable for conducting VNTRs, must be retained by the laboratory for at least 20 working days after isolation.

ii. Validated procedures, acceptable to the Management Agency, must be used for VNTR.

iii. At the conclusion of VNTR analysis, a report shall be issued that contains the following information:

- Laboratory accession number
- Management Agency sample identification number or code
- Name and address of owner
- Name and address of submitter
- Species of animal examined
- Result of examination
- Official identification of animal

iv. The results are to be reported to the submitter by referring to the location of strains of the identical type to that of the newly examined strain.

v. Testing is to be completed and results are to be reported to the submitter, and to the VDM if different from the submitter, within 90 working days of receipt of samples by the laboratory.

5.5 Whole Genome Sequencing for DNA Typing of *Mycobacterium bovis*

i. Whole Genome Sequencing (WGS) of *Mycobacterium bovis* is the primary method for genomic analysis [although VNTR typing remains available].

ii. Cultural isolates of *Mycobacterium bovis*, suitable for conducting WGS, must be retained by the laboratory for at least 180 working days after isolation.

iii. Validated procedures and laboratories, reviewed and acceptable to the Management Agency, must be used for Whole Genome Sequencing including but not limited to:

- Culture and isolation of *M. bovis.*
- Extraction and preparation of DNA for transport.
- The laboratory and technology used for producing the raw genomic data.
- The methodology used for the bioinformatics analysis.
- The means of reporting and presenting results.
- The systems (storage, location, backup/redundancy provisions, etc.) for keeping and maintaining the integrity of the raw, processed, and analysed data.

iv. At the conclusion of WGS analysis (cases/samples may be batched), a report shall be issued that contains the following information:

- Laboratory accession number.
- Management Agency sample identification number or code (with key to match to Laboratory ID(s).
- Name and address of owner.
- Name and address of submitter.
- Species of animal examined.
- Official identification of animal.
- Result of analysis which may be in narrative form but must include this cases' genomic relationship to all other isolates currently in the database.

v. Testing is to be completed and results are to be reported to the submitter, and to the VDM if different from the submitter, within 60 working days of DNA typing/sequencing being requested.

Policy 6: TB Surveillance

Policy

Effective surveillance to determine the presence or absence of TB in cattle and deer herds is essential for the rational planning and implementation of disease control and eradication activities, and to monitor the achievement of TB control objectives. To this end policies will define requirements for TB surveillance in cattle and deer and in wildlife species.

Any variations to surveillance specifications must be approved by the Chief Advisor Disease Management.

Implementation Statement

TB surveillance strategies will be applied as follows:

- TB testing of farmed cattle and deer.
- TB surveillance of Game estates.
- Post-mortem inspection of all cattle and deer carcasses processed at registered slaughter premises and game packing houses.
- Post-mortem inspection of test-positive and reactor cattle and deer slaughtered other than at registered slaughter premises and game packing houses.
- Direct surveys of specified wildlife populations.
- Reporting of clinical or pathological evidence of TB in any species by registered veterinarians, diagnostic laboratories, farmers, hunters, trappers and members of the general public.

Specifications

6.1 TB Testing of Farmed Cattle and Deer

i. All cattle and deer herds are to be tested in accordance with the specifications contained in Policy 7.

ii. Only approved TB tests (as per Policy 4) are to be used for the testing of farmed cattle and deer within the National Bovine Tuberculosis Pest Management Plan as per TB Plan Order Clause (1) Interpretation; Approved: test. Clause 13(1)(a) Restriction on testing and treatment of animals.

6.2 TB Surveillance of Game Estates

i. Cattle and deer which have been kept within a Game estate for 30 days or more are to be subject to a TB surveillance programme based on and approved under the “Game Estates” Policy.

6.3 Post-Mortem Inspection of Cattle and Deer Processed at Registered Slaughter Premises and Game Packing Houses

i. A post-mortem inspection for TB is to be conducted at slaughter of all cattle and deer processed through registered slaughter premises and game packing houses. Such inspection must be conducted by an official assessor under the Animal Products Act 1999 and must follow official inspection procedures as prescribed in the Red Meat Code of Practice Chapter 7.

ii. When TB-like lesions are identified at the time of carcass inspection, the official assessor must notify the VDM as required under TB Plan Order Clauses 14A and 14B, using the appropriate submission form or electronic method as directed by the Management Agency and as prescribed in the Red Meat Code of Practice Chapter 7.

6.4 Post-Mortem Inspection for Slaughter Other than at a Registered Slaughter Premises or Game Packing House

i. When TB reactors or test-positive cattle or deer are slaughtered other than at a registered slaughter premises or game packing house (for example on-farm slaughter) then post-mortems are to be performed by a registered veterinarian, an official assessor under the Animal Products Act 1999 who has attained competency in necropsy for the particular species or any other person who has demonstrated competency in post-mortem technique and lymph node identification for the particular species through a training programme acceptable to the Management Agency.

ii. The registered veterinarian, official assessor or other person conducting the post-mortem must notify the findings to the VDM using the appropriate submission form or electronic method as directed by the Management Agency.

iii. Samples for laboratory diagnosis will be collected and submitted as for procedures at slaughter premises or game packing houses described above as prescribed in the Red Meat Code of Practice Chapter 7.

iv. The registered veterinarian, official assessor or other person may choose, or be directed by the VDM, to sample more than three cases per line.

6.5 Direct Surveys of Feral or Wild Animals

i. Direct TB surveillance of wildlife species will be undertaken where needed to confirm the presence or absence of TB in wildlife in any given area, either as part of the proof-of-freedom process supporting VRA reduction or for investigative purposes following TB breakdowns.

ii. Proposals for undertaking direct TB surveillance of wildlife populations as part of the proof-of-freedom process will be approved within the regional operational planning process. Proposals for undertaking direct TB surveillance of wildlife populations for investigative purposes must be submitted to the Chief Advisor Disease Management in a format prescribed by the Management Agency, for approval prior to commencement.

iii. Survey proposals must consider:

- Adequacy of livestock surveillance, with reference to current livestock density (tested and untested) and available livestock surveillance capacity.
- Potential vectors of concern, including likely host status (i.e. maintenance vs spillover hosts) and likely TB prevalence.
- Stratification of habitat.
- Timing of year for survey and capture likelihood.
- Sample size.

iv. Survey design will consider the relative effectiveness and cost-efficiency of direct sampling of maintenance hosts versus indirect sampling of spill over hosts.

v. Potential methods of indirect sampling of maintenance host, e.g., possums, are to target scavenging hosts, e.g., ferrets and feral pigs; or the use of indicator species such as released TB-free feral pigs and wild deer.

vi. Post-mortems of animals captured during surveys are to be performed by a registered veterinarian, an official assessor under the Animal Products Act 1999 who has attained competency in necropsy for that species, or any other person who has demonstrated competency in post-mortem technique and lymph node identification for the particular species through a training programme acceptable to the Management Agency.

vii. Post-mortem procedure, including sample submission, cleaning and disinfection must follow the Management Agency's protocol "Wildlife Necropsy: Technical and Audit Specifications" for the respective species.

viii. The person performing the post-mortem must notify the findings to the VDM using the appropriate submission form or in the format prescribed by the Management Agency.

ix. Notification must be made to the Management Agency within five working days of any wildlife taken during surveys which are found to have lesions considered typical or suspicious for TB by the laboratory.

x. If requested, detailed survey reports must be provided to the Management Agency within ten working days of the final laboratory report being received.

xi. The powers of Section 109 and Section 121 A of the Biosecurity Act 1993 are available to authorised persons to implement TB surveillance of feral or wild animal populations.

6.6 Reporting of Clinical or Pathological Evidence of TB:

i. The Biosecurity (National Bovine Tuberculosis Pest Management Plan) Order 1998 obliges bodies such as registered veterinarians, diagnostic laboratories, farmers, hunters, trappers and members of the general public to report suspect cases of bovine tuberculosis to the Management Agency or to an Authorised Person.

6.7 Other Information to be Reported from Slaughter Premises

i. In accordance with Clause 15A of the Biosecurity (National Bovine Tuberculosis Pest Management Plan) Order 1998, the Management Agency will require operators of commercial premises for the slaughter of cattle and deer to record and report the animal's official identification supplier's herd number and/or NAIT number for all cattle and deer slaughtered, and for this information to be reliably linked to reports of all suspect TB cases found at slaughter.

ii. Information to be reported to in (i) above shall be reported in a manner specified by the Management Agency.

iii. Operators of slaughter promises will enable and assist the Management Agency to audit compliance with requirements in (i) and (ii) above.

Policy 7: On-farm Testing Programme

Policy

To ensure effective on-farm TB surveillance for both livestock and vector infection on-farm testing programmes for cattle and deer herds will be defined and undertaken based on TB risk.

Any variations to on-farm testing programme specifications must be approved by the Chief Advisor Disease Management.

During the term of this Operational Plan, new risk-based testing programmes and policies may be phased in based on more detailed risk analysis associated with herd and animal location, disease history and livestock movement patterns. Policy variations to enable piloting of new risk-based testing programmes are outlined in Policy 7B.

Implementation Statement

On-farm testing specifications for cattle and deer herds, including ancillary testing, will be set by the Management Agency for all cattle and deer herds.

Tests to be applied to cattle and deer will be approved by the Chief Technical Officer of MPI (see Policy 4). The types of tuberculin (Bovine and Avian) and their strengths to be used in tests will be approved by the Chief Advisor Disease Management.

For the purposes of testing deer herds, all deer will be assumed to have a birth date of 1 January. This is to better enable integration of on-farm testing with seasonal events in deer farming.

Provided TB tests are conducted within the nominated time frames, testing is to be undertaken by mutual agreement between the person in charge of the herd and an authorised/accredited person.

If the person in charge of the herd fails to present animals for testing as required by the Programme with reasonable notice, an Authorised Person will issue formal written direction utilising powers under section 121 of the Biosecurity Act 1993 requiring animals to be presented for test on a specific date. Failure to comply will result in enforced mustering and testing with cost recovery. When animals cannot be captured, penned, mustered, tested, and sampled as required, an Authorised Person and any assistants may enter any place and destroy the cattle and deer (using powers under section 121 of the Biosecurity Act 1993).

For herds with a Clear status, herd tests are to be completed within 180 days of the due date, unless an exemption has been granted by the VDM or an Authorised Person.

For herds with an Infected or Suspended status, herd tests are to be completed within 90 days of the due date unless an exemption has been granted by the VDM.

On-farm testing may be replaced with slaughter surveillance for certain classes of herds as described in policy specifications.

All tuberculin tests are applied with a standard interpretation as stated in Policy 4.

Ancillary tuberculin skin tests are rarely used but where it is appropriate to do so these must be applied within the specified timeframes stated under Policy 4 “Approved tests” and are to be completed within 60 days of their due date unless an exemption has been granted by the VDM. Exemptions will only be granted for deer herds when:

- The ancillary test cannot be undertaken on or about the due date because of the roar/rut, and
- The date of the test does not exceed 180 days after the due date, and
- The VDM is satisfied there are no epidemiological factors within the herd or surrounding area which would require an earlier test result to be obtained, and
- The herd’s TB status is set to Suspended.

Ancillary blood tests are to be completed within the eligible time frames as for an approved test (Policy 4).

7.1 Cattle Herd Testing Policies for Herds with an Infected Status

General policies for infected cattle herds are summarised in the following table. Further specific testing details for an infected herd will be contained within the Infected Herd Management Plan for that herd. Cattle from infected herds may also require further testing under Policy 12 Movement Control Restrictions – Infected Status Cattle and Deer Herds.

Surveillance type	Frequency of whole herd testing programme	Stock to test
On-farm testing	2 to 12 months with the following specific requirements: 1. A whole herd test should be performed as soon as practical and permissible (animals are not to be injected with tuberculin within 60 days of a previous test). This must be undertaken within six months of the slaughter of any tuberculous cattle and the herd should be tested at least twice per year until there is a clear whole herd test. 2. When infection has been detected through an on-farm test or the period prevalence is greater than 2%, the ideal retest interval is 3–4 months, with a minimum of two tests/year, until there is a clear whole herd test. 3. To fit within management constraints (e.g., late pregnancy or early lactation), the retest interval may be extended from 2–6 months until there is a clear whole herd test. 3. If for exceptional reasons the whole herd testing intervals in 1, 2 or 3 cannot be achieved, the following measures are to be considered: • Testing cattle mobs to fit in with the farmer's stock management programme. • When the disease was diagnosed at an on-farm test, giving priority to testing animals in the cohort group as well as those not presented at that test. • When the disease was diagnosed at a slaughter premises, giving priority to the testing of the cohort group and/or mobs grazed alongside the cohorts. • The current, or any proposed, vector control programme.	Beef cattle ≥ 3 months of age Dairy cattle ≥ 6 weeks of age
Pre-movement testing	Animals may be allowed to move under an Official Permit from one herd number to another based on a risk assessment by an OSPRI VDM. If permission is given, the animals are to be skin and blood tested at the discretion of the VDM within the 60 days preceding the movement and must return a negative result. Information regarding the details of the test is to be recorded on the Animal Status Declaration that is required to accompany the animals when they move.	As permitted by the Disease Management Veterinarian on case-by-case basis following assessment of risk
Post-movement testing	As stipulated on the Permit for the specific scenario (see Policy 12).	Stock to test will be notified by the tester at the time the test is arranged
Slaughter surveillance	The status of infected herds may be monitored using slaughter surveillance when 100% of the test-eligible cattle remaining in the herd following the diagnosis of TB go directly to slaughter within the following 12 months. A combination of slaughter surveillance and testing of eligible stock may also be used.	N/A

7.1.1 Parallel Blood Tests – Interferon-gamma Tests

Infected herds will be considered for parallel blood testing based on the guidelines contained in the Suspect and Infected Herd Bovine TB Vet Manual procedures.

7.2 Cattle Testing Polices for Herds with a Clear Status

General note for Clear status herds in all areas:

- Eligible stock going to slaughter within three months of test completion may be excluded from the requirements of herd testing

7.2.1 Cattle Herds with Clear 1 Status (Movement Controlled, Special Testing and Surveillance Areas)

General testing polices for C1 status herds are summarised in the following table. Refer to Policy 13 for movement testing policies for C1 herds.

Surveillance type	Frequency of whole herd testing programme	Stock to test
Routine on-farm testing	The interval between successive whole herd tests is not to exceed 12 months. NB: To overcome the issue of non-specificity, specific age groups may be tested at different times of the year with the written agreement of the Chief Advisor Disease Management.	Cattle ≥ 3 months of age
Pre-movement testing	Animals that are to move from one herd number to another are to be tested within the 60 days preceding the movement with a negative result. Information regarding the details of the test is to be recorded on the Animal Status Declaration that is required to accompany the animals when they move.	Cattle over 3 months of age
Post-movement testing	Animals may require post movement testing following movements from areas with a direct risk of wildlife related disease. This is to provide assurance to both parties and to facilitate early detection in the unlikely event that TB is moved but not detected at the required premovement tests. Tests will be generated from movements in future.	Stock to test will be notified by the tester at the time the test is arranged
Slaughter surveillance	The status of C1 herds may be monitored using slaughter surveillance when 100% of the test-eligible cattle in the herd at a designated point-in-time will go directly to slaughter within the following 12 months. A combination of slaughter surveillance and testing of eligible stock may also be used.	N/A

7.2.2 Clear 2 or Higher or CM Status Cattle Herds Within a Movement Controlled Area

Surveillance type	Herd status	Frequency of whole herd testing programme	Stock to test
Routine on-farm testing	C2 or higher	Annual NB: To overcome the issue of non-specificity, specific age groups may be tested at different times of the year with the written agreement of the Chief Advisor Disease Management.	Cattle ≥ 3 months of age
Pre-movement testing		Animals that are to move from one herd number to another are to be tested within the 60 days preceding the movement with a negative result. Information regarding the details of the test is to be recorded on the Animal Status Declaration that is required to accompany the animals when they move.	Cattle over 3 months of age
Post-movement testing		Animals may require post movement testing following movements from areas with a direct risk of wildlife related disease. This is to provide assurance to both parties and to facilitate early detection in the unlikely event that TB is moved but not detected at the required premovement tests. Tests will be generated from movements in future.	Stock to test will be notified by the tester at the time the test is arranged
Slaughter surveillance	CM	The TB status of a herd may be monitored using slaughter surveillance when 100% of the test-eligible cattle in the herd at a designated point-in-time will go directly to slaughter within the following 12 months. A combination of slaughter surveillance and testing of eligible stock may also be used.	N/A

7.2.3 Clear 2 or Higher or CM Status Cattle Herds Within a Special Testing Area (STA)

The following table is provided for guidance in developing on-farm testing programmes for Special Testing areas (annual/biennial). Policies may be modified for properties neighbouring infected cattle or deer herds or for herds which receive stock from an Infected or C1 herd or from a herd located within a High Risk Movement Control Area.

Surveillance type	Herd status	Frequency of whole herd testing programme	Stock to test
Routine on-farm testing	C2 or higher	Annual Biennial & Other Variations to standard annual or biennial testing policies within defined parts of STAs may be approved by the Chief Advisor Disease Management. The choice of stock to test will be based on a consideration of: i. Whether the dynamics of TB in the wild animal population within the neighbouring area is stable or progressive; and ii. The density of livestock within the Special Testing Area; and iii. The location of infected or suspected TB wild animals in relation to the Special Testing Area within the last three years.	Cattle ≥ 12 months of age Cattle ≥ 24 months of age
Additional testing		Additional tests may be applied from time to time where animals of interest are identified as having entered a herd.	
Slaughter surveillance	CM	The TB status of a herd may be monitored in an **annual special testing area** using slaughter surveillance when 100% of the test-eligible cattle in the herd at a designated point-in-time will go directly to slaughter within the following 12 months. The TB status of a herd may be monitored in a **biennial special testing area** using slaughter surveillance when 100% of the test-eligible cattle. In the herd at a designated point-in-time will go directly to slaughter within the following 24 months. A combination of slaughter surveillance and testing of eligible stock may also be used.	N/A

7.2.4 Clear 2 or Higher or CM Status Cattle Herds Within a Surveillance Area

The following policies may be modified for properties neighbouring infected cattle or deer herds or for herds which receive stock from an Infected or C1 herd or from a herd located within a High-Risk Movement Control Area.

Surveillance type	Herd status	Frequency of whole herd testing programme	Stock to test
Routine on-farm testing	C2 or higher	Test frequency will be allocated based on the required level of surveillance. Routine test frequency will be between three yearly to five yearly. In non-dairy herds with more than 250 test-eligible cattle, a random sample of at least 250 animals will be tested.	All cattle ≥ 24 months of age
Additional testing		Additional tests may be applied from time to time where animals of interest are identified as having entered a herd.	
Slaughter surveillance	CM	The TB status of a herd may be monitored using slaughter surveillance when 100% of the test-eligible cattle in the herd at a designated point-in-time will go directly to slaughter within the following 36 months. A combination of slaughter surveillance and testing of eligible stock may also be used.	N/A

* Testing required to maintain geographic and temporal spread of disease surveillance.

7.3 Quality Assurance Programmes

Derogation from the above on-farm testing specifications may be allowed for herds managed under a quality assurance programme which has been approved by the Chief Advisor Disease Management.

7.4 Cattle Herd Testing Polices for Herds with a Suspended Status

The testing programme for Suspended status cattle herds will be developed by the VDM. The testing programme will include the eligible herds, eligible cattle for testing, the frequency of testing and the interpretation of tests. Pre-movement testing requirements are to follow the specifications contained within Policy 14.

7.5 Ancillary Serial Testing for Cattle

7.5.1 Herds with a Clear Status

The Interferon-gamma test, as required, is to be applied to cattle positive to a Caudal Fold test.

The type of Interferon-gamma test to be used (Standard or Special Antigen) and the circumstances in which it will be used should be consistent with the specifications of use of the individual tests contained in Policy 4, Approved TB Tests.

7.5.2 Herds with an Infected or Suspended Status

The policy of applying ancillary serial tests in herds with an Infected or Suspended status should be based on the guidelines contained within the Suspect and Infected Herd Bovine TB Vet Manual.

7.6 Deer Herd Testing Policies for Herds with an Infected Status

General policies for infected deer herds are summarised in the following table. Further specific testing details for an infected herd will be contained within the Infected Herd Management Plan for that herd. Deer from infected herds may also require further testing under Policy 12 Movement Control Restrictions – Infected Status Cattle and Deer Herds.

Surveillance type	Frequency of whole herd testing programme	Stock to test
Routine on-farm testing	2 to 12 months with the following specific requirements: 1. A whole herd test must be performed within six months of the slaughter of any tuberculous deer and the herd must be tested at least twice per year until there is a clear whole herd test. 2. When infection has been detected through an on-farm test or the herd period prevalence is greater than 2%, the ideal retest interval is 3–4 months, with a minimum of two tests/year, until there is a clear whole herd test. 3. To fit within management constraints (e.g., late pregnancy, fawning or the rut), the retest interval may be extended from 2–6 months until there is a clear whole herd test. 4. If for exceptional reasons the whole herd testing intervals in 1, 2 or 3 cannot be achieved, the following measures are to be considered: 4.1 Testing deer mobs to fit in with the farmer's stock management programme. 4.2 When the disease was diagnosed at an on-farm test, giving priority to testing animals in the cohort group as well as those not presented at that test. 4.3 When the disease was diagnosed at a slaughter premises, giving priority to the testing of the cohort group and/or mobs grazed alongside the cohorts. 4.4 The current, or any proposed, vector control programme.	All deer ≥ 6 months of age
Pre-movement testing	Animals may be allowed to move under an Official Permit from one herd number to another after a risk assessment by an OSPRI VDM. If permission is given the animals are to be skin and blood tested at the discretion of the VDM within the 60 days preceding the movement with a negative result. Information regarding the details of the test is to be recorded on the Animal Status Declaration that is required to accompany the animals when they move.	As permitted by the Disease Management Veterinarian on case-by-case basis following assessment of risk
Post-movement testing	As stipulated on the permit for the specific scenario (see Policy 12).	Stock to test will be notified by the tester at the time the test is arranged
Slaughter surveillance	The status of infected herds may be monitored using slaughter surveillance when 100% of the test-eligible deer remaining in the herd following the diagnosis of TB go directly to slaughter to within the following 12 months. A combination of slaughter surveillance and testing of eligible stock may also be used.	N/A

7.6.1 Parallel Blood Testing – ELISA

Infected herds will be considered for parallel blood testing based on guidelines contained within the Suspect and Infected Herd Bovine TB Vet Manual.

7.7 Deer Herd Testing Policies for Herds with a Clear Status

General note for Clear status herds in all areas:

- Eligible stock going to slaughter within three months of test completion may be excluded from the requirements of herd testing.

7.7.1 Deer Herds with a Clear 1 Status (Movement Controlled, Special Testing and Surveillance Areas)

General testing polices for C1 status deer herds are summarised in the following table. Refer to Policy 13 for movement testing policies for C1 herds.

Surveillance type	Herd status	Frequency of whole herd testing programme	Stock to test
Routine on-farm testing	C1	The interval between successive herd tests is not to exceed 12 months. NB: To overcome the issue of non-specificity, specific age groups may be tested at different times of the year with the written agreement of the Chief Advisor Disease Management.	All deer ≥ 8 months of age
Pre-movement testing		Animals that are to move from one herd number to another are to be tested within the 60 days preceding the movement with a negative result. Information regarding the details of the test are to be recorded on the Animal Status Declaration that is required to accompany the animals when they move.	Deer over 8 months of age
Post-movement testing		Animals may require post movement testing following movements from areas with a direct risk of wildlife related disease. This is to provide assurance to both parties and to facilitate early detection in the unlikely event that TB is moved but not detected at the required premovement tests. Tests will be generated from movements in the future.	Stock to test will be notified by the tester at the time the test is arranged
Slaughter surveillance	C1	The status of C1 herds may be monitored using slaughter surveillance when 100% of the test-eligible deer in the herd at a designated point-in-time will go directly to slaughter within the following 12 months. A combination of slaughter surveillance and testing of eligible stock may also be used.	N/A

7.7.2 Clear 2 or Higher or CM Status Deer Herds Within a Movement Controlled Area

Surveillance type	Herd status	Frequency of whole herd testing programme	Stock to test
Routine on-farm testing	C2 or higher	Annual NB: To overcome the issue of non-specificity, specific age groups may be tested at different times of the year with the written agreement of the Chief Advisor Disease Management.	All deer ≥ 8 months of age
Slaughter surveillance	CM	The status of a herd may be monitored using slaughter surveillance when 100% of the test-eligible deer in the herd at a designated point-in-time will go directly to slaughter within the following 12 months. A combination of slaughter surveillance and testing of eligible stock may also be used.	N/A

7.7.3 Clear 2 or Higher or CM Status Deer Herds Within a Special Testing Area

The following table is provided for guidance in developing on-farm testing programmes within a Special Testing Area. Policies may be modified for properties neighbouring infected cattle or deer herds or for herds which receive stock from an Infected or C1 herd or from a herd located within a High-Risk Movement Control Area.

Surveillance type	Herd status	Frequency of whole herd testing programme	Stock to test
Routine on-farm testing	C2 or Higher	Annual	Deer ≥ 15 months of age.
		Biennial and Other	Deer ≥ 24 months of age
		Variations to standard annual or biennial testing policies within defined parts of STAs may be approved by the Chief Advisor Disease Management. The choice of stock to test will be based on a consideration of: i. Whether the dynamics of TB in the wild animal population within the neighbouring area is stable or progressive; and ii. The density of livestock within the Special Testing Area; and iii. The location of infected or suspected TB wild animals in relation to the Special Testing Area within the last three years.	

Surveillance type	Herd status	Frequency of whole herd testing programme	Stock to test
Slaughter surveillance	CM	The TB status of a herd may be monitored in an annual testing area using slaughter surveillance when 100% of the test-eligible deer in the herd at a designated point-in-time will go directly to slaughter within the following 12 months. The TB status of a herd may be monitored in a biennial testing area using slaughter surveillance when 100% of the test-eligible deer in the herd at a designated point-in-time will go directly to slaughter within the following 24 months. A combination of slaughter surveillance and testing of eligible stock may also be used.	N/A

7.7.4 Clear 2 or Higher or CM Status Deer Herds Within a Surveillance Area

Routine on-farm testing will not be required for Clear 2 or higher or CM status deer herds in Surveillance Areas unless as directed by the VDM under the following circumstances:

- The herd has received stock from an Infected or C1 status herd or from a herd located within a High-Risk Movement Control Area.
- The herd is adjacent to a property with an Infected status cattle or deer herd.
- Additional risk factors have been identified requiring resolution.

7.8 Deer Herd Testing Policies for Herds with a Suspended Status

The testing programme for Suspended status deer herds will be developed by the VDM. The testing programme will include the eligible herds, the eligible deer for testing, the frequency of testing and the interpretation of tests. Pre-movement testing requirements are to follow the specifications contained within Policy 14.

7.9 Ancillary Serial Testing for Deer

Specifications for ancillary serial testing of deer must be developed by the VDM based on the following policies:

7.9.1 Herds with a Clear Status

i. If an ancillary serial test is to be applied to deer positive to a Mid Cervical test, the following policies apply:

ii. If there are 3 or less mid cervical positive deer to retest, the IgG1 (ETB or Modified ETB) test is to be applied to all the test positive deer.

iii. If there are 4 or more deer to retest, either:

- A combination of the IgG1 and CCT tests may be used; or
- All the positive deer may be tested with a CCT.

7.9.2 Herds with an Infected or Suspended Status

The policy of applying ancillary serial tests in herds with an Infected or Suspended status should be based on the guidelines contained within the Suspect and Infected Herd Bovine TB Vet Manual procedures.

7.10 Compliance Management for Untested, Small, Uncontrolled and Non-Commercial Cattle and Deer Herds

i. Herds which are essentially closed and are not used for commercial animal production (e.g., zoos, display animals, pets, etc.) other small herds or herds with uncontrolled stock which are overdue for TB testing may be managed through a compliance process that effectively manages TB risk by preventing sales or movements of live animals and permanently suspending the herd status.

ii. Where a herd is assessed as having low disease risk and is deemed by the Management Agency as being impractical to test, then an alternative option to an enforced muster procedure may implemented. This will involve Suspension of herd status and the issue of an Official Directive pursuant to S (122) (1) (c) of the Biosecurity Act preventing movement of stock from the herd, apart from directly to slaughter.

iii. Criteria for compliance management of non-commercial, untested small herds or uncontrolled herds will be according to guidelines described in the Untested Small or Uncontrolled Herd Management Standard Operating Procedures.

Policy 7B: On-farm Testing Programmes: Risk-Based Testing Variations

Policy

During the term of this Operational Plan, the Management Agency may apply Risk-based testing variations to Policy 7 and Policies 12–15 for the purpose of piloting new on-farm testing policies to be based on more detailed evaluation of herd and individual animal infection risk factors related to location, livestock movement history and herd infection history.

Implementation Statement

Any testing policy variations to be applied under this policy shall be:

- Approved by the Chief Advisor Disease Management.
- Communicated in writing to the herd or animal owner no less than 60 days prior to the variation being applied.
- Applied in addition to, or as a substitute for, any testing requirements under Policy 7 and 12–15 at the discretion of the VDM.
- Applied irrespective of current herd TB status and Disease Control Area location.

Specifications

Testing policy variations under this Policy may include combinations of all or some of the following:

- More frequent herd testing (annual or biennial) on previously infected herds where risk is assessed as high by VDM.
- Parallel herd testing at whole herd testing in previously infected herds where risk is assessed as high by the VDM.
- Identification of High-Risk Animals of Interest (HRAOI) to be traced and subject to additional testing (primary and parallel).
- Post-movement testing for animals and in-contact cohorts leaving herds located in areas or with disease histories where risk is assessed as high by the VDM.
- Cessation or reduction of on-farm testing of herds where their risk is assessed as low by the VDM.

Policy 8: Game Estates

Policy

Policies for Game estate herds within the National Pest Management Plan will recognise their special conditions of management without putting at jeopardy the TB status of the areas in which such operations are established.

Policies will define the following requirements for Game estate herds:

- Registration.
- Record keeping.
- TB control.

During the term of this Operational Plan, new policies for Game estates may be phased in to provide for equivalence with wider risk-based testing and disease management policies to be introduced, which will take account of more detailed risk analysis based on herd and animal location, disease history and livestock movement patterns.

Specifications

8.1 Definition of a Game Estate

i. Owners of deer must register their herd with the Management Agency. On registration, the herd will be classified either as a deer herd or as a Game estate herd.

   - Owners of Game Estates must also register the herd location as required under the National Animal Identification and Tracing Act 2012 and comply with all requirements and conditions of that Act.

ii. For the purpose of this policy a Game Estate herd is as defined as a herd of deer, of any species, which are the private property of the herd owner (as distinct from deer owned by the Crown) and which are managed under **controlled conditions** for the predominant purpose of hunting.

iii. "Controlled conditions" is defined as the implementation of measures (including the use of natural features) to constrain deer to a defined area from which they are not free to move out at will:

   - Deer herds that meet the conditions of (ii) where income is derived from wild animals being hunted on the farm, are also required to be registered with DOC under the Wild Animal Control Act 1977 and comply with all relevant conditions of that Act and any relevant permit.
   - Sections 12B and 31D of the Wild Animal Control Act requires the deer to be enclosed to prevent the escape of deer and also to meet any prescribed specifications.

iv. Crown-owned deer on land (either private or public) where there is no specific control of movement, are excluded from this policy.

v. Deer herds which are kept under controlled conditions, but are not classified as Game Estates, are required to meet all conditions of the National Pest Management Plan for farmed deer herds.

vi. An owner may have both a Game Estate on one part of their property and a farmed deer herd on another provided any conditions as required by the Management Agency are met and maintained.

8.2 Game Estates – General Conditions

i. Each Game Estate is to have an individual management plan developed.

ii. The VDM is responsible for initiating and producing the management plan in a format prescribed in "Game Estate Management Best Practice."

iii. Depending on the area where the Game Estate is located, the management plan may include a TB surveillance programme utilising the skin testing of deer using an approved primary test (as per policy 4); necropsy of trophy and cull animals, with the necropsy done by a person acceptable to the Management Agency; and/or necropsy of resident possums, pigs and ferrets.

iv. The owners of Game Estates are to adhere to all conditions and policies as determined by the Management Agency.

v. The Game Estate may be audited to ensure that all conditions, policies determined by the Management Agency and any requirements outlined in the Management Plan, are being met.

vi. Game Estates must comply with the requirements of the Animal Products Act 1999.

vii. Herds registered as Game Estates which are neither Infected nor Suspended shall be assigned a herd TB status of CM.

viii. Live deer must not be moved from a Game Estate unless they are moving direct to slaughter and comply with Ministry for Primary Industries requirements. In certain permitted circumstances, live deer may leave a Game Estate but must move directly to slaughter as farmed deer under the same ownership and are subject to the requirements of the Ministry for Primary Industries.

ix. Any cattle leaving the Estate (other than those going directly to slaughter) are to be TB tested prior to allowing them to contact other farm stock and no later than within 60 days of exiting the Estate. The methods for this will be established in conjunction with the VDM and set out in the management plan.

x. The external boundaries of the Game Estate must prevent the movement of deer out of the area defined as a Game Estate, either by secure fencing or utilising geographic features which prevent deer movement.

xi. Any deer or cattle released into the Game Estate are to come from a herd that has had a Clear status for five years or longer.

xii. If deer being introduced into the Game Estate originated from a Movement Controlled Area, they must be either pre-movement tested clear or move under an exemption from pre-movement testing requirements granted by the VDM.

xiii. Owners of Game Estates will be required to maintain and make available to the Management Agency or its agent records of:

- TB test results; and
- Dates, numbers, and sources of deer/cattle released into the Estate; and
- Dates and numbers of deer carcasses and cattle removed from the estate and their destination.

xiv. Deer entering a Game Estate which are identified with official ear tags as required under the National Animal Identification and Tracing Act 2012 may have official ear tags removed if authorised by a NAIT officer or NAIT authorised person to remove the device.

8.3 TB Control

i. When TB is diagnosed within any deer or cattle beast within a Game Estate, the following options exist:

- Establish a programme to TB test all deer and cattle within the estate and slaughter any reactors diagnosed. This testing programme would be identical to that for farmed cattle or deer; or
- De-stock the estate to slaughter; or
- A combination of testing and destocking.

ii. The time to allow for destocking will take account of the estimated level of disease, the end of the hunting season for the predominant deer species and the location of the herd. In any event the length of time is to be no longer than 24 months from the initial diagnosis of TB.

iii. When TB is first diagnosed in a wild animal on the Game Estate the VDM, in consultation with the Chief Advisor Disease Management and the estate owner, will determine an appropriate response.

- The response will be dependent on the wild animal species TB was diagnosed in (host status considerations) and may include additional surveillance (of both deer and wild animals) and appropriate vector control.
- The objective of the increased surveillance is to provide assurance to the VDM that over a three year period, the probability of the Game Estate herd being infected is ≤ 5%.

8.4 Non-Compliance

i. Game Estates which do not operate within the requirements of the policy will receive initial warnings from an Authorised Person and then be re-classified as a deer herd should non-compliance continue.

8.5 Charges

i. Owners of Game Estates will be required to fund all programme activity under this policy (excluding costs of VDM involvement), including costs of registering the estate, inspections, and costs associated with destocking.

Policy 9: Herds Overdue for TB Testing

Policy

The Management Agency will maintain and implement policies and procedures for herds which are overdue for testing as well as test positive animals which are overdue for ancillary tests.

Any variations to these specifications must be approved by the Chief Advisor Disease Management.

Implementation Statement

To maintain the integrity of TB surveillance within the National Pest Management Plan, all TB tests required within the Plan are to be completed by the test expiry date*.

* Test expiry date = test due date + specified number of days to complete test.

Specifications

i. For herds with a Clear status, herd tests are to be completed within 180 days of the due date unless an exemption has been granted by the VDM.

ii. For herds with an infected status, herd tests are to be completed within 90 days of the due date unless an exemption has been granted by the VDM.

iii. For herds with a Suspended status, herd tests are to be completed by the date determined by an Authorised Person.

iv. Ancillary tests are to be completed within the eligible time frames as an approved test.

v. Post movement TB tests are to be completed by the date determined by an Authorised Person and documented on the permit to move that accompanies the animal/s.

vi. Further detailed procedures for management of overdue herd tests will be specified Overdue Test Management Best Practice Guidelines.

vii. If the person in charge of the herd fails to present animals for testing as required and with reasonable notice, an Authorised Person may arrange to have the animals mustered and tested. When animals cannot be captured, penned, mustered, tested and sampled as required, an Authorised Person and any assistants may enter any place and destroy the cattle and deer.

Policy 10: Slaughter of TB Reactors

Policy

The Management Agency will require identification and expeditious slaughter of TB Reactor cattle and deer as defined in Policy 1.

Unless otherwise approved by the Management Agency, slaughter of TB Reactors will be carried out in circumstances which provide for reliable post-mortem inspection and diagnosis of any TB infection.

Specifications

i. All TB Reactors must be identified with official TB Reactor ear tags issued by the Management Agency.

ii. All TB Reactors must be identified with an approved NAIT RFID tag at time of the reactor tag being applied.

iii. All TB Reactors are to be determined and directed to slaughter by an Authorised Person who is also a Veterinarian employed by the Management Agency.

iv. TB Reactors are to be slaughtered within 30 days or otherwise as soon as practical after diagnosis.

v. Unless agreed otherwise with the owner, the Management Agency shall make necessary arrangements for transport and slaughter of TB Reactors and shall meet the cost of these arrangements.

vi. When it is necessary to seize a TB Reactor for slaughter, the person in charge of the animal(s) is to be given a minimum of 24 hours' notice to present the cattle or deer.

vii. Whenever possible, all TB Reactors are to be slaughtered at a registered slaughter premise. This is to ensure:

- The animals are subject to a standard post-mortem inspection.
- Control over the sale/disposal of meat from TB Reactor carcasses is maintained.
- Meat value for the carcass is retained by the Management Agency to off-set the costs of compensation.

viii. When an Authorised Person agrees to the slaughter of a TB Reactor at a place other than a registered slaughter premise, the animal(s) may be sent to a rendering plant or be slaughtered on-farm under the supervision of either a registered veterinarian, an official assessor under the Animal Products Act 1999 who has attained competency in necropsy for the particular species, or any other person who has demonstrated competency in post-mortem technique and lymph node identification for the particular species through a training programme acceptable to the Management Agency.

ix. All TB Reactors which are moved off-farm for slaughter must be accompanied by an Official Permit to Move issued by an Authorised Person prior to movement.

x. TB Reactors which are not subject to post-mortem inspection by either a registered veterinarian, an official assessor under the Animal Products Act 1999 who has attained competency in necropsy of cattle, or any other person who has demonstrated competency in post-mortem technique and lymph node identification for cattle through a training programme acceptable to the Management Agency, may be considered by the VDM to be infected with TB.

xi. TB Reactors which have been treated with a hormonal growth promotant or a chemotherapeutic agent (for example anthelmintics, antibiotics and injectable mineral supplements) are not to be slaughtered for human consumption within the product's withholding period.

xii. Owners may apply to have a test positive animal (cattle or deer) slaughtered instead of an ancillary blood test (where eligible). Approval must be given by an Authorised Person prior to the slaughter being arranged. The animal(s) may be slaughtered on-farm or at a slaughter premise. Irrespective of location chosen for slaughter, the owner/person in charge of the animal(s) must sign a 'Waiver of compensation' form prior to slaughter.

- Where animals are approved by an Authorised Person to be slaughtered without an ancillary blood test and are to be slaughtered on-farm, a post-mortem examination must be carried out by an OSPRI approved operator at the expense of the owner. Disposal of animal carcasses slaughtered on-farm is the responsibility of the person in charge of the animal(s) and must be in accordance with local bylaws or other relevant regulations. The disposal method must also be approved by OSPRI to prevent the potential spread of TB.
- Where animals are approved by an Authorised Person to be slaughtered without an ancillary blood test are destined for a slaughter premise, a permit-to-move from OSPRI is required and the premise must be informed, in advance, that the animal(s) has a reactor tag. This will affect how the animal(s) is handled and examined at slaughter. The financial return from the animal(s) may be reduced due to increased administration and limitations to potential markets. OSPRI may be able to assist with arranging and transportation for the animal(s) but all slaughter fees and transport costs are to be borne by the farmer.

Policy 11: Compensation

Policy

Compensation will be payable to the owners of cattle and deer slaughtered according to Clause 18 of the Biosecurity (National Bovine Tuberculosis Pest Management Plan) Order 1998.

Specifications

i. Compensation will be payable to the owners of cattle or deer which are directed to slaughter by the Management Agency, pursuant to Section 122 of the Biosecurity Act 1993, under the following circumstances:

- The animal has tested positive to an approved test or tests for bovine tuberculosis and directed to be slaughtered by the VDM.
- Movement to slaughter is the only permitted or practicable option for an animal following the imposition of restrictions on the movement of its herd under section 130 of the Act, and direction to slaughter has been approved by the General Manager, Disease Control Planning and Integration.
- Movement to slaughter is the only permitted or practicable option for an animal as a direct result of the implementation of this plan, and direction to slaughter has been approved by the General Manager, Disease Control Planning and Integration.

ii. Unless agreed otherwise with the owner, the Management Agency shall make necessary arrangements for transport and slaughter of animals eligible for compensation and shall meet the cost of these arrangements.

iii. Notwithstanding Clauses 1 and 2 above, compensation and any associated transport and slaughter costs will not be payable when:

- The owner wishes to slaughter cattle or deer which have been positive to an approved TB test, and the animals are awaiting an ancillary test (see Policy 10: Slaughter of TB Reactors).
- The owner chooses to slaughter and retain the animal for home consumption. In this circumstance the owner is to:
  a. obtain the permission of an Authorised Person.
  b. sign a Waiver of Compensation form provided by the Management Agency.
  c. reasonably facilitate and meet the costs of any post-mortem examination of the animal as required by the Management Agency.
  d. dispose of any unwanted carcass parts as required by the Management Agency.
- The owner has not complied with any legal directive or other legal obligation under Biosecurity (National Bovine Tuberculosis Pest Management Plan) Order 1998.

iv. When compensation is payable, it will be at the rate of 100% of Fair Market Value irrespective of any diagnosis of TB.

v. Fair Market Value is to be determined under processes to be agreed between the Management Agency and the respective dairy, beef and deer industry organisations specified in Clause 18 of the Biosecurity (National Bovine Tuberculosis Pest Management Plan) Order 1998.

vi. Payment of compensation will be made after the animal is slaughtered and documentation has been provided and approved.

Policy 12: Movement Control Restrictions – Infected Status Cattle and Deer Herds

Policy

To prevent the spread of disease and allow the tracing of stock, the Management Agency will restrict the movements of cattle and deer from Infected status herds.

In limited circumstances some movement of cattle or deer from Infected herds may be permitted provided the safeguards specified in this policy are followed, and subject to a documented risk assessment which has been approved by the Chief Advisor, Disease Management.

Specifications

12.1 The Issue and Revocation of Movement Restrictions

i. The movement of cattle or deer will be restricted from herds with an Infected TB status (see Policy 1) via a Restricted Place Notice issued pursuant to Section 130 of the Biosecurity Act 1993.

ii. The Restricted Place Notice is to be signed by an Authorised Person under the Biosecurity Act 1993.

iii. Restricted Place Notices are to be served within five working days of the VDMs decision to change the herd's TB status to Infected.

iv. The Restricted Place Notice is to be personally delivered to the occupier of the place by an Authorised Person unless the circumstances under (v) below apply.

v. When for exceptional reasons a Restricted Place Notice cannot be delivered within the required time frame or by an Authorised person, the Notice is to be mailed by registered mail or couriered provided the occupier of the place is visited within ten working days of the Notice being sent.

vi. A Restricted Place Notice should be revoked when the herd status moves from Infected to Clear as per the criteria listed in Policy 1. Any proposal to extend the duration of a Restricted Place Notice past the date at which an infected herd's status is changed to Clear must be approved by the Chief Advisor Disease Management.

vii. Restricted Place Notices are to be revoked in writing by an Authorised Person under the Biosecurity Act 1993.

12.2 Movement Control Restrictions for Herds with an Infected Status

The movement control restrictions to be applied to Infected Status herds will be as follows:

i. A Restricted Place Notice (RPN) will be issued by an Authorised person pursuant to Section 130 of the Biosecurity Act.

ii. A Permit to Move must be issued before any cattle or deer are moved from an Infected Status Herd. A Permit-to-Move must be in a format prescribed by the Management Agency. Requests for Permits-to-Move must be made at least 14 working days in advance of the planned movement date and are to be processed within two working days.

iii. A permit to move may specify any requirements considered reasonable by the Authorised Person issuing the permit including that:

- Cattle or deer being moved must be negative to a pre-movement Caudal Fold Test (CFT) applied within 60 days prior to movement, along with any requirements for parallel blood tests.
- Cattle or deer are to be identified with official white Movement Control eartags issued by the Management Agency.
- Cattle or deer being moved must be identified with approved NAIT devices and the movement must be recorded in the NAIT system. An accurate NAIT scan list of all animals to be moved is to be provided to the Management Agency and to the person who will be in charge of the animals at their destination within 24 hours of movement.
- Cattle or deer being moved are to re-tested post-movement.

iv. Any Permit to Move issued for movement of cattle or deer from an Infected status herd is to be sent to the person who will be in charge of the animals at their destination as soon as is practicable.

v. The VDM is to ensure that owners of properties immediately adjacent to the movement destination are notified as soon as is practicable of the movement of cattle or deer from an Infected herd.

vi. The following additional movement control restrictions may also be applied by the VDM:

- Cattle being moved must be negative to an Interferon-gamma (ancillary parallel) test.
- Pre-movement testing of cohort or in-contact herd mates.

12.3 Exemptions and Variations

i. Movement direct to slaughter: The above movement control measures do not apply to non-reactor cattle or deer being moved direct to slaughter.

ii. Movement of TB reactors: TB reactor cattle or deer may only be moved to slaughter and require a Permit to Move as in clause 12.2 (ii) above. See also Policy 11.

iii. Movements as a result of a civil disaster or for reasons of animal welfare:
Cattle or deer required to be moved as a result of a civil disaster or for reasons of animal welfare may have some or all of the requirements for movement restrictions temporarily waived by an Authorised Person after receiving a direction from the VDM. In such circumstances, the Authorised Person will specify to the owner the follow-up actions required at the time of movement.

12.4 Non-Compliance

i. When the conditions of a Restricted Place Notice served on an Infected status herd are not complied with, the person to whom the Restricted Place Notice was issued is to receive an official warning issued by an Authorised Person.

ii. The official warning will specify any additional movement restrictions over and above those specified in the Restricted Place Notice.

iii. For persons who have been subject to a warning on more than one occasion, a case for prosecution is to be made.

12.5 Management Advice for Owners of Infected Herds

i. Owners of herds with an Infected status may apply to the Management Agency to meet reasonable costs for professional farm management advice.

ii. The purpose of the management advice is to enable herd owners to obtain advice on management options for the farm business while operating under the movement restrictions for Infected herds.

iii. Applications for management advice are to be provided by the herd owner to the VDM for approval. The decision on whether to grant assistance, and if so the amount of that assistance, is at the discretion of the Management Agency.

iv. The types and levels of approved management advice, and costs for this, are to be documented within the herd's Infected Herd Management Plan.

v. Invoices for approved management advice costs are to be provided to the VMD for payment by the Management Agency.

Policy 13: Movement Control Restrictions – Clear 1 Status Herds

Policy

To prevent the spread of disease and allow the tracing and post movement testing of cattle or deer from herds with a history indicating risk of residual TB infection, the Management Agency may restrict the movements of cattle and deer from herds with a Clear 1 (C1) status.

Any variations to movement control specifications must be approved by the Chief Advisor Disease Management.

Specifications

13.1 The Issue and Revocation of Movement Restrictions

i. Herds with a Clear 1 TB status may have their cattle or deer movements restricted by the issue of an Official Directive pursuant to Section 122(1) (c) of the Biosecurity Act 1993 which has been signed by an Authorised Person.

ii. An Official Directive may be personally delivered, mailed, emailed (with receipt required) or couriered.

iii. Official Directives are to be revoked in writing by an Authorised Person under the Biosecurity Act 1993, when the status of any C1 herd is changed to Clear 2 (C2) or Clear Monitored (CM).

13.2 Movement Control Restrictions

The specific movement restrictions to be applied to a Clear 1 status herd are to be determined by the VDM on a case-by-case basis and may include but are not limited to the following:

i. Restricting movements direct to slaughter-only until the herd reaches a C2 or CM status.

ii. Permitting movements but applying restrictions on any movement other than direct to slaughter. These restrictions may include but are not limited to:

- Requiring a Permit to Move issued by the Management Agency for any cattle or deer to be moved from the herd. Requests for permits to move must be made at last 14 days in advance of the planned movement date and are to be processed within two working days.
- Cattle or deer being moved must be negative to a pre-movement primary test applied within 60 days prior to movement. The pre-movement test may include the entire cohort from which the animal(s) are intended to move even if some may remain on the property.
- A copy of any Permit to Move issued for movement of cattle or deer from a C1 status herd is to be sent to the person in charge of the animals at their destination as soon as is practicable.
- Cattle or deer being moved are to be traced to their destination and retested between 90 days and 12 months post-movement.
- In addition to the relocated animals, the post-movement test may include the rest of the cohort or in-contact herd mates in the herd which has received cattle or deer from a Clear 1 herd.

13.3 Exemptions and Variations

i. The above movement restrictions do not apply to any cattle or deer being moved directly to slaughter.

ii. Cattle or deer required to be moved as a result of civil disaster or for reasons of animal welfare may be exempted from some or all movement restrictions by an Authorised Person after receiving direction from the VDM. In such circumstances the Authorised Person will specify to the owner the follow-up actions required at the time of movement.

Policy 14: Movement Control Restrictions – Suspended Status herds

Policy

To prevent the spread of disease and allow the tracing of cattle or deer during a period of indeterminate herd TB status, or in the case of non-compliance with TB strategy requirements, the Management Agency may restrict the movements of cattle and deer from herds with a Suspended status.

Any variations to movement control specifications must be approved by the Chief Advisor Disease Management.

Specifications

14.1 The Issue and Revocation of Movement Restrictions

i. Herds with a Suspended TB status may have their cattle or deer movements restricted when:

- TB Reactors are awaiting slaughter and uncontrolled animal movements from that herd are considered to be a significant TB risk to the status of another herd; or
- Test-positive cattle or deer have no visible TB lesions when slaughtered but there is other epidemiological evidence to suggest the animal(s) may be infected with TB. (Examples: proximity to TB-infected vectors or an Infected herd); or
- Cattle or deer are found at slaughter with lesions histologically typical or suspicious for TB and prior to confirmation by culture; or
- Owners fail to complete ancillary testing or slaughter test-positive cattle, or deer as directed by an Authorised Person; or
- The herd is in direct contact with cattle or deer from a herd with an Infected status; direct contact being defined as any animals from the herd being grazed in the same paddock as those from an infected herd; or
- The herd has received cattle or deer from an Infected status herd; or
- The herd owner fails to complete whole herd tests within timeframes required by the Management Agency.

ii. Movements will be restricted by an Official Directive issued pursuant to Section 122(1)(c) of the Biosecurity Act 1993 and signed by an Authorised Person.

iii. An Official Directive may be personally delivered, mailed, emailed (with receipt required) or couriered.

iv. Official Directives are to be revoked in writing by an Authorised Person under the Biosecurity Act 1993, when the suspect TB case has been resolved, the case of non-compliance has been addressed or the Official Directive has been complied with.

14.2 Movement Control Restrictions

i. The specific movement restrictions to be applied to a Suspended status herd are to be determined by the VDM and/or Compliance Manager on a case-by-case basis, depending on the circumstances leading to the herd's status being suspended. The Movement Control measures to be applied may be one or more of the following:

- A Permit to Move must be issued for any cattle or deer to be moved from the herd.
- Cattle or deer being moved must be negative to a pre-movement primary test applied within 60 days prior to movement.
- Cattle or deer being moved must be identified and their movements recorded in compliance with NAIT.
- Pre-movement testing of cohort or in-contact herd mates as required by the VDM.
- Cattle or deer being moved are to be retested post-movement unless exempted by VDM.

Policy 15: Movement Control Restrictions – Clear Status Herds Located in Movement Controlled Areas

Policy

To prevent the spread of disease via movement of infected cattle or deer, the Management Agency will restrict the movements of stock from Clear Status herds in specific areas based on TB risk. Such areas will be declared as Movement Controlled Areas under Section 131 of the Biosecurity Act 1993.

Any variations to movement control specifications must be approved by the Chief Advisor Disease Management.

Defined parts of Movement Controlled Areas may be further classified as High-Risk Movement Controlled Areas, to enable the application of additional livestock movement or testing requirements, which may also apply to herds in other areas which receive livestock from High-Risk Movement Controlled Areas.

Specifications

15.1 Movement Restrictions for Herds with a Clear Status Located Within Movement Controlled Areas (MCAs)

i. For the owners of herds with a Clear status that are located within a MCA who intend to move cattle or deer three months of age and older from the herd, apart from movements directly to slaughter, the animals to move must be negative to an approved TB test applied within 60 days prior to the movement.

ii. If a test-positive animal is found, it must remain on the property or be sent directly to slaughter. The balance of in-contact animals may move under a Suspended status and a Permit to Move.

- If there is a significant risk posed by the movements of these animals, the VDM can apply additional movement restrictions.
- If on slaughter, TB is found in the test-positive animal, then the status of all the in-contact animals will change to Infected, otherwise they will regain their original status.

iii. If no test positives are identified at this test, no additional movement restrictions are required.

15.2 Post Movement Testing for Animals Moved from Herds with a Clear status Located within High-Risk Movement Controlled Areas (HRMCAs)

i. Movements of cattle or deer from herds located within High-Risk Movement Control Areas are to be traced to their destination herd.

ii. Animals moved as in 15.2 (i) above are to be tested for tuberculosis between 90 days and 12 months following the date of movement.

iii. The post-movement test in 15.2 (ii) may include in-contact or cohort animals as directed by the VDM.

15.3 Exemptions from Movement Controlled Area Pre-Movement Testing Requirements

i. Persons in charge of herds with a status of Clear within a Movement Controlled Area may apply to an Authorised Person for an exemption from the requirement for pre-movement TB testing of eligible animals under the following conditions, provided the animals are not going for private or public sale and are staying under the same ownership:

- Where the animals have been, or will be, grazing for a short term (less than 90 days) within the Movement Controlled Area; or
- Where facilities for the TB testing of cattle or deer are not available; or
- Where animals are required to be moved because of a civil disaster; or
- For reasons of animal welfare; or
- Where animals are likely to be in an immuno-compromised state which would affect TB test results; or
- Humanitarian reasons e.g., family death etc.

ii. Requests for exemptions are to be processed within two working days.

iii. If exemptions are approved, a Permit to Move is to be issued for all cattle or deer moving under such exemptions.

iv. Cattle or deer exempted from pre-movement testing requirements may be subject to additional requirements post-movement. The additional requirements will be specified in the Permit to Move and may be one or more of the following:

- Post-movement testing of the exempted animals plus any in-contact animals if they have not been held in isolation.
- Suspension of recipient herd's status.
- Applying movement restrictions temporarily, via an Official Directive, on the recipient herd until post-movement testing is completed.

v. Specific additional requirements are to be determined by the VDM and/or Compliance Manager, taking into account:

- The reason the exemption was granted.
- The duration the exempted animals were present in the Movement Controlled Area.
- The herd type and management regime of the recipient herd.
- The Disease Control Area of the recipient herd.

vi. Any test-positive animals detected at post-movement testing are to be managed as per usual Management Agency policy for herds of that type, status and Disease Control Area.

Policy 16: TB Declarations and Herd Information

Policy

To minimise the risk of TB spread through the movement of cattle and deer, the Management Agency will require declarations to be made of the TB risk relating to cattle/deer movements and will provide TB risk information in relation to specified herds.

Specifications

16.1 TB Declaration Requirements

i. All cattle or deer 30 days or older being moved either from their herd of origin to any other herd, or to a place of slaughter, or being offered for sale at a public sale yard are to be accompanied by a TB Declaration completed by the owner or a person acting with the authority of the owner.

ii. The TB Declaration may be included in other industry documents (such as Animal Status Declaration Cards or Forms, "ASD") where these are approved by the Management Agency.

iii. The TB Declaration may be made and transmitted in electronic form where systems and processes for this are approved by the Management Agency and the Ministry for Primary Industries such as an electronic ASD.

iv. Obligations in relation to TB Declarations, and the information to be declared, are specified in clauses 12B–12F of the Biosecurity (National Bovine Tuberculosis Pest Management Plan) Order 1998.

16.2 Herd Information

i. Any person requiring TB information for any herd is to be given all the following information:

- The herd's current TB Status, and
- Whether the herd is in a Movement Controlled Area, and
- Any legal requirements that have to be fulfilled before cattle or deer can be moved from the herd.

ii. Additional information which may be given on any herd to any person includes:

- The date of the last whole herd test.
- The TB Status history of the herd.
- The testing programme for the herd.
- The Vector Status and the Disease Control Area status for the location of the herd.
- Whether the herd is located within a vector control operational area.

iii. Immediate neighbours to herds with an Infected TB status will be notified by the VDM at or around the time the herd is classified as being infected or when an infected herd is first moved onto a farm.

Policy 17: Wildlife Vector Control and Surveillance

Policy

Achievement of TB Plan objectives requires effective identification, control, and eradication of TB-infected wildlife and vector-borne sources of TB. To ensure optimal delivery of vector control and surveillance activities, the Management Agency will implement an orderly planning and management framework and robust quality management systems. Safe, effective operations which comply with relevant statutes and regulations will be delivered through conformance with documented best practice and standard operating procedures. Where required, any use of legal powers by Authorised Persons must be approved by the appropriate senior manager of the Management Agency.

Specifications

17.1 Planning and Management Framework

i. All wildlife vector control and surveillance activities (the vector programme) will be carried out under an annual programme to be approved by the General Manager, Disease Control Planning and Integration.

ii. Technical design of the vector programme to achieve TB strategy objectives will be according to the Management Agency's Technical Design Guidelines.

17.2 Vector Programme Implementation

i. The Management Agency will follow formal documented policies and procedures for procurement of vector programme services.

ii. Operations will be carried out under standard operating procedures or Technical Design Guidelines.

iii. Sufficient resources will be allocated for auditing or monitoring the delivery and/or performance outcomes of vector operations.

iv. Effective consultation and communications will be carried out with affected parties in the implementation of the vector programme.

17.3 Legal Powers

i. The willing cooperation of land occupiers and other affected parties will be sought where this is required to implement the vector programme.

ii. Where necessary the Management Agency will use the powers conferred under Clause 8 of the Biosecurity (National Bovine Tuberculosis Pest Management Plan) Order 1998 to implement the vector programme.

iii. The use of legal powers as above must have the prior written approval of the General Manager, Disease Control Integration and Planning.

Policy 18: Chatham Islands

Bovine TB is not present on the Chatham Islands (Chatham and Pitt Islands) and TB testing is not required. For this reason, it is essential that policies protect this area of NZ (VFA) from introduction of infected animals.

Policy

To minimise the risk of TB spread to the Chatham Islands through the movement of livestock, the Management Agency requires mitigation criteria to be met for all stock prior to leaving a mainland port.

Specifications

18.1 Movement of Stock to Chatham Islands

18.1.1 Deer

i. Department of Conservation does not permit deer farming on the islands, and it is illegal to release wild animals (Section 11 – Wild Animal Control Act 1977). Therefore, no deer are permitted to be moved to the Chatham Island under any circumstances.

18.1.2 Cattle

i. TB risk to cattle on the islands must therefore be managed through restrictions on cattle movements from the mainland.

ii. Only cattle that meet all of the following criteria are eligible to enter the Chatham Islands:

- Must come directly from the property of their birth and must meet all NAIT obligations (tagged and registered with lifetime traceability).
- Must originate from a herd that is NOT located in a Movement Control Area (MCA)
- Must originate from a herd with a status of C5 or above
- Animals are to have been pre-movement skin TB tested within six months (but preferably within 90 days) of date of proposed transport with a negative result. This test must be at least 60 days after any previous test for tuberculosis.

A correctly completed Animal Status Declaration is required to accompany the animal(s) as well as a Permit to Move signed by a TBfree New Zealand Authorised person.

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, except for 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 polices 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 three 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 per se).
Probability of Freedom (PFree)	The probability that TB has been eradicated from the possum population in a defined area.
Proof of Freedom (POF)	Modelling and calculating the probability of freedom (PFree).
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.

TB	Used as an abbreviation for bovine tuberculosis. *Mycobacterium bovis*, 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: • 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.
Veterinarian, Disease Management (VDM)	Responsible for disease management in the bovine TB eradication programme in defined area.

OSPRI