

Agency Disclosure Statement

This Regulatory Impact Statement has been prepared by the Ministry for Primary Industries (MPI). It provides an analysis of options for the long-term control and eradication of bovine tuberculosis in New Zealand.

The process of analysis has involved MPI, Operational Solutions for Primary Industries (OSPRI), funders and stakeholders in formal and informal consultation. The options were developed with the benefit of supporting information sought from independent sources, which includes:

- an analysis of options for the TB Plan;
- a review of the science underpinning the eradication of TB;
- a review of the science undertaken for managing TB; and
- a range of economic and disease modelling work.

The analysis concludes that the preferred option is to build on work of the previous TB Plan by aiming for the eradication of TB over 30 years. The preferred option will result in a programme costing an average of just over \$60 million per year, compared to the status quo of just over \$80 million per year.

MPI considers that the information provided is a good basis for analysis. The independent science review confirms that complete eradication of the disease is a realistic objective. Key assumptions in the analysis and risks in the implementation of the Plan include the risk that OSPRI will not be able to successfully implement the operational changes in vector control and disease management quickly enough to achieve the milestones set. OSPRI considers that the risk can be managed by operational efficiencies, strong industry involvement, a less risk-averse approach in deciding when an area is TB free, and the additional transitional funding which is being sought.

There is an additional risk that Cabinet will not approve the Crown's share of the transitional funding.

Otherwise the analysis contains no key gaps, dependencies, significant constraints, caveats or uncertainties.

Julie Collins
Director, Biosecurity and Animal Welfare Policy

Executive Summary

1. Bovine tuberculosis (TB) is a disease which affects the cattle and deer industries and a range of wild animals, and can also be spread to humans. The disease has been managed in New Zealand for many years, currently under a national pest management plan under the Biosecurity Act 1993.
2. The Act requires such plans to be reviewed at least every 10 years; the review of the current Plan began in December 2014. The current Plan is based on:
 - testing for the presence of the disease in herds and wild animals, which can spread the disease;
 - a large-scale possum and ferret control programme in risk areas to prevent the disease being spread to farmed livestock; and
 - trialling the possibility of completely eradicating the disease from wildlife in remote locations.
3. The cost of implementing the current TB Plan is around \$80 million per year. The Crown currently contributes about \$30 million per year, and the balance of about \$50 million per year is met by the cattle and deer industries, and regional councils.
4. Three options have been considered for a future Plan:
 - eradication of TB over 30 years, at a reduced average cost of just over \$60 million per year (the preferred option);
 - eradication of TB over 25 years at higher cost of \$70 million per year; and
 - on-going containment and control, costing about \$38 million per year for the first 30 years, then reducing to about \$31 million per year in perpetuity.
5. The next iteration of the Plan also recommends a revised structure based on funding from beneficiaries of the Plan rather than exacerbators as at present. Under the favoured option the Crown would fund just over \$24 million per year, with the balance of about \$36 million per year to be met by industry. Regional councils would no longer be expected to contribute.
6. MPI has been involved along with funders and stakeholders in developing the public consultation document and proposed amendments to the Plan. There is strong support for the favoured TB Plan proposal from stakeholders and funders, including MPI.

Status Quo and Problem Definition

BACKGROUND

Bovine Tuberculosis

7. Bovine tuberculosis (TB) is an infectious disease caused by the bacterium *Mycobacterium bovis*, which can infect a wide range of domestic and wild animals, and may also be spread to humans. TB is a disease which is listed by the World Organisation for Animal Health (OIE), and its presence must be reported to the OIE.
8. TB infection in cattle and deer can result in production losses for the beef, dairy and deer farming sectors. The impacts of the infection can range from minor illness and coughing to serious wasting and eventually death. Because the course of the disease is generally slow, animals can spread the disease to others in the herd before showing clinical signs.
9. New Zealand, along with most other developed nations, progressively embarked on cattle Tb control measures, beginning in 1945.
10. In New Zealand, the main causes of TB in cattle and deer herds are direct transfer within and between herds, and direct contact with infected possums. With no resistance to the disease, possum populations become heavily infected, passing the disease on to cattle and acting as a reservoir of infection. Similar reservoir hosts of bovine TB are also known among wild animals in the United Kingdom and Ireland, Canada and South Africa. In these countries, as in New Zealand, when the vector animals are targeted the disease stops spreading and infection rates in herds decrease.

TB poses trade risks

11. While New Zealand has strict controls through testing and post-slaughter inspection to manage the risk of human infection from the consumption of TB-infected dairy products and meat, there are two main trade risks to manage:

Harm to New Zealand's reputation as a supplier of high-quality and safe primary produce.

12. Escalating rates of TB prevalence could lead to an adverse reaction by overseas consumers to exports of New Zealand beef, dairy products or venison, despite the measures in place to manage possible human health

risks. The negative impact on perceptions could lead to reduced demand and subsequent reduced prices; and

New Zealand's inability to be classified officially free of TB by the OIE.

13. Markets wishing to obtain this classification must have an infected herd rate of less than 0.2% (i.e. two infected herds per one thousand herds) sustained for three years. Many of the developed countries, including New Zealand's trading partners and competitors, have much reduced levels of TB, or have eliminated it from their cattle herds.

STATUS QUO

Control of bovine TB under the Biosecurity Act 1993

14. Bovine TB probably arrived in New Zealand in the mid nineteenth century, together with the cattle and deer that were imported. By 1970 all cattle herds were under regular TB testing or routine carcass inspection for the disease among others, along with compulsory slaughter for the animals testing positive, and partial quarantine of infected herds.

15. The disease is currently managed in New Zealand through a national pest management plan, the Biosecurity (National Bovine Tuberculosis Pest Management Plan) Order 1998, under the Biosecurity Act 1993. The principal elements of the Plan involve:

- testing herds and wild animal populations (disease vectors) for the presence of the disease;
- compulsory slaughter of farmed animals suspected to be infected;
- vector control – a large-scale possum and ferret control programme in tuberculosis risk areas to reduce population densities below the level at which the disease can persist; and
- movement controls on cattle and deer from tuberculosis risk areas to prevent spread of the disease to lower-risk areas.

16. The objectives of the current Plan established in 2011 are to:

- eradicate TB from wildlife in at least 2.5 million hectares by June 2026;
- prevent establishment of TB in wildlife in vector free areas;
- prove that eradication of TB in wildlife populations is possible (proof of concept) by carrying this out in two extensive areas of bush, while maintaining continued freedom from TB in areas where it has already been eliminated; and
- ensure that the national rate of TB infection in livestock herds is less than 0.4% (four infected herds per 1000 herds).

17. Overall progress with TB control since 2002 has seen the number of infected cattle herds fall by 81%, and deer herds by 96%. At present 49 infected cattle herds are known, and one infected deer herd. This gives an overall herd infection rate of 0.18, well within the target level of 0.4.¹
18. OSPRI is also on track with its objective to eradicate TB from wildlife vectors over 2.5 million ha by 2026. To date, TB has been eradicated from wildlife populations over almost 830,000 ha. A further 300,000 ha was targeted for clearance over the last financial year, taking the cumulative total to more than one million ha.

Benefits associated with the Plan

19. The benefits provided by the Plan have been re-assessed as part of the current review process, and include both financial and other benefits.
20. Financial benefits are primarily around a future reduction in costs and avoided production losses. Investments are being made to progressively reduce Tb rates in livestock herds and wildlife populations, resulting in the following main benefits:
 - continued increases in carcass values as fewer incidences of TB are detected, when livestock are inspected or are slaughtered at processors; and
 - reductions in the indirect costs to farmers complying with herd management and livestock movement restrictions, and associated on-farm costs for testing.
21. Reputational and trade preference benefits are gained from maintaining positive control of TB in livestock, although these are not able to be clearly quantified.
22. Biodiversity benefits are also provided by the TB Plan, such as the costs saved to the Department of Conservation (DoC) and other landowners where possums and other wildlife populations have been controlled as part of the Plan.
23. Farmers and other land owners also enjoy wider and more diffuse benefits, such as increased options for land uses and less liability for control of possums.

Costs of the Plan

24. The cost of implementing the current TB Plan is around \$80 million per year. The Crown currently contributes about \$30 million per year, in

¹ This level needs to be maintained for three years and a successful application made to the OIE for recognition of country freedom from TB.

recognition of its role as a landowner with possums (an exacerbator), and for the incidental biodiversity benefits which flow from possum control under the Plan. The balance is funded by the cattle and deer industries, and regional councils:

Funder	Percent of total	Amount (\$m)
Crown	38	30
industry	54	44
Regional Councils	8	6

PROBLEM DEFINITION

25. Bovine TB, if left to spread, would lead to serious production losses in the beef, dairy and deer farming sectors. Managing TB under the TB Plan supports New Zealand's pastoral industries to increase productivity and retain access to foreign markets, vital to the country's economic well-being.
26. Previous investments in control by the Crown, industry and other parties in control of the disease need to be maintained and, if possible, built upon.
27. The Plan is currently under statutory review, as is required under the Biosecurity Act. The review seeks to confirm the strategic direction of the Plan for the future, examine the appropriate funding shares of the contributing partners, and identify any effectiveness and efficiency improvements that can be made.

OBJECTIVES

28. A revised national pest management plan setting out a successful bovine TB management strategy for New Zealand would need to:
 - continue the reduction of TB disease levels in livestock to a level that:
 - enables New Zealand to meet the OIE definition of freedom from disease that will be recognised by our major overseas trading partners; and
 - ensure that New Zealand's reputation as a supplier of high-quality beef, dairy and venison products is not adversely affected;
 - progressively reduce the size of vector risk areas to prevent further transmission of TB infection in livestock;
 - build on the benefits of past investment and reduction in TB levels;
 - optimise progress in control of the disease at an affordable annual cost; and

- ensure public and Government support for the preferred option.

Regulatory Impact Analysis

29. Three options have been considered for a future Plan:
- fast eradication;
 - eradication at a moderate pace; and
 - containment.
30. The option for on-going containment and control has been considered as the default status quo position. There is no support from funders, stakeholder organisations or central Government for an option of “no Pest Management Plan”.
31. The option for no Plan, relying on ad hoc control rather than a regulatory option has been tried in the past, and failed. Between the late 1970s and late 1980s, expenditure on vector control was reduced to a very low level in the belief that economic incentives would result in possum trappers and landowners controlling pests. By the late 1990s it became clear that the incidence of disease in livestock was increasing under this regime, so expenditure on vector control was increased. Despite increased expenditure, infection rates only began to decline when a well-resourced national plan was established to manage the disease.
32. The options have been assessed according to the following criteria:

Strategic fit	How well does it meet the objectives of TB management?
Benefit:cost	The ratio of benefits and cost for each option.
affordability	Is the option affordable with acceptable funding arrangements?
feasibility	Technical feasibility and likelihood of success.
resources	Are the necessary resources available?

Option 1: Fast eradication

Objectives

- TB freedom in wildlife throughout New Zealand by 2035; and
- Biological eradication of the disease from New Zealand by 2050.

Options for achieving objectives

33. The focus of this option is intensive suppression of possum populations to remove TB-infected individuals. This work along with the culling of infected livestock will result in the eradication of TB from the country.
34. Areas will be prioritised for possum control by taking into account the current or recent infection in livestock or wild animals, and where eradication will take the longest.
35. The eradication of TB under this option is expected to take 25 years at the cost of \$70 million per year.

Option 2: Eradication at a moderate pace (preferred option)

Objectives

- TB freedom in wildlife throughout New Zealand by 2038; and
- Biological eradication of the disease from New Zealand by 2055.

Options for achieving objectives

36. The activities in wild animal control and approach in selecting priority areas for control in this option are the same as for the previous eradication option. The difference between the two is the level of investment in control, with a lower investment giving a resultant extension in timelines for this option.
37. The eradication of TB under this option is expected to take 30 years, at a reduced average cost of just over \$60 million per year (the preferred option).

Option 3: Ongoing containment and control

Objectives

- TB freedom in an additional 3 million ha throughout New Zealand by 2025; and
- Maintain TB prevalence at 0.2% or less.

Options for achieving objectives

38. The current areas where infected wildlife remain (Vector Risk Areas) would be subject to control operations in buffer zones around them over the long term, to prevent the spread of disease outwards to livestock. The

core of the areas where infected wild animals persist would remain untreated.

39. The on-going containment and control is expected to cost about \$38 million per year for the first 30 years, then reducing to about \$31 million per year in future.

Assessment against criteria

Strategic fit

40. The eradication options best fulfil the objectives of TB management as set out earlier. They will result in the permanent removal of production losses, completely satisfy TB-related market access requirements, and best optimise the value from previous investments and programme efficiencies gained from national management.
41. The containment option also meets all the objectives of TB management by maintaining TB at a low prevalence, which also protects the previous investments made and satisfies market access requirements. This option does not, however, fully leverage the benefits available from national management or previous investments made due to the ongoing funding required.

Benefit: cost

42. A benefit: cost analysis was carried out by independent consultants, drawing on the best available industry and science data sources. The ratios calculated, have similar results for each option:

Fast eradication:	11:1
Eradication at moderate pace:	12:1
Containment and control:	13:1
43. These result reflect that the benefits of eradication can be achieved with a lower level of investment as in option two, and also that the containment option continues to offer benefits. However, as the benefit cost calculation stops at year 30 according to the standard Treasury guidelines, it does not reflect the zero ongoing costs for the eradication options.

Affordability and funding arrangements

44. The containment option is the most affordable on an annual basis, but is the least affordable in the long term. This reflects both the ongoing funding need and the point that the impacts of disease will continue.

45. Both eradication options require higher funding levels in the medium term compared to containment, but both are cheaper in comparison to the current programme. With financial pressures being felt by all funders, the option of eradication at a moderate pace is the most attractive from the affordability perspective.

Feasibility

46. All of the options are technically feasible. A science review of the TB Plan has been undertaken as part of the overall review, and has concluded that the total eradication of TB from New Zealand is possible. The current iteration of the Plan has been successful in providing the proof of concept for eradication, and so the options for the next version of the TB Plan in pushing forward with an eradication option, or maintaining a control option are realistic.

Resources

47. All of the proposed options reduce annual funding available for wild animal control operations. All the options have been developed with a view to modifying some operational aspects of the TB programme such as reducing testing costs now that the level of infection in livestock has been significantly reduced.

48. There is a possibility that the reduction in these aspects of the programme may result in reduced national capacity and capability in those fields. This may adversely affect the ability to respond quickly to future outbreaks of the disease, and reduce the benefits that accrue from having a number of skilled animal control and animal disease specialists around the country. These impacts could occur under all options being considered, but do not outweigh the benefits of the successful eradication or containment of TB.

Summary of the options assessment

49. The assessment is noted on the basis that the options meet individual criteria more or less equally; they have not been given a numerative ranking.

	Strategic fit	Benefit:cost	affordability	feasibility	resources
Faster eradication
Eradication at moderate
Containment and control

ERADICATION OVER 30 YEARS AT JUST OVER \$60 MILLION PER YEAR (PREFERRED OPTION)

50. The proposal sets a budget of \$60 million per year over the next ten years. As progress is made, the annual cost will decline steeply over the second and third ten-year terms. The 30-year eradication period will be followed by about 10 years of monitoring to confirm eradication and deal with any isolated re-occurrence of the disease in livestock or wild animals. The cost of monitoring is expected to be a few million dollars per year.
51. OSPRI as the management agency is tasked with optimising progress within an agreed level of funding. Under the proposed Plan, efficiencies are expected to be gained from a more risk-based approach to herd testing and wild animal control. This is expected to lower the intensity of effort being put into testing livestock for the presence of TB, and in the level of proof for accepting eradication of the disease from wildlife populations.
52. Since the budget was first prepared, OSPRI has requested additional transitional funding of \$10 million for the first two years of the programme to manage the risks in progressing to the new management regime. If Cabinet approves the Crown share of transitional funding, the budget for the first two years of the Plan would be increased to \$65 million per year, reducing to \$60 million per year thereafter. This does not significantly alter the benefit cost ratio.
53. All of the funding stakeholders support the option of proceeding to eradication with an amended Plan that is less than the status quo (\$60 million compared to the current \$80 million), with savings being made in revising operations to take a more risk-based approach to herd testing and wild animal control.
54. All options have been proposed on the basis that the TB Plan should be funded by the beneficiaries of the Plan, rather than by exacerbators as in the current version. The proposed funding shares for the term of the Plan are as follows:

funder	Percent of total	Amount (\$m)
Crown	40	24

industry	60	36
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55. MPI has been involved in discussions around the development of options for the Plan and supports the preferred option.

CONSULTATION

56. Funders and stakeholders including MPI were involved in developing the proposals put forward by OSPRI in the discussion document and proposing amendments to the Plan. Full and summary consultation documents, along with supporting papers, were made available on OSPRI's website. Publicity for the formal consultation and website was provided through media releases and networks of stakeholders contacted through OSPRI and industry organisations.

57. The formal consultation on the proposal document ran from the end of June to the end of July 2015, with late submissions being accepted into August; 239 written submissions were received.

58. Public information roadshows were organised, with 36 information sessions being held throughout the country; 350 people attended.

59. Stakeholder feedback on the proposals was also sought in other ways including an online survey available through the website, and a telephone survey of 175 farmers from the beef, dairy and deer farming sectors.

60. Overall there was strong support for the TB Plan proposal. Following consultation and engagement with MPI and industry funders OSPRI proposed some changes to the original proposal, including:

- provision of \$10 million additional transitional funding; and
- adjustments to the relative funding contributions of the dairy and beef sectors, within the same combined total.

61. The proposed amendments to the TB Plan were generally well received. The most common concerns raised were that:

- the proposal to modify the cattle slaughter levy which funds industry contributions was seen as unworkable and unfair by about 40% of the submitters;
- the use of 1080 was opposed by around 10% of submitters; and
- the move to a lower-cost Plan and a more risk-based approach to herd testing would create risks around operational effectiveness without adequate transition funding; raised by 5% of submitters.

62. In response to these concerns OSPRI is continuing to develop its proposals for the slaughter levy together with MPI, and is seeking additional transitional funding from Cabinet.

Conclusions and recommendations

63. The favoured option is that of a TB Plan that aims to totally eradicate bovine TB from New Zealand within about 30 years, followed by a further 10 years of monitoring and any necessary mopping-up exercises to confirm eradication. This option has an expected average cost of just over \$60 million per year. Over the proposed 40 year period of the Plan the total cost is expected to be about \$1.2 billion.

64. An alternative option of containment and control of the disease at the current Plan's target of 0.2% herd infection rate has been considered. Ongoing costs for this option will remain high at around \$38 million per year for the first 30 years, followed by ongoing costs of about \$30 million per year. This option has the highest estimated direct cost over time, and will have continuing inter-generational costs.

65. The alternative of faster eradication over 25 years would be expected to be achieved at a higher cost of \$70 million per year for the first 10 years, with a total cost of implementation of about \$1.1 billion over 35 years, at which point eradication would be complete.

Economic summary of options

	Fast eradication	Moderate eradication	containment
Eradication date	2050	2055	never
Initial average cost	\$70 million p.a.	\$60 million p.a.	\$53 million p.a.
Total plan cost	\$1.092 billion	\$1.139 billion	\$1.195 billion ongoing
Benefit: cost	11:1	12:1	13:1

66. Although the cost of the favoured option is slightly higher (about 8%) than the faster option, it has the following advantages:

- TB freedom in livestock would be achieved within the same timeframe and at a lower upfront cost;
- this option provides the lowest annual cost to farmers;

- this option is supported by funders, stakeholders and central Government; and
- further material improvements are likely over the lifetime of the TB Plan, allowing further savings to be made.

67. MPI supports the preferred option of eradication at a moderate pace and cost. All three options will have a Crown budgetary commitment that is substantially less than the status quo of \$30 million p.a.

IMPLEMENTATION

68. The objectives of the Plan, as set out in regulation 5 of the Order, will require amendment to notify the change in approach to pursue the total eradication of TB from New Zealand.

Amendments to the Biosecurity (National Bovine Tuberculosis Pest Management Plan) Order 1998

69. Clauses in the Order in Council will need to be amended to take account of the new Plan's:

- expiry date;
- objectives;
- compensation provisions; and
- funding arrangements.

Amendments to the Biosecurity (Bovine Tuberculosis Cattle Levy) Order 1998

70. Clauses in this Order in Council which provides funding for the Plan will need to be amended to:

- introduce the differential levy for dairy and beef cattle;
- amend the levy rates; and
- extend the levy to be applied to exporters of live cattle and deer from New Zealand, as beneficiaries of the Plan under its new iteration.

71. The Biosecurity (Bovine Tuberculosis – Otago Land Levy) Order 1998 will also need to be revoked as a consequence of the new Plan's move to beneficiary funding, whereby Regional Councils will no longer make a contribution.

72. Revised operations in disease testing and animal vector control are measures for OSPRI to develop as part of its operational plan, and are not specified in the Order in Council.

73. As noted earlier, the changes will not impose additional compliance costs or regulatory impacts on affected individuals and companies involved in the beef, dairy and deer farming sectors. The financial costs of the revised Plan will be reduced in comparison to the current Plan.

74. MPI will continue to support OSPRI in implementing the Plan as necessary. This support includes technical and policy advice, statutory appointments, and the exercise of statutory functions under the Biosecurity Act by MPI's chief technical officers.

MONITORING, EVALUATION AND REVIEW

Monitoring and Evaluation

75. Regular review of progress, both annually and in terms of longer term achievement of milestones will be carried out and reported on by OSPRI as part of its statutory reporting obligations under the Biosecurity Act, and reporting responsibilities to funders and stakeholders.

76. The principal measurements that enable OSPRI to report the progress of the amended Plan will be published in its annual Operational Plan. OSPRI will set targets for disease control measurements and progress measures for the vector control programme, and the actual numbers will be assessed and reported against these targets.

77. The principal disease control measurements are the:

- number of infected herds;
- number of animals testing positive for TB, and their status at post-mortem inspection;
- number of animals testing negative for TB, but found to have the disease at post-mortem inspection;
- rate of herds becoming infected; and
- rate at which infected herds are cleared of disease.

78. OSPRI will measure progress in vector control by considering the duration and measured effectiveness of vector control activities against forecasts.

Review

79. The Biosecurity Act requires that the Plan is reviewed again within 10 years, and may be reviewed before that time if the Minister has reason to believe that the plan or part of the plan is failing to achieve its objectives, or that relevant circumstances have changed since the plan began operations.

80. MPI will continue to work with OSPRI and stakeholders to review progress of the Plan throughout its ten-year period. In future reviews MPI will critically evaluate the objectives and achievements of the Plan, and assess various options for future iterations of the Plan.