A REPORT

Review of Biosecurity Influences of the Last Decade

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1.0 INTRODUCTION

The past decade or so has seen major changes in the development and management of biosecurity in New Zealand.

The Parliamentary Commissioner for the Environment (PCE) is undertaking a review of New Zealand biosecurity from an environmental management perspective with a particular focus on key aspects of biosecurity risk which may have resulted from changing policy and practices.

- The main purpose of the review is toTo identify any gaps or weaknesses and highlight the strengths of the current system for managing biosecurity risks to the environment.

As part of the overall review, this document is a retrospective review of significant policy, legislative, institutional or other changes that have been key influencing factors in the development of the current biosecurity system.

1.1 Background

Three key issues affect New Zealand's approach and thinking on biosecurity:

1. As a trading nation, the pressure to move goods more efficiently and cost-effectively around the world is an ongoing issue in an increasingly global economy.

2. Current international scientific thinking indicates that effective quarantine is practical only in an island nation such as New Zealand. Nations with land borders find effective quarantine impractical and not cost-effective.

3. New Zealand has a unique but declining indigenous biodiversity.

New Zealand's traditional dependence on export earnings from primary production has resulted in the development of a complex interrelationship of protection through import control balanced with the demands of increasing primary production through agricultural extension and policy.

These conflicting demands and the need to balance them have been the responsibility of the Ministry of Agriculture and Forestry (MAF) to administer.

2.0 EXECUTIVE SUMMARY

The key factors identified as influencing the integrity of the biosecurity process are identified and areas requiring further analyses highlighted. The scope of this review did not allow for in-depth study of issues relating to the key influences, merely an identification of general strengths, weaknesses and gaps. Further work is needed in the policy areas identified.

Ministerial responsibility for Biosecurity brings together the biosecurity activities of the Ministries of Agriculture and Forestry, Health and Fisheries, and the Department of Conservation under one portfolio.

The objective is to ensure:

- A consistent and complete approach to the development of biosecurity policy
- The management of pests, weeds and diseases detrimental to:
    - — Economic growth
    - — Biological diversity
    - — Human health

The biosecurity portfolio is intended to provide an opportunity to create a centre of excellence for the development of biosecurity standards and specifications, compliance/audit and purchase of biosecurity services. However, this has not occurred.

The four main issues identified in the course of this study are:

- The integrated biosecurity risk management model as a strength
- Current inter-departmental harmonisation and responsibility for funds as a weakness
- Funding of biosecurity as a weakness
- Border inspection under development as a weakness

2.1 Integrated Biosecurity Model

The integrated biosecurity system is considered robust enough to be scrutinised in global forums as a good model. However, it has been developed as an uncoordinated response because of a theoretical model developed under the pressures of reducing government funding and dramatic changes in global commodity market. After the initial development, change has been ad hoc and the model's integrity compromised. The programme is good but requires a review.

In summary, the model consists of:

- Risk analysis providing a basis for policy formulation in an international market place committed to the principles of free trade, and in a domestic market where society is increasingly demanding involvement in the decision making process.

- Risk assessment utilising quantitative and qualitative means of assessing the effects of a proposed action with the management of these risks focusing upon a strategy to reduce the probability of an adverse effect occurring.

- Risk communication involving the various stakeholders in the consultation process and communicating to them the nature of, and the rationale behind, the policy decision.

2.1.1 POLICY IMPLICATIONS

Improvements will be gained if all stakeholders apply this methodology across all importation pathways. The focus to date has been on commercial importation of "risk" goods and passenger arrivals.

Strategies to look at accidental importation, contamination and "hitchhiking" pests associated with the importation mode -- aircraft, ships, containers, etc -- need to be developed to achieve the same efficiency as the existing model.

2.2 Harmonisation

While there is a Biosecurity Council consisting of representatives from MAF, Health, MfE, Conservation, etc, the primary driver for development and implementation of Biosecurity strategies has been MAF who has a relatively narrow "risk perspective" based in part on trade obligations.

Within MAF, there is a professional perception that suggests that the other parties to the biosecurity council are not at the level of development to make technically

sound risk assessment decisions and that the commercially focused pathways being managed by MAF will be sufficient to provide an effective barrier.

2.2.1 POLICY IMPLICATIONS

International obligations have had a very high influence on the Biosecurity strategy to date:

- Future developments need to consider the expectations of society, the significance of the risk, the technologies and management measures that are available, their efficacy and cost as well as our international obligations.

- Improved harmonisation with the key stakeholders to develop and implement the biosecurity strategy will need to be achieved. This will enable consistent decisions to be made on the level of risk that New Zealand is prepared to take in respect of the introduction of pests, weeds and diseases.

2.3 Funding

The New Zealand Government has historically recognised the public good component of Biosecurity by providing facilities and adopting charging policy that is designed to recover only a proportion of the total cost.

The development of pest risk management systems has allowed the Government to pass the "desirable" level of biosecurity management onto the private sector when the clear biological rationale is to benefit that sector.

The Varroa mite is an example of the private sector selecting a sub-optimal level of self-regulation, which has large national economic consequences.

It is also an example of the shift in government philosophy. After a decade of expensive incursion responses and a declining reliance on the primary sector in the economy it is likely that the decisions, justifications and arguments around who should pay for the Biosecurity systems will hinder the future development of the Biosecurity strategy and paralyse the response activities for new and uncategorised pests.

Inadequate assessment of long term risks posed by pests outside the "commercially" identified ones will continue to drive inactivity.

2.3.1 POLICY IMPLICATIONS

A framework is required that ensures a consistent approach to the funding of risk management strategies. A comprehensive analysis of risks posed by all import pathways and consideration of whom and in what proportion those who generate

risks and those who benefit from the management of risks should meet the costs against the taxpayer represented as the "public good".

The costs of emergency response procedures should be clearly separated from normal operational costs because this distorts MAF operating costs and complicates the decision-making process if funding is being sourced internally from other MAF operations.

2.4 Border Inspection

The perception that the Border Inspection Service is the first line of defence is incorrect as outlined in the integrated Biosecurity System. However, its importance in the effective Biosecurity system has been underestimated and under-developed as M.A.F has focused on other theoretical systems-based approaches.

The uncertainty of reporting lines and the threatened shift of structure over a ten year period have resulted in its under development in the Biosecurity strategy. It has also resulted in a lack of investment in technology. What investment has occurred has been a reactive response to incursions such as fruit fly.

The commercial/user pays focus of the Border inspection service under the MAFQual structure and subsequent separation from the policy/regulatory infrastructure, which was the result of the policy/delivery split, saw a shift in emphasis to revenue drivers not interception drivers. *Example: Focus on an international training business at the expense of internal training recorded in the MAF audit reports*.

This focus combined with the threat of losing this operation through several government border reviews resulted in inspection being excluded in the developing risk strategies and has weakened inspection as an effective risk management tool.

Its ability to act as an early warning system is severely hampered by:

- Lack of interception analysis and resource
- Workload
- Interception and incursion comparisons

Within the biosecurity model, inspection is seen as a compliance check. However, it could be developed to act as a monitoring function that identifies early pressures at the border from new threats or circumstances along any given pathway.

2.5 Policy Implications

Measurements of how effective the inspection component is in the Biosecurity system will require an improvement in information collected. The following information is required:

- Actual Inspections versus actual importation.
- Interceptions versus inspection.
- Analysis of interception records.
- Incursion analysis—a review of diagnostic capability.
- A review of border inspection's role in the biosecurity model.

3.0 BIOSECURITY STRATEGY

Quarantine as a biosecurity strategy is first recorded during the Black Plague epidemic. It was an accidental discovery from forced isolation of 40 days, hence the literal interpretation of "40 days separation".

3.1 Historical Overview: 1900–1950s

The geographic isolation and long sea voyage effectively maintained an environment in New Zealand that was largely free of the world's most significant and economically threatening pests and diseases.

This was further enhanced by New Zealand's historical use of formal quarantine procedures, often involving maximum-security quarantine facilities on islands.

With increasing speed of air and sea transport, pest and disease transfer is an increasing global issue. Governments found that control through quarantine no longer offered the protection it once did, was slow, costly and did not address all the pathways that were evolving.

3.2 1950–1990: Prohibition, Certification, Inspection and Treatment

Moves to regulate plant and plant products, to reduce the spread of pests and diseases in traded material, were undertaken by OECD member nations in the early 1950s.

3.2.1 THE EMERGENCE OF THE DEPARTMENT OF AGRICULTURE

The Port Agriculture service was developed in response to current thought and as a response to the 1956 Swine Fever outbreak in Devonport. This combined plant and animal health risks though a single inspection agency for the first time.

The development of internationally recognised certification, legislation to support prohibition and the establishment of treatment facilities supported development of "Border Inspection" as the first line of defence.

The thinking of the day was every potential incursion must be imported and therefore limited points of entry reduced the possibilities. Targeted inspection

would therefore increase the potential to intercept the incursions. High-risk imports of live animals and plants were still processed through maximum-security quarantine facilities.

3.3 1990–present

3.3.1 MAF INTEGRATED BIOSECURITY SYSTEM

The present integrated approach has been developed to ensure compliance with international requirements, and to expedite the importation of plants, animals and their products and other regulated articles with minimum intervention, whilst maintaining New Zealand's plant and animal health status.

The components of the integrated New Zealand MAF Biosecurity system are:

- International agreements/standards for sanitary and phytosanitary certification
- Crop surveys (recently developed to pest surveys)
- New Zealand import health standards (based on pest risk analyses)
- Supply countries' export certificate systems
- Border inspection (compliance inspection)
- Biosecurity direction/clearance
- Compliance information (feedback to supply countries)
- Plant pest surveillance
- Exotic disease and pest response

3.3.2 INTERNATIONAL AGREEMENTS

New Zealand is a contracting party to the FAO International Plant Protection Convention. New Zealand has an obligation to comply with the conditions and requirements of the World Trade Organisation (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures. This means sanitary and phytosanitary measures must be transparent, technically justified and sufficient

only to protect animal and plant health (as opposed to protecting a non-competitive domestic market).

3.3.3 FIELD SURVEYS

Specific field surveys are undertaken on an annual basis to maintain the accuracy and integrity of import health standards. This process is moving toward specific pest or disease surveys.

3.3.4 IMPORT HEALTH STANDARDS

Import health standards can be considered as being one of the first lines of defence against unwanted pests and diseases. They are the specifications with which a supply country's export certification system must comply.

3.3.5 SUPPLY COUNTRIES' EXPORT CERTIFICATION SYSTEMS

Supply countries' export certification systems are an integral part of the New Zealand MAF biosecurity system. The major means of sanitary/phytosanitary control of imported material in many countries is to sample the consignment on arrival and make a decision based on what was detected. New Zealand differs in that it specifies its sanitary/phytosanitary requirements before export. This places a responsibility on New Zealand MAF to ensure the supply county is completely informed of any requirements (in the form of import health standards) and that the country has the opportunity to discuss/debate technical justification.

3.3.6 BORDER INSPECTION

New Zealand is able to implement effective phytosanitary control systems at points of entry because it is an island nation. Inspection is carried out at the border to check the imported produce for compliance with New Zealand's import health standards. This is undertaken for all controlled pest entry pathways.

Where possible, identification of the pest is required to species level, as feedback to supply countries is a necessary component of maintaining/improving New Zealand's biosecurity system.

There are operational standards for import inspection systems, as well as import health standards.

3.3.7 BIOSECURITY DIRECTION/CLEARANCE

Before imported produce can be released for distribution within New Zealand, it must be given biosecurity clearance by an inspector. Clearance can only be given if an inspector is satisfied that all the requirements of the import health standard have been met. This includes any post-entry requirements.

3.3.8 COMPLIANCE INFORMATION FEEDBACK TO SUPPLY COUNTRIES

New Zealand MAF has implemented a comprehensive phytosanitary feedback database to provide timely (within seven days of interception) and accurate advice of all instances of non-compliance by imported products with New Zealand's sanitary/phytosanitary requirements.

3.3.9 PEST SURVEILLANCE

Pest entry pathways cannot be totally controlled and pests will continue to enter New Zealand undetected. Should a pest of major concern enter New Zealand, early detection is essential if eradication is to be implemented and effective.

3.3.10 EXOTIC PEST RESPONSE

If a targeted quarantine pest is found in New Zealand, an eradication programme based on a pre-defined management strategy is implemented. For non-targeted quarantine pests, should one of these be detected, a measured response may be initiated following identification.

4.0 BIOSECURITY FOCUS ON AGRICULTURE

The primary focus of the biosecurity strategy so far has been the protection of New Zealand's status as a supplier of primary produce that is substantially free of the world's most serious pests and diseases.

This focus on agriculture security is reflected in the following MAF Mission statements:

1986	Protect the health status of New Zealand's plants. livestock and fish resources from pests and diseases, which would impede our ability to export agricultural produce competitively.
1988	MAF Qual's mission is to facilitate the agricultural and horticultural industry's ability to market plants, animals, fish and food products internationally through quality management systems designed to meet the requirements of clients.
1990	To develop and help sustain the land and water resources and associated industries vital to the growth of New Zealand's economy into the 21st century.
1992	Maintain our competitive advantage as an export nation by keeping out unwanted pests and diseases, thus preserving New Zealand's unique environment.
1995	Enhancement of New Zealand's reputation as a country largely free of plant and animal pests and diseases.
1998	To contribute to the Governments agricultural and fisheries objective for enterprise development growth, and profitability, sustainability, market assess and agricultural security.

Statements in 1990 and 1992 reflect environmental considerations that emerged as part of the Resource Management Act development.

The development and implementation of a framework which enables consistent decisions to be made on the level of risk New Zealand is prepared to take in respect of the introduction of pests, weeds and diseases is now a recognised goal.

This is within the context and constraints of available government funding and is called Vote Biosecurity. However, MAF contends that it is not possible to achieve zero risk.

This stance is not completely accepted or well understood by the other parties involved in the Biosecurity portfolio. MAF's commercial interest in maintaining

the biosecurity budget may be in conflict at times with other stakeholders' demands.

The current biosecurity strategy is a world leader but all stakeholders must have a level of confidence. Consequently, it is necessary to decide how far it is possible and practical to go in reducing biosecurity risk.

5.0 SIGNIFICANT EVENTS IN THE DEVELOPMENT OF THE BIOSECURITY STRATEGY

The following chronologically lists the key influencing events categorised as Legislative, Policy, Institution or Incursion Drivers:

1985/86	**Legislative Driver: Waterfront Reform**
	MAF's agreement to allow off-wharf examination of stored products at approved importers' premises resulted in a proliferation of examination points to be serviced.
	Implication: Considerable pressure on staff with reduced efficiency and limited resourcing, especially vehicles. Containment problems increased. Pilfering at ports was also an issue.
	Institution Driver: Technology
	In February 1985, the World Health Organisation approved the addition of a New Zealand-developed residual treatment to the two traditional methods of aircraft disinfection ("off-blocks" and "upon arrival").
	Implication: Airline operators benefit from faster clearance and increased passenger comfort. Reduction in resourcing for MAF, both staff and materials.
1986/87	**Legislative Driver: Reduction in Government Appropriation and Introduction of User Pays**
	Government's decisions to progressively reduce MAF's financial appropriation over the next five years by approximately 5% per annum and introduce cost recovery. MAF began to examine its structure to ensure that it could compete.
	Implication: Reduced funding results in staff reduction through non-replacement of staff leaving.
	Legislative Driver: Deregulation of Imported Fruit and Vegetables
	The deregulation of fresh fruit imports saw a significant increase in the volume of imported fruit and vegetables coming into New Zealand from a range of importers.
	Implication: Fragmentation of trade resulted in proliferation of inspection sites.
	Institutional Driver: Restructure
	Changes in the government funding, global market and increased protectionism contributed to the pressure for MAF to restructure.
	Implication: Border inspection and related quarantine functions were incorporated into the new quality management business, charged with protection of plant, animal and fish status, quality assurance and validation of food safety and trueness to label. MAF Qual's mission

	was to enable and enhance the ability to market plants, animals, fish and foods through quality management systems designed to meet requirements of clients.
1987/88	**Policy Driver: Emergency Response Procedures (ERP) Review**
	A review was undertaken to ensure that MAF's restructuring had not left New Zealand with a reduced capacity to respond to an emergency.
	Implication: The increasing development of ERP as a contingency was a result of the increasing pressure at the border and loss of confidence in the inspection process.
	Institution Driver: Technology
	Airport "detector dog" programme was initiated with the intention of detecting unwanted items while reducing actual inspections of luggage and packages. The "one-stop red/green" immigration service was introduced in conjunction with other agencies to speed up passenger flow on arrival by air from overseas. Reassessment of passenger risk profiles was undertaken to make inspection more effective. Changes were introduced in the procedures for residual insecticide spraying of aircraft cabins and cargo holds.
	Implication: These initiatives allowed reallocation of resources.
1988/89	**Policy Driver: Strengthen Agriculture Security**
	A new National Agriculture Security Service was launched. The service regrouped five separate agriculture security activities protecting New Zealand's plant, fish and animal health status and environment. The restructuring was intended to ensure cost-efficient, high-level protection is maintained as a basis for New Zealand's trading in primary produce.
	Implication: Harmonising of biosecurity issues within MAF. The start of an integrated strategy.
1989/90	**Policy Driver: Border Service Review**
	A public service review recommended the establishment of one agency to handle all border functions. However, Government decided to continue with existing arrangements.
	Implications: Opportunity for MAF Qual to re-evaluate border service function. Considerable resource effort was required during the submissions process.
	Incursion Driver: Fruit Fly
	The discovery of three fruit flies in a trap in South Auckland in March 1990 sparked an intensive control and containment operation.
	Implication: This was the beginning of offshore quarantine initiatives. Bilateral quarantine agreements were signed with six Pacific Island nations to help minimise the risk of pest incursions.
1990/91	**Policy Driver: Agricultural Security**
	Emergency pest and disease response procedures were further developed. The chief technical officers endorsed new border inspection standards.
	Implication: Start of a performance-based business relationship.

	Institutional Driver: Technology
	Risk management principles were developed and accepted as an evaluation tool for imports.
	Implication: A move away from reliance on inspection for detection, to inspection for compliance as a more effective tool.
1991/92	**Legislative Driver: Tariff Reduction**
	The announcement by government of a new tariff regime post-1992 to 1996. This resulted in considerable discussion and negotiation in defining the effects of tariff levels on significant agricultural imports.
	Implication: Increased volumes of imports stretch staff and resources. Increased volumes of mail inspected (up 118% since 1990/91).
	Policy Driver: Global Trade Strategies
	Contribution to the GATT Uruguay Round negotiations continued following release of the Dunkel paper. Proposals in the paper go a long way towards meeting New Zealand's requirements for liberalising trade. MAF and the Ministry of External Relations and Trade (MERT) promoted New Zealand's aims within the Cairns Group. MAF supported the Minister's advocacy of trade liberalisation at the OECD.
	Implication: Quarantine requirements seen as a possible trade barrier.
	Policy Driver: Increase Prosecution Caseload
	Handling of substantial caseload increase of the National Flora and Fauna Investigation Unit (NFFIU) with 25 prosecutions actioned between March 1991 and June 1992.
	Implication: An attempt to introduce "instant" fine system with proposed legislative changes.
	Incursion Driver: Bee Disease
	The strength, versatility and technical integrity of MAF's Emergency Disease and Pest Response (EDPR) was demonstrated during a suspected exotic bee disease emergency in Nelson. Four thousand hives in the area were inspected.
	Implication: Industry/MAF contingency plans and surveys developed.
1992/93	**Policy Driver: MOU Signed with Ministry of Forestry**
	A memorandum of understanding was signed between MAF and the Ministry of Forestry for the delivery of services by MAF border services.
	Implication: Duplication of resources involved in activities such as passenger, mail and yacht clearances was avoided.
	Institutional Driver: Technology
	Border services obtained accreditation by the New Zealand Tourism Board as a Kiwi Host business. More than 60% of staff completed the Kiwi Host training programme. Programmes to meet ISO 9002 quality systems standards for border services were well advanced and external accreditation was sought in December 1993.
	Implication: Quality system approaches are standardising inspection procedures and developing strategies.

	Incursion Driver: Seizures at the Border
	Increased numbers of tourists to New Zealand placed additional demands on border services. Large numbers of seizures of high-risk quarantine material continued to be made including an average of 250 a week, which had not been declared. Live fruit larvae were detected on 24 occasions (22 were from commercial consignments of fruit).
	Institutional Driver: Technology
	A National Plant Surveillance Database (NPSD) was developed. The programme was to facilitate information collection by all the agencies that identify plant pests in New Zealand.
1993/94	**Legislative Driver: Biosecurity Act 1993**
	The new Biosecurity Act came into force.
	Institutional Driver: Technology
	Risk profiling of passengers was revised after several surveys.
	Implication: Standardisation of statistics was undertaken.
	Incursion Driver: Asian Gypsy Moth
	Asian gypsy moth egg rafts were detected. Monitoring has been reinforced within MOU with the Ministry of Forestry. A number of exotic ticks discovered in animals imported into New Zealand and on humans returning from overseas.
	Implication: Development of strategies to deal with fruit fly are broadened to other issues and other departments.
1994/95	**Policy Driver: Pest Management Strategies**
	The development and assessment of several regional and national pest management strategies, under the requirements of the Biosecurity Act, were undertaken.
	Policy Driver: Global Trade
	Work continued in various forums such as the OECD, the WTO's Committee on Agriculture and the Committee on Trade and the Environment to further New Zealand's agricultural trade liberalisation objectives. Preparatory work for the next trade round also commenced.
	Implication: The need for Import Health Standards.
	Policy Driver: Import Health Standards
	Import health standards were developed and reviewed, using risk analysis methodologies, at the same time as export health conditions were negotiated to gain market access for New Zealand agricultural exports. Liaison with industry sectors took place to ensure that industry priorities for import and export conditions were being met.
	Incursion Driver: Fruit Fly
	Fruit fly was detected in surveillance trap in Whangarei. White fly incursion was also found in Auckland greenhouses.
	Implication: Exotic Disease and Pest Response (EDPR) programmes working well and gain full accreditation. Acceptance that incursions are going to continue and new technology and increased resourcing is required.

1995/96	**Policy Driver: Bilateral Arrangements**
	The WTO/GATT Sanitary/Phytosanitary Agreement provided a framework for the development of much improved bilateral trading and market access.
	Implication: All MAF Regulatory Authority (MAFRA) businesses worked with respective industries to exploit these opportunities.
	Policy Driver: Risk Assessment Review—EDPR
	A review of the New Zealand programme set up to respond to the introduction of exotic diseases was completed. It focused on clearly establishing the functions for which government has a responsibility either by way of providing or purchasing services or being accountable for outcomes.
	Policy Driver: Risk Assessment Review—Animal Health
	New Zealand's animal health surveillance programme review, which was initiated in December 1994, was completed. The review recommended that the programme should more clearly specify the core activities the Crown must purchase to meet its accountabilities, enhance opportunities for contestability and ensure that it is capable of meeting future demands.
	Policy Driver: Risk Assessment Review—Mail and Air Passengers
	Implication: MAF Regulatory Authority refined specifications and MQM enhanced the efficiency and effectiveness of the delivery processes.
	Institutional Driver: Technology
	The Quarantine Detector Dog Programme training centre was established. The first two teams of Quarantine Detector Dogs graduated and began working at Auckland International Airport.
	Implication: Increased public awareness.
	Incursion Driver: Agriculture Security Responses
	Two fruit fly responses were carried out in March after the discovery of a fruit fly at Mt Eden and two at Birkenhead in Auckland. No further flies or larvae were detected after the original finds. A further and more prolonged fruit fly response followed the detection of the flies in early May at Mt Roskill. The last discovery of fruit flies or larvae was on 23 May 1996. Measured responses were mounted to eradicate *Cernuella virgata,* an exotic snail and *Houttuynia cordata*, a potentially noxious plant, and to investigate suspected Aujesky's disease in pigs. Forestry began an eradication programme on white spotted tussock moth.
	Institutional Driver: Record Interceptions
	A record number of fruit fly interceptions (53 separate incidents of live fruit fly) were discovered during routine passenger, mail and cargo clearance. Several successful prosecutions of passengers, who were carrying prohibited goods, were taken and court fines have in some cases exceeded $10,000.

	Implication: Funding for a number of projects is fast-tracked.
1996/97	**Legislative Driver: Environmental Risk Management**
	Introduction of the Agricultural Compound and Veterinary Medicines (ACVM) Bill and the Hazardous Substances and New Organisms Act (HSNO) in conjunction with the establishment of the Environmental Risk Management Authority (ERMA).
	Implication: Widening of "risk" beyond production-focused pests and disease.
	Policy Driver: Biosecurity Strategy Review
	Development of comprehensive strategies for the delivery of biosecurity and sanitary/phytosanitary assurances.
	Implication: Establishing a sound financial basis for the delivery of the required programmes.
	Institutional Driver: Technology
	Increased funding resulted from the Mediterranean fruit fly incursions, the subsequent eradication, and the preparation of an enhanced border security package. Government provided $2 million for the introduction of x-ray machines and the Quarantine Detector Dog Programme that was launched by the Minister of Agriculture in late 1995/96.
	Implication: The programme resulted in interception rates being raised to a significantly higher level than previously (from about 54% to 94%).
	Policy Driver: Trade and Market Access
	MAF developed initiatives that would ensure the GATT Uruguay Round delivered what was agreed and worked in collaboration with the Ministry of Foreign Affairs and Trade (MFAT) to: • Complete a range of bilateral access agreements • Participate in the World Trade Organisation and its committees
	Policy Driver: Contingency Plans
	Work began on prioritising the major risks, and pest management strategies were developed as contingency plans for the major exotic pests and diseases (foot and mouth disease, fruit fly)
	Incursion Driver: Rabbit Calicivirus Disease
	Following the escape of the disease in Australia in 1996, New Zealand strengthened its border measures to prevent its introduction here. An application to introduce the disease in New Zealand was received by MAF. However, during the final deliberations, the disease was illegally imported and released. Painted Apple Moth was found in Auckland and eradication programmes started.
	Implication: MAF's role as production adviser and protector from exotic pests was never before so sorely tested. Credibility was undermined.
1997/98	**Legislative Driver: Forestry Amalgamation**
	The Ministry of Forestry was amalgamated into MAF combining biosecurity, policy and regulatory functions.

	Implication: Increased resource level and skill base at border. Significant loss of key MAF personnel.
	Legislative Driver: Biosecurity Council
	The Biosecurity Council was formed by the Minister for Biosecurity to co-ordinate the various departments with responsibilities and interests in biosecurity.
	Policy Driver: PAQIS
	MAF established a database of import health standards available on the MAF website.
	Institutional Driver: Technology
	Lists of unwanted organisms were published, including 866 animals and 200 plants. 30,000 are on the permitted list.
1998/99	**Legislation Driver: Border Review**
	The Government commissioned another review of border services.
	Policy Driver: Core Activities Defined
	MAF reference laboratory and disease response functions were centralised and positioned as "core" MAF activities along with border service operations.
	Policy Driver: Cost Recovery
	Industry was consulted on the implementation of cost recovery of inspection services of passengers and craft.
	Incursion Driver: Subterranean Termites
	Eradication of termites from a Matamata property commenced.
1999/00	**The Philosophical Driver**
	MAF looked for ways to achieve current levels of agricultural security in the most cost-effective way with as good as or enhanced levels of protection, and exploiting the best available technology. MAF's preferred approach was to shift the risk offshore thus reducing the need for onshore protective systems and better explain to stakeholders the techniques of risk analysis and the concept of "acceptable risk".

6.0 KEY INFLUENCES ON BIOSECURITY STRATEGY

The following section summarises the significant events into the key factors that influenced the development of the biosecurity strategy over the past 12 years:

1987	**Restructure**
	Interpretation: In 1987, MAF initiated and managed a comprehensive restructuring of its total organisation to better position itself in the commercial environment. The restructuring was the biggest change ever undertaken in the organisation's 96-year history. The mission remained the same: 'To carry out efficiently and effectively the Government's policies and programmes relating to the farming, horticultural and fishing industries and to advise on how to maximise the national benefit from those industries'. However, the restructuring fundamentally changed the way MAF's business was carried out. There were two reasons for change: 1. The move to user pays. This new policy required MAF to market its research capability and its technology, and to recover the cost of its quality assurance services to industry clients. 2. The announcement of a significant and progressive reduction in appropriated Government income over the five years to 1990/91. MAF was "allowed" to generate revenue to support its resource base, but could not exceed its net appropriation from the Government and it was not "allowed" to build a profit into the pricing of its monopoly services.
	Analysis: The placement of Quarantine Services into MAF Qual, which was running a regionalised commercial business, did not fit the discipline-based divisional structure. Staff were challenged to provide statutory services on a "least cost" basis, but without compromising the highest standards of security and professionalism in an environment of increasing pressure (volumes) at the border and reduced funding. In addition, for any discretionary services that could be identified, staff were being asked to develop traditionally free services into commercially viable, competitive products and services that will prosper in a highly competitive marketplace. The restructuring of MAF provided a management structure and philosophy that was "maximum delegation and time-sensitive and risk-accepting behaviour".
1989	**Offshore Quarantine**
	Interpretation: Offshore quarantine was developed as a strategy to transfer, as much as possible, the risk of disease or pest entry from

	importations to the country of origin. It required the development of technically sound importation requirements for animals, plants and their products. Considerable effort was invested in developing bilateral protocols/agreements to formalise New Zealand's importation requirements. At the end of 1989, an amendment to the Animals Act 1967 was due for introduction into Parliament. This was intended to provide clearer criteria for assessment, from an environmental impact point of view, of the acceptability of animals new to New Zealand and proposed for importation, later to be incorporated into the Biosecurity Act.
	Analysis: Increasing imports, tariff reductions and continual reduced government funding meant that the reliance on border inspection was no longer tenable and international developments had seen the offshore strategy developed by USDA Aphis.
1990	**Agriculture Security Service**
	Interpretation: Agriculture security is the design, management, delivery, audit and review of services that protect New Zealand's animal and plant health status. It was MAF's position that New Zealand's access to overseas markets depends on this country's animal and plant health status. The driving principles behind New Zealand's agriculture security were to: • Allow the most rapid and free entry of plants, animals and their products, including genetic material, consistent with safety to agriculture and the environment; • Adopt conservative responses if scientific or economic information is not adequate to assess the risk to agriculture or the environment, while seeking and encouraging the provision of such information through the application of research, technology and biological surveys; • Pursue technical opportunities to facilitate the greatest possible fulfilment of agriculture security. Previously separate activities of agriculture security were combined under the umbrella of the National Agriculture Security Service (NASS). This new structure brings together: • Offshore quarantine • Border protection • Post-entry quarantine • Disease and pest surveillance • Exotic disease and pest response
	Analysis: NASS not only protected New Zealand's animal and plant health, but also allowed beneficiaries and consumers of the services to be a part of policy development without endangering timely decision making. For the first time key decision-makers, Chief Technical Officers (CTOs) from Horticulture and Agriculture were working together. This was the basis for the present integrated system.

1991	**Restructure**
	Interpretation: MAF's unique blend of contestable services and monopoly functions was considered a risk to transparency. Therefore, at the insistence of Treasury and SSC, regulatory and delivery functions were split, dismantling the progress made by NASS and breaking down the lines of communication. A formal business relationship needed to be re-established.
	Analysis: The delivery/policy split further isolated the inspection group from the decision-making process. Poor statistics in the annual report through this period reflect the lack of communication. Risk analysis and other agriculture security measures were developed by the policy group. Leaving inspection out of the strategy was an early warning system.
1992	**Risk Assessment**
	Traditional no-risk trading policies involving plants, plant products, animals, semen, embryos and other animal products became increasingly difficult to sustain, and a more formal and structured approach to risk regulation become necessary. It is also accepted that absolute freedom from risk does not exist in biological systems and that excessively stringent controls can encourage smuggling. The sole reliance on a "country freedom" strategy of importation, whereby countries had to be declared free of certain specified diseases, before importation could be permitted was effective in its day but requires greater flexibility and discretion due to modern diagnostic capability and techniques. The process of risk analysis provides much greater confidence in respect of statements regarding disease status. Epidemiology, extrapolative toxicology, decision theory, and probability theory are only a few of the tools employed in the process of risk analysis. MAF uses both quantitative and qualitative forms of risk assessment in a wide range of policy areas. These include exotic disease policy, animal and plant importation policy, public health policy (including meat inspection and drug regulation) and animal welfare and ethics policy.
	Analysis: In modern society, there is a strong desire to minimise risk while reaping the benefits of technological innovation, free trade, and improved health. As indicated by Brunk (1992)[NOT IN BIBLIOGRAPHY], "In the area of government regulation of risk, this means that the assessment of the magnitudes of the risks faced by the public, and the impact of various strategies of risk management be based on the best available scientific evidence, methods and theoretical models".
1993	**Biosecurity Act**
	Interpretation: The basis for the current Biosecurity system is formulated around the Biosecurity Act 1993. The modus operandi for import control is prohibition. All plants and plant products, animal and animal products are **prohibited** entry into New Zealand unless an

	import health standard, covering the importation, has been issued in accordance with the Biosecurity Act 1993. The Act requires that any risk good (or other regulated article) entering New Zealand that could act as a vector for an unwanted organism (regulated pest) be covered by an import health standard which specifies the requirements for the effective management of the risk associated with the import.
	Analysis: This piece of legalisation was an over ambitious attempt to revise the Plants Act and the Animals act at a time when harmonising of Plants and Animals groups within MAF was occurring over agriculture security issues. It was drafted with a clear intention that there would be a shifting of emphasis toward industry and local government risk management plans. That supported the reducing government intervention policies of the day.
1995	**Quarantine and International Trade**
	Interpretation: It is important to fully appreciate that current quarantine measures adopted by New Zealand are based upon commercial drivers and as such are seen by MAF as *-must conform fully with our obligation under this GATT SPS agreement:* • Members shall ensure that their sanitary or phytosanitary measures are based on an assessment, as appropriate to the circumstances, of the risks to human, animal or plant life or health, taking into account risk assessment techniques developed by the relevant international organisations. • Members should, when determining the appropriate level of sanitary or phytosanitary protection, take into account the objective of minimising negative trade effects. Quarantine systems all impose delays, costs and embargoes on imports of certain items and are clearly non-tariff trade barriers in practice. GATT makes allowance for quarantine as a justifiable non-tariff trade barrier under Article XX(b). This provides for quarantine measures that protect human, animal, or plant life or health subject to the requirement that the measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. The OIE has been given the responsibility, under GATT, to evaluate and assist development of technical standards for trade in animals and animal products, in order to achieve an international consistency that will minimise trading disputes. The International Plant Protection Convention was established in 1951 within the framework of the Food and Agriculture Organisation (FAO), replacing an old Convention of 1929. The 1951 Convention was revised in 1979. Its purpose is to secure common and effective action to prevent the spread and introduction of pests of plants and plant products and to promote measures for pest control. Recognising the usefulness of international co-operation in controlling pests of plants and preventing their spread, especially across national boundaries, and desiring to ensure close co-

	ordination of measures to that end, contracting parties have undertaken to adopt legislative, technical and administrative measures specified in the Convention and supplementary agreements. The Convention applies mainly to quarantine pests involved with international trade.
	Analysis: The current MAF integrated biosecurity system starts with this process, however is heavily dependent on the quality of the information supporting a given stance, ie the existence of appropriate scientific capabilities, diagnostic services and an adequate means of communication. This severely limits non-commercial (environmental, lifestyle) issues to be evaluated.

7.0 DATA

7.1 Information Collection Difficulties

It was difficult to obtain statistics to be able to compare the performance of the inspection service over time.

Workload statistics for 1984 and 1999 were available and used to demonstrate the comparison (see 7.4). However, for other years, the format changes caused by restructures, administrative changes and the disbanding of MAF's information structures have meant meaningful comparisons could not be achieved within the scope of this review.

These data indicate that figures from 1993 onward are the only reliable statistics generated since 1987.

1988–1992 statistics appear the same in annual reports. It is our understanding that the figures in the annual report were carried forward and did not reflect the actual situation of an increased workload. The statistics from inspection service were not challenged and may reflect internal attitudes towards the inspection service. There was no inspection service representation at MAF head office until 1992.

7.2 Quarantine Service Workload Statistics Since 1987

Mail	N/A	626,891	65,000	65,000	65,000
Cargo	87,364	N/A	N/A	N/A	N/A
Vessels	4,607	3,100	3,000	3,000	3,000
Passengers	983,376	1,572,525	1,500,000	1,500,000	1,500,000
Aircraft	6,262	9,742	9,000	9,000	9,000
	1984	**1987**	**1988**	**1989**	**1990**

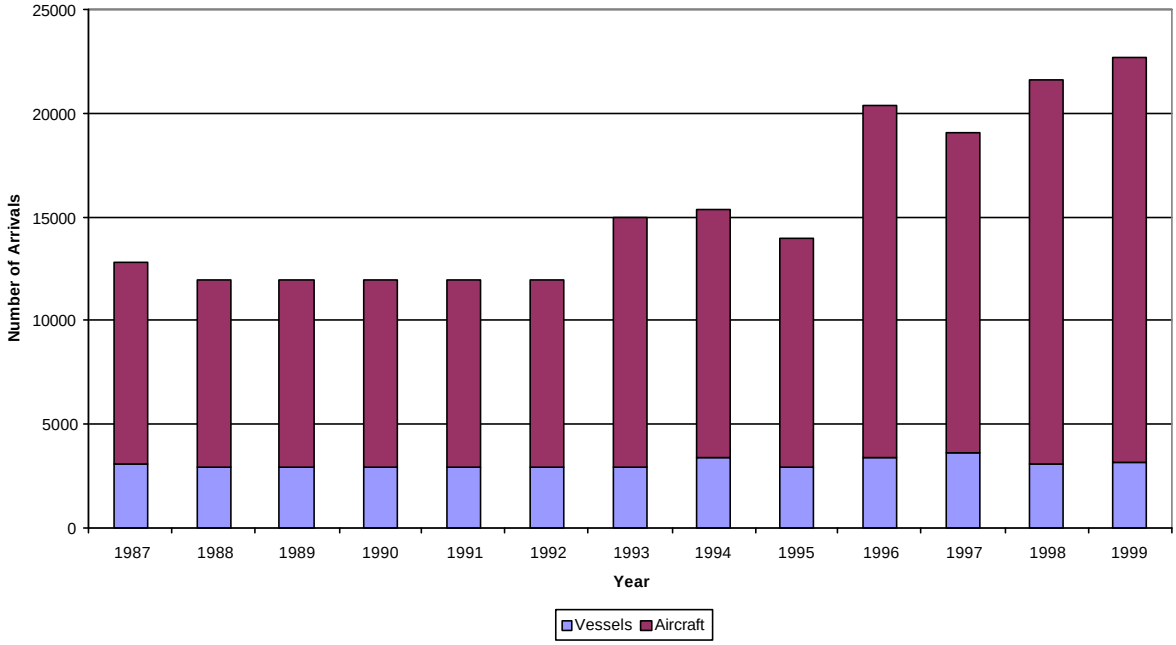
Mail	65,000	110,000	150,000	200,000	209,384	294,730	288,000	218,000
Cargo	N/A	145,000	145,000	300,000	254,466	272,043	297,668	300,000
Vessels	3,000	3,000	3,400	3,000	3,454	3,639	3,100	3,140
Passengers	1.5m	1.9m	2.0m	2.0m	2,967,000	2,611,000	2,736,000	3,166,741
Aircraft	9,000	12,000	12,000	11,000	16,970	15,978	18,490	19,589
	1992	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**

This shows the increase in volumes and should be compared with actual inspections.

Containers imported, numbers inspected and interceptions found in the containers inspected were not records that were readily available. This may reflect operational focus and resourcing abilities.

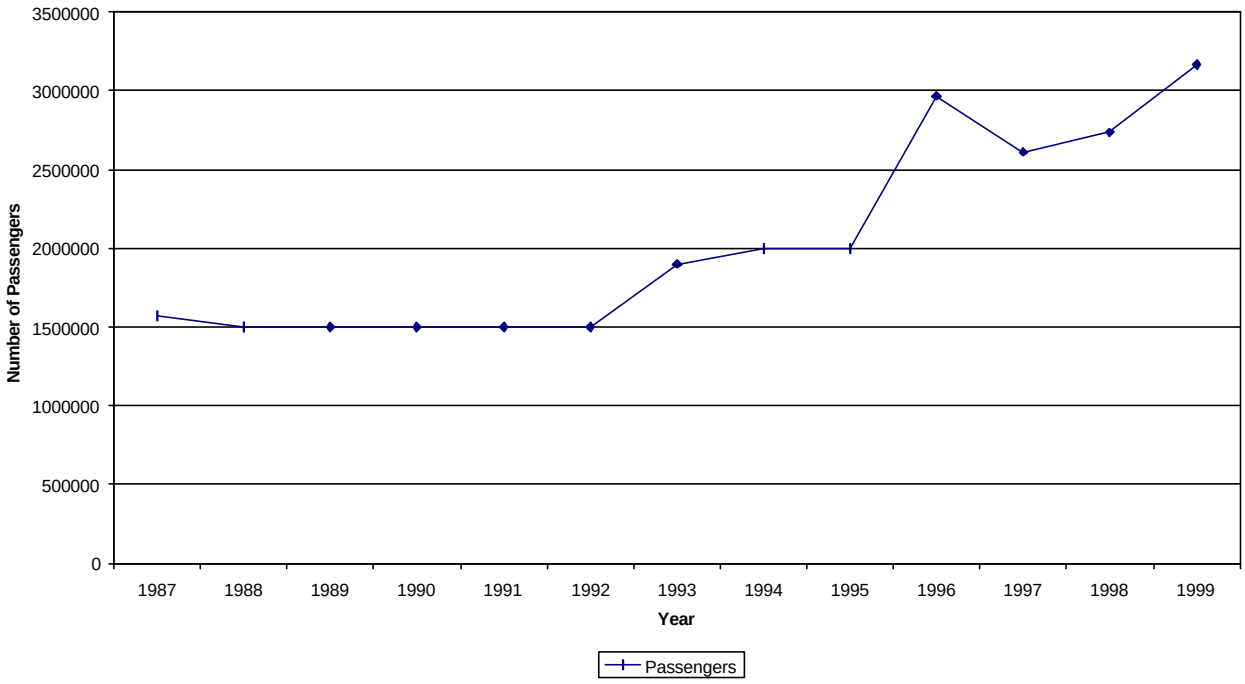
These figures were generated from Statistics New Zealand figures and when compared with data from MAF, when these were available, did not directly reflect the numbers. This may have been caused by collection variances and definitions of import container (may have included transit containers).

Inspection Volumes Since 1988

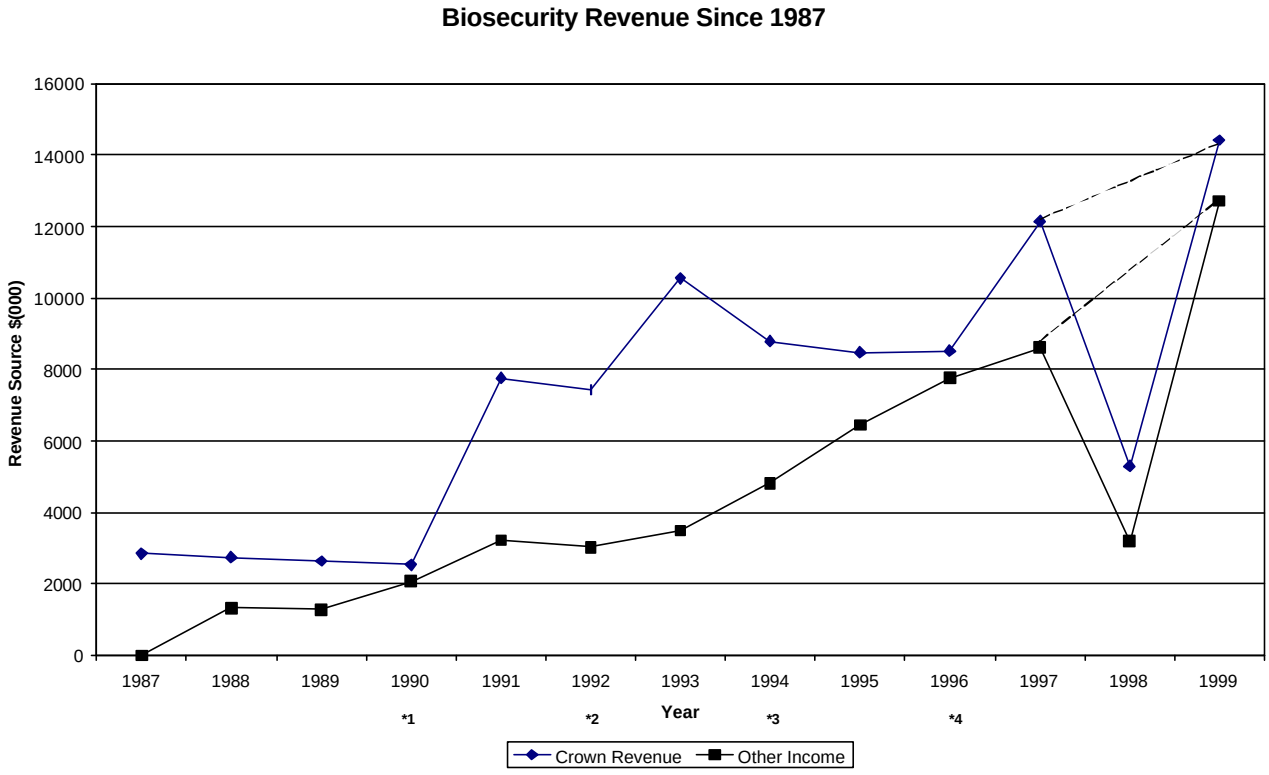


1988–1992 figures are unreliable. Analysis of the data was not within the scope of this review.

Number of Arriving Passengers Since 1987



7.3 Revenue/Expenditure Data



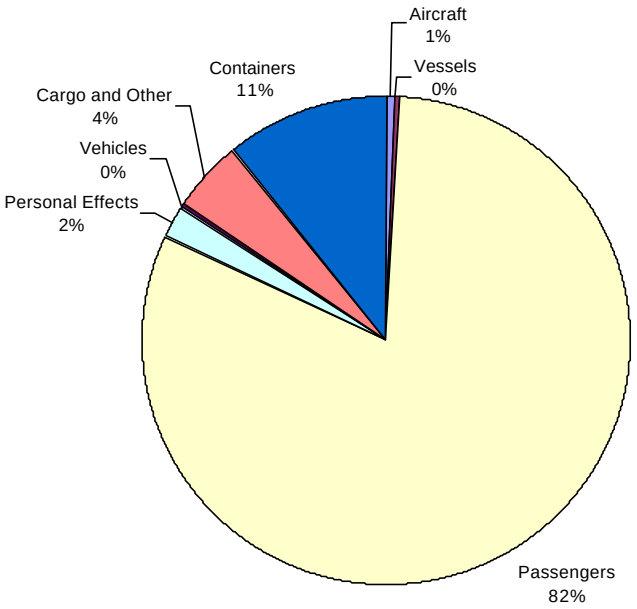
Note:

*1. South Auckland Fruit Fly Incursions.
*2. Exotic Bee Disease Response.
*3. Whangarei Fruit Fly Incursions.
*4. Mt Eden, Mt Roskill and Birkenhead Fruit Fly Incursions.

Comments: There are likely discrepancies in some of the figures in 1998 hence the dotted line. It is most likely that a mistake in the figures was printed in the annual report of that year.

7.4 Comparison of 1984 and 1999 Workload Activities

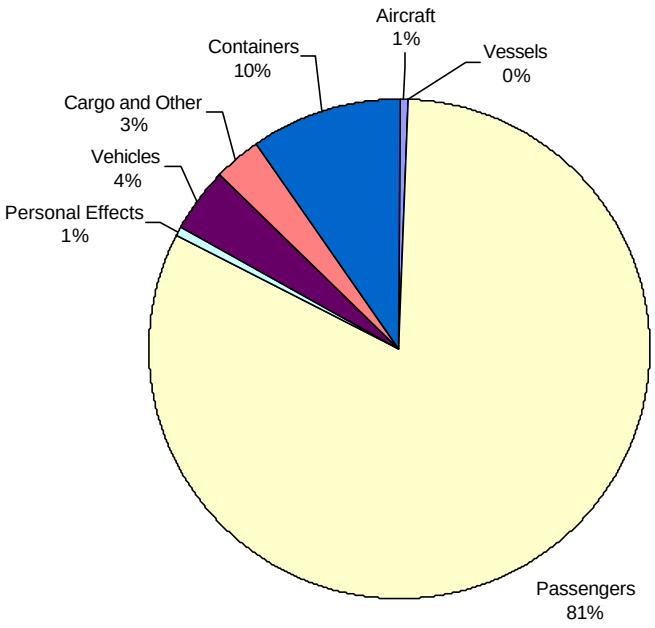
Workload Activity in 1984



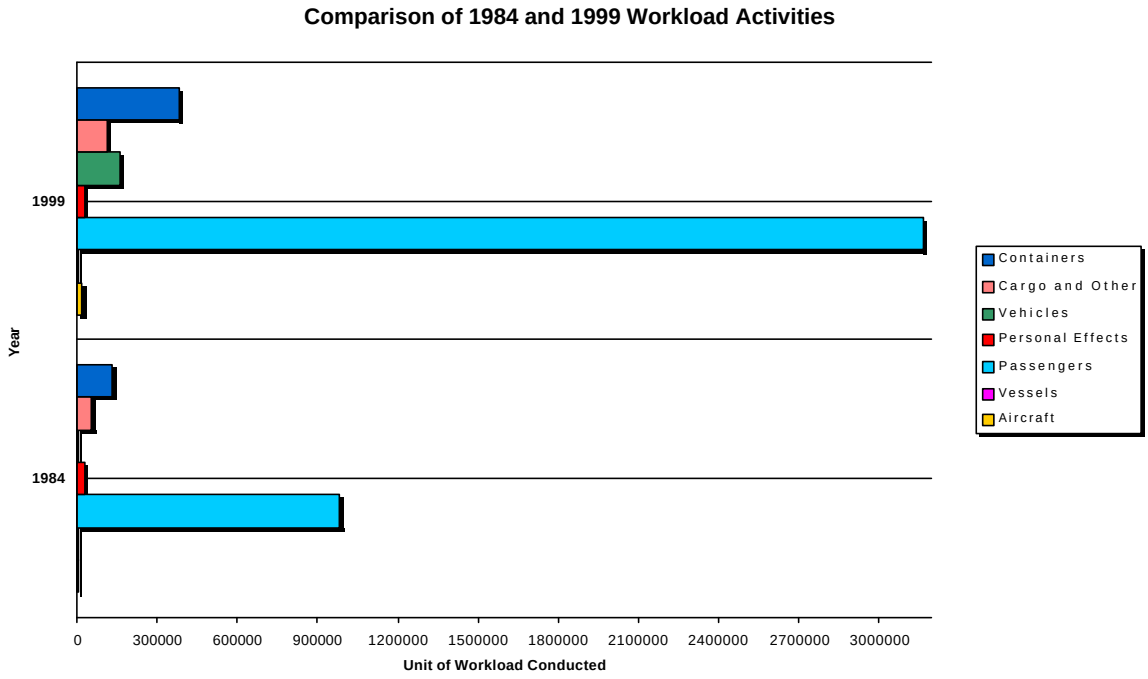
Notes:

1. Vehicle clearance increases due to legislative changes and tariff reductions.
2. Personal effects clearance decreases due to risk assessment and declaration.
3. Reduction in cargo and other clearances due to changing nature of imported goods.
4. The consistent percentage for passengers reflects focus and development in this area.

Workload Activity in 1999



Please note comments in Section 7.1.



	Aircraft	Vessels	Passengers	Personal Effects	Vehicles	Cargo and Other	Containers
1984	6262	4607	983376	27413	5384	54567	132828
1999	19589	3140	3166741	26083	160839	113078	381633
% Change	313% Increase	32% Decrease	322% Increase	1.2% Decrease	299% Increase	207% Increase	287% Increase

The personal effects clearance figures have declined in the comparison. However, Statistics New Zealand figures show a small increase in volumes from these compared years, particularly from the inspection services own "profile—high risk" countries. Without analysis of the risks, random assessment of declarations and analysis of the interception data, this reduction in workload activity is likely to be a response to resource shortages and operational focus.

7.5 Interpretation

Border inspection statistics to date have not been used as an analysis tool for predicting pressure points in the biosecurity system. Effects of legislative, policy and institutional change have not enabled analysis of the border inspection components and therefore resourcing has generally been reactive to incursion drivers. The exception to this is the statistical work carried out in passenger processing (Hyde, 1991 and Whyte, 1996 and 1998).

8.0 WHERE TO FROM HERE?

The following recommendations of this brief review indicate areas that require further analysis:

1. The biosecurity system like any risk management programme requires a regular risk assessment or audit by an independent validator or agencies charged with a "watchdog" role. A decision needs to be made on who should conduct such an assessment.

2. Develop an education/implementation strategy to introduce the integrated biosecurity system for other stakeholders identified in the body of this report will improve understanding and achieve improved harmonisation.

3. Conduct a service performance review to reflect society's expectations and make recommendations upon whether changes are required and where they should occur in the biosecurity system.

4. Develop a risk management system to act as a guiding model to analyse issues and facilitate decision-making on discovery of unexpected pest incursions, such as the Varroa bee mite.

5. Carry out a retrospective review to determine key influencing factors and current operating status and operational focus of the border inspection service.

6. Analyse interception data, import volumes, inspection rates and in-depth investigation of incursions, eg DNA testing of Varroa bee mite to determine origin.

The current biosecurity strategy is a sound model developed in an environment where the demands of export issues are balanced with the needs for import controls (pest/disease freedom). It is my view that the addition of sound risk analysis of the natural flora and flora issues will balance the strategy further and enhance the programme for the betterment of all New Zealand.

9.0 GLOSSARY

ACVM
Agriculture Compounds and Veterinary Medicines

AQS
Australian Quarantine Services

AQIS
Australian Quarantine Inspection Services

CTOs
Chief Technical Officers

EDPR
Exotic Disease and Pest Response

ERMA
Environmental Risk Management Authority

ERP
Emergency Response Procedure

GATT
General Agreement of Tariffs and Trade

HSNO
Hazardous Substances New Organisms

ISP
Independent Service Provider

MAF Biosecurity
MAF Biosecurity is responsible for management of risks for forests, plants, and animals with conservation, marine and human biosecurity concerns. MAF Biosecurity works closely with the wider national and international community concerned with maintaining biosecurity and managing risks to plant and animal welfare.

MFAT
Ministry of Foreign Affairs and Trade

MAFRA
Ministry of Agriculture Regulatory Authority

MERT
Ministry of External Relations and Trade

MOF
Ministry of Forestry

MOU
Memorandum of Understanding

MQM
MAF Quality Management

NASS
National Agricultural Security Services

NFFIU
National Flora and Fauna Investigation Unit

NPPSD
National Plant Surveillance Database

PAQIS
Plant and Animal Quarantine Information System

OECD
Organisation for Economic Co-operation and Development, a group of 24 Developed Countries.

SPS
Sanitary and Phytosanitary Services

SSC
State Services Commission

WTO
World Trade Organisation

10.0 BIBLIOGRAPHY

Shapland, K. (1992) Standards for Phytosanitary Export Certification. MAF Publication.

Dr A Pomeroy. (1990) Effect on Agriculture of Waterfront Reforming and Need for Shipping Reforms. Policy Services. MAF Corporate Discussion Paper.

Eveleens, Reynolds & Moore. (1989) Effects of Liberalisation on the Provision of Government Services to Agriculture.

MAF Policy Discussion Paper. (1994) A Review of Government Provision of Animal and Plant Quarantine Facilities at Somes Island, Silverstream and Lynfield.

MAF Biosecurity Authority. (2000) Description of New Ministry of Agriculture and Forestry's Biosecurity (Phytosanitary) System.

Ministry of Agriculture and Fisheries Annual Reports. (1987–1995)

Ministry of Agriculture Annual Reports. (1996–1998)

Ministry of Agriculture and Forestry Annual Reports. (1999)

Agriculture Quarantine Service Annual Report. (1984)

Demographic Trends Journal. (1999)

Hyde, NH. (1991) MAF Passenger Processing Study Results: Auckland International Airport. MAF Agriculture Quarantine Service Report.

White, CF. (1996) Survey of International Airport Passengers. MAF Border Service Report.

Whyte, CF. (1998) Systems Efficacy and Seizure Detection Rate Report. MAF Border Service Report.