BIOSECURITY NEW ZEALAND

Approval of National Animal Identification System

Regulatory Impact Statement

ISBN 978-0-478-36304-3 (print)
ISBN 978-0-478-36305-0 (online)

30 November 2009

Ministry of Agriculture and Forestry
Te Manatū Ahuwhenua, Ngāherehere

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Executive Summary

This Regulatory Impact Statement has been prepared by the Ministry of Agriculture and Forestry Biosecurity New Zealand (MAF) in support of the National Animal Identification and Tracing (NAIT) proposal. NAIT aims to enhance New Zealand's animal identification and animal tracing systems, starting with cattle and deer. Changes to legislation and regulations are also proposed to give effect to the NAIT system.

The regulatory impact of these changes is deemed "significant" and will impose additional costs on agricultural businesses, primarily cattle and deer farmers, saleyards, stock and station agents and processors. Substantive consultation with the affected sectors has been undertaken since 2004. Further policy work and consultation will be required prior to final policy decisions.

MAF administers the Biosecurity Act 1993, Biosecurity (Animal Identification Systems) Regulations 1999 and the Animal Identification Act 1993. While these Acts and regulations serve to protect New Zealand from organisms harmful to plant and animal health, they are no longer sufficient to support a national framework for animal identification and traceability. Instead, information on animals is increasingly fragmented, cannot be readily accessed from a range of identification schemes developed for specific purposes, and results in duplication of effort and additional compliance costs.

The NAIT system is proposed to improve the efficiency and timeliness of establishing the animal health status of New Zealand's livestock population. NAIT would be a national framework that will enable the rapid and accurate tracing of animals from birth to slaughter and provide New Zealand livestock owners, processors and government with timely and quality information on the current location, movement history and other key attributes of livestock. NAIT would effectively provide insurance in a changing world. It will do this by linking animals to properties during their life and storing this information electronically. NAIT will start with cattle and deer, species which already have mandatory identification requirements. NAIT is a partnership between industry and the Crown, recognising the public, private and industry good of animal identification and tracing.

The preferred option[1] is to build a NAIT system that meets the core animal identification and tracing requirements, but with the ability to add other data in future. An interim establishment board will oversee the system's development and liaise with stakeholders to manage the transition to the new system. MAF and industry will continue to work together to develop the NAIT solution and will negotiate with other organisations for NAIT to be run by an existing organisation once it is operational, to save costs for the participants. The Crown's FarmsOnLine property database system, once implemented, will provide property information for NAIT, saving compliance and system costs.

NAIT will help manage risks posed by biosecurity incursions or contamination scares, reducing the breadth and length of outbreaks by identifying where at-risk livestock are located in a timely manner. NAIT will help New Zealand to maintain or enhance its access to international markets for animal products, where credible lifetime (birth to slaughter) traceability is increasingly required to support assurances that the final food product is of good quality and safe to eat.

1 NAIT Stage 2 Business Case, version 6.1 October 2009

MAF's preferred compliance strategy is to encourage high voluntary compliance, however, mandatory provisions will be needed as the actions of a few non-compliant farmers or processors can have widespread consequences. The proposed option is to introduce a new National Animal Identification and Tracing Bill into Parliament by mid-2010. This Bill would repeal the Animal Identification Act and amend other Acts to consolidate animal identification and tracing law. The Bill will align existing systems and introduce an overarching framework for animal identification and traceability. Regulations under the proposed Bill would bring cattle into the scheme by mid-2011, deer by mid-2012 and would provide for other species to be brought into the NAIT system as appropriate.

The core information generated by NAIT would be linked to other systems for defined private and public purposes, while balancing the need to protect personal information held by the system. The system needs to be flexible to allow the information to grow and change as collective needs change, and as new technology for data capture and transfer is implemented. The system needs to strike an appropriate balance between holding information in the public interest and compliance costs, to ensure data is up-to-date and has good coverage.

Assuming that NAIT uses property information from FarmsOnLine, the Net Present Value of the NAIT system alone is $141.3 million over 15 years, with an internal rate of return of 32.4 percent and a benefit to cost ratio of 1.81:1.

MAF considers the NAIT project to be high risk due to the complexity of governance and funding arrangements with industry. While NAIT's benefits are difficult to quantify, the costs are not, leading to parties seeking to minimise their own compliance costs[2]. MAF considers the ongoing participation of all the original NAIT partners is an indication of the project's importance. Risks can largely be managed by the governance arrangements for the project, proactive communications, the legislative checks and balances to support NAIT, transition planning for all the affected parties, and Crown funding to cover a shortfall in industry funding in advance of levies.

ADEQUACY STATEMENT

The Regulatory Impact Analysis Team (RIAT) has reviewed this Regulatory Impact Statement and considers it to be adequate according to the adequacy criteria. This assessment has been made using Cabinet's old RIA assessment criteria, as this proposal was developed well before the new criteria came into effect on 2 November 2009. In considering the adequacy, RIAT has taken as given Cabinet's earlier decision to rule out alternative options for achieving the policy objectives

2 This behaviour is also characteristic of other international schemes.

Status Quo and Problem

WHY IS NAIT NEEDED?

New Zealand's economic and social prosperity depends on its international trade reputation and access to key agricultural export markets. Agricultural exports made up 54.2 percent ($21.7 billion[3] of total exports of $40 billion) of New Zealand merchandised exports in 2007/08[4].

Demand for individual animal identification and "whole-of-life" tracing of livestock is increasing internationally due to:

- increased consumer awareness and concerns about food safety, particularly animal food products;
- the need to better manage animal diseases that may impact animal or human health;
- trends towards consumer preference for produce from animals reared under certified schemes featuring production conditions such as organic, never been fed proteins of animal origin, animal welfare-friendly and environmentally sustainable; and
- other factors such as the application of genetic modification and cloning to livestock improvement, which require individual animal identification and tracing systems.

New Zealand needs a world-recognised animal identification and tracing system to be able to meet these needs. Existing systems for cattle and deer in New Zealand meet current requirements for official government to government assurances, but are seen as falling behind the systems of New Zealand's trading partners and competitors. The outstanding driver is the need to improve the efficiency and timeliness of establishing the animal health status of New Zealand's livestock.

The faster and more effectively an animal disease can be contained, managed and (ideally) eradicated from the country, the sooner New Zealand's export markets can reopen (if they have been closed). If faced with an exotic disease incursion right now, the cost to farmers, industry and the government would be considerably higher than if it was supported by a central store of animal identification and tracing data. NAIT will make New Zealand more efficient at managing and reducing the economic impact of exotic disease outbreaks and diseases that are already established in New Zealand.

WHAT ARE THE CURRENT RISKS AND COSTS THAT NAIT WILL HELP MANAGE?

Biosecurity disease outbreaks: MAF has estimated the probability of a foot-and-mouth disease (FMD) outbreak affecting multiple species of cloven-hoofed livestock to be one in 100 years (Pr=0.01). Other important cattle and deer diseases on the list of the OIE notified diseases (e.g. chronic wasting disease, brucellosis, etc) have a higher probability of occurrence than this. In 2001, a Reserve Bank/Treasury study calculated the cost of an FMD outbreak to be $6.1 billion, rising to $10.65 billion over two years. The annualised risk cost ($6.1 billion X 0.01) is therefore just over $61 million per annum. While NAIT would not reduce the likelihood of occurrence of a disease, it would reduce the impact should the disease occur. MAF has estimated that a more effective animal identification and tracing system would reduce an economic impact of an FMD-like outbreak by 4 percent to 10 percent (most likely value = 5 percent).

3 All financial figures are in $NZ using Reserve Bank published exchange rates at the time where converted from other currencies
4 Statistics New Zealand. Merchandise Exports and Imports to June 2008 – http://www.stats.govt.nz/products-and-services/global-new-zealand/2008/default.htm

Management of diseases already in New Zealand: The cost of managing bovine tuberculosis (a disease of cattle and deer) in New Zealand is $80 million per annum. This does not include the cost component of tagging livestock ($1 to $2 per animal) prior to moving to slaughter or to other properties. Further biosecurity benefits from better livestock information include $75,000 per annum saved by not conducting deer and cattle movement studies and approximately 25 percent of improvements in the quality of response contingency plans.

Market Access: with approximately 80 percent[5] of New Zealand's beef and venison exported, and meat and dairy products constituting over 62 percent of agricultural exports, New Zealand must follow international trends to maintain or enhance market share in premium price markets and maintain international consumer confidence in New Zealand beef and dairy products.

The United States (US) is a significant market for beef and veal exports. From September 2003 to 2008 the combined exports of processed and secondary cuts to North America ranged from 180,000 to 230,000 tonnes, with an annual estimated traceability premium of $11.5 to 21.5 million.

Many of New Zealand's agriculture markets, and competitors for those markets, have or are developing mandatory animal identification and lifetime traceability systems (Table 1). Tagging cattle with radio frequency identification (RFID6) is becoming the desired standard for national individual animal identification schemes:

Table 1: Animal ID and tracing systems in key trading countries/competitors

Country	Mandatory	Species	Under Development
Australia	Yes (States)	Cattle using individual RFID eartags	Lifetime tracing of sheep (RFID), pigs
United Kingdom	Yes	Cattle, sheep and other livestock	Phase in RFID
Canada	Yes (Provinces)	Cattle, sheep, pigs, poultry, eggs	Full value chain, national adoption, phase in mandatory RFID, including horses, goats
USA	Initial voluntary	Cattle, production livestock	State-led property identification and voluntary implementation in individual States by sector
South Korea	Yes	Cattle, agricultural products	Phase in RFID
Japan	Yes	Cattle	Phase in RFID
European Union	Yes	Cattle and other livestock, farmed fish	Phase in mandatory RFID for sheep. Each country has own specific schemes
Argentina	Yes	Cattle	
Brazil	Yes (export)	Cattle	National adoption for all animals, optional RFID phase in

Many of these systems were introduced after biosecurity or contamination failures. Canada introduced age verification tracing of cattle after its trade with the US was closed for 18 months following the discovery of a Canadian-sourced cow with bovine spongiform encephalopathy (BSE or "mad cow disease") in 2003. The closure cost Canada $5.8 billion in additional processing costs and reduced exports.

Countries with such systems in place are likely to expect importing countries to operate systems of equivalent rigour, and may restrict market access if identification and tracing systems are considered inadequate. In February 2008, the European Union banned Brazilian beef imports due to deficiencies in Brazilian tracing systems. This cost Brazil $NZ430 million

[5] Meat and Wool New Zealand (2007), personal communication.

[6] http://en.wikipedia.org/wiki/Rfid; the NAIT system proposes a read-only low frequency RFID for cattle and deer.

by mid-March of that year. Recently Brazil announced its intention to expand the system to apply to all cattle, not just those destined for export.

The introduction of NAIT can provide an effective insurance against the consequences of a biosecurity incident such as other countries have experienced, as well as protecting our current market share in premium price markets that are responsive to traceability features.

CURRENT STATE OF ANIMAL IDENTIFICATION AND TRACING LEGISLATION IN NEW ZEALAND

A range of animal identification systems exist to meet specific purposes. Some of these systems are commercially driven and privately managed; others are put in place for a specific national purpose in accordance with legislation.

The Biosecurity Act allows the Director-General of MAF to approve an identification scheme to facilitate pest management, to mark the presence or absence of organisms of particular qualities relating to the purposes of the Act, and/or meet the certification requirements in respect of New Zealand exports. The legislation required the identification devices used in official schemes to be unique, clear, lasting and not confused with any other generally used scheme of identification. Once the identification scheme has been approved as meeting the requirements under the Biosecurity Act, it is largely left to the scheme administrator to inform the Director-General of any subsequent changes that differ from the approved scheme. The Biosecurity (Animal Identification Schemes) Regulations provide some additional requirements on the suspension or revoking of these schemes.

The Animal Identification Act 1993 allows the Director-General of MAF to approve identification schemes for various purposes, to monitor such schemes and also creates offences (such as for defacing or removal of identifiers). No schemes have been formally approved under the Animal Identification Act since its inception, and it has only been used in respect of wandering stock. Instead the Biosecurity Act has been the legislation used to approve official identification schemes, sometimes in conjunction with other legislation. Current official/mandated requirements include identification of:

- Cattle and deer greater than 30 days old for bovine tuberculosis (Tb) testing, and for identifying animals and herds which test positive for Tb[7]. This includes the application of separate identification ear tags for animals that are test positive for Tb, along with the other animals in the herd. The tag remains on the animal until the herd/animal subsequently tests clear or the animal is slaughtered.
- Imported live animals under the Biosecurity (Imported Animals, Semen and Embryo Information) Regulations 1999, to ensure these animals are excluded from human consumption.
- Hormone growth promotant (HGP)-treated animals in conjunction with the Animal Products Act (Animal Products (Hormonal Growth Promotant Specifications) Notice 2004). HGP-treated animals are excluded from some markets and an official declaration is required to this effect.

Animal Status Declaration forms must also be signed by the person sending animals off a property, for cattle and deer movements (for Tb) and for a range of production animals going to slaughter (cattle, deer, sheep, goats, horses, alpacas, llamas, ostriches, emus and pigs). Some of the identification information from official and voluntary schemes (such as the herd identifiers) is included on the form to verify the group of animals associated with the form.

7 See Biosecurity (Animal Identification Scheme) Regulations and Biosecurity (National Bovine Tuberculosis Pest Management Strategy) Order 1999.

The number of individual, voluntary schemes has grown, mainly to link genetic history to individual animal productivity in support of herd improvement. Examples of this are the "MINDA" scheme, run by the Livestock Improvement Corporation, linking productivity and genetics in dairy animals, and various beef and sheep breeding schemes. There has also been some tracing undertaken in support of industry-managed diseases (sheep measles and enzootic bovine leucosis).

The current administrators of the official schemes under the Biosecurity Act are:

- Animal Health Board (AHB) – Tb scheme;
- Livestock Improvement Corporation (LIC) – for production records and genetic improvement. The tags are also recognised for compliance with the Tb requirements; and
- MAF – imported live animals.

The main compliance measures that farmers of cattle and deer must follow for current official schemes under the Biosecurity Act require:

- Purchase of the primary and secondary tags from a tag supplier licensed to supply to an official scheme. Farmers must register their herd with the scheme administrator and use a password to order tags. The tag must be printed with either the AHB unique herd identification number or the LIC unique participant code. Contact details (including address where the tags are to be sent) are updated as they change as part of the tag ordering process. Tag registers are maintained, which allow tags to be printed with a sequential management number; a year (e.g. '09') can also be printed at the option of the purchaser. Generally farmers purchase tags in bulk, either online or at a specialist farming retail outlet, or may choose to use a value-added service provider (for a small annual fee per animal).
- Tagging of animals prior to first movement. Animals going directly to slaughter can use a cheaper non-durable tag which has just the herd/participant code identifier on it. Animals less than 30 days old that move (e.g. young calves moving to slaughter or to a beef rearing property) are exempt and these animals generally lose lifetime traceability.
- Replacing tags that are lost (either a duplicate or replacement tag).

PROBLEMS WITH NEW ZEALAND'S EXISTING ANIMAL IDENTIFICATION SYSTEMS

The various identification schemes have been developed in an ad hoc way to meet specific purposes, with the result that:

- there is incomplete data on properties with at-risk livestock, particularly lifestyle properties and properties that provide temporary animal grazing;
- the data on at-risk livestock, including animals not tagged on their farm of birth, or which are not tagged until the animals are moved to slaughter, is incomplete or absent;
- schemes operating under different rules impose additional compliance costs, including specific tags and requirements to supply information in different formats;
- system costs are not efficient as common data cannot be shared and interrogated;
- most of the systems rely on slow and inefficient paper-based records to reconcile animal movements; and
- there is no existing mechanism to foster a public good, national approach to animal identification.

In summary, industry and government does not know where all at-risk animals are located at any given time, there is no single definitive source for this information that can be rapidly and easily interrogated, and lifetime traceability of animals cannot be assured.

The schemes under the current legislation meet the objectives for which they were put in place, and there are currently no difficulties meeting the required standards for official assurances provided for exported meat and dairy products. However, these schemes do not provide a "whole of New Zealand" approach, and would not meet the animal identification and tracing requirements that would be necessary for verification to support government to government assurances, should New Zealand's animal health status change. Further, the current schemes do not support the giving of commercial assurances that can maintain and enhance New Zealand's market share in those overseas markets where consumers are demanding lifetime traceability.

IMPACTS OF THE PROBLEMS OF CURRENT SCHEMES

These problems impact on farmers and others in the value chain through the possibility of a biosecurity outbreak or emergency, and the consequential reduction in market access for New Zealand's animal products. Without access to a single, quality source of information, the duration and impact of a biosecurity outbreak is increased. Time spent on finding animals, properties and owners at the start of an outbreak causes delays. This means that animals may be spread from infected properties outside of controlled areas. Where new diseases are being managed, it is time consuming and expensive to establish new systems, or to negotiate access to an existing scheme, in order to trace animals and their disease status (e.g. vaccinated for the disease) and provide status reports confirming the disease has been managed. Should a biosecurity emergency occur, New Zealand's market access could be stopped or restricted.

Farmers, having already provided information on their animals for an existing scheme, have concerns about costs of providing duplicate information. Some farmers do not understand why that information cannot be made available for other purposes and are reluctant to provide the information again for a separate scheme or purpose.

The actions or non-participation of a few can have wide ranging consequences.
New Zealand's reputation in the market place relies on verifiable information to quickly identify the source of a contaminant or infection. If this cannot be done quickly, the market reaction could flow-on to affect all farmers with that stock.

When a new pest is being managed, or new information about animals is required (such as HGP treatment for market access), a new and separate system (including a form of identification such as ear tags) would need to be put in place if administrators of existing schemes were not willing to accommodate the new requirements. This would create confusion, require replication of core data and increase compliance costs. Existing scheme administrators effectively end up as gatekeepers, setting de facto "national" rules that may meet their needs but impose additional costs and compliance for other parties who have separate identification needs. For example, it cost the dairy industry $0.5 million to develop a suitable identification scheme to manage a cattle viral disease. This was because industry could not easily and efficiently re-use elements of its data held on an existing scheme. In another example, a new scheme administrator could not implement its scheme easily because the processor software had been written to meet the different requirements of another identification scheme.

Putting in new technology is difficult as farmers, saleyards and processors do not want to use several reading systems to handle multiple identification devices. This makes identification technology changes very slow. While RFID devices are becoming widely recognised as the preferred identifier for high-value animals, it has taken more than 10 years for these devices to be accepted as a secondary identifier for the Tb scheme. Those using RFID had to apply three tags to cattle or deer – two for official purposes and the RFID tag for on-farm management purposes. The farmer's investment in the RFID technology may have had no further use if the animals were sold to another party without RFID.

Establishing lifetime traceability at present is too difficult to verify and some premium market processors do not accept animals unless they have spent their entire life on one property.

Enhancing New Zealand's identification and tracing schemes – starting with cattle and deer

At the instigation of industry, an industry-Crown (MAF and NZ Food Safety Authority) working party was established in August 2004 to collectively look at how New Zealand's animal identification and traceability could be advanced to meet a wide range of needs. The Animal Identification and Traceability Working Group met monthly to look at the issues and possible options. The Group agreed that a national approach was needed that established a set of rules and standards and a body to oversee national animal identification, starting with cattle and deer. This framework needed industry and Crown participation to be successful, consistent with the World Organisation for Animal Health (OIE) outcome-based guidelines[8].

The NAIT project was established in March 2006, and is overseen by an industry-Crown Governance Group comprising senior management representatives of the NAIT partner organisations (all partners remain in NAIT as at November 2009), with an independent Chair (Ian Corney, a sheep/beef farmer in the Central North Island and former Chairman, Meat and Fibre Council of Federated Farmers):

- Dairy Companies Association of New Zealand
- Dairy Insight (replaced by DairyNZ in November 2007)
- Deer Industry New Zealand (DINZ)
- Federated Farmers of New Zealand
- Meat and Wool New Zealand (M&WNZ)
- Meat Industry Association of New Zealand
- Ministry of Agriculture and Forestry
- New Zealand Food Safety Authority.

A memorandum of understanding that sets out the respective roles of the NAIT partners and the methods of managing the project, including decision-making during the design of NAIT, was signed by all parties on 20 April 2007. Work on the detailed design of the proposed NAIT system was facilitated by a Technical Advisory Group (of the same membership as the above) from 2006 and has continued to the present, with the addition of New Zealand Trade and Enterprise and the Stock and Station Agents Association of New Zealand in late 2008 as observers (the AHB had an observer from June 2006 to September 2008).

NAIT PURPOSE AND OBJECTIVES

The primary purpose of NAIT is to safeguard the New Zealand brand and farmers' income by protecting market access for New Zealand animal products through enhancing regulatory and consumer confidence in New Zealand's ability to manage biosecurity and food safety risks. NAIT is a tool to enable the rapid and accurate tracing of animals from birth to slaughter.

The NAIT organisation objectives are:

- provide a credible and quality assured data source to support official and commercial assurances for New Zealand exports;
- retain and enhance access to high-price markets with customer and consumer-driven requirements for traceability of animal products or related value-added initiatives; and
- provide reliable and up-to-date animal location and status information for MAF and industry biosecurity response, surveillance and pest management requirements and to enable animal tracing back to sources of residues, contaminants and diseases.

[8] Chapter 4.2 OIE Terrestrial Code: Design and implementation of identification systems to achieve animal traceability.

The objectives of the NAIT establishment (initial roll-out) project are to:

- put in place an overarching framework, including general-purpose systems and processes, that will enable animal identification and tracing for New Zealand for a wide range of functions (biosecurity, market access, adverse events, policy advice and information across the livestock sector and industry-good activities);
- ensure this is done in a way that will minimise impact and cost to New Zealand farmers and related businesses, while achieving internationally accepted standards;
- ensure that data integrity and privacy are protected and controls over data use are maintained;
- Identify and trace cattle and deer initially, but accommodate other species in future, in accordance with the risks being managed;
- undertake this activity in such a way that recognises an essential partnership between the Crown and industry stakeholders; and
- establish a governance function that defines the strategies and monitors operational activities needed to ensure that the benefits of NAIT are realised for farmers and for the wider New Zealand economy.

INTERNATIONAL BEST PRACTICE

The OIE guidelines state the need for animal identification and tracing to take into account the following key elements:

- desired outcomes, scope, performance criteria of the systems, lessons from preliminary studies;
- design of programme, standardised documentation (means of animal identification, registration of establishments where animals are kept, registration of animals, and recording of animal movements and events other than movements), reporting systems, information system where the data is held and accessed, linking of identifiers to diagnostic/laboratory results and penalties;
- legal framework for implementation and enforcement; and
- implementation of an action plan, communications and training, checking and verification, auditing and review.

MAF reviewed a range of cattle identification and tracing systems operating in 10 countries around the world[9]. The review indicated that the most effective systems were forward-thinking and proactively developed (rather than in reaction to a crisis), with an industry-government partnership working to produce the best system. This included setting and incorporating the rules, standards, and compliance measures into a coherent legal framework. Adequate resourcing was also key. A robust, quality-assured system enhances the acceptance of agricultural and livestock products in international marketplaces. These and other lessons have been incorporated into the overall NAIT design.

KEY DECISIONS ON THE NAIT SYSTEM

In the initial Business Case for NAIT in 2007, five options were assessed for their suitability to deliver the combined needs of the industry and Crown participants in NAIT. Each of the options was assessed in accordance with strategic fit, reflection against international experience, data completeness and management of risks, flexibility to adapt to future needs, management of project risks, feasibility and cost-effectiveness.
The preferred option was to build a separate core, central repository of data holding property, animal and animal movement records and drawing information from approved data sources.

9 Review of Selected Cattle Identification and Tracing Systems Worldwide – Lessons for the New Zealand Animal Identification and Tracing (NAIT) Project, MAF Biosecurity New Zealand Information Paper No: 2009/03 (February 2009)

This core repository would initially hold the minimal data required to meet the objectives of NAIT, but with the capacity to add additional datasets over time once the original system is working well. This option was preferred over other options such as enhancing an existing animal identification scheme, developing a new, single system (with all animal-related data on it), or the status quo. These other options were rejected as being costly, complex, lacking in flexibility to meet changing needs, and offering no improvement in data quality.

The initial assessment concluded cattle would definitely be in the initial rollout, but further work on whether deer should be included was needed. This work was mainly focussed on whether the low frequency RFID device and standard for cattle was also suitable for deer in the New Zealand farm context.

Since the initial Business Case, further substantive decisions by the NAIT partners were made on NAIT:

- **A new system is needed**: the NAIT partners agree that the status quo will not enable the biosecurity and market access objectives to be met. Existing sector activities relating to animal identification, however, will largely continue but be enhanced or reused rather than creating completely new processes. For example, ongoing use of the current tag ordering systems already in place.
- **Legislated system**: the NAIT parties agree that a level of compulsion is required in order to be effective, although the mandatory data that is collected should be limited to the minimum requirements for animal identification and tracing in order to minimise cost and impacts. Expansion to include other species will be driven by the risks to be managed for those species and the participation of that sector.
- **Industry-Crown partnership**: in accordance with the OIE guidelines, a cooperative approach is seen as better than industry or Crown-alone one. The core needs for both are the same, while roles in supporting the system are complementary to establish a publicly accepted and appropriately resourced legal framework. It also recognises that some key markets, such as the EU, expect any national system to be under the control of the government/competent veterinary authority and therefore an industry-only scheme would not deliver all the possible market access benefits.
- **Operational funding**: the agreed approach is a not-for-profit organisation, established with Crown funding but operated with revenue sourced from the beneficiaries of the system, ie both Crown and industry in agreed shares. The previous Government agreed in 2008 to those shares being 35 percent Crown and 65 percent industry. The industry funding will ultimately come from levies once these are in place, and the interim position is that these should be a mix of milk solid levies and slaughter levies, although this decision will be revisited.
- **Species included in initial implementation**: the primary species for identification and tracing are considered to be cattle, farmed deer and sheep, with other possibilities being pigs, poultry, goats, equines, imported animals (irrespective of species) and camelids (alpaca, llama). Cattle and deer are included at the individual animal level in the initial implementation because current obligations for these species, such as for Tb purposes, can be modified to meet the new objectives. Deer will be included, but will follow 12 months after mandating for cattle. The system design will enable recording of information against either individual animals, herd/mob/flock or at property level depending on the risks being managed. The NAIT parties also agreed that the systems should have few exemptions as this keeps the system simple and reduces avoidance behaviours. Bobby calves (animals less than 30 days old going directly to slaughter as a by-product of the dairy industry) are the main exemption.
- **Animal identification devices**: current official tags are two visual ear tags (one in each ear) using bar codes in accordance with Tb management requirements. Where individual

identification of animals is needed, the NAIT parties agreed that accurate recording of animal identification requires automation to minimise human error and save time. Low frequency radio frequency (RFID) ear tags are considered the device of choice for this purpose and have been agreed as the standard for cattle and deer. Increases in tagging cost are offset by the more accurate and automated reading of tags and uploading of information onto databases. Tags will also be applied shortly after birth so that the whole population of animals can be recorded; this compares with current practice to tag animals shortly before they move, which may be several years after birth or not at all. RFID tags will be introduced as secondary tags in current schemes for cattle and deer to facilitate transition and reduce additional tagging costs. RFID tags will be linked to the identifiers on visual tags (i.e. the primary tag) enabling farmers to identify animals without having to have an RFID reader. Industry is also keen for official identification to move to a single RFID tag, saving net tagging compliance costs, provided that the identification of animals can be restored if the official tag is lost.

- **Electronic versus paper submission of animal movement data**: experience in the UK indicates that paper-based submission of movement data is administratively costly and time consuming and should be avoided. The NAIT parties agreed that web-based submission of information by NAIT users directly, or via third-party service providers, or an 0900 (cost recovered) call centre, is preferred.
- **System design – one or two-legged transactions**: a design goal for NAIT is to minimise the cost and effort imposed on farmers to comply with information requirements. Validation of data is a significant cost component. When animals move from one property to another, two parties are involved – the sender and the receiver. A one-legged transaction is defined as where only one of the parties is required to provide information to NAIT, and two-legged where both parties supply the data. The NAIT parties agreed that the default should be two-legged recording of movements, but with certain movements to be allowed as one-legged if defined conditions could be met. NAIT will accredit parties (such as saleyards and meat processors) to operate one-legged transactions recording animal movements on behalf of the farmer. Farmers sending animals to another property will therefore only be required to record the movement on NAIT if they are sending animals to another farm or to premises not accredited by NAIT.
- **NAIT to reuse property data to be held on FarmsOnLine**: the NAIT parties agreed that, in order to meet wider biosecurity requirements, the Crown needed to have a complete dataset of all rural properties, along with the livestock and crop details, but that this was outside of the scope of NAIT. A separate property registration process on NAIT for only cattle and deer properties (or for only livestock properties) would, however, result in duplication and added cost to meet biosecurity needs. Instead a single, accurate and up-to-date property register was needed. It was subsequently agreed that this property register (called "FarmsOnLine") would be developed and managed by the Crown, and that NAIT would use this property data to support registration of properties for NAIT purposes at no cost.

As part of the full (Stage 2) Business Case, a matrix of options were also considered (see Annex 1) around governance, operations, delivery of systems, information scope, software acquisition and implementation/transition.

The preferred option is to build a NAIT system that meets the core animal identification and tracing requirements, but with the ability to add other data in future. An interim establishment board will oversee the system's development and liaise with stakeholders to manage the transition to the new system. MAF and industry will continue to work together to develop the NAIT IT software solution and will negotiate with other organisations for NAIT to be run by an existing organisation once it is operational, to save costs for the participants. The NAIT

proposal assumes the FarmsOnLine system, approved by Cabinet in October 2009 and managed by MAF, will provide property information which is key data for NAIT. Some of the different options have legislative implications, primarily around governance and the need to retain flexibility to add other data over time.

NAIT Legislation

MAF and the dairy, beef and deer sectors agree that in order to have an effective national animal identification and tracing framework that can accommodate multiple species, a level of mandatory compliance is required. The competitive nature of livestock sector business interests means that the private sector alone is unlikely to reach voluntary agreement on the type of identification scheme needed. Industry processors also do not want to run independent tracing schemes or use such schemes to differentiate product, as this may not protect the overall New Zealand brand and would create further costs in reconciling information for biosecurity purposes.

The legislative work programme supporting NAIT, should it proceed, would provide an overarching and enduring mandatory framework for animal identification and tracing that supports biosecurity, market access and related functions, starting with cattle and deer. The legislation will support:

- provision of reliable and up-to-date database and information to meet MAF and industry biosecurity response, surveillance and pest management needs, and enable traceability back to likely source of residues, contaminants and diseases; and
- retention and enhancement of access to higher-price markets with customer and consumer-driven requirements for traceability of animal products.

The NAIT system relies on identifying all qualifying livestock and properties, and maintaining a complete and up-to-date dataset. If individual farmers were able to opt out of providing information to NAIT, the integrity of the whole system would be compromised.

ALTERNATIVE LEGISLATIVE OPTIONS

Options to give effect to the NAIT system cover a mix of legislation, regulations and system rules and standards. The overall legislative options considered were:

Maintain status quo – continue with an enabling approach to animal identification and tracing for specific official purposes, leaving other animal identification to be driven by commercial imperatives. This uncoordinated approach is not acceptable due to the increasing likelihood of New Zealand failing an audit (such as one undertaken by the EU) on its overall animal identification and tracing status due to a lack of national data standards and real gaps in the system (such as missing animals). In addition, creating a national dataset (such as that needed for biosecurity) would be increasingly difficult if a growing number of incompatible schemes were put in place. MAF and industry would not have timely access to a credible and consolidated data set for biosecurity responses or contamination scares. There would be ongoing duplication and compliance costs for participants. The status quo option would mean New Zealand would continue to fall behind its competitors and trading partners, risking the loss of market share and/or access to premium price markets within an estimated six years.

Enhance the Biosecurity Act and regulations – make changes to the existing law to implement a national approach to animal identification and tracing. While this is the easiest option, the legislation's purpose limits the options for wider uses envisaged by NAIT and does not effectively deal with issues of property and people (e.g. privacy in terms of data access, use and disclosure). The Biosecurity Act enables other parties to do biosecurity-related activities. The Biosecurity Act does not, however, support the Crown facilitating a national coordinated approach to animal identification and tracing. The Crown has an interest in accessing the information for responding to biosecurity incursions, managing pests, maintaining or enhancing current market share, and in supporting infrastructure development

and on-farm productivity. The compensation provisions of the Biosecurity Act (compensation for verifiable losses for directions given under the Act) should not apply to animal identification and tracing. In addition, the legislation and regulations related to the Biosecurity Act and other Acts that establish existing schemes (e.g. the Animal Products (Hormonal Growth Promotant Specifications) Notice 2004 made under the Animal Products Act 1999) would need to be reviewed to manage any necessary transition to the NAIT framework.

Amend the Animal Identification Act – the legislation is outdated, focusing on hide markings and ear notches rather than national frameworks. This Act would require major change rather than amending or applying additional sections. Effectively the entire Act would need to be changed in content to give effect to the NAIT system. The LAC Guidelines suggest that such legislation should instead be revoked if no longer required and other legislative instruments be developed in its place.

Repeal the Animal Identification Act, enact a new NAIT Act with associated regulations for each NAIT species, and manage changes to other Acts and regulations (as required) as consequential amendments – a new NAIT Act would establish the overarching framework for animal identification and tracing. It would set out the roles and responsibilities of the various parties and enable different species- by-species requirements, including share of costs, to be set out in regulations. There are no impediments to repealing the Animal Identification Act as no identification systems have been approved under this Act, although provisions relating to wandering stock may be migrated to the new NAIT legislation. Some minor changes to sections 50 and 51 of the Biosecurity Act may be required to give effect to the NAIT Act and to avoid confusion with overlapping legislation between the two Acts. Section 9 of the Wild Animal Control Act (which references the Animal identification Act) will also need to be amended. Other Acts (or associated regulations) that refer to the Animal Identification Act or that establish existing schemes may require consequential amendment, but further work on this would be needed in conjunction with the departments responsible for those Acts.

Establish a legal framework based on all at-risk species (livestock, plants, forestry, etc) incorporating the uses of data across the full value chain – this option was considered in light of the broad scope of the FarmsOnLine project (which considers all rural properties and their biosecurity risk not just livestock properties and stock). It also reflects lessons from other countries, such as Canada, which started with animal-focused identification and tracing and is now looking at the primary production sector as a whole in terms of tracing of food, including food with variously sourced ingredients. Several attempts to get a more holistic view of "value chain information management" have not been successful to date, however, and the view is that New Zealand industries have not yet reached a state of maturity to encompass this approach. Any legislative approach taken does, however, need to recognise future capability and requirements with a wider scope than simply live animal tracing alone.

Preferred Legislative Option

Option d) Repealing the Animal Identification Act, putting in place a new NAIT Act, with associated regulations for each NAIT species (initially cattle and deer), and managing changes to other Acts and regulations (as required) as consequential amendments, is the preferred option because a new NAIT Act would:

- encourage a single national approach to identification of livestock to support multiple purposes (including biosecurity and market access);
- consolidate all the legislation for animal identification and tracing into one piece of primary legislation;
- enable the wider issues of privacy, data access and use to be met;

- facilitate industry-Crown partnership as required by international guidelines;
- provide a modular approach to add mandatory obligations for persons associated with other livestock species over time;
- allow additional industry information needs to be linked to NAIT information, reducing duplication and costs for industry; and
- provide sufficient flexibility to enable the schemes that are put in place to evolve over time to meet new and emerging animal identification and tracing needs.

The primary purpose of the NAIT Bill will be to impose requirements on New Zealand farmers and other participants in the supply chain up to the point of slaughter, and to:

- set out the purpose of NAIT;
- set out the safeguards and rights to access, use and disclose NAIT information in accordance with the purpose of NAIT, and the protection of personal information in conformity with the Information Privacy Principles set out in the Privacy Act 1993;
- outline the roles and responsibilities of the Minister, MAF, the NAIT governance entity and other parties, including those with respect to the holding of information and its use for purpose;
- set out offences and penalties for not complying with NAIT obligations or inappropriate use of the data held by NAIT;
- enable regulations for "NAIT species" to be established, including the setting of levies to support industry's equitable contribution towards the cost of NAIT, but enabling each sector to consider and manage its own biosecurity and market access risks at an individual, flock/herd or property level;
- provide for transition of current official schemes made under the Biosecurity Act to the NAIT system;
- amend sections 50 and 51 of the Biosecurity Act, and section 9 of the Wild Animal Control Act relating to identification of organisms; and
- repeal the Animal Identification Act 1993 (migrating sections on wandering stock); and
- possibly make consequential amendments to other Acts or associated regulations in light of the above.

New regulations (for each NAIT species, and starting with cattle and deer) would require:

- registration of properties with NAIT species (to identify properties of interest) including farms, saleyards, processing plants, etc where these animals can be held or kept. Information would need to be provided on other animals on the property and possibly on crops to support improving information to support biosecurity activities;
- identification of animals in accordance with standards for identification devices prior to their first movement (or within a defined period, whichever is sooner);
- registration of animals on NAIT;
- recording movements of animals between properties on NAIT and the final fate of animals (e.g. death, slaughtered, exported). When animals move between properties the person in charge of animals must advise NAIT of the animal being moved and the property it is moving to. Accredited properties involved in a movement (e.g. saleyards and processing premises) can provide this service on behalf of farmers;
- handling of animals with lost identification, and those which have not been identified; and
- levies for meeting each industry sector's share of the NAIT costs.

Subject to Cabinet approval of NAIT, further consultation is planned with livestock sector farmers and industry stakeholders on the content and enforcement strategy of the proposed NAIT legislation and associated regulations. Submissions could also be made to the Primary Industry Select Committee following the first Parliamentary reading of the Bill.

There is support for NAIT being mandatory for participants. During April 2009, a telephone survey on the NAIT proposal was undertaken with 642 dairy, beef, deer and lifestyle farmers. The conclusions in regard to farmer acceptance of traceability becoming mandatory under proposed NAIT legislation were:

- 80 percent of farmers believe traceability will become mandatory in New Zealand at some stage, while a further 10 percent believe it will never happen and 10 percent are unsure;
- of the farmers who believe traceability will become mandatory, the most common timeframes cited were 3, 5 and 10 years from now; and
- on average, 58 percent of farmers are supportive of a mandatory traceability system, compared with 17 percent not supporting mandatory requirements and 25 percent who were neutral.

OBLIGATIONS POSED BY NEW LEGISLATION AND REGULATIONS

Obligation to register cattle and deer properties

Properties would need to be registered and assigned a property identifier (specific to the property and staying with the property throughout changes in ownership) with the MAF FarmsOnLine property register used this purpose. This is a one-off cost on the implementation of NAIT and whenever properties are sold. Persons with obligations under NAIT to register properties will log onto a web-based NAIT system, verify data on the NAIT register, add some new information relevant to NAIT, and obtain their property identification number. The property registration process itself will be at no cost, apart from farmer's time, estimated at between 15 minutes (for properties already in FarmsOnLine) to an hour.

This obligation will affect more than 48,000 cattle and deer properties, 90 sale yards, 28 cattle processors, 11 deer processors and 6 mixed cattle and deer processors, and whatever proportion of the estimated 20,000 lifestyle block owners who hold NAIT-qualifying species. Farmers without computer access (estimated at 12 percent) will be able to approve a third-party service provider to do this on their behalf, or register directly with NAIT via an 0900 number (charged to the user of this service to avoid cross-subsidisation). The NAIT obligations are similar, but incremental, to existing obligations for cattle and deer farmers to register their herd and property details with the AHB in order to purchase tags under the Tb regulations made under the Biosecurity Act.

Obligation to tag cattle and deer and register on NAIT

Persons in charge of animals will have obligations to tag animals with NAIT-approved tags and to register each animal onto NAIT within a short time of birth or prior to the animal moving (whichever is sooner). This is an ongoing cost. There will be a one-off cost to tag existing animals with the NAIT tag (a lead-in time for older animals will be given). As cattle and deer must currently be tagged for Tb management, the process of purchasing tags does not change from the farmers' perspective. Main changes will be:

- tagging all animals before they move and within a short time of birth (closing a loophole where animals < 30 days old can be moved without tags) except for bobby calves going directly to slaughter for which current commercial tagging is deemed adequate. Approximately 1.015 million beef calves, 1.5 million dairy calves going into dairy operations (excluding bobby calves) and 0.66 million fawns born each year will be affected by this change.
- an RFID tag will replace one of the two existing bar-coded tags.
- animals on properties going directly to slaughter can no longer use direct-to-slaughter tags (currently applied immediately prior to transport to slaughter). The farmer must therefore

carry the cost of the tagging of their animals for longer than under the current system and purchase a more expensive tag if currently using direct-to-slaughter tags.
- while the tag purchasing process will hold the tag information on NAIT, the farmer (or designee) will be required to verify the date when the tags are applied to animals.

Obligation to provide information to NAIT when animals are moved

When an animal is moved, information must be provided to NAIT. The minimum information requirements will be the property identifier (of the sending property), the RFID identifier of each animal being moved, and the date and approximate time of the start of the movement. The equivalent information must be provided to NAIT at the conclusion of the movement.

To mitigate the costs and impacts, the RFID identifiers of animals moving to saleyards and slaughter premises only need to be read by the receiving business if it is accredited to do so by NAIT. Farmers will therefore not be required to purchase RFID readers to meet their NAIT obligations. It is anticipated that some farmers will still purchase RFID readers in any case as they will also want to take advantage of individual identification to track the progress of animals on-farm (e.g. recording individual weight gain) and record treatments. The NAIT costings estimate 30 percent of dairy farmers, 10 percent of beef farmers and 8 percent of deer farmers will purchase RFID readers within three years of NAIT being mandatory.

The obligation to report slaughtered, dead on farm and missing, or exported animals

At point of slaughter, processors will have an obligation to advise NAIT that an individual animal has been slaughtered. This enables NAIT to differentiate slaughtered animals from the records of the live population. This action can be done concurrently with the reading in of animals to slaughter and therefore no incremental cost is incurred. A similar requirement is needed for the relatively few animals that are exported from New Zealand (in conjunction with other export certification requirements). Farmers generally already note the animals dying on farm in any case, but would have a small annual labour cost of uploading this information to NAIT.

Obligation to share in the operating costs of NAIT

A key decision has been the allocation of NAIT operational costs across the participating sectors and the Crown. Any agreed allocation will need to be dynamic over time to allow for changes in value and size within and between sectors, and to allow for other species to join the NAIT system on a similar cost-sharing basis as the initial participants.

The NAIT legislation will allow levies to be set to offset each sector's share of costs (estimated about $1 per animal per annum) for the core NAIT operations (database, call centre, compliance and enforcement, communications). A slaughter levy for beef (2.34 million animals) and deer, and a milk solids levy for dairy animals (307 kg of milk solids per animal per annum) is proposed. This is similar to the approach adopted and regulated under the Tb strategy and the collection process can be managed concurrently at marginal administrative cost.

It is proposed that the levy rates be altered annually using rolling three-year average values of the annual movements for adult cattle and deer (from NAIT) and the national farm-gate prices for beef, venison and milk (from DairyNZ and M&WNZ). NAIT data will be a key input to the industry cost-share calculations, but the number of animal movements will not be known accurately until this data is available. In the meantime, best guess estimates are being used. This approach will adjust the industry contributions to NAIT in a measured way, correcting for changes (economic and numerical) in sector size. Changes to levies will be retrospective in nature.

Costs and Benefits

FARMERS

The costs of NAIT for farmers are largely marginal costs utilising existing regulatory requirements for Tb, and will vary from property to property based on the type of operation. The marginal cost of RFID tagging is estimated to be $2 to $3 per animal (dependent on the number of tags purchased and supplier used). The cheaper direct-to-slaughter tags ($0.84/tag) will no longer be used as they are not durable for the life of the animal. Farmers may optionally purchase RFID readers ($1,000-2,500 for a hand-held reader) but this is not required under regulations. The cost of recording onto NAIT is estimated to be $0.29 per animal or about $3.24 million per annum. Approximately 2.65 million beef, 1.76 million dairy and 0.7 million deer move per annum (including to slaughter). The on-farm additional cost of individual cattle and deer traceability per head per annum is about $1. This includes tagging, reading of tags, data transfer/reporting to NAIT and associated technology costs on farm.

Table 2 provides examples of the NAIT costs estimated per farm type based on national models ("average" property type) developed by MAF for its farm monitoring programme. The marginal on-farm cost of implementing NAIT in cattle and deer is estimated to average $12.5 million per annum (over 15 years), with additional tagging costs being 65 percent of total NAIT on-farm costs.

Table 2: National model of NAIT costs as a proportion of annual operating expenditure (AOE).

Type	Description	AOE	NAIT start up (% AOE)	NAIT annual (% AOE)
Dairy	392 breeding cows	$658,200	$1,058 (0.16%)	$659 (0.10%)
Beef	Central North Island mixed sheep/beef property with 385 cattle and 149 breeding cows	$276,905	$866 (0.30%)	$460 (0.17%)
	Lower North Island mixed sheep/beef fattening property with 290 cattle, sell/purchase 236 cattle per annum	$245,168	$653 (0.27%)	$642 (0.26%)
Deer	North Island deer property with 440 mixed age breeding hinds, 110 rising 2-year hinds, 658 other deer, selling 484 animals per annum	$194,462	$1,800 (0.92%)	$1,886 (0.96%)
	South Island deer property with 568 mixed age breeding hinds, 92 rising 2-year hinds, 701 other deer, selling 503 animals per annum	$228,505	$2,212 (0.96%)	$2,297 (1.00%)

ACCREDITED PREMISES (SALEYARDS, PROCESSORS)

Saleyards (including stock and station agents who act on behalf of farmers) and processors will be required to record individual animals entering their premises and to invest in RFID readers (hand-held or/and panel) and make premises modifications in order to do so. They will also need to amend their processes and management systems to comply with NAIT. Total set up costs for the 45 processors and 90 saleyards (over a 3-year period) are estimated to be $1.2 million and $2.5 million respectively. The annualised costs are $1.3 million for saleyards and $0.450 million for processors.

TRANSPORT OPERATORS

Transport operators are proposed to have no additional obligations under the first rollout of NAIT. It is anticipated that some transport operators may wish to provide a tag reading service to farmers where this is mutually agreed. There may be implications for transport operators if moving an animal from a property without an approved tag carries an offence (although the general view is that the farmer moving the stock has responsibility for compliance). While some NAIT parties consider that transport operators should have a greater role than this, the Road Transport Forum opposes any new NAIT obligations.

TOTAL COSTS AND BENEFITS

A conservative cost benefit analysis was completed for NAIT and FarmsOnLine in accordance with Treasury guidelines, assessing the marginal costs and benefits over the status quo (in 2009 terms).

While detailed costs can be assigned to the various parties, the quantification and assignment of benefits is largely at a macro-economic benefit. The approach on the latter was to quantify the minimum level of benefits required. Additional non-quantified benefits (such as dairy-specific NAIT benefits or reduced barriers to the inclusion of other species) and reduced costs (such as falling tagging and reader costs), if realised, would provide a greater return on investment than stated in the cost benefit analysis.

The costs are:

- **NAIT system** – the development and operating costs of the core system, which is sensitive to vendor pricing;
- **On-farm costs –** the costs of tagging animals and uploading information to NAIT. This is sensitive to reading and tagging infrastructure cost. The marginal tag cost for NAIT, however, has fallen from $3.90 to $2.25 since 2004, with competition among manufacturers leading to an expectation of ongoing price reductions;
- **Processors and intermediaries costs** – the infrastructure set up and ongoing operating costs to read animals at saleyards, stock and station agents and by meat processors; and
- **FarmsOnLine system** – the developing and operating costs of FarmsOnLine.

The main benefits quantified in the cost-benefit analysis are:

- **Biosecurity and surveillance response efficiency** – reduced costs from more reliable and up to date information on animal movements, better decision-making, and reduced delays and costs of tracing. NAIT and FarmsOnLine will improve New Zealand's biosecurity capability and reduce the costs and impact of future responses once these systems are established.
- **Biosecurity reputation in the beef market** – loss from diversion of beef into low value markets.
- **Market response to traceable beef** – access to premium high-value beef markets;
- **On-farm offset costs** – the savings on reading and recording, on farms that choose to purchase tag readers, and savings on ear tags, following planned transition to a single tag system.

Table 3: Quantitative costs and benefits of NAIT and FarmsOnLine (over 15 years)

	Base case $m	Minimum $m	Maximum $m
Quantified Benefits (% of total benefit)			
Biosecurity efficiency and effectiveness – reduced costs of response activity and mitigate flow-on impacts (10.6%)	29.0	25.8	45.5
Biosecurity reputation in the beef market – avoidance of loss from loss of access to key markets (35.6%)	98.0	61.2	158.2
Market response to traceability – maintain access to premium high-value beef markets (44.1%)	121.4	23.4	217.6
On-farm cost offset – savings on reading and recording on-farm of animals (8.7%)	23.8	23.8	23.8
Other quantified FarmsOnLine benefits (2.1%)	6.1	6.1	6.1
Present value of Total Benefits	275.2	137.2	448.0
Quantified Costs (% of total costs)			
NAIT development and operating costs (33.7%) shared between Crown 35% and industry 65% (Budget 2008 Appropriation)	57.6	43.5	57.6
On-farm costs – additional industry tagging and data upload costs (50.3%)	85.9	66.2	111.9
Processors & Intermediaries costs – industry infrastructure setup and ongoing operating costs (7.2%)	12.3	5.3	12.8
FOL development and operating costs (9.4%) borne by Crown	16.0	16.0	16.0
Present value of Total Costs	170.7	130.6	197.1

The property data held by FarmsOnLine will be freely accessed and re-used by NAIT, reducing costs for the NAIT system as property would otherwise have to be built into its design and maintained by the NAIT parties. This 'free' data-reuse benefit for NAIT is therefore a true NAIT benefit and is not double-counted in the combined NAIT and FarmsOnLine cost benefit analysis. Assuming that NAIT uses FarmsOnLine property data, the Net Present Value of the NAIT system alone is $141.3 million over 15 years, with an internal rate of return of 32.4 percent and a benefit to cost ratio of 1.81:1.

FarmsOnLine stands on its own merits, however, with a benefit to cost ratio of 1.31:1. FarmsOnLine will also provide complete and accurate spatial data to enable full biosecurity benefits to be delivered. Cabinet approved FarmsOnLine on 19 October 2009 and it is planned to be operational from March 2011 prior to completion of the NAIT core system. The dairy industry supports NAIT primarily for the foundation dataset that it provides and the generic capability to protect the rural economy. NAIT, either directly or as an enabler for extended functionality funded directly by the dairy industry, will help the industry to mitigate risk around biosecurity (both exotic and endemic diseases), inhibitory substances, milk residues, animal welfare and market claims. The diary industry would also benefit from the enhanced collection and analysis of surveillance data, and from efficiencies in re-using data to support future endemic disease management.

The introduction of NAIT will bring forward the uptake of RFID technology that is already occurring in the deer, cattle and sheep sectors. Non-quantified on-farm benefits will arise from the use of RFID to quickly and accurately capture individual animal identifiers and match this data with other information specific to the animal, and from using the combined information for improved farm and animal management. Farmers using this technology will have better information and more efficient farm management systems.

Benefits for saleyards and meat processors have not been quantified in the cost benefit analysis, but benefits will arise from better information to support processing decisions about livestock prior to slaughter and through a reduction in manual processing. While there may be

no actual reduction in staff numbers at saleyards and processing plants, the freed-up labour could be redeployed for other tasks. Additional overheads would be avoided by having a single mandatory identification system in the form of NAIT, rather than needing to run a range of tag reading/recording systems for different identification schemes.

NAIT participants will have opportunities to offer new services to their customers based on RFID technology. They will also benefit indirectly from continued or improved access to high-value international markets and from the reduced impact of an adverse biosecurity event. The proposed NAIT system has a number of other unquantifiable qualitative benefits:

- enhancing New Zealand's capability to respond to future developments in international animal traceability and identification practices;
- re-using technology for other commercial applications (through the whole supply chain);
- building on New Zealand's international leadership in livestock health, welfare and existing livestock traceability systems;
- enhancing New Zealand's reputation as a trusted supplier of meat products with individual animal traceability features and verification of source to the farm of origin; and
- improving customer and consumer confidence with verifiable tracing to international standards.

The analysis shows that benefits in international meat markets resulting from enhanced traceability are likely to be significantly higher than the cost savings arising from an exotic animal disease outbreak or from surveillance and disease management programmes. Assuming a 25 percent average difference between prices in high and low-value markets, the analysis shows that the loss of access to high-value (premium) markets, due to a lack of traceability, results in an estimated lost revenue of $93.6 million (if the access to Japan and South Korea beef markets is affected) to $360.6 million per annum (if access to all high-value markets is affected) for the same volume of exported beef.

In addition to the annualised cost for running the core NAIT system of $5.6 million, the total marginal annual cost of implementing NAIT for the cattle and deer sectors is $11.7 million and $1.1 million respectively. This cost equates to 3.1 percent of the value total beef exports to Japan and South Korea, 1.9 percent of the value of beef exports to countries with traceability requirements, and 0.8 percent of the value of high-value beef exports. Assuming a 1.25 percent premium for traceable venison exports, the deer sector would receive $5.1 million in annualised benefit[10]. This benefit is similar to the estimated additional biosecurity benefit from NAIT for that sector.

Will NAIT increase the costs to New Zealand domestic consumers?

The flow-on impacts in terms of meat prices for domestic consumers are expected to be negligible, given the small additional costs to the farmer and processor from NAIT. For example, the value of a 300 kg steer at $3.30/kilo ($990) compared with the estimated $3.00 NAIT cost. Furthermore, with the majority of livestock-based product going overseas, New Zealand is a price taker. The domestic price therefore follows international price, certainly in terms of long-term trends, regardless of the cost of production. The wholesale price schedule varies weekly and generally reflects changes in international price. Supermarkets also prefer to keep meat prices relatively steady (high) as they say that consumers do not like highly volatile prices. There is unlikely to be a domestic premium for traceability if all beef is traceable under NAIT, unless possibly compared to pork or lamb. While NAIT is unlikely to increase overall cost of domestic supply, premiums may occur in

[10] NAIT and FarmsOnLine Cost Benefit Analysis, NAIT business case Oct 2009

niche markets where people are willing to pay more for preferred attributes (e.g. organic) linked to tracing.

NAIT Governance

The NAIT Governance Group initially agreed to the option of a Crown Company structure to govern the NAIT system, in the form of Public Finance Act Schedule 4 Company, subject to an agreed constitution for that organisation, and a review after the mandatory NAIT system had been in place for a year. Such an institutional arrangement would meet the mixed objectives of NAIT, within industry-Crown partnership, while encouraging stakeholder engagement. This was preferred to a Crown Entity company model because of the lower level of Ministerial oversight and the greater flexibility needed under the partnership. This option was subsequently reviewed with a preference for an alternative organisational form that could deliver NAIT at lower system operating cost.

The NAIT Governance Group has subsequently agreed to an establishment board (as a limited liability company) having funding agreements with MAF and the three industry funding partners (M&WNZ, DairyNZ and DINZ). There would also be a memorandum of understanding with all the NAIT partners. The nature of the long term entity to run the NAIT system will be finalised during the build phase. Partnerships or contractual relationships with existing industry organisations are preferred over a stand-alone entity because of the reduced costs to the NAIT participants.

It is likely that the NAIT organisation will take the form of either a stand-alone industry-owned company, with the majority of operational activities contracted to a third party, or a business unit incorporated into the structure of an existing industry organisation. The chosen option will depend on whether a suitable third party interested in running NAIT can be found and the nature of its current governance. A board of the NAIT governance entity will be necessary given the quasi-regulatory roles proposed. The legislative and regulatory framework will need to support whatever future governance structure is proposed, including one which may be largely run by industry.

Other species

Initially, the NAIT system will be established to identify and trace cattle and deer only, but the system will be designed to allow other livestock species to be included over time In the 2005 consultation on the NAIT proposal, indications of interest were received from the poultry, pig and horse sectors. Some parts of the sheep industry have also expressed interest. It will be up to each livestock sector to determine its own animal identification and traceability information needs, and an agreed implementation date. The overall system will be designed to accept movement records based on herd/mob/flock, as well as the initial implementation of individual identification, to provide wider scope for future species requirements.

Implementation and Review

Given the number of participants in the system, new NAIT obligations are proposed to come into force an estimated six months from the date of notification in the *New Zealand Gazette* of the regulations for specific species. A prior voluntary phase is proposed to enable early adopters (e.g. of RFID) to use the core NAIT system. Advantages of this approach are that those wanting to gain some of the NAIT tracing benefits sooner can do so prior to full uptake and the NAIT system can be further finetuned using real data. A staged entry may also reduce some of the stress and/or system capacity issues that will inevitably occur as the mandatory deadline for registering properties and stock approaches, given the large number of NAIT participants. The introduction of RFID as a secondary device option in current official schemes means farmers can purchase these devices sooner and avoid retagging costs for older animals once the regulations come into effect.

NAIT can prove its success when the identified benefits have been achieved within the cost and time parameters agreed by all parties. Three key areas where NAIT anticipates specific payback will be reviewed to confirm realisation of benefits. These are:

- **improved customer/consumer confidence with verifiable tracing to international standards***:* an annual assessment of a specified number of meat and dairy companies on the benefits attained or losses avoided (provided in confidence to a third-party) and an economic assessment, utilising measurements and standard practices, will be undertaken.
- **faster resumption of market access following any adverse biosecurity or food safety event***;* and
- **higher accuracy, reliability and faster response in case of a biosecurity or natural disaster event**:

  These will both be reviewed via benchmark information gathered at a 2010 incursion response simulation, so comparisons against each identified benefit can be assessed via future biennial test events. MAF would review progress against the benchmarks after each event.

The NAIT project has followed the *Guidelines for Preparing E-government Business Cases (SSC 2007)*, with independent quality assurance (IQA) undertaken by KPMG. The majority of issues raised by IQA were responded to by adding explanatory text to sections of the (Stage 2) Business Case to improve clarity. More significant work included the addition of detail on the proposed form and ongoing operation structure of NAIT governance and further work on the project and risk management plans.

Risks

The Gateway 2 evaluation has categorised the NAIT project as "high risk". This reflects the complexity of stakeholder relationships (eight NAIT partners) and potentially adverse stakeholder reaction to NAIT's new compliance requirements. MAF notes that there are incentives for participants to seek to minimise their own costs or compliance obligations even if this leads to higher costs (or risk exposure) for other participants. The challenges of developing new multiparty strategies, policies and procedures add complexity and risk that would not normally be experienced for a project operating within a single organisation. Other risks outside the project's control include the impact of a major food safety scare or biosecurity outbreak, prior to the NAIT system being in place.

High or significant risks to the project's ability to deliver include:

- negative publicity from lobby groups or around potential uses of NAIT data;
- processors and sale yards not making the necessary investment to operate the system;
- dependency on third-party data providers (such as processors and administrators of existing tag schemes) to adopt new processes and systems;
- possible difficulties in data matching and migration from third-party data providers;
- not being able to find a suitable organisation to operate the system;
- the possibility that industry funding may not be available in advance of levies[11]; and
- resources are too limited to cope with the number of registrations when the mandatory deadline approaches.

A project risk register was developed outlining the potential impact and methods to mitigate each risk. Many risks are mitigated by early and ongoing engagement, and proactive media and specific communications targeted at multiple levels within stakeholder organisations. Consultation will be aimed at the proposed new legislation and regulations, finetuning of the design and increasing understanding of the new requirements. The final solution must be practical to implement, while addressing the problems and ensuring the benefits for biosecurity and market access are realised. The levies and compliance costs need to be understood by the farming public and balanced with the benefits that will be delivered from the system.

The development of transition plans will clarify timelines and responsibilities for the various parties with NAIT interdependencies. The funding risks in advance of levies, in terms of incomplete or insufficient operational funding from both industry and Crown, may compromise timing and quality of delivery and delay in establishing the operational unit. Mitigation of this risk would be achieved through gaining Cabinet approval for the Crown's share of operational funding to be frontloaded and industry (through levies) paying more in the initial operational out-years to offset the additional Crown upfront funding.

The enforcement strategy relies on a high level of compliance. On the basis of stakeholder feedback, including survey, it is reasonable to assume that this is possible given the acceptance for a mandatory approach and current compliance for bovine Tb purposes. There are also strong incentives for processors, in particular, to support compliance, for example on the values for untagged stock. The NAIT design adopts a risk-based approach where those participants with the highest risks (on average) will be those that interact the most with NAIT. The more frequently stock are moved, the more frequently movement recording is required

[11] M&WNZ, DairyNZ and DINZ have committed to shared funding of $0.8 million in each of 2009/10 and 2010/11 to assist with building NAIT. There is therefore a shortfall in industry funding of $4 million over these years (based on industry meeting 65 percent of the costs of the core NAIT system)

and the greater the cost. Those that introduce least risk, such as animals going directly from farm-of-birth to slaughter, bear a lower NAIT cost.

Data use concerns will be addressed in the system design and legislation. Ownership of the NAIT data will reside with those owners of rural properties and persons in charge of animals who provide their data. The NAIT governance entity will apply standards and business rules for the collection of NAIT data, and will act as custodian of the data it collects and holds securely on behalf of the data owners.

The core IT build has only minor technology risks because the design of NAIT is similar to general inventory systems and to existing animal identification and tracing systems that are already in use. While there will be ongoing challenges around adoption of other emerging animal identifier technologies, NAIT has adopted a "follower" rather than a "leader" approach to mitigate risks of international acceptance of novel technologies. New technology can be introduced as secondary identification in the first instance.

Any delay in negotiation with an existing organisation to run NAIT would add additional costs and delay benefit realisation. A worst-case scenario would be failure of negotiation for establishment of the preferred option, with the default being establishment of a stand-alone NAIT entity at a higher long-term cost. Mitigation of this risk could be achieved through seeking Ministerial support for the preferred approach and through the appointment of a dedicated negotiation team.

Risk management for the project uses the *Australia/NZ Risk Management Standard AS/NZ 4360:2004*, with risk monitoring and management involving the programme management team, risk 'owners', and an external person with experience in a related industry implementation activity. Ongoing IQA will report monthly to project governance. The most risky elements of the project are business establishment and change management rather than the IT build, and this should reflect in monitoring priorities.

Consultation

Consultation on NAIT has been a key feature of the project. The changes will affect more than 48,000 commercially-operated cattle and deer properties, some 135 sale yards and processing plants, and the proportion of 20,000 lifestyle block owners that own or graze cattle or deer on their properties.

Since 2004, when industry initially approached MAF and NZFSA seeking a collective industry-Crown approach to animal identification and tracing, the parties have been working in partnership (firstly as part of the Animal Identification and Traceability Working Group and then as parties to the NAIT project).

An industry consultation document (July 2005), *Proposal for an Enhanced National Animal identification and Traceability System (with an initial focus on Cattle and Deer)*, set out the broad outline of the possible new system. The 88 written submissions received (primarily from a mix of industry-good bodies and stakeholder groups, and individual farmers) reflected broad support for the principles in the document. General assent to proceed was given, provided there was more detail on the design of the system and ongoing dialogue as the practical details were sorted out.

Key decisions, including the initial (Stage 1) Business Case were directed back to the respective boards of the NAIT partners for endorsement and the Business Case was submitted for new initiative funding from 2008/09. The previous Government approved in principle a Crown contribution to support the NAIT project in Budget 2008. Crown funding is proposed to cover initial capital funding and 35 percent of the ongoing operational funding. Industry funding of the project to date has been via M&WNZ, DairyNZ and DINZ using reserves and membership funding contributions.

A public discussion document (June 2008), *National Animal Identification and Tracing – Enhancing New Zealand's animal identification and tracing systems*, sought refinement of the NAIT concept. A total of 86 submissions commented directly on the NAIT system, with 26 indicating support, 10 strongly opposed and 50 having reservations about the system as proposed. The latter number was strongly influenced by 25 of the submissions reflecting very specific concerns from two industry associations. The issues raised were followed up in the stakeholder consultation process.

A project team comprising representatives of the NAIT partners and contractors was formally established to complete the full (Stage 2) Business Case, develop the policy/legislative framework and to facilitate wider industry consultation on the NAIT proposal. Further information has been made available through information sites at National Fieldays (2006, 2007, 2008), a national tour of special NAIT open invitation meetings with farmers across the country, and specific meetings with focus groups and interested parties on specific concerns around meat processing plants, sale yards, Royal Agricultural Society (AMP shows), the Road Transport Forum, tag suppliers and existing scheme administrators. More than 20 public meetings were held and 729 individual stakeholders addressed by August 2009.

A key discussion point at meetings has been the proposed costs for industry participants, particularly farmers. The biggest concern is the cost difference between the current Tb secondary tag and the proposed NAIT RFID tag. A cost calculator was developed so farmers could calculate their likely NAIT costs. The NAIT partners consider that the actual costs for NAIT are likely to be lower than those publicly stated.

A 2009 telephone survey of 642 farmers was also undertaken by a market research organisation on behalf of the NAIT Governance Group, to assess the support for a mandatory animal traceability system. Ninety-three per cent of those surveyed were aware of the issue for the agricultural sector. More than three times as many (58 percent) supported the mandatory NAIT proposal than were against it (17 percent).

MAF convened an advisory group of MAF, project team and industry representatives from the Technical Advisory Group to prepare an outline draft of the legislation and proposed regulations, and to determine where the proposed rules sit best in the hierarchy of primary legislation, regulations/notices, and operating procedures. The NAIT system rules and operating procedures will be developed first. It is expected that the discussion around draft legislation will continue to be refined, according to the following timetable:

Early-mid 2010	Draft law changes completed and introduction into the House
June-2010	Compliance and enforcement regime with resources and budgets confirmed
End 2010	Regulations including levy arrangements drafted
June 2011	Legislation for NAIT in place
October 2011	NAIT goes live, mandatory cattle inclusion and levy collection
July 2012	Mandatory deer inclusion and levy collection

The NAIT Governance Group has unanimously signed off on the full (Stage 2) Business Case. All NAIT partner organisations, except Federated Farmers, have also ratified the NAIT business case.

GOVERNMENT DEPARTMENT/AGENCY CONSULTATION

The following agencies have been consulted on the proposal: the New Zealand Food Safety Authority, the Department of Conservation, the Ministry for the Environment, the Ministry of Foreign Affairs and Trade, the Office of the Privacy Commissioner, Te Puni Kokiri, the Ministry for Research, Science and Technology, Statistics New Zealand, the Department of Internal Affairs, the Ministry for Economic Development, Land Information New Zealand, and the Crown Company Monitoring Advisory Unit.

As a major Information Technology project, due to the breadth of stakeholders impacted by the NAIT project, NAIT has also be subject to the Crown's guidelines for major IT projects including IQA (carried out by KPMG), Gateway 2 review, and to control agency oversight from the State Services Commission, Treasury, and the Department of the Prime Minister and Cabinet. This provides assurance that all relevant standards and guidelines have been followed, and provided further guidance and discussion around the proposed governance structure.

Annex 1: Selection of Options for Delivery of Six Key Elements of NAIT

There are six key elements of NAIT that could be delivered in various ways that were considered during the analysis of options. These six key elements are largely independent of each other and so were evaluated separately to find the overall preferred option for NAIT, as summarised below.

Governance – the form of the NAIT entity:

- Option G1 – NAIT as a Crown company under Schedule 4 of the Public Finance Act 1989. NAIT would be subject to some parts of the Crown Entities Act 2004, with up to 49 percent industry shareholding.
- Option G2 – NAIT as an industry-owned and funded entity. Under this option the Crown would not have a role in the oversight of NAIT (except through the administration of the law and through contracts around the purchase of data). Industry would, however, need to pay for the NAIT assets.
- Option G3 – NAIT as a new organisation combined with an existing organisation. Under this option NAIT partners would negotiate with other organisations for NAIT to become a part of that entities' core business, with a corresponding change to the constitution.
- Option G3a – Negotiate with an existing industry organisation to develop a new combined organisation.
- Option G3a is the preferred option as it maximises the opportunity to leverage existing industry expertise and infrastructure if combined with option D2 (see below).

Operations – NAIT as a standalone operating entity or operations undertaken by a third-party:

- Option OP1 – NAIT operational unit established as a stand-alone business.
- Option OP2 – NAIT operations are run by a third-party.

Both options are viable, but Option OP2 is the preferred option whereby operations are undertaken by a third-party (or a new combined organisation) due primarily to a lower annual operating cost that results in a significant difference in the net present value of the NAIT proposal.

Delivery – the programme of work to deliver the NAIT system:

- Option D1 – Programme of work undertaken within the new NAIT entity.
- Option D2 – Programme of work undertaken within MAF.

Both options are viable but Option D2 is preferred as it provides for a quicker start-up (and therefore earlier realisation of benefits) and reduces the risk and time delay associated with establishment of new business infrastructure and competencies in the new organisation. Instead, NAIT can leverage off existing infrastructure in MAF.

Scope of information to be included in the NAIT database:

- Option B1 – Enhance an existing system, building additional NAIT functionality into a current animal identification system.
- Option B2 – Partial solution with reduced solution functionality, building only some of the requirements identified in the combined needs analysis into the NAIT system.
- Option B3a – Wider scope of information management, meeting all the identified requirements of all the NAIT partners, including genetic information and other attributes.

- Option B3b – Minimal scope of information management.

Option B3b, the minimal scope option, is preferred. Initially, the NAIT solution will manage only core animal identification and tracing information i.e. NAIT will contain only the data and functions required to support core animal identification and tracing. The system will be designed in a manner that makes later enhancements and links to other industry data as easy as possible. Future functionality extension will be subject to cost benefit analysis and quality assurance to ensure that architectural integrity is maintained.

Acquisition of NAIT software:
- Option S1 – Custom build software solution
- Option S2 – Customise an existing solution (including systems in use in other countries)
- Option S3 – Base solution on a commercial package.

A request for proposal was formally advertised on government's GETS procurement site and evaluated 21 expressions of interest were received and evaluated. The NAIT design team considers that the build-and-operate (5 year) indicated costs do not differ sufficiently across the implementation options for any one option to stand out. Should NAIT be approved, the next phase of the project will seek proposals for all three options (S1, S2 and S3), along with related services that may be offered.

Implementation and transition
- Option T1a – Mandatory compliance for all parties on the legislated date or following a transition period.
- Option T1b – Phased or delayed mandatory use of the system, enabling early adopters to voluntarily become NAIT-compliant.

Option T1a is preferred as it delivers the NAIT benefits earlier and because exemptions can be confusing, resulting in wider non-compliance. In addition, the processing industry has concerns around maintaining parallel systems for bar-coded and radio frequency tag recording for any extended period. Transitional planning, however, reduces farmer impact without compromising benefits. It is recommended that NAIT is implemented with a fixed mandatory date (coinciding with legislation) for cattle in the first instance. A transition period may apply to deer (one year delay in mandating has been proposed) to allow for further investigation and alignment of NAIT processes with farming practice in this sector.