

Australian Quarantine Review Secretariat

Australian Quarantine

a shared responsibility

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Department of Primary Industries and Energy

Canberra 1996

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ISBN 0 642 25971 2

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Preferred way to cite this publication:

Nairn, M.E., Allen, P.G., Inglis, A.R. and Tanner, C. (1996) *Australian Quarantine: a shared responsibility*. Department of Primary Industries and Energy, Canberra.

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FORWORD

Quarantine touches every member of the Australian community either directly or indirectly. This explains why this Review attracted so much interest and attention from such a wide cross-section of the population. We were greatly encouraged by the large number of written submissions we received and the extent of participation at the public hearings we conducted throughout the country. Our deliberations were assisted by the many constructive suggestions put forward on how Australian quarantine could be improved.

Undertaking a comprehensive review of quarantine issues facing Australia was always going to be a difficult task to complete in the allotted time of 10 months. Nevertheless, the Review was completed on time and within budget, thanks to the commitment of the review team members and the energy, competence and discipline of our support team led by Chief Executive Officer, Mr Peter Buckland. It was of considerable comfort to us that, although the Review was commissioned by Senator the Hon. Bob Collins late last year, support was immediately forthcoming from the Hon. John Anderson MP within days of the change in Federal Government in March of this year.

We decided quite early in the review process that our best chance of achieving a successful outcome and at the same time meeting our reporting date of October 1996 was to develop an understanding of what the Australian community expected from a quarantine service and then establish broad principles on how these expectations could best be met. We had extensive contact with officers in the Australian Quarantine and Inspection Service and were impressed with their professionalism and commitment, especially given the sometimes unfair criticism their organisation received following media reports of an unwelcome entry of a pest or disease of animals or plants.

During the course of the Review, we came to the conclusion that some fundamental changes were required not only in the structure of the organisation delivering quarantine services but also in general community attitudes to quarantine. We hope that people with an interest in quarantine can find the time to read the whole Report, as it is an absorbing story with many interrelated themes. The Review Committee members unanimously support all of the recommendations and we take full responsibility for the views expressed.

We believe that the acceptance and implementation of the recommendations will lead to a more efficient and effective quarantine service as well as set the stage for members of industry, the general public and governments to participate in a partnership that will enhance our capacity to keep Australia relatively free of those pests and disease that threaten our people, our animal and plant industries, and our unique natural environment.

Professor Malcolm E. Nairn

**Chairman, Australian Quarantine Review Committee
October 1996**

EXECUTIVE SUMMARY

The Australian Quarantine Review received 167 written submissions from a wide cross-section of the Australian and international community - governments, industry and the general public. Eighty-five individuals and organisations that made submissions also elected to attend one of the public hearings conducted throughout the country. In addition, the Review Committee met with a large number of government, industry and community organisations, visited quarantine facilities, held discussions with representatives of the policy and operations areas within the Australian Quarantine and Inspection Service (AQIS), and had direct contact with quarantine organisations in five other countries.

The Review commenced in January 1996 and the Review Committee undertook to report to the Minister for Primary Industries and Energy by October. The terms of reference were very broad and included all aspects of quarantine policies and procedures. The Report includes 109 recommendations.

People who read the full Report will discover several fundamental themes that characterise the approach the Review Committee took in framing its recommendations. For example, the Review Committee was convinced that to achieve the objectives of quarantine in Australia in the context of pressures from world trade, tourism and international obligations, it will be necessary to engage industry, government and the general public in a partnership approach to quarantine. This can most effectively be accomplished by a structural change of AQIS to locate the quarantine service and policy functions in a separate statutory authority to be known as Quarantine Australia. This will enable the Australian community to have a greater influence on quarantine policies and to develop a sense of ownership. It will also allow important issues such as the effect of quarantine decisions on the natural environment to receive due attention. The partnership concept will need to be developed with an effective and targeted public awareness campaign on the value of quarantine to Australia.

A significant number of submissions to the Review emphasised the fundamental importance to the community of maintaining Australia's unique natural environment. The Review Committee believes that effective quarantine policy and programs are essential to achieving this objective. Quarantine decisions must take greater account of environmental considerations and this responsibility should be reflected in quarantine legislation.

Another matter that became increasingly obvious during the course of the Review was the imbalance between the animal and plant sectors with respect to quarantine. Although there are many valid reasons to explain why plant industries have received relatively less attention than the animal industries in the past, it is time this problem was addressed in a positive way. Examination of incursions into Australia over the past 25 years reveals that the rate of incursions of plant pests and diseases was about 10 times more than for animals. The recommendations on the establishment of an Australian Plant Health Council and a Chief Plant Protection Officer position within the Department of Primary Industries and Energy will assist in achieving a higher status for the plant industries.

A great deal of concern was expressed to the Review Committee on the way risk analysis is conducted on applications to import animals, plants or their products into Australia. There is a lack of confidence in the process used for such analysis, and the

recommendations contained in Chapter 7 are designed to rectify the problems that were brought to the Review Committee's attention. Industry and the general public need a greater opportunity for having their views considered and the process should be conducted in a way that is transparent, scientifically based and with a mechanism for appeal on process. All this needs to be done in the context of Australia's international obligations.

In the past, quarantine has tended to focus on a border or 'barrier' approach. The Review Committee sees quarantine as much broader than this. The Report has specific sections dealing with pre-border, border and post-border activities, which the Review Committee sees as the continuum of quarantine. This approach emphasises the importance of keeping unwanted diseases and pests offshore as well as placing more attention on the value of both monitoring and surveillance within Australia and on national preparedness for and response to incursions.

Throughout the course of the Review, the Review Committee was aware that as a result of considerable media attention on some recent incursions, some staff within AQIS have felt under siege. Much of the criticism about the effectiveness of AQIS can not be supported by facts. The Review Committee commissioned four studies on plant and animal incursions over the past 25 years and these did not suggest any significant change in the rate of incursions in recent years, except perhaps for weeds. The fact is that Australia has remained relatively free of many of the major pests and diseases of animals and plants, despite its participation in the massive increase in international trade and movement of people, and dwindling government financial support for the quarantine service.

It is time for a new focus on quarantine to ensure that the vigilance that has characterised Australia's approach to quarantine protection is not diminished. This Report provides the blueprint for a fresh approach to Australian quarantine based on a shared responsibility.

RECOMMENDATIONS

A FRESH APPROACH

Recommendation 1: The Review Committee recommends that the vision for quarantine be 'that Australia will maintain its relative freedom from unwanted pests and diseases while fulfilling national and international obligations in a responsible manner' (Section 2.2).

Recommendation 2: The Review Committee recommends that the goal of national quarantine should be to prevent the establishment and spread within Australia of exotic pests and diseases that are deemed to have a significant deleterious effect on humans, animals, plants or the natural environment (Section 2.2.4).

Recommendation 3: The Review Committee recommends that the goal of quarantine be achieved through a nationally coordinated, consistent and transparent quarantine system using pre-border, border and post-border measures (Section 2.3.3).

AWARENESS AND CONSULATION

Recommendation 4: The Review Committee recommends that a major cultural change in the scope of quarantine be achieved through an ongoing and nationally coordinated awareness campaign that emphasises:

- the continuum of quarantine (pre-border, border and post-border);
- the importance of protecting animal and plant industries and the natural environment;
- a partnership approach leading to shared ownership and responsibility (by governments, industry and the general public); and
- the principle of manageable risk (Section 3.2.4).

Recommendation 5: The Review Committee recommends that the public awareness campaign:

- be developed by a professional public relations agency;
- be launched by the Prime Minister;
- adopts the Beagle Brigade as the national symbol for quarantine;
- uses a range of strategies including a schools program, a national Quarantine Week, and improved information for the travelling public;
- ensures that the penalties imposed for serious offences reflect the high value that the community places on quarantine; and
- reinforces commitments under Australia's international obligations (Section 3.2.6).

Recommendation 6: The Review Committee recommends that the present Industry Charging Review Committees become Industry Consultative Committees that are:

- re-formed to include consultation on policy and strategic issues relating to quarantine programs; and
- expanded to include other relevant industry groups (Section 3.3.2).

Recommendation 7: The Review Committee recommends that Government re-establish formal communication links on quarantine policies and programs with States including through:

- formal meetings of the chief veterinary and plant officers, or their equivalents; and
- regular meetings of specialist quarantine staff across all disciplines (Section 3.3.3).

Recommendation 8: The Review Committee recommends that Government undertake appropriate consultation with indigenous peoples and remote local communities in the development and implementation of quarantine policies and programs that affect their communities (Section 3.3.6).

QUARANTINE AUSTRALIA

Recommendation 9: The Review Committee recommends that the Government establish a statutory authority, to be named Quarantine Australia, to provide quarantine policy and services in accordance with Government policy (Section 4.3.7).

Recommendation 10: The Review Committee recommends that Quarantine Australia assume all the functions and responsibilities of the Australian Quarantine and Inspection Service, with the exception of meat inspection (Section 4.4.1.5).

Recommendation 11: The Review Committee recommends that Quarantine Australia and the Australian Customs Service continue to work in close collaboration but remain as separate agencies for the time being (Section 4.4.1.6).

Recommendation 12: The Review Committee recommends that policy and operational direction for Quarantine Australia be determined by a Board of Directors appointed by and responsible to the Minister for Primary Industries and Energy (Section 4.4.2.1).

Recommendation 13: The Review Committee recommends that the Board of Quarantine Australia assume the responsibilities of the Quarantine and Inspection Advisory Council as they relate to the charter of Quarantine Australia (Section 4.4.2.1).

Recommendation 14: The Review Committee recommends that the Board of Quarantine Australia comprise up to nine members:

- a Chairperson appointed by the Minister for Primary Industries and Energy;
- up to seven members appointed by the Minister following an independent competitive selection process based on skills criteria; and
- a Managing Director appointed by the other members of the Board (Section 4.4.2.2).

Recommendation 15: The Review Committee recommends that the members of the Board of Quarantine Australia should have, collectively, experience and qualifications in

a wide range of fields including: animal health or production; plant health or production; agricultural processing; importing and exporting; public health; conservation and management of the natural environment; business management or economics; finance; industrial relations; communications and promotion; and Commonwealth and State governance (Section 4.4.2.3).

Recommendation 16: The Review Committee recommends that the Chairperson of the Board of Quarantine Australia be the Director of Animal and Plant Quarantine under the *Quarantine Act 1908* (Section 4.4.2.4).

Recommendation 17: The Review Committee recommends that management of Quarantine Australia be provided by an executive management group consisting of its Managing Director and senior managers, with determination of the actual functional structure to await the outcome of the Meat Inspection Reform Task Force (Section 4.4.3).

Recommendation 18: The Review Committee recommends that Quarantine Australia establish a register of stakeholders to be regularly consulted on key quarantine issues, and that its Chairperson report annually to a meeting of registered stakeholders (Section 4.4.4).

Recommendation 19: The Review Committee recommends that a Quarantine Development Unit be established within Quarantine Australia (Section 4.4.5.1).

Recommendation 20: The Review Committee recommends that Quarantine Australia adopt a total quality management approach to the development and implementation of quarantine policies and programs (Section 4.4.5.2).

Recommendation 21: The Review Committee recommends that Quarantine Australia develop Memoranda of Understanding (or their equivalent) with key organisations, including relevant groups within the Department of Primary Industries and Energy (Section 4.4.6).

Recommendation 22: The Review Committee recommends that the Department of Primary Industries and Energy immediately establish a task force to manage the movement of the relevant responsibilities under the Australian Quarantine and Inspection Service to a new statutory authority, Quarantine Australia (Section 4.5).

INTERNATIONAL OBLIGATIONS AND LEADERSHIP

Recommendation 23: The Review Committee recommends that Australia continue to take a lead role in the development of international definitions, standards, rules and procedures related to quarantine, including risk analysis, area freedom and market access arrangements (Section 5.2.3.3).

Recommendation 24: The Review Committee recommends that Australia's international position on quarantine-related issues be based on objective scientific principles consistent with Australia's national quarantine goal (Section 5.5.1).

Recommendation 25: The Review Committee recommends that greater encouragement and support should be provided by Government to persons with relevant experience in quarantine issues to assume a leadership role internationally (Section 5.6).

Recommendation 26: The Review Committee recommends that Australia maintain an international leadership role in relation to ballast water management (Section 5.6).

OFFSHORE ACTIVITIES

Recommendation 27: The Review Committee recommends that Quarantine Australia coordinate the identification of quarantine threats in neighbouring countries and in countries that have significant contact with Australia through trade and tourism (Section 6.1.3).

Recommendation 28: The Review Committee recommends that Quarantine Australia assess the need for, coordinate, broker and where necessary participate in cooperative programs in neighbouring countries (and, where appropriate, in countries that have significant contact with Australia through trade and tourism) in:

- pest and disease monitoring and surveillance;
- pest and disease control and eradication;
- preparedness and response against incursions; and
- relevant education, training and diagnostic services (Section 6.2.5.2).

Recommendation 29: The Review Committee recommends that Quarantine Australia collaborate with overseas quarantine authorities in the areas of staff exchange and training, research, technology development, and treatment measures (Section 6.3).

Recommendation 30: The Review Committee recommends that Quarantine Australia negotiate with overseas quarantine agencies to continue development of arrangements for offshore preclearance of goods by appropriate export authorities and companies (Section 6.4).

Recommendation 31: The Review Committee recommends that Quarantine Australia take a proactive role in selected countries to promote greater awareness of Australian quarantine requirements among their travel authorities, travel agencies and travelling citizens, and among their international trading authorities and companies (Section 6.5).

Recommendation 32: The Review Committee recommends that Quarantine Australia ensure that information on Australia's quarantine requirements is more clearly presented to Australian residents before they travel overseas (Section 6.5).

RISK ANALYSIS

Recommendation 33: The Review Committee recommends that Quarantine Australia continue to use and refine scientifically based risk analysis - comprising risk assessment, risk management, and risk communication - to develop its quarantine policies and procedures (Section 7.1.3).

Recommendation 34: The Review Committee recommends that Quarantine Australia use a process to ensure that import risk analysis is consultative, scientifically based, politically independent, transparent, consistent, harmonised and subject to appeal on process (Section 7.3).

Recommendation 35: The Review Committee recommends that Quarantine Australia improve community and stakeholder understanding of import risk analysis by:

- developing and circulating a public handbook on its risk analysis process as a matter of urgency; and
- using print and electronic information media to inform registered stakeholders, other interested parties, and the general public of the receipt of import access requests and progress with the risk analysis of these requests (Section 7.4.1.1).

Recommendation 36: The Review Committee recommends that Quarantine Australia routinely consult with relevant registered stakeholders in a partnership approach to agree on what type of risk analysis should be used for each import access request (Section 7.4.3).

Recommendation 37: The Review Committee recommends that, for each import access request that consultation with registered stakeholders identifies as meriting detailed risk analysis, Quarantine Australia coordinate and chair a Risk Analysis Panel including members with experience and expertise in quarantine risk analysis plus members with scientific expertise relevant to the import access request under consideration (Section 7.4.5.1).

Recommendation 38: The Review Committee recommends that each Risk Analysis Panel:

- develop a specific timetable with deadlines for each stage of consideration of its import access request, for agreement with relevant registered stakeholders; and
- prepare an issues paper for relevant registered stakeholders before commencing detailed risk analysis on the import access request referred to it (Section 7.4.5.2).

Recommendation 39: The Review Committee recommends that, where necessary, each Risk Analysis Panel appoint and contract expert Working Parties to undertake work required to complete its risk analysis (Section 7.4.5.3).

Recommendation 40: The Review Committee recommends that each Risk Analysis Panel assess risks and examine appropriate risk management strategies needed to approve or reject the import access request referred to it (Section 7.4.6).

Recommendation 41: The Review Committee recommends that if a Risk Analysis Panel considers that an appropriate risk management strategy can be applied to an import access request, it advise the Department of Primary Industries and Energy, which would be responsible for:

- determining if approval is likely to have a significant effect on an Australian industry;
- identifying any structural adjustment measures that might be required; and
- liaising with other agencies such as the Department of Foreign Affairs and Trade concerning any international implications arising from approving the request (Section 7.4.6).

Recommendation 42: The Review Committee recommends that:

- responsibility for the risk analysis decision rest with the Chairperson of the In-House Risk Analysis Team or the Risk Analysis Panel; and
- the decision reflect the deliberations of the Team or Panel (Section 7.4.6).

Recommendation 43: The Review Committee recommends that any appeal against the decision of a Risk Analysis Panel be restricted to consideration of the appropriate discharge of the agreed process and be considered and adjudicated by the Board of Quarantine Australia within 45 days of lodgement with the Board (Section 7.4.7).

Recommendation 44: The Review Committee recommends that Quarantine Australia's import risk analysis process and associated decisions on import access requests should be subject to periodic external review (Section 7.4.8).

Recommendation 45: The Review Committee recommends that import risk analysis used by Quarantine Australia include increased consideration of the potential environmental effects of proposed introductions of new species, breeds or varieties of animals and plants or their germplasm, including their propensity to become weeds, vertebrate pests or invertebrate pests in Australia (Section 7.6.1.2).

Recommendation 46: The Review Committee recommends that Quarantine Australia develop a proposal for a streamlined process for considering imports of agents into secure premises for evaluation of their potential as biological control agents, and submit this for the consideration of the Standing Committee on Agriculture and Resource Management (Section 7.6.3).

Recommendation 47: The Review Committee recommends that Government provide funds to establish a Key Centre for quarantine-related risk analysis to enhance Australia as a world leader in this field (Section 7.8).

BORDER ACTIVITIES

Recommendation 48: The Review Committee recommends that Quarantine Australia use risk analysis based on comprehensive detection databases and information systems to target resource allocation to increase the efficiency and effectiveness of border activities (Section 8.3.1).

Recommendation 49: The Review Committee recommends that Quarantine Australia ensure consistent, effective and efficient national delivery and reporting of quarantine services (Section 8.3.3).

Recommendation 50: The Review Committee recommends that Quarantine Australia establish, as a matter of priority, performance objectives and indicators for all border programs, and implement regular audits of programs against these indicators for both efficiency and effectiveness (Section 8.3.4).

Recommendation 51: The Review Committee recommends that Quarantine Australia facilitate the use of industry-developed quality assurance arrangements for low risk quarantine goods and tasks, subject to appropriate audit arrangements (Section 8.3.5).

Recommendation 52: The Review Committee recommends that a national system for the approval and audit of private premises for the performance of quarantine be established and implemented as a matter of urgency (Section 8.3.6).

Recommendation 53: The Review Committee recommends that Quarantine Australia impose mandatory fumigation at approved and audited premises overseas for cut flowers from sources with an established record of high prevalence of accompanying pests or diseases (Section 8.4.2).

Recommendation 54: The Review Committee recommends that the regulations governing the import of seeds and plant germplasm be based on a permitted list for entry rather than solely the current prohibited list (Section 8.4.3).

Recommendation 55: The Review Committee recommends that tolerances for contaminants of imported seeds (including bulk grains) be consistent, equitable and based on scientific risk analysis (Section 8.4.3).

Recommendation 56: The Review Committee recommends that Quarantine Australia undertake regular audits of seeds, bulbs, tubers and other plant material imported for human consumption to ensure that those originating from high risk sources are not viable for propagation (Section 8.4.3).

Recommendation 57: The Review Committee recommends Quarantine Australia urgently develop and adopt consistent sampling methods and techniques based on internationally accepted scientific procedures (Section 8.4.4.2).

Recommendation 58: The Review Committee recommends that the Australian Animal Health Council should address, as a matter of importance, the issue of unwanted contaminants in imported feedstuffs for animals (Section 8.4.5).

Recommendation 59: The Review Committee recommends that Quarantine Australia strengthen training programs on biological products for staff to ensure proper implementation of this border program (Section 8.4.6).

Recommendation 60: The Review Committee recommends that quarantine authorities ensure that a national system for issuing import permits be developed and implemented as soon as practicable (Section 8.4.7).

Recommendation 61: The Review Committee recommends that Quarantine Australia make increased use of X-ray technology to improve the efficiency and effectiveness of quarantine delivery at the border including airports, seaports, mail exchanges and courier depots (Section 8.5.1).

Recommendation 62: The Review Committee recommends that Quarantine Australia liaise closely with the Australian Customs Service to ensure that customs electronic information systems meet Australia's quarantine requirements, including for the quarantine inspection and clearance of air cargo (Section 8.5.2.1).

Recommendation 63: The Review Committee recommends that Quarantine Australia develop and increase the use of electronic information systems to speed the clearance of cargo, subject to the development of satisfactory quality assurance systems and audit procedures (Section 8.5.2.1).

Recommendation 64: The Review Committee recommends that Quarantine Australia provide import protocols and manuals via electronic information systems, including the internet through a home page on the worldwide web (Section 8.5.2.2).

Recommendation 65: The Review Committee recommends that the detector dog program be expanded as soon as possible to ensure that:

- at least one dog team is available for all shifts at all major international airports;
- teams are available for clearance of passengers and for wharf surveillance at seaports; and
- teams are available for use at international mail exchanges and courier depots (Section 8.5.3.3).

Recommendation 66: The Review Committee recommends that pratique for aircraft and vessels move to a system of reporting by exception (Section 8.6.2).

Recommendation 67: The Review Committee recommends that aircraft disinsection be discontinued (Section 8.7).

Recommendation 68: The Review Committee recommends that Quarantine Australia ensure that vector monitoring is undertaken in accordance with World Health Organization guidelines at all first ports of call (Section 8.8).

Recommendation 69: The Review Committee recommends that experienced quarantine officers be used as marshals in international airport arrival halls to profile passengers for quarantine purposes (Section 8.9.1.3).

Recommendation 70: The Review Committee recommends Quarantine Australia give a high priority to wharf surveillance and provide better quarantine signage at wharves (Section 8.9.3).

Recommendation 71: The Review Committee recommends that the Travellers Statement be retained and improved by the addition of more strategic quarantine questions (Section 8.9.4).

Recommendation 72: The Review Committee recommends that quarantine security for goods stored or transported under bond be tightened to ensure that the quarantine risks to Australia associated with these goods are appropriately addressed (Section 8.10.1).

Recommendation 73: The Review Committee recommends that as a minimum, all containers should be subject to thorough external inspection at their port of entry (Section 8.10.2).

Recommendation 74: The Review Committee recommends that Quarantine Australia investigate with industry the use of quality assurance arrangements, with an appropriate audit system, for clearing consignments of low risk timber and timber products (Section 8.10.3).

Recommendation 75: The Review Committee recommends that, as a matter of urgency, procedures for the identification of the presence and type of timber dunnage and packing

associated with imports be uniformly implemented across all ports of entry, and that the required quarantine inspection be undertaken (Section 8.10.4).

Recommendation 76: The Review Committee recommends that tightened inspection procedures introduced to address the risk posed by imported second-hand and field-tested agricultural machinery continue until completion of risk analysis of border programs (Section 8.10.6).

Recommendation 77: The Review Committee recommends that for general cargo, Quarantine Australia develop and implement a system of sanctions and incentives to encourage compliance with Australia's quarantine requirements (Section 8.10.7).

Recommendation 78: The Review Committee recommends that Quarantine Australia undertake an immediate review of international mail operations to ensure that quarantine surveillance of all international mail is effective (Section 8.11).

Recommendation 79: The Review Committee recommends that galley waste and other refuse from international aircraft may be disposed of at a municipal or other commercial waste disposal facility under standard waste control measures, and subject to audit by Quarantine Australia (Section 8.12.1).

Recommendation 80: The Review Committee recommends that disposal of galley refuse from vessels continue by means of incineration, deep burial at marked sites or by heat treatment, and that auditing of this disposal be intensified (Section 8.12.2).

Recommendation 81: The Review Committee recommends that the animal quarantine stations operated by Quarantine Australia should be on a more commercial basis by introducing a system of forfeitable bonds for allocations of space, with bonds being forfeited if offers are not taken up within a specified period (Section 8.13.1).

Recommendation 82: The Review Committee recommends that, in principle, Government animal quarantine stations should be offered for privatisation, subject to audit by Quarantine Australia and maintenance of appropriate security (Section 8.13.1).

Recommendation 83: The Review Committee recommends that, in principle, private onshore high security animal quarantine stations should be permitted, subject to audit by Quarantine Australia and maintenance of appropriate security (Section 8.13.1).

Recommendation 84: The Review Committee recommends that Quarantine Australia form a review committee to set priorities for imports of plant genetic material (Section 8.13.2).

Recommendation 85: The Review Committee recommends that Government continue to provide Quarantine Australia with community service obligation funding for its avian and plant quarantine stations (Section 8.13.3).

Recommendation 86: The Review Committee recommends that Quarantine Australia give high priority to auditing and reviewing its border activities (Section 8.14.2).

Recommendation 87: The Review Committee recommends that Quarantine Australia ensure that it reviews its import protocols on a regular basis to take account of changing circumstances (Section 8.14.2).

MONITORING AND SURVEILLANCE

Recommendation 88: The Review Committee recommends that monitoring and surveillance programs are essential, require increased national coordination, and should be conducted in a cost-effective manner (Section 9.3.2).

Recommendation 89: The Review Committee recommends that the enhanced Commonwealth-delivered initiatives under the Northern Australia Quarantine Strategy should continue to be funded after 1998-99, subject to regular analysis of their effectiveness and appropriateness (Section 9.5.1.1).

Recommendation 90: The Review Committee recommends that Government support the development and management of national pest and disease databases and information systems (Section 9.5.3).

Recommendation 91: The Review Committee recommends that the Department of Primary Industries and Energy take a leadership role to incorporate an Australian Plant Health Council with responsibilities for plant health (including forestry) equivalent to those of the Australian Animal Health Council for animal health (Section 9.6.2).

Recommendation 92: The Review Committee recommends that until the Australian Plant Health Council is incorporated and operating, the Department of Primary Industries and Energy undertake a coordinating role with respect to plant health (Section 9.6.2).

Recommendation 93: The Review Committee recommends that a Chief Plant Protection Officer be designated at a Commonwealth level with responsibilities in plant health, equivalent to those of the Chief Veterinary Officer for animal health (Section 9.6.4).

Recommendation 94: The Review Committee recommends that the Chief Veterinary Officer and the Chief Plant Protection Officer in the Commonwealth Department of Primary Industries and Energy take leadership roles to ensure national coordination of monitoring and surveillance of pests and diseases of animals and plants in Australia, and the development of pest and disease databases and information systems (Section 9.7).

Recommendation 95: The Review Committee recommends that the Australian Animal Health Council and the Australian Plant Health Council take responsibility for coordinating the national delivery of monitoring and surveillance programs relevant to Australia's animal and plant health status, respectively (Section 9.7).

Recommendation 96: The Review Committee recommends that Quarantine Australia coordinate targeted national monitoring and surveillance for pests and diseases of quarantine importance in high risk areas, in liaison with the Chief Veterinary Officer, Chief Plant Protection Officer, Australian Animal Health Council and the Australian Plant Health Council (Section 9.7).

PREPAREDNESS AND RESPONSE

Recommendation 97: The Review Committee recommends that Government establish plant diagnostic laboratories and secure post-entry quarantine facilities at Eastern Creek, near Sydney (Section 10.4.5.2).

Recommendation 98: The Review Committee recommends that the Australian Plant Health Council investigate the need, optimal location and possible funding options for a national secure containment facility for plant pests and diseases (Section 10.4.5.2).

Recommendation 99: The Review Committee recommends that the Australian Animal Health Council and the Australian Plant Health Council review national field, diagnostic and research capacity in animal and plant health (Section 10.4.7).

Recommendation 100: The Review Committee recommends that the Department of Primary Industries and Energy, through the Chief Veterinary Officer and the Chief Plant Protection Officer, take a leadership role to ensure that appropriate contingency plans are available for major exotic pests and diseases that threaten animals (including aquatic animals), plants (including forestry) and the natural environment (Section 10.5.3).

Recommendation 101: The Review Committee recommends that the Australian Animal Health Council and the Australian Plant Health Council take responsibility for coordinating the development of national contingency plans for major exotic pests and diseases that threaten animals (including aquatic animals), plants (including forestry) and the natural environment (Section 10.5.3).

Recommendation 102: The Review Committee recommends that the Commonwealth Department of Health and Family Services complete its handbook on the management of human diseases of quarantine concern (Section 10.5.4).

Recommendation 103: The Review Committee recommends that Quarantine Australia, in association with the Chief Veterinary Officer and the Chief Plant Protection Officer, determine where possible the method of introduction of any new incursion of an exotic pest or disease and use this information to develop strategies to reduce the likelihood of future incursions (Section 10.6.2).

Recommendation 104: The Review Committee recommends that the Australian Animal Health Council and the Australian Plant Health Council investigate means for ensuring that appropriate compensation is an integral part of contingency plans and response strategies for incursions of exotic pests and diseases (Section 10.6.6).

RESOURCES AND LEGISLATION

Recommendation 105: The Review Committee recommends that governments increase their commitment to budgetary funding of quarantine and quarantine-related activities to reflect community expectations in line with the partnership approach to the development and delivery of effective quarantine (Section 11.1.1.3).

Recommendation 106: The Review Committee recommends that the Government increase its commitment to quarantine and quarantine-related activities to reflect community expectations by providing budgetary funding for the resources needed to implement the recommendations of this Review (Section 11.1.2.17).

Recommendation 107: The Review Committee recommends Quarantine Australia ensure that work on updating the Quarantine Proclamations and Regulations and facilitating their passage through Parliament, continue as a matter of urgency (Section 11.2.4).

Recommendation 108: The Review Committee recommends that relevant sections of the *Quarantine Act 1908* be revised as soon as possible to reflect fully the changed scope and focus of quarantine advocated in this Report (Section 11.2.5).

Recommendation 109: The Review Committee recommends that legislation establishing Quarantine Australia have a sunset clause of 10 years, with a review of its performance in the development and delivery of national quarantine policy and programs to be undertaken within the two years preceding this date (Section 11.2.5).

ACRONYMS AND ABBREVIATIONS

AAHC	Australian Animal Health Council
AAHL	Australian Animal Health Laboratory
ACIAR	Australian Centre for International Agricultural Research
ACS	Australian Customs Service
AFTA	Association of South East Asian Nations Free Trade Area
AICCC	AQIS–Industry Cargo Consultative Committee
AIMS	AQIS Import Management System
APHC	Australian Plant Health Council
AQIS	Australian Quarantine and Inspection Service
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
AUSVETPLAN	Australian Veterinary Emergency Plan for Exotic Animal Diseases
CAC	Commonwealth Authorities and Companies
CCEAD	Consultative Committee on Exotic Animal Diseases
CER	Australia–New Zealand Closer Economic Relations Trade Agreement
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
Codex	Codex Alimentarius Commission
CPPO	Chief Plant Protection Officer
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSO	Community Service Obligation
CVO	Chief Veterinary Officer
DPIE	Department of Primary Industries and Energy
EXANDIS	Exotic Animal Disease Preparedness Consultative Council
FAO	Food and Agriculture Organization
FMA	Financial Management and Accountability
GMO	Genetically Modified Organism
ICRC	Industry Charging Review Committee
IPPC	International Plant Protection Convention
IRAT	In-House Risk Analysis Team
MOU	Memorandum of Understanding
NAHIS	National Animal Health Information System
NAMP	National Arbovirus Monitoring Program
NAQS	Northern Australia Quarantine Strategy
NFF	National Farmers' Federation
OIE	Office International des Epizooties
PNG	Papua New Guinea
QIAC	Quarantine and Inspection Advisory Council
RAP	Risk Analysis Panel
SCARM	Standing Committee on Agriculture and Resource Management

SPS Agreement	Agreement on the Application of Sanitary and Phytosanitary Measures
TBT Agreement	Agreement on Technical Barriers to Trade
VMS	Vessel Monitoring System
WHO	World Health Organization
WTO	World Trade Organization

GLOSSARY

community	governments, industry and the general public
continuum of quarantine	a system of nationally coordinated surveillance, inspection and control using pre-border, border and post-border measures to prevent the establishment and spread of unwanted pests or diseases that may have a deleterious effect on humans, animals, plants or the natural environment
disease	any harmful condition of humans, animals or plants caused by a transmissible agent or heritable trait
endemic	pests or diseases that occur in a particular country or region
exotic	pests or diseases that occur outside a particular country or region
Government	Commonwealth Government
government(s)	Commonwealth Government and State governments
monitoring	passive collection and collation of data on Australia's current human, animal and plant health status
natural environment	natural ecosystems, including humans, animals, plants, all natural and physical resources, and their associated amenity values
pest	any animal, plant or other organism that may pose a threat to the community or the natural environment
risk analysis	the total process of risk assessment, risk management and risk communication
risk assessment	the process of identifying and estimating the risks associated with an option and evaluating the consequences of taking those risks
risk communication	the process of interactive exchange of information and opinions concerning risk between risk managers and stakeholders
risk management	the process of identifying, documenting and implementing measures to reduce risk and its consequences
State	'State' refers to State and Territory (i.e. the Australian Capital Territory, the Northern Territory and all six States of the Commonwealth)
surveillance	active measures to detect new pest and disease incursions and changes in the distribution and prevalence of endemic pests and diseases
third-party services	services provided by a group other than the primary organisation under discussion

ACKNOWLEDGMENTS

The Review Committee wishes to thank all those who took the time to lodge written submissions to the Review and to attend public hearings or private meetings, especially

those industry bodies and State organisations that committed substantial resources to the consultation process.

The high level of assistance provided by the Australian Quarantine and Inspection Service (AQIS) is gratefully acknowledged. The Review Committee appreciated the openness with which AQIS supplied information, including substantial supplementary information requested by the Review Committee, and the organisation of briefings and site visits to quarantine operations. The Review Committee also wishes to thank sincerely all AQIS staff, particularly those in the regions, for their frankness and their patience during the course of the Review.

The Review Committee acknowledges the generosity shown by officials in Canada, Japan, New Zealand, the Republic of Korea, and the United States for the significant resources dedicated to discussions and briefings with the Review Committee. The Review Committee also wishes to thank the staff of Australia's Embassies and High Commission in these countries for the assistance provided in organising the visit programs.

PART I: INTRODUCTION

1. THE REVIEW

1.1 ORIGIN OF THE REVIEW

In the 1990s, worldwide community awareness of the potential effect of pests and diseases has been heightened as the result of incidents such as Ebola virus in Africa and bovine spongiform encephalopathy (or 'mad cow disease') in Europe. Such incidents have resulted in a more cautious and questioning approach by the community to issues related to human, animal and plant health.

Between 1990 and 1995, a number of incursions into Australia of exotic pests and diseases, including western flower thrips, papaya fruit fly, Siam weed, chalkbrood, northern Pacific starfish and Japanese encephalitis, attracted considerable media attention. A number of incidents involving endemic pests and diseases, although not quarantine-related, also achieved a high public profile. For example, several children were hospitalised with haemolytic uraemic syndrome after eating contaminated smallgoods, and two people and several horses died from infection with equine morbillivirus. Whether quarantine-related or not, these incidents led some sections of the community to question the adequacy of Australia's quarantine policies and programs, and the technical competence of Australia's quarantine service.

At the same time, the Australian Quarantine and Inspection Service (AQIS) was seeking to finalise quarantine import conditions for a number of commodities such as cooked chicken meat, fresh salmon and pigmeat. Australian industry held a number of concerns about the pest and disease status of proposed imported products and questioned both the process and the science upon which AQIS was determining import conditions. An inability to reach common ground for deciding issues on scientific merit led to a highly politicised and public debate on proposed entry conditions. This discourse was resource-

intensive and time-consuming, and led to a high level of mistrust between the parties, with consequent community concern about Australia's quarantine services.

Underlying these events were a number of major developments in world trade and other issues relevant to quarantine policy, including:

- conclusion of the Uruguay Round of the General Agreement on Tariffs and Trade, which enhanced opportunities for international trade in agricultural commodities, and increased the trade expectations of exporting countries;
- negotiation of the Agreement on the Application of Sanitary and Phytosanitary Measures, which defined the rights and obligations of members of the World Trade Organization in the development and implementation of food standards and quarantine controls;
- the increasing use of the 'clean, green' reputation of food-exporting nations such as Australia as an international marketing tool, in part reflecting increased consumer concern about food safety;
- rapid increases in the volume of world trade and international passenger movements, placing heavy pressure on border control measures intended to exclude exotic pests and diseases; and
- significant scientific advances in surveillance and identification procedures for plant and animal pests and diseases.

This confluence of events, coupled with the recommendation of the most recent major review of Australia's quarantine chaired by Professor David Lindsay that another major review of Australia's quarantine policy be conducted in about 1994 (DPIE 1988), led to the establishment by the former Minister for Primary Industries and Energy, Senator the Hon. Bob Collins, on 14 December 1995, of an independent Committee to review Australia's animal and plant quarantine policies and programs. Continuing Government support for this decision was subsequently affirmed by the incoming Minister for Primary Industries and Energy, the Hon. John Anderson MP, following the general election in March 1996. Mr Anderson also broadened the Review's scientific expertise by appointing a fourth member to the Review Committee.

1.2 TERMS OF REFERENCE

The Review Committee's terms of reference were to:

- 1) review Australia's animal and plant quarantine policies and programs having regard to:
 - a) the advantageous animal and plant health status which Australia has and the benefits and costs which flow from preserving that status;
 - b) Australia's international obligations;
 - c) trade impact of Australian quarantine policies; and

d) environmental considerations.

2) make recommendations on:

- a) any appropriate revisions in Australia's animal and plant quarantine policy framework;
- b) revisions to the quarantine risk assessment process, including the potential for greater use of quantitative methods of assessment;
- c) the capacity of existing quarantine programs to deliver the requisite level of quarantine protection determined by the Government;
- d) the adequacy of existing consultative processes to ensure that industry and community groups are appropriately informed and their views taken into account in policy development and program delivery; and
- e) the appropriate balance between cost-recovered and community service funded program elements.

The Review Committee was requested to report to the Minister for Primary Industries and Energy by October 1996.

1.3 MEMBERSHIP OF THE REVIEW COMMITTEE

The Australian Quarantine Review Committee comprised four members with extensive scientific, economic and industry experience. The Review Committee members were:

- Emeritus Professor Malcolm Nairn (Chairman)

Professor Malcolm Nairn was Vice-Chancellor of Northern Territory University from 1989 to 1996. His career has spanned more than 30 years in the field of veterinary science, including a period as Dean of the School of Veterinary Studies at Murdoch University.

- Mr Andrew Inglis

Mr Andrew Inglis operates a mixed grain and grazing property in South Australia. He is Chairman of the Grains Research and Development Corporation, a Board Director on the Australian Wheat Board, and Vice-Chairman of the Grains Group of the International Federation of Agricultural Producers.

- Ms Carolyn Tanner

Ms Carolyn Tanner is a Senior Lecturer in the Department of Agricultural Economics at the University of Sydney. She has extensive experience in agricultural trade policy and is co-author of the recently published monograph on Farm Policy and Trade Conflict.

- Dr Peter Allen

Dr Peter Allen is Manager of the South Australian Animal and Plant Control Commission. Previously, he was the State Entomologist and then Chief, Animal and Plant Quarantine, in South Australia.

The Review Committee was supported by a small full-time secretariat from the Department of Primary Industries and Energy — Mr Peter Buckland (Chief Executive Officer), Ms Gemma Davis, Dr Mike Nunn and Mr Terry Rule.

1.4 CONDUCT OF THE REVIEW

To meet the reporting date of October 1996, the Review Committee sought written submissions from interested parties by 8 March 1996. Advertisements were placed in all major newspapers including major rural publications. However, partly as a result of the general election in March 1996, some interested parties indicated they needed more time to complete submissions and the deadline was extended to 29 March 1996.

In examining its terms of reference, the Review Committee identified a number of matters that it considered to be fundamental to its deliberations. These key issues were incorporated into an information booklet that was circulated to assist interested parties in preparing their submissions. A total of 1500 booklets were distributed. In addition, letters of invitation to lodge a written submission were directed to the heads of major organisations expected to have an interest in the outcome of the Review.

The Review Committee received a total of 167 written submissions representative of all segments of the Australian community and from across all States. A list of the individuals or organisations that lodged submissions is included in Appendix A. A small number of submissions received on a confidential basis have not been listed.

Faced with a lack of comparable data, the Review Committee commissioned four independent reports into incursions of exotic pests and diseases of animals and plants over the past 25 years. The major conclusions drawn from these commissioned reports can be found in Appendix B. The Review Committee anticipates that the full reports will be released as a discussion paper during 1997 by the Bureau of Resource Sciences.

The Review Committee undertook an extensive series of public hearings and private meetings in May and June 1996, in all capital cities and in selected regional centres throughout Australia. Hearings included meetings with 85 of the individuals and organisations that made submissions, as well as discussions with quarantine staff in each State. Private meetings and discussions were also held with more than 50 interested parties during the hearing process, including several peak industry organisations, State representative bodies of the Australian Chamber of Commerce and Industry, and officials from relevant departments of all States. Some of the private discussions extended into July and August 1996.

Before and during the public hearing process, the Review Committee inspected quarantine operations in all States, including visits to the Cocos Islands Animal

Quarantine Station and to the Torres Strait region, and received briefings from quarantine staff.

In June and July 1996, the Review Committee made brief but comprehensive visits to five other countries to compare quarantine policy and operations. The Review Committee held discussions with government officials and relevant industry representatives in Canada, Japan, the Republic of Korea, New Zealand and the United States. The Review Committee was also able to hold discussions with officials of the European Union while they were visiting Canberra on other business.

Media interest was apparent and consistent throughout the Review, particularly during the public hearing process. Many radio broadcasts discussing the Review included interviews with the Chairman of the Review Committee, Professor Malcolm Nairn.

1.5 STRUCTURE OF THE REPORT

Rather than follow the order of the terms of reference, the Review Committee has structured the Report to emphasise the need for Australians to adopt a broad approach to quarantine. The Report consists of eleven chapters divided into seven parts — covering introduction, fundamental changes, structural organisation, pre-border issues, border issues, post-border issues, and implementation.

The Review Committee believes that the arguments developed in the body of the Report stand on their own merits. However, additional detailed information supplementing particular sections of the Report is included in a series of appendixes. Definitions of key words relevant to this Review are provided in the Glossary.

1.6 HISTORY OF THE ADMINISTRATION OF QUARANTINE

The *Quarantine Act 1908* derives its authority from Section 51(ix) of the Constitution. It was introduced as a result of the States' perception of the need for a comprehensive set of national laws governing the control of infected persons, vessels, goods, animals and plants entering the country from overseas. Before proclamation of the Commonwealth Act, the States had enacted uniform quarantine legislation generally known as the 'Federal Quarantine Acts'. The Commonwealth Act, which was given effect on 1 July 1909, tended to follow the principles embodied in the State legislation. Under the Administrative Arrangements Order of the day, the Act was to be administered by the Department of Trade and Customs. While under Customs administration, the position of Director of Quarantine was created to assume responsibility for policy development in quarantine matters.

With the creation of the Commonwealth Department of Health in 1921, quarantine policy was vested in the health portfolio. Service delivery aspects of animal and plant quarantine continued to be carried out by State departments (as was the case before Federation), while human quarantine services were gradually taken over by the Commonwealth.

The quarantine function remained under the Department of Health's administration until being transferred to the Department of Primary Industry (now the Department of Primary Industries and Energy) in December 1984. The States continued to deliver operational services for quarantine under formal agency arrangements with the Commonwealth until 1995. In 1995, the Agriculture and Resource Management Council of Australia and New Zealand agreed to transfer service delivery functions from the States to direct Commonwealth control. Operational services in the Australian Capital Territory, New South Wales, Queensland, South Australia and Victoria have been transferred. Service delivery functions in the care of the other States remain unchanged.

1.7 PREVIOUS REVIEWS OF QUARANTINE

Many reviews have examined Australia's quarantine services, and an even greater number have examined specific areas of quarantine administration. Activities such as relations with States (including financial arrangements), combined barrier operations with the Australian Customs Service, airport and seaport operations, coastal surveillance,

waste disposal, aircraft disinsection, staff training, and the Northern Australia Quarantine Strategy have all been examined.

Major reviews of quarantine undertaken during the past 20 years include:

- 1977 Department of Prime Minister and Cabinet: *Review of Australian Quarantine Arrangements* (DPMC 1977) — 27 recommendations;
- 1979 Senate Standing Committee on National Resources: *The Adequacy of Quarantine* (Senate 1979) — 44 recommendations;
- 1985 Auditor-General's Efficiency Audit: *Reports of the Auditor-General on Efficiency Audits: administration of quarantine services* (Auditor-General 1985) — 11 recommendations;
- 1986 Joint Parliamentary Committee on Public Accounts: *Administration of Quarantine* (JPCMA 1986) — 23 recommendations;
- 1988 Lindsay Review: *Australian Quarantine Requirements for the Future: report of the Quarantine Review Committee* (DPIE 1988) — 59 recommendations;
- 1992 Auditor-General's Efficiency Audit: *Efficiency Audit: Australian Quarantine and Inspection Service, Quarantine Division 1991–92* (Auditor-General 1992) — 69 recommendations;
- 1995 NAQS Review: *Review of The Northern Australia Quarantine Strategy: a report Commissioned by the Australian Quarantine and Inspection Service* (Nairn and Muirhead 1995) — 28 recommendations; and
- 1996 Senate Review: *Australian Quarantine and Inspection Service. Report of the Senate Rural and Regional Affairs and Transport Legislation Committee* (Senate 1996) — nine major recommendations on quarantine issues.

These reviews are significant in terms of their impact on aspects of various quarantine policy and service delivery, and will be referred to from time to time in this Report. In all, these reviews made 270 recommendations relating to quarantine, most of which have been implemented in whole or in part. However, despite the number of reviews and the effect of their recommendations, questions are raised about the adequacy of Australia's quarantine measures to meet changing international circumstances after each major pest or disease incursion.

PART II: A SHARED RESPONSIBILITY

2. A FRESH APPROACH

2.1 AUSTRALIAN QUARANTINE

Australians generally benefit from a natural environment that, compared to other countries, is relatively free of many debilitating pests and diseases of humans, animals and plants. This privileged health and quarantine status is of considerable benefit to Australia's export trade. It contributes to Australia's comparative advantage in agricultural production and enhances the marketability of Australian products by virtue of our 'clean, green' image. Benefits accrue not only to the agricultural sector but also to the Australian community as a whole through reduction in the use of chemicals to prevent and control pests and diseases, protection of native flora and fauna, promotion of Australia as a tourist attraction, and enhancement of the quality of life of all Australians.

Quarantine controls are an indispensable element in the maintenance of Australia's privileged human, animal and plant health status and of the regulatory framework that governs trade within and between nations. Effective and efficient quarantine enhances community welfare by safeguarding the community from significant losses associated with the spread of pests and diseases.

Unfortunately, the general public, industry and governments do not appear to have common agreement on the objectives of quarantine, the roles of each stakeholder, and what is realistically achievable by the agency responsible for delivering quarantine policies and programs. Despite a good record in assisting to maintain Australia's favourable human, animal and plant health status, some in the Australian community hold the view that any incursion is a failure on the part of quarantine services.

To ensure that Australia's quarantine policies and programs continue to meet the expectations of the Australian community, the Review Committee believes that there must be some fundamental changes to the quarantine culture in Australia. These changes are discussed in detail throughout this Report, but can be summarised as:

- development of a partnership approach to quarantine policies and programs involving the whole Australian community — the general public, industry and governments;
- establishment of a statutory authority to develop national quarantine policy and ensure national delivery of quarantine services;
- establishment of a more balanced approach to animal and plant health and quarantine by providing additional inputs for plant health and quarantine;
- development of a more formally structured process for conducting risk analyses to provide a scientifically based foundation for a policy of manageable risk;
- acknowledgment of the importance of quarantine to the natural environment;

- expansion of the scope of quarantine by recognising the importance of activities in all three elements of quarantine — pre-border, border and post-border — as a continuum; and
- enhancement of the focus on pre-border and post-border activities of the continuum of quarantine in the achievement of Australia's quarantine goal.

2.2 SCOPE OF QUARANTINE

For quarantine activities to be meaningful, it is important that they reflect the realistic requirements of the Australian community and accord with Australia's international obligations. The *Quarantine Act 1908* describes quarantine as 'measures for the inspection, exclusion, detention, observation, segregation, isolation, protection, treatment, sanitary regulation and disinfection of vessels, installations, persons, goods, things, animals, or plants, and having as their object the prevention of the introduction or spread of diseases or pests affecting human beings, animals, or plants'.

Although one meaning of the word 'quarantine' is to isolate, the Review Committee has not considered quarantine as an 'isolationist' concept. Rather, the Review Committee has taken a positive and proactive approach by seeking to embrace the needs of the Australian and international communities. It is therefore important that the scope of quarantine reflects a shared community vision of quarantine — a vision that encapsulates both the benefits and responsibilities of effective and efficient quarantine.

Recommendation 1: The Review Committee recommends that the vision for quarantine be 'that Australia will maintain its relative freedom from unwanted pests and diseases while fulfilling national and international obligations in a responsible manner'.

2.2.1 The Public Good Element of Quarantine

The term community service obligation (CSO) is frequently used to describe a range of government activities aimed at improving or protecting the welfare of the Australian community. These activities are usually undertaken by governments because:

- other organisations would not elect to perform these duties on a commercial basis;
- they would be provided commercially only at higher prices; or
- they involve responsibilities that governments do not require other organisations in the public or private sectors to undertake generally.

Activities funded by CSO for the public good most commonly occur where the beneficiaries are diverse and not readily identifiable. In those cases where the beneficiaries are a discrete unit with an ability to pay, it is normal to fund the activity being undertaken on a commercial basis attracting a 'user-pays' fee.

In some circumstances, quarantine has the properties of a public good, in that if left to the private sector, quarantine activity in certain areas would tend to be under-supplied

relative to the level desired by the Australian community. The failure of voluntary market arrangements to cope with pest and disease risks is a fundamental reason for government involvement in quarantine. Although the principal beneficiaries of certain aspects of quarantine might sometimes be readily identifiable, in a number of cases benefits are spread throughout the community and it is difficult to identify individual beneficiaries. The regulatory approach generally adopted to quarantine could therefore be viewed as a government attempt to correct this apparent market failure.

The community benefits of quarantine stem from the prevention of various pests and diseases (including undesirable animal and plant species) becoming established in Australia. With respect to the introduction of any new quarantine provision aimed at achieving this objective, the benefits would be the avoidance of costs and losses associated with the spread of pests or diseases. Such benefits might include:

- reductions in the cost of pest and disease control (e.g. spraying or special transport arrangements within Australia, or damage to the natural environment — including effects of chemical residues);
- continuation of Australia's pest and disease-free status, thus reducing the cost of entry to overseas markets by reducing the cost of meeting other countries' quarantine requirements;
- savings in costs of administering any natural disaster relief programs that might otherwise have been necessary;
- avoidance of output losses that would persist after an outbreak even if pest and disease control measures were adopted; and
- flow-on savings to the Australian community and industries such as tourism that could be adversely affected should an introduced pest or disease damage native flora or fauna.

In the absence of quarantine initiatives there could be a range of losses depending on whether and how rapidly a pest or disease entered and spread within the country, and the extent to which it affected the natural environment, local production and market opportunities. It is difficult to achieve community agreement on the economic costs of an exotic pest or disease incursion, given the diverse interests of particular segments of the community. However, by way of illustration of the costs associated with an exotic incursion, the Review Committee notes that governments alone have committed \$55 million for the attempted eradication of papaya fruit fly from northern Queensland. In this regard, it has been suggested that quarantine has some of the elements of insurance in so far as it involves the imposition of regular costs, like an insurance premium, to provide protection through managed risk. The issue of the appropriate level of government budgetary funding for quarantine and quarantine-related activities is discussed in detail in Chapter 11 on Resources and Legislation.

2.2.2 Imbalance between Plant and Animal Quarantine

Although the scope of quarantine is broad, the development of measures since 1908 to reflect this scope has not always been consistent across the three areas of human, animal and plant health. For instance, the strong quarantine focus on human health in the early part of the twentieth century is now overshadowed by the focus on animals and plants of agricultural importance. However, quarantine has tended to have a stronger focus on animals than plants. This inconsistency is due to a number of reasons, including the facts that:

- the industry infrastructure to support animal health is more highly developed and integrated than for plants;
- the number of economically important species of plants is significantly greater than that of animals, and the level of information on many plant pests and diseases tends to be less than that available for most animals;
- plant diseases are often present for a longer period of time before detection and their spread is usually more insidious and less dramatic than animal diseases;
- the number of pests and diseases that can affect plants is far greater than those affecting animals (so plant pests and diseases are more difficult to address); and
- the effects of an outbreak of an exotic disease of animals tend to have a greater visual and emotive impact on the community than disease outbreaks affecting plants.

The imbalance between resources provided for both health and quarantine for animals and for plants also applies internationally. The larger number of exotic pest and disease introductions affecting plants, as compared to animals, over the past 25 years may also reflect this imbalance. Independent reports commissioned by the Review Committee indicate that, conservatively, the number of exotic plant pests and diseases that have established in Australia during the past 25 years is at least 10 times more than for pests and diseases of animals (see Appendix B). The Review Committee is strongly of the view that increased resources need to be devoted to plant health and quarantine, although not at the expense of resources allocated to animal health and quarantine. Chapter 9 on Monitoring and Surveillance contains more detailed discussion and recommendations relating to this issue.

2.2.3 Public Health

The importance of effective quarantine measures to public health can best be gauged by Australia's freedom from a number of serious pests and diseases of humans that occur in other parts of the world — such as Ebola fever, yellow fever and plague. Australia's early quarantine arrangements focussed primarily on the exclusion of exotic human diseases. Although of less concern than a few years ago due to improved treatments and international eradication or control of a number of serious diseases, human quarantine still requires vigilance at seaports and airports. Malaria is a disease of growing concern in the South-East Asian region and viral haemorrhagic fevers still occur in many countries. Similarly, rabies is widespread and remains a disease of concern in many parts of the world.

The occurrence in 1995 of equine morbillivirus in Queensland and subsequently of Japanese encephalitis in the Torres Strait region created renewed interest in zoonoses (pests or diseases transmissible between humans and animals). Incidents of food poisoning with *Escherichia coli* in Australia, Japan and the United States have also raised the profile of infections transmitted to humans by animal products, as has the concern regarding the possibility of human infection with the agent of bovine spongiform encephalopathy in Europe. The Review Committee notes that there are well-established links between animal and human health authorities in Australia, including veterinary representation on the group responsible for coordinating national control of infectious diseases of humans, the Communicable Diseases Network of Australia and New Zealand, which meets routinely by telephone conference about every two weeks.

However, the importance of effective quarantine measures in maintaining Australia's favourable human health status was addressed by only a small number of written submissions to the Review Committee. Community awareness and appreciation of the benefits of effective quarantine to human health may therefore need to be heightened.

2.2.4 The Importance of the Environment

Written and public submissions clearly indicated to the Review Committee that maintaining a safe and clean natural environment is fundamentally important to both the general public and industry. The Australian community has come to recognise that quarantine has an important role in protecting Australia's indigenous flora and fauna from exotic pests and diseases. Most Australians regard Australia's unique biodiversity as an asset of high value.

It is therefore important that quarantine decisions take account of environmental considerations. Although the *Quarantine Act 1908* does not make a distinction between native flora and fauna and other plants and animals, decision making under the Act must conform with the relevant provisions of Australia's environmental legislation and related arrangements dealing with environmental impact assessment, protection of endangered species, and protection of World Heritage areas and the National Estate. Relevant legislation includes the *Wildlife Protection (Regulation of Exports and Imports) Act 1982*, the *Environment Protection (Impact of Proposals) Act 1974*, the *Endangered Species Protection Act 1992*, the *World Heritage Properties Conservation Act 1983* and the *Australian Heritage Commission Act 1975*.

In addition, the Inter-governmental Agreement on the Environment provides that environmental considerations be integrated into government decision-making processes. Quarantine authorities therefore have a major responsibility to consider possible adverse environmental impacts of quarantine decisions. Notwithstanding this, the Review Committee is of the view that the *Quarantine Act 1908* should be amended to reflect specifically the importance of quarantine to the natural environment. This issue is discussed further in Chapter 7 on Risk Analysis.

Recommendation 2: The Review Committee recommends that the goal of national quarantine should be to prevent the establishment and spread within Australia of exotic pests and diseases that are deemed to have a significant deleterious effect on humans, animals, plants or the natural environment.

2.3 ACHIEVING THE QUARANTINE GOAL

2.3.1 Principles

The Review Committee considers that the following principles should guide the direction of programs by which the Australian community seeks to achieve its quarantine goal. These principles are that:

- programs should be national in their approach;
- objectives, formulation of policy and delivery within and between programs should be consistent;
- programs should be effectively coordinated to ensure objectives are met;
- programs should be transparent;
- effective consultation and communication are necessary to ensure community awareness and ownership of programs;
- programs should aim to maintain or improve the protection of Australia's human, animal and plant health status and its natural environment;
- programs should reflect Australia's national and international obligations.

2.3.2 The Continuum of Quarantine

The Review Committee believes that there is a need for a fundamental shift in the culture of quarantine. The goal of quarantine can be most effectively achieved by:

- implementing measures offshore to reduce the threat of entry;
- using well-targeted border controls;
- ensuring early detection of incursions; and
- having emergency responses to contain, control or eradicate incursions.

The Review Committee views effective quarantine as a continuum reflecting a nationally coordinated system of surveillance, inspection and control using pre-border, border and post-border measures to prevent the establishment and spread of unwanted pests or diseases that may have a deleterious effect on humans, animals, plants or the natural environment. At present, activities under the three elements of the continuum of quarantine — pre-border, border and post-border — are addressed by each segment of

the Australian community in different ways. Although responsibility across the continuum should be coordinated at a national level, this does not necessarily imply that a single authority should have sole responsibility for the development, implementation and funding of all quarantine-related programs.

Quarantine is a community responsibility. Hence the responsibility for the development, implementation and funding of the specific elements of quarantine policies and programs should be shared between governments, industry and the general public. However, it is important that one agency assumes responsibility for the coordination of the respective quarantine elements of the continuum to ensure that the goal of quarantine is met. The Northern Australia Quarantine Strategy (NAQS) delivers an efficient and effective quarantine operation — pre-border, border and post-border — for northern Australia. In essence, NAQS is a program that is based on the notion of a continuum of quarantine, an approach that the Review Committee believes needs to be adopted nationally. Such an approach is supported by a number of peak organisations within the Australian community, including the National Farmers' Federation, which refers to it as a 'holistic' approach.

Individual elements of the continuum were addressed in a number of written and oral submissions to the Review. For instance, submissions such as that of the Queensland Chamber of Commerce and Industry argued that 'the culture of prevention is the first line of defence and the level of recognition of this culture should be regarded as a priority'. The Australian Quarantine and Inspection Service (AQIS) does this in part through the development of import protocols aimed at reducing the risk of infected or infested product departing from its source. However, collaborative work can also be undertaken to reduce the prevalence of pests and diseases offshore, particularly with Australia's northern neighbours and those countries with which Australia has significant contact through trade or tourism. This is discussed further in Chapter 6 on Offshore Activities.

Similarly, other submissions to the Review made the point that responsibility for protecting human, animal and plant health does not diminish once goods are quarantine cleared at the border. For example, the submission from The Botanical Ark argued that 'quarantine does not end once a seed germinates or a plant is released from the quarantine house — we must constantly observe the health and vigour of the plants and monitor their potential as weeds'. In the past, this element of the quarantine continuum has been performed primarily by States and industry. Unfortunately, budget cuts have seen a number of States severely reduce their agricultural field and laboratory services. This is discussed further in Chapter 9 on Monitoring and Surveillance and in Chapter 10 on Preparedness and Response.

Formal emergency response plans to incursions into Australia are currently limited to about 20 pests and diseases of animals, and to even fewer pests and diseases of plants. This deficiency is now being addressed by a task force under the umbrella of the Agriculture and Resource Management Council of Australia and New Zealand and the Standing Committee on Agriculture and Resource Management. Similarly, the Commonwealth Department of Health and Family Services is working on emergency responses for incursions affecting human health. This element of quarantine is discussed further in Chapter 10 on Preparedness and Response.

The continuum of quarantine requires a partnership between each member of the Australian community. Its effective and efficient implementation requires each member of the community to take ownership and responsibility for delivery of its share of various programs (see Section 2.4).

2.3.3 National Coordination and Consistency

To be fully effective, quarantine programs must be coordinated on a national basis and developed with a national perspective. AQIS currently has overall responsibility for national quarantine policy and service delivery, although the States and the Commonwealth, through well-established consultative arrangements, work together on specific policy issues. In some States (the Northern Territory, Tasmania and Western Australia), service delivery is also undertaken by State staff under operational guidelines developed and disseminated by AQIS.

Uniformity and consistency in the application of procedures, cost-effectiveness of administration and planning, and flexibility of staff use are key factors in a national approach to the coordination and development of quarantine programs. Anything less can lead to a reduction in confidence in the program by Australian and international communities. During the conduct of the Review, the Review Committee saw evidence of a number of instances of inconsistency in approach to quarantine between regional operations, particularly with respect to inspection procedures. A number of written submissions to the Review also raised the issue of inconsistency of implementation of quarantine policy (see Chapter 8 on Border Activities). The Review Committee is also aware that in delivering quarantine policy on behalf of the Commonwealth, States have tended to overlay their own imperatives or interpretation on some national quarantine policies, resulting in inconsistency of implementation and confusion for industry, domestically and internationally. This lack of uniformity and consistency is to the detriment of effective and efficient quarantine for Australia.

<p>Recommendation 3: The Review Committee recommends that the goal of quarantine be achieved through a nationally coordinated, consistent and transparent quarantine system using pre-border, border and post-border measures.</p>

2.4 A NATIONAL PARTNERSHIP

Effective quarantine relies on all stakeholders — governments, industry and the general public — appreciating the importance of quarantine vigilance to everyday activities and responding accordingly. Quarantine is a shared responsibility for the benefit of all Australians. Breaches of quarantine have the potential to affect not only the agricultural and public health sectors — which are widely accepted as traditional stakeholders in quarantine — but also forestry, aquaculture, the natural environment and the general public. The Review Committee strongly endorses the adoption of a broader view of quarantine that embraces the whole Australian community.

Throughout the Review process, the expressed national desire for effective, practical quarantine policies and programs was consistently strong and reassuring. The Review Committee believes that this commitment needs to be harnessed and strengthened. The general public, industry and governments must together ensure that proper attention, resources and support are given to human, animal and plant health and quarantine in Australia.

With joint ownership and involvement comes joint responsibility. Governments, industry and the general public have a shared responsibility to ensure that human, animal and plant health and quarantine protection meets the realistic expectations of the community through coordinated and effective programs. There is also a requirement to abide by the agreed rules, both national and international, governing such activities. Destructive public criticism does little to sustain the confidence of domestic consumers or of governments and consumers in Australia's export markets. Integrity in issues of human, animal and plant health and quarantine is vital to Australia's reputation internationally, and to the national benefits that such a reputation brings.

In this Report, the Review Committee seeks to introduce a partnership approach to the challenges facing Australia in the development and delivery of effective quarantine policies and programs, and the fundamental changes that are required to meet Australia's quarantine objectives in the future. The Report addresses issues such as the scope of quarantine, the importance of the natural environment, the responsibility for quarantine and the culture this embodies, the appropriate organisational structure for the effective development of quarantine policy and the delivery of quarantine programs, the understanding and appreciation of risk, and the public good aspects of quarantine. The remaining chapters of this Report explore how this partnership approach — the foundation for Australian quarantine in the future — can be developed and enhanced.

AWARENESS AND CONSULTATION

3.1 QUARANTINE CULTURE

The Review Committee believes that a fundamental change is needed to Australia's national quarantine culture. Quarantine must be a shared responsibility for the benefit of all Australians. To be effective, the continuum of quarantine advanced by the Review Committee relies on each member of the Australian community assuming ownership of quarantine and its implementation based on partnership.

To change the quarantine culture within Australia, a number of areas need to be addressed. In the first instance, the Review Committee has advocated a change to the approach taken to quarantine so that it embraces pre-border, border and post-border aspects of human, animal and plant quarantine — the continuum of quarantine. The way the Australian community views quarantine needs to be changed to instil a sense of ownership and responsibility on the part of all Australians. The partnership culture also needs to be embraced by government officials directly responsible for the development and delivery of quarantine policies and programs, to ensure that these policies and programs meet the long-term interests and expectations of the Australian community.

3.2 COMMUNITY AWARENESS

A successful quarantine system requires that the community understands and embraces the objectives of quarantine. A number of submissions to the Review suggested that awareness and education programs on quarantine in Australia were inadequate. For example, the Western Australian Farmers Federation argued that 'there is a need for more public awareness and involvement in quarantine issues so that everyone is aware of their responsibilities and quarantine impacts'.

3.2.1 The Travelling Public

The education of travellers, whether overseas visitors or returning Australians, is fundamental to ensuring that Australian quarantine safeguards are effective. One of the principles the Review Committee is promoting is that it is more effective to manage risk pre-border than at the border or post-border. Awareness of what is permissible under quarantine regulations before departure for Australia represents a most effective method for avoiding the introduction of exotic pests and diseases by overseas visitors or returning Australians. The Review Committee notes that the Australian Quarantine and Inspection Service (AQIS) has recently improved the distribution of printed quarantine information to travellers before departure for Australia, and is updating quarantine messages on video monitors in the baggage collection halls of Australia's international terminals. Specific suggestions dealing with this aspect of traveller awareness are discussed in Section 6.5.

3.2.2 Fortress Australia versus Manageable Risk

It is important that the Australian community understands and appreciates just what is achievable through effective quarantine policies and programs. Unfortunately, some sections of the community do not appear to understand the role of Australia's quarantine services and consequently have unrealistic expectations of its performance.

A number of submissions to the Review refer to Australia as an island state, and use this as justification for a 'no risk' approach to quarantine. The reality is that Australia shares an international border with Papua New Guinea (PNG). The proximity of Australia's Torres Strait Islands to the Western Province of PNG, some four kilometres from Saibai Island to the PNG coast, creates a natural passage for direct introduction of exotic pests and pathogens to the Australian mainland. Saibai Island is closer to PNG than are the islands of the Great Barrier Reef to the Queensland coast, or Rottneest Island to Perth. The Torres Strait has traditionally been an important link between indigenous Australians and the outside world. This traditional movement of people and trade throughout the northern part of Australia continues today, subject to quarantine, customs and immigration controls (see Section 3.3.6)

It is also important for the Australian community to appreciate that exotic pests and pathogens can be introduced through the natural movement of wildlife, such as migratory birds, or be borne for long distances on wind or sea currents. The fact that the Australian community encourages the establishment of wildlife sanctuaries, partly for the purpose of attracting migratory birds, would appear contradictory to the 'no risk' position held by some in the community, given that migratory birds have been the likely cause of the last

four outbreaks in Australia of virulent avian influenza, an exotic disease of Australian poultry. The community therefore needs to adopt a pragmatic approach to quarantine that is consistent with risks of pest and disease introductions via natural pathways — methods of entry that can not be prevented by quarantine authorities and that, on occasions, are actively encouraged by the community.

Similarly, there has been a significant increase in passenger movements to and from Australia in recent years, with associated recreational, cultural and economic benefits. Australia welcomed 6.8 million international air travellers in 1995–96, and indications are that this figure will continue to increase by about 10% a year up to the year 2000. Each returning Australian and visiting passenger has the potential to spread diseases of human health concern or carry minute spores of exotic pathogens on their clothing. Australia's economic development relies on its ability to trade, which generates requirements to import. Australia has long sought to enhance these economic benefits through the negotiation of agreed obligations, rules and standards governing the conduct of international trade.

The natural and economic movement of people, animals (including wildlife and insects), plants and goods provides pathways for the introduction of exotic pests and diseases. Even if sustainable, an isolationist policy would still not protect Australia from the likelihood of exotic incursions through natural pathways, such as wind-borne pests and pathogens. No quarantine service is able to prevent totally the introduction of exotic organisms. The Australian community therefore has to appreciate and accept that 'no risk' is unachievable. As the Australian Citrus Growers Federation stated in its submission to the Review Committee 'the only (commercial) "no risk" quarantine policy is a "no trade" policy that is, of course, untenable'.

It is unfortunate that a fortress Australia approach to quarantine, although unsustainable, persists within some sections of the Australian public, industry, media and government. Individually and collectively, the Australian community accepts risks daily. Given that quarantine risks are inevitable, the question is to how best manage that risk. This issue is discussed in detail in Chapter 7 on Risk Analysis.

3.2.3 Education

It is important as part of an ongoing national awareness campaign that resources are regularly allocated for educating the community — particularly school children, ethnic groups and immigrants — about the importance of quarantine to Australia. In 1992, AQIS initiated a schools communications information kit on quarantine issues. Although an expensive investment, costing about \$1 million, the product was informative and well-received by schools. Unfortunately, there appears to have been limited follow-up on the initial positive response to the program due to declining resources. The Review Committee believes that a strong schools communication program and similar initiatives should be reinstated to help disseminate the quarantine message to the community.

The quarantine message could be conveyed to the public through various media, including children's and ethnic education programs in schools (and on television and radio), drama and current affairs programs, the distribution of fact sheets on specific quarantine issues, the use of the internet and home pages on the worldwide web, the

conduct of industry workshops and presentations, and attendance by quarantine officials at relevant annual meetings and conferences. AQIS currently carries out a number of information initiatives. However, some initiatives appear to be *ad hoc*, uncoordinated, with a limited audience, and have lost momentum and effectiveness through lack of follow-up. Examples of worthwhile initiatives that the Review Committee believes have not been fully exploited are the highly successful schools 'quarantine rap' competition undertaken in South Australia (but not conducted nationally), the quarantine awareness program for foreign students developed in Tasmania, the production of a very good but inadequately promoted series of up-to-date Plant Quarantine Leaflets on plant pests and diseases, and the existence of an internal 'subject-service' contact list within AQIS.

To be truly effective, communication programs must be nationally coordinated to ensure a consistent theme, but retain a regional flavour and focus to ensure that the message reaches regional communities. A good example of this is the successful use of national football identities to promote the Northern Australia Quarantine Strategy (NAQS) message — Michael Long in the Northern Territory and Mal Meninga in the Torres Strait Islands.

The Review Committee commends AQIS for the initiative of 'Quarantine Week 96' in September 1996, and the high profile given to this event through its launch by the Minister for Primary Industries and Energy, the Hon. John Anderson MP. The Review Committee supports continuation of this event as an annual national focal point for quarantine awareness.

A number of submissions to the Review supported the need for a strong quarantine education program. For instance, the Australian Conservation Foundation stated that 'a well resourced education program on the costs of quarantine breaches and benefits of quarantine security would mobilise people to help augment AQIS's work'. At the same time, most submissions recognised that quarantine education is a shared responsibility, and that industry and States must play their part in the process. For instance, in its written submission the Tasmanian Farmers and Graziers Association stated that 'the outcome of an education program should be a better understanding of the nature of disease processes and wider 'ownership' of what constitutes acceptable risk and benefits'. It stated that the Tasmanian Farmers and Graziers Association 'accepts some responsibility to participate in developing and implementing an education program' together with governments. The Nursery Industry Association of Australia was even more specific, stating that 'most horticultural industries now employ technical officers to whom "Fact Sheets" could be directed for wider promulgation within the industry'. Coordinated national strategies should take account of the roles being played by States in the establishment of awareness and education programs.

The Community and Public Sector Union perhaps best reflected the responsibility of the community with its statement that 'the burden of cost should be carried by all parties who have an interest in ensuring our pest and disease free status is maintained, i.e. contributions from exporters, importers and the public purse, and this should be coupled with a full and proper education program to foster an understanding of why we have quarantine laws and the benefits of maintaining such laws.' In its submission to the Review, Tourism Council Australia — on behalf of the tourism industry and its members such as the Australian Federation of Travel Agents, Inbound Tour Operators Association

and major airlines servicing Australia — offered to 'assist in any way possible with the development and delivery of quarantine educational programs'.

3.2.4 Responsibility of Officials

As stated previously, quarantine is a partnership. The formulation of quarantine policies and programs must be a consultative process involving the Australian community. Quarantine policies and programs should not be developed in isolation. In formulating these policies and programs, government officials must understand and consider the concerns and interests of the community. Appropriate community consultation processes are discussed in Section 3.3.4.

Officials should also take full account of community practice in the implementation of quarantine programs and the discharge of their quarantine duties. For example, travellers to Australia bring with them a number of different customs. The lifestyle habits associated with these customs, such as a traditional food, may at first glance appear to represent a potential quarantine concern. However, an understanding of how traditional food is to be consumed may well nullify the original perceived quarantine concern. In this regard, the Review Committee believes that quarantine officers, particularly those at international airport terminals, should have training in relevant multicultural issues (see Section 11.1.2.16).

Community awareness should also be an essential element in the detection of, and response to, quarantine incursions. As one individual's submission to the Review aptly observed, 'uncertainty in the general community contributes to alarm'.

Implementation of recommendations of the Lindsay Review appears to have led to a widely held perception in the community that the attitude of Australian quarantine authorities towards exotic pests and diseases has become more relaxed in recent years. It is important that this perception is corrected by redefining and explaining the role of the quarantine service so that expectations of the Australian community are realistic and achievable. There are aspects of AQIS's activities associated with market access negotiations, protocol development, risk analysis, inspection and maintenance of disease freedom that are currently not well understood by the community.

It is therefore important that quarantine be a partnership and that all members of the community accept ownership of quarantine and assume their share of the responsibility for managing quarantine risk.

Recommendation 4: The Review Committee recommends that a major cultural change in the scope of quarantine be achieved through an ongoing and nationally coordinated awareness campaign that emphasises:

- **the continuum of quarantine (pre-border, border and post-border);**
- **the importance of protecting animal and plant industries and the natural environment;**
- **a partnership approach leading to shared ownership and responsibility (by governments, industry and the general public); and**
- **the principle of manageable risk.**

3.2.5 Publicity

For an effective community awareness campaign, it is important that the publicity strategy be professionally managed. It is also essential that the target audience of the campaign be appropriately defined. The Review Committee sees the target audience as including the general public, particularly schools, ethnic communities and immigrants; industry, especially the travel and trade sectors; government officials, particularly quarantine officials; and the international community, especially travellers and exporters to Australia.

In the Review Committee's view, it is imperative that a targeted approach be adopted for the campaign based on sound research. For instance, 1995 tourism statistics show that about 35% of all Australians travelling overseas visit countries in the Asian region and 22% visit Europe, while 50% of our visitors originate from Asia, 20% from Europe, and 10% from the United States and Canada. These statistics allow for specific messages to be designed and targeted at specific travellers. For example, travellers to or from regions of high quarantine risk, could be made aware of the different pests and diseases that pose a major problem for Australia if introduced. These statistics reinforce the concept that an effective quarantine awareness program is a coordinated series of targeted messages via a range of media — and not a single, universal, generic program. To be effective, awareness programs must be in the appropriate medium, in the appropriate language, and reflect the appropriate cultural nuances.

The national quarantine awareness campaign should also reflect and reinforce community values towards quarantine. It is apparent to the Review Committee that the Australian community has a strong interest in quarantine and sees effective quarantine as essential to

protecting animal and plant industries, the natural environment and the Australian quality of life. The community also views any deliberate attempts to breach Australia's quarantine border with great concern. For example, the Queensland Farmers' Federation argued that 'penalties for quarantine breaches do not reflect the potential threat to native fauna and flora and potential economic cost to Australia from the introduction of exotic pests and diseases'. The Australian Banana Growers' Council went further to suggest that some effort could be put into educating the judiciary on the importance of quarantine 'given their lack of will to impose maximum penalties' on those that intentionally seek to breach the quarantine border. The Review Committee supports this sentiment, and believes that as an important element of national awareness the Australian judiciary should reinforce the importance of quarantine by imposing penalties more in keeping with community attitudes.

The national awareness campaign should be endorsed at the highest levels to demonstrate clearly to the community the importance of quarantine to Australia. The Review Committee believes that the launch of the national awareness campaign should involve the Prime Minister of Australia and include relevant ministers from the Commonwealth Government and State Governments, and personalities from the general public and industry. Consideration should also be given to the introduction of a national symbol for quarantine (see Section 3.2.6).

Once commenced, a national awareness campaign on quarantine must be allocated sufficient resources to be ongoing and effective. Such an ongoing campaign need not be funded solely by the Government. Because quarantine is a community responsibility, each element of the community has a role to play in developing national quarantine awareness. For instance, international airline carriers could be asked to sponsor the detector dog program at airports (see Section 11.1.3). Given the benefits ecotourism enjoys from the maintaining of Australia's 'clean, green' image, the tourism industry could assist with dissemination of the quarantine message overseas. The Review Committee is aware that the Tourism Division of the Department of Industry, Science and Tourism is currently developing an education package with an environmental message as part of the National Ecotourism Strategy. There may be an opportunity for a national quarantine message to also be included in this initiative. Regular review of the effectiveness of the campaign should be an important element of the awareness program.

3.2.6 A National Symbol

Community awareness of quarantine could be enhanced by the adoption of a national symbol for quarantine. For instance, 'Smokey the Bear' is used as a symbol to discourage and prevent forest fires in the United States. Australia's quarantine detector dogs have the potential to be developed as an easily identifiable public relations image for quarantine.

The 'Beagle Brigade' already has appeal within the Australian community and is becoming identified internationally as being associated with quarantine. Beagle dogs are now used by a number of countries for quarantine purposes at international airports, including Canada, Japan, New Zealand and the United States. By its very nature, the Beagle Brigade is of inestimable value from a public relations perspective. The Review Committee believes that this image should be built on to improve quarantine awareness and to act as a positive deterrent for non-compliance with Australian regulations. The

beagle dog as a national symbol of quarantine would also be reinforced by the exposure of international travellers to quarantine dogs in use in other countries.

Recommendation 5: The Review Committee recommends that the public awareness campaign:

- **be developed by a professional public relations agency;**
- **be launched by the Prime Minister;**
- **adopts the Beagle Brigade as the national symbol for quarantine;**
- **uses a range of strategies including a schools program, a national Quarantine Week, and improved information for the travelling public;**
- **ensures that the penalties imposed for serious offences reflect the high value that the community places on quarantine; and**
- **reinforces commitments under Australia's international obligations.**

3.3 CONSULTATION

A common theme throughout written and public submissions to the Review was concern at what was regarded as a lack of meaningful consultation by AQIS with each element of the Australian community. Although most concern centred on consultation associated with the risk analysis process, there remains a strong undercurrent of dissatisfaction with consultation processes in general. This section deals with the broader issue of consultation, while Chapter 7 deals with consultation on risk analysis.

3.3.1 Principles of Consultation

As the Nursery Industry Association of Victoria commented in its written submission, for a quarantine authority 'to provide an effective service it must be a highly targeted operation, well resourced technically and an effective communicator with its clients — domestically and internationally'.

Effective consultation is an integral part of developing partnerships in quarantine and establishing community ownership. The principles and objectives of effective consultation should be to :

- increase transparency of quarantine policy and operations;
- improve relationships and communications with stakeholders;
- increase community intelligence and feedback on quarantine policy, operations and issues of concern;
- enhance policy development by taking account of community views; and
- increase ownership of quarantine decisions.

3.3.2 Industry and Agency Consultative Arrangements

AQIS currently holds regular (generally six-monthly) meetings with a number of organisations that it regards as major clients — including the National Farmers' Federation, the Australian Poultry Industry Association, the Australian Livestock Exporters Council, the Pork Council of Australia, and the Australian Animal Health Laboratory. AQIS also consults regularly with plant industries through the Australian Horticultural Corporation's Market Access Committee. In addition, the concerns of agricultural industries are discussed during regular meetings of AQIS with State departments of agriculture (e.g. via Animal Health Committee and Plant Health Committee) that cover a broad range of animal and plant health issues. The full range of consultative or advisory groups that AQIS has with industry are listed in the 1996 Senate Committee's report (Senate 1996, pp. 187–188).

AQIS has also established Industry Charging Review Committees (ICRCs) with several industry sectors, including those involved in biologicals, horticulture, grains, live animals, import clearance, seaports entry and airports entry (although consultations with this group have moved to an informal basis since introduction of the Passenger Movement Charge). However, discussion within the ICRCs has tended to centre on costs and charges of quarantine services rather than on the broader aspects of quarantine policy development. The Review Committee's view of ICRCs is supported by the Quarantine and Inspection Advisory Council (QIAC), which in its written submission noted that consultative committees 'have been relatively successful in communicating technical matters, but from QIAC's perspective they have limited effect in building meaningful relationships with those industries until relatively recent times'. The one notable exception is the AQIS–Industry Cargo Consultative Committee (AICCC). AICCC is the peak consultative body for all issues arising from the management of Australia's quarantine strategy and the relationship between the cargo handling industry and AQIS. The objective of AICCC is to improve the effectiveness and efficiency of border control, and wherever possible coordinate the functions of all concerned to avoid duplication and enhance the smooth flow of cargo in and out of ports. More recently, the AICCC has developed industry-funded initiatives such as the Import/Export Cargo Clearance Study (AICCC 1996) to provide input to border program development.

The Review Committee believes that the role of ICRCs should be expanded to provide for meaningful consultation on policy and strategic issues relating to their respective programs. For example, these ICRCs could be effectively used to discuss and revise views on pests and diseases of quarantine concern, to discuss industry positions on international developments and the role to be played by industry in progressing these issues, or to share government and industry survey results of Australia's and neighbouring countries' animal and plant health status. However, the expanded areas of dialogue should not extend to risk analysis, which would be covered by specific consultative mechanisms (see Chapter 7 on Risk Analysis).

The consultation process should also be broadened to include other industry groups that do not have access to ICRCs. In this regard, the Review Committee notes the comment of the report of the National Task Force on Imported Fish and Fish Products that 'there is no specific industry group which provide [*sic*] AQIS with a ready mechanism for dealing with aquatic animal imports. While regular meetings are held with the Fishing Industry

Advisory Committee, the focus is fish processing, food standards, inspection policy and related issues' (NTFIFFP 1996). The 1996 Senate Committee's report also stated that 'it is imperative for an organisation such as AQIS to have vigorous consultative processes ... founded on a collaborative effort between AQIS and the industry. However the Committee is concerned that effective channels of communication have not been established with some industries and also smaller producer groups' (Senate 1996, p. xviii). In the view of the Review Committee it is the quality of consultation that is important, not merely the quantity or process of those consultations.

Mention was also made to the Review Committee of the unrealistic timelines sometimes allowed for the consultative process. One example cited by the Australian Food Council and the Australia New Zealand Food Authority was the limited time often given for parties to respond to matters relating to Codex committees. Although it was acknowledged by the parties that 'unrealistic time constraints may sometimes be dictated by Codex itself ... there must be substantial improvements in the consultative mechanism if the interest of Australian food and beverage processors are to be taken into account'. The Australian Horse Council and the Australian Veterinary Association also expressed concern that inadequate time was provided for industry to comment on new import protocols or on often complex amendments to protocols.

Recommendation 6: The Review Committee recommends that the present Industry Charging Review Committees become Industry Consultative Committees that are:

- re-formed to include consultation on policy and strategic issues relating to quarantine programs; and
- expanded to include other relevant industry groups.

3.3.3 State Governments

During the course of the Review, those States (the Australian Capital Territory, New South Wales, Queensland, South Australia and Victoria) that had transferred responsibility for delivery of national quarantine to the Commonwealth expressed concern at a sense of isolation from the quarantine-decision making process that now existed. These States felt doubly disadvantaged as the Commonwealth has maintained formal lines of communication on quarantine with the States (the Northern Territory, Tasmania and Western Australia) that retained responsibility for delivering quarantine services. In its submission to the Review, the Queensland Department of Primary Industries stated that 'the process of consultation is a means to rectifying discrepancies in policy formulation. With the transfer of quarantine and export inspection functions back to the Commonwealth, AQIS has lost the direct link with the local level. State officers continue to work in critical geographic areas but no longer participate in the quarantine function. Therefore, there needs to be a forum to re-establish this link through the use of State agencies'. Similarly, Primary Industries South Australia argued that 'it is important that the States' consultative input on animal disease issues such as import protocols is maintained. This is because much of the technical expertise and experience with specific disease issues lies with the State animal health authorities'.

Although it is natural for some confusion and inconsistency when any new organisational arrangements are being put in place and the expectations of each of the parties are being clarified and addressed, it is important that relevant communication linkages that existed

before the transfer be retained. The Review Committee is strongly of the view that the Commonwealth should re-establish meaningful quarantine communications links with all States. In the first instance, this could be achieved through formal meetings of the chief veterinary and the chief plant officers, or their equivalents, from the Commonwealth and from each State. Maintaining this contact and dialogue is important for the effective implementation of the continuum of quarantine, particularly as most pest and disease monitoring programs and emergency response strategies are delivered through State legislation.

The Review Committee also noted that a number of the regular meetings that previously took place between State and Commonwealth technical quarantine specialists (e.g. entomologists and taxonomists) were no longer occurring. Regular meetings of specialist staff provide the opportunity for significant exchanges on quarantine policies and procedures, and generate a collective and consistent approach to quarantine issues. Although the Review Committee is pleased to learn that a national meeting of quarantine entomologists took place in mid-July 1996 (the first such meeting since 1994), it is strongly of the view that regular meetings between specialist quarantine staff across all disciplines need to be formalised. These formal gatherings should occur at least once a year.

Recommendation 7: The Review Committee recommends that Government re-establish formal communication links on quarantine policies and programs with States including through:

- formal meetings of the chief veterinary and plant officers, or their equivalents; and
- regular meetings of specialist quarantine staff across all disciplines.

3.3.4 Community Consultation

Because quarantine decisions have a community-wide impact, the consultation process must include all stakeholders, not just the fee-paying clients of the quarantine service. All government organisations have a fundamental responsibility to establish and maintain effective systems of communication with the community. Quarantine decisions affecting industry and the general public should not be made in isolation. In the Review Committee's opinion, there is a need for a more active process of wider community consultation and information dissemination and collection.

The Review Committee was advised that there was no easily identifiable process by which 'on-the-ground' intelligence from the community could be effectively communicated to quarantine authorities. A number of submissions suggested the establishment of clearly defined and readily accessible channels of communication between the community, representative organisations, and AQIS to improve the quarantine service's responsiveness to quarantine concerns. The Review Committee is aware that an internal 'subject-service' contact list currently exists within AQIS. Wide dissemination of this contact list — including relevant Commonwealth, State and industry quarantine contacts in the regions — would help in addressing this issue. The compilation of such a comprehensive contact list reflects the shared community responsibility for quarantine.

Consultation and communication must be a two-way process. The community has a responsibility to initiate meaningful contact and consultation with quarantine authorities on issues of importance or where there is a perceived lack of information or knowledge. As highlighted in the 1996 Senate Committee's report, 'it is the primary responsibility of AQIS to develop and maintain consultative links with its clients, recognising that consultation is an integral part of its operations, and not merely an adjunct to it. However, the Committee also clearly asserts that industry must play its part in developing an appropriate consultative relationship with AQIS' (Senate 1996, p. xviii). The Review Committee is also strongly of the view that because quarantine is a partnership, responsibility for effective and meaningful consultation and communication rests with all members of the partnership.

The Review Committee believes that consultation and communication are fundamental to the required shift in the culture of quarantine in Australia. The effectiveness of consultation and communication will ultimately be judged by the credibility and ownership of quarantine policies, programs and decisions.

3.3.5 Registered Stakeholders

Consultation must be representative and meaningful if there is to be community ownership of quarantine. In this regard, the formal consultative base has to be broader than the client list and the committee and advisory structure operated by AQIS. Formal consultative arrangements need to be established for the wider community, including with environmental representatives and consumer bodies. However, the consultation process should not be so exhaustive that it is ineffective.

To ensure that the consultative process is effective, the Review Committee believes that there is a need for a register of relevant stakeholders that represent the quarantine interests of the Australian community. Where appropriate, peak organisations should represent the interests of their constituents. Local, regional and State issues should be channelled through the appropriate national representative organisation. Once developed, the list of registered stakeholders would be publicly gazetted by the Government for comment. New organisations, bodies or representative groups could also apply for consideration to be included in the register.

The Commonwealth quarantine authority would be required to ensure that all registered stakeholders are regularly consulted and kept fully informed of significant developments in quarantine policies and programs. It would be the responsibility of registered stakeholders to ensure that their members were informed of issues emerging from consultation. The Commonwealth quarantine authority would continue to keep the general public and interested individuals informed through the various media discussed in Section 3.2.3. With respect to specific quarantine issues such as individual import protocols, detailed consultation would be held with the relevant subset of the registered stakeholders, as discussed in Chapter 7 on Risk Analysis.

The Review Committee believes that the register of stakeholders should include:

- national producer bodies representing agriculture, aquaculture and forestry (e.g. National Farmers' Federation and other peak bodies);
- national import bodies (e.g. Customs Brokers Council of Australia, Australian Timber Importers Federation, Importers Association of Australia);
- State departments of agriculture;
- relevant Commonwealth agencies (e.g. Australian Nature Conservation Agency);
- regional authorities (e.g. Torres Strait Regional Authority);
- national conservation and environmental bodies (e.g. Australian Conservation Foundation);
- national consumer bodies (e.g. Australian Consumers Association);
- national peak scientific bodies in animal and plant health (e.g. Australian Veterinary Association);
- national representative and advisory groups (e.g. Australian Animal Health Council, Australian Chamber of Commerce and Industry, Tourism Council Australia);
- national processor bodies (e.g. Australian Food Council); and
- national service bodies (e.g. Board of Airline Representatives in Australia, Australian Chamber of Shipping, Australian International Movers Association).

The role of registered stakeholders is discussed further in Chapter 4 on Quarantine Australia and Chapter 7 on Risk Analysis.

3.3.6 Role of Indigenous Peoples and Remote Local Communities

Remote parts of Torres Strait, Cape York Peninsula, the Northern Territory and the Kimberley region — as well as Australia's distant island territories such as the Cocos (Keeling) Islands and Christmas Island — have become more accessible to both local inhabitants and visitors as communications and transport have improved. Cultural interaction between indigenous people in these areas and with neighbouring societies has traditionally occurred, as has trade in commodities. In some regions, this traditional interaction has been specifically protected by formal instruments — such as the Torres Strait Treaty between Australia and PNG. External commercial interest in these areas is also expected to increase, particularly from the ecotourism industry. The proximity of these regions to neighbouring countries and their sheer remoteness present added quarantine concerns that to date have been addressed through such measures as the establishment of special quarantine zones, special management strategies such as NAQS

(see Sections 6.2.2.2. and 9.5.1.1), or exclusion of the territory (such as Christmas Island) from the *Quarantine Act 1908*.

The Review Committee is conscious of the extremely important role that Australia's indigenous peoples and remote local communities play in quarantine and in the protection of its natural environment. However, it is the Review Committee's view that indigenous peoples and remote local communities can play an even greater role in the development and implementation of quarantine programs.

Recommendation 8: The Review Committee recommends that Government undertake appropriate consultation with indigenous peoples and remote local communities in the development and implementation of quarantine policies and programs that affect their communities.

PART III: A NEW ORGANISATION

4. QUARANTINE AUSTRALIA

4.1 INTRODUCTION

The Australian Quarantine and Inspection Service (AQIS) is one of the seven operating groups that constitute the Department of Primary Industries and Energy (DPIE). Although AQIS possesses substantial operating independence, it is ultimately responsible to the DPIE Executive Board, which comprises the departmental Secretary and the Executive Directors of each of the seven groups.

AQIS delivers both export inspection and import quarantine services and manages the associated technical and operational support systems. Although AQIS administers several pieces of legislation, powers are derived mainly from the *Export Control Act 1982* and the *Quarantine Act 1908*. The organisation is divided into policy (or regulatory) and operations (or service) divisions designed to improve client focus and to focus each division on its core business. The Quarantine and Inspection Advisory Council (QIAC), whose role is to provide some external input to AQIS, was formed in late 1992 and replaced the former Quarantine and Inspection Policy Council.

A number of written and oral submissions to the Review Committee argued that AQIS was operating less than optimally and that the structure should be changed to address a perceived under-performance. This chapter addresses criticisms raised about the current structure of Commonwealth quarantine services and proposes changes to improve future performance of these services and reflect the proposed broadened scope of quarantine.

4.2 PRINCIPLES

Having identified the goal and scope of quarantine, the Review Committee developed a set of principles that should be embodied in the organisational structure designed to

achieve the objectives of quarantine. In the Review Committee's view, the supporting organisational structure should:

- provide for the development of a culture, both within the organisation and in the community, that embraces the goal of quarantine and the continuum approach to quarantine;
- enhance the establishment of a partnership with stakeholders — namely governments, industry and the general public — to ensure community ownership of quarantine policies and programs;
- permit effective, efficient and transparent development and delivery of Australia's quarantine policies and programs across the continuum of quarantine;
- allow flexible application of resources and procedures to develop and deliver quarantine policies and programs;
- provide appropriate mechanisms for ensuring ongoing delivery of the public good elements of quarantine;
- provide the ability to deliver commercial objectives consistent with the goal of quarantine, Government policy and community needs;
- establish credibility with stakeholders and confidence with domestic and international consumers and overseas quarantine agencies;
- forge strong linkages with appropriate external groups to provide expert input into the development and delivery of policies and programs across the continuum of quarantine;
- be practical in both form and in delivery of functions;
- maximise accountability to stakeholders;
- be responsive to the interests and concerns of the community;
- instil and encourage the development of professionalism within the organisation;
- ensure fairness and equity in the discharge of the organisation's duties; and
- ensure independence from undue influence from any section of the community.

These principles set the measure by which the Review Committee evaluated the merits of the various options considered for the organisational structure best able to achieve the goal and objectives of quarantine.

4.3 ORGANISATIONAL OPTIONS

During the Review a range of options concerning the structure of Commonwealth quarantine services were placed before the Review Committee, namely:

- continuation of the current structure;
- separation of export inspection and quarantine import functions;
- separation of quarantine policy development and quarantine operational roles;
- separation of both export inspection and quarantine import functions and the policy development and service delivery roles within these two functions — a four-way split;
- relocation of the quarantine functions from DPIE to another Government portfolio; and
- establishment of a statutory authority to manage Australia's quarantine functions.

The Review Committee also considered the option of privatising Australia's quarantine service, but discounted this option as it did not meet the principles set out in Section 4.2. The Review Committee also notes that the option of privatisation of Australia's quarantine services was not proposed in any of the submissions to the Review. To the contrary, a number of submissions argued strongly against privatisation of quarantine functions.

4.3.1 Retaining the Current Structure

Retaining the *status quo* was argued mainly for reasons of organisational stability, particularly given that AQIS has undergone a number of changes to its structure and operations since its formation in 1986. Proponents of this option also felt that the strong positive linkages AQIS enjoys with other operating groups within DPIE should be retained. The perceived efficiency associated with the 'no change' option was a further supporting argument presented. The 1996 Senate Committee also expressed the view that 'AQIS should not be restructured at this stage' (Senate 1996, p. 40).

As an operational group within DPIE, AQIS is naturally perceived by many in the community as having a primary focus on the relationship of quarantine to commercial agriculture. However, as discussed in Chapter 2, quarantine also embraces environmental and health issues. To broaden the scope, awareness and ownership of quarantine and achieve the goal of quarantine, the Review Committee believes that Commonwealth responsibility for quarantine should be at arm's length from DPIE. While the Review Committee acknowledges the references to community and environmental interests in DPIE's 1996–97 Corporate Plan (DPIE 1996), positioning quarantine at arm's length from the Department would be consistent with the broadened responsibilities of Commonwealth quarantine authorities stemming from a continuum approach to quarantine.

In its written submission to the Review Committee, QIAC stated that it 'has observed that AQIS's presence within a government department can (and does) limit the speed and degree of change and reform that is achievable. The Public Service Act [*sic*], the industrial relations environment and climate, and the needs [*sic*] to service government provide real constraints especially in the establishment of a new culture'. The Review Committee believes that development of a new culture needs to be achieved, both within the organisation and within the Australian community.

4.3.2 Separation of Export Inspection and Quarantine Import Functions

Proponents of separating export inspection and quarantine import functions were strongly of the view that there must be a clear separation between facilitating exports and protecting Australia from pests and diseases. A number of proponents argued that the discharge of national quarantine responsibilities by Australian authorities had been compromised by the associated international export facilitation role of AQIS and a perceived over-willingness to meet trade obligations. For example, the Queensland Farmers' Federation argued that 'the joint responsibility for export inspection and quarantine protection has resulted in inadequate ownership ... and ongoing management of Australia's disease and pest-free status'. Although under this option the export and the

import functions would be administered by two separate agencies, some submissions suggested that an overarching policy group could be established to advise and direct each agency.

A number of the concerns with the export and import linkage stemmed from AQIS's meat export inspection functions. The Review Committee notes that the Government and the Meat Industry Council have embarked on pilot studies of company-based meat inspection operating within a Government-approved and supervised quality assurance framework. This is consistent with the move internationally towards quality assurance systems for food inspection based on Hazard Analysis and Critical Control Point rather than traditional end-point visual inspection. The Government has announced that, provided pilot studies are successful, company-based inspection will be the cornerstone and central strategy for reforming meat inspection in Australia. Given that meat inspection accounts for almost half of the current AQIS resource base, movement to company-based inspection should address most of the concerns raised with the Review Committee regarding the perceived adverse impact that export facilitation has on quarantine functions.

With respect to other export inspection functions currently performed by AQIS for commodities such as fish, dairy and grains, there has already been significant movement towards industry or third-party inspection with audit by AQIS under a quality assurance program. For products such as fruit, vegetables and horticulture, export inspection and import quarantine functions are performed by the same AQIS officers to ensure an efficient and effective use of resources.

4.3.3 Separation of Policy (Regulation) and Operations (Service) Roles

Separation of the quarantine regulation and service functions would see quarantine policy development transferred to one or more of the other operating groups within DPIE, with the operational role being retained by AQIS. Proponents of this option argued that such a separation would make policy decisions (e.g. those decisions relating to new imports or new import conditions) more independent of AQIS. For instance, the Tasmanian Farmers and Graziers Association argued that the 'structure for decision making at present has enormous potential to compromise AQIS now and in the future'. Under the proposed separation, the Tasmanian Farmers and Graziers Association suggested that 'AQIS would retain all technical and delivery functions and be freed from the responsibility of balancing technical, trade and political policy'. Proponents of this option argue it will lead to enhanced credibility and transparency of policy and service delivery.

In the view of the Review Committee, the development of effective and efficient quarantine policy is compromised if divorced from implementation. In addition, it is difficult to ensure that staff achieve operational objectives if denied understanding or input into the policy development and implementation process. During its visit to New Zealand, the Review Committee observed this separation model in practice, and noted that New Zealand authorities were experiencing a number of management difficulties. In particular, quarantine delivery staff expressed a feeling of isolation from policy development of the programs they were contracted to deliver. Previous informal ties between operational and policy staff had been strained by prohibited access by delivery

staff to policy areas in the same building. The Review Committee is strongly of the view that splitting the policy and operational functions into separate agencies would result in a significant loss of communication between policy and service delivery arms of quarantine. This view is shared by QIAC.

The driving force behind many of the calls for separation of the quarantine policy function was concern that policy development should be independent of the operational functions in which AQIS was considered to have a vested interest. The Review Committee has sought to address these concerns by developing a model for risk analysis that encourages greater independence, transparency and community ownership (see Chapter 7 on Risk Analysis).

There were also claims that the dual function performed by AQIS provided it with the opportunity to develop regulations that by their very nature could be delivered only by AQIS and hence were not truly open to third-party contestability. However, in its evidence to the 1996 Senate Committee, AQIS stated that there was no intention to compete against private providers of delivery services where a decision had been made to make such services third-party contestable. Rather, in moving towards operations with contestable delivery, AQIS was looking to withdraw fully from the provision of those services and limit its role to a regulatory one (Senate 1996, pp. 33–34).

4.3.4 Four-way Split

Some submissions, such as that by the National Farmers' Federation, argued not only for a separation of import quarantine from export inspection but also, within this split, a separation of the policy and operation functions. Supporters of this option believe it offers the combined benefits of the previous two options. As stated in Section 4.3.3, the Review Committee strongly opposes the separation of the quarantine policy and operational functions into two distinct organisations. Similarly, as discussed in Section 4.3.2, the Review Committee believes that moves by the Government and the meat industry to differentiate clearly meat export inspection functions from quarantine functions should go a substantial way to addressing the concerns expressed at having these two functions co-located within the one organisation.

4.3.5 Relocation in another Government Portfolio

A few submissions to the Review Committee suggested that responsibility for quarantine was not properly suited to an agricultural portfolio and should be relocated within another Department. Suggested portfolios were the Department of Health and Family Services and the Department of the Environment, Sport and Territories. This option reflected the view that quarantine has wider responsibilities than just the interests of the agricultural sector. In the view of the Review Committee, moving responsibility for quarantine to another Commonwealth portfolio or splitting AQIS among two or more portfolios would not address many of the concerns expressed by parties during the Review, nor achieve the goal of quarantine.

4.3.6 Statutory Authority

A number of submissions proposed the establishment of a statutory authority to assume responsibility for Australia's quarantine policies and programs. Proponents of this option argued that a statutory authority would provide greater independence of decision making, instil a wider sense of community ownership of quarantine, permit a more flexible use of resources with resultant gains in efficiency, and reduce the level of political controversy associated with quarantine decisions.

Placing responsibility for quarantine within a statutory authority may be achieved either by establishment of an agency within an existing Commonwealth department, along the lines of a business unit responsible to a departmental Secretary, or independent from a department and directly responsible to a Commonwealth Minister. In analysing these two options, the Review Committee acknowledges the assistance provided by the Commonwealth Department of Finance through the provision of a copy of its *Guide To Commercialisation in the Commonwealth Public Sector* (Department of Finance 1996). This document addresses the proposed replacement legislation for the *Audit Act 1901*, particularly the Financial Management and Accountability (FMA) legislation and the Commonwealth Authorities and Companies (CAC) legislation. This legislation was considered by Parliament, but not passed, during the last months of the previous Government. The Department of Finance anticipates that the FMA and CAC legislation, if approved by the Parliament, will come into effect on 1 July 1997.

4.3.6.1 Types of statutory authorities

The proposed FMA legislation covers government organisations that do not have legal ownership of money or property separate from the Commonwealth. As described in the proposed legislation, these organisations as agents of the Commonwealth are:

- departments of state (including business units operating within departments); or
- Parliamentary departments; or
- statutory authorities whose enabling legislation does not give them legal ownership of money or property separate from the Commonwealth.

All Commonwealth bodies to be subject to the proposed CAC legislation are separate legal entities from the Commonwealth. These bodies therefore have the capacity to own money and other assets separate from the Commonwealth. Under the proposed legislation, CAC bodies fall into one of the following groups:

- authorities that have as their principal function public interest activities and are mainly funded from the Budget;
- authorities whose costs are wholly or partly recovered from levies or taxes imposed on industries identified as beneficiaries of the services provided;
- Government Business Enterprises;

- Commonwealth-controlled companies limited by shares that are not Government Business Enterprises; or
- other companies.

According to the Department of Finance document, a body should generally be an authority, rather than a company, if either or both of the following characteristics apply:

- the body engages mainly in public interest activities rather than commercial activities; or
- the body is fully commercialised, or engages mainly in commercialised activities, but receives payments from the Budget on an annual basis to fund some of its activities.

The Department of Finance document goes on to describe 'corporatisation' as entailing comprehensive reform embodying five basic principles:

- clarity and consistency of objectives;
- management authority;
- performance monitoring;
- effective rewards and sanctions; and
- competitive neutrality with the private sector.

Although these principles apply in varying degrees to all Commonwealth organisations, they appear to apply more fully, or have the potential to be applied more fully, to bodies that are independent of a departmental structure, than to bodies that fall under a departmental structure.

4.3.6.2 Flexibility of independent statutory authorities

As stated previously, unlike agencies under the auspices of a department, authorities under the proposed CAC legislation own monies and other assets in their own right, can operate their own bank accounts, and have access to interest credited to their bank accounts. Funds received from user-charging are retained in an authority's bank accounts without the need to negotiate a resource agreement with the Department of Finance.

Access to such a facility should assist the quarantine authority in overcoming the current inefficient system where charges for quarantine services are negotiated each year with industry. Funds collected through overcharging in any year are now refunded to industry, after negotiation, via a variety of methods in the following year. However, financial shortfall from undercharging for services in any year must be met from the quarantine operating budget. Equity and certainty for all parties could be achieved if charges were negotiated and agreed for a longer period (e.g. say three years) with any surplus being

invested in improved service delivery and any shortfall being amortised, to minimise disruption to service delivery.

Authorities under the proposed CAC legislation are not subject to the Government's running costs arrangements and therefore do not have access to the Provision for Running Costs Borrowing. However, a CAC-style authority may borrow from the Budget under a resource agreement with the Department of Finance. Although it is proposed that the facility be available to authorities mainly dependent on the Budget to finance operations, the system does provide Government with improved certainty as to its budget outlays in any financial year.

Unlike agencies under the arm of a department (covered by the proposed FMA legislation), the staff of most independent authorities covered by the proposed CAC legislation are not employed under the *Public Service Act 1922*. Where such authorities have enabling legislation, staff are generally employed under that legislation. CAC-style authorities are therefore free to develop their own workplace bargaining arrangements within guidelines endorsed by the Government. This provides greater employment flexibility enhancing productivity, achieving cost efficiencies and allowing opportunity for improved employment conditions.

Where an organisation requires some independence from Ministerial control and financial independence from the Commonwealth, an authority under the proposed CAC legislation may be more suitable than one under the proposed FMA legislation. Commercial-style operations involve a degree of independence from day-to-day Ministerial control because the supply of goods or services subject to charges should, to varying degrees, be established through close consultation with the consumers of those goods or services. This dialogue is increasing in magnitude and growing in importance with respect to quarantine as Government takes the conscious decision to withdraw community service obligation (CSO) funding from quarantine operations. Through consultative committees, industry is becoming more involved and integrated with the service supplied by quarantine authorities and the resultant charging schedule imposed. That is not to say that responsible Ministers should not be consulted about significant proposals — in fact, such consultation is a requirement of the proposed CAC legislation.

4.3.6.3 Advantages of an independent statutory authority

Establishment of a statutory authority outside the departmental structure is, in the view of the Review Committee, a better option than a statutory authority established within a department. Advantages include:

- functional independence from the department;
- a suitable structure for engendering a cultural change in the organisation;
- potential for greater job satisfaction for staff;
- clearer identification of Ministerial and authority responsibilities in the enabling legislation;

- competitive management;
- greater resource efficiency and flexibility;
- financial independence;
- greater community ownership and responsiveness to stakeholders; and
- more public accountability.

These advantages reflect principles established by the Review Committee for assessing an appropriate organisational structure to achieve the quarantine objectives identified (see Section 4.2).

There are also potential disadvantages in establishing a statutory authority that is independent of a department. These include increased vulnerability to budget cuts, possibly greater pressure to increase external revenue, perceived increased susceptibility to community pressure, and weaker links with relevant government bodies.

At present, AQIS resembles a 'business unit' within DPIE. AQIS receives funding from the Budget to meet its CSOs through its own Appropriation (Division 495). These CSO funds together with revenue from industry charges are paid into a Group 2 trust account that AQIS has operated since 1 July 1993. The policy directions and operations of AQIS are overseen by an advisory board (QIAC) but AQIS reports to the Minister for Primary Industries and Energy through the Secretary of DPIE and is part of the DPIE management structure.

4.3.7 The Appropriate Structure — Quarantine Australia

From the submissions received by the Review Committee, there would appear to be considerable disquiet within some sectors of the Australian community concerning the recent performance of Australia's quarantine service. The Review Committee believes that a cultural change is necessary for the quarantine authority to have its credibility re-established with those sectors of the Australian community. An appropriate organisational structure should be established to engender a culture more suited to the goal and the continuum of quarantine that the Review Committee is advocating. It is the Review Committee's opinion that the Australian community is receptive to this necessary change.

Having regard to the principles to be embodied in an appropriate organisational structure identified in Section 4.2, the Review Committee believes that the goal of quarantine and the continuum approach to quarantine (as set out in Chapter 2) would be best achieved through the establishment of a statutory authority separate from DPIE but responsible to the Minister for Primary Industries and Energy. Establishment of this separate entity — to be called Quarantine Australia — would serve as the catalyst for instilling a new culture for quarantine, both within Quarantine Australia and within the Australian community. Establishment of a statutory authority with responsibility for both quarantine policy and operations was supported by a number of submissions, including that of the Australian Academy of Science.

The Review Committee is conscious that in proposing the name 'Quarantine Australia' some may choose to view the organisation as one seeking to 'isolate' Australia from the rest of the international community. However, nothing could be further from the intentions of this Report and the principles underlying it. The name of Quarantine Australia is aimed at projecting a positive image of quarantine consistent with the vision of maintaining Australia's relative freedom from unwanted pests and diseases while fulfilling national and international obligations in a responsible manner.

Quarantine Australia, through its Board of Directors and mode of operation, would be instrumental in establishing an effective partnership with the Australian community and developing national ownership of quarantine. As a statutory authority independent of DPIE, Quarantine Australia would have greater flexibility of resources for the transparent professional development and effective implementation of Australia's quarantine policies and programs in accordance with Government policy.

Recommendation 9: The Review Committee recommends that the Government establish a statutory authority, to be named Quarantine Australia, to provide quarantine policy and services in accordance with Government policy.

4.4 FUNCTIONS AND OPERATIONS OF QUARANTINE AUSTRALIA

4.4.1 Scope

In establishing a new organisation, a key question is which responsibilities of existing organisations should be assumed by the new structure.

4.4.1.1 Close relationship of policy and operations functions

As discussed in the preceding section, the Review Committee is strongly of the view that the policy and operational functions of quarantine must remain within Quarantine Australia for the organisation to be effective. Independence and transparency of policy formulation will be assisted by the establishment of a Board, adoption of a new consultative framework for risk analysis (as detailed in Chapter 7), development of an effective partnership with stakeholders leading to community ownership of quarantine policy, and effective consultative processes (as discussed in Chapter 3).

There must be a close relationship between quarantine policy formulation and operational delivery if the objectives of quarantine are to be achieved. However, this relationship must be based on sound science, taking account of operational practicalities, and not unduly influenced by commercial imperatives. Further, in keeping with the concept of the continuum of quarantine, it is important that Quarantine Australia maintains effective leadership in international fora underscored by a sound, coordinated policy and operational base. This imperative has already been recognised by the Government in the August 1996 Budget, with the allocation to AQIS of \$2 million a year for the next three years to fund a Technical Market Access Program to overcome quarantine and other technical barriers to trade in Asia as part of its Supermarket to Asia Strategy. This issue is discussed further in Chapter 5 on International Leadership.

4.4.1.2 Complementarity of selected import and export functions

With respect to the current export functions of AQIS, the Review Committee notes the separate studies being undertaken by Government and industry on meat export inspection and Government's stated objectives in this area. The Review Committee does not believe that operational aspects of meat inspection should be included in Quarantine Australia.

The Review Committee notes the other export inspection functions currently performed by AQIS fall into two categories — those commodities for which officers also perform import quarantine tasks (such as fruit and vegetables) and those commodities subject to industry quality assurance programs (such as dairy exports). The former category remains an efficient use of resources, with quarantine officers undertaking both quarantine and export inspections. The Review Committee does not consider that the integrity of Quarantine Australia would be compromised by the performance of this dual role for a limited number of commodities. The latter category of commodities where resources are associated with the auditing and certification function is relatively small. Efficiencies would be realised by Quarantine Australia assuming initially, at least, this limited role (perhaps under an audit and compliance section within Quarantine Australia) rather than isolating a small group from both Quarantine Australia and any new structure established to oversee meat inspection functions.

4.4.1.3 Chief Veterinary Officer and Chief Plant Protection Officer

The position of Australia's Chief Veterinary Officer (CVO) does not formally lie within AQIS, although the CVO plays an important role in policy setting with respect to the Office International des Epizooties and has input to the Codex Alimentarius Commission. The CVO has a wide role with respect to animal (including aquatic animal) and human health issues across DPIE, including responsibility for DPIE's Office of Food Safety. The CVO chairs and manages the Consultative Committee on Exotic Animal Diseases, a national committee dealing with exotic or emergency animal disease preparedness and response activities. The Review Committee considers that the position of CVO should remain with DPIE, given its wide role in animal and human health, but that the CVO must continue to maintain strong links with Quarantine Australia.

Currently, there is no position for plant health within Government equivalent to that of the CVO. Creation of a position within Government of a Chief Plant Protection Officer (CPPO) responsible for plant health would naturally sit within DPIE. This issue is discussed further in Chapter 9 on Monitoring and Surveillance and in Chapter 11 on Resources and Legislation.

4.4.1.4 Direct policy development

The Review Committee fully recognises that a proposal to maintain policy development within Quarantine Australia, a statutory authority independent of a line portfolio, is a new concept for the Commonwealth Government, although common in State Governments. Quarantine Australia must clearly operate within the Government's overall policy framework. In this regard, attention will need to be given to Quarantine Australia's charter as embodied in the enabling legislation, and to its obligatory reporting requirements, especially to Parliament through the Minister for Primary Industries and

Energy. Even where independence is stipulated, it is expected that the activities of Quarantine Australia will normally be monitored by the Minister for Primary Industries and Energy to ensure satisfactory observance of the requirements of its charter, the adequacy of that charter, and the general quality of performance. This would include assurances that the conduct of business by Quarantine Australia conforms to appropriate public standards of propriety and probity. In meeting these obligations, the Minister will need to be kept regularly advised by Quarantine Australia of its activities, including policy development. Quarantine Australia would be as accountable to the Minister as is AQIS, but directly so rather than through DPIE.

The Review Committee sees strong operational links between Quarantine Australia and the Offices of the CVO and CPPO as essential to maintaining consistent development and implementation of animal and plant health and quarantine policy, and for providing the Minister for Primary Industries and Energy with a source of independent advice on quarantine issues from DPIE, as required.

4.4.1.5 Other responsibilities

Other considerations (as discussed in the following sections) that will require attention in the establishment of Quarantine Australia include:

- the relationships between the Board, the executive management, the Minister and the central agencies of government;
- funding procedures and financial management; the clear and transparent specification, with Ministerial agreement, of service delivery requirements and funding arrangements relating to CSOs;
- areas of independence and those subject to Ministerial controls, including activities for which specific Ministerial approval must be sought; and
- the Minister's recourse to powers of direction, to ensure that Australia's national or international obligations are met.

<p>Recommendation 10: The Review Committee recommends that Quarantine Australia assume all the functions and responsibilities of the Australian Quarantine and Inspection Service, with the exception of meat inspection.</p>
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4.4.1.6 A single border agency

The Lindsay Review made several recommendations concerning closer working relationships between the Australian Customs Service (ACS) and AQIS. The Review Committee understands that these recommendations were considered by a joint ACS–AQIS working party, which determined that their implementation was not feasible at that time.

A Memorandum of Understanding (MOU) covering cooperation and consultation between AQIS and ACS was signed in December 1990. The four principal functional areas of formal consultation relate to passenger processing and aircraft clearance, cargo

clearance, Coastwatch, and postal clearance. There is also considerable formal and informal consultation between the agencies on specific operational and policy issues, particularly at the working level. In most areas, it would appear that these consultations are effective, cordial and regular, and that the level of cooperation between the two agencies is reasonable. However, there remains a strong sense of 'individualism' displayed by officers of the two agencies. The Review Committee saw limited evidence of a 'national' approach to the challenges facing Australia on quarantine and customs issues.

A number of submissions to the Review canvassed the attractiveness of a single border agency undertaking immigration, customs and quarantine functions at some stage in the future. The Review Committee believes that there is merit in this concept, and is aware that Canada is currently conducting a pilot trial on single-agency delivery of quarantine, customs and immigration at two of its border crossings with the United States. Advances in technology associated with changed risk profiling and risk management procedures, particularly for passenger processing, in the areas of quarantine, customs and immigration may logically lead to a single border agency at some time in the future.

However, the Review Committee believes that implementation of such an objective at present could cause significant disruption to border functions largely due to the current entrenched and divergent cultures of customs and quarantine authorities. For instance, in some areas such as cargo management, ACS is investigating the possibility of post-entry periodic returns, which depending on implementation of the strategy, could be contrary to quarantine interests of data collection and quarantine clearance (see Section 8.5.2.1).

The Review Committee notes that as from 1 January 1997, ACS will substantially increase its fees for manual lodgement of import entries, with the aim of collecting an additional \$46.9 million a year to help cover portfolio savings targets set by the Government in its August 1996 Budget. At the same time, new charges for AQIS announced in the Budget will recoup from industry \$3 million in 1996–97 and \$7.5 million in 1997–98. Although there may be renewed calls by Australian industry for a single border agency because of the increase in costs for import clearance (quarantine and customs) of product, the Review Committee believes that increased national awareness and ownership under a new structure will contribute to more efficient allocation of national resources. Placement of the issue of a single border agency on the Government's program for economic reform should therefore be delayed until the new approach to quarantine is established and proven.

Recommendation 11: The Review Committee recommends that Quarantine Australia and the Australian Customs Service continue to work in close collaboration but remain as separate agencies for the time being.

4.4.2 The Board

4.4.2.1 Role of the Board

As with other independent Commonwealth statutory authorities, Quarantine Australia would be managed by a Board directly accountable to the Minister for Primary Industries and Energy for its overall policy, operational and financial performance. The Secretary of DPIE would advise the Minister on major matters relating to the performance of Quarantine Australia and the overall Government policy framework in which it operates. The balance of strategic policy and management activity between the Minister for Primary Industries and Energy and the Directors would be embodied in the enabling legislation for Quarantine Australia.

Recommendation 12: The Review Committee recommends that policy and operational direction for Quarantine Australia be determined by a Board of Directors appointed by and responsible to the Minister for Primary Industries and Energy.

As stated previously, the role of the Board of Quarantine Australia should be to develop quarantine policy and programs and to advise the Minister regularly on the discharge of its charter. The expanded functions to be adopted by Quarantine Australia as a result of the continuum of quarantine approach recommended by the Review Committee should result in advice to the Minister on the full gamut of quarantine issues. The duties currently performed by QIAC would therefore be subsumed by the Board of Quarantine Australia.

Recommendation 13: The Review Committee recommends that the Board of Quarantine Australia assume the responsibilities of the Quarantine and Inspection Advisory Council as they relate to the charter of Quarantine Australia.

4.4.2.2 Composition of the Board

The Review Committee believes that to be effective the Board of Quarantine Australia should number no less than seven and no more than nine directors, including the Chairperson and the Managing Director. The Chairperson of Quarantine Australia would be appointed directly by the Minister for Primary Industries and Energy, with the other Directors appointed by the Minister on recommendation from a competitive selection process similar to that employed in appointing Directors of other government statutory bodies. The Managing Director of Quarantine Australia would be selected by the other Directors of the Board through a national advertising and interview process.

Recommendation 14: The Review Committee recommends that the Board of Quarantine Australia comprise up to nine members:

- a Chairperson appointed by the Minister for Primary Industries and Energy;**
- up to seven members appointed by the Minister following an independent competitive selection process based on skills criteria; and**
- a Managing Director appointed by the other members of the Board.**

4.4.2.3 Qualifications and tenure of the Board

An independent Board for Quarantine Australia must have credibility, both domestically and internationally. The importance of this is intensified in light of the Review Committee's recommendation that Quarantine Australia has responsibility for both development and delivery of quarantine policy, within the Government's overall policy settings. As one individual's submission to the Review stated, 'credibility can quickly be lost if integrity is not maintained'. Similarly, QIAC is of the view that 'the major obstacle to any move to corporate or statutory authority status (for AQIS) is whether overseas authorities would accept an industry-related body running (quarantine)'.

To address this issue, the Review Committee believes that the Board of Quarantine Australia should be selected on the basis of the breadth of skills necessary to achieve the charter of the organisation, rather than be appointed on a sectoral or institutional basis. Fields in which the Review Committee believes the Board should collectively have experience or qualifications include:

- animal health or production;
- plant health or production;
- agricultural processing;
- importing and exporting;
- public health;
- conservation and management of the natural environment;
- business management or economics;
- finance;
- industrial relations;
- communications and promotion; and
- Commonwealth and State governance.

A skills-based Board permits selection from a broad cross-section of the Australian community. This approach will counter any perception that the Board of Quarantine Australia is unduly influenced by any special interest group. Appointment to the Board of Quarantine Australia through a competitive and transparent selection process will further guarantee the independence of the Board from specific interests.

As with all statutory authorities, it will be the duty of Board members to meet their responsibilities in relation to Quarantine Australia — and not to particular interest groups. The Board of Quarantine Australia will also be accountable to the Minister for Primary Industries and Energy, and through the Minister to the Parliament, for its

performance. This, together with the fact that Quarantine Australia will be a Commonwealth statutory authority, should give domestic and international consumers and overseas quarantine agencies confidence in the integrity of Quarantine Australia.

The Review Committee believes that the enabling legislation for Quarantine Australia should provide for fixed periods of tenure not exceeding five years for Board members, other than the Managing Director, with any one Board member not serving more than two consecutive terms of tenure. This arrangement should promote the infusion of new approaches over time and limit the possibility of Quarantine Australia becoming captive to a select group. Provision should be made for staggered appointments of Directors in the initial establishment of Quarantine Australia so that no more than half the Board is scheduled for retirement at any one time.

Recommendation 15: The Review Committee recommends that the members of the Board of Quarantine Australia should have, collectively, experience and qualifications in a wide range of fields including: animal health or production; plant health or production; agricultural processing; importing and exporting; public health; conservation and management of the natural environment; business management or economics; finance; industrial relations; communications and promotion; and Commonwealth and State governance.

4.4.2.4 Position of Director of Animal and Plant Quarantine

Under the *Quarantine Act 1908*, the Secretary of the Department of Primary Industries and Energy is also the Director of Animal and Plant Quarantine and holds most of the powers under the Act. With the establishment of Quarantine Australia at arm's length from DPIE, the Review Committee believes that these powers rightly rest with the new organisation. This is not only for practical reasons, but also to reinforce the fact that quarantine decisions take account of a broader set of issues than commercial agricultural interests and that these decisions are scientifically based and independent of individual or interest group pressure.

Given that the Chairperson of Quarantine Australia will be the person ultimately accountable to the Minister for Primary Industries and Energy for the performance of Quarantine Australia, it follows that the Chairperson would also hold the position of Director of Animal and Plant Quarantine. However, it should be stressed that this quarantine power could not be delegated to any other member of the Board, except the Managing Director (who may also delegate this power to other staff of Quarantine Australia). It is not the intention of the Review Committee that quarantine decisions should be made *de facto* by the Board. This responsibility must lie solely with the Director of Quarantine, or his or her delegate, as currently operates within DPIE.

Recommendation 16: The Review Committee recommends that the Chairperson of the Board of Quarantine Australia be the Director of Animal and Plant Quarantine under the *Quarantine Act 1908*.

4.4.3 Management

Although the Review Committee sees the Board of Quarantine Australia setting the strategic policy and operational directions for the organisation, the day-to-day management of Quarantine Australia should rest with the executive management of the organisation. Against this background, the Chairperson of Quarantine Australia would be appointed on a part-time basis, with the Managing Director employed on a full-time basis. The Managing Director would be responsible to the Board for the conduct of Quarantine Australia's business.

As discussed in detail in Sections 4.4.1.1 and 4.4.1.2, the Review Committee is strongly of the view that to be fully effective Quarantine Australia must be directly responsible for both the policy and operations functions of quarantine. Similarly, for efficient and practical use of resources, Quarantine Australia should also concurrently assume responsibility for those export service delivery functions not associated with meat inspection. Based on the current AQIS structure, most of the responsibilities of the Development and Evaluation Division would be included in Quarantine Australia. Those responsibilities in the Operations Division relating to quarantine, support services, imported foods, processed foods and those areas not directly involved in the delivery of meat inspection services would also be included in Quarantine Australia.

The Review Committee notes that the special task force set up by the Minister for Primary Industries and Energy to define the new delivery arrangements for meat inspection services will also be considering the impact this initiative will have on the functional organisation for the remaining non-meat inspection staff. This task force, under its steering committee, is scheduled to report to the Minister at the end of October 1996. Determination of the final organisational structure within Quarantine Australia should await the outcome of the Meat Inspection Reform Task Force. Close regard will also need to be paid to the provision of information technology and personnel services, as the isolation of the meat inspection function may mean that critical mass no longer exists to warrant in-house provision of such services by Quarantine Australia.

Recommendation 17: The Review Committee recommends that management of Quarantine Australia be provided by an executive management group consisting of its Managing Director and senior managers, with determination of the actual functional structure to await the outcome of the Meat Inspection Reform Task Force.

4.4.4 Communication

For Quarantine Australia to operate effectively, it is important that the organisation has good lines of formal communication to the Minister for Primary Industries and Energy and to its stakeholders.

With respect to the former, Quarantine Australia should provide the Minister with a five-year corporate plan. The corporate plan should be drafted in accordance with relevant Government policy and be supported by annual reports to the Minister on the performance of Quarantine Australia. The annual report should also be the centrepiece of Quarantine Australia's accountability to the Minister and to the Parliament. This formal reporting process will need to be supplemented by regular contact between the Chairperson of Quarantine Australia and the Minister — and between the senior

management of Quarantine Australia and the Minister and the Minister's office — to keep the Minister informed of major developments in national and international quarantine issues.

The Review Committee also believes it is important for the Australian community be kept informed on a regular and formal basis of the developments in quarantine and the performance of Quarantine Australia. Section 3.3.5 discussed the need for a register of relevant stakeholders that are representative of the quarantine interests of the Australian community and provided examples of organisations that might be included on this register. The Review Committee is strongly of the view that there needs to be a high level of interaction between Quarantine Australia and its registered stakeholders.

As well as consulting on specific matters during the course of a year, the Review Committee also believes that it is important that general issues such as developments in quarantine-related policies and programs nationally and internationally, the performance of Quarantine Australia and quarantine priorities and strategies for the future, be discussed on a formal and regular basis with its registered stakeholders. The Review Committee believes that this should be achieved by an annual meeting of the registered stakeholders, at which the Chairperson would report on behalf of the Board of Quarantine Australia.

Recommendation 18: The Review Committee recommends that Quarantine Australia establish a register of stakeholders to be regularly consulted on key quarantine issues, and that its Chairperson report annually to a meeting of registered stakeholders.

4.4.5 Other Issues

4.4.5.1 Quarantine Development Unit

During the course of the review process, the Review Committee was impressed by the internal reports drafted and prepared by the Quarantine Development Unit within AQIS. This Unit was established on a temporary basis to address a number of emerging quarantine issues. The Review Committee sees considerable merit in the establishment of a permanent Quarantine Development Unit within Quarantine Australia to develop strategic papers for internal consideration and to undertake specific investigations. The Unit should take the opportunity to bring in outside expertise where necessary. Such an approach would also help to maintain the formal and informal linkages between Quarantine Australia and other organisations.

Recommendation 19: The Review Committee recommends that a Quarantine Development Unit be established within Quarantine Australia.

4.4.5.2 Total quality management

A number of submissions to the Review maintained that AQIS appeared to have little or no internal quality management procedures in place for its own programs, even though it expected industry to adopt such procedures. This issue was highlighted by CSIRO, which argued that the incursion of silverleaf whitefly and bruchid beetles may well be attributable to the lack of an in-house total quality management approach to quarantine programs, within AQIS.

The adoption by Quarantine Australia of total quality management would be consistent with the principle of 'effective, efficient and transparent development and delivery of Australia's quarantine policies and programs across the continuum of quarantine' highlighted in Section 4.2. Total quality management represents a useful management tool for ensuring consistent policy and programs are developed and implemented nationally. It is also important that, under this approach, Quarantine Australia undertakes regular and systematic reviews of past quarantine decisions and their continued appropriateness.

Recommendation 20: The Review Committee recommends that Quarantine Australia adopt a total quality management approach to the development and implementation of quarantine policies and programs.

4.4.6 Linkages with External Bodies

The Review Committee is acutely aware that AQIS has a number of strong and important institutional linkages within DPIE, and formal and informal linkages with other agencies and groups. Within DPIE, AQIS provides input into general portfolio policy issues and international issues including multilateral and bilateral trade, and obtains policy and economic advice on the range of animal and plant-based primary industries, together with specialist scientific and technical advice. Similarly, AQIS liaises extensively with other agencies including ACS, the Australian Federal Police, the Department of the Environment, Sport and Territories, the Department of Health and Family Services, the Department of Foreign Affairs and Trade, Austrade, the Australia New Zealand Food Authority, Australia Post, the Department of Industry, Science and Tourism, CSIRO, the Australian Horticultural Corporation and rural industry organisations generally. These linkages reflect complementary interests in issues relating to quarantine.

The Review Committee anticipates that there will be concern at the change in these formal and informal linkages with the establishment of Quarantine Australia. Maintaining this important network can not be left to chance or to personalities. It is essential that mechanisms are put in place for Quarantine Australia to seek and receive relevant and appropriate advice from external sources of expertise in groups such as DPIE (e.g. the Australian Bureau of Agricultural and Resource Economics, and the Bureau of Resource Sciences), the Department of Health and Family Services, CSIRO, the Australian Nature Conservation Agency, the Department of the Environment, Sport and Territories, universities and museums, and State departments. To formalise these linkages, the Review Committee believes that Quarantine Australia should develop a series of MOUs, or their equivalent, with key contact agencies setting out mutually agreed consultative and operational arrangements. Such an MOU already exists between AQIS and ACS (as

noted in Section 4.4.1.6) and this could provide a model for other MOUs. The Review Committee fully appreciates that, to be effective, formal mechanisms such as MOUs require a genuine desire on the part of each party to facilitate the elements of the arrangement. However, serious intent is necessary for any arrangement to work properly, whether it is a formal or an informal linkage.

The Review Committee is aware that ACS is discussing with AQIS the possibility of replacing the existing MOU with a detailed Service Level Agreement. It is proposed that this agreement would provide for consultative arrangements between the two agencies, detail the functions to be performed on each other's behalf and the administrative arrangements to support these functions and introduce performance indicators. Specific MOUs with individual agencies such as the Department of the Environment, Sport and Territories could cover specific issues such as the appointment of Quarantine Australia officers as inspectors under the *Wildlife Protection (Regulation of Exports and Imports) Act 1982* and with Australia Post on handling international mail for quarantine purposes (see Sections 8.3.2.4 and 8.3.2.5 respectively).

The Review Committee also notes the linkages that currently exist between AQIS and the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) through the Standing Committee on Agriculture and Resource Management (SCARM). The Review Committee expects DPIE's interaction with these bodies on animal and plant health issues will be substantially maintained through the positions of CVO and CPPO within the Department. The role that Quarantine Australia should continue to play with ARMCANZ and SCARM should be specifically addressed in its MOU with DPIE.

Recommendation 21: The Review Committee recommends that Quarantine Australia develop Memoranda of Understanding (or their equivalent) with key organisations, including relevant groups within the Department of Primary Industries and Energy.

The proposed structure of Quarantine Australia and its relationship with other entities is shown in Figure 1.

4.5 TASK FORCE FOR THE ESTABLISHMENT OF QUARANTINE AUSTRALIA

It is important that the transition to Quarantine Australia be appropriately managed to minimise disruption and dislocation of existing quarantine arrangements and linkages. Organisational change will require staff to be managed and supported to adapt to the new culture of Quarantine Australia. Consultation with staff, both directly and through the relevant union, should therefore be undertaken as early as possible. To assist management of the process, a task force should be established to identify and be responsible for implementing the required changes, including preparation of the enabling legislation.

Recommendation 22: The Review Committee recommends that the Department of Primary Industries and Energy immediately establish a task force to manage the

movement of the relevant responsibilities under the Australian Quarantine and Inspection Service to a new statutory authority, Quarantine Australia.

PART IV: PRE-BORDER QUARANTINE

5. INTERNATIONAL OBLIGATIONS AND LEADERSHIP

5.1 INTRODUCTION

Australia, as a middle-ranked economic and political power, highly dependent on and integrated with the global community, has been very active in a wide range of international fora. Australia's involvement in such fora has conveyed substantial benefits, both nationally and internationally. For example, in recent years Australian initiatives have contributed to a negotiated peace settlement in Cambodia and a ban on whaling. As one individual's submission to the Review stated, international agreements and obligations 'create a sense of order in dealing with other countries'. The Review Committee acknowledges that Australian quarantine policy must continue to take account of international obligations related to trade, public health and the natural environment.

5.2 WORLD TRADE

5.2.1 International Agreements

In its role as leader of the Cairns Group of Agricultural Trading Nations, Australia was a strong advocate for agricultural reform in the successful Uruguay Round of multilateral trade negotiations. Extending the disciplines of the General Agreement on Tariffs and Trade to agricultural commodities was a most significant achievement. However, with the reduction in tariffs resulting from the Uruguay Round, there was concern that some countries might turn to quarantine and other non-tariff restrictions as an alternative means of protecting their agricultural industries. The Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) and the Agreement on Technical Barriers to Trade (TBT Agreement) were designed to prevent this from happening. The purpose of these agreements is to define how technical barriers to trade may be used legitimately. The agreements are discussed in more detail in Appendix C on International Obligations Relevant to Quarantine.

5.2.1.1 SPS and TBT Agreements

The SPS Agreement encourages governments to 'harmonise' or base their national measures on the international standards, guidelines and recommendations developed in other international organisations to which most World Trade Organization (WTO) member governments belong. These organisations include:

- for human health and food safety, the Codex Alimentarius Commission (Codex) of the Food and Agriculture Organization (FAO) and the World Health Organization (WHO);

- for animal health, the Office International des Epizooties (OIE); and
- for plant health, the Committee of Experts on Phytosanitary Measures established under the auspices of the International Plant Protection Convention (IPPC).

Encouragement to use the international standards set by these organisations does not mean that these international standards are a ceiling on national standards. However, governments that do not base their national requirements on relevant international standards must justify their higher standards on scientific grounds.

It is important that Australia ensures that gains to the agricultural sector embodied in the WTO and the SPS and TBT Agreements are not eroded. Given that Australia exports five times as much food as it imports, clearly it is in Australia's interest to ensure that quarantine policies and processes, internationally and domestically, are not used as a device to protect industries from import competition. International standards are increasingly being taken into account by countries in establishing conditions for import access for animals, plants and their products. In this regard, it is important that Australia ensures that its national agricultural policies and practices are recognised by international standards-setting organisations (such as OIE, IPPC and Codex), given the reliance that WTO places on these organisations as international reference bodies.

5.2.1.2 Animal quarantine

In 1993, OIE added chapters on import risk analysis and related topics — namely evaluation of veterinary services, and zoning and regionalisation — to its Animal Health Code. In 1994, OIE adopted guidelines on surveillance and monitoring of animal health. Australia played a significant role in the development of the animal health standards that underpin these arrangements for international trade. This has been done by active participation in OIE and FAO and through regular consultations with like-minded countries — notably Canada, New Zealand and the United States during quadrilateral quarantine consultations.

5.2.1.3 Plant quarantine

The establishment of WTO has given new impetus to the development of plant quarantine standards under the IPPC. Regional plant protection organisations established under the convention have, in consultation with FAO, set in train two programs. The first was the establishment of a Convention secretariat; the second the initiation of a technical work program. Australia has been an active participant in the technical work program and has been involved in drafting technical standards for the principles of plant quarantine, pest risk analysis, and individual elements of the guidelines for pest risk analysis. The resultant standards have subsequently been accepted and put into practice by many countries, including Australia.

5.2.1.4 Market access

As more countries put into effect agreed international standards, Australia should be able to negotiate improved market access arrangements. For example, recognition of the bluetongue-free status of southern Australia by the European Union, in accordance with

OIE guidelines on disease regionalisation, would enable Australia to overcome the present ban on the import of Australian ruminants and germplasm into the European Union.

International standards, including processes for risk analysis, are constantly being reviewed and refined. For example, IPPC's pest risk analysis standard for plants requires further development to assist countries to implement it. Similarly, OIE is currently reviewing its system for categorising animal diseases. Australian quarantine officials presented a paper on this topic at the January 1996 meeting of OIE's Code Commission (the body responsible for the development of animal health standards that underpin arrangements for international trade in animals and animal products).

5.2.1.5 Definitional problems

A number of key definitions of terms used in the SPS Agreement remain the subject of considerable debate. Examples include the interpretation of:

- a 'consistent approach to risk management';
- 'least trade restrictive' measures;
- 'sufficient scientific evidence' on which to impose restrictions;
- a 'reasonable time' for assessments;
- 'official' or 'regional control' areas;
- 'appropriate risk assessment'; and
- the 'relative cost-effectiveness of alternative approaches to limiting risks'.

Resolving these issues, among others, will be central to the successful implementation of a set of international rules that recognise the specific human, animal and plant health differences of sovereign countries and the relative advantages or disadvantages that accrue from the rules.

It is therefore important that Australia continues to play an active part in the elaboration of key international trade standards and definitions which are consistent with Australia's obligations as a member of WTO and with Australia's domestic human, animal and plant health policies. Australia was a world leader in advocating adoption of the import risk analysis approach for countries to determine scientifically based quarantine conditions governing the import of foreign products. Largely as a result of its advocacy, this approach has been adopted for OIE, IPPC and WTO purposes. Indeed, given the leading role played by Australia — and in particular Australia's quarantine officials in championing the import risk analysis approach — it is reasonable to expect Quarantine Australia to be at the forefront in defining and conducting specific import risk analyses, internationally and domestically.

5.2.2 Regional Agreements

In the economic and trade arenas, Australia also has opportunities and obligations at regional and bilateral levels. The Asia–Pacific Economic Co-operation Forum has established a Sub-Committee on Standards and Conformance, because the differing standards within the region discourage trade and slow down the move towards closer economic integration. Standards represent the biggest non-tariff barrier facing Australian exporters in the region. Under the 1995 Osaka Action Agenda, the year 2000 has been set as a target date for the development of medium-term benchmarks for harmonisation of standards.

Australia is also active in the Asia–Pacific Plant Protection Commission, a regional body under the auspices of the IPPC. Australia, together with New Zealand, is a major contributor in this forum to the development of harmonised plant quarantine standards. This forum is also a vehicle through which Australia can promote its position internationally.

5.2.3 Trading Partner Agreements

5.2.3.1 New Zealand

Quarantine was not formally covered in the 1983 Australia–New Zealand Closer Economic Relations Trade Agreement (CER). Australia and New Zealand concluded a Protocol on the Harmonisation of Quarantine Administrative Procedures following a review in 1988. The Protocol was primarily aimed at removing impediments to the development of trans-Tasman trade. Work has focused, *inter alia*, on developing common approaches in the areas of inspection standards and procedures for handling specific quarantine matters. CER has also encouraged the acceptance of international standards and procedures where these are appropriate. The Review Committee is aware from written submissions that further work needs to be undertaken by respective authorities in this area if the full opportunities for trans-Tasman trade are to be realised.

5.2.3.2 South-East Asia

Harmonisation of the exchange of quarantine information is one activity under CER–ASEAN Free Trade Area (AFTA) Cooperation. This formal dialogue could be used to provide a useful conduit for keeping a number of South-East Asian governments and regional businesses fully informed of Australia's approach to quarantine issues. For example, this could be done through information exchange and inclusion of quarantine information in the CER–AFTA customs compendium. Apart from 'transparency aspects', active dialogue towards the stated objective may also provide opportunities to lessen the external emphasis on perceived negative aspects of Australia's quarantine requirements. It would help shift emphasis towards identifying better ways to facilitate and streamline trade procedures in the quarantine area by, for example, using electronic systems to cover quarantine requirements.

5.2.3.3 Other

Australia has several formal bilateral and trilateral quarantine cooperation and dialogue agreements with a number of its trading partners. These arrangements provide valuable points of focus for progressing specific quarantine issues, including technical market access issues, advancing cooperative work programs of mutual interest (particularly with our northern neighbours), and addressing developments in national, regional and multilateral quarantine policies and programs.

Australia has much to gain by being at the forefront in these multilateral, regional and bilateral fora in negotiations and discussions on quarantine issues of importance to Australia. It is in Australia's long-term interests to exercise influence on these international guidelines.

Recommendation 23: The Review Committee recommends that Australia continue to take a lead role in the development of international definitions, standards, rules and procedures related to quarantine, including risk analysis, area freedom and market access arrangements.

5.3 PUBLIC HEALTH

Australia is one of the few countries that is a non-signatory to the International Health Regulations adopted by the 22nd World Health Assembly in 1969. This is largely because Australia's *Quarantine Act 1908* provides wider powers to regulate travel than are specified in the International Health Regulations, which are aimed at preventing the spread of human diseases. However, there is no indication that Australia's non-signatory status has resulted in any undue action against Australia.

5.4 NATURAL ENVIRONMENT

Australia is signatory to a large number of international agreements on the environment—103 using a broad definition (92 multilateral and 11 bilateral). Many of these agreements include provisions that influence Australia's quarantine policy.

5.4.1 CITES

The Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) imposes obligations on signatories to protect certain endangered species. For example, it includes provisions to use controls on import and export permits to prevent over-exploitation of these species. The Australian Nature Conservation Agency is responsible for implementing Australia's obligations under CITES in concert with other Government agencies. In this regard, in 1993 AQIS developed a protocol for the successful importation of black rhinoceros from Africa after the Bureau of Resource Sciences reviewed the disease risks and how these could be managed. The merits of this initiative were highlighted by the birth of a male black rhinoceros at the Western Plains Zoo New South Wales in June 1996.

5.4.2 Biodiversity

The current Biosafety Protocol negotiation, under the auspices of the Convention on Biological Diversity ratified by Australia in June 1993 may have implications for Australia's quarantine arrangements. In particular, it could result in obligations relating to the safe transfer, handling and use of genetically modified organisms that could have an adverse impact on the natural environment. A Negotiating Group has been established by members to the Convention on this issue with the objective of completing its work by 1998.

Some submissions to the Review emphasised that, as a signatory to the Convention, Australia is obliged to protect its biodiversity. There were strong arguments that Australia should take a conservative approach to the implementation of agreements formulated under WTO by adopting the 'precautionary principle' as a legitimate objective under the SPS and TBT Agreements. This issue is discussed further in Section 7.4.6.

Other submissions argued that for Australia's quarantine system to be internationally credible it must include careful consideration of potential environmental impacts on World Heritage listed areas. There were further views expressed that Australia should take the opportunity offered by the precedent-setting phase of WTO to ensure Australia's ecological distinctiveness is acknowledged in all quarantine decision-making processes that might affect Australia's natural environment.

5.4.3 Other

By way of further illustration, Australia is also a signatory to the Convention on Wetlands of International Importance, to the United Nations Convention on the Law of the Sea, and to the Convention for the Protection of the Natural Resources and Environment of the South Pacific. These multilateral and regional agreements include an obligation to protect natural environments, including their flora and fauna. Thus there is a responsibility to ensure that import controls, including quarantine policies and procedures, are adequate to manage the threat of exotic pests and diseases that could damage such environments.

Apart from the international obligations arising from being a signatory to these international conventions, the Australian community is now demanding greater protection of its unique natural environment by responsible agencies, including Australia's quarantine service.

5.5 NATIONAL IMPACT

5.5.1 Industry and Community Concerns

In written submissions and at public hearings, several parties expressed concern that Government officials appeared to be working hard to meet international obligations — particularly relating to the facilitation of imports — at the perceived expense of protecting Australian industries from imported exotic pests and diseases. This sentiment was closely allied with the contention that Australia, by leading in the adoption of multilateral, regional and bilateral obligations, was putting its industry at a competitive

disadvantage thus exacerbating the difficulties experienced by industry competing on an uneven international playing field.

However, membership of international organisations and participation in international arrangements confers both rights and obligations on Australia. As one individual's written submission aptly put it, 'open markets require open minds'. Australia has a reputation for pursuing a conservative approach to quarantine policy. However, this must not be interpreted as a protectionist policy. WTO members — most of which are also Australia's regional and bilateral trading partners — have established a clear direction that OIE, IPPC and Codex should lead a process of developing more objective and transparent trading criteria. Australia, as a signatory to WTO, has a responsibility and an obligation to support the OIE, IPPC and Codex initiatives and to comply with their agreed procedures and policies.

That is not to say that Australia should capitulate to unreasonable multilateral, regional or bilateral pressure that would put its human, animal or plant health status at risk. Australia has a sovereign right to ensure that its current human, animal and plant health status is at least maintained or preferably enhanced. Overseas authorities should appreciate fully Australia's specific quarantine concerns, just as Australia must respect those of its trading partners and neighbours. Australia is permitted internationally to take a conservative approach to quarantine, as long as this policy is scientifically based and consistently implemented.

Recommendation 24: The Review Committee recommends that Australia's international position on quarantine-related issues be based on objective scientific principles consistent with Australia's national quarantine goal.

5.5.2 Involvement of Stakeholders

In essence, Australian industry generally accepts that it is now part of the global community and must participate accordingly. What appears to be at the root of some industry concerns is the belief that international agreements on principles, disciplines, standards and specific market access arrangements are being developed and implemented by Government in the absence of meaningful industry consultation. Industry and the community want to be involved in the decisions that will affect their business operations and living standards.

There appears to be a need for greater involvement of stakeholders in the process of developing terms, conditions and definitions for use in international fora and market access arrangements that have a flow-on effect to Australia's human, animal and plant health policies. During the Uruguay Round of multilateral trade negotiations, the Department of Foreign Affairs and Trade and the Department of Primary Industries and Energy discussed with relevant peak industry bodies the development and refinement of Australia's position on agriculture in the negotiations. It would appear that not all of these peak industry bodies have kept grass-roots members apprised of developments as they occurred, nor have Government officials emphasised sufficiently the degree of consultation undertaken. To address this issue, the Review Committee believes that Quarantine Australia, in association with the Department of Foreign Affairs and Trade, should organise a series of industry seminars to explain the implications of the Uruguay

Round, the SPS and TBT Agreements, the process of risk analysis and the expected long-term benefits of these to Australia. These seminars would form part of the overall community awareness program on quarantine discussed in Chapter 3 of this Report.

Industry and the community need to be reassured that policies adopted in international fora will not lead to unacceptable risks being taken with Australia's 'national assets'. Similarly, industry and the community must be reassured that the decisions taken also embrace Australia's people, flora and fauna and are not purely northern-hemisphere or trading-partner focused, and that Australia will not automatically adopt international standards that have been developed by countries where a pest or disease exotic to Australia is endemic. Furthermore, if international fora use principles, standards or definitions that are demonstrably contrary to Australia's interests, Australia should take the lead in seeking to rectify the situation. Industry and the community need to be reassured that, in discharging Australia's multilateral, regional and bilateral obligations, officials will take note of levels of compliance by other countries and be prepared, if necessary, to challenge blatant avoidance or evasion of international obligations by those countries. The Review Committee believes that Quarantine Australia should take full account of the wide range of community interests in the development of quarantine strategies, including issues to be advanced in international fora.

In its written and public submission to the Committee, the Australian Horse Council argued that Australia should take a lead role in developing the OIE Code on international horse diseases and push for the establishment of an equine group to update Code chapters on these diseases. More specifically, the Council argued that Australia's quarantine authorities should lobby the OIE to establish a permanent Working Party on the international movement of horses with terms of reference that include the review of Code chapters relating to diseases of horses. Similarly, Australia is free of many of the economically important diseases that affect aquatic animals in other parts of the world. The report of the National Task Force on Imported Fish and Fish Products notes that 'of the 11 diseases of aquatic animals in the OIE list of notifiable diseases, three are recorded in Australia, while of the 14 "other diseases", only four are nominally present in Australia. Conversely, many of the exotic pathogens of high quarantine importance for Australia, are not listed on either OIE or European Union lists' (NTFIFFP 1996). The report goes on to recommend that 'Australia request the OIE to modify aquatic animal disease lists to include diseases of significance to Australia'.

Such concerted action would aim to establish international standards and procedures that reflect Australia's equine and aquatic animal health status and hence not compromise this status in the world arena. These are specific examples of where cooperative consultation and active involvement between Quarantine Australia and its stakeholders could lead to an agreed leadership role for Australia in international fora — a leadership role strongly supported by industry and the community. The Review Committee is strongly of the view that registered stakeholders should be regularly informed, consulted and involved, where appropriate, in international discussions and negotiations that have quarantine significance (see Sections 3.3.2 and 3.3.5).

5.6 INTERNATIONAL LEADERSHIP

The Review Committee does not regard Australia's obligations under the numerous international environmental agreements, world health regulations and international trade agreements to be in conflict with each other or conflicting with Australia's quarantine policy. The goal of quarantine (as enunciated in Chapter 2 of this Report) is to prevent the establishment and spread within Australia of exotic pests and diseases that are deemed to have a significant deleterious effect on humans, animals, plants or the natural environment. Quarantine Australia has an opportunity to ensure the implementation of effective quarantine policies that are based on scientific reasoning and are consistent with Australia's international obligations.

A consistent and coordinated strategy is required if Australia is to achieve its objectives fully and effectively in the plethora of international fora. To be of influence, Government officials, in consultation with industry and the community, must develop a clear vision of the directions in which Australia wishes to lead the international debate. The armoury of initiatives for realising this vision should be established on a strong scientific basis, reflect Australia's overall human, animal and plant health policies, and fully use informal and formal domestic and international networks of officials, academics, institutions and industry.

There is a widely held perception, nationally and internationally, that Australia is no longer at the leading edge of the international debate on some methods and standards that have the potential to determine how international agreements affecting quarantine are implemented. Evidence presented to the Review suggests that the attention that Australia once commanded in relevant international fora has diminished. Factors contributing to this decline include reduced resources for the scientific research required to develop sustainable positions, and the time required for positioning players in relevant areas of influence internationally and for engendering confidence and acceptance by other international decision makers.

Unless there is clear recognition that investment of time and resources in these activities is essential to achieving the overall vision, the process will be ineffective. This point was also recognised in the 1996 Senate Committee's report, which concluded that 'it is crucial that AQIS maintain its international liaison activities' (Senate 1996, p. 127). There is little international advantage in a well-constructed contingency plan that effectively controls an incursion of an exotic pest or disease if the method for control and verification is not aligned with international standards or is not accepted internationally. Australian officials should be given the opportunity to take the lead in international fora to ensure that international disciplines, standards and procedures set are at least consistent with, and no more onerous than, those applied within Australia.

As an example of international leadership, New Zealand has taken a positive and aggressive approach nationally to the development of sound principles and methods for undertaking risk analysis, not only in the area of quarantine but across the whole of government. It has dedicated resources to researching and formulating a position on risk analysis supported by definitive science. It has also committed resources to servicing and attending international meetings to influence the debate on the issue in accordance with New Zealand priorities. Officials and others have attained influential positions on international bodies and committees such as in OIE, thus leading and influencing international debate.

Australia once filled this role. For example, through CSIRO Australia has developed internationally recognised expert systems such as CLIMEX and BIOCLIM. Australian quarantine authorities have been innovative in using CLIMEX in some pest risk analyses and using other quantitative methods in setting tolerances for contaminants. Australian authorities should build on their past record and develop new risk assessment methods in concert with other scientifically based organisations and industry. Organisations such as the Bureau of Resource Sciences have an interest in developing as centres of excellence in quantitative quarantine risk analysis and have skills in complex systems analysis and decision support systems (see Section 7.8).

Australia has in the past been able to influence positively the harmonisation of sanitary and phytosanitary issues through its involvement in international organisations such as OIE and IPPC. Australia needs to reassert itself in this role to ensure that the interests of its people, industry and natural environment are fully reflected in international undertakings.

To be effective, sufficient time and effort must be committed to the development of intellectual property within Quarantine Australia to underpin its international leadership activities. In recent times, limited resources and increased workloads have weakened this commitment. Constrained activity in this area is unacceptable if Australia wishes to realise its quarantine objective and achieve full benefits for the Australian community and the natural environment.

Recommendation 25: The Review Committee recommends that greater encouragement and support should be provided by Government to persons with relevant experience in quarantine issues to assume a leadership role internationally.

The International Convention for the Prevention of Pollution from Ships is an excellent example of Australian leadership in addressing an international issue of environmental and quarantine concern — namely, the potential introduction and spread of exotic pests and diseases through ballast water and ship fouling. The Government has used a variety of mechanisms to progress this matter, including:

- developing the Australian Ballast Water Strategy, which was released in December 1995;
- funding CSIRO to establish the Centre for Research on Introduced Marine Pests;
- supporting the development of international guidelines and other initiatives, especially through the International Maritime Organization;
- including ballast water as an issue in the Commonwealth Coastal Policy; and
- establishing in June 1996 an Australian Ballast Water Management Advisory Council chaired by the Director General of the International Center for Living Aquatic Resources Management.

The development of a new Annex under the International Convention for the Prevention of Pollution from Ships is particularly important because its introduction will make control measures for ballast water mandatory for shipping worldwide. Some ship owners have already responded by incorporating the current voluntary guidelines developed by AQIS into on-board manuals for use by the Master and crew. The role of AQIS as the lead agency in this important development is commendable and should continue under Quarantine Australia. Ballast water protocols are an excellent demonstration of how international agreements can be used to advance and protect Australia's quarantine interests.

Recommendation 26: The Review Committee recommends that Australia maintain an international leadership role in relation to ballast water management.

OFFSHORE ACTIVITIES

6.1 PRINCIPLES

Offshore activities constitute the first element of the continuum of quarantine — pre-border, border, post-border — advocated by the Review Committee (see Section 2.3.2). The term 'border' is used in preference to 'barrier' in recognition of the fact that, given natural migrations and modern methods of transport, in fact no country has a 'barrier' around it, only a border. The Review Committee believes that the pre-border element of the continuum of quarantine is an efficient and effective means of contributing to maintaining Australia's animal and plant health status. The Review Committee believes strongly that there should be a greater focus on offshore activities through increased attention and resources to help keep problems offshore in the first instance. Such a focus also provides a means of identifying potential high risks so that appropriate preparedness and response strategies can be developed.

Some additional resources will need to be made available to increase the level of offshore activities as recommended in this chapter. Details of the likely additional amounts and possible sources of funds are provided in Chapter 11 on Resources and Legislation.

6.1.1 Managing Quarantine Risks Offshore

The Review Committee is of the firm view that Australia has much to gain from managing quarantine risks — from pests and diseases of concern — offshore. This approach should include, where possible, effectively pushing back the 'border' and decreasing the 'pool' of threat in neighbouring countries and countries that have significant contact with Australia through trade and tourism.

The principles of developing the offshore element of the continuum of quarantine are to:

- identify pest and disease threats;
- increase Australia's knowledge of pests and diseases that might enter;

- implement appropriate preventive and control measures;
- develop appropriate preparedness and response strategies;
- undertake research on pests and diseases of concern, with mutual benefit to Australia and countries where they are endemic; and
- increase offshore awareness of Australia's quarantine requirements.

6.1.2 Offshore Monitoring and Surveillance

Australia's offshore monitoring and surveillance of pests and diseases should have a strong regional focus reflecting most likely geographical sources of incursions of exotic pests and diseases. Such a focus would include Papua New Guinea (PNG) and Indonesia (as currently targeted in the Northern Australia Quarantine Strategy, NAQS), the Philippines (especially its southern region, adjacent to Indonesia), and New Zealand.

Australia's offshore monitoring and surveillance of pests and diseases should also focus on its major trading partners — that is, on countries that have significant contact with Australia through trade and tourism. This is already practised to some extent (e.g. monitoring of vessels that have been in Russian Far Eastern ports for the presence of Asian gypsy moth, an important exotic pest of forest trees).

There is also a need for specific monitoring and surveillance of pests and diseases that affect Australian native animals and plants that are now raised or grown in other countries. Such monitoring and surveillance enables an assessment of the susceptibility of Australian species to pests and diseases that are endemic in other countries but exotic to Australia. This information is useful for improving Australia's preparedness against incursions of exotic pests and diseases. Species for which this strategy should be developed include animals such as monotremes and marsupials, and plants such as eucalypts, acacias and macadamias. For example, useful information on the susceptibility of a range of Australian native flowers to exotic pests and diseases could be obtained from data on the effects that pests and diseases have on them in countries such as Israel where they are now grown commercially.

Similarly, plantations of Australian native trees have been established overseas on a vast scale during the past three decades. For example, by the turn of the century there will be more than one million hectares of Australian native acacias and eucalypt plantations in Indonesia and more than four million hectares of eucalypts in South America and South Africa. These plantations include areas where related species occur naturally, creating the opportunity for pathogens from these species to transfer to eucalypt hosts (as has already happened for guava rust). The establishment of these plantations and the highly competitive nature of industrial forestry, which encourages movement of germplasm between countries, have increased the risk of incursion of exotic pathogens of eucalypts.

6.1.3 Overseas Information

Official sources of information on pests and diseases include the Office International des Epizooties (for animals) and the International Plant Protection Convention (for plants).

Australia is a member of these organisations and similar bodies exist at a regional level (e.g. the Animal Health and Production Commission for Asia and the Pacific).

Another official source of information is Australia's own record of pests and diseases intercepted with passengers, animals, plants or other goods at the border. An interceptions database can provide valuable information on the extent of the risk of entry of exotic pests and pathogens to Australia.

However, there are also a number of potentially useful unofficial sources of such information, including:

- industry contacts (e.g. importer, exporter and producer networks);

- agency contacts (e.g. major marketing authorities such as the Australian Wheat Board); and
- Australian quarantine (and other official) staff who are seconded to or stationed in overseas positions.

All of these sources of information are available to help identify the most immediate and serious potential pest and disease threats facing Australia. Quarantine Australia should actively coordinate all available information to identify these pest and disease threats before they are introduced into Australia. A particular focus of this information collection should be on the most immediate and serious threats in neighbouring countries and, where appropriate, in countries from which significant movements of people, animals, plants and goods originate — that is, Australia's major partners in trade (including the tourist trade).

Recommendation 27: The Review Committee recommends that Quarantine Australia coordinate the identification of quarantine threats in neighbouring countries and in countries that have significant contact with Australia through trade and tourism.

6.2 INTERNATIONAL PROJECTS

6.2.1 Research

A fundamental principle of Australian-funded research on pests and diseases exotic to Australia should be that it leads to mutual benefits to Australia and the country (or countries) where the pests or diseases occur.

6.2.1.1 Examples of research on issues of quarantine concern

The Australian Centre for International Agricultural Research (ACIAR) coordinates and undertakes international collaborative research to develop sustainable agricultural systems and appropriate natural resource management strategies. All ACIAR-funded projects are based on a partnership to ensure mutual benefits to Australia and collaborating countries.

Some examples of current ACIAR projects and achievements relating to animal and plant health include:

- development of cottage production of Newcastle disease vaccine to overcome problems of cost and supply of commercial vaccine in remote areas of Africa and Asia;
- establishment of a Poultry Health Network in China;
- development of national or regional reference laboratories for bluetongue in China and Malaysia, and for foot-and-mouth disease in Thailand;

- identification of the distribution of the major arthropod pests and weeds affecting agriculture in South-East Asia;
- control of fruit flies in Malaysia, Thailand and several countries in the South Pacific region;
- control of citrus pests in China;
- biological control of *Chromolaena odorata* (Siam weed) in Indonesia and the Philippines;
- biological control of *Mimosa pigra* in Indonesia, Malaysia and the Philippines;
- biological control of water hyacinth in Indonesia, Malaysia, the Philippines and Thailand; and
- biological control of green vegetable bug in PNG.

Universities, Commonwealth and State departments and Cooperative Research Centres are also involved in offshore research, some of which is in areas relevant to animal and plant health and quarantine. Their involvement may be through projects coordinated by ACIAR or in projects negotiated direct with an overseas research institution or government.

However, governments are not the only providers or potential providers of research or research funding. Some non-government agencies such as the Crawford Fund for International Agricultural Development are also involved. In addition, industry is involved through funds provided to Research and Development Corporations that may undertake similar offshore research, and occasionally through direct linkages with overseas organisations. The Review Committee acknowledges the vision shown by the cattle industry in providing funds to support offshore research on screw-worm fly and by the sugar industry in conducting research in PNG.

Sugar

The sugar industry has taken a very proactive approach to investigating exotic pest and disease threats by conducting significant amounts of research through collaboration of its Bureau for Sugar Experiment Stations and PNG's sugar industry. The Review Committee was most impressed with this industry initiative, which it believes other industries could use as a model for increasing their knowledge of (and thus preparedness against) exotic pests and diseases of concern.

Grains

The Grains Research and Development Corporation is funding collaborative research overseas on a number of exotic pests and diseases of grains. For example, it is supporting research on Russian wheat aphid (*Diuraphis noxia*, an important pest of grains) and karnal bunt (*Tilletia indica*, an important fungal pathogen of cereals). The Grains Research and Development Corporation is funding collaborative research at the

International Maize and Wheat Improvement Centre in Mexico to introduce resistance to Russian wheat aphid into Australian cultivars of wheat. It is also developing collaborative research on karnal bunt at the same institute.

Ballast water

Ship fouling and the discharge of ballast water into the waters of Australia's ports provides a proven method of introducing marine pests and, potentially, marine or aquatic pests and diseases they might be carrying (Jones 1991). Recognition of this potential pathway of introduction and establishment of unwanted exotic organisms in the late 1980s led to significant initiatives by the Department of Primary Industries and Energy, especially the Australian Quarantine and Inspection Service, including the development of guidelines for ballast water discharge (AQIS 1995).

As discussed in Section 5.6, Australia has taken a commendably strong international leadership role in addressing this difficult issue. There are certainly opportunities to continue this work, particularly through developing closer links and collaborative research with New Zealand, offering potential benefits to both countries and ultimately to the rest of the world.

Screw-worm fly

Australia conducted applied research in PNG on the Old World screw-worm fly for many years to establish its basic biology and develop lures to enable surveillance of northern Australia for this important pest of animals. The research also led to field tests that provided a useful surveillance method and demonstrated the potential of control by releasing sterile male flies. Australia is now sponsoring further research on this pest in Malaysia, including work on potential differences between strains from different regions.

Biological control agents

Australian scientists have been active in developing and implementing biological control of pests and diseases. For example, ACIAR and other agencies have supported projects to control pests (e.g. banana skipper, leucaena psyllid and spiralling whitefly) and weeds (e.g. *Salvinia molesta* and water hyacinth) in South-East Asia and the Pacific region. The Review Committee considers that such projects deserve a high priority, because they provide effective aid to affected countries and ensure that Australia is well-prepared in the event of any incursion that it might suffer.

Human health

Australian public health authorities and medical researchers are involved in a variety of cooperative research programs on human diseases of quarantine concern. An example is research on the prevention and control of malaria in PNG by groups such as the Walter and Eliza Hall Institute in collaboration with the PNG Institute of Medical Research. Similar examples are work on filariasis in PNG by the Anton Brienel Institute of James Cook University of North Queensland and recently initiated studies on Japanese encephalitis in PNG by the University of Queensland. Such work provides similar

benefits to human health as targeted collaborative research offshore provides for animal and plant health.

Fumigation

There is an international requirement to phase out the use of methyl bromide, including its use as a fumigant for quarantine purposes. The Review Committee noted that quarantine authorities in Australia, Canada, New Zealand and the United States all expressed concern at the need to identify other means of disinsection of products. In collaboration with the Flower Export Council of Australia and the Rural Industries Research and Development Corporation, CSIRO has conducted some research on replacement of methyl bromide for quarantine treatment of cut flowers. There appears to be an urgent need to find effective and acceptable alternative treatments for quarantine purposes, offering an opportunity for collaborative research internationally.

6.2.2 Pest and Disease Control

6.2.2.1 Regional activities

Australia participates in a number of regional organisations that are involved in projects to control pests and diseases of animals and plants. These include the Animal Health and Production Commission for Asia and the Pacific, and the South Pacific Commission. Such organisations sponsor a number of collaborative programs in animal and plant health and quarantine, particularly periodic short courses to train field and laboratory staff or quarantine inspectors in pest and disease identification.

6.2.2.2 Joint activities with Indonesia and Papua New Guinea

The Tripartite Committee on Agricultural Health and Quarantine oversees a memorandum of understanding between Australia, Indonesia and PNG to cooperate on matters pertaining to animal and plant health and quarantine. It provides a policy framework for a range of cooperative activities including monitoring and surveillance, information exchange, and training.

NAQS was developed specifically to address the special quarantine risks associated with northern Australia. It was established in 1989 following the Lindsay Review of Australian quarantine (DPIE 1988). In its interim report in 1987, this Committee pointed out that northern Australia posed a number of unique challenges for quarantine.

NAQS includes both onshore and offshore components, with the latter designed to provide a better understanding of the animal and plant health status of eastern Indonesia and of PNG. The resulting improved understanding is of mutual benefit, allowing Indonesia and PNG to improve the targeting of their pest and disease control activities and providing Australia with early warning of threats.

A recent review of NAQS (Nairn and Muirhead 1995) stressed that the quarantine environment in northern Australia has changed significantly since 1989. Improvements in transport infrastructure have made remote parts of northern Australia much more accessible to visitors. Exports of live cattle from the Northern Territory and the

Kimberley region have increased, interceptions of illegal fishing vessels and of refugee boats from South-East Asia have increased, and the number of ecotourists visiting northern Australia has increased dramatically.

Based on the findings of the 1995 review, further strategies were developed for NAQS, including the provision of additional resources for its scientific, operational and public awareness elements. Additional funding of \$14.7 million will be provided by the Government over the four years from 1995–96 to 1998–99. The Review Committee acknowledges the quarantine risk associated with Australia's northern borders, and endorses the Government's response to the 1995 review of NAQS. As discussed in Section 9.5.1.1, resources will be needed beyond this four-year period to ensure that NAQS continues as an effective program.

6.2.2.3 Indonesia

Australian bilateral aid has funded a number of pest and disease control projects in Indonesia. These include:

- foot-and-mouth disease eradication, which led to the successful eradication of this disease from Indonesia over a period of more than a decade; and
- the Eastern Islands Diagnostic Project, which established basic animal health laboratory services in several of the eastern provinces of Indonesia closest to Australia.

6.2.2.4 Papua New Guinea

Australia has provided significant general budgetary support to PNG for many years. These funds have supported recurrent activities of PNG's animal and plant health and quarantine services, which employed considerable numbers of Australian veterinarians and plant health specialists from the end of the Second World War until the late 1980s. The presence of Australian staff during this period provided very good feedback on pests and diseases occurring in PNG, including early warning of changes in the country's animal and plant health status. Since the late 1980s, PNG budgetary support for agriculture has declined and the number of Australian staff working in the country's animal health and plant protection services has fallen dramatically.

One result of the recent decrease in untied budgetary support from Australia to PNG has been a shift to greater proportions of tied grants, which are applied in areas determined by agreement as being of mutual benefit to both countries. The natural resources sector was one of the first sectors identified as warranting additional input via Australian aid grants, offering the opportunity to develop and implement projects related to animal and plant health and quarantine of mutual benefit to PNG and Australia.

A major Australian-funded aid project designed to improve PNG's quarantine service commenced in 1996. This five-year project, the PNG Agricultural Quarantine Support Project, specifically aims to improve the capacity of the Government of PNG to provide quarantine, animal health and plant health services to protect and enhance PNG's agricultural industries and natural resources (AusAID 1996). It includes components on

institutional strengthening, pest and disease control, feral animal control, legal enforcement, and provision of facilities, housing and equipment.

Several biological control (biocontrol) projects have been undertaken in PNG with Australian assistance. These include the highly successful project to control the aquatic weed *Salvinia molesta* (which was becoming an important environmental problem) and projects to control several pests of agricultural importance (including banana skipper and spiralling whitefly). Similarly, an ACIAR project on the Asian honey bee and its associated mites is developing practical methods to control and prevent the spread of this pest in PNG and Irian Jaya Province of Indonesia.

There are opportunities for further monitoring and surveillance of several pests and diseases in PNG that are either exotic to Australia (e.g. *Taenia solium* cysticercosis, trichinellosis and fruit flies) or recent incursions (e.g. Japanese encephalitis). For example, NAQS survey samples collected in early 1996 provided serological evidence of the possible presence of surra in PNG. Surra is an insect-borne parasitic disease of the blood of cattle, horses, dogs and several other species. It occurs in much of South-East Asia (including Indonesia) but does not occur in Australia and was believed to be exotic to PNG until the recent survey provided evidence it is now present there. There is a need for research to confirm the presence of this disease, determine its distribution and host range, investigate its pathogenicity, and explore treatment and control options. Such a research project would be of immediate benefit to PNG and provide relevant epidemiological information to improve Australia's preparedness against any future incursion. Using an agency such as ACIAR, Australia could coordinate and fund research on surra in PNG and possibly eastern Indonesia. A project along these lines would be a good example of the sort of offshore collaborative research that the Review Committee is advocating as part of the continuum of quarantine.

6.2.3 Pest and Disease Preparedness and Contingency Planning

Australia has considerable experience in disease preparedness and contingency planning, especially with respect to animal pests and diseases for which a detailed response strategy has been developed. The Australian Veterinary Emergency Plan, which is discussed in Chapter 10 on Preparedness and Response, outlines the response to incursions of exotic pests or diseases of animals. It provides control strategies, emergency operations manuals, and counter-disaster plans that define the roles of all agencies that would be involved in such a response.

The Review Committee believes that Australia should help neighbouring countries to develop at least the broad outline of similar pest and disease preparedness and contingency plans that they could use in the event of an incursion of an exotic pest or disease of animals or plants. The Review Committee notes and endorses the inclusion of such assistance in the Australian-funded PNG Agricultural Quarantine Support Project (see Section 6.2.2.4).

6.2.4 Education and Training

Australia has a long tradition of providing tertiary education to students from developing countries, through both provision of staff and equipment overseas and through access to undergraduate and postgraduate training in Australia. For example, postgraduate programs in agriculture (including plant pathology and entomology) are available from a number of Australian universities, and postgraduate training in animal health is available from five universities, including one specialising in tropical veterinary science. Some of these programs allow course work to be undertaken in Australia and a research project to be completed in the student's own country. Such an option offers opportunities for upgrading qualifications by conducting collaborative research on an endemic animal or plant pest or disease that is of particular relevance to the student's country but that is exotic to Australia.

Australia also has much to gain from providing targeted training in animal and plant health and quarantine for its northern neighbours. Such training is of mutual benefit, providing skills for these countries to apply to protect and improve their animal and plant health status, thus providing increased protection of Australia's status. Targeted in-service training, either in Australia or in-country, has proven to be very effective for staff from the animal and plant health and quarantine services of countries such as Indonesia, PNG and the Pacific Islands, on either a bilateral or regional basis.

Some targeted training for offshore collaborators has been provided in NAQS (e.g. in identification of fruit flies), which is in the process of developing or coordinating further training inputs (e.g. aquatic animal health for Indonesia). Similarly, Australia has supported the attendance of PNG veterinarians at an exotic diseases training course at the Australian Animal Health Laboratory (AAHL). There has also been some training of quarantine officers from New Zealand and other countries in the use of electronic information systems used by Australian quarantine authorities. The Review Committee strongly supports such cooperation in education and training, which it sees as an important part of managing quarantine concerns offshore.

6.2.5 Diagnostic Services

6.2.5.1 Animal health

AAHL is a high security laboratory capable of safely diagnosing a wide variety of exotic animal pests and diseases. With the recent relocation of CSIRO's main endemic disease diagnostic laboratory to the same site at Geelong, AAHL now offers the capacity to diagnose both exotic and endemic diseases under very secure conditions.

AAHL offers an opportunity for Australia to provide a world class regional reference laboratory service for animal pests and diseases. Having AAHL offer a regional reference laboratory service provides opportunities for Australian scientists to develop expertise in exotic pests and diseases of animals. It also provides improved intelligence on the distribution and epidemiology of animal pests and diseases in collaborating countries, and builds informal and formal links with animal health specialists working in these countries.

Such a service would be particularly appropriate for Pacific Island countries, which often have very limited laboratory capacity themselves and have an animal health status that is similar to or better than Australia's. However, this service should also be made available to countries in South-East Asia, provided appropriate protocols are developed to exclude imports of specimens associated with vesicular diseases such as foot-and-mouth disease. The Review Committee thus endorses the recommendation of the AAHL Stocktake Report that 'the AAHL Board agree to AAHL undertaking a major reference laboratory role for East Asia (including South-East Asia) in the area of diseases of livestock and zoonoses with the exclusion of importation of specimens associated with vesicular diseases' (CSIRO 1994, p. 11).

6.2.5.2 Plant health

Australia does not have a high security national plant health laboratory similar to AAHL. However, it does have a number of specialist plant health diagnostic laboratories that act *de facto* as a national reference laboratory for different classes of plant pests and diseases. Having these laboratories, under appropriate security, offer a regional reference laboratory service would provide opportunities for Australian scientists to develop expertise in exotic pests and diseases of plants. It would also provide improved intelligence on the distribution and epidemiology of plant pests and diseases in collaborating countries, and build informal and formal links with plant health specialists working in these countries.

Recommendation 28: The Review Committee recommends that Quarantine Australia assess the need for, coordinate, broker and where necessary participate in cooperative programs in neighbouring countries (and, where appropriate, in countries that have significant contact with Australia through trade and tourism) in:

- pest and disease monitoring and surveillance;
- pest and disease control and eradication;
- preparedness and response against incursions; and
- relevant education, training and diagnostic services.

6.3 COOPERATION WITH OVERSEAS AUTHORITIES

Quarantine Australia has a legitimate and fundamental need to liaise and cooperate closely with overseas quarantine authorities, particularly those of Australia's near neighbours and major trading partners. Such interaction should include continued close cooperation with the other 'quadrilateral' countries (Canada, New Zealand and the United States).

Australia should continue to collaborate with relevant overseas quarantine authorities in training, including secondment of officers to other countries (and from other countries to Australia) in both policy and operational areas. Such exchanges offer specific training skills and a more general mutual benefit in terms of appreciating other countries' quarantine arrangements. Similarly, there are obvious advantages in having close collaboration with relevant overseas quarantine authorities in the areas of research, technology development and treatment measures.

Recommendation 29: The Review Committee recommends that Quarantine Australia collaborate with overseas quarantine authorities in the areas of staff exchange and training, research, technology development, and treatment measures.

6.4 PRECLEARANCE

Preclearance of passengers or goods in their country of origin is consistent with the principle of managing quarantine risks offshore (see Section 6.1). However, the Review Committee understands that preclearance is used for quarantine inspection of only a limited range of product intended for the Australian market — only summer fruit, avocados and kiwi fruit from New Zealand at present.

The Review Committee notes that preclearance has the advantage that quarantine risks are dealt with offshore and any deficiencies can be corrected quickly in the country of origin. For example, since the introduction of the preclearance program in New Zealand, the number of rejections by Australian quarantine inspectors has decreased as a result of better understanding of Australia's quarantine requirements. However, the use of preclearance depends on the willingness of overseas industry and quarantine authorities to comply with Australia's requirements, and the confidence that Quarantine Australia has that its requirements can be met. Industry needs to take into account the cost of preclearing compared to the cost of inspection and possible treatment on arrival.

The Review Committee considers that there is considerable opportunity to extend preclearance of goods. For example, Quarantine Australia could develop lists of approved overseas organisations to preclear items of low quarantine risk — with a quality assurance and audit process to de-list them for failing to perform adequately. Several submissions to the Review argued that using such an arrangement for products and suppliers of proven safety would enable quarantine staff to save resources that can be re-focused on high risk products and suppliers.

Australian quarantine staff oversee all quarantine matters relating to the transport of personnel and equipment for Australian defence forces returning from overseas, and for forces travelling to Australia for exercises. For example, two quarantine officers spent nearly eight weeks with the Australian deployment in Rwanda overseeing the preparation of equipment for return to Australia. Defence authorities also occasionally ask for suitably cleared quarantine staff to travel overseas to preclear sensitive or classified equipment that can then be flown direct to a destination rather than enter through a regular port. The Review Committee supports the use of quarantine staff to preclear defence vessels and equipment overseas, thus significantly reducing the quarantine risk associated with such activity.

Recommendation 30: The Review Committee recommends that Quarantine Australia negotiate with overseas quarantine agencies to continue development of arrangements for offshore preclearance of goods by appropriate export authorities and companies.

6.5 OFFSHORE QUARANTINE AWARENESS

Australia has experienced a rapid growth in visitor numbers over the past decade, and the rate of increase in the number of annual visitors is likely to continue to increase in the foreseeable future. The range of countries from which these visitors come has also become increasingly diverse, with significant growth in visitors from Asia in particular. In addition, Australian residents are travelling more frequently and to a wider range of countries.

Tourists and other visitors pose a potential source of introduction of exotic pests and diseases, particularly through the introduction of foods that have not been subjected to treatment or processing to inactivate pathogens or pests of concern. Plant material such as fruit or vegetables taken from home or village gardens where they can be exposed to pests and diseases probably poses the greatest potential risk for introduction via air or sea passengers visiting Australia.

Some visitors may wish to carry specialty foods for relatives or friends in Australia, but most would refrain from this if they were aware of Australia's quarantine requirements. It is thus in Australia's interest to ensure that all visitors are provided with information on its quarantine requirements. Such information needs to be made available to visitors before they pack for their trip. Overseas travel authorities and travel agencies offer a potential means of providing such information to travellers before they depart, and Quarantine Australia should develop an active program to disseminate information on Australia's quarantine to these organisations so they can make their clients aware of these requirements. Similarly, such information should be provided to overseas trading authorities and companies so they can make it available to their staff (e.g. crews of ships and aircraft) and take account of Australia's quarantine requirements when preparing goods for shipment (e.g. requirements for dunnage and packaging).

It should be feasible to concentrate on Asian airports that operate as the major hubs for flights to Australia from Europe and Asia. Appropriate information (in the language or languages of the country concerned) should be provided at check-in points of international terminals at hub airports to advise intending passengers of Australia's quarantine requirements. It might also be possible for quarantine staff (preferably locally engaged) to circulate with passengers in departure lounges to advise on Australia's quarantine requirements and encourage visitors or returning travellers to declare or offer up any prohibited items, whether in hand luggage or hold baggage.

Information for visitors on Australia's quarantine requirements can also be provided with their visas or travel documents — through overseas travel agents, Austrade offices, or Department of Foreign Affairs and Trade offices.

<p>Recommendation 31: The Review Committee recommends that Quarantine Australia take a proactive role in selected countries to promote greater awareness of Australian quarantine requirements among their travel authorities, travel agencies and travelling citizens, and among their international trading authorities and companies.</p>

Information on Australia's quarantine requirements also needs to be more clearly presented to Australian residents before they travel overseas. This information should advise them to not to bring prohibited goods back to Australia and should be provided before departure at Australian ports or airports. For example, it could be provided at the immigration exit point (with the cooperation of customs staff, or if they are unable to assist, using staff especially dedicated for the purpose) or in the departure lounges (also using dedicated and appropriately trained quarantine staff).

Recommendation 32: The Review Committee recommends that Quarantine Australia ensure that information on Australia's quarantine requirements is more clearly presented to Australian residents before they travel overseas.

RISK ANALYSIS

7.1 INTRODUCTION

Australia's quarantine policy and programs are based on the assessment and management of pest and disease risk in accordance with internationally accepted principles. Risk analysis provides the framework for determining quarantine policy, particularly with respect to consideration of import access requests.

7.1.1 The Mythical 'No Risk' Quarantine Policy

In 1979, the Senate Standing Committee on Natural Resources reported on the adequacy of quarantine and other control measures to protect Australia's pastoral industries from the introduction and spread of exotic pests and diseases of animals and plants. Its report stressed that there is no such thing as a 'no risk' (or 'nil risk' or 'zero risk') quarantine policy, noting that 'the shorthand term "no risk" is widely applied to Australia's quarantine policy. The use of this term is misleading and it is not accepted by the quarantine authorities as an accurate description of quarantine policy. In practice any international trade or travel contains an element of quarantine risk ... A more accurate description of quarantine policy would be the scientific evaluation of acceptable risk' (Senate 1979, p. 4).

Similarly, the Lindsay Review of Australian quarantine requirements concluded that 'a "no risk" policy for Australian quarantine — implying total exclusion — is untenable and undesirable and should be formally rejected. By contrast, the notion of "acceptable risk" is realistic: it reflects the fact that, regardless of the policy of the day, all imports whether or not they are legal inevitably involve a level of risk' (DPIE 1988, p. 27). Furthermore, a subsequent Senate Committee report on the Australian Quarantine and Inspection Service (AQIS) noted that 'risk analysis and risk management underpin many facets of AQIS' work and, during the inquiry, this process emerged as one of the most controversial and consistently misunderstood aspects of AQIS' activities' (Senate 1996, p. 65). The same report reiterated that 'successive reviews of Australia's quarantine services have noted that a policy of "no risk" is not, and never has been, a viable quarantine policy option' (Senate 1996, p. 65).

However, the number of individuals and organisations that continue to advocate a 'no risk' policy remains sufficient for the 1996 Senate Report on AQIS to state that it was 'concerned about the persistence of the view that "no risk" is a viable option for quarantine policy, despite consistent and unequivocal dismissal of this approach by previous reviews' (Senate 1996, p. xi). Even during the course of the present Review, a number of submissions advocated a 'no risk' policy. The Review Committee believes that the continued perception in some quarters that there ever has been or ever can be a 'no risk' quarantine policy for any country — let alone a major agricultural trading nation such as Australia — reflects a fundamental misconception that needs to be corrected in an ongoing awareness campaign. As discussed in Chapter 3, the national quarantine awareness campaign needs to include a focus to increase industry and community understanding of the fact that there is not and cannot be a 'no risk' quarantine policy. The awareness campaign must aim to ensure that all Australians appreciate that natural migrations of vertebrate animals (including birds and fish), invertebrates (including insect pests), plant germplasm (including seaborne seeds and airborne spores), and insects and other pests mean that Australia never has been truly isolated from the rest of the world's flora and fauna (and their associated pests and diseases). Similarly, human-assisted movement of animals and plants (and of their associated pests and diseases) has occurred since the first humans migrated to Australia tens of thousands of years ago.

In more recent times, many pests and diseases undoubtedly failed to establish in Australia during early European settlement. The long sea voyage from Europe meant that on their way out (or soon after arrival) animals or plants infected or infested with significant pathogens or pests died or developed obvious clinical signs and were destroyed. Since the establishment of quarantine services (as outlined in Section 1.6), sound scientific principles have been developed and applied to quarantine to manage the risk of inadvertently importing unwanted exotic pests and diseases with animals and plants (or their products) and passengers and cargo. These principles, such as pre-entry testing and certification, import inspection and post-import quarantine and surveillance, have led to the largely successful management of the pest and disease risks that are unavoidably associated with imports, trade and travel. Indeed, it is the very success of this risk management approach that has led to the misconception in some quarters that Australia has had a 'no risk' quarantine policy.

The application of sound scientific principles to identify and manage the pest and disease risks that are unavoidably associated with imports, trade and travel is part of the process that is now called risk analysis. Although animal and plant health and quarantine authorities worldwide have adopted this approach for many years, it is only in the past 10 to 15 years that it has been recognised formally as part of the emerging inter-disciplinary study known as risk analysis, which has its roots in the physical sciences and engineering rather than biology.

7.1.2 The Terminology of Risk Analysis

Because risk analysis has been recognised only recently as a study or discipline in its own right and has developed from an inter-disciplinary background, there is still some confusion in scientific and popular literature about the precise definition of each of its elements. Several attempts have been made to develop a standardised nomenclature both overseas and in Australia. Such attempts have been made in, for example, animal health

(Hathaway 1991, Ahl et al. 1993, Kellar 1993, MacDiarmid 1993, OIE 1994), plant health (IPPC 1995, McNamara 1995) and other disciplines such as environmental science (Beer and Ziaolkowski 1995). In Australasia, Standards Australia and Standards New Zealand have developed a joint standard on risk analysis (SA/SNZ 1994, 1995) and the Australia New Zealand Food Authority released a discussion paper on the application of risk analysis to food safety in September 1996 (ANZFA 1996).

Much of the confusion in the terminology in risk analysis relates to the terms used for the whole process and for each of its elements. For example, some authorities use 'risk management' as the overall term (rather than risk analysis as used in this Report). Others use 'risk analysis' more narrowly as including elements such as risk identification, assessment and evaluation but excluding risk management and communication. The only practical difficulty arising from these variations in terminology is that one needs to be conscious of which set of terms is being used in any particular publication or discipline. Despite variations in details of the terms used, the basic principles are the same across all disciplines.

For the purposes of this Report, risk analysis is used as the overall term to encompass the elements of risk assessment, risk management and risk communication. This approach is generally consistent with that of most authorities working in animal and plant health and quarantine, including the Office International des Epizooties (OIE) and the International Plant Protection Convention (IPPC).

From a quarantine perspective:

- risk assessment is thus the process of identifying and estimating the risks associated with an import and evaluating the consequences of taking those risks;
- risk management is the process of identifying, documenting and implementing measures to reduce these risks and their consequences; and
- risk communication is the process of interactive exchange of information and opinions concerning risk between risk managers and stakeholders.

Quarantine authorities worldwide have long practised all three elements of risk analysis — albeit probably more consciously and comprehensively for the first two elements than the last.

7.1.3 Applying Risk Analysis in Quarantine

Many submissions to the Review recognised that a 'no risk' policy is unachievable and acknowledged that Australian quarantine authorities have always endeavoured to base import policy and procedures on scientifically based assessment and management of pest and disease risks. CSIRO's submission to the Review supported the use of risk analysis in quarantine and stated that 'it is impossible to maintain a no risk quarantine policy and be involved in world trade'. Similarly, the Australian Academy of Science's submission noted that AQIS's quarantine strategy is based on risk analysis and that 'this strategy has been Australia's long standing approach to quarantine and has served well in the past'. The submission from the Grains Council of Australia stated that the Council 'appreciates

that a "no risk" policy is unobtainable'. In its submission to the review, the National Farmers' Federation noted that 'freedom to trade is progressively becoming the "default" position: quarantine barriers or import controls must be justified. In this situation quarantine becomes more explicitly a program for managing risk'.

Discussions the Review Committee held with quarantine authorities and agricultural producer groups overseas (in Canada, the Republic of Korea, Japan, New Zealand and the United States) reinforced the fact that scientifically based risk analysis is fundamental to quarantine policy and practice worldwide. The Review Committee believes that Quarantine Australia must continue to use and refine scientifically based risk analysis to develop its quarantine policies and procedures.

Recommendation 33: The Review Committee recommends that Quarantine Australia continue to use and refine scientifically based risk analysis — comprising risk assessment, risk management, and risk communication — to develop its quarantine policies and procedures.

7.2 STAKEHOLDER CONCERNS

This section considers concerns raised during the course of the Review on the application of risk analysis in quarantine decision making on import access requests — the process of import risk analysis. Many submissions to the Review raised concerns relating to the way AQIS conducts import risk analysis, particularly regarding consultation, scope and resource requirements.

7.2.1 Consultation

Many submissions sought better consultation on import risk analysis. The need for early and extensive consultation is illustrated by comments such as that of the Tasmanian Salmonid Growers Association, which stated in its submission to the Review that it had 'found the process of the current risk assessment to be subjective, pre-emptive and inadequately resourced'. Some submissions claimed that AQIS issues papers or discussion papers on import access requests were produced too late in the process for meaningful dialogue with industry, which tended to see these papers as merely presenting an outcome that was already decided. Similar criticism has been levelled at quarantine services in other countries; for example, an official of the United States Animal and Plant Health and Inspection Service noted that its approach to import access requests had been characterised by some as 'decide, announce and defend'.

In its submission to the Review, the National Farmers' Federation recommended that 'AQIS consult with the scientific and farming communities, to determine what is a range for acceptable probabilities of risk'. The Tasmanian Farmers and Graziers Association stated 'that consultation with industry and States is critical for the development of smooth processes and successful decision making particularly in the area of risk assessment'. Similarly, the Western Australian Farmers Federation argued the need for 'consultative processes to ensure that industry and community groups are appropriately informed and their views taken into account in policy development and program delivery', with consultation to 'include industry and the community in every step of the importing process'.

Other submissions also sought greater consultation with industry on what pests and diseases should be considered in an import risk analysis. For example, the submission from the Bureau of Sugar Experiment Stations recommended 'that industry be involved in determining the quarantine status of a pest/disease'.

Some groups noted that consultation consumed a considerable amount of their resources, and that provision of more detailed information would be helpful. For example, in its submission to the Review, the Australian Veterinary Association stated that 'parties being asked to comment on import proposals must be given full access to all qualifying data'.

7.2.2 Priority and Timing

Some submissions to the Review stated that there was a need for a transparent method of determining the priority that should be given to each import access request. The lack of clear, defined stages and an agreed timetable was a frequent concern raised in submissions and public hearings. Some submissions also noted that particular risk analyses occasionally took a very long time to be completed.

7.2.3 Who Undertakes Import Risk Analyses

Some submissions to the Review queried the capacity of AQIS to undertake independent scientific risk analyses, particularly in highly specialised areas. A few submissions argued that AQIS was compromised by its role in export facilitation and trade, suggesting that this involvement would inevitably lead to trade-offs between import access and access to export markets.

7.2.4 Handling Uncertainty

Several submissions raised concerns about how the risk analysis process handled uncertainty. For example, in its submission to the Review, the National Farmers' Federation recommended that 'risk assessors should err on the side of caution, especially when information is not available'. The Tasmanian Department of Primary Industry and Fisheries noted that 'this inherent uncertainty also puts a premium on consultation to agree on processes'. The application of the precautionary principle in quarantine risk analysis is discussed in Section 7.4.6.

7.2.5 Scope

A number of submissions called for a greater emphasis on possible environmental implications of proposed imports. In its submission to the Review, the Tasmanian Farmers and Graziers Association recommended that 'AQIS accept responsibility [for] and play a role in the protection of the environment from introduced pests and diseases'. Similarly, the Australian Veterinary Association stated that 'possible environmental consequences must be included in all risk assessment procedures for the importation of both animals and plants'. In its submission to the Review, the National Biodiversity Council proposed that 'the protection of Australia's biodiversity by adopting the precautionary principle should be recognised as a "legitimate objective" under the Technical Barriers to Trade Agreement'. Similarly, the submission of the Department of

the Environment, Sport and Territories recommended a 'review of AQIS policies and procedures with a view to strengthening AQIS's capacity for transparent assessment of the potential environmental impacts of proposals. This should be explicitly recognised as part of AQIS's charter and expertise'. However, it also noted that 'provided that AQIS establishes a process which is consistent with the avoidance of unjustified discrimination in trade or a disguised restriction on trade, there is ample scope for it to provide protection for the Australian environment'.

Some submissions also called for consideration of regional or local consequences of decisions on import access requests. For example, the Tasmanian Department of Primary Industry and Fisheries noted that potential consequences are 'likely to fall very unevenly on different regions of Australia, so safeguarding of minority interests needs careful consideration'.

7.2.6 Resources

Several submissions noted that import risk analysis is a demanding and resource-intensive process. They questioned whether or not there are adequate resources to undertake the number of risk analyses and the amount of consultation involved. For example, the Australian Veterinary Association stated that 'with the increasing number of protocols to consider, there is concern that AQIS is being inundated with requests to export to Australia and does not have adequate resources to deal with these and fully integrate industry responses'.

7.2.7 Appeal

Several submissions to the Review noted that there is no formal mechanism of appeal against any risk analysis decision, raising concerns that AQIS is 'judge, jury and executioner'. These submissions called for a formal appeal mechanism to be instituted.

7.3 PRINCIPLES OF RISK ANALYSIS

For many years, international organisations such as OIE and IPPC have advocated the use of risk analysis in animal and plant quarantine (see Appendix D). These organisations are now recognised by the World Trade Organization (WTO) as custodians of the international standards, guidelines and recommendations for sanitary and phytosanitary aspects of international trade. As discussed in Chapter 5 on International Obligations and Leadership, Australia is a member of WTO and a signatory to its provisions, including the Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement) and the Agreement on Technical Barriers to Trade. The SPS Agreement defines a number of principles governing sanitary and phytosanitary measures that may affect international trade: basic rights and obligations; harmonisation; equivalence; risk assessment; regionalisation; national treatment; transparency; control, inspection and approval procedures; technical assistance; and special and differential treatment. These principles are outlined in more detail in Appendix C.

Of immediate relevance to the current discussion is the specific inclusion of risk assessment and risk management (which are included in the principle of 'control, inspection and approval procedures') as fundamental to the application of sanitary and

phytosanitary measures to international trade. In addition, risk communication is implicit in the SPS Agreement, particularly in relation to its principle of transparency, which obliges members to notify changes of their sanitary or phytosanitary measures. Thus risk analysis — including risk assessment, risk management and risk communication — is integral to international trade overseen by the WTO.

The Review Committee considers that a number of fundamental principles should apply to import risk analysis. Import risk analysis should be consultative, scientifically based and politically independent, transparent, harmonised, and subject to appeal on process. By adopting these principles, the process will demonstrate integrity and engender confidence both domestically and internationally:

- Consultation

Import risk analysis should be conducted in a consultative framework, with agreed priorities and timetables. Consultation should be early and broad, with the inclusion of all relevant stakeholders. Early consultation should help to engender the partnership approach advocated by the Review Committee, and avoid the adversarial and confrontational approach that has characterised import risk analysis of some proposed imports in recent years.

- Scientific Basis and Political Independence

Import risk analysis should fundamentally be a scientific process. In particular, risk assessment should be 'essentially a scientific endeavour based on experimentation and observation' (ANZFA 1996, p. 2). Import risk analysis should be independent of any political considerations, although it is acknowledged that risk management 'involves policy decisions based on a balance of scientific, social and economic considerations' (ANZFA 1996, p. 2).

- Transparency

Import risk analysis should be transparent and open. Details of the risk assessment undertaken and any risk management options examined should be readily available for peer review and public scrutiny.

- Consistency

Import risk analysis should be consistent with both Government policy and Australia's international obligations. Consistency should be achieved by reference to existing Australian policies and procedures, by reference to relevant international standards, guidelines and recommendations, and through the contribution of participants experienced in risk analysis.

- Harmonisation

Import risk analysis should take account of international standards, guidelines and recommendations so that they are as harmonised as much as possible with international practice. However, quarantine authorities may use risk management

strategies that are more stringent than international standards, guidelines and recommendations where this is scientifically justifiable and consistent with Australia's international obligations.

- Subject to Appeal on Process

The process of risk analysis for import access requests should be subject to appeal to ensure natural justice.

Recommendation 34: The Review Committee recommends that Quarantine Australia use a process to ensure that import risk analysis is consultative, scientifically based, politically independent, transparent, consistent, harmonised and subject to appeal on process.

7.4 IMPORT RISK ANALYSIS

Many submissions to the Review commented on various aspects of the import risk analysis process used by AQIS. Four submissions — from the National Farmers' Federation, the Queensland Department of Primary Industries, the Tasmanian Department of Primary Industry and Fisheries, and the Victorian Department of Natural Resources and Environment — put forward detailed models of proposed systems for import risk analysis. The Review Committee considered all of these comments and proposals in the light of the principles outlined in the preceding section as part of its deliberations on improvements to the process used for import risk analysis.

This section provides details of a proposed process for import risk analysis that the Review Committee believes will provide greater consultation and ownership, while continuing to meet Australia's international obligations. The Review Committee acknowledges that risk analysis is a difficult and complex process, and that the process it is recommending may require fine-tuning to take account of experience with its application. The major difference between the process proposed and current AQIS practice is in the duration, timing and amount of consultation and communication, and its provision of an appeal mechanism. This focus is consistent with the thrust of most criticism of the processes used by AQIS for import risk analysis, for which concerns were largely to do with consultation and communication.

7.4.1 Early Consultation and Partnership Approach

Many submissions to the Review stressed that early consultation and use of a partnership approach in considering import risk analyses would address many of their concerns about the process used. Similarly, the 1996 Senate Committee recommended that AQIS should have wide ranging consultation with relevant industry groups before publishing a draft import risk analysis. The Senate Committee considered that 'such an approach will protect AQIS' scientific reputation, reduce the likelihood of protracted and acrimonious debates, and ensure stable investment environments in the relevant industries' (Senate 1996, p. 101).

The Lindsay Review recognised that, to be effective, consultation should not only be early but also broad. It noted that 'the process of consultation has to extend beyond

technical considerations to include those with an interest in the impact of quarantine. The range of such groups is extensive and includes international agencies, trading interests, wildlife and conservation interests, agricultural industries, consumers and all the many users of quarantine' (DPIE 1988, p. 34).

The Review Committee believes strongly that early consultation with key stakeholders will help to obtain consensus on:

- priorities (i.e. the order of consideration and the resources to be allocated to applications for import access);
- the need for detailed risk analysis (i.e. which applications merit detailed risk analysis and which are more routine and can thus be undertaken in-house by Quarantine Australia);
- timetable and deadlines (i.e. the expected time required to undertake the import risk analysis, reflecting both the availability of information required and the resources to be allocated to complete the risk analysis);
- the scope of the risk analysis and the methods it should employ; and
- what risk management strategies might be investigated to allow the proposed import to proceed without jeopardising Australia's animal and plant health status or having a negative effect on its natural environment.

7.4.1.1 Informing stakeholders and the general public

All parties in a partnership approach need to be knowledgeable on the risk analysis process to be followed when considering import access requests. Quarantine Australia must develop and circulate widely a handbook on risk analysis to ensure that the industry and the general public — especially all key stakeholders involved in specific risk analyses — are aware of the process to be followed. This is consistent with the 1996 Senate Committee's recommendation that AQIS needed to develop improved strategies to explain and disseminate information on its risk analysis and management approach to quarantine inspection (Senate 1996, p. 99).

The proposed handbook should set out clearly and fully the principles of risk analysis as applied to import access requests, the process to be followed in quarantine import analysis, and the international obligations that must be considered in this analysis. The handbook will need to be reviewed and updated on a regular basis to ensure that it remains accurate and current. The Review Committee noted that AQIS has previously developed a discussion paper (AQIS 1991a) that provides some of the information that should be included in the proposed handbook.

Several submissions to the Review complimented AQIS on its publication, the *AQIS Bulletin*, which provides useful information on both the organisation itself and on specific quarantine issues. The Review Committee endorses such efforts to inform stakeholders and the general public, but believes they should be supplemented by greater use of

electronic media, which offer significantly cheaper and faster means of disseminating information.

Electronic news lists offer a means of distributing information to interested parties (such as registered stakeholders) or to a specifically selected subset of these. For example, media releases of the United States Department of Agriculture are automatically available worldwide as they are released to any interested party who 'subscribes' to its electronic news list. The same organisation also provides much information on technical matters such as animal or plant health using the same technology. Quarantine Australia could use electronic news lists to provide stakeholders with advice on matters such as import access requests that have been received and how the risk analysis of these requests is progressing.

The Department of Primary Industries and Energy has a popular site on the web (its address is <http://www.dpie.gov.au>). The Minister for Primary Industries and Energy makes effective use of this technology by 'posting' all media releases at this site so that anyone interested in the work of this portfolio can check the site periodically to view up-to-date information on areas that interest them. OIE, WTO and a range of other international agencies operate similar web sites. Both the United States Department of Agriculture's Animal and Plant Health and Inspection Service and Agriculture and Agri-food Canada have web sites that carry large amounts of current information on their quarantine policies and programs. For example, Canada's web site includes a searchable database of all 'plant quarantine import requirements' governing the import of plants and plant products into Canada. Anyone wishing to see these can view them by logging on to the worldwide web and dialling the electronic address for this site.

Australia and other developed countries are experiencing rapid growth in the number of organisations and individuals with direct access to the internet and worldwide web. Quarantine Australia should make greater use of electronic information media such as the internet and worldwide web to provide information to the general public and more specifically to registered stakeholders or groups of stakeholders.

Recommendation 35: The Review Committee recommends that Quarantine Australia improve community and stakeholder understanding of import risk analysis by:

- developing and circulating a public handbook on its risk analysis process as a matter of urgency; and**
- using print and electronic information media to inform registered stakeholders, other interested parties, and the general public of the receipt of import access requests and progress with the risk analysis of these requests.**

7.4.1.2 Initial advice on import access requests

When Quarantine Australia receives an import access request, it should immediately advise registered stakeholders and the general public that an application has been received. This advice should include the use of electronic media such as the worldwide web (see Section 7.4.1.1). Individuals and organisations that are not registered stakeholders but have an interest in any particular request can then follow its progress or arrange to participate more fully through one of the relevant registered stakeholders.

Public advice on each import access request should be sufficiently detailed to identify the species or product proposed, its country of origin, and its intended use, so that all interested parties are aware of the general nature of the application received. However, details that might be considered to be commercially in-confidence (e.g. of the applicant, supplier or volume or number of consignments proposed) should be protected.

Quarantine Australia should then undertake a preliminary evaluation of the request to determine whether or not it believes the request should be considered by its own in-house risk analysis (see Section 7.4.4) or requires a more detailed risk analysis with broader external consultation (see Section 7.4.5). Quarantine Australia should also identify from its list of registered stakeholders (see Section 3.3.5) the relevant stakeholders with whom it will consult concerning each request. The proposed process is outlined in Figures 2 and 3.

7.4.2 Setting Priorities

When import access requests are submitted to Quarantine Australia, there is a need to determine the priority to be given to their consideration. Many submissions to the Review argued that consultation with stakeholders should include input on setting priorities. Consultation on the priority for processing import access requests is consistent with the new culture advocated for quarantine in this Review — especially its focus on national awareness, consultation, ownership, responsibility and commitment.

After seeking advice from stakeholders on what priority they consider should be given to any import access request, the Board of Quarantine Australia must then be responsible for setting priorities. Only the Board will have complete knowledge of all requests that are under consideration, of all new requests received, and of the resources available at any time to undertake risk analyses. The Review Committee believes that some principles that the Board should consider in determining the priority given to an import access are:

- the extent to which Australia is likely to benefit from the proposed import

Feedback from stakeholders on their perception of the priority that should be given to an import access request will provide the Board with some indication of the extent to which Australia is likely to benefit from the proposed import. Other indications will include the degree of political and community support as reflected by public comment and correspondence to Quarantine Australia. In principle, the greater the apparent extent to which Australia is likely to benefit from a proposed import, the higher should be the priority for conducting a risk analysis on it.

- the source of the import access request

Requests for considering import access should receive high priority if they originate from government or a national industry peak body.

- the quality of the application and supporting documentation

Import access requests at present vary enormously in the amount of background information they contain. Some are a one-page letter offering only a very brief outline of a possible opportunity. Others are detailed submissions specifying proposed sources (e.g. with details of their health status and quality assurance arrangements) and proposing possible risk management procedures (e.g. with details of pre-entry diagnostic tests and treatments and of post-entry quarantine or processing). Given the significant staff resources that many import risk analyses can demand, Quarantine Australia should encourage proponents of proposals to provide relevant details — including pertinent scientific information — needed for risk analysis. In principle, the more complete the detail provided, the higher should be the priority for conducting a risk analysis.

- the time the application has been before the Board

In principle, the longer the time that an import access request has been before the Board, the higher should be the priority for conducting a risk analysis on it.

7.4.3 Determining the Type of Risk Analysis

The vast majority of import access requests are routine and should be addressed by Quarantine Australia by a process of in-house risk analysis. The in-house risk analysis process is not in any way less scientific than the detailed risk analysis by scientific experts from within and outside Quarantine Australia — it is just less complex because of any of a number of reasons that determine that an import access request can be readily approved or rejected on sound scientific grounds.

Reasons that might lead to agreement that an import access request can be processed by an in-house risk analysis by Quarantine Australia would include, for example, requests that:

- involve commodities from sources with a proven record of freedom from any pests or diseases of concern (and good monitoring, surveillance and reporting systems in place for the rapid detection, confirmation and reporting of any relevant change in health status);
- involve a pest or pests of concern, or the causative agent or agents of any disease or diseases of concern, that are readily removed or inactivated by application of standard risk management strategies (and the application of such strategies can be readily confirmed and satisfactorily audited);
- do not involve consideration of pests or diseases that might cause significant direct animal or plant mortality or lost production even if they were introduced;
- do not involve consideration of pests or diseases that have a significant negative effect on the natural environment even if they were introduced;

- involve imports at times when any pests or diseases of concern could not be present on or in exports, or would not be able to establish in Australia if they were introduced (e.g. seasonal imports of some agricultural products);
- do not involve significant uncertainties (i.e. involve only one or a few scientifically well-understood pests or diseases of concern, affecting only one or a few host species that have well described pest and disease susceptibility); or
- involve a request for import of a commodity from a source with a similar health status to that of a source already approved for imports of the same commodity (i.e. that are based primarily on precedent, requiring only modification — to include a new source of origin — of an existing import protocol that has proven to be effective).

Alternatively, there may be reasons that would enable an in-house assessment to determine that an import access request can be readily rejected on sound scientific grounds. Such reasons would include, for example, requests that involve:

- possible or likely infestation with a pest or pests of concern, or contamination with or infection by an agent or agents of a disease or diseases of concern, that are known not to be able to be removed or inactivated by the application of current risk management strategies; or
- proposed imports of species on prohibited lists (e.g. of plants prohibited as weeds or of animals prohibited as pests such as those on the Australian Nature Conservation Agency's aquatic animal lists).

Import access requests that do not meet the criteria for in-house risk analysis by Quarantine Australia would be considered by the process outlined in Section 7.4.5. When Quarantine Australia advises the relevant registered stakeholders of its preliminary evaluation on each import request, it will nominate its preferred process for undertaking the risk analysis, with reasons for this view, and request that stakeholders indicate a priority for considering the request (as discussed in Section 7.4.2). Quarantine Australia will ask the relevant registered stakeholders to endorse its preferred process. If a majority of stakeholders agree with the preferred process nominated by Quarantine Australia, then Quarantine Australia will initiate the risk analysis after its Board has determined the priority of the request.

If Quarantine Australia and relevant registered stakeholders can not agree on the preferred risk analysis process, it should meet with them to try to obtain consensus. If agreement is still not forthcoming, then the matter will be referred to the Board of Quarantine Australia, which will determine the process to be followed. In all cases, Quarantine Australia will advise the applicant and relevant registered stakeholders of the outcome of its consultation on whether the request will be considered by in-house or detailed risk analysis.

Recommendation 36: The Review Committee recommends that Quarantine Australia routinely consult with relevant registered stakeholders in a partnership approach to agree on what type of risk analysis should be used for each import access request.

7.4.4 In-House Import Risk Analysis

A Quarantine Australia in-house risk analysis team (IRAT) should comprise whatever number and mix of skills that Quarantine Australia deems necessary to consider the particular import access request. The IRAT may comprise as few as two officers (e.g. the action officer and his or her supervisor) with relevant scientific expertise in animal or plant health. It might also include input from other specialist disciplines (e.g. entomology, virology or statistics) as appropriate.

Once the priority for considering an import access request has been determined (as discussed in Section 7.4.2), each IRAT should develop a timetable with deadlines for key stages of the risk analysis, and communicate these to the applicant and key relevant registered stakeholders. If at any point the risk analysis starts to deviate significantly from its timetable, the IRAT must advise the applicant and key relevant registered stakeholders so that a new schedule can be determined.

Each IRAT will determine the risk analysis method it will use — qualitative, semi-quantitative or quantitative. Most in-house risk analyses are likely to be qualitative rather than quantitative, but some may be quantitative or include a quantitative component (e.g. in determining the risk of selecting an infected animal from a herd or population with a known prevalence of a particular disease by using a test of a given sensitivity and specificity).

Each IRAT should use whatever external advice and consultation it deems necessary. The Review Committee would anticipate that this would normally include discussion with the applicant and some relevant registered stakeholders while proceeding with the risk analysis. It would also include the routine release of a discussion paper supporting the draft decision and (where an application is approved) the draft protocol governing the proposed import. This discussion paper should, as is current practice, be circulated to a small number of relevant key stakeholders for comment on the details of the proposed protocol. Experience has shown that such informed comment on draft protocols can ensure that any minor difficulties with implementation can be addressed by modifying the protocol, if necessary, before it is finalised and adopted as standard procedure.

Occasionally, an IRAT might determine that one of the criteria that triggered or led to an import access request being considered in-house is based on a faulty premise (e.g. that the source proposed does not have the same health status as another that is already approved under an existing protocol). If this occurs, Quarantine Australia must cease its in-house analysis and refer the request to relevant registered stakeholders for their views on whether or not the request should be subject to detailed risk analysis.

7.4.5 Detailed Risk Analysis

Some import access requests will not fit the criteria for an in-house risk analysis by Quarantine Australia as outlined in the preceding section. Consultation with relevant registered stakeholders (as outlined Section 7.4.1) may determine that these requests require a more detailed risk analysis by scientific experts from within and outside Quarantine Australia.

7.4.5.1 Risk Analysis Panels

For import access requests deemed to require a detailed risk analysis, Quarantine Australia should coordinate and chair a Risk Analysis Panel (RAP). Each RAP should comprise a core of two members with experience and expertise in quarantine risk analysis plus one to three members with scientific expertise relevant to the import access request under consideration.

The two 'core' members should have specific experience in risk analysis as applied to quarantine. In particular, they should be skilled in the application of risk assessment and risk management to quarantine issues, and should be fully aware of international obligations and responsibilities (e.g. under WTO) and relevant standards and codes (e.g. of OIE, IPPC and the Codex Alimentarius Commission). They should also have relevant scientific skills in animal or plant health (depending on the import access request under consideration) although they might not be expert in the particular species being considered. The 'core' members would usually be drawn from Quarantine Australia and other relevant government agencies (e.g. the Bureau of Resource Sciences or the Office of the Chief Veterinary Officer). They would play an important role in ensuring that each detailed risk analysis is conducted in accordance with international standards. Their involvement should also help to ensure consistency in approach across the wide range of import access requests that Quarantine Australia will be asked to address.

The other members of the RAP should have expert scientific knowledge in the species involved in the import access request being considered, or in scientific disciplines relevant to the particular request (e.g. veterinary virology or plant mycology). These members would usually be drawn from scientific organisations (e.g. CSIRO, museums, universities and Cooperative Research Centres), State departments (of agriculture, fisheries, forests or primary industry), industry, private consultancy firms, or qualified members of the general public. Members would be selected because of their scientific expertise, and not as representatives of any particular organisation, sector or industry. They would ensure that each detailed risk analysis considers the best available and most current scientific knowledge. Their involvement should also help to ensure improved consultation, transparency and independence — and thus ultimately greater ownership of the process itself and the RAP's final decision.

Quarantine Australia and relevant registered stakeholders should reach consensus and agree on the membership of each RAP. If agreement can not be reached, Quarantine Australia should meet with relevant registered stakeholders to try to obtain consensus. If after such consultation Quarantine Australia and relevant registered stakeholders still can not agree on membership of the RAP, then the matter will be referred to the Board of Quarantine Australia, which will determine the panel's membership. In all cases,

Quarantine Australia will advise the applicant and relevant registered stakeholders of final membership of the RAP.

Recommendation 37: The Review Committee recommends that, for each import access request that consultation with registered stakeholders identifies as meriting detailed risk analysis, Quarantine Australia coordinate and chair a Risk Analysis Panel including members with experience and expertise in quarantine risk analysis plus members with scientific expertise relevant to the import access request under consideration.

7.4.5.2 Timetable, scope and methods

An agreed timetable, with deadlines for each stage of consideration of an import access request is essential for the consultative partnership approach advocated by the Review Committee. Thus an early task of each RAP will be to estimate the time needed to undertake its risk analysis, identify key stages in the analysis, and seek agreement with relevant registered stakeholders on its proposed timetable and deadlines.

If at any stage in the course of its deliberations a RAP determines that it will not be able to meet the agreed timetable, it must advise the applicant of the reasons for the delay. It must also consult with relevant registered stakeholders to advise the reasons for the delay and determine a revised timetable.

Each RAP will determine and agree on the scope of the risk analysis to be undertaken on its import access request. It will identify the pests and diseases of concern to be considered in the risk analysis, the scope of the scientific assessment required, the need for and scope of any other assessment required (economic, environmental etc.), and the analytical methods to be used. Each RAP will prepare a preliminary evaluation along these lines, and provide an issues paper for relevant key registered stakeholders. The issues paper will also propose when and how the RAP will consult further with relevant registered stakeholders during the risk analysis. Such consultation might take any of a number of forms, including circulation of discussion papers for comment, and convening meetings or workshops. The issues paper will include appropriate dates or deadlines for consultation in its proposed timetable for the risk analysis.

The RAP will circulate the issues paper to relevant registered stakeholders for comment, and seek agreement on and endorsement of the proposed approach to its risk analysis on the import access request referred to it. The RAP will endeavour to obtain agreement of relevant key registered stakeholders on the proposed scope, methods and timetable before proceeding with its detailed risk analysis. If agreement still can not be reached after consultation, the RAP should meet with relevant registered stakeholders to try to obtain consensus. If agreement is still not forthcoming, the RAP will refer the matter to the Board of Quarantine Australia for its decision.

Recommendation 38: The Review Committee recommends that each Risk Analysis Panel:

- **develop a specific timetable with deadlines for each stage of consideration of its import access request, for agreement with relevant registered stakeholders; and**
- **prepare an issues paper for relevant registered stakeholders before commencing detailed risk analysis on the import access request referred to it.**

7.4.5.3 Risk Analysis Panel Working Parties

Where necessary, the RAP will appoint or contract expert Working Parties to complete specific components of a detailed risk analysis. RAP Working Parties will be chaired, convened and managed by an appropriate expert from outside Quarantine Australia. Each Working Party will include at least one member from Quarantine Australia and, where appropriate, include industry experts. In principle, a member of the RAP considering a particular import risk analysis might also be a member of a RAP Working Party. Each RAP Working Party should also include at least one member with experience in import risk analysis.

Members of RAP Working Parties will comprise appropriate experts — particularly in science for Scientific Working Parties conducting detailed risk assessments and considering risk management options, and in economics for Economics Working Parties examining the potential economic loss of the introduction or establishment of any pests or diseases of concern. In some cases, a RAP may also identify a need to assign and contract Working Parties to examine areas such as the environment or risk communication. Where they are required, such Working Parties would be established similarly to the Scientific and Economics Working Parties, with members who are experts in the relevant disciplines. The Review Committee anticipates that Quarantine Australia would fund any specific detailed consultancies that a Working Party might require, and pay non-government members of Working Parties for travel and a sitting fee for meeting attendance, but not for meeting preparation or other time spent on Working Party issues outside meetings.

To maintain linkages with specialist Groups in the Department of Primary Industries and Energy, it is anticipated that RAP Working Groups would be chaired by an appropriate professional officer from one of these Groups. Thus a specialist scientist from the Bureau of Resource Sciences would normally chair each RAP Scientific Working Party, and a specialist economist from the Australian Bureau of Agricultural and Resource Economics would normally chair each RAP Economics Working Party. Having expert Working Parties chaired and managed by agencies external to Quarantine Australia should further ensure that each RAP's work is, and is seen to be, quite independent and scientifically based. It should also help to allay fears expressed in some quarters that AQIS has in the past faced a conflict of interest by being 'judge, jury and executioner' on import access requests.

Recommendation 39: The Review Committee recommends that, where necessary, each Risk Analysis Panel appoint and contract expert Working Parties to undertake work required to complete its risk analysis.

7.4.6 Determining the Level of Risk

Each IRAT or RAP should assess risks associated with the import access request referred to it, and examine appropriate risk management strategies that might be used to reduce the level of risk. Where such strategies are available to reduce the level of risk of introducing exotic pests or pathogens of concern to a manageable level, the IRAT or RAP will decide to permit the proposed import, subject to the risk management strategies it determines are appropriate.

The Review Committee believes that the pertinent concept is one of 'manageable risk'—not 'no risk' (which is unachievable) or even so-called 'acceptable' or 'minimum' risk. It acknowledges that a certain amount of judgement is implicit in this concept, but maintains that the import risk analysis process outlined in this chapter ensures that stakeholders are fully involved in determining who should be involved in making this judgement. The Review Committee also notes that both individuals and organisations make similar judgements on risk across many sorts of decisions on a daily basis.

Consistency of application of the concept of manageable risk will be achieved by reference to existing Australian policies and procedures, by reference to relevant international standards, guidelines and recommendations, and through the contribution of experienced members of each IRAT and RAP (e.g. RAP 'core' members, discussed in Section 7.4.5.1). In particular, each IRAT or RAP will need to examine other risk pathways relevant to the import access request under consideration to ensure that any risk management strategies imposed result in a similar level of risk to that associated with these pathways.

Recommendation 40: The Review Committee recommends that each Risk Analysis Panel assess risks and examine appropriate risk management strategies needed to approve or reject the import access request referred to it.

In some cases, a RAP Working Party may determine that there are significant gaps in information that need to be filled by further research before it can make a scientifically based decision on a particular import access request. This conclusion should be conveyed to the relevant RAP, with recommendations that specify the gaps and define the research needed to fill them. The RAP should then consider contracting and funding necessary research — or encouraging other research providers or the applicant to fund such research — to fill the gaps identified. The RAP should also advise the applicant and relevant key registered stakeholders that the risk analysis is 'on hold' because of the information gaps identified, of the action it has taken or recommends be taken to fill these gaps, and of the proposed revised timetable for considering the import access request.

This process is consistent with the concern noted in the 1996 Senate Committee's report that 'the scientific research on the basis of which AQIS must make an assessment of risk should be comprehensive and relevant to Australian conditions', and its recommendation that 'assessments of risk should not be made until such research has been done' (Senate 1996, p. 100). Similarly, a number of submissions to the Review argued that where there is significant uncertainty or where there are significant gaps in knowledge needed to conduct risk analysis, quarantine authorities should take a conservative approach. Some submissions went further and advocated adoption of the precautionary principle (or a

variant of it) in cases they deemed involved significant uncertainty, probable delayed identification or reporting of incursions, or inadequate or no means of containing, controlling or eradicating incursions. Examples cited in submissions included areas such as fish health, forest health, and plant weediness.

The precautionary principle has been defined in various ways but may be simply seen as the principle of adopting a conservative approach when the relevant information needed to make an informed decision is limited — the greater the uncertainty, the more conservative should be the decision. Provided due account is taken of the need for judgement in any decision — whether to do with quarantine or any other issue — the principle is not necessarily inconsistent with the principles of risk analysis. Indeed, the SPS Agreement (see Appendix C), specifically states that 'in cases where relevant scientific information is insufficient' member countries of the WTO may provisionally adopt 'sanitary or phytosanitary measures on the basis of available pertinent information' (including that from relevant international organisations and from sanitary or phytosanitary measures applied by other members). However, the SPS Agreement sees the adoption of conservative measures as only provisional, and states that if adopted on the basis of gaps in information, member countries 'shall seek to obtain the additional information necessary for a more objective assessment of risk and review the sanitary or phytosanitary measure accordingly within a reasonable period of time'. Thus Australia's international obligations preclude the ongoing or indefinite use of the precautionary principle as grounds for not taking a decision on any import access request.

If a RAP considers that an appropriate risk management strategy can be applied to an import access request, it should advise the Department of Primary Industries and Energy, which would then be responsible for determining if approval is likely to have a significant effect on an Australian industry. The Department would also be responsible for identifying any structural adjustment measures that might be required, and liaising with other agencies such as the Department of Foreign Affairs and Trade concerning any international considerations that might arise from approving the request. Conversely, if a RAP considers that an appropriate risk management strategy can not be applied to an import access request, it should advise the Department of Primary Industries and Energy, which would be responsible for liaising with other agencies such as the Department of Foreign Affairs and Trade concerning any international implications that might arise from not approving the request.

Recommendation 41: The Review Committee recommends that if a Risk Analysis Panel considers that an appropriate risk management strategy can be applied to an import access request, it advise the Department of Primary Industries and Energy, which would be responsible for:

- determining if approval is likely to have a significant effect on an Australian industry;**
- identifying any structural adjustment measures that might be required; and**
- liaising with other agencies such as the Department of Foreign Affairs and Trade concerning any international implications arising from approving the request.**

The decision on each import access request must reflect the deliberations of the IRAT or RAP that examined the request. In the view of the Review Committee, the Chairperson of

the IRAT or RAP , as the delegate of the Director of Animal and Plant Quarantine, is the person empowered to make the quarantine access decision. Quarantine Australia should advise the respective applicant or proponent and relevant registered stakeholders of each decision, which should be made publicly available (e.g. through the *Bulletin*, electronic lists and the web site discussed in Section 7.4.1.1).

Recommendation 42: The Review Committee recommends that:

- responsibility for the risk analysis decision rest with the Chairperson of the In-House Risk Analysis Team or the Risk Analysis Panel; and**
- the decision reflect the deliberations of the Team or Panel.**

7.4.7 Appeal

Many submissions to the Review that commented on import risk analysis argued that there is a need for some means of appeal. The Review Committee believes that the process for import risk analysis outlined in this chapter should ensure that the need for appeal is minimal, and restricted to alleged failure to follow due process. It considers that the significantly enhanced consultation with registered stakeholders proposed in this process obviates appeal on any grounds other than due process.

Because the Board of Quarantine Australia does not itself undertake import risk analyses, it is in a good position to act as the arbiter for any appeal on due process followed by each RAP. To ensure that appeals are considered promptly, appropriate times need to be set for both lodging an appeal and for having an appeal considered. If an appeal is not lodged within 30 days of Quarantine Australia advising the decision of a RAP, Quarantine Australia should implement the decision as soon as is feasible. If an appeal is lodged, the Board of Quarantine Australia should consider and adjudicate on it within 45 days of lodgement. If after consideration the Board of Quarantine Australia rejects an appeal, the original decision of the RAP concerned should be implemented as soon as is feasible. If after consideration the Board of Quarantine Australia upholds an appeal, the Board should advise the relevant RAP to reconvene, rectify the deficiency and re-work its risk analysis.

Recommendation 43: The Review Committee recommends that any appeal against the decision of a Risk Analysis Panel be restricted to consideration of the appropriate discharge of the agreed process and be considered and adjudicated by the Board of Quarantine Australia within 45 days of lodgement with the Board.

7.4.8 Periodic External Review

The Review Committee recommends that the import risk analysis process and associated decisions should be subject to periodic external review. Such review should be undertaken every three to five years. It might ultimately be undertaken by an independent scientific agency within Australia, but initially should be undertaken by overseas experts, preferably drawn from quarantine services of countries such as Canada, New Zealand and the United States or perhaps from appropriate international organisations (e.g. OIE and IPPC). Such external review is consistent with the principles of transparency and harmonisation, and with overseas experience with the use of risk analysis in regulatory decision making. For example, a draft report on the use of risk analysis in a wide range of

regulatory agencies in the United States (CRARM 1996) concluded that there is a need for greater use of external peer review of regulatory decisions based on risk analysis. In addition, such periodic review is consistent with the principles of quality assurance discussed in Section 4.4.5.2.

Recommendation 44: The Review Committee recommends that Quarantine Australia's import risk analysis process and associated decisions on import access requests should be subject to periodic external review.

7.5 METHODS FOR RISK ASSESSMENT

The Review Committee was asked specifically to make recommendations on 'revisions to the quarantine risk assessment process, including the potential for greater use of quantitative methods of assessment'. Comment was sought on risk assessment methods through submissions and public hearings. In addition, the Review Committee paid particular attention to current practice and trends in risk assessment methods used overseas, especially in Canada, New Zealand and the United States.

As pointed out in a number of submissions, risk assessment is a relatively new discipline — and this is especially true for quantitative approaches, many of which have become feasible only in the past few years as advances in computer technology have enabled more complex systems such as import pathways to be simulated. The submission from New South Wales Agriculture acknowledged this and noted that there is no recognised forum in Australia for discussing risk assessment methods. It also recommended that a national network be developed 'to ensure that a wide range of scientists use this technology consistently'.

7.5.1 Trends in Risk Assessment

At present, methods used in risk assessment range from qualitative approaches (as used by quarantine authorities worldwide for many years) to quantitative approaches (in which numbers are used for all stages or steps in an import chain) — with many actual assessments using both approaches (i.e. using quantitative data where these are available and qualitative assessment where quantitative data are not readily available).

Internationally, there appears to be a gradual trend towards increasing use of quantitative risk assessment methods in import risk analysis — fully for the relatively small number of instances where they can be applied, and partially in semi-quantitative approaches.

This trend was evident in Japan, Canada, New Zealand and the United States. The Review Committee noted that the latter two countries in particular were devoting significant resources to risk assessment, especially to more quantitative approaches. As noted by the Lindsay Review 'the approach is being pursued by overseas countries, despite the difficulties: Australia cannot afford to ignore this trend' (DPIE 1988, p. 45). This is discussed further in Section 7.8.

Comments made by the Lindsay Review on 'import risk assessment' are still appropriate, particularly for quantitative methods. The Lindsay Review noted that risk assessment:

- is an extremely demanding and complex process;
- involves consideration of biological and economic factors;
- requires continual review as circumstances that affect risk change, necessitating review of risk management strategies; and
- needs to adopt a scientific and objective approach, 'although the ultimate judgement on quarantine action is usually subjective and based on the best information available' (DPIE 1988, p. 30).

In its submission to the Review, the Tasmanian Department of Primary Industry and Fisheries argued that in import risk analysis 'evidence should be quantified wherever possible' but that 'quantification must be recognised as usually inadequate to provide clear answers. Therefore room must be left for unquantifiable grounds for making decisions, and the default position must be precautionary'. The submission from the Bureau of Sugar Experiment Stations recommended that 'decisions relying on subjective judgements (which may include quantitative risk analysis and probability analysis) be clearly identified, and that industry consultations be undertaken before implementing such decisions'. The submission from New South Wales Agriculture recommended that 'the risk analysis process should take account of both qualitative and quantitative data and recognise the role that pathway-initiated pest risk assessment has in developing quarantine protocol'. Similar arguments were presented in a range of other submissions to the Review.

7.5.2 Qualitative, Semi-quantitative and Quantitative Approaches

The Review Committee believes that import risk assessment should use the method most appropriate to the import access request being considered — whether qualitative, semi-quantitative or quantitative — and that each IRAT or RAP should determine which method is most appropriate for each import access request. The perception held in some quarters that quantitative approaches are inherently 'better' or 'more scientific' than qualitative approaches is misguided — a poor quantitative risk assessment (e.g. one using poor data or using inappropriate quantitative techniques) can be quite misleading and far less scientific than a good semi-quantitative or qualitative assessment.

Methods used in import risk assessment are reviewed in a range of papers, including, for example, Kellar (1993), MacDiarmid (1993), and OIE (1994) for animal health, and IPPC (1995) and McNamara (1995) for plant health. Reviews are available on trends in both animal and plant import risk assessment in the United States (Chang et al. 1994, APHRAN 1994, Bossé et al. 1996) and Canada (APHD 1994). Reviews are also available on the incorporation of economic analysis into import risk assessment (Dijkhuizen et al. 1995, 1996). However, most information on methods used in import risk assessment is gleaned by examining examples of specific assessments, whether qualitative (e.g. Cassidy et al. 1996 on risks associated with private quarantine facilities for horses), semi-quantitative (e.g. APHIS 1996 on the risks of bovine spongiform encephalopathy in the

United States) or quantitative (e.g. Beckett et al. 1996, on risks associated with imports of porcine semen). There is also a significant and expanding literature on modelling the probable spread and effect of incursions of pests and diseases, based on climatic factors (e.g. the use of the CLIMEX program to predict the likely range of introduced insect pests) or epidemiological spread (e.g. Markov chain or state-transition models of the spread of pathogens in susceptible populations).

An initial step in import risk analysis is to determine which pests or diseases in the country of origin of a proposed import do not occur in Australia and are of sufficient concern to warrant exclusion. Such pests and diseases may be either exotic to Australia or may occur in Australia but be considered undesirable in a particular import. Import risk analysis basically establishes a scenario tree or outline of the pathway or pathways of entry and establishment that might be associated with a proposed import. In qualitative approaches, emphasis focuses on the key points in the pathway where risk management factors can be applied to eliminate (e.g. by heat treatment of a product) or reduce (e.g. by vaccinating or testing live animals) the risk of importing pests or diseases of concern. In semi-quantitative approaches, numerical values (e.g. the prevalence of the pest or disease of concern) are applied at each point for which data are available. In fully quantitative approaches, such data are applied at all points of the pathway of entry and establishment.

The Lindsay Review noted that 'as with many biological issues, it is difficult to make quantifiable judgements about probabilities in relation to quarantine' (DPIE 1988, p. 41). It is only in relatively simple cases that reliable quantitative data are available for all steps in the pathway of entry and establishment. True quantitative import risk analyses are thus the exception rather than the norm. However, simple scenario trees or pathways can be analysed in a semi-quantitative or quantitative manner even where there are gaps in data. For example, one may include an extreme value (e.g. assume that the prevalence of infection in the population of origin is 100%) for missing data points and run the simulation. One can also use expert opinion to provide a 'best guess' of the value for a particular data point (e.g. using the Delphi technique). Such approaches enable the analyst to conduct sensitivity analyses to determine whether or not the particular parameter for which data are not available has a major impact on the overall probability of an exotic agent entering and establishing. Such analysis often shows that there are only a few critical points in the pathway that have a significant effect on the overall probability of entry or establishment. If good data are available on these points, the analyst can be confident that his or her assessment is robust. However, if good data are not available on these critical points, the analyst can report that robust quantitative risk analysis is not possible until information is available to fill these gaps. A RAP reaching this conclusion might encourage applicants or research providers to commission or conduct appropriate research to fill the gaps identified (as discussed in Section 7.4.6), or decide to use a semi-quantitative or qualitative approach.

Semi-quantitative or quantitative approaches can be either deterministic or stochastic. The deterministic approach assigns a single number (e.g. an amount or a probability) to each point in a scenario tree or pathway. Simulation over the whole pathway thus leads to a single value, ignoring the fact that variation is an integral component in all biological systems. The stochastic approach assigns each point a value that takes account of variation — it uses a parameter defined as a probability distribution for each point in the pathway. For example, a deterministic approach might assign a value of 10% for the

prevalence of a particular disease in the population of origin. The stochastic approach would assign this a value determined by a normal distribution with a mean of 10% and a standard deviation of perhaps 0.5%, thus approximating the real range of values encountered in the population. Stochastic analysis, using computer simulation, leads not to a single value for the overall pathway but to a range of values defined as a probability density distribution. For example, a deterministic analysis might conclude that the risk of importing a particular disease is 1 in 15 000 000 per tonne per annum. A stochastic analysis of the same pathway might lead to a result of a 95% confidence that the risk is between 1 in 14 000 000 and 1 in 17 000 000 per tonne per annum. Stochastic analysis provides a more realistic estimate than does deterministic analysis because it takes account of biological variation.

In most cases, there are only one or a few critical points in the scenario tree or pathway that are the primary determinants of the overall risk of entry or establishment of pests or diseases of concern. In addition, in complex situations with multiple possible pathways that each have only an extremely small probability of occurrence, the mathematics of fully quantitative assessment is problematic and not yet well defined. Such situations are assessable only by qualitative or semi-quantitative approaches even if good data are available for all points in the pathway. For most import risk analyses there are — and are likely to continue to be — data gaps that preclude a fully quantitative approach. In addition, from a practical perspective, it should also be appreciated that quantitative assessments tend to be extremely resource-intensive, requiring skilled staff, large amounts of data, sophisticated computer software and a large investment of time. Thus the Review Committee concludes that although quantitative approaches to risk analysis have some application in evaluating selected import access requests, semi-quantitative and qualitative approaches are most appropriate for the vast majority of import risk analyses.

7.6 FACTORS INCLUDED IN IMPORT RISK ANALYSIS

7.6.1 Assessing Pest Status

Import risk analysis should include evaluation of the potential pest status of a species or a variant of a species (breed, cross-breed, strain, line, variety etc.), whether the variant was derived by natural selection, human-assisted natural breeding, or the use of biotechnology to produce a 'genetically modified organism' (GMO). Submissions to the Review raised concerns about the low priority given to such evaluation in import risk analysis and argued that greater attention was needed to ensure that new species or variants imported into Australia were not likely to become environmental pests. Examples included Bengal cats, Dorper sheep and herbicide-resistant plants. The Review Committee believes that evaluation of potential pest status should be an integral component of import risk analysis of import access requests for species or variants that are exotic to Australia.

7.6.1.1 Pest animal status

Several submissions to the Review argued that import risk analysis must include an evaluation of the potential pest status of new species or variants of animals. In part, this argument rests on the premise that even animals imported into some sort of confinement should be regarded as eventually likely to 'escape', with potential negative consequences

for the natural environment. For example, the submission from the National Biodiversity Council argued that 'the presence of exotic species in Australia, in either a quarantine situation or in an artificial habitat, should be regarded as inevitable introductions into habitats which have natural values (i.e. biodiversity values). In other words, escapes from confinement (like gardens, aquaria, cages or fenced-off areas) are inevitable in either the short- or long-term'.

The Review Committee notes that there are models for evaluating the potential pest status of vertebrates (e.g. Bomford 1991) and that quarantine authorities are obliged to refer relevant import proposals to the Environmental Protection Authority for assessment under the *Environment Protection (Impact of Proposals) Act 1974*. In addition, potential importers should be alerted to the need to consider whether or not an additional permit is required from the Australian Nature Conservation Agency of the of the Department of the Environment, Sport and Territories. In its submission to the Review, the Department of the Environment, Sport and Territories argued that applications for quarantine import permits for animals (and plants) should include a standard paragraph to inform intending importers that they should check with that Department to determine whether an additional permit is required from the Australian Nature Conservation Agency. The Review Committee agrees that quarantine import applications should be amended accordingly.

7.6.1.2 Weediness

Many submissions to the Review expressed concern at the number of introduced plants that have become weeds in Australia. The report that the Review Committee commissioned on weeds demonstrated that such concerns were well founded, with its conclusion that at least 290 plants have become naturalised in Australia during the past 25 years and that the rate of naturalisations is increasing (see Appendix B). The Review Committee noted that the potential environmental impact of imported plants was also of increasing concern in other countries, including New Zealand and the United States.

Several submissions to the Review supported a model for assessing weediness that was commissioned by the Australian Weeds Committee (Pheloung 1995). Submissions from a range of government and environmental groups supported the Pheloung model for determining the weediness of new plant introductions, including the use of a 'permitted' list as the basis for approvals, rather than the use of a 'prohibited list' as practised by AQIS (see Section 8.4.3).

The Review Committee believes that although it will need further development and fine-tuning, the Pheloung model provides a very sound framework — based on risk analysis principles — for determining the weediness of new plant introductions. The Review Committee applauds the action by AQIS in circulating it for public comment in September 1996 in preparation for its ultimate adoption for assessing weediness of proposed new plant introductions.

Recommendation 45: The Review Committee recommends that import risk analysis used by Quarantine Australia include increased consideration of the potential environmental effects of proposed introductions of new species, breeds or varieties of animals and plants or their germplasm, including their propensity to become weeds, vertebrate pests or invertebrate pests in Australia.

7.6.2 Genetically Modified Organisms

A few submissions to the Review commented on the need to ensure that the process of import risk analysis was suitable for considering requests for import of GMOs. The Review Committee believes that the import risk analysis process advocated in this Report is appropriate for and readily applicable to all imports of exotic species or variants of species (breed, cross-breed, strain, line, variety etc.). It considers that this is true whether the variant was derived by natural selection, human-assisted natural breeding, or the use of biotechnology to produce a GMO.

On its import permit applications, AQIS specifically asks if microorganisms are GMOs. As more animal and plant GMOs are developed and they or their products are traded internationally, Quarantine Australia should include this question on all import applications. Identification of animals and plants as GMOs, and of their products as derivatives of GMOs, will enable Quarantine Australia to ensure that this information is considered in its import risk analysis.

Australia is engaged in consultations on the development of a possible protocol on biological safety of GMOs under the Convention on Biological Diversity (see Appendix C for discussion on this Convention). The protocol is likely to consider the international movement of GMOs, including unintentional movement across national boundaries and their possible adverse effects (e.g. on agriculture or the natural environment). It is likely to include provision for an 'advance informed agreement' on the biological safety of GMOs. This agreement would oblige countries that produce or export a GMO to provide relevant information to enable potential importing countries to conduct an import risk analysis on the GMO, including consideration of possible effects on biodiversity. The agreement might also oblige countries that produce or export a GMO to undertake the import risk analysis on behalf of developing countries that request such assistance. The Review Committee supports these developments and believes that Quarantine Australia should work closely with other authorities such as the Genetic Manipulation Advisory Committee to ensure that importing countries are provided with the necessary information or assistance for any GMOs produced in Australia.

7.6.3 Biological Control Agents

Several submissions to the Review raised the issue of the protracted process required for importing agents for evaluation of their potential use in biological control. The submissions agreed that a very thorough consultative process was required for consideration of approval to release such agents into the natural environment. However, they argued that a more streamlined process was both appropriate and feasible for evaluating requests to import such agents into secure premises for testing their potential as biological control agents.

The crux of the argument for a more efficient process for importing potential biological control agents is that the keeping of such imports and the decision process for their import are, as stated in CSIRO's submission to the Review, 'very closely regulated and a frequent source of frustration and delay'. The protracted process and long delays are seen as an unnecessary and expensive disincentive to researchers wishing to import organisms for evaluation as possible biological control agents. This is particularly so given that most organisms evaluated can be quickly eliminated as potential biological control agents (e.g. because studies in appropriately secure facilities prove they are pests or pathogens of indigenous Australian species and not just the target pest species for which control is desired). The Review Committee believes that there is scope for streamlining the process used for approving imports of agents for testing for their potential as biological control agents. For example, testing of agents could be restricted to appropriately secure facilities (under supervision and audit of Quarantine Australia) and applications could be screened by a scientific panel with representatives from government, agricultural groups and environmental groups. A core panel with such representation might be supplemented with additional scientific members with expertise in the particular taxonomic groups of the putative biological control agent or target pest (although neither the core nor supplementary group should include members working for the applicant or proponent of any particular proposed import). The scientific panel should use and apply the principles of risk analysis in its consideration of applications for importing agents for evaluation of their potential as biological control agents.

The Review Committee believes that Quarantine Australia should develop a proposal along these lines for a more efficient approach to importing agents for evaluation of their potential as biological control agents, and submit this for the endorsement of the Standing Committee on Agriculture and Resource Management. In addition, it notes that in its submission to the Review, the Department of the Environment, Sport and Territories recommended that the Australian Nature Conservation Agency and AQIS jointly develop and institute a single permit that would cover all relevant legislation overseen by both parties. This could be included in Quarantine Australia's review of procedures.

The Review Committee wishes to emphasise that it seeks streamlined procedures for importing agents for evaluation of their potential as biological control agents — and not for the subsequent process for approval to release such agents after testing in Australia. A more comprehensive consultative process similar to existing procedures should continue for approval to release biological control agents.

Recommendation 46: The Review Committee recommends that Quarantine Australia develop a proposal for a streamlined process for considering imports of agents into secure premises for evaluation of their potential as biological control agents, and submit this for the consideration of the Standing Committee on Agriculture and Resource Management.

7.7 OTHER APPLICATIONS OF RISK ANALYSIS

Risk analysis can be applied to a wide range of topics related to animal and plant health and quarantine, including areas such as food safety and endemic disease control. However, two particular areas relevant to quarantine operations and trade issues are its application for evaluation of border activities and facilitating exports.

7.7.1 Evaluation of Border Activities

The principles of risk analysis can be applied to help determine the risk associated with different pathways of entry. Risk analyses of the pathways by which exotic pests and diseases might enter Australia would help to evaluate their relative risk. The level of relative risk would also assist in the evaluation of border policies and procedures, and enable Quarantine Australia to allocate resources according to the degree of risk. This matter is considered further in Chapter 8 on Border Activities.

7.7.2 Export Facilitation

The principles of risk analysis can also be applied to help developing countries that import from Australia to formulate appropriate import protocols. Assisting such countries with risk analysis is consistent with the recent focus on positioning Australia as the 'supermarket for Asia' (see Section 4.4.1.1). It may also be a future requirement for GMOs (or food or products of GMOs) developed in Australia (see Section 7.6.2) and is consistent with the SPS principle of providing technical assistance to developing countries (see Appendix C).

7.8 KEY CENTRE FOR QUARANTINE RISK ANALYSIS

Many submissions to the Review stressed that Australia needs to develop and maintain a leadership role in quarantine risk analysis. Some argued that Australia had a significant leadership role in this area (particularly in animal health in the late 1980s and early 1990s) internationally, but had not maintained this position in recent years. The Review Committee concurs with these views.

As a significant trading nation, it is in Australia's interests to lead in this area and to influence international developments through organisations such as the OIE and the IPPC (see Section 5.2). As previously noted, New Zealand is now playing a significant international leadership role in risk analysis and related areas, and has dedicated significant resources to maintaining this position. The Review Committee also noted that the United States is committing substantial resources in this area both at its Centers for Epidemiology and Animal Health at Fort Collins and its new plant equivalent, which is being developed at Raleigh. Canada has also devoted significant resources to quarantine risk analysis.

One way to re-ignite interest and establish a strong base for this work in Australia is to develop a Key Centre in quarantine-related risk analysis. Such a Centre would provide a base for training and research in risk analysis and related disciplines. It could be established with an initial five-year grant that would be supplemented and gradually replaced by other sources of funds (e.g. external research grants, training and consultancy

services, and extension into other related areas of risk analysis such as food safety and public health).

Ideally, the Centre should be based at an Australian university, preferably in a relevant faculty or school (e.g. of epidemiology, public health, veterinary science or plant protection), and involve other agencies with expertise and experience in quarantine risk analysis. Given its background in quarantine risk analysis and its significant in-house computing capacity, the Bureau of Resource Sciences would be expected to be a participant in the Centre. The Centre should be established by developing a detailed proposal and calling for competitive tenders from interested parties to bid for the initial grant funding, as per the usual process for establishing Key Centres. The Review Committee believes that establishing a Key Centre for quarantine-related risk analysis is essential to enhance Australia's intellectual leadership in this area.

Recommendation 47: The Review Committee recommends that Government provide funds to establish a Key Centre for quarantine-related risk analysis to enhance Australia as a world leader in this field.

PART V: BORDER QUARANTINE

8. BORDER ACTIVITIES

8.14. INTRODUCTION

Border activities are but a part of a continuum of pre-border, border and post-border arrangements that combine to form the total complement of quarantine controls. Because of the highly regulatory nature of border processes, these activities have the highest profile and tend to attract most public interest. It is for this reason that the Review Committee devoted a good deal of attention to border quarantine activities.

Appendix E provides brief descriptions of all current border programs. The Review Committee found that there are a number of common concerns across border programs and hence have made some recommendations that apply to more than one program. The Review Committee has thus approached concerns with the quarantine border on an issue-by-issue basis, rather than by program.

8.14. PRINCIPLES OF BORDER QUARANTINE

Quarantine activities at the border are designed to meet the quarantine goal through the implementation of effective controls on the entry of people, animals, plants and goods that may introduce unwanted pests and diseases. The principles of border quarantine are:

- determining, through a process of scientific analysis, the level of risk posed by items of human, animal and plant origin passing through the border;
- identifying and targeting high risk pathways through which items of potential quarantine concern may gain undetected access to Australia;

- developing appropriate border controls to prevent undetected entry, especially through the use of new technology;
- promoting awareness of quarantine and the dangers presented by risk items — both within Australia and overseas — particularly in the minds of the travelling public;
- fostering close and effective relationships with other agencies that have border responsibilities;
- delivering quarantine border programs in the most efficient and effective manner, including contestable third-party delivery arrangements;
- delivering nationally consistent quarantine border programs; and
- undertaking regular audit and review of controls and procedures for border activities.

8.3 ELEMENTS OF BORDER QUARANTINE

8.14.2 Identifying High Risk Pathways

In 1988, the Lindsay Review commented that ‘one of the first things a quarantine service must know is how effective its operations are at assessing and addressing risk’ (DPIE 1988, p. 35). The Review Committee agrees that the principles of risk analysis should be applied to help determine the effectiveness of current border quarantine activities.

Risk analyses of the pathways by which exotic pests and diseases might enter Australia would enable current border policies and procedures to be evaluated, and help management of Quarantine Australia to allocate its resources to high risk areas. Just as for import risk analysis, the validity of such risk analyses depends on the quality of the available data and information. The Lindsay Review also recognised this, and recommended the use of ‘coordinated databases and database management systems oriented to the needs of quarantine’ (DPIE 1988, p. 57), especially for policy development, risk analysis, and ‘evaluating the effectiveness of programs’. The Review Committee concurs with these views, and specific recommendations on developing such databases and information systems are discussed in Section 9.5.3.

During the course of the Review, it came to the attention of the Review Committee that inspectors at the border do not always complete the full inspection of consignments in accordance with the sampling protocol, and do not always analyse products confiscated at first ports of entry, to determine the actual quarantine risk (see Section 8.4.4.2). The Review Committee appreciates that limited resources and the advent of full cost-recovery inhibit the incentive for border staff to analyse completely all intercepted product. However, without this full analysis quarantine officials have an imperfect database on which to formulate future policy and operational decisions. For example, current work practices may provide data on the number of times a particular import protocol or quarantine regulation is breached, but not on the level of quarantine risk associated with each breach. The Review Committee believes that records on the detection of pests and diseases at the border need to be improved to provide adequate data for the development of comprehensive databases and information systems on incursions.

Areas the Review Committee considers need more attention, and to which it believes relatively few resources have been allocated, include international mail exchanges and courier depots, seaports and air cargo. Although all border activities should be the subject of risk profiling and analysis over the next three years, these three areas need particular attention in the interim. This matter is considered further in Chapter 11 on Resources and Legislation.

<p>Recommendation 48: The Review Committee recommends that Quarantine Australia use risk analysis based on comprehensive detection databases and information systems to target resource allocation to increase the efficiency and effectiveness of border activities.</p>
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8.3.2 Relationships with Other Border Agencies

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Australian Customs Service

There is a long-standing and close working relationship between quarantine authorities and the Australian Customs Service (ACS). Both agencies operate within a regulatory framework with separate Acts and Regulations. At international airports, the first contact disembarking passengers have with Australian officials is when they reach the customs, immigration and quarantine border within the international terminal of the airport. This border, known as the primary line, is staffed by ACS officers and it is at this point that passengers present a completed Travellers Statement and other documents. At the primary line, the ACS officer marks the statement to indicate that the passenger has:

- declared quarantine goods, in which case the passenger must go through the red channel for inspection of the goods by a quarantine officer;
- declared goods on the quarantine free list and is given ‘free runner’ status, in which case the passenger may exit via the green channel; or
- nothing to declare and is given free runner status, in which case the passenger may exit via the green channel.

Customs marshals also play a role in directing declarants and others to baggage search channels. Although ACS performs a decision-making role in relation to passenger clearance at the red–green channels and intuitive judgements at the primary line, it has no involvement in policy development in quarantine. However, because of an extensive agency role — for the Department of Immigration and Multicultural Affairs, the Australian Federal Police, the Australian Nature Conservation Agency and others — and its large staff numbers, ACS exercises considerable influence over airport operational arrangements that affect, to varying degrees, the implementation of quarantine procedures.

Quarantine officers instruct and advise newly recruited international airport customs staff on quarantine concerns. To assist in the clearance of passenger baggage, the quarantine service developed in 1988 a list of low risk items that customs officers could clear without the need to refer to a quarantine officer. The further development of this list since that time has facilitated faster passenger movement through international airports while maintaining the required level of quarantine border integrity.

ACS cargo clearance electronic systems form the basis for all imported cargo clearance arrangements at airports and seaports and quarantine’s databases have been developed in conjunction with ACS. Section 8.5.2.1 covers in more detail the relationship with ACS in developing joint electronic information systems. ACS also conducts initial screening of mail for quarantine authorities at international mail exchanges and courier mail depots.

However, in recent times the focus of customs and quarantine authorities at the border appears to be diverging. ACS emphasis on its role in trade facilitation and advanced planning for passenger preclearance, together with revised arrangements for handling mail, may have a significant effect on the delivery of quarantine services at airports,

seaports, mail exchanges and cargo handling facilities. Although quarantine authorities share the objective of facilitating passenger and cargo movements, their primary objective at the border is to maintain and enhance Australia's quarantine integrity.

ACS has a Memorandum of Understanding (MOU) with the Australian Quarantine and Inspection Service (AQIS) that sets out the cooperative and consultative arrangements between the two organisations. The organisations have formal and informal consultations on a range of border issues. These arrangements are covered in more detail in Chapter 4 on Quarantine Australia.

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Department of Health and Family Services

The Department of Health and Family Services, through its Chief Medical Advisor as the Director of Human Quarantine, has responsibility for determining human quarantine policy. It advises quarantine authorities of its policy requirements, which are then implemented through operational instructions and directions for border quarantine staff. The Department of Health and Family Services maintains its advisory role with quarantine border operations through periodic meetings called usually on specific issues. The Director of Human Quarantine has been consulted on all recommendations in this Report that may affect human quarantine policy.

In the event of an outbreak of an exotic pest or disease of humans that may pose a threat to Australia, the Department of Health and Family Services takes a far more active role in operational matters. Depending on emerging disease situations, this role may extend to developing or approving changes to operational procedures and directions.

8.3.2.3 Federal Airports Corporation

The Federal Airports Corporation is the controlling authority at most international airports in Australia. Its charter gives it control over airport infrastructures with a consequent effect on how agencies operate within airports. As such, its policies and procedures inevitably influence quarantine operations. There are both formal and informal contacts between AQIS and the Federal Airports Corporation on operational matters. AQIS is a member of the facilitation committee at each international airport. These committees meet regularly to discuss, among other things, cross-agency issues and airport operations generally. There is also a National Facilitation Advisory Committee, a joint industry and regulatory authority committee that examines and resolves aircraft scheduling and other operational difficulties.

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Department of the Environment, Sport and Territories

The Department of the Environment, Sport and Territories is the agency with responsibility for the *Wildlife Protection (Regulation of Exports and Imports) Act 1982* and thus has an interest in quarantine matters, particularly at the border. From the inception of this Act, ACS has acted as an agent for the wildlife protection authorities (currently the Australian Nature Conservation Agency, which is part of the Department of

the Environment, Sport and Territories) under an agreement that sets out the responsibilities of each organisation in relation to the administration and enforcement of the Act. This agreement is currently under review and is being developed as an MOU between both organisations. One of the components of the draft MOU relates to interaction with AQIS on a number of issues, although AQIS is not party to the proposed MOU.

The Review Committee has been advised that once the draft MOU with ACS has received some degree of consensus, the Australian Nature Conservation Agency intends to approach AQIS to have a similar MOU with that organisation. The Committee supports the establishment of an MOU between Quarantine Australia and the Australian Nature Conservation Agency, and suggests that the MOU should make specific reference to quarantine officers exercising powers under the *Wildlife Protection (Regulation of Exports and Imports) Act 1982* (see Section 4.4.6).

8.3.2.5 Australia Post

Australia Post is responsible for the handling of all official mail items entering Australia. Traditionally, quarantine staff have played a secondary role in mail inspection, examining items referred by ACS 'screeners' for quarantine clearance. Thus ACS has generally had the primary role in negotiations with Australia Post on matters relating to mail handling and examination. This situation is gradually changing, with quarantine authorities taking a closer interest in mail surveillance. Revised arrangements with Australia Post are under negotiation, including the development of an MOU with AQIS on quarantine aspects of handling mail (see Section 4.4.6).

8.14.2 Delivery of Quarantine Services

Before 1994, all quarantine service delivery was carried out under agency arrangements by State administrations, on the Commonwealth's behalf. In October 1994, a meeting of the Agriculture and Resource Management Council of Australia and New Zealand resolved to transfer responsibility for delivery of quarantine services to the Commonwealth. Ministers from the Northern Territory, Tasmania and Western Australia did not agree to the transfer. This decision has led to a situation whereby there is now a mix of Commonwealth and State agencies delivering supposedly identical Commonwealth quarantine programs in different parts of the country. For instance, State staff appointed as Quarantine Officers by the Commonwealth perform the border function at Darwin, Hobart and Perth International Airports. Commonwealth quarantine officers carry out the border activities at all other international airports in Australia.

As stated in Chapter 2, the principles underpinning the goal of quarantine are that quarantine programs should be delivered effectively, efficiently and with a consistent national approach. To ensure that these principles are achieved, one agency should bear the full responsibility for provision of quarantine services. The Review Committee believes that Quarantine Australia should be that agency, although Quarantine Australia, for reasons of geographic and economic efficiency, may choose to appoint third-party agencies to deliver some services subject to contestability and appropriate audit.

Recommendation 49: The Review Committee recommends that Quarantine Australia ensure consistent, effective and efficient national delivery and reporting of quarantine services.

8.14.2 Performance Indicators for Border Programs

At the time of conducting its examination of border programs, the Review Committee was concerned to note that performance indicators for some border programs were not properly established. Although data on workload and effectiveness have been maintained in a variety of forms for many years, they are not sufficiently detailed, complete or retrievable to be useful for either internal program review or external auditing.

The Review Committee understands that part of this deficiency arises from laxity with the former arrangement under which the States directly operated quarantine border functions under agreements with and policy guidelines from the Commonwealth. In its report on an efficiency audit of quarantine operations, the Auditor-General noted that 'currently, the management of the agency agreements is limited by a lack of clearly agreed objectives between AQIS and State agents. There is an absence of meaningful performance indicators to allow effective management of the delivery of services and the evaluation of agency operations' (Auditor-General 1991, p. 26). It would appear that this is still the case.

The Review Committee has been advised that effort is being directed towards rectifying this situation. AQIS has established a working party to develop appropriate performance indicators for all border programs. It is expected that these indicators, which are due for completion and dissemination to program staff in November 1996, will be developed to be effective as both program management and auditing tools. The Review Committee sees such data as fundamental for the effective management of all programs.

Recommendation 50: The Review Committee recommends that Quarantine Australia establish, as a matter of priority, performance objectives and indicators for all border programs, and implement regular audits of programs against these indicators for both efficiency and effectiveness.

8.14.2 Quality Assurance

Before 1990, there were only a limited number of quarantine compliance agreements with industry. During the period from 1990 to 1992, quality assurance arrangements were developed with companies that were prepared to produce procedural manuals and accept the challenge of undertaking some components of quarantine inspection activities, subject to audit. However, there was considerable variety in the types of auditable quality assurance arrangements that were developed during this period. Generally, the arrangements were known as Approved Quarantine Directives or Compliance Agreements. Approved Quarantine Directives were scheduled for two audits per year; Compliance Agreements, which had more flexibility, were generally required to have one audit per year.

New quality assurance arrangements being developed will allow accredited customs brokers to undertake assessment of packaging material for low risk commodities. Under

the proposed arrangements, there will no longer be a requirement for accredited customs brokers to present all packaging documentation.

Further advances in quality assurance arrangements will see developments in both the plant and animal quarantine areas for post-arrival quarantine management. However, the Review Committee is adamant that all quality assurance arrangements must be accompanied by well developed auditing programs. Although endorsing the extended use of quality assurance arrangements with industry for activities with low quarantine risk, the Review Committee believes that these arrangements should be approved only when subject to regular auditing. The determination of the level of risk and the means of managing risk are discussed in more detail in Section 8.3.1.

During the Review, some industry groups expressed concern that there was a tendency for quarantine authorities to develop complex and onerous Approved Quarantine Directives that were difficult for industry to adopt and hence were commercially unattractive. Although quarantine integrity must not be compromised, the Review Committee considers that the conditions applicable to quality assurance arrangements covering low risk items should be no more complex than is required to manage the assessed risk, subject to audit.

Recommendation 51: The Review Committee recommends that Quarantine Australia facilitate the use of industry-developed quality assurance arrangements for low risk quarantine goods and tasks, subject to appropriate audit arrangements.

8.14.2 Quarantine-approved Premises

During the public hearing process and the Review Committee's inspections of quarantine operations, the issue of approval of private premises for the performance of quarantine was brought to its attention. In particular, concerns had been raised regarding the way in which premises were approved and approvals withdrawn. It was put to the Review Committee that different standards were applied across States, resulting in difficulties for importers.

The Review Committee understands that the *Quarantine Act 1908* (Sections 44B(1) and 46A) provides the legislative base for the use of places other than quarantine stations for the quarantine of goods, including those of animal or plant origin. The approval, which must be given in writing by a Quarantine Officer, is generally for a specific purpose and then subject to conditions applying to the particular quarantine. From inquiries made by the Review Committee, it would appear that State quarantine authorities have adopted different policies and guidelines over the years, although there are similarities in overall requirements. This situation is not dissimilar to others encountered by the Review Committee where industry has difficulty with policies and guidelines being applied differently from State to State for imports of like product.

The Review Committee is aware that since the transfer from some States of quarantine functions to the Commonwealth, a project officer has been appointed by AQIS to examine the differing arrangements and to prepare standardised criteria for the various types of approved premises.

The Review Committee raises this issue as a further example of a lack of a national and uniform approach to the application of quarantine policies and guidelines. Not only should these premises that serve an important role in quarantine security be approved under uniform guidelines, but they should also be subject to regular audit. The Review Committee believes that an urgent examination of these inconsistencies should be undertaken and that Quarantine Australia should develop and implement appropriate auditing programs for these establishments.

Recommendation 52: The Review Committee recommends that a national system for the approval and audit of private premises for the performance of quarantine be established and implemented as a matter of urgency.

8.3.7 Cost-recovery for Quarantine Programs

Over many years, the Commonwealth has pursued a policy of partially recovering the direct operating costs of quarantine programs. Under former policies, such elements as quarantine surveillance, clearance of aircraft, ships and their passengers, research and general administrative costs were excluded from cost-recovery. However, since 1979 successive governments have introduced policies leading to much higher levels of cost-recovery, culminating in a 1990 decision to increase cost-recovery levels to 100%. Cost-recovery was gradually extended over the next three years to this pre-determined level.

A number of submissions to the review were critical of cost-recovery and the user-pays principle. In its submission, the National Farmers' Federation (NFF) stated that 'as a general principle NFF believes that tasks identified as functions of the national government such as border surveillance and collection of statistics, should be funded by the Commonwealth. So too should analytical assessment, policy development, and risk and cost-benefit determinations. Some operational activities identified as benefiting individuals or groups of individuals could be funded through cost-recovery'. The NFF submission went on to propose that an AQIS Charging Review Committee be established to review beneficiaries and community service obligations. Canberra Consumers made the point that 'the quarantine service is not provided for the benefit of users; it exists to protect the country from the importation and spread of threats to man, animals or plants'.

The Review Committee is aware that industry-based charging review committees were established in 1994 to permit greater scrutiny of charges to these end users (see Section 3.3.2). The function of these committees is to assess operational procedures and staffing, consider the composition of user-attributable costs, and advise on charging structures and rates.

Although supporting the general principle of cost-recovery for quarantine services, the Review Committee believes that the application of this policy should not be taken to the extreme. Observations during the inspection phase of the Review lent weight to the view that quarantine staff were tending to concentrate effort on cost-recovered programs to the detriment of budget-funded activities such as wharf surveillance. Further, the Review Committee received a strong impression that some quarantine activities appeared to be driven more by the ability to charge for services than by the need to meet the objectives of quarantine. In such situations, quarantine security is likely to be compromised. Urgent consideration should therefore be given to reviewing the balance between funding

provided for community service obligations and from cost-recovery in border activities. This issue is discussed further in Chapter 11 on Resources and Legislation.

8.4 IMPORT PROTOCOLS

Quarantine policies for the import of live animals, plants and their genetic materials are based on the development of scientific protocols (the term protocol refers to conditions that are or may be, applied to imports). A risk analysis is conducted as part of protocol development. An integral element of this process is a sound knowledge of the pest and disease status in the exporting country, and of the pre-border, border and post-border strategies that can be used to manage risk.

8.14.2 Effectiveness of Current Import Protocols

In attempting to assess the effectiveness of current animal and plant import protocols, the Review Committee commissioned a number of reports on pest and disease incursions in Australia over the past 25 years (see Appendix B). This section of the Report focuses on data from those reports on pest or disease incursions that might indicate there could be shortcomings in import protocols.

The commissioned report on animal pests and diseases identified three incursions of pests or pathogens that were new or not anticipated, and not accounted for in import protocols. The report identified a further three instances of detection of antibody to an exotic disease during post-entry quarantine. Although none of these three incidents involved the presence of disease, each had trade repercussions and illustrates the need for continuous review of protocols.

The commissioned report on plant diseases concluded that the main routes of introduction appear to be legally introduced plant materials (defined as including cuttings, budwood, fruit, leaf waste and dried material) and seeds, which constituted about 41% and 34% of established incursions, respectively. Few plant pathogens that established in Australia during the past 25 years appeared to be associated with imports of whole plants. Exotic plant pathogens that apparently established in Australia during the study period were most commonly associated with fruits and vegetables (34.5%) and nursery plants, ornamentals and flowers (22.5%). When analysed by type of pathogen, fungi (42%) and viruses and viroids (39%) predominated. The Review Committee believes that the data in this report indicate that import protocols for plant materials — especially fruits, vegetables, nursery plants, ornamentals and flowers — need to be reviewed and strengthened.

The commissioned report on weeds concluded that at least 290 exotic species of plants have become naturalised in Australia during the past 25 years (see Appendix B). However, because plants may be present for some time before they are recognised as weeds, many species that have been recorded as naturalised during the study period may have been introduced before 1970. The report concluded that, of those species for which information was available, most had been introduced deliberately — with 65% of the total having been legally introduced as ornamental plants for horticulture. The Review Committee believes that the data in this report indicate that there is a need to strengthen

the assessment of weediness in protocols for importing plants, especially of ornamental plants for horticulture (see Section 7.6.1.2).

8.14.2 Fumigation and Treatment of Imported Plant Material

With regard to fumigation, Agriculture Western Australia made the point in its submission that current fumigation treatments appear to be inadequate for addressing all the risks with insects. The submission expressed concern about the efficacy of some treatments required for insect pests found on imported goods. The validity of some overseas fumigation certificates was also questioned in a number of submissions.

It is fair to say that governments and industry are concerned at the validity of overseas certification and at the inadequacy of fumigation and treatment of plant material, particularly cut flowers. For instance, the Review Committee is aware that AQIS recently circulated to all interested parties, a notification list of fumigators from which certification will not be accepted, based on detections of inadequate fumigation treatments.

The Review Committee believes that sanctions should be intensified against importers who continually present consignments with fumigation certificates from agents listed as unacceptable. Merely ordering re-fumigation in Australia — albeit at the importer's expense — is inconsistent with the principle of seeking to treat potential quarantine concerns offshore whenever possible. The Review Committee believes that where importers have a record of presenting consignments with unacceptable fumigation certificates, the consignment should not be permitted to enter Australia (see Section 8.10.7).

The inspection and treatment of imported plant material was criticised in a number of submissions to the Review Committee. In particular, submissions referred to inadequate fumigation and concerns that the inspection requirements do not match the type of pests that are likely to be found on the product. Consistent with the concept of the continuum of quarantine, the Review Committee is strongly of the view that disease and pest risk should be managed offshore, where possible. There is reduced incentive for exporters to ensure full compliance with import protocols if the option of treatment on arrival is readily available. In particular, the Review Committee shares the concerns expressed in submissions regarding fumigation certification and inadequate treatment of imported cut flowers. Further, the Review Committee believes that quarantine authorities should impose mandatory fumigation at approved and audited premises overseas for cut flowers from sources with an established record of high prevalence of accompanying pests or diseases. Persistent transgressors should be removed from this mandatory requirement only when they can prove to the satisfaction of quarantine authorities that remedial action has been put in place, the revised procedures are effective over a number of consecutive imports, and ongoing compliance can be audited (see Section 8.10.7).

<p>Recommendation 53: The Review Committee recommends that Quarantine Australia impose mandatory fumigation at approved and audited premises overseas for cut flowers from sources with an established record of high prevalence of accompanying pests or diseases.</p>
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8.14.2 Seeds

With respect to imports of seeds for sowing, AQIS basically operates a ‘prohibited’ entry system, based on two sets of lists, namely:

- those seeds prohibited by legislation due to their assessed weed threat or other undesirable characteristics — these seeds are listed under Proclamation 86P, commonly referred to as the ‘prohibited weeds list’; and
- those seeds that have restricted entry due to their assessed risk of transmitting seed-borne diseases (i.e. entry is allowed by permit only with defined conditions such as limited import quantities, treatment or a period of growth in post-entry quarantine).

By and large, those seeds not covered by the two lists are permitted entry without an import permit, but are subject to inspection on arrival and treatment, if required. These unrestricted imports, which are ‘automatically approved’ by default, can also include seeds that have not been previously assessed.

As highlighted in Chapter 7 on Risk Analysis and in Section 8.4.1, the Review Committee is strongly of the view that quarantine authorities must take greater account of potential weediness and of seed-borne pathogens via alternative host pathways in determining conditions for managing seed imports. In this regard, the Review Committee believes that it is more appropriate for quarantine authorities to operate an ‘approved’ list for seed imports, based on scientific risk analysis, supplemented by an augmented prohibited list for weeds and for seeds requiring specific permits. Under this approach, seeds that are not on the ‘approved’ list would be prohibited entry until assessed scientifically for quarantine purposes. Publication of the definitive approved and prohibited lists would provide transparency and consistency for Australia’s importers and the community. The Review Committee understands that the proclamations associated with imported seeds are being redrafted to incorporate approved and prohibited lists.

Recommendation 54: The Review Committee recommends that the regulations governing the import of seeds and plant germplasm be based on a permitted list for entry rather than solely the current prohibited list.

The Review Committee is concerned by the inconsistency that currently exists with tolerances for seed contaminants associated with the import of unrestricted seed. Although the tolerance for weed seeds as contaminants in unrestricted seed imports is nil, this applies only to weed seeds identified in Proclamation 86P. There are no constraints on seeds that are not listed on Proclamation 86P — that is, on those seeds that have potential weediness or have not been assessed for weediness. Although the commissioned report on weeds indicates that only 2% of traceable weed incursions entered as contaminants of other imported seed (see Appendix B), the current anomaly with respect to weeds should be addressed by the Review Committee’s recommendation on the development of an ‘approved’ list for seed imports.

Of greater concern is the level of restricted seed allowed as contaminant in bulk imports of unrestricted seed, particularly seed designated for agricultural sowing. By way of

illustration, in its submission to the Review Committee, Pacific Seeds noted that ‘sorghum is a restricted species that we can only import through a Quarantine Glasshouse. [However], AQIS does allow seed lots of unrestricted species to be contaminated with up to 35 sorghum seeds per kilogram. Such seeds can ... be sown without restrictions such as seed treatment requirements or area freedom’. As reported in a recent review of seedborne diseases of 24 crop genera, ‘the risk of introducing and establishing new diseases through unrestricted bulk imports of seed destined for direct sowing in the field is far greater than that represented by small seed lots grown to second generation seed for release through post-entry quarantine’ (Phillips and Chandrashekar 1994, p. 11). Further, the report on plant pathogens commissioned by the Review Committee concluded that about one-third of established incursions of exotic seedborne pathogens during the past 25 years entered via approved imported seeds (e.g. the recent example of anthracnose of lupins). However, the percentage of these incursions that were transmitted from restricted seeds as a contaminant of unrestricted imports is not known (see Appendix B).

In its submission, Pacific Seeds argued that the difference in treatment between restricted seed imports and tolerances for restricted seed contaminants of unrestricted seed imports is not related to the risk associated with each mode of import — but is based on what was practically achievable with seed screening technologies at the time tolerances were set. For instance, Pacific Seeds compares the nil tolerance for maize as a contaminant against that of 35 seeds per kilogram for sorghum in unrestricted seed imports, noting that ‘the difference in tolerance is we assume because maize being a much larger seed can more easily be graded out of other seeds whilst removing sorghum may be more difficult’. There was no evidence presented during the course of the Review that refuted this assertion. The Review Committee believes strongly that there must be consistency in conditions applying to imports of restricted seeds under permit and as contaminants of unrestricted seeds and that these conditions, including tolerances, should be based on sound scientific grounds.

Recommendation 55: The Review Committee recommends that tolerances for contaminants of imported seeds (including bulk grains) be consistent, equitable and based on scientific risk analysis.

Another apparent inconsistency with respect to imported seeds brought to the attention of the Review Committee related to imports of seeds of certain horticultural crops such as beans, broad beans, peas, sunflowers and garlic for sale as food. In its submission to the Review Committee, the Heritage Seed Curators Association claimed that the direct import of such seeds for sowing incurred relatively expensive quarantine charges — ranging from treatment on entry to growing out in quarantine glasshouses, depending on the particular seed. In contrast, similar seeds imported for sale as food in supermarkets and health stores — although supposedly devitalised by AQIS-approved treatments — could be purchased off the shelf and germinated by members of the Association. The Association claims that its members ‘have found that the germination rate varies between 10 and 60% ... for treated bean seed bought off the shelf in a supermarket or healthfood store’. In this regard, AQIS acknowledges that although methyl bromide fumigation may not be as effective as other devitalisation treatments, it is considered adequate for certain bean seed from North America, Europe and New Zealand in view of the low pest and

disease risks associated with sourcing from these countries and the intended end use of the seed (i.e. human consumption via the retail trade).

Recommendation 56: The Review Committee recommends that Quarantine Australia undertake regular audits of seeds, bulbs, tubers and other plant material imported for human consumption to ensure that those originating from high risk sources are not viable for propagation.

8.4.4 Sampling methods

The Review Committee became aware during inspections of quarantine operations that inspection staff were applying differing standards to the sampling of plant materials. In some instances, staff seemed unaware of the existence of differing sampling standards and inspection procedures between States and, certainly in the case of fresh fruit and vegetable inspections, also appeared unaware of the general lack of uniform procedures. While acknowledging that standards for inspection of grain imports appear to have a solid and generally uniform base, inspection of other plant materials such as fresh fruit and vegetables do not.

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Grains

Most imports of restricted seed (see Section 8.4.3) are permitted entry only in small lots subject to treatment and growth in post-entry quarantine. Only seed produced in quarantine on healthy plants is released to the importer for multiplication. Two exceptions to this are bulk beans (*Phaseolus vulgaris*) and peas for sowing, which are allowed from certain States in the United States subject to specific requirements. In these cases, samples are drawn in accordance with the International Seed Testing Association's rules and samples are forwarded to a seed laboratory for analysis. Release is dependent on the outcome of that analysis. All government seed laboratories are accredited by the International Seed Testing Association.

In the case of non-restricted seed, for small consignments (up to 500 g) quarantine inspectors examine the whole consignment using sieves with apertures suitable for the task. Non-restricted seed is inspected to determine the absence of restricted seed, weed seed, fungal fruiting bodies and any other contaminants. Bulk quantities of non-restricted seed, whether bagged or loose, are sampled according to rules set by the International Seed Testing Association. Small retail packets are inspected visually by checking a pre-determined number of packets in accordance with statistical tables.

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Horticulture

There are specified inspection sample sizes for imports of cut flowers. However, importers do have the option of a lesser sampling rate if they opt for voluntary fumigation. All consignments must be inspected before fumigation to determine pest status and what fumigation rate must be applied. The Review Committee is aware that AQIS is currently finalising a consultancy for a complete review of all the inspection standards for the import of cut flowers. It is estimated that this review will commence in December 1996 but in the meantime arrangements have been made to implement a number of new procedures to ensure any immediate quarantine concerns are addressed while the review is undertaken. The particular problems associated with the import of cut flowers is discussed in Section 8.4.2.

The differing standards being applied by States to the inspection of fresh fruit and vegetable imports is a matter of concern to the Review Committee. This concern is reinforced by the finding in the report on pest and disease incursions of plant material commissioned by the Review Committee that identifies legally imported fruits and vegetables as being a major route (34%) for introduction of exotic plant pathogens into Australia (see Appendix B).

The Review Committee is aware that for fresh fruit and vegetable imports from Japan, Mexico, New Zealand, Spain and the United States, there is a 600-unit sample taken for each consignment under a sampling requirement set out under specific import protocols. However, inspections may vary because in some States inspection ceases as soon as live pests are found, which may be only half way through the 600-unit sample. This limited inspection has implications in terms of identification of all possible pests in a consignment and application of appropriate fumigation rates to kill pests. For commodities other than those with specific protocols mentioned above, the use of a plant health standard sampling rate is used by some States.

AQIS acknowledges that sampling rates and inspection techniques vary between States and locations, explaining that the variations are due to the time constraints of the inspectors, experience of the inspector and the pressures from importers to release goods or reduce inspection times. Confusion can also exist over required sampling rates as some staff undertake both quarantine and export inspections that can have differing sampling requirements. The Review Committee is aware that AQIS has work in progress to develop a national sampling standard to align export and import requirements, the aim of which is to ensure all States are using standard sample size and inspection techniques.

The Review Committee is strongly of the view that the application of internationally accepted uniform standards for sampling of plant material, particularly fresh fruit and vegetables, is critically important to the prevention of the entry of plant pests and diseases and should be introduced as soon as possible.

<p>Recommendation 57: The Review Committee recommends Quarantine Australia urgently develop and adopt consistent sampling methods and techniques based on internationally accepted scientific procedures.</p>
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8.14.2 Foods and Feedstuffs

Due to the substantial overlap between the imported food inspection and the import clearance programs, AQIS began a process of amalgamating the two programs during 1995. The amalgamation has led to the development of a common computer management system, common fees for comparable inspection activities, visits for sampling and clearance purposes by a single officer (except in a minority of specialised cases), co-location of staff from the two programs, and the use of a single dispatch and control system. Both programs require similar background experience and knowledge, and specialist training is available to ensure a smooth amalgamation. The Review Committee commends this management initiative.

The Review Committee acknowledges a late supplementary submission from the Community and Public Sector Union that raised objections to the transfer of existing imported food inspectors to a different public service classification. The Review Committee shares the Union's view that the imported foods inspection function, as with all inspection activities, should be carried out by persons with appropriate qualifications and experience. However, while acknowledging the concerns of the Union, the Review Committee does not believe that comments on public service position classifications is within its terms of reference.

The Review Committee recognises that the Australia New Zealand Food Authority has responsibility for establishing Australia's food safety requirements. Toxins and heavy metal contaminants in imported foods for human consumption should thus remain separate from quarantine considerations. However, the Review Committee understands that similar contaminants of imported feed and feed ingredients for animals do not fall within the responsibility of the Australia New Zealand Food Authority or any other Commonwealth agency because such feedstuffs are not for direct human consumption. Given the effect that contaminated feedstuffs ingested by domestic animals could have on Australia's domestic and international markets, the Review Committee believes that this issue should be taken up by the Australian Animal Health Council for urgent consideration and resolution.

<p>Recommendation 58: The Review Committee recommends that the Australian Animal Health Council should address, as a matter of importance, the issue of unwanted contaminants in imported feedstuffs for animals.</p>
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8.14.2 Biological products

Biological products (or biologicals) include, *inter alia*, microorganisms, vaccines, serum, antiserum, hormones, antibodies, toxins, toxoids, human or animal blood and blood components, products of molecular biology, and therapeutics. AQIS is responsible for assessing applications and issuing permits to import biological products.

The risks associated with importing biological products were highlighted in a number of submissions to the Review Committee. In its submission, Cynamid Websters noted that there are inherent risks in the use of vaccines that are aggravated by the potential risk of inadvertently introducing an exotic disease through imported vaccines or vaccine components. Cyanamid Websters argued that each proposal for importing a vaccine should be reviewed using a formal risk analysis procedure. CSL suggested that fundamental to quarantine is the

acceptance that biological imports might be contaminated by adventitious agents with potential for serious harm in the importing country, and thus importing these substances presents a risk to the existing health status.

The Review Committee believes that AQIS acknowledges this risk, in that an increasing emphasis has been placed by AQIS on regulating high volume, medium risk laboratory requisites while higher risk products have either been strictly controlled or prohibited. With extra resources now available to AQIS, high volume, medium risk products are being assessed more thoroughly. The Review Committee understands that assessments are showing that most of these products require only minimal post-import controls.

However, in relation to quarantine border controls there are two major aspects to be addressed for the importation of biologicals and foods. First, there is the range of complex food and biological products that must be assessed, and cannot be easily identified by border staff when they examine the products at entry. Second, many of the products being assessed are part of the international trade, with new products constantly being developed and marketed. This adds to difficulty in identification. Given the vast range of complex products that must be cleared by quarantine staff, a high level of liaison and training must occur.

In its submission to the Review, AQIS acknowledged shortcomings in staff training on imported biological materials and commented that the primary goal of the program is to facilitate imports while maintaining quarantine integrity. Central to this approach is the drafting of new subordinate legislation (a Quarantine Proclamation) to allow for the issue of permits containing conditions for medium and high risk products. However, the proclamation will also allow for the import of low risk products without permits, following publication of the appropriate import conditions in a notice in the Government Gazette. This will permit the targeting of assessment and training resources to high risk products rather than to post-arrival control of low risk products. It will also provide opportunities to devolve permit issue for medium risk products to regional staff. Integral to this plan will be the preparation of manuals for assessors and staff, as well as guidelines for importers. The development of training programs for quarantine staff and upgrading of electronic systems under the Export Import Conditions Database project are also essential. The Review Committee endorses this approach, subject to strong scientific analysis.

Recommendation 59: The Review Committee recommends that Quarantine Australia strengthen training programs on biological products for staff to ensure proper implementation of this border program.

8.4.7 Permits to Import

A number of submissions to the Review Committee raised the requirement that an importer must apply for a permit to import plant material into each State where that material may be required. In particular, the Food and Beverage Importers Association queried the need for this in the light of AQIS being a national organisation. As a matter of principle, the Review Committee believes that permits and protocols should have national application and validity, with individual States applying specific State quarantine

requirements separately and independently, so that any differing requirements are transparent.

The Review Committee understands that work is currently under way towards the development of a nationally based permit issuing and tracking system. The Review Committee supports the requests from industry that this costly and time consuming situation be rectified as quickly as possible.

Recommendation 60: The Review Committee recommends that quarantine authorities ensure that a national system for issuing import permits be developed and implemented as soon as practicable.

8.5 NEW TECHNOLOGIES

8.14.2 X-ray Equipment

The need to develop and use the latest technologies to detect quarantine breaches at the border is most important. At a time when the quarantine border is coming under increasing pressure, recent developments in soft tissue X-ray machines for baggage and parcel examination and the bar-coding of suspect items represent significant advances with practical use in border protection.

Multi-energy X-ray systems are well-suited for screening food items, agricultural products, foliage and cuttings. Recent field testing of the technology at selected airports in Australia has demonstrated that multi-energy machines can be reliably used to identify items such as fruit and some meats that are commonly found in passengers' baggage and in the parcel post. The latest generation machines are programmable and allow some flexibility in items to be targeted. The most recent trial of a multi-energy X-ray machine of baggage of passengers exiting the red channel (passengers with items to declare) at Mascot Airport revealed that, in addition to items already declared, the machine detected a wide range of undeclared food items. Products such as fresh sprouting lotus seed, beef jerky and vegetable seeds were a few of the prohibited items seized during the two-day trial. A comparison trial was also undertaken using the ACS backscatter X-ray machines. The Review Committee understands the backscatter machine failed to detect a number of items of quarantine concern identified by the multi-energy technology thus calling into question the adequacy of ACS backscatter X-ray machines for quarantine use. The Review Committee regards the extension of multi-energy X-ray technology to all appropriate quarantine border operations (airports, seaports, international mail exchanges and courier depots) as an important technological aid for improving the detection of items of quarantine concern.

Although the Review Committee understands that passenger baggage is subject to quarantine examination, additional attention should be paid to returning cruise ships by the use, where available, of mobile baggage X-ray equipment. The Review Committee understands that negotiations on the lease or purchase of a trial mobile machine for examining mail are almost complete, and a trial could be expected to commence in late 1996. Indications are that this technology will provide an increased level of quarantine assurance about parcels. The challenge will be to ensure it is used in the most efficient and effective manner. The Review Committee sees these developments as being of

significant assistance in intercepting high risk mail items and encourages the use of this new technology.

Recommendation 61: The Review Committee recommends that Quarantine Australia make increased use of X-ray technology to improve the efficiency and effectiveness of quarantine delivery at the border including airports, seaports, mail exchanges and courier depots.

8.5.2 Information Systems

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Electronic information systems

Since 1992, there have been significant developments in the area of electronic initiatives with the Import Clearance Program being involved in the development and implementation of computer systems designed to improve the efficiency and reliability of its operations. In particular, two large and complex computerised information systems have been developed.

The first is the AQIS Import Management System (AIMS), which is fundamental to the way AQIS screens commercially imported goods. AIMS is directly linked to the ACS COMPILE system. All consignments of cargo imported into Australia valued at more than \$250 require electronic clearance through the ACS COMPILE system. Importers obtain both customs and quarantine clearance through the COMPILE system. Once a registered customs broker has lodged an entry, COMPILE screens tariff codes against AQIS profiles. If flagged by an AQIS profile as subject to quarantine, an AIMS entry must then be lodged through the Joint Entry Management System to obtain quarantine clearance. The Joint Entry Management System is a subsystem of COMPILE that provides the link between COMPILE and AIMS.

The Review Committee is aware that ACS is looking at modifications to its systems that, if implemented, could have a significant effect on quarantine border operations. For instance, ACS is considering periodic returns where large companies would lodge COMPILE entries in a consolidated form once a month. From an ACS commercial perspective, this would be beneficial as it would require the broker to initiate and complete the entry and transfer duty and sales tax to ACS once a month. From a quarantine perspective, such a system would be impossible to manage. To meet both import clearance and imported foods concerns, AIMS relies on details of individual consignments being screened before their release by ACS. If consolidated data are to be available only on a monthly basis, the data must be provided for quarantine purposes before import. If this policy is pursued, AQIS may need to develop its own stand-alone version of AIMS to take over data capture activities currently undertaken and accessed from COMPILE, so that AIMS can complete its profiling of cargo for quarantine concerns in a timely way.

The Review Committee sees air cargo as an area of quarantine inspection that needs greater attention, and urges Quarantine Australia to continue to work with ACS to develop appropriate electronic systems for air cargo clearance. Goods under the COMPILE value limit of \$250 — a significant proportion of air cargo — pose particular quarantine concern because they are usually not cleared through COMPILE but by a

system of air waybills screened through the Air Cargo Automation system. Although AQIS has profiles in the Air Cargo Automation system targeted at goods of quarantine concern, the system was devised for customs purposes and its descriptions of consignments are often not sufficiently described for quarantine identification. At present, quarantine screening must thus be undertaken manually for air cargo valued at less than \$250. One solution is to develop better electronic identification and clearance systems with more appropriate tariff codes to flag consignments of quarantine concern, as is done with sea cargo. Considering the extensive experience that the ACS has in cargo clearance and associated electronic systems, future developments in quarantine cargo clearance electronic systems will require close cooperation and consultation with ACS.

Recommendation 62: The Review Committee recommends that Quarantine Australia liaise closely with the Australian Customs Service to ensure that customs electronic information systems meet Australia's quarantine requirements, including for the quarantine inspection and clearance of air cargo.

The other major system being developed by AQIS and due to be field-tested in late 1996 is the Export Import Conditions Database, which is an electronic information system designed to replace and improve the current paper-based systems for the issue of permits. It will also incorporate an electronic quarantine manual. The main components of the system are:

- a maintenance system to allow all import conditions to be set and modified by the Canberra office;
- a query system for field staff based on the up-to-date data in the maintenance system; and
- a national permit-issuing system for all products requiring import permits.

As mentioned previously, changes being considered by ACS will, if implemented, have a major effect on quarantine operations, and will result in a need for significant additional development of computerised information systems for quarantine purposes.

The Review Committee anticipates that service delivery to clients will be improved by the introduction of the Export Import Conditions Database. The refinement of AIMS to maximise industry usage and to incorporate the screening of imported foods consignments is a major priority, particularly for air cargo where the system of identification of product of possible quarantine concern is far inferior to the computerised system used to process sea cargo.

Recommendation 63: The Review Committee recommends that Quarantine Australia develop and increase the use of electronic information systems to speed the clearance of cargo, subject to the development of satisfactory quality assurance systems and audit procedures.

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Internet and the worldwide web

Section 7.4.1.1 of this Report dealing with risk analysis canvasses the use of the internet as a means of making up-to-date information on import protocols, applications to import, and assessments of applications publicly available. Extension of this facility to include the export and import conditions contained in the Export Import Conditions Database should be encouraged to make this information also available to the widest possible clientele.

The Review Committee welcomes the initiative to transfer this information to electronic systems and believes that priority should be given to extending the system to all available staff and clients, and to including as much information as possible on the internet through a home page on the worldwide web.

Recommendation 64: The Review Committee recommends that Quarantine Australia provide import protocols and manuals via electronic information systems, including the internet through a home page on the worldwide web.

8.5.3 Detector Dogs

The quarantine detector dog program introduced in 1992 has proved to be most successful. The program involves training both passive and active dogs — the passive dogs are used in passenger clearance, and the active (generally larger) dogs are used in mail exchanges and airport areas not accessible to the public.

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Airports

Airport teams consist of a dog (beagle) and handler. Each team goes through eight weeks of training at the National Training Centre. Before being matched with a handler, each dog undergoes a minimum of five weeks of scent discrimination training and by the end of the course each dog will successfully respond, passively, to up to 15 different scents. These scents range from meat and meat products to fruit, vegetables, plant cuttings, eggs, as well as live birds and reptiles.

Currently, the program has one active and 14 passive dogs. The Review Committee understands that recruitment of four active dogs is in progress, with training to commence early in 1997. However, additional resources would be required to provide sufficient teams to staff the major airports for all shifts and to provide additional capacity for other activities such as seaports and other areas of the import clearance program.

During the public hearing process, a number of submissions referred to the success of the program and the high level of passenger acceptance of the dogs. However, an exception to this high level of acceptance is with some visitors from Asia who may be alarmed by the proximity of the dog. This concern should be able to be addressed by increasing

awareness of the role and purpose of the detector dogs before travellers depart for Australia.

The Review Committee sees this as a useful program that greatly assists in the border detection process and one deserving of further expansion. At present, there are insufficient teams for all shifts at all airports. The Review Committee believes that additional resources should be made available to enable Quarantine Australia to have at least one dog team on duty for all shifts at all major Australian international airports.

8.5.3.2 Seaports

As mentioned in Section 8.3.1, the Review Committee sees seaports as an area requiring more attention. The obvious success of the detector dog program at international airports leads the Review Committee to the view that more use should be made of the detector dogs at seaports, particularly for wharf patrols. The physical presence of the teams, particularly the uniformed officer with the dog — coupled with targeted quarantine signs as recommended in Section 8.9.3 — should significantly increase quarantine awareness around seaports.

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International mail exchanges and couriers

AQIS is undertaking a pilot trial using an active dog at Brisbane. All classes of international mail are covered when the dog and handler are on duty. To date, the trial is proving very successful, with both high coverage (90%) and a high accuracy (97%) being achieved while a dog team is working. It is anticipated that when the trial is completed in late 1996, dogs will be used regularly. Each mail exchange will need to be assessed to ascertain the number of teams required, given the variations in work practices between exchanges.

The Review Committee is strongly of the view that there should be a consistent quarantine approach to international mail — whether handled by couriers or by mail exchanges. Thus the Review Committee believes that detector dogs should also be used for the inspection of international courier mail.

Recommendation 65: The Review Committee recommends that the detector dog program be expanded as soon as possible to ensure that:

8. . . at least one dog team is available for all shifts at all major international airports;

- teams are available for clearance of passengers and for wharf surveillance at seaports; and**
- teams are available for use at international mail exchanges and courier depots.**

8.6 HEALTH CLEARANCE (PRATIQUE)

8.14.2 Aircraft

All aircraft arriving from overseas are required to land at approved first ports of call unless special permission to land elsewhere is obtained before arrival. Approved landing places are located in every State in Australia. The aircraft crew must send (or have sent ahead) to the quarantine staff at the aircraft's intended first port of arrival, a message attesting to the health status of those on board to advise whether there are live animals on board and that the aircraft has been disinfected. The message seeks quarantine clearance to land and disembark passengers (known internationally as pratique).

The Review Committee believes that the routine request to be granted pratique should be re-examined. In most instances, the airline's base staff or an agent send the message to quarantine staff on the captain's behalf. There is anecdotal evidence indicating that the current compulsory system of prior notification for pratique is not efficient because of instances of quarantine concern not being reported before arrival due largely to the routine nature of the requirement. The Review Committee considers that the routine reporting of freedom from quarantine concern has the inherent danger of losing its impact. Certainly the need to advise of illness or the presence of an animal onboard is essential for basic quarantine protection and in that regard a system of exception reporting is seen as a more positive way of ensuring quarantine security. In other words, the advance message need only be sent where there is something of quarantine interest to report. Penalties should be applied in the event of failure to report illness, animals or other non-compliance with quarantine requirements.

8.14.2 Vessels

All vessels arriving at Australian first ports of call must obtain pratique. Pratique is usually granted by a quarantine officer after the perusal of answers to a questionnaire radioed in by each ship. The questionnaire covers the health of the crew, details of the vessel, presence of any animals on board, previous presence in any port subject to Asian gypsy moth infestation during certain risk periods, and details of the ballast water carried by the vessel.

The problem identified for aircraft pratique also applies to pratique for vessels, and the routine pratique message is a matter of concern to the Review Committee. The importance of advising illness, the ballast status, Asian gypsy moth certification, or the presence of an animal on board is not in dispute. The routine nature of the message is the issue, and reporting by exception would ensure a stronger focus on the issue by captains of vessels. This issue has been discussed with the Department of Health and Family Services, which concurs with the Review Committee's position on pratique for both aircraft and vessels. This recommended system of reporting by exception should be reviewed after 12 months of operation to assess its effectiveness.

<p>Recommendation 66: The Review Committee recommends that pratique for aircraft and vessels move to a system of reporting by exception.</p>

8.14. AIRCRAFT DISINSECTION

Australia has been disinsecting aircraft arriving from overseas since the end of the Second World War. Although the procedures have varied significantly in the intervening 50 years, the basic requirement has not altered. A number of reviews of the need for and means of disinsecting aircraft have been undertaken in that time. In reviewing this procedure, the Review Committee questions the need for continuation of this practice.

All aircraft from all countries except New Zealand are required to be disinsected, irrespective of the disease or vector status of the country or countries that the aircraft either originate in or transit. Aircraft from New Zealand are required to have only their cargo holds disinsected. The disinsection procedure required by Australian quarantine authorities accords with the standards and recommended practices of Annex 9 of the Convention on International Civil Aviation, which is administered by the International Civil Aviation Organization. The Review Committee notes that disinsection of aircraft is not compulsory under this Convention and the vast majority of countries do not practise aircraft disinsection. Only about 30 of the 190 member countries of the World Health Organization (WHO) require any form of disinsection at all.

The Lindsay Review expressed concern that the scientific basis for the need for disinsection had not been established or that disinsection was effective in significantly reducing the risk of entry of pests and diseases. The report further commented that 'disinsection is an excellent example of quarantine being applied in response to a general biological principle, with little or no attempt to assess the risk, consider wider effects or evaluate its cost-effectiveness' (DPIE 1988, p. 153). In response, AQIS commissioned a review of disinsection in 1990. In May 1994, an interdepartmental working group comprising nominees from AQIS, the Bureau of Resource Sciences, the Department of Health and Family Services, and the Department of Transport was convened to examine aircraft disinsection. The working party recommended, *inter alia*, that AQIS and the Bureau undertake a full scientific assessment of the risks of entry of insects in aircraft cabins and holds within two years. Subsequently, trials were undertaken on the effectiveness of varying spraying practices on insects in aircraft.

Despite this work, it appears that the situation identified by the Lindsay Review in 1988 still persists. A recent review by the Bureau of Resource Sciences on incursions of exotic insects presents no evidence that exotic insect pests have entered Australia through aircraft (Clarke in prep.). Indeed the report, while suggesting that compulsory disinsection of aircraft may reduce the risk of introducing hitchhiking insects, comments that 'it is likely that most hitchhiking species gain entry via shipping containers and vessels' (Clarke in prep.).

Flights within Australia are not compulsorily disinsected. The Review Committee notes that despite the presence of the *Aedes aegypti* in and around Cairns airport, there is no evidence that this vector (of yellow and dengue fevers) has been transported from Cairns to Darwin, despite daily flights between the two ports.

Since the introduction of procedures whereby the airline staff carry out the process and at airline expense, disinsection is neither labour intensive nor costly to quarantine. However, there are still concerns as to the extent to which each and every international

flight is disinfected. Despite the production of empty cans of spray, quarantine staff rely on assurances from the cabin crew that the procedure has been carried out according to specifications. Anecdotal evidence from passengers who have been asked to observe the procedure would suggest that this is not always the case. In addition, many international travellers, particularly those from the United States and Asian countries, regard disinsection as an unacceptable imposition. In fact, it appears that travellers from most areas of the world have a very poor perception of disinsection.

Several submissions to the Review also queried the effectiveness of disinsection. In one submission, a senior airline pilot with substantial experience operating aircraft into Australia from the Asian region, observed that with the latest aircraft designs there are many areas that cannot be reached by a disinsection spray no matter how carefully applied. In essence, it was contended that the procedure is ineffectual, as it does not achieve full coverage.

With regard to the introduction of human pests or diseases via aircraft, a human disease carrier is more likely to pose a greater threat to quarantine than an insect vector. For example, large numbers of people carrying organisms of malaria and a range of viruses in their blood enter Australia every month. The risk of incursions from such infected travellers arriving by air is likely to be far higher than any risk of arrival of infected insect vectors on aircraft.

The Review Committee has consulted widely on this issue, including contact with respected scientists in medical entomology and with the Chief Medical Advisor and Director of Human Quarantine. The prevailing view is that although disinsection may well kill insects, there is no sound scientific evidence to confirm that the process significantly reduces the risk of introduction of exotic pests and diseases.

Recommendation 67: The Review Committee recommends that aircraft disinsection be discontinued.

8.14. VECTOR MONITORING

WHO sets a standard (Article 19 of the International Health Regulations) for vector-free zones of 400 metres around the perimeter areas of international airports. The perimeter is defined as any buildings or land used for the parking of aircraft. The purpose of setting the standard is that most countries that are signatories to the WHO International Health Regulations do not insist on aircraft disinsection. Australia is not a signatory to the International Health Regulations but generally observes the WHO directives. The 400-metre vector-free zone should therefore be maintained and strictly policed at Australian airports. It should also be noted that the maintenance of the 400-metre vector-free zone is intended as much for preventing the transmission of disease out of a country as it is for ensuring the prevention of the disease from entering that country.

In the context of the recommended discontinuation of aircraft disinsection, maintenance of the 400-metre vector-free zone takes on an added dimension. It is important that the 400-metre area form a proper buffer zone wherein appropriate measures can be initiated and maintained to ensure that breeding sites are monitored and treatments instituted if necessary.

Vector monitoring for the presence of insects of public health concern — particularly for mosquitoes and their breeding sites — is also undertaken at seaports around Australia as part of Australia's observance of International Health Regulations. Light traps and carbon dioxide traps are used, and water containers are provided for egg laying and subsequent identification of resultant larvae. Where necessary, breeding sites are treated to destroy larvae. However, the Review Committee understands that vector monitoring around seaports is not currently practised as rigorously as around airports.

Recommendation 68: The Review Committee recommends that Quarantine Australia ensure that vector monitoring is undertaken in accordance with World Health Organization guidelines at all first ports of call.

8.9 QUARANTINE CLEARANCE AT AIRPORTS AND SEAPORTS

8.14.2 Airports

In 1995–96, some 6.8 million passengers arrived in Australia on about 52 000 international flights. Arriving passenger numbers are increasing by about 10% a year, and this trend is expected to continue to the year 2000 and possibly beyond. Increases over the past two years have been above official projections placing border agencies under strain.

Passenger baggage at international airports is cleared through a two-channel system known as red–green. This system derives its name from an arrangement by which passengers 'self-declare' whether or not they have any goods that may be of customs or quarantine concern by exiting through a point marked by a sign that is red if they have such items or green if they have nothing to declare.

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Aircraft passenger non-compliance

Surveys of passengers using the green channel (i.e. 84% of inbound passengers to Australia who declare they have no items of quarantine concern), commenced in 1991 to gauge the level of breaches of the airport terminal border. Surveys from 1991 to 1994 indicate that, with the exception of Cairns, the proportion of passengers intercepted in the green channel with items of quarantine concern was fairly constant, at about 26%. For Cairns, the figure was 35%.

Further green channel surveys of all major Australian airports except for Melbourne (which at the time was undergoing a major refit) were conducted in December 1995. A survey in Melbourne was conducted in April 1996. Results for all ports except Melbourne show that, on average, 35% of passengers in the green channel have items of quarantine interest or concern that should have been declared. An average of 6% (included in the 35% leakage) had items that should have been seized and destroyed. The subsequent Melbourne survey revealed that 41% of green channel passengers have items that should

have been declared — including 5% with items that should have been seized and destroyed.

Although the results of the green channel surveys seem disturbing, due attention should be paid to the scientific assessment of the risk of these border interceptions. Clearly, some items carried by passengers are of manageable risk, while other items potentially pose a significant risk. Unfortunately, scientific data are not available to undertake a full risk analysis of items apprehended at international airports. Intuitively, airports would seem to represent a high risk pathway because of the volume of passengers passing through them, the non-commercial nature of the goods often carried, and the leakage rate through the green channel. Just how high a risk can really only be determined after a full scientific risk analysis has been completed.

The Review Committee acknowledges that considerable progress has been made in developing methods for preventing and detecting breaches of the quarantine border at airports. The airport detector dog program is proving a very valuable tool in detecting potential breaches of the *Quarantine Act 1908*. Advances in technology such as multi-energy X-ray systems and its development for examining passengers' baggage and mail will also enhance border security. The use of more and better-located signs at airports, together with announcements and in-flight videos, is designed to alert the travelling public to Australia's quarantine requirements. With regard to the in-flight video, a newly developed video message was completed and sent to airlines in September 1996, with the request that it be shown on Australia-bound flights. The Review Committee sees benefit in the videos as an additional means of reinforcing the quarantine message but makes the observation that this video may not necessarily be shown on all flights by all airlines as it is understood there is no legal requirement to do so. In addition, when used, the message may only be shown over the general video and sound system thus excluding those passengers with personalised sound and screen systems. The Review Committee is also aware that some airlines have recently introduced changes to in-flight entertainment systems and extended personalised video screens to all seats in all classes on their aircraft. This effectively means that in addition to passengers in first and business class who already have access to such systems on later model aircraft, all passengers on aircraft fitted with this latest equipment will be able to access the new multi-choice program systems, thus reducing the effect and consequential benefit of the in-flight video to quarantine security.

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Awareness

To be fully effective, post-arrival activities need to be supplemented by pre-arrival education and awareness of travellers. Consistent with the continuum of quarantine and the principle of managing quarantine issues offshore where possible, the Review Committee believes that efforts should be intensified to establish a blend of offshore and onshore arrangements to educate both exiting Australians and intending travellers to Australia either not to bring potentially dangerous goods into the country or, if that message is received too late, to declare or dump such items at the border.

Discussion on possible methods for improving travellers' awareness of Australia's quarantine requirements is contained in Chapter 6 on Offshore Activities. The Review Committee notes that there have been recent moves to disseminate quarantine

information to intending visitors before their departure for Australia, but believes that more must be done in this area. The Review Committee's recommendations on offshore awareness (see Section 6.5) should be read in conjunction with this section.

The Review Committee is firmly of the view that if effective pre-embarkation awareness programs are developed and appropriately supported, together with a highly visible quarantine presence before the final declaration (the decision to self-declare by choosing the red or green channel exit), the green channel at airports would become what it is intended to be — an exit for those with nothing to declare of quarantine significance — thus allowing more quarantine attention and resources to be devoted to the red channel. Indeed, there would be an opportunity for facilitating quarantine clearance of tour groups organised by operators with a proven record of compliance with Australia's quarantine requirements. Subject to periodic audit for compliance, such tour groups could be directed immediately to the green channel. Such an approach would be consistent with the Review Committee's proposal to use incentives to encourage compliance with Australia's quarantine requirements (see Section 8.10.7).

Signs and publicity should attract attention and be provided in a range of relevant languages to alert passengers to the need to observe quarantine requirements. The recruitment and training of multi-lingual quarantine staff will assist in processing passengers with language difficulties. The Review Committee believes that these improvements, together with better focusing of resources and greater use of new technology, provide the best means of managing the quarantine risk associated with the increasing influx of airline passengers.

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Airport quarantine marshalling

Inspections of airport quarantine operations showed an obvious absence of experienced quarantine presence in the passenger process until the red–green channel area had been reached. With the exception of a detector dog handler at some airports, passengers encountered only ACS staff until this point. Although ACS officers have a basic knowledge of quarantine, they are not experienced in profiling passengers for quarantine purposes. The Review Committee notes with concern the absence of a quarantine presence when passengers first arrive in the terminal.

Experienced quarantine officers can glean a good deal of intelligence by mixing with arriving passengers and profiling them for possible quarantine breaches. To some extent, the detector dog teams already provide a presence in this area, but that program needs supplementation at this key part in the passenger clearance process. A permanent quarantine presence by a roving marshal or marshals in the baggage hall to profile and question passengers (and with the authority to clear passengers after questioning or examine goods in passengers' possession) will help overcome this deficiency. The Review Committee noted that quarantine marshals were used very effectively by United States officials during a site inspection of Dulles Airport in Washington.

<p>Recommendation 69: The Review Committee recommends that experienced quarantine officers be used as marshals in international airport arrival halls to profile passengers for quarantine purposes.</p>

8.14.2 Vessels

Each vessel arriving in Australia for the first time is inspected and the details are entered into the Vessel Monitoring System (VMS), which is a computer-driven risk management system. If the vessel passes without needing remedial work, it will not be inspected again until its fourth visit. If a vessel fails its initial or any subsequent inspection, it requires three consecutive clear inspections before it is returned to the reduced inspection program. High risk vessels such as yachts and livestock carriers are inspected at each visit. All quarantine staff have access to the system and can access the history of any vessel visiting Australian ports.

VMS is also used to enter ballast water management details. It is used to record whether or not a vessel intends discharging ballast while in Australian waters, whether or not it has exchanged ballast water at sea during the voyage, and whether or not the vessel is part of a compliance arrangement for ballast water control. Experience with VMS has shown that the system is working satisfactorily and should be continued.

Cruise ships are an added concern. These vessels generally travel from Australia through the South Pacific and visit a range of islands. Often passengers leave the vessels and collect local artefacts and food items to bring back to Australia. Many of these locally made articles are capable of bearing insects such as borers and are of potential quarantine concern.

Because cruise ships tend to take and return passengers originating in Australia, the task of educating the ship operators in quarantine awareness should be far less difficult than with airlines. The Review Committee believes that attention should be given to developing publicity programs for cruise ship operators with an emphasis on advising passengers not to purchase and bring back to Australia items of potential quarantine concern.

Live animals on board vessels — particularly on board itinerant yachts — are a significant potential quarantine risk if appropriate action is not taken to ensure that they remain on board the vessel. The Review Committee considers that the quarantine risk associated with live animals on board vessels is manageable provided the control measures and health checks currently in place are observed and strictly enforced.

8.14.2 Wharf and Seaport Surveillance

However, the question of wharf surveillance is a separate issue. Items such as inadequately cleaned mining and harvesting equipment, and containers loaded at ports where the giant African snail is present, are being off-loaded at Australian ports. Recent experience has shown that in some cases such items are not inspected or treated before release. Surveillance of crews leaving ships is also a matter of concern. Although VMS is a successful method of targeting resources to areas of greatest threat, this has resulted in a reduction in wharf patrols, a feature of clearance practised in the past.

The Review Committee is concerned at the inadequate resources allocated to this area of quarantine activity. Although it is acknowledged that airports present a risk, there is a significant imbalance between the resources allocated to airport operations and the amount of attention being paid to wharf and seaport surveillance — for instance, the inadequate monitoring of refuse and of crews to ensure that they do not take potentially high risk items of food from the vessel. Unlike aircraft, sea-going vessels can carry significant quantities of uncooked food. A lack of surveillance of crew carrying this material onshore is regarded as a significant risk that should be addressed. Notices placed on ship gangways by the vessels' agents or on port sheds and at exit gates should help alert ships' crews of Australian quarantine requirements and their responsibilities.

Recommendation 70: The Review Committee recommends Quarantine Australia give a high priority to wharf surveillance and provide better quarantine signage at wharves.

8.14.2 Travellers Statement

Before arrival, passengers are required to complete a Customs and Quarantine Travellers Statement declaring if they have been in a yellow fever endemic area during the past three weeks and whether or not they have in their possession or personal baggage any items of animal or plant origin, and whether or not they have been on a farm while overseas. This statement has been in place for many years and has been used by both the Australian customs and quarantine services.

ACS advised the Review Committee that it no longer requires the statement to be completed for customs purposes. This view was supported by Qantas Airways, which argued that to facilitate passenger movement through international terminals a written statement of this type should not be required. The Review Committee understands that an interdepartmental committee, chaired jointly by ACS and the Department of Immigration and Multicultural Affairs, is currently reviewing passenger processing, and that it is unlikely that the Travellers Statement will cease to be required in the near future because of the requirements of quarantine authorities.

The Review Committee views as most important the need for travellers to think about what is actually in their possession and then make a conscious and deliberate statement to that effect. The statement is an important tool for quarantine, particularly in regard to the expanded role envisaged by the Review Committee for the quarantine marshal at international airports. The Review Committee believes that the Travellers Statement should be retained, and improved by the inclusion of more targeted questions, such as whether or not the passenger:

- is going to a farm in Australia, or will be visiting areas outside cities while in Australia;
- has hiking or camping equipment that has been used overseas; or
- has golf or other outdoor sporting equipment used overseas.

Recommendation 71: The Review Committee recommends that the Travellers Statement be retained and improved by the addition of more strategic quarantine questions.

8.10 QUARANTINE CLEARANCE OF CARGO

The primary method for screening all imported cargo electronically is through links to ACS electronic information systems. Determination of the profiles used in the screening systems is based on risk analysis principles (see Section 8.5.2.1 on information systems). Cargo clearance involves screening the import to determine risk, clearance of documents (e.g. fumigation certificates), inspection of product (e.g. fresh fruits and vegetables), and treatment if any problems are encountered.

8.14.2 Quarantine Security and Transshipment

During the public hearings and inspections of quarantine operations, an issue of security of quarantinable items during transportation from the point of arrival (bond) to the designated inspection area was raised with the Review Committee. It was claimed that there have been instances where goods subject to quarantine have been substituted or otherwise interfered with during transport to the final inspection point.

From time to time, sticker-type seals have been applied to goods subject to quarantine inspection but these are easily removed and re-applied and do not represent a genuinely secure system. However, there does not appear to be any foolproof system yet devised to overcome this potential security risk.

Another security issue brought to the Review Committee's attention during the public hearings was the alleged lack of procedures for surveillance of produce being transhipped through Australia. For example, the Review Committee was informed that produce was being exported by air from New Zealand to overseas destinations via Australia and was often left without quarantine supervision in cargo sheds, bond stores or on tarmac areas. In other cases, products are further processed under bond in Australia before shipment to their intended destination. The Review Committee understands that quarantine staff are often not informed of the presence of these goods, as they rely on ACS for advice. Because this produce is not destined for Australia, the ACS computer does not flag these items for quarantine inspection. In some cases, the bond stores are located away from airports but the goods are neither subject to quarantine surveillance nor notification from ACS.

The Review Committee is concerned with the situation and considers that these gaps in quarantine surveillance must be closed. It encourages Quarantine Australia to examine these shortcomings with a view to developing satisfactory security arrangements for uninspected goods subject to quarantine clearance and produce being transhipped through Australian ports.

Recommendation 72: The Review Committee recommends that quarantine security for goods stored or transported under bond be tightened to ensure that the quarantine risks to Australia associated with these goods are appropriately addressed.

8.10.2 Containers

A number of submissions to the Review raised the issue of the dangers posed to quarantine security by the movement of containers between metropolitan areas, before they undergo quarantine clearance. The system, known as landbridging, involves transporting containers from the port of entry to another metropolitan destination. This system is being increasingly used by industry, due to the cost-effectiveness of the process.

Under this system, containers can be moved from the port area and transported to a different metropolitan area with the correct commercial documentation but not necessarily with the prior knowledge or approval of AQIS. Very often, this process involves long-distance transport between States through rural areas. From a quarantine perspective, landbridging is an unsatisfactory situation and certainly presents a significant risk — with the possibility of uninspected containers with insect infestations or adhering soil transiting rural areas. Containers originating in countries infected with giant African snail are all inspected on arrival in Australia.

In the case of containers going direct to country destinations, AQIS aims to minimise the risk of a chance pest or disease incursion by conducting tailgate inspections of all containers destined for rural delivery. A tailgate inspection involves opening the doors of the container allowing a quarantine officer to conduct a cursory examination of its interior to ensure that there is nothing obvious that might be of quarantine concern (e.g. live insects, infested products, untreated dunnage or packing materials). The external surfaces of containers are also inspected. These inspections are usually undertaken while the containers are on the back of the transporting vehicle. The Review Committee recognises that this inspection procedure represents a compromise between quarantine security and commercial movement of cargo.

Container handling has been the subject of a recent internal report (AQIS 1996) that acknowledges the need to work with industry to facilitate speedy cargo clearance. However, the report also highlights the significant risks that this process presents, and proposes measures to reduce or eliminate the problem. The report puts forward a number of options, of which the preferred option — which is also supported by industry — is to maintain current procedures for inspecting containers destined for rural delivery (as well as those coming from giant African snail ports), with the added requirement of lifting rural-bound containers onto container stands, or inspecting the containers on skeletal bed trailers. The report also recommends the introduction of procedures to inspect and to carry out surveillance on all landbridged containers before departure. The Review Committee supports this approach and urges its early implementation.

Recommendation 73: The Review Committee recommends that as a minimum, all containers should be subject to thorough external inspection at their port of entry.

8.14.2 Timber and Timber Products

Procedures for inspection of timber and timber products came in for considerable criticism from industry in submissions to the Review Committee and in the follow-up public hearings. Apparent variations in inspection procedures from port to port and delays in clearance of consignments attracted the main criticism.

During the Review, a number of importers expressed concern at what they regarded as undue delays in clearance of timber at some ports. However, timber must sit for at least 24 hours before inspection to enable detection of pest infestation through signs of frass (insect excrement). The Review Committee could find no evidence of inspection not being completed within three days of arrival, as per current directives.

The Review Committee believes that some imports of timber and timber products may pose a high risk due to the volume and variety of imports and the nature of the pests themselves. Pests of timber and timber products tend to be long-lived with long maturation times, and are difficult to detect during inspection on arrival. Imports of timber and timber products are varied as are the associated risks (e.g. sawn logs with bark are probably high risk, manufactured products such as chopsticks are probably low risk). However, the level of risk of the different types of timber and timber products can only be determined after risk analysis (see Section 8.3.1).

Inspection arrangements for timber and timber products need to be reviewed to determine if any new technologies are available for the detection of pests and pathogens. Accreditation of overseas sources that use approved treatment methods should also be investigated (e.g. kiln-dried timber from New Zealand). Only adequately trained officers should undertake timber inspections.

Several submissions to the Review expressed concern at the possible incursion of decay and stain fungi on imported timber and timber products. In addition, the commissioned report on forest pests and pathogens noted that although there were no definitive examples of the establishment of decay or stain fungi in Australia during the past 25 years, past experience in Australia and overseas has shown that fungi introduced on timber or dunnage can be very destructive. The report lists a number of such fungi that have been intercepted on arrival of timber imported into Australia and notes that imports of sawn green timber have the potential to introduce pathogenic decay fungi (e.g. those of the genera *Armillaria*, *Echinodontium*, *Ganoderma*, *Heterobasidion* and *Phellinus*) and stain fungi (e.g. of the genera *Ceratocystis*, *Fusarium* and *Ophiostoma*) that could lead to significant losses in forestry and forest products. The Review Committee noted that forestry and quarantine officials in both New Zealand and Canada shared these concerns about the risk of introduction of exotic decay and stain fungi of timber and timber products. There is an opportunity for Australia to collaborate with such countries to address this problem through applied research. Such collaboration would be consistent with the principle of keeping problems offshore and undertaking research on pests and diseases of concern, as outlined in Chapter 6 on Offshore Activities.

A number of submissions supported some form of quality assurance arrangement whereby importers could arrange for self or third-party inspection and clearance of low risk timber and timber products, subject to audit. The Australian Timber Importers

Federation advocated the use of ‘an accredited inspection and fumigation service that could be managed and administered by the timber industry as an in-house responsibility’. The Review Committee supports this initiative, subject to identification of low risk items provided by detailed risk analysis.

Recommendation 74: The Review Committee recommends that Quarantine Australia investigate with industry the use of quality assurance arrangements, with an appropriate audit system, for clearing consignments of low risk timber and timber products.

8.14.2 Dunnage and Packing

Apart from its use in the floors and structure of containers, timber is also used as packing for goods carried in containers and for dunnage. While always requiring a declaration from the shipper, changes were introduced in 1995 whereby each consignment entering Australia must be accompanied by a declaration by the importer’s agent stating whether or not it includes timber packing. Although some incidents of false declarations have been identified (with subsequent remedial action such as imposing cost penalties in the form of full inspection of all containers imported by the offending companies), the Review Committee believes more emphasis could be directed to this area. Despite these recent changes, it is still only through random inspections that breaches of these procedures are detected.

Because timber used for dunnage is usually of a low grade, the risk of infection or infestation with exotic pests or pathogens would appear to be high. All timber dunnage should therefore be properly treated, fumigated or promptly destroyed. Evidence emerged during site inspections by the Review Committee that would indicate that in some cases insufficient attention is being directed to this risk area.

Dunnage control in relation to imported air freight appears to have no clear guidelines or procedures in place and seems to have been given little attention to date. Although the level of dunnage imported with air freight is far less than that with sea cargo — most dunnage is in the form of pallets and packaging — air freight containers are often moved from air cargo bond stores to freight forwarders with little supervision. The Review Committee understands that quarantine control of dunnage at freight forwarders’ premises is not currently in place. At air cargo bond stores, quarantine officers attempt to inspect wooden packaging and dunnage through surveillance activities as part of routine patrols of these areas. With limited time available for such activities, there is often difficulty in examining all cargo to the extent required. The turn-around time for air cargo is of necessity very short, and movement can be difficult to monitor. Consequently, the Review Committee understands that much of the freight and packing leaves the bond store without inspection. The Review Committee believes that Quarantine Australia should review procedures to ensure that appropriate attention is given to dunnage and packing timbers.

Recommendation 75: The Review Committee recommends that, as a matter of urgency, procedures for the identification of the presence and type of timber dunnage and packing associated with imports be uniformly implemented across all ports of entry, and that the required quarantine inspection be undertaken.

8.14.2 Air Cargo

There has been an increase in air freight generally in recent years, with dedicated cargo aircraft arriving in Australia and the regular scheduled airlines themselves increasing freight carrying capacity. Air cargo, a specialised area of the import clearance system, is based on the Air Cargo Automation system, which is accessed by AQIS for quarantine clearance. The Review Committee heard much criticism of this program from industry in both submissions and public hearings, particularly regarding a perceived lack of development of an adequate system of flagging items of quarantine interest and a perceived inconsistency of quarantine procedures between air cargo and sea cargo. This issue is discussed in more detail in Section 8.5.2.1.

The Review Committee regards air cargo controls as an area that requires significant and urgent improvement. AQIS has advised the Review Committee that in the determination of new quarantine profiles it was found that the ACS manual screeners release without referral to AQIS about 80% of all screen-free cargo of quarantine concern. This situation is likely to be exacerbated as ACS moves to full electronic screening in early 1997 (see Section 8.5.2.1).

8.14.2 Imported Second-hand Farm Machinery

The Minister for Primary Industries and Energy asked the Review Committee specifically to address the issue of imported second-hand and new field-tested agricultural machinery that might be contaminated with soil and seeds. Imports of all such machinery from countries where karnal bunt (a fungal disease of grains) occurs were suspended by the Minister in April 1996, pending a full examination of the situation.

As a result, AQIS issued revised guidelines for the inspection of second-hand agricultural machinery. Subsequent Quarantine Operational Notices acknowledged differing inspection procedures in each Australian State and sought to standardise inspection procedures for used agricultural machinery. The revised instructions cover the import of machinery from countries both with and without karnal bunt. After examining the instructions and holding discussions with inspection staff, the Review Committee is satisfied that, if fully observed, the revised instructions should provide a satisfactory framework for inspection, and that with appropriate care and attention to the inspection procedures, the risks associated with the import of second-hand or new field-tested agricultural machinery will be greatly reduced. These arrangements may need to be reviewed after completion of a detailed risk analysis of border programs, as recommended in Section 8.3.1.

Recommendation 76: The Review Committee recommends that tightened inspection procedures introduced to address the risk posed by imported second-hand and field-tested agricultural machinery continue until completion of risk analysis of border programs.

8.14.2 Sanctions for Non-compliance

While acknowledging that a number of procedures have already been developed in inspection arrangements to institute forms of sanctions for non-compliance with quarantine regulations, the Review Committee is concerned that these sanctions are mainly directed at remedying the problem once goods have arrived in Australia and are not focused on keeping the problem offshore, as espoused in this Review's approach to the continuum of quarantine. Mention has already been made of VMS and of the sanctions for continuous re-inspection applying to offending vessels. Reference has also been made of the new arrangements requiring that each cargo consignment be accompanied by a declaration regarding the presence of timber packing materials. Penalties for false or incomplete declarations result in full inspections for a specified period, with consequential additional costs to the importer. Inadequate fumigation of containers can also attract sanctions in the form of non-acceptance of fumigation certificates from overseas companies not complying with quarantine standards. These penalties go some way to reinforcing with importers that Australia will not tolerate continued breaches of its quarantine requirements. However, irrespective of the sanctions applied under these arrangements, the pest or pathogen has still arrived with the consignment and the problem has not been kept offshore.

While commending the action already taken to institute and enforce these post-arrival penalties, the Review Committee believes that the further development of sanctions should focus on returning offending consignments to their country of origin and not permitting their entry into Australia. The Review Committee acknowledges that this proposal might be seen in some quarters as harsh, but believes that it is fully in accord with the approach advocated in the continuum of quarantine.

While recommending that sanctions be introduced for continued breaches of quarantine import requirements, the Review Committee is also cognisant of the need to reward 'good customers', wherever possible — those who go to the trouble and expense of observing Australia's quarantine rules and continuously prepare consignments in the proper manner. These efforts could be rewarded by the institution of a system of automatic clearance of consignments, with random audit after a predetermined number of favourable inspections.

Such a system was observed by the Review Committee while undertaking an investigative tour of quarantine arrangements in Canada. The procedure adopted in Canada is a special clearance system designed to reward importers who have established a history of compliance with Agriculture and Agri-Food Canada's requirements. Under this system, an importer with a satisfactory compliance history may automatically receive pre-approval for shipments of low risk items. In this way, the importers' goods are cleared without inspection charges or delays. The program is regarded as quite successful and has met with considerable approval from importers. The Review Committee believes

that Quarantine Australia should review this program and consider adopting appropriate elements of it for use in Australia.

Recommendation 77: The Review Committee recommends that for general cargo, Quarantine Australia develop and implement a system of sanctions and incentives to encourage compliance with Australia's quarantine requirements.

8.14. INTERNATIONAL MAIL

Incoming international mail is screened to minimise the risk to human, animal and plant health from the potential introduction of exotic pests and diseases to Australia through the postal system, while facilitating the movement of mail.

ACS screens mail at all international mail exchanges. Screening is based on declarations and intuition, with screening of Letter Class and Other Articles (LCOA — envelopes and small parcels weighing less than 2 kg) limited to ACS 'target country' lists. Quarantine staff examine only those items referred to them by ACS screeners. About 87% of ACS mail detections are of a quarantine nature.

A major cause of quarantine concern with the current system derives from the ACS–Australia Post agreement that at least 85% of LCOA mail is released following the application of the ACS profiling system. The Review Committee understands that AQIS is not a signatory to this agreement and was not consulted on its preparation. Because the ACS profiling system reflects customs priorities and ACS drug detector dogs are not trained for quarantine items, the current arrangements effectively mean that a maximum of only 15% of LCOA mail is screened for quarantine purposes.

The level of quarantine risk associated with LCOA mail is unknown, but intuitively it would appear to be high, given the number of detections of items of quarantine concern (such as budwood and seeds). A joint survey is planned with ACS and should provide a sound basis for assessing the risk of LCOA mail. However, it does not appear to be feasible to base quarantine risk profiles simply on the country of origin. One approach being investigated is the targeting of mail being sent to high risk destinations in Australia. In this regard, a database is currently being developed to coordinate information about high risk countries of origin, linked to high risk seasons (such as Easter, Christmas, or Chinese New Year) and high risk destinations in Australia.

Australia Post estimates that there are about 40 private courier companies in competition with it on overseas mail operations. A recent substantial decline in Australia Post receipts of overseas mail is some measure of the market share of these courier carriers. Quarantine screening of this material is largely done on the basis of referral of suspect items by ACS.

This situation indicates that private courier companies are not undergoing the same degree of quarantine inspection as Australia Post. To date, little attention has been paid to this element of international mail. Although ACS refers some mail items to quarantine, most go largely unchecked. There is clearly a need for an extension of the detector dog program into this area, and the Review Committee understands that when the detector dog program is fully expanded into mail exchanges, random checks of private courier

mail will be undertaken. Electronic manifesting should also be considered, as should greater random sampling. Surveillance of private couriers and Australia Post should be consistent, subject to the findings of risk analysis (as recommended in Section 8.3.1).

The United States operates a defence forces mail centre at Mascot. Mail examination at this centre is based on accompanying declarations and quarantine staff visit this centre once a day for inspection of declared and, from time to time, undeclared mail. The Review Committee believes that there is scope for the occasional use of detector dogs at the site and targeted publicity material should also be developed for users of this specialised service.

The application of X-ray technology and the use of detector dogs in screening international mail is discussed in Sections 8.5.1 and Section 8.5.3.3 respectively.

<p>Recommendation 78: The Review Committee recommends that Quarantine Australia undertake an immediate review of international mail operations to ensure that quarantine surveillance of all international mail is effective.</p>
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8.12 WASTE DISPOSAL

8.14.2 Aircraft

For many years, galley waste from overseas aircraft has been perceived as a significant potential quarantine risk, and disposed of by incineration, deep burial or heat treatment, under quarantine supervision.

Aircraft food is of high quality, prepared in hygienic conditions and subject to manufacturer's or supplier's strict specifications. In the absence of any recent scientific analysis to the contrary, the Review Committee believes that aircraft galley waste presents a manageable risk to humans, animals and plants when disposed of under standard waste controls, subject to audit by Quarantine Australia. By standard waste controls the Review Committee means that the waste would be taken to a municipal or other commercial waste disposal facility, dumped and covered with other refuse or filling in the usual way. These facilities are safe and are required to be fenced or otherwise protected from unauthorised access, including access by animals. Disposal should be audited periodically by Quarantine Australia.

Although it is true that birds could feed on waste before it is covered, it must be remembered that all links in the chain of exposure must be completed for an exotic incursion or establishment to occur. Thus for an incursion to occur, a piece of food containing or contaminated with an exotic agent must first escape the scrutiny of the catering company. It must then persist and retain infectivity after processing, handling and exposure to varying conditions by the catering company and the airline. It must not be consumed in flight, be close to the top of the dumped waste, collected by a bird and eaten or be dropped by that bird in an area of quarantine importance and consumed by a susceptible animal of another species. Throughout this whole chain, the exotic agent must persist and retain infectivity, and be in such quantity and of such virulence to cause infection. For the incursion to lead to establishment, the infected animal or plant would have to go unnoticed by its farmer or owner. Any break in this chain, at any point, would

stop the potential incursion and establishment of the pest or pathogen involved. Even if all links in this chain were maintained, the justification for current disposal requirements is questionable. For example, a passenger could disembark from the same aircraft and carry the spore of an exotic pathogen on his or her clothing and introduce an exotic disease direct to a farm or into the natural environment.

The Review Committee has been advised that costs to the airline industry of highly secure disposal of quarantine waste from international aircraft is a considerable imposition. Provided adequate precautions are put in place to ensure that this waste is not disposed of other than at a municipal or other waste disposal facility with adequate mechanisms for coverage of the waste and with suitable audit, the need to continue these high security and expensive arrangements for the disposal of galley waste from aircraft can not, in the view of the Review Committee, be justified.

Recommendation 79: The Review Committee recommends that galley waste and other refuse from international aircraft may be disposed of at a municipal or other commercial waste disposal facility under standard waste control measures, and subject to audit by Quarantine Australia.

8.14.2 Vessels

Galley waste from ships poses a high quarantine risk. Considerable amounts of uncooked meats and dairy produce may be carried on board all vessels regardless of size and type, and meals tend to be prepared on these vessels. From a quarantine perspective, these vessels generally have the added disadvantage of poorly educated crews who do not appreciate the risks of uncooked or unprepared produce being taken ashore and disposed of carelessly. Adequate disposal and auditing arrangements such as those already in place are necessary and should remain, and monitoring and auditing of these arrangements should be intensified. Where deep burial is involved, the burial site used for disposal should be clearly marked to minimise the risk of the area being excavated for re-use.

Recommendation 80: The Review Committee recommends that disposal of galley refuse from vessels continue by means of incineration, deep burial at marked sites or by heat treatment, and that auditing of this disposal be intensified.

8.13 QUARANTINE STATIONS

8.14.2 Animal Quarantine Stations

The Animal Quarantine Stations Program comprises the management and operation of government facilities for the quarantine of imported animals after they have arrived in Australia. The stations are used for quarantine isolation and testing of imported animals from a variety of countries, many with a differing disease status. Their basic function is to protect against the entry of animal pests and diseases present in the country of origin that may not be detectable at the time of arrival.

There are five government-owned and operated post-arrival animal quarantine stations:

- Byford in Western Australia (dogs and cats);
- Cocos Islands in the Indian Ocean (livestock, zoo animals and large birds e.g. ostriches);
- Eastern Creek in New South Wales (dogs, cats, horses and bees);
- Spotswood in Victoria (livestock, horses, dogs and cats, live bird facility); and
- Torrens Island in South Australia (hatching egg facility).

Most animals arrive by air with consignments of larger animals usually arriving by chartered air freighter. Companion animals and other groups of small animals generally arrive as cargo on scheduled passenger flights. Although the on-arrival examination of animals may be carried out at the quarantine station, the testing of animals for the exclusion of exotic diseases both overseas and in Australia, is treated as part of the import clearance program (see Appendix E).

One of the recommendations from an internal review of animal quarantine stations in 1991, was that — at least in relation to companion animals — a system of deposit and booking fees should be introduced (AQIS 1991b). Subsequent reviews recommended an extension of this principle to other animals. Such a system was identified as necessary because with live animal imports, there is often a need to conduct a series of tests under pre-embarkation quarantine in the exporting country. At times it can take several weeks to prepare a consignment for export to Australia, and consequent delays in shipment and cancellation of bookings at short notice can leave quarantine facilities idle while new consignments are being prepared. The system proposed was that where space was booked at an animal quarantine station and for reasons beyond the control of animal quarantine staff that booking was not taken up, the costs associated with that cancellation would be borne by the person or group of persons, making the reservation. The *Quarantine Act 1908* was amended in December 1994 to allow AQIS to charge deposits and booking fees for reservations at animal quarantine stations.

The Review Committee understands that this policy has not yet been fully implemented. Reasons advanced for this are that although a cancelled booking has a significant effect on program revenue for the live bird, hatching egg and Cocos Islands facilities, this has not occurred regularly in recent times. Further, because of the irregularity of the problem across the three facilities and the changing nature of many of the relevant importation protocols, it has been difficult to formulate appropriate charges. However, with the changing international avian health situation and the economic situation regarding imports of ‘new’ species through the Cocos Islands facility, the risk of booking cancellations has risen significantly.

The Review Committee is aware that AQIS is seeking approval for revised fees, including those for deposits and bookings. The Review Committee believes that the financial viability of the stations is most important, and supports the introduction of procedures for deposits and booking fees.

Recommendation 81: The Review Committee recommends that the animal quarantine stations operated by Quarantine Australia should be on a more commercial basis by introducing a system of forfeitable bonds for allocations of space, with bonds being forfeited if offers are not taken up within a specified period.

Australia's animal quarantine stations have been government-owned and operated for more than 70 years. These stations were perceived as necessary safeguards or insurance policies against the introduction of exotic animal diseases. Consequently, station establishment and maintenance costs — together with running cost deficits (the difference between fee revenue and expenditure) — were budget-funded. As pointed out in Section 8.13.3, for many years the stations were not a commercial success and continued increases in fees led to importer dissatisfaction and increased losses due to declining use of the stations. Although in recent times losses have been greatly reduced, solutions are needed to ensure the long-term viability of the stations.

The Lindsay Review recommended, *inter alia*, that 'subject to security standards and other conditions to be determined and reviewed as appropriate by AQIS, and supervised on its behalf by the States, private and other commercial interests should be authorised to own and/or operate a wider range of low to medium security plant and animal quarantine facilities ... Existing high security quarantine stations should continue to be owned and operated by government, in the medium term at least' (DPIE 1988, p. 123). An internal AQIS review of animal quarantine stations commenting on the Lindsay Review also saw as an option the 'full privatisation of all quarantines considered to be medium or low risk with the retention of key high security government facilities only' over an eight-year implementation program (AQIS 1991b).

The Review Committee agrees with the principles outlined in the Lindsay Review but believes that those principles could be taken further with all Government stations — irrespective of their security status — being offered for private ownership and management. However, the extension of these principles to the private ownership of high security quarantine stations and facilities should be introduced gradually, and only after a reasonable time to assess experience with privatised low to medium risk stations. This Review is concerned to ensure that any proposals for private ownership of Government quarantine stations of any level of security, should be permitted only after development of the necessary security controls and conditions, and subject to strict audit.

Recommendation 82: The Review Committee recommends that, in principle, Government animal quarantine stations should be offered for privatisation, subject to audit by Quarantine Australia and maintenance of appropriate security.

The question also arises as to the feasibility and desirability of fostering a program of privately owned offshore or onshore quarantine stations. A small number of submissions to the Review supported the proposition that privately owned stations offer an effective alternative to government-run stations, although these views were mainly from individual industries. A small number of submissions opposed any such a move. Arguments were put that offshore facilities — particularly those not on Australian territory — could lead to a loss of control of monitoring of animals, their breeding, and attention to strict quarantine procedures. An example of recent experience with private quarantine is the Scrapie Freedom Assurance Program. As part of this program, private quarantines were

conducted at Glendook, Terraweena, Kirra and Wongan Hills. The quarantine period extended over many years and was particularly suited to private operation, albeit under strict quarantine supervision. These and other quarantines of live animals such as laboratory, circus and zoo animals, alpacas, llamas, deer, sheep, goats and horses demonstrate that the private ownership and operation of quarantine facilities is possible and even desirable in many circumstances.

The question of private high security offshore quarantine stations was examined in a recent review (Snowdon 1995). This review examined the existing government-owned and operated Cocos Islands station and made recommendations on requirements that would need to be met if similar stations were to be established. The Review Committee notes that private enterprise has since entered the market, with the establishment of a private high security animal quarantine station on the Pacific island of Niue and development of a private high security facility near Goulburn, New South Wales, for importing hatching eggs of domestic poultry. Both facilities are expected to commence operation before the end of 1996.

In the preceding recommendation, the Review Committee put the proposition that, if adequate controls, conditions and audit are in place, there is no reason why private ownership could not be extended to high security stations. Further to that recommendation, the Review Committee believes that, with the necessary safeguards, this policy could be extended to onshore as well as offshore stations, subject to audit by Quarantine Australia and maintenance of appropriate security.

Recommendation 83: The Review Committee recommends that, in principle, private onshore high security animal quarantine stations should be permitted, subject to audit by Quarantine Australia and maintenance of appropriate security.

8.14.2 Plant Quarantine Stations

Plant quarantine includes pest and disease screening, treatment and care of plants and plant materials at government post-entry plant quarantine stations. It includes maintenance of the stations with respect to quarantine security and proper horticultural practices in the establishment and maintenance of plants in quarantine. It may also encompass research activities supporting improved disease screening efficiency and effectiveness.

Plants that undergo post-entry quarantine have minimum quarantine periods ranging from three months for ornamental varieties to three years for pome fruit, although the quarantine period may be extended until the disease screening process is completed to the satisfaction of quarantine authorities. AQIS currently accredits selected overseas plant health systems and has instituted reduced quarantine requirements in recognition of this.

Pressures to reduce the cost of this program and achieve full cost-recovery for user-attributable costs led in 1992 to an internal review of the station program. The review sought to identify a more efficient mechanism for delivering an effective and appropriate service, without compromising quarantine security. The key recommendations of the review were to withdraw AQIS funding from certain stations and offer the facilities to the States to be State-run and funded. The alternative was to close the stations and institute a

research program into improved disease detection methods with a view to reducing the time in quarantine. Unfortunately, the research component has not progressed due to lack of available resources.

Charges for post-entry plant quarantine have been developed to reflect the cost of providing the variety of pest and disease testing and plant maintenance and establishment services necessary in post-entry quarantine. The current charging levels have largely been in force since August 1992, with only minor changes to some rates. It has long been a general view that high fees can lead to an increased incidence of smuggling of plant material. Where economies of scale have been identified, the charges have been structured to pass these savings on to users of the services through lower charging scales.

There are plans to relocate the plant quarantine station to Commonwealth property at Eastern Creek as a result of the proposed closure by the New South Wales State Government of the Biological and Chemical Research Institute at Rydalmere in Sydney (see Section 10.4.5.2). However, significant strains are still being placed on plant quarantine facilities and all indications are that this situation will continue. In view of this, the Review Committee believes that a system for setting priorities for the use of plant quarantine facilities should be introduced.

Recommendation 84: The Review Committee recommends that Quarantine Australia form a review committee to set priorities for imports of plant genetic material.

8.14.2 Smuggling and Community Service Obligations

Due to historically high running costs, post-entry quarantine stations were for many years a drain on the quarantine budget with substantial losses being incurred. Several internal efficiency reviews were undertaken between 1991 and 1993 to correct this unsatisfactory situation. The benefits of these reviews can be seen in that animal quarantine stations are now largely cost-recovered. The small shortfall in revenue over expenditure for these stations is boosted by a budget-funded grant for the avian import program. The subsidy of \$298 000 a year is provided to ensure the continued viability of the program and help curb smuggling — the primary reason for establishing the avian facilities originally. The Review Committee supports the provision of the anti-smuggling subsidy and its continuation.

The plant quarantine stations program significantly under-recovers its expenditure, and this situation is expected to continue. In this regard, a Department of Finance subsidy of \$1 million initially granted for each of the three years from 1992–93 to assist this program was continued into the 1996–97 financial year. In view of the very important role that these facilities play in plant quarantine protection and the risk of an increase in smuggling if the subsidy were to cease, the Review Committee believes that this subsidy should be continued, contingent on adequate demand for the facilities.

Recommendation 85: The Review Committee recommends that Government continue to provide Quarantine Australia with community service obligation funding for its avian and plant quarantine stations.

8.14 COMPLIANCE AND AUDIT

8.14.2 Compliance

Most compliance investigations into quarantine activities are border related. Suspected quarantine breaches are investigated by AQIS, as well as ACS, under the terms of an MOU signed in 1990. ACS staff prepare briefs of evidence in relation to quarantine offences. However, future strategies must take into account the possibility of ACS either not supplying or being unable to supply quarantine compliance services at the border. The non-availability of ACS resources will have a major effect on quarantine in terms of the availability of qualified staff for the preparation of legal briefs.

The Review Committee notes that legislation facilitating the introduction of a system of on-the-spot fines for breaches of the *Quarantine Act 1908* at the border was introduced into the Commonwealth Parliament in June 1996. In keeping with the culture of quarantine awareness and partnership being advocated in this Report, the Review Committee trusts that enforcement of these new powers — if passed by Parliament — will be with discretion, compassion and due attention to civil liberties, and reflect the cooperative culture the Review Committee is seeking to engender through Quarantine Australia. Any use of on-the-spot fines must be consistently and uniformly applied nationally.

The advent of new technologies for recording and tracing notable offenders should be used as a positive management tool for transgressors at the quarantine border. The Review Committee acknowledges that on-the-spot fines have merit in terms of time saved in preparation of legal briefs and presentation of cases at court. However, they should not deter officials from taking court action where a serious breach of quarantine occurs.

8.14.2 Audit

During the conduct of the Review, it became apparent that declining resources had led to a marked reduction in the frequency of audits undertaken by quarantine officials across the full spectrum of quarantine activities including border programs (e.g. for containers) and approved premises.

No inspection function is likely to meet the objective of quarantine consistently and effectively without regular and consistent audit and review. This is true of border activities, including quality assurance arrangements, quarantine-approved establishments, and other third-party arrangements. The Review Committee believes that audit and review are essential elements of effective program management.

<p>Recommendation 86: The Review Committee recommends that Quarantine Australia give high priority to auditing and reviewing its border activities.</p>
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Regular auditing, review and periodic re-negotiation as required, are essential if the purposes of import protocols are to be effectively maintained over time (see Section 8.4.1 on import protocols). Throughout this process there should be regular consultation with relevant stakeholders (see Chapter 7 on Risk Analysis).

Recommendation 87: The Review Committee recommends that Quarantine Australia ensure that it reviews its import protocols on a regular basis to take account of changing circumstances.

PART VI: POST-BORDER QUARANTINE

9. MONITORING AND SURVEILLANCE

9.1 INTRODUCTION

The Review Committee advocates a continuum approach to quarantine, encompassing coordinated pre-border, border and post-border activities. Monitoring and surveillance are important for determining Australia's human, animal and plant health status. As such, monitoring and surveillance for pests and diseases form integral parts of the post-border element of the continuum of quarantine. Preparedness and response, the other part of post-border quarantine activities, are discussed in Chapter 10.

9.2 PRINCIPLES

In this Report, the term 'monitoring' is used for the passive collection and collation of data on Australia's current animal and plant health status. 'Surveillance' is used for active measures to detect new pest and disease incursions and changes in the distribution and prevalence of endemic pests and diseases.

During the course of the Review, several examples of effective monitoring and surveillance were brought to the attention of the Review Committee. However, there was also ample evidence that insufficient resources have been dedicated to these tasks in the past. In some cases, the results of monitoring and surveillance have been used to protect animal, plant and human health for the benefit of the Australian community. However, there are a number of incidents where detections did not lead to a rapid response to control or eradicate incursions. The coordinated industry and government response to the 1993 detection of Asian honey bee in the Torres Strait is a good example of appropriate pest and disease management based on effective monitoring and surveillance. In contrast, the apparent delayed response to the 1993 detection of papaya fruit fly in the Torres Strait region resulted in an expensive eradication program in northern Queensland.

In the view of the Review Committee, effective monitoring and surveillance will:

- provide a knowledge of Australia's current animal and plant health status;
- provide information on animal and plant pests and diseases which occur in other countries and could threaten Australia's primary industries, natural environment and human health;
- provide early detection of incursions of exotic pests and diseases, whether due to illicit or natural entry or through not being intercepted at the border, which will greatly improve the chances of successful control or eradication of the incursions;

- represent an important element of meeting Australia's international obligations;
- provide basic input to the risk analysis process; and
- add to the knowledge of Australia's flora and fauna.

9.3 IMPORTANCE OF MONITORING AND SURVEILLANCE

9.3.1 International Obligations

Monitoring and surveillance networks are of assistance to Australia in fulfilling its international obligations. Under the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), member countries are required to establish scientifically that they are free of specific pests and diseases, rather than simply claiming freedom. Scientifically based monitoring and surveillance programs will therefore be an essential element in establishing continuing freedom from pests and diseases. Similarly, in line with International Health Regulations, Australia maintains a 400-metre vector monitoring program around airports and seaports (see Section 8.8).

9.3.2 The Benefits of Monitoring and Surveillance Programs

In the view of the Review Committee, there is no question of the need for adequate resources and infrastructure for monitoring and surveillance of Australia's human, animal and plant health status — particularly in areas of high risk. A number of submissions to the Review concentrated on northern Australia to emphasise the importance of monitoring and surveillance. Industry sees northern Australia as an area of high quarantine risk given its potential as a pathway for incursions of exotic pests and diseases (e.g. recent incursions of Asian honey bee, Japanese encephalitis, varroa mite, spiralling whitefly, black sigatoka and papaya fruit fly). In its submission to the Review, the Bureau of Sugar Experiment Stations stated that 'in the case of sugarcane smut, which is present in Indonesia and is likely to enter from the north at some stage, over half of currently registered [sugarcane] varieties would be lost and the majority of present breeding clones and parents would be of restricted value. No sugarcane entomologist has visited the Torres Strait since 1989 and it is likely that past distributions have changed but not been reported'. The Bureau of Sugar Experiment Stations argued that it should be involved in new surveys for cane pathogens in northern Australia. A number of equally supportive examples were provided in other submissions from such sectors as the banana and other horticultural industries.

The cost of eradication of an unwanted pest or disease can be significant, especially when compared to the annual cost of targeted monitoring and surveillance programs. In its submission to the Review Committee, the Queensland Department of Primary Industries argued that 'once a pest or disease becomes established, the cost of eradication increases at an exponential rate. Hence, the costs of monitoring, detection, deterring and education become much less than large scale eradication costs'. An example of the costs associated with the failure of monitoring and surveillance is the \$55 million allocated by governments to eradicate papaya fruit fly over the period from 1995–96 to 1997–98.

The National Farmers' Federation (NFF) in its submission to the Review argued that 'active surveillance involving disease, pest and weed specific field work collection and testing to produce a statistically valid sample of a population is very expensive'. In support, the NFF noted that in response to an overseas request, a survey of the prevalence of enzootic bovine leucosis was estimated to cost more than \$1 million. The NFF further noted that passive monitoring 'without statistically valid sampling procedures and usually

conducted as a by-product of other sampling activities ... is more opportunistic [and] will indicate the presence of disease but not its absence in a statistically reliable manner'.

In its submission, the NFF went on to argue that monitoring and surveillance programs should be subject to a cost-benefit analysis before being initiated. The imperative for this analysis is further driven by the reduction in the levels of passive monitoring by State departments and the closure or privatisation of State government laboratories. The NFF noted that 'private laboratories do not have the charter to conduct the sort of community service work undertaken by government laboratories that are themselves becoming increasingly operated under cost-recovery principles'.

Recommendation 88: The Review Committee recommends that monitoring and surveillance programs are essential, require increased national coordination, and should be conducted in a cost-effective manner.

9.4 THE CHALLENGES

A number of submissions to the Review pointed to the reduction in monitoring and surveillance systems over the past few years. The Queensland Department of Primary Industries gave as an example the removal of the pest trapping systems from Cape York Peninsula and other parts of North Queensland, and questioned whether the widespread establishment of papaya fruit fly into Northern Queensland was related to this reduction in monitoring. The Department proposed 'that a surveillance system for threatening exotic pests, weeds and diseases is put in place on a permanent and continuous basis throughout Australia'. The Review Committee is concerned by the reduction in monitoring and surveillance networks and the decline in resources being allocated to these tasks. These reductions are evident both in field resources and in regional and national diagnostic capabilities. As noted in Section 9.3.2, there have been several closures of State laboratories. The Review Committee's concerns with Australia's declining diagnostic capacity is discussed further in Chapter 10 on Preparedness and Response.

The human, animal and plant health status of Australia's neighbouring countries and those with which Australia has significant contact through trade and tourism is constantly changing. Hence the importance of pre-border activities associated with the continuum of quarantine aimed at establishing the health status of these countries (see Chapter 6 on Offshore Activities). It is also important that the target lists of pests and diseases for which monitoring and surveillance networks are operating in Australia are modified regularly to reflect these changes in health status. Regular updating of these target lists should be undertaken in consultation with key stakeholders including agricultural industries and agencies responsible for human, animal and plant health and the protection of the natural environment.

However, monitoring and surveillance programs are not ends in themselves. The information generated from these programs is an important management tool which must be used effectively if the full benefits of monitoring and surveillance programs are to be realised. For example, the Australian Horse Council reported to the Review Committee that as soon as there was serological evidence of the possible presence of surra in Papua New Guinea (PNG), Australian quarantine authorities suspended imports of horses from that country pending development of an amended protocol. A number of submissions to

the Review argued that a similar timely response was not made to the initial detection of papaya fruit fly in the Torres Strait region. There is a need for a system of effective monitoring and surveillance that generates scientifically valid results. Further, there is a need to ensure that significant results trigger a prompt response, and for a coordinated system to ensure delivery of that response.

To be effective as a management tool, information generated from monitoring and surveillance programs must be complete and up-to-date. However, there are few complete national pest and disease databases or information systems in Australia. This is particularly true for plant pests and diseases. The lack of completed databases and information systems is a reflection of funding constraints and a lack of delineation of who is responsible for maintaining and developing databases and information systems for pests and diseases. This issue is discussed further in Section 9.5.3.

9.5 DELIVERY

9.5.1 Monitoring and Surveillance Programs

Examples such as the recent incursion of papaya fruit fly and ongoing concern regarding the possible introduction of screw-worm fly from PNG demonstrate the need for targeted monitoring and surveillance programs. A number of monitoring and surveillance programs are currently undertaken in Australia. Some, such as vector monitoring at international air and seaports, State-based fruit fly programs, and the Brucellosis and Tuberculosis Eradication Campaign (BTEC), have been in place for many years; others such as the Northern Australia Quarantine Strategy (NAQS), have been developed more recently. A number of programs are also undertaken at State, regional and sector level, but national information on their outcomes is not always readily available. This section summarises some of these programs to illustrate the range of monitoring and surveillance programs that are in place.

9.5.1.1 Northern Australia Quarantine Strategy

NAQS is a significant monitoring and surveillance program undertaken by the Commonwealth. From its inception in January 1989, this program provided an early warning system. It was operated mainly by the States (the Northern Territory, Queensland and Western Australia) but funded by the Commonwealth.

NAQS includes an offshore component designed to provide a better understanding of the animal and plant health status of neighbouring countries and to provide early warning of new threats. It involves joint programs with PNG and Indonesia that include sentinel herd programs and periodic surveys by field teams (see Section 6.2.2). Onshore activities include regular inspections of remote sites, collection of samples, community awareness and a trapping program to check for incursions of screw-worm fly and papaya fruit fly. The offshore and onshore monitoring and surveillance programs provide advance warning of emerging threats — and confidence that exotic incursions are not becoming established undetected in remote areas.

A recent review of NAQS (Nairn and Muirhead 1995) led to a significant change in focus of the program strategy which is now a fully Commonwealth-controlled activity comprising scientific, operational and public awareness components. Significant additional funding of \$14.7 million was allocated to NAQS for the financial years from 1995–96 to 1998–99.

Recommendation 89: The Review Committee recommends that the enhanced Commonwealth-delivered initiatives under the Northern Australia Quarantine Strategy should continue to be funded after 1998–99, subject to regular analysis of their effectiveness and appropriateness.

9.5.1.2 Brucellosis and Tuberculosis Eradication Campaign

BTEC is perhaps the best recent example of cooperative effort between industry and governments. This campaign commenced in 1970 as a nationally coordinated program to eradicate brucellosis and tuberculosis from cattle and buffalo in Australia. In the 25 years since BTEC started, more than \$760 million has been invested, with the cattle industry and governments sharing the cost.

Australia achieved national freedom from bovine brucellosis in 1989. It is now in a five-year monitoring phase to enable Australia to be declared free of bovine tuberculosis by the end of December 1997. Monitoring is based primarily on the examination of animals at slaughter, and submission of any granulomas found for laboratory examination as part of the National Granuloma Submission Program. Current cost-sharing arrangements will continue until at least December 1997 to complete the eradication of tuberculosis.

9.5.1.3 National Arbovirus Monitoring Program

The National Arbovirus Monitoring Program (NAMP) is a collaborative Commonwealth, State and industry program of active surveillance to demonstrate the freedom of large areas of Australia from arboviral infections such as bluetongue. NAMP also provides warning of incursions of exotic, potentially virulent arboviruses, as well as a means for monitoring any subsequent spread. NAMP has been accepted as a scientifically valid monitoring program by veterinary authorities of Australia's various trading partners.

9.5.1.4 Recent national insect pest initiatives

The Australian Quarantine and Inspection Service (AQIS) has recently initiated two national early warning surveillance programs to concentrate on Asian gypsy moth and exotic fruit flies (specifically species in the genera *Bactrocera* and *Ceratitis* that are established in countries close to Australia).

Traps baited with lures are to be used in port areas considered to be at a high risk for the introduction and establishment of exotic fruit flies. The program will link existing fruit fly surveillance programs conducted by State governments and NAQS, and fill potential gaps to form a coordinated national exotic fruit fly surveillance network. It will have at least 2300 traps, covering 39 ports of first call around Australia, and will support research to develop new diagnostic techniques that could be used in surveillance programs.

Asian gypsy moth is a potentially serious pest of up to 600 species of trees, and in countries where it is established it has already demonstrated an ability to cause significant damage. The main pathway by which this pest could enter Australia is as eggs on containers and ships. Under the AQIS program, traps are being placed in 22 port areas around Australia. The Review Committee understands that tropical regions are not included because Asian gypsy moth has not established itself in such areas elsewhere in the world. The surveillance program has been developed in conjunction with State forestry departments and pest preparedness staff, and in consultation with overseas agencies. It will be carried out by States as part of their forest pest surveillance strategies.

The exotic fruit fly and Asian gypsy moth surveillance programs are designed to increase Australia's ability to detect incursions of these pests. Early detection should also trigger quick management actions and allow for efficient and cost-effective responses. It is hoped that developing surveillance programs for these two pests will foster a greater awareness and coordination of exotic pest surveillance programs and lead to the development of effective national surveillance programs for other targeted pests in the future. In 1995–96, the Government allocated \$1.3 million over the next two years to develop and implement the two surveillance programs. The Review Committee supports this initiative.

9.5.1.5 States and industry

Some States have systems in place for monitoring and surveillance of specific pests and diseases (e.g. ovine footrot in New South Wales, South Australia, Tasmania and Western Australia) but generally these systems are not part of a nationally coordinated program. For instance, Tasmania currently operates 15 State-funded surveys so that product for export can be certified as free of specified pests and diseases. According to the Tasmanian Department of Primary Industry and Fisheries, Tasmania's ability through these programs to demonstrate scientifically that it has area freedom from fruit fly is expected to result in exports of additional agricultural products worth more than \$40 million in 1995–96. Tasmania maintains about 1300 fruit fly traps through the State. Surveys are conducted for stem nematode to support export certification that onions are free of this pest. This survey has also been integrated with development of a range of local measures to minimise the spread of the pest, and with a much wider farm hygiene program.

Tasmania also surveys for animal and plant pests and diseases that occur in other parts of Australia. For example, potato cyst nematode, which is considered to be a serious pest of potatoes, has been present in small pockets east of Melbourne for many years. A cooperatively funded Commonwealth–State survey program has been operating in Victoria to determine the extent of this pest and to attempt eradication where it is identified. However, it has been agreed that this pest is too widespread to be eradicated, and that action can now only contain and limit its spread. As a result, Tasmania commenced surveying for potato cyst nematode four years ago, and each year tests 20% of the State's potato crop. Tasmania is confident that it has now collected sufficient data to justify scientifically a claim of area freedom from this pest.

State forestry agencies also undertake certain quarantine activities, such as pheromone trapping for Asian gypsy moth in New South Wales and Queensland. More recently, four

Forest Health Inspectors have been employed by New South Wales and Queensland (two in each State) to monitor forest health, including pest incidence. These initiatives are seen as important parts of forest health and quarantine, although the Review Committee agrees that more resources are required to expand such functions. The Review Committee is aware that State Forests of New South Wales operates a Health Survey Unit at a cost of about \$200 000 each year.

The Australian Animal Health Council (AAHC) has established a Task Group to examine endemic disease management for Australia's livestock industries. This group is to develop priorities for addressing the management and, where possible, eradication of major endemic pests and diseases of animals, based on the 19 endemic diseases monitored by National Animal Health Information System (NAHIS — see Section 9.5.2.1). The Review Committee applauds this initiative by AAHC. The Review Committee believes that the advances being made by AAHC in animal health would be enhanced by the inclusion of Australia's fisheries and aquaculture sector in its membership. The Review Committee notes that the Tasmanian Government and industry already spend about \$150 000 each year to monitor the health status of salmonids in that State.

The Australian pig industry has supported the development of a national disease database based on recording the prevalence at slaughter of lesions of production-limiting pig diseases. This project centralises information collected and collated under the State-based Pig Health Monitoring Schemes. The project aims to record disease information on a substantial proportion of the national pig herd to provide reliable data on disease prevalence. The scheme was developed in South Australia in the mid-1980s and with industry support has been expanded to cover all the mainland States. Abattoir monitoring is performed on a user-pays basis, with the Pig Health Monitoring Scheme data providing a valuable tool for producers and their veterinarians to develop herd health programs. The scheme provides graphical reports of the severity and prevalence of diseases, and can compare results with those of herds of similar size and management. With the expansion of the project into a national disease database, the disease information will further benefit epidemiologists, pig health researchers and industry organisations in the development of industry programs. The use of the data to monitor the effectiveness of disease control programs on individual farms as well as to target research and extension programs for the industry as a whole, has benefited the industry markedly.

Monitoring to assess the effectiveness of animal and plant health and quarantine policies is undertaken at a range of levels. At the farm level, inspection for pests and diseases is undertaken routinely by farmers. Their skill and concern in the area of health and quarantine is demonstrated by their willingness to control pest and disease outbreaks and conform with health and quarantine regulations. However, it is important that an effective awareness program provides farmers with information on the effects and identification of pests and diseases of concern (see Section 10.4.1).

9.5.2 National Databases and Information Systems

As argued above, monitoring and surveillance programs are an essential tool in managing Australia's human, animal and plant health and quarantine status. Commonwealth agencies use three major national pest and disease information systems or databases for monitoring and surveillance of pests and diseases. These are the:

- National Animal Health Information System (NAHIS);
- Pest and Disease Information Database (PDI) for plants; and
- NAQS Significant Findings Database.

9.5.2.1 National Animal Health Information System

NAHIS is based on routine monitoring of selected diseases, supplemented by special studies and surveys. The NAHIS target list is flexible, and adjusted as new issues and priorities emerge. For 1995, it included 34 diseases — 19 endemic and 15 exotic. Although most of the data come from passive sources, active surveillance is used in some cases. NAHIS contains summary information on the diseases, their importance in Australia, livestock numbers, slaughter statistics, residue surveillance data, animal health regulations, and key contacts in Commonwealth and State animal health authorities.

Data collection for NAHIS commenced in the second half of 1993, using quarterly reports from States and other agencies. Sources of data for NAHIS include Commonwealth and State animal health authorities, diagnostic laboratories, eradication or control programs, herd monitoring systems, universities, research programs and veterinary practitioners. NAHIS also stores summaries of the findings of various national programs and surveys — including NAQS, NAMP, the National Granuloma Submission Program, the National Residue Survey, the National Salmonella Surveillance Program, and the Department of Health and Family Services National Notifiable Diseases Surveillance Scheme.

In its submission to the Review, NFF advised that 'NAHIS has been languishing under resource constraints' for some years. Management of NAHIS recently passed to the newly incorporated AAHC, which has as one of its first tasks the further development of the system (see Section 9.6.1).

9.5.2.2 Pest and Disease Information Database for Plants

The purpose of PDI is to provide technical information in support of the work of Commonwealth and State plant quarantine staff by helping specialist entomologists and plant pathologists assess pest and disease risks and to undertake risk analysis of import access requests. Risk assessment and risk management elements of risk analysis consider possible pathways that could lead to the introduction of exotic pests and diseases into Australia.

PDI was first developed in the mid-1970s and was designed to facilitate the storage, maintenance, reporting and the retrieval of data on pests and diseases of plants. Data are

primarily obtained from scientific publications, supplemented by pest and disease information gathered from Australian State departments of agriculture and overseas trading partners. PDI includes data on:

- pest and disease interceptions on imported commodities and post-entry quarantine;
- pest, disease, host and location relationships (including nomenclature, vector and survey details) for a wide range of plant species both in Australia and overseas;
- Australian pests and diseases, to facilitate exports of Australian plants and plant products; and
- survey results, including data on areas free of specific pests and diseases.

Through NAQS, Australia has developed a stand-alone version of PDI for Indonesia which provides Indonesia with a management resource and facilitates the exchange of information between both countries.

9.5.2.3 NAQS Significant Findings Database

NAQS has in place across northern Australia a series of monitoring stations for culicoides (midges that act as vectors for some diseases of animals), screw-worm fly, fruit flies, and the Asian honey bee. Detections are recorded on the NAQS Significant Findings Database.

Since its inception in 1989, the NAQS monitoring and surveillance programs have produced significant findings relating to 19 insect pests, seven animal diseases and one weed. Seventeen of these organisms were specifically targeted by NAQS because of their perceived significance. Most were recorded in PNG and Irian Jaya Province of Indonesia. In some instances, such as Asian honey bee and spiralling whitefly, NAQS monitored progress of the movement of these organisms towards and into Australia and officials have instituted actions aimed at control of the migration and impact of the pest. In the case of spiralling whitefly, a biological control agent in the form of a parasitic wasp (*Encarsia haitiensis*) has been released in infested areas and has been successful in reducing damage by the whitefly.

9.5.3 Databases and Information Systems as a Management Tool

It is essential that human, animal and plant health and quarantine decisions are based on current knowledge, using appropriate scientifically sound methods. Informed decisions, risk analysis and policy development consistent with obligations under the SPS Agreement all depend on adequate, accurate, current and readily accessible information. It is thus important to maintain databases on endemic pests and pathogens and on exotic pests and pathogens of quarantine importance to Australia. Related information such as the size of sample needed to ensure the scientific and statistical basis for monitoring and surveillance is also important.

Although the Commonwealth maintains a general set of databases and information systems (see Section 9.5.2), there are no complete and up-to-date national electronic information systems or databases on pests and diseases. As highlighted by the Bureau of Resource Sciences in its submission to the Review, 'currently there is no national coordination of information generated by the various States on ... plant pests and diseases'. The decisions of Australia's plant industries and plant health and quarantine staff would be easier and more targeted if, for example, a national database of all the major pests and diseases present on each crop in Australia were available electronically. The use of information technology to collate relevant information and make it more accessible to relevant areas of the community is essential to improving Australia's health and quarantine activities.

Appropriately developed monitoring and surveillance programs ensure that policy makers have access to accurate and up-to-date information on the health status of Australia's animal and plant industries. Establishment of national databases and information systems is critical for building confidence, domestically and internationally, in Australia's animal and plant health status — and in the soundness of its application of manageable risk in quarantine decisions. This confidence is directly related to the integrity of Australia's monitoring and surveillance networks and their associated databases and information systems. This is particularly so for scientific support of claims of area freedom, or zoning, for pests and diseases.

<p>Recommendation 90: The Review Committee recommends that Government support the development and management of national pest and disease databases and information systems.</p>

9.6 IMBALANCE BETWEEN PLANTS AND ANIMALS

As highlighted in Chapter 2, all elements of the continuum of quarantine — pre-border, border and post-border — have tended to have a stronger focus on animals than plants. This is also generally true of animal and plant health services. Reasons for the bias towards animals include:

- the greater emotional impact of pests and diseases of animals compared to the impact of plant pests and diseases, given that most plant pests and diseases have little visible effect on the community;
- a large number of private veterinary practitioners with a legal obligation to report serious pest and disease outbreaks, ensuring that early detection and reporting are more likely with animal than plant pests and diseases;
- better diagnostic technology with animal industries than with plant industries;
- better tracing systems for the movement of most infected animals or animal products than with plants or plant products;
- a relatively small number of animal pests and diseases affecting a limited number of domesticated animal species, including those forming the basis of very large and valuable industries, compared to the very large number of exotic pests and

diseases affecting numerous plant species that are often the basis of only relatively small industries;

- a longer history of international collaboration and coordination of management and resources for animal health and quarantine than for plant health and quarantine; and
- until recently, little public appreciation of the significance of plant incursions on Australia's natural environment.

The Review Committee is strongly of the view that this imbalance needs to be redressed to raise the profile of plant health and quarantine in Australia, but should not be at the expense of animal health and quarantine. Two structures that greatly assist government and industry focus on resources and other issues in the animal area, both domestically and internationally, are the newly formed AAHC and the Commonwealth Office of the Chief Veterinary Officer (CVO). The Review Committee believes that the plant industries would benefit significantly by the establishment of a similar Council and position for plants within Australia.

9.6.1 Australian Animal Health Council

AAHC is a non-profit company limited by guarantee, established under Australian corporations law and accountable to the Australian Securities Commission. Its shareholders are the Commonwealth and State Ministers with agricultural responsibilities as well as the Presidents of the Australian Veterinary Association and the eight peak national commodity councils of Australia's livestock industries (the Australian Chicken Meat Federation, the Australian Dairy Farmers' Federation, the Australian Egg Industry Association, the Australian Horse Council, the Cattle Council of Australia, the Pork Council of Australia, the Sheepmeat Council of Australia, and the Wool Council of Australia).

AAHC was formed following a major review of animal health services in Australia during 1994. This review, as well as recommending the formation of the AAHC with both industry and government representation, identified seven core functions in animal health that were required at a national level. These are:

- disease surveillance, diagnosis, reporting, prevention, control and eradication;
- policy development in animal health, veterinary public health and animal welfare;
- negotiation of trade protocols, development of standards and certification for export;

- exclusion of exotic disease;
- maintenance of professional standards and expertise;
- development of national codes of practice for animal care, husbandry, welfare and veterinary public health; and
- national registration of veterinary chemicals and biologicals.

AAHC was established to give a higher profile to and broaden the input base for animal health planning in Australia. It is intended to be the peak animal health body — the point of reference for strategic policy development, for national program funding and for animal health matters that require negotiation and resolution. The AAHC will also monitor standards for the provision of animal health services in Australia.

The objectives of AAHC are to :

- provide strategic leadership in the identification of national priorities and the development of national policy for Australia's animal health system;
- ensure that the performance of the national animal health system meets market and commercial requirements; and
- ensure international confidence in the capability of Australia's animal health services.

AAHC currently has three Task Groups operating, of which two specifically address issues and concerns related to Australia's capability in preparedness for and response to incursions of exotic pests and diseases of animals. The Task Groups cover:

- Animal Disease Preparedness;
- Endemic Disease Management; and
- Animal Health Services.

9.6.2 An Australian Plant Health Council

There is no central coordinating body to identify national priorities in plant health and to facilitate joint industry and government cooperation in maintaining acceptable national plant health standards that meet consumer and market requirements. This deficiency was raised in a number of submissions to the Review. The creation of a similar body to AAHC for plant industries would address a significant number of the expressed concerns, particularly the need to develop and maintain some formal mechanism for effecting coordinated national leadership and direction in plant health issues.

The establishment of an Australian Plant Health Council (APHC) with wide industry and government representation would be pivotal in advancing a number of issues facing the Australian plant sector, including development of management and funding mechanisms

for plant health in Australia and preparedness for and response to incursions of exotic pests or diseases (see Section 10.5.3). APHC could also take responsibility for the development and management of national databases and information systems on major pests and diseases of plants in Australia, and address the issue of the need for scientific and diagnostic support for the plant sector (see Section 9.7).

Recommendation 91: The Review Committee recommends that the Department of Primary Industries and Energy take a leadership role to incorporate an Australian Plant Health Council with responsibilities for plant health (including forestry) equivalent to those of the Australian Animal Health Council for animal health.

The Review Committee believes that the level of concern within the Australian community with respect to plant health and quarantine is sufficiently strong to support the incorporation of APHC. The importance of the issues of concern to the Australian plant industries can no longer afford to be overlooked or dismissed as being too hard to address. Instead, the challenge should be taken up by the community, but particularly by industry and by governments. In the interim, it is important that one organisation be responsible for undertaking a coordination role with respect to Australia's plant health policies.

Recommendation 92: The Review Committee recommends that until the Australian Plant Health Council is incorporated and operating, the Department of Primary Industries and Energy undertake a coordinating role with respect to plant health.

9.6.3 The Chief Veterinary Officer

The Office of the CVO is a specialist area within the Commonwealth Department of Primary Industries and Energy (DPIE). Its core functions include :

- providing policy, strategic and specialist advice to other areas of DPIE, the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), the Standing Committee on Agriculture and Resource Management (SCARM), industry, and other groups on animal health, fish health, food safety and chemical residue issues;
- undertaking national coordination and emergency management of animal health (including the health of finfish and other aquatic animals), food safety and chemical residue emergencies; and
- managing special projects of national significance, such as the SCARM Task Force on Incursion Management.

The CVO represents the Government on a number of important national and international committees and boards. This role enables the CVO to contribute to the development of national and international policies and guidelines for animal health (including aquatic animal health).

9.6.4 A Chief Plant Protection Officer

There is no formal Commonwealth equivalent to the CVO for plants in Australia. Currently, national issues relating to plant health and quarantine — including representation at overseas technical meetings on plant health and quarantine — are generally handled by the head of plant policy within AQIS. This officer also has day-to-day line-responsibility for the development of Australia's plant quarantine policies and has no dedicated staff to provide support in emergency situations that may arise. The occupant of this position thus has limited time and resources to devote to more strategic and longer-term management issues affecting plant health.

The Review Committee is strongly of the view that the issues facing plant health in Australia are sufficiently significant and numerous to warrant the creation of a Commonwealth position for plants — the Chief Plant Protection Officer (CPPO) — along the lines of the animal equivalent, the CVO. The CPPO would be responsible for:

- providing policy, strategic and specialist advice on plant health to DPIE, ARMCANZ, SCARM, industry, other agencies and the general public;
- undertaking national coordination and emergency management of plant health issues;
- representing Australia's interests at international meetings and develop networks both domestically and internationally to promote the health of Australia's plants and plant products;
- undertaking special projects with respect to plant health issues, as required; and
- acting as a focal point for contact on national plant health issues.

The Review Committee believes that the position of CPPO should reside within DPIE, although it is important that the CPPO maintains strong and close links with Quarantine Australia. The CPPO should be supported by a small unit identified as the Office of the Chief Plant Protection Officer. In essence, the Offices of the CVO and the CPPO would provide an operational link between DPIE and Quarantine Australia on the inter-relationships between the development of animal and plant health policies and strategies and quarantine policies and strategies. The Offices of the CVO and the CPPO would also be a source of independent advice to the Minister for Primary Industries and Energy on quarantine issues.

<p>Recommendation 93: The Review Committee recommends that a Chief Plant Protection Officer be designated at a Commonwealth level with responsibilities in plant health, equivalent to those of the Chief Veterinary Officer for animal health.</p>
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9.7 RESPONSIBILITIES FOR NATIONAL COORDINATION

The Review Committee appreciates that the provision of effective systems for monitoring, surveillance and reporting of animal and plant health — including the provision of diagnostic services — is almost exclusively the province of State Governments and is generally supported by State legislation. However, a number of submissions to the Review raised concerns about whether or not current systems are fully effective, especially given substantial cutbacks in some of these services by States in recent years.

In its submission to the Review, the Australian Academy of Science argued strongly that two specific recommendations on monitoring and surveillance from the 1988 Lindsay Review have not been adequately implemented. The Academy noted that 'no significant progress has been made on establishing a national coordinated program to survey and monitor pests and diseases throughout Australia' and 'with the exception of a program for monitoring mosquitoes at international airports, no national program for monitoring and control of insect vectors and pests of significance to agricultural quarantine and human health has been established at international airports and seaports'.

The Review Committee is concerned at the lack of a national approach to monitoring and surveillance programs. The Review Committee recognises that considerable resources are dedicated to monitoring and surveillance of particular pests and diseases by individual States, organisations and industry sectors, but questions whether the full benefit of these collective resources is being realised. In the first instance, it is important to have full intelligence on the individual programs in place through Australia to identify gaps in Australia's monitoring and surveillance network. The Review Committee notes that this is the approach currently being taken by the AAHC Task Group on animal health services.

The Review Committee believes that it is imperative that the CVO and CPPO in DPIE take responsibility for ensuring national coordination of the disparate programs currently in place for monitoring and surveillance. DPIE should also be responsible for helping, in consultation with State Governments and industry, to identify gaps in monitoring and surveillance networks and associated databases and information systems, and for helping to develop strategies for addressing these gaps.

Recommendation 94: The Review Committee recommends that the Chief Veterinary Officer and the Chief Plant Protection Officer in the Commonwealth Department of Primary Industries and Energy take leadership roles to ensure national coordination of monitoring and surveillance of pests and diseases of animals and plants in Australia, and the development of pest and disease databases and information systems.

However, the CVO and the CPPO should not supplant the monitoring and surveillance work currently undertaken by States and industry. Rather, the CVO and CPPO should act as catalysts to ensure that programs are being coordinated and gaps identified and addressed. States and industry are essential partners in the delivery of effective monitoring and surveillance programs. In this respect, the Review Committee supports the work being undertaken by AAHC in driving animal health issues, including the

assessment of monitoring and surveillance programs for animal pests and diseases. This work should continue and be replicated in the plant sector by APHC upon its formation. Both Councils appear to be the appropriate organisations for ensuring adequate delivery of national monitoring and surveillance programs, and the development and management of national pest and disease databases and information systems.

Recommendation 95: The Review Committee recommends that the Australian Animal Health Council and the Australian Plant Health Council take responsibility for coordinating the national delivery of monitoring and surveillance programs relevant to Australia's animal and plant health status, respectively.

As discussed at the beginning of this chapter, monitoring and surveillance for exotic pests and diseases are important components of the post-border element of the continuum of quarantine. It is therefore essential that Quarantine Australia takes responsibility for ensuring that monitoring and surveillance programs are in place to effectively address the potential entry of exotic pests and diseases, particularly in high risk areas.

Sites may be regarded as having a high potential risk for the introduction and spread of exotic pests and diseases because of factors such as:

- locational characteristics (e.g. the discharge of ballast water at seaports, or the attractiveness of wilderness areas to ecotourists);
- abundance of natural hosts (e.g. major agricultural production areas or rainforests);
- importance as entry points for people and products (e.g. airports, seaports); and
- proximity to countries where pests and disease of concern are endemic (e.g. northern Australia, including the Torres Strait region).

In the discharge of this duty, Quarantine Australia needs to liaise closely with the Offices of the CVO and CPPO, with AAHC and APHC, and with other relevant stakeholders. An effective national monitoring and surveillance network will help build community confidence in the application of manageable risk to border activities of Quarantine Australia.

Recommendation 96: The Review Committee recommends that Quarantine Australia coordinate targeted national monitoring and surveillance for pests and diseases of quarantine importance in high risk areas, in liaison with the Chief Veterinary Officer, Chief Plant Protection Officer, Australian Animal Health Council and the Australian Plant Health Council.

PREPAREDNESS AND RESPONSE

10.1 INTRODUCTION

In addition to monitoring and surveillance, post-border activities include preparedness for and response to incursions of exotic pests and diseases. Although traditionally much of the focus of quarantine has been on border activities, the Review Committee believes that preparedness and response form an integral and essential part of the post-border element of the continuum of quarantine.

Industry also recognises the importance of preparedness and response, as illustrated by the submission to the Review from the National Farmers' Federation, which noted that 'Australia's quarantine policy framework includes not only operations at international barriers to prevent diseases, pests and weeds entering Australia, and analytical quarantine assessment procedures; but also preparedness for barrier breakdowns within Australia'. The importance of these activities has received significantly increased recognition in the two years preceding this Review. Soon after its establishment in October 1995, the Australian Animal Health Council (AAHC) established three Task Groups, two of which address issues and concerns related to Australia's capability in preparedness for and response to incursions of exotic pests and diseases of animals (see Section 9.6.1). Subsequently, the Standing Committee on Agriculture and Resource Management (SCARM) established a Task Force on Incursion Management in May 1996. The SCARM Task Force is specifically to address arrangements for detecting and responding to pest and disease incursions of animals and plants.

In considering Australia's capability in preparedness for and response to incursions of exotic pests and diseases of animals and plants, the Review Committee noted that, in general, arrangements are far better established in the animal sector than in the plant sector. The one area of exception in the animal sector is that of aquatic animals, where arrangements are only now being developed at a national level. Animal health has long had the advantage of a national focus for pest and disease preparedness and response provided by the Office of the Chief Veterinary Officer (CVO). A similar focus is needed for plants, as recommended in discussion on creating an Office of the Chief Plant Protection Officer (CPPO) in Section 9.6.4. Much of the discussion in this chapter derives from the Review Committee's consideration of the positive aspects of preparedness and response in the animal sector. Many of the recommendations are designed to extend the same principles and strategies into the plant sector and into those animal subsectors where they are not yet in place.

Effective preparedness against pest and disease incursions requires a number of elements, including early detection and confirmation, known reporting lines, and developed contingency plans. Once a diagnosis of an exotic pest or disease is confirmed, an agreed decision-making process and coordinated emergency arrangements are needed for an effective response.

10.2 PRINCIPLES

The fundamental principles for effective preparedness for and response to incursions of exotic pests and diseases are:

- a nationally coordinated approach, involving governments, industry and the general public;
- agreed lists of pests and diseases of concern;
- early detection (including both public awareness and effective field services);
- known reporting lines;
- ability to confirm that an agent is an exotic pest or pathogen of concern (i.e. diagnostic capacity);
- agreed mechanism for decision making;
- agreed plans of action (contingency plans); and
- resources for implementing the contingency plans and ensuring a prompt response.

10.3 NATIONAL COORDINATION

Preparedness for and response to animal health emergencies such as incursions of exotic pests and diseases are coordinated nationally by a specific unit in the Commonwealth Department of Primary Industries and Energy — the Animal Diseases/Incidents Section (formerly called the Foreign Diseases Unit). This ensures that preparedness and response strategies are coordinated nationally, and provides a core of experienced and well-trained staff to assist in the management of incursions. In late 1995, a one-person Plant Protection Unit was established within the Crops Division of the Commonwealth Department of Primary Industries and Energy with similar functions to the Animal Diseases/Incidents Section, although the precise roles of this Unit have yet to be defined.

10.3.1 Industry Involvement

The high dependence of the Australian beef, sheep and dairy industries on maintaining and improving animal health status to ensure continued access to premium export markets has led to a strong appreciation of the importance of maintaining this privileged status. In general, animal industries have tended to have a greater commitment to the need for developing sound preparedness and response capacities than have plant industries. The far larger number of subsectors and more varied range of enterprises in plant industries have compounded this tendency by leading to a significantly more diverse and fragmented plant sector in comparison with the relatively small range of livestock subsectors.

Probably because of their appreciation of the need to maintain and improve animal health status to maintain ready access to major export markets, the livestock industries have traditionally been very ready to cooperate with governments on developing preparedness and response strategies for exotic pests and diseases. Successful nationally coordinated campaigns against former significant endemic animal diseases such as contagious bovine pleuropneumonia, bovine tuberculosis, and bovine brucellosis in the cattle industry have demonstrated the value of government–industry cooperation through joint policy development, funding and implementation. This approach has more recently been extended to joint development of preparedness and response strategies against exotic pests and diseases of animals — initially through the Exotic Animal Disease Preparedness Consultative Council (EXANDIS) and most recently through AAHC (see Section 9.6.1). With a few notable exceptions (see Section 10.5.3), there has not been such a tradition of government–industry cooperation in the control or eradication of pests and diseases of plants, nor in a joint partnership approach to developing preparedness and response strategies against exotic pests and diseases of plants.

10.3.2 EXANDIS

In 1989, the Government established EXANDIS as a joint government–industry advisory group to raise the level of preparedness for exotic pests and diseases of animals. EXANDIS identified the need for more effective links between government and industry, a national approach to training, and an effective national response plan. EXANDIS also provided independent advice to the Minister on exotic disease control policy, and oversaw expenditure from a special trust account. EXANDIS concluded its activities in mid-1995, when responsibility for maintenance of exotic disease preparedness was passed to AAHC (see Section 10.3.3). One of the major achievements of EXANDIS was the development of the Australian Veterinary Emergency Plan for Exotic Animal Diseases (AUSVETPLAN) — a comprehensive emergency response plan for exotic pests and diseases of animals (see Section 10.5.1).

10.3.3 Australian Animal Health Council

Australia's new peak animal health body, AAHC, is a non-profit company with government and industry shareholders (see Section 9.6.1). It was established as the national point of reference for strategic policy development and national program funding. Greater involvement of industry is consistent with the partnership approach advocated in this Review (as discussed in Chapter 2). However, not all animal industries are represented in AAHC. For example, fisheries and aquaculture are significant omissions, and the Review Committee supports the inclusion of aquatic animals in AAHC.

The AAHC Animal Disease Preparedness Task Group was formed in 1996 to develop strategies to maintain the nationally coordinated approach to exotic animal disease preparedness developed by EXANDIS, facilitate the application of AUSVETPLAN-based contingency planning to other animal health emergencies (e.g. endemic diseases or residue problems), and provide advice on management and budget requirements. It is also charged with developing options for extending contingency funding arrangements that cover 12 major exotic pests and diseases (see Section 10.5.1) to include 'all animal health situations that have significant effects on commercial performance'.

The AAHC Animal Health Services Task Group was formed in 1996 to outline current requirements and likely future changes in animal health-related policies and regulations affecting market access, and document consumer concerns about animals and animal products from an animal health and welfare perspective. It is charged with comparing essential service requirements with current animal health services in Australia and those of our trading partners and international competitors. It will thus define the outcomes and programs needed to satisfy future market requirements, estimate the total animal health services required to deliver these programs, and present options on how to provide these services.

The Review Committee was impressed by the potential of AAHC to provide significant long-term improvements to animal health in Australia. It notes that AAHC sits well with the Report's principle of developing ownership of the continuum of quarantine through a partnership approach involving stakeholders in policy formulation and program implementation. There is no organisation like AAHC to ensure similar government–industry liaison and cooperation on plant health issues. However, the Review Committee believes that a similar organisation offers significant opportunities for improving preparedness and response strategies for exotic pests and diseases of plants. An Australian Plant Health Council (APHC) is urgently required, as recommended in Section 9.6.2.

10.4 EARLY DETECTION

10.4.1 Agreed Lists of Pests and Diseases of Concern

The pest and disease lists developed by the Office International des Epizooties (OIE) and the Food and Agriculture Organization (see Appendix D) provide internationally agreed lists of major animal pests and diseases that are of significant concern to trade in animals and animal products. These lists, and standards in the OIE Code, cover the most important pests and diseases of animals. They provide a sound internationally defensible starting point for import risk analysis and a readily available measure for considering which exotic agents should be targeted in national preparedness and response strategies. However, there is no similar internationally agreed listing of pests and diseases of plants to use in the same way.

There is a need for animal and plant health and quarantine authorities in Australia to develop, in consultation with industry and relevant stakeholders, agreed lists of pests and diseases of concern. Such lists should form the basis of priorities for offshore surveillance and research (as discussed in Chapter 6 on Offshore Activities), surveillance in Australia (as discussed in Chapter 9 on Monitoring and Surveillance) and development of contingency plans.

10.4.2 Reporting Lines

An incursion of an exotic pest or disease may first be noted by people outside State or Commonwealth animal or plant health services. An incursion might first be suspected by a member of the general public (e.g. for weeds or other environmental pests), a farmer, a private veterinary practitioner, a plant health consultant or a research scientist. Such people need to know how to report their suspicion or concern, who they should advise, and how to do this quickly. The Review Committee believes the awareness campaign outlined previously (see Chapter 3 on Awareness and Consultation) needs to include specific information on reporting suspect exotic pests and diseases because early advice is often essential to allow prompt and effective containment leading to eradication and control. The Review Committee notes that in 1994 EXANDIS facilitated the commencement of the Disease Watch Hotline — a toll-free telephone number (1800 675 888) that connects callers to the relevant State officer to report concerns about any potential exotic pest or disease of animals. The hotline has also proven to be very useful during agricultural emergencies other than animal disease emergencies (e.g. the papaya fruit fly incursion and the chlorfluazuron residue incident in 1995). The Review Committee believes that consideration should be given to broadening the use of this hotline to include reporting suspected incursions of pests and diseases of plants.

Once a suspected incursion has been notified to an appropriate State or Commonwealth officer, that officer needs to know precisely who to advise and what follow-up action to initiate (e.g. to have an appropriate officer or diagnostic team visit the affected area quickly).

10.4.3 Training and Awareness

EXANDIS has supported training of veterinarians overseas on specific exotic animal pests and diseases. It has also supported training in Australia using the high security facilities at the Australian Animal Health Laboratory (AAHL), which currently runs two exotic disease training courses for veterinarians each year, providing first-hand experience in the recognition of a range of exotic diseases. In 1995, AAHL ran two training courses — one for field veterinarians, the other for veterinary pathologists. It also ran a three-day workshop in conjunction with Emergency Management Australia to make those who would direct operations more aware of management techniques during an emergency. EXANDIS also supported two training sessions for private veterinary practitioners in 1995.

To raise awareness of exotic pests and diseases, EXANDIS sponsored the production of a series of videos and distributed a diagnostic manual (Geering et al. 1995) to all registered veterinarians. It also produced two full-colour posters showing the lesions of major exotic pests and diseases, and distributed them through major rural magazines in 1995. The Review Committee could find little evidence of similar nationally coordinated major training and awareness initiatives in the plant sector. It believes that this situation is unlikely to improve until the plant sector adopts similar mechanisms and structures to those that have allowed the animal sector to develop its current level of training in and awareness of exotic pests and diseases.

10.4.4 Field Services

States are responsible for pest and disease control within their respective jurisdictions and have traditionally maintained strong field services. State Government field services need to be sufficiently resourced to enable a prompt response to be made to any reports of suspected incursions of exotic pests and diseases.

Many submissions to the Review expressed concern at the run down in State field services during the past decade, arguing that in many States they were now inadequate to ensure a prompt response to reports of incursions of exotic pests and diseases of both animals and plants. For example, the National Farmers' Federation argued that 'attaining a high level of integrated preparedness will require increased resources' and called for 'a moratorium on cuts to quarantine and agricultural health programs by the States and the Commonwealth'. However, it also acknowledged that exotic disease management and control should 'be funded by joint contributions from industry and government'. In particular, several submissions provided data on the decline in numbers of State and Commonwealth animal health field staff. They suggested that numbers were now so low that Australia might no longer pass other countries' evaluation of the effectiveness of its veterinary services. Such evaluation forms an important part of risk analysis that determines continued access of Australian exports to overseas markets (see Section 1.7 of Appendix D).

10.4.5 Diagnostic Capacity

Many submissions to the Review also expressed concern at the reduction of State diagnostic laboratory services, arguing that services were now inadequate to ensure rapid evaluation of any suspected case of an incursion of an exotic pest or disease — whether to confirm that the case is not exotic, to refer to reference laboratories any that can not be confirmed as endemic, or to confirm that it is an incursion of an exotic pest or disease.

10.4.5.1 Animals

In its submission to the Review, the Australian Veterinary Association argued that in the event of an outbreak of an exotic disease Australia 'may not be able to control it due to insufficient personnel and expertise in both field and laboratory situations'. Similarly, the National Registry of Domestic Animal Pathology noted that over the past six years 'there have been severe reductions in trained and experienced field and laboratory diagnosticians, particularly in the areas of farm animals, fish, poultry and wildlife'. It also flagged an increasing deficiency due to age profiles of staff, noting that remaining laboratory staff 'have an average age of 45–50 years' and that 'young diagnosticians are conspicuous by their absence'.

10.4.5.2 Plants

Several submissions to the Review, including that of the Australian Academy of Science, expressed concern at deficiencies in plant health disciplines such as entomology and forest health. For example, concern at the recent decline in both the number of practising taxonomists and the number of Australian universities offering training in taxonomy prompted the Australian Biological Resources Study to host a national workshop in 1995

(Visher 1996). The concern leading to the workshop was based on information that included trends such as the decrease in the number of practising botanical and zoological taxonomists at Australian universities from 193 in 1974 to only 64 in 1991. Similarly, information provided with the Queensland Department of Primary Industries' submission pointed out that the number of positions for forest entomologists and forest pathologists in State departments had fallen by almost 50% between 1990 and 1993 (the last year for which figures were readily available). The decline of available expertise in this area has led to comment that the current level of resources is insufficient to guarantee protection of forest resources and native plant communities.

In its submission to the Review, the Australian Academy of Science noted that it had made representations in early 1996 to the Standing Committee on State Development of the Parliament of New South Wales to express concern at the proposed closure of the Biological and Chemical Research Institute at Rydalmere and of the Regional Veterinary Laboratory at Wagga Wagga. The Academy argued strongly that closure of the Rydalmere facility in particular would significantly compromise Australia's plant health diagnostic capacity, and noted the Institute's impressive record in identification of exotic pests and diseases of plants.

The Review Committee understands that AQIS intends to develop post-entry quarantine facilities and a plant health laboratory at Eastern Creek, near Sydney, to replace those that will no longer be available at Rydalmere. The Review Committee supports this initiative, which it sees as an essential but minimal requirement for maintaining Australia's capacity in plant health and quarantine.

Recommendation 97: The Review Committee recommends that Government establish plant diagnostic laboratories and secure post-entry quarantine facilities at Eastern Creek, near Sydney.

A few submissions — including those of CSIRO and the Australian Academy of Science — argued that there was a need for a national secure containment facility for plants to undertake a role similar to AAHL's role for animals. The Review Committee notes that the plant sector does not have a high security laboratory equivalent to AAHL to provide national diagnosis for exotic pests and diseases of plants, or to undertake research on exotic pests and pathogens that require a high level of security.

However, the Review Committee understands that diagnosis of and research on many exotic pests and some exotic pathogens of plants can be safely undertaken in secure facilities that are considerably less sophisticated than those required for animal pathogens such as at AAHL. Several facilities of this sort exist around Australia, providing in essence a decentralised capacity for diagnosis of and research on many exotic pests and some exotic diseases of plants. The Review Committee acknowledges that a more secure containment facility might be required for other exotic diseases of plants (e.g. pathogens that are dispersed in aerosols, requiring air filters and negative pressure for secure containment).

The Review Committee specifically sought the opinion of a number of State departments and industry organisations on their perception of the need for a secure containment facility (or facilities, if at more than one site) for plants. There appeared to be little

agreement on the need for such a facility, its precise charter or role, or its optimal location. There also seemed to be little agreement on the need for a biocontainment facility in northern Australia that has been suggested might include some capacity in animal biotechnology in addition to plant protection activities. The Review Committee believes that this issue should be investigated in detail by APHC before any recommendations are made or additional funding is sought.

Recommendation 98: The Review Committee recommends that the Australian Plant Health Council investigate the need, optimal location and possible funding options for a national secure containment facility for plant pests and diseases.

10.4.6 Research Capacity

Australia has had a long history of leadership in agricultural research, including research into pests and diseases of animals and plants. Innovations from such research have increased productivity and contributed significantly to Australia's competitiveness as an exporter of high quality animals, plants and their products. However, with significant cuts to budgetary support at both Commonwealth and State levels, Australia's national capacity for research in agriculture — including animal and plant health — has been substantially eroded over the past decade.

Given that the focus of this Review was on quarantine and not on research, relatively few submissions specifically addressed agricultural research. However, a number of submissions did call for increased effort in research on animal and plant health and quarantine. The Australian Academy of Science argued that there was a need to encourage more research in quarantine-related issues and proposed that this could be done through competitive grants for relevant research projects. It also advocated a system of competitive grants to support quarantine-related pest and disease diagnosis and research, administered through a peer review system like that of the Australian Research Council or the National Health and Medical Research Council. Several submissions noted that there was a need for more research to improve knowledge of Australia's native animals and plants, including knowledge of their pest and disease status. The Australasian Mycological Society raised concern at how little is known about native Australian fungi. In addition, representatives of communities in the Torres Strait region and the Tiwi Islands noted the need for research on local plants and insects to provide baseline information on native species in northern Australia.

During the course of the Review, the Review Committee became aware of a specific gap in facilities for investigating the potential biological control of aquatic pests. Australia has experienced a number of incursions of significant aquatic pests, particularly associated with ship fouling and ballast water (see Section 6.2.1.1 and Appendix B). The Review Committee noted that work by the Cooperative Research Centre for Research on Imported Marine Pests had identified several potential biological control agents for some of the most important of these pests. However, research to assess their potential for biological control is hampered by the lack of a secure facility in Australia for conducting such studies.

10.4.7 Diagnostic and Research Needs

As noted previously, several submissions to the Review expressed concern at significant human resource deficiencies in particular disciplines such as entomology, veterinary diagnostic pathology and aquatic animal health. Some submissions to the Review also stressed the importance of animal and plant health authorities having access to other agencies with potential diagnostic expertise, including museums, universities, and research organisations such as CSIRO. However, they noted that such organisations have introduced charges for services that were previously provided free. The Review Committee noted the inconsistency of the Government providing significant funding for AAHL to undertake diagnosis of exotic pests and diseases of animals while providing little funding for similar services for plants (e.g. for identification of insect pests). It believes that the Board of Quarantine Australia might address this anomaly and consider developing a contract or contracts for the identification of pests and diseases of plants (e.g. of pests found on imported goods inspected at the border).

Australia needs to maintain its capacity to undertake research into pests and diseases of animals and plants, both offshore (as discussed in Section 6.2) and within Australia. A strong research capacity in this area is central to the development of sound strategies for preparedness for and response to incursions of exotic pests and diseases. The Review Committee notes that AAHC's Task Group on Animal Health Services (see Section 9.6.1) is reviewing Australia's field, diagnostic and research capacity in animal health in relation to national and international requirements. The Review Committee commends this initiative and would expect that, once formed, APHC would undertake a similar review of plant health capacity and requirements.

Recommendation 99: The Review Committee recommends that the Australian Animal Health Council and the Australian Plant Health Council review national field, diagnostic and research capacity in animal and plant health.

10.5 CONTINGENCY PLANS

Many submissions to the Review argued that there is a need for more emphasis on developing contingency plans for incursions of exotic pests and diseases of animals and plants. Several submissions — including those of the National Farmers' Federation, the Tasmanian Farmers and Graziers Association, and the Tasmanian Department of Primary Industry and Fisheries — argued that they were needed generally. Other submissions argued that they were needed for particular areas or for specific pests or diseases.

10.5.1 Livestock

AUSVETPLAN is the nationally agreed plan for responding to an outbreak — or suspected outbreak — of an exotic pest or disease of animals anywhere in Australia. AUSVETPLAN was developed and agreed by governments, in consultation with industry, to enable a rapid response to any such incursion. Many submissions were complimentary of AUSVETPLAN and generally agreed that AUSVETPLAN provided a very useful model for contingency planning that could be applied to animal pests and diseases not already included (e.g. those affecting aquatic animals). They also generally commented that AUSVETPLAN provided a very useful model for contingency planning that could be applied to plants (including forestry). However, a few submissions suggested that even AUSVETPLAN contingency plans were not as well-developed as

they should be. For example, the Australian Academy of Science argued that contingency plans 'must be based on a thorough use of all relevant data and methodology. This should include population ecology of potential hosts and epidemiology of the target species, ecological modelling and game theory, leading to explicit risk assessment and realistic contingency plans. Current approved plans fall far short of this'.

The purpose of AUSVETPLAN is to:

- provide a structure for managing an exotic disease emergency;
- provide coherent exotic disease contingency plans;
- provide compatible and uniform operations and procedures between Commonwealth and State animal health authorities and emergency management organisations;
- improve the technical basis for strategies to combat exotic disease incursions;
- identify deficiencies in scientific and technical knowledge required to combat an exotic disease emergency, and establish research priorities; and
- provide a focus for training people in appropriate operational responses and procedures.

AUSVETPLAN provides a comprehensive package that clearly and concisely sets out the roles, responsibilities, coordination arrangements, financial arrangements (where applicable), policies (based on detailed technical support) and procedures that will be followed by all agencies in an exotic animal disease response. It provides a consistent framework for action to be taken for a particular incident across all parts of the country. The critical factors addressed by AUSVETPLAN are:

- coordination of the emergency (disaster) operational management;
- detailed, consistent responses to individual diseases;
- financial arrangements for the sharing of eradication costs for selected diseases;
- adequate and consistent legislation between the Commonwealth and States; and
- a comprehensive emergency management system.

AUSVETPLAN includes the following documents and related diagnostic resources:

- a Summary Document that overviews the whole of AUSVETPLAN;
- Disease Strategies for selected diseases;
- Operational Procedures Manuals, providing a template for field operations such as the humane destruction of animals, decontamination procedures, valuation and compensation;
- Management Manuals, providing the overall structure and arrangements for management of control centres, information systems and laboratory services necessary for an effective response to exotic disease outbreaks; and
- Enterprise Manuals (now being developed) that relate to specific types of enterprises (for example abattoirs) that involve difficult economic or disease eradication issues, or are epidemiologically important in the spread and extent of diseases.

AUSVETPLAN represents the result of many years of work and considerable effort by a large number of writing groups. The Review Committee understands that although various writing groups had been developing contingency plans for some years, it was only after the injection of funds from EXANDIS that the completion of these plans was possible.

10.5.2 Aquatic Animals

Aquatic animal health has recently emerged as a priority for animal health authorities in Australia, with policy issues managed by the Ministerial Council of Forestry, Fisheries and Aquaculture. The Council is supported by a permanent committee, the Standing Committee on Fisheries and Aquaculture. Several committees advise the Standing Committee on specialist issues and in turn have their own infrastructure of subcommittees, working parties and expert panels that focus on particular areas within each committee's terms of reference. In 1995, the Fish Health Coordinating Group was established, replacing Animal Health Committee's Subcommittee on Fish Health. The Group's first task was to review important exotic diseases of aquatic animals and recommend a system for responding to aquatic animal disease emergencies.

At the same time, quarantine issues relating to aquatic animal diseases and pests were examined in a review of aquatic animal quarantine by a national Working Party that commissioned a major scientific review through the Bureau of Resource Sciences (Humphrey 1995). Subsequently, the National Task Force on Imported Fish and Fish Products was established to review the use of aquatic animals and their products (NTFIFFP 1996). The Review Committee anticipates that Government will consider the National Task Force's report in conjunction with the more general framework and recommendations of this Report.

As part of the development of recommendations by the SCARM Task Force on IncurSION Management, an Aquatic Animal Disease Contingency Planning Workshop was held in

August 1996 to examine preparedness for and response to incursions of pests and diseases of aquatic animals. The workshop recommended that industry, State and Commonwealth agencies collaborate in the development of communications systems to ensure timely and accurate reporting of diseases from field to State and, when applicable, national information systems. It suggested that the systems might be based on the approach used in the Tasmanian Fish Health Emergency Management Plan. The workshop also examined current preparedness and response arrangements used by the Consultative Committee on Exotic Animal Diseases (CCEAD) for managing incursions of livestock pests and diseases (see Section 10.6.1). It recommended that 'aquatic animal disease emergency management arrangements be included under the CCEAD and AUSVETPLAN arrangements or equivalent' and 'that appropriate modifications be made to these arrangements to enable them to be used in the control of disease in the aquatic environment'. With respect to contingency plans, the workshop recommended 'that funding be urgently sought to establish writing groups to develop generic and enterprise-based plans for the management of aquatic animal disease emergencies'.

The Review Committee anticipates that the recommendations of the Aquatic Animal Disease Contingency Planning Workshop will be considered by the SCARM Task Force on Incursion Management. The Review Committee endorses the approach of managing aquatic animal disease emergencies by CCEAD and developing contingency plans using the approach successfully adopted by AUSVETPLAN. The Review Committee believes that these tasks would be facilitated by having fisheries and aquaculture included as members of AAHC, and supports moves to this effect.

10.5.3 Plants

Knowledge of the major pests and diseases affecting animals (with the exception of aquatic and zoo animals) is greater than that of those affecting plants. There is a greater number of relatively less understood host–pest and host–pathogen combinations to consider for plants than there is for animals. Thus the ability to identify the most likely pest and disease threats to Australia is less for plants than it is for animals. Consequently, the number of pests and diseases for which appropriate preparedness and response strategies need to be developed is greater for plants than for animals. So great is this possible number for plants, that some plant health and quarantine specialists (and some plant industry representatives) argued that there is little or no point in attempting to develop preparedness strategies such as contingency plans for plants.

However, many submissions to the Review argued that there was a need to develop more contingency plans for specific plant pests and diseases of concern. This view was put by groups as diverse in interests as the Australian Academy of Science, the Western Australian Farmers Federation, Canberra Consumers and the Australian Banana Growers' Council. For example, the submission from the Australian Banana Growers' Council recommended that 'much greater attention be given to contingency planning for target species'. Other submissions argued that a more generic contingency plan for pests and diseases of plants was appropriate and feasible. This view was put by groups including Agriculture Western Australia, CSIRO, the Queensland Department of Primary Industries, Primary Industries South Australia, and the Tasmanian Department of Primary Industry and Fisheries. Other submissions also specifically highlighted the need for

contingency plans based on pests and diseases of particular crops, or for groups such as weeds and forest pests and diseases.

The Review Committee noted with concern that, in contrast to animals, there appeared to be no coordinated generic contingency plan for exotic pests and diseases of plants. Although a framework for eradicating incursions of some exotic pests and diseases was developed in 1980 (Department of Health 1980), this provided only guidelines and nothing like the detail of AUSVETPLAN, and does not appear to have been further developed. The Review Committee noted that there are a few more detailed contingency plans covering specific exotic pests or diseases of plants — including fireblight, Dutch elm disease, fruit flies and black sigatoka. The Review Committee was particularly encouraged to learn of the preparation of other contingency plans for plant pests and diseases, including melon flies, karnal bunt and Asian gypsy moth.

The Review Committee recognises that AUSVETPLAN contingency plans are the result of many years of work, and required significant injection of funds (via EXANDIS) to develop them. Obviously, developing such plans for a wide range of exotic pests and diseases of plants would take some time and require considerable resources. However, the Review Committee believes that a series of generic plans and a small number of specific plans for major exotic pests and diseases of plants should be developed. The generic plans might be prepared for a particular host or industry (i.e. by developing a plan for exotic pests or diseases of a single host plant or group of plants). Alternatively, they might be prepared according to the type of agent (e.g. insect pests, bacteria, fungi) or their method of spread.

The Review Committee endorses the continued development of contingency plans for major exotic pests and diseases of animals and plants, and acknowledges the current work of both SCARM and AAHC in this area. However, there is a need for leadership to ensure that work on contingency plans is undertaken in a coordinated manner. Given their links with State agencies through SCARM and their roles (as outlined in Sections 9.6.3 and 9.6.4 respectively), the CVO and CPPO are well-placed to take on this leadership role.

Recommendation 100: The Review Committee recommends that the Department of Primary Industries and Energy, through the Chief Veterinary Officer and the Chief Plant Protection Officer, take a leadership role to ensure that appropriate contingency plans are available for major exotic pests and diseases that threaten animals (including aquatic animals), plants (including forestry) and the natural environment.

The Review Committee is firmly of the view that a partnership approach is fundamental to maintaining and improving Australia's animal and plant health status (see Chapter 2). The Review Committee was very impressed with the initiative shown by the banana industry in developing an appropriate contingency plan and working closely with the Queensland Government to develop sound preparedness and response strategies for major pest and disease threats. Such approaches seem to be particularly appropriate for industries that are concentrated in a limited area, allowing producers to cooperate more readily than is possible for more widely distributed industries. The Review Committee believes that industry should be involved in the development of contingency plans to

ensure that they are appropriate and feasible. Industry should also have a role in setting priorities for developing such plans, and AAHC and the proposed APHC provide a suitable mechanism for coordinating industry input.

Recommendation 101: The Review Committee recommends that the Australian Animal Health Council and the Australian Plant Health Council take responsibility for coordinating the development of national contingency plans for major exotic pests and diseases that threaten animals (including aquatic animals), plants (including forestry) and the natural environment.

10.5.4 Humans

The Review Committee is aware that the Commonwealth Department of Health and Family Services has been developing a handbook on the management of quarantine diseases for some time (DHFS in prep.). This handbook is effectively a contingency plan for any incursion of a major exotic pest or disease of humans, providing details such as the roles and responsibilities of various agencies, principles and procedures for managing suspected cases, and contact details for relevant authorities. The Review Committee urges the early completion of this handbook, which will ensure that an agreed contingency plan is in place for any incursion of a major exotic pest or disease of humans.

Recommendation 102: The Review Committee recommends that the Commonwealth Department of Health and Family Services complete its handbook on the management of human diseases of quarantine concern.

10.6 INCURSION RESPONSE

When an incursion has been identified and confirmed as an exotic pest or disease of concern, there is a need for a prompt response to control or eradicate it. A prompt response requires an agreed decision-making process, a mechanism for managing the response, and access to funding to implement the response.

10.6.1 Mechanism for Decision Making

Animal health authorities have long had the advantage of an established forum to review and coordinate a national response to suspected incursions of exotic pests or diseases. CCEAD is the group most directly concerned with the national response in an animal health emergency. CCEAD is chaired by the Commonwealth CVO and includes the CVOs of each State, the Chief of the CSIRO Division of Animal Health, and the Head of AAHL. Formed in 1941, CCEAD reports to the Agriculture and Resource Management Council of Australia and New Zealand through SCARM. The CVO of a State in which a pest or disease outbreak occurs may request CCEAD to be convened, and further meetings are held as required during the course of the outbreak. Meetings are usually held by telephone conference, and each CVO may have relevant Commonwealth or State officers, external scientific experts (e.g. from CSIRO) and industry representatives participate in the meetings.

The terms of reference of CCEAD are to:

- consult on emergencies resulting from the introduction of an exotic pest or disease of animals, or from a serious epidemic of an endemic disease;
- make judgements regarding the presumptive and confirmatory diagnosis of outbreaks of exotic pests or diseases of animals for the purpose of invoking the provisions of the Commonwealth–States Cost-Sharing Agreement for combating outbreaks; and
- advise on eradication or control methods for presumptive or confirmed introductions of exotic pests or diseases of animals.

Several submissions to the Review argued that incursions of exotic pests and diseases of plants were handled very poorly in comparison to those of animals. Submissions focused on a number of incursions of significant exotic pests and diseases of plants during the past five years that attracted considerable public attention — the most recent being the incursion of papaya fruit fly. Although SCARM has previously recommended that plant health emergencies be handled in a similar manner, there is in practice no formal arrangement analogous to CCEAD for the consideration of plant incursions — partly because of the lack of a CPPO.

There is a need for a mechanism similar to CCEAD's for prompt and efficient decision making once a suspected incursion of an exotic pest or disease of plants is reported. The Review Committee notes that the SCARM Task Force on Incursion Management (see Section 10.1) is to investigate options for such a mechanism as part of its deliberations. The CCEAD mechanism was successfully used in 1995 to manage the pilchard mortality incident (involving fisheries departments and industry) and for managing two incidents of equine morbillivirus infection and one of Japanese encephalitis (involving human health departments). The SCARM Task Force on Incursion Management is examining the CCEAD model as a possible generic approach to managing incursions of exotic pests and diseases of plants and of aquatic animals. The Review Committee anticipates that the recommendations of this Task Force will provide a sound basis for decision making following the report of any suspected incursion of an exotic pest or disease of either animals or plants.

10.6.2 Investigation of Causes of Incursions

Understanding how an incursion occurred provides important feedback to develop better strategies for reducing the risk of similar incursions occurring in the future. The reports on recent incursions contracted during the Review (see Appendix B) demonstrated that the cause of most incursions of exotic pests and diseases into Australia is never definitively established. The Review Committee believes an essential part of improving risk management in quarantine is to be able to determine, where possible, how incursions have occurred. The Review Committee believes that greater attention should be given to enable the method of introduction of incursions of exotic pests and pathogens to be determined.

Recommendation 103: The Review Committee recommends that Quarantine Australia, in association with the Chief Veterinary Officer and the Chief Plant Protection Officer, determine where possible the method of introduction of any new incursion of an exotic pest or disease and use this information to develop strategies to reduce the likelihood of future incursions.

10.6.3 Managing Outbreaks and Incursions

The effectiveness of CCEAD and AUSVETPLAN has been proven on several occasions in recent years. For example, an outbreak of virulent avian influenza (fowl plague) occurred in December 1994 on a poultry farm near Brisbane. The outbreak was managed by CCEAD and eradicated in accordance with the AUSVETPLAN contingency plan for this disease. An intensive monitoring and surveillance program was then undertaken to meet the requirements for country freedom specified in the OIE International Animal Health Code and these were satisfied fully in June 1995.

The CCEAD mechanism and the approach to pest and disease emergencies developed in AUSVETPLAN have also proven to be of value for outbreaks that are not specifically covered in AUSVETPLAN. For example, an outbreak of a new disease of horses occurred in September 1994 in a suburb of Brisbane. Fourteen horses died or were euthanised, and a trainer who had very close contact with the affected horses also developed a severe respiratory disease and died. Strict controls were quickly put in place and intensive serological surveillance was undertaken to demonstrate that the disease had not spread. The disease was quickly shown to have been caused by a previously unknown virus, now named equine morbillivirus, which has never been reported outside Queensland. Despite being a totally new condition, the outbreak was rapidly contained by using the CCEAD mechanism and implementing a response consistent with AUSVETPLAN contingency plans for other viral diseases of horses. The same approach was also used initially in the incursion of Japanese encephalitis, which occurred for the first time in Australia in early 1995 on Badu Island in the Torres Strait, probably as a result of migratory water birds infecting local mosquito populations. It was also used successfully to monitor and coordinate the response to widespread mortality in pilchards across waters of southern Australia in mid-1995.

In accordance with a previous SCARM directive, a consultative approach similar to CCEAD's was used to respond to papaya fruit fly in early 1996. Other incursions of plant pests and diseases have met with limited responses because of their widespread distribution when detected (e.g. western flower thrips). A few have been met with a well-coordinated government–industry response, such as that for black sigatoka of bananas. However, the Review Committee believes that the lack of a formal response mechanism for incursions of plant pests and diseases similar to the CCEAD mechanism has often delayed appropriate responses by governments, which have been reluctant to initiate rapid responses without early agreement on cost-sharing arrangements (see Section 10.6.6).

10.6.4 Outbreak Exercises

Having contingency plans in place is a necessary but not sufficient condition for ensuring that they will be of value in the event of an incursion. It is also necessary to ensure that contingency plans are practical by testing them in mock exercises in the field. For example, mock emergency response exercises have been periodically conducted to test communications, diagnostic and other components of AUSVETPLAN and CCEAD arrangements. Such exercises not only test the feasibility and allow revision or fine-tuning of contingency plans, but also provide practical training for field and diagnostic laboratory staff, State and Commonwealth animal and plant health policy staff, and coordinating mechanisms such as those of the CVO and CCEAD (and their proposed plant equivalents). Similar exercises to test contingency plans are required for pests and diseases of both plants and aquatic animals once they are developed.

10.6.5 Compensation

Although authority to control any incursion of an exotic pest or disease rests with the States, the control or eradication of a major incursion could be beyond the financial resources of an individual State. Thus a Commonwealth–States Cost-Sharing Agreement on the costs of eradication of specified exotic pests and diseases of animals has been in operation since 1955. The agreement establishes a formula for sharing eradication and compensation costs for 12 specified exotic pests and diseases of animals. Under the agreement, compensation is payable to owners of livestock for animals that die or are destroyed, and for property that is destroyed, as a result of one of these pests or diseases. Under the formula, the Commonwealth funds 50% of the cost and the States share the remaining 50%, usually according to their proportion of the national population of susceptible species of stock. In addition, because some outbreaks could be prolonged and require extended quarantine restrictions, provision has been made for a second instalment of compensation payment equal to any market value increase between the time of destruction of livestock and the lifting of property restrictions when the affected producers are able to restock.

10.6.6 Funding Mechanism

The Commonwealth–States Cost-Sharing Agreement has meant that outbreaks of suspected incursions of pests or diseases of animals have been promptly reported, in part because stock owners know they will receive at least some compensation. It has also meant that State animal health authorities have been able to respond immediately, because they know the Commonwealth and other States will reimburse most costs according to a pre-determined formula. For example, the agreement has been used to fund successful eradication of several outbreaks of virulent avian influenza, including the most recent incursion in late 1994 (see Section 10.6.3). There is no similar formal agreement for plant pests and diseases, so that the response to incursions may be limited or delayed if an affected producer is slow to report a suspected incursion (because he or she has no means of obtaining compensation for even direct losses) or an affected State is unwilling to commit significant funds to contain, control or eradicate an incursion (because there is no certainty that the Commonwealth and other States will share the costs involved). Several submissions to the Review claimed that limited or delayed responses to some recent incursions of plant pests and diseases, including the initial response to papaya fruit

fly, were the result of a lack of an agreement on cost-sharing. Although the Cost-Sharing Agreement is limited to only 12 pests and diseases of animals, the same principle has been used in response to both incursions of other exotic pests and diseases and to outbreaks of new endemic diseases (e.g. equine morbillivirus).

The Review Committee strongly believes that appropriate compensation should be an integral part of effective contingency plans and response strategies. The SCARM Task Force on Incursion Management is charged with, *inter alia*, investigating the possible extension of the Cost-Sharing Agreement to other exotic pests and diseases of both animals and plants. However, it is likely that any such extension will require industry contributions in addition to any Commonwealth or State funding, and will be limited to compensation for only direct losses. In the animal sector, insurance underwriters and industry representatives have in recent years investigated terms and conditions of an appropriate insurance program against consequential business losses, other than from animals and property destroyed, for producers affected by an exotic disease eradication campaign. The Review Committee endorses such approaches, which it believes may provide the only practical means of minimising producers' financial risk from incursions of exotic pests and diseases. It believes that AAHC and APHC should investigate means for ensuring that appropriate compensation are an integral part of contingency plans and response strategies for incursions of exotic pests and diseases.

Recommendation 104: The Review Committee recommends that the Australian Animal Health Council and the Australian Plant Health Council investigate means for ensuring that appropriate compensation is an integral part of contingency plans and response strategies for incursions of exotic pests and diseases.

PART VII: IMPLEMENTATION

11. RESOURCES AND LEGISLATION

11.1 RESOURCES

In examining Australia's quarantine policy and programs, the Review Committee has reported on perceived deficiencies in quarantine protection and recommended corrective action. Where the recommended action has funding implications, estimates of the necessary additional funding have been made. Without conducting an efficiency audit of quarantine, the Review Committee has taken into account the appropriateness of existing programs and how funds are allocated to these programs. Some recommendations in this Report will require specific funding for implementation. This should not necessarily be taken to mean that these funds represent a net increase to the overall quarantine budget.

Throughout this Report, the Review Committee has stated its firm belief that Quarantine Australia needs to adopt a broader approach to quarantine encompassing pre-border, border and post-border elements of the continuum, rather than focusing resources almost exclusively on border activities. This re-focus, together with scientific analysis of the risks posed by people and goods passing through the border, may well result in a

redistribution of resources to those areas determined as being in most need. However, even after a redirection of effort and rationalisation of available resources, the Review Committee believes that there will still be a need for a considerable increase in the level of Government funding allocated to quarantine programs.

11.1.1 Sources of Funding

The quarantine functions of the Australian Quarantine and Inspection Services (AQIS) are funded predominantly on a fee-for-service basis. Those functions not cost-recovered are considered to be a community service obligation (CSO) and are fully funded from the Commonwealth Budget. Chapters 2 and 8 discuss the general issues of funding for quarantine programs. This section examines the overall balance between CSO and cost-recovery in quarantine programs and the Review Committee's assessment of how that balance should be determined.

11.1.1.1 Cost-recovery

Since 1979, successive Governments have instituted a policy of full cost-recovery for government services, including quarantine. As such, identifiable users of quarantine services have since been charged on a fee-for-service basis for services provided. The implementation of full cost-recovery for quarantine services has not been achieved without difficulties. For example, there has been a marked reduction in monitoring and surveillance activities by quarantine staff (e.g. at seaports, as discussed in Section 8.9.3) because, the Review Committee believes, this function is not cost-recovered. Commenting on findings of an Auditor-General's Efficiency Audit in 1991–92 that 100% cost-recovery was not being achieved, AQIS responded that 100% cost-recovery presented particular problems for some programs, and that there are limitations on how far program operating costs can be cut without affecting productivity. In particular, onerous increases in charges may encourage smuggling or non compliance. Smuggling has the potential to introduce exotic pests or diseases that will necessitate expensive control or eradication measures — involving costs that could far exceed any additional revenue obtainable by aiming for 100% cost-recovery from plant and avian quarantine facilities. In response, the Auditor-General acknowledged that in some areas the objective of 100% cost-recovery may conflict with other regulatory objectives and may have a negative effect on quarantine security (Auditor-General 1992).

The concerns expressed to the Auditor-General on cost-recovery policies were echoed in many submissions to the Review. The Australian Nature Conservation Agency — through a submission from the Department of the Environment, Sport and Territories — commented that 'in circumstances where high levels of cost-recovery create incentives for smuggling, there must be higher CSO-funding to achieve the fundamental objective of safe minimum standards'. Others, including Agriculture Western Australia, also observed that high charges tend to encourage smuggling.

11.1.1.2 Community Service Obligation funding

There are few areas of quarantine that do not have elements of both public good and individual gain. It therefore follows that costs associated with effective quarantine should be apportioned between governments, industry and the general public. The Lindsay

Review recommended that 'the basis of cost apportionment for the controlled entry of quarantinable items should be as follows:

- Government should bear all costs associated with the intellectual input, international negotiation, liaison and coordination needed to develop conditions of entry. Government should also bear any costs associated with levels of monitoring or auditing it chooses to impose during the controlled entry program over and above those agreed with the importer prior to the commencement of the program.
- importers should bear all costs associated with care and maintenance of quarantinable items and with the propagation and multiplication of genetic material while in quarantine. They should also bear those costs attributable to meeting the agreed requirements of the conditions of entry of the material into Australia' (DPIE 1988, p. 133).

This recommendation was not accepted by the Government of the day.

Given that elements of national quarantine are a public good, it is essential that governments determine the level of investment, through budgetary funding, that they are prepared to make in quarantine and quarantine-related activities for the welfare of the Australian community. The Review Committee believes that in addition to areas of direct support to governments, quarantine activity must be afforded higher levels of Commonwealth and State funding for programs specifically benefiting the Australian community and essential to the public good. In a general sense, the Review Committee regards as community benefit, any activity for which there is no readily identifiable client. Where the benefits are shared by industry and the general public, governments should be prepared to meet their share of funding for quarantine and quarantine-related activities.

Areas for which budgetary funding is provided by the Government include quarantine policy and protocol formulation; market access activities; education, publicity, surveillance and deterrence; servicing and attendance at international and domestic fora and meetings; and government business. The quarantine processing of overseas passengers has long been treated as a CSO, although more recent developments have seen this activity funded by the Passenger Movement Charge. With respect to other quarantine border functions, where the commodity is of low volume and low value relative to quarantine charges there has generally been a decision to waive or subsidise the charges in the interest of equity and to avoid the possibility of creating distortion or an incentive for smuggling. This is the case for plant and avian post-entry quarantine facilities.

In its publication *Guide to Commercialisation in the Commonwealth Public Sector* (Department of Finance 1996), the Commonwealth Department of Finance recognises that CSOs can be funded by a number of methods, including direct funding from the budget to the service provider; cross subsidisation; funding from the resources of the responsible organisation without cross subsidisation; and levies on industry. Each of these methods has advantages and disadvantages and involves trade-offs between efficiency and other objectives such as transparency. The Review Committee believes that Quarantine Australia should investigate all of these methods to secure the appropriate level of CSO-funding for the public good component of quarantine activities.

Environmental considerations appear to have played little part in influencing funding for quarantine. Protecting the natural environment through increased monitoring and surveillance for pests and diseases is an important element of the continuum of quarantine. The Review Committee sees the implications of quarantine decisions on the natural environment as part of the quarantine process, with a need for consequential additional support through CSO-funding.

11.1.1.3 Joint responsibility

The Review Committee believes that effective quarantine is a partnership and as such each section of the community must accept responsibility, including its share of funding for quarantine activities. States are both users and beneficiaries of quarantine services. Over many years, States have contributed to the quarantine effort by the provision of diagnostic laboratories and support services. However, reductions in State budgets have had a marked effect on the level of support available, and in some cases facilities have been closed or privatised, with a subsequent reduction in services provided for the public good. The partnership concept advocated in this Report assumes that States will continue to make a meaningful contribution to quarantine-related funding.

Industry is also both a user and a beneficiary of quarantine. Industry benefits from the high level of pest and disease freedom secured by quarantine surveillance and must be prepared to contribute to the ever-increasing cost of quarantine services. Some suggestions as to how industry might directly assist the quarantine budget are canvassed in Section 11.1.3.

The Review Committee believes that the level of budgetary funding for quarantine does not fully reflect governments' share of their responsibilities. By way of comparison, the Review Committee notes that in its 1996–97 Budget, the Government allocated \$5297 million to the Department of Defence, \$391.3 million to the Australian Customs Service, \$54.5 million to AusAID, and \$42.3 million to the Antarctic Division under the Department of the Environment, Sport and Territories. The CSO-funding from the Budget for quarantine in 1996–97 is \$7.9 million excluding the budget allocation for the Commonwealth's share of the cost of eradication of papaya fruit fly in northern Queensland. As one individual's submission to the Review put it, this level of funding is equivalent to the cost of building about two kilometres of new highway. When considered against the gross annual value of production of Australia's rural industries — estimated at close to \$29 000 million for 1995–96 based on statistics of the Australian Bureau of Agricultural and Resource Economics — Australia's expenditure on quarantine protection is insignificant compared to the value of the resources it protects. It should also be viewed against the enormous potential cost of an incursion of a serious human, animal or plant pest or disease such as rabies, foot-and-mouth disease, or Asian gypsy moth. No submissions to the Review called for privatisation of Australia's quarantine policy and programs. Conversely, the vast majority of submissions argued that Government should accept a greater financial responsibility for activities throughout all elements of the continuum of quarantine. Table 1 compares Government quarantine budgets for 1993–94 and 1996–97 in real terms (1996–97 dollars).

Table 1: Budget funding for quarantine activities in AQIS for 1993–94 and 1996–97 (in 1996-97 \$m)

	1993–94	1996–97
cost-recovered	39.17 ^a	37.46
CSO	20.85 ^a	15.62 ^b
Total	60.02	53.08

Key:

a) in 1996–97 dollar equivalents

b) includes funding for airport operations, which is now cost-recovered, to ensure comparability with 1993–94.

The Review Committee accepts that in a general climate of 'user-pays' for government services, quarantine should not be exempt from the effects of this policy. However, it is the view of the Review Committee that reductions in Government CSO-funding for quarantine services have been significant (as Table 1 demonstrates) and that any effort at further reductions in CSO-funding will compromise Australia's quarantine security. The Review Committee notes that during a period of increasing quarantine activity and demand on resources (e.g. 10% annual increase in passenger arrivals and a similar increase in container traffic), there has been no change over the past three years in the total number of quarantine staff, including central and regional support staff, employed by AQIS. This number has remained relatively stable at about 575 after a reduction of some 10% in operational staff following the 1993–94 reform package.

In its report on AQIS, the 1996 Senate Committee noted that 'prior to the implementation of the 1993–94 reform package, there was a prevailing view that AQIS was over-staffed and inefficient. However, since that time AQIS has made substantial reductions in staff that have been accompanied by significant productivity improvements. The Committee considers that the 1993–94 reform package was necessary, but that, in some areas, the cuts appear to have been too severe. On the basis of evidence presented during the inquiry, the Committee is convinced that AQIS could not absorb further across-the-board reductions in staffing and resource levels without severely compromising its effectiveness. Indeed, the Committee is of the view that in certain areas of AQIS' operations, staffing and resource levels must be increased' (Senate 1996, p. xviii). The Review Committee agrees with this conclusion of the Senate Committee's report. The Review Committee is also aware that States have significantly reduced resources for quarantine-related activities (see Chapters 9 and 10).

Recommendation 105: The Review Committee recommends that governments increase their commitment to budgetary funding of quarantine and quarantine-related activities to reflect community expectations in line with the partnership approach to the development and delivery of effective quarantine.

11.1.2 Estimates of Additional Costs

The Review Committee has made a number of recommendations for changes to quarantine operational and structural arrangements. These changes will require funding, some or all of which would be additional, depending upon the extent to which existing resources can be redistributed. The following sections provide indicative estimates of the additional funding that may be required to implement the recommendations of the Review Committee in the absence of any redistribution of existing resources. Attempts have been made to indicate those budgetary costs that are one-off, for a specific period or that may be ongoing. These estimates will require more detailed costing by the Department of Primary Industries and Energy before any approach to Government to secure the allocation of additional funds.

11.1.2.1 Structural change (enabling legislation)

The Review Committee recommends that Quarantine Australia be established as a statutory authority (see Section 4.3.7). The first step in the process is preparation of enabling legislation. This legislation must reflect the Government's intentions regarding the new organisation — that is, its statutory powers and that of its Board, and its relationship with the Minister and other elements of the Commonwealth bureaucracy. There will also need to be amendments to associated legislation, such as the *Quarantine Act 1908* and the *Export Control Act 1982*. There is a cost associated with preparing and drafting legislation, and the Review Committee believes this should be taken into account.

Estimated Cost: \$100 000 (non-recurring)

11.1.2.2 Implementation of new structure

There is also a need to implement the structural and organisational changes recommended in this Report. The Report recommends the establishment of a task force to implement its recommendations (see Section 4.5), and funds will need to be provided for this purpose.

Estimated Cost: \$250 000 (over two years)

11.1.2.3 Funding for the Board of Quarantine Australia

As part of the structural re-arrangements, the Report recommends the appointment of a seven to nine-person Board to direct the work of Quarantine Australia (see Section 4.4.2). There will be running costs for the Board and estimates of these costs are included here. However, it should be noted that there will be offsetting savings of approximately \$120 000 per annum, the current annual running costs of the Quarantine and Inspection Advisory Council, which would be abolished upon the creation of Quarantine Australia.

Estimated Cost: \$300 000 per annum (recurring, cost-recovered)

11.1.2.4 Public awareness

A major recommendation of the Review Committee is the initiation of a national quarantine awareness program, which should be managed by a professional public relations agency to ensure it achieves the maximum effect on public understanding of quarantine issues (see Section 3.2). The Review Committee recommends that the program be ongoing, but that an annual sum of \$2 million be allocated for the first three years, with the effectiveness of the program being subject to a review at the end of that period.

Estimated Cost: \$2 000 000 per annum (three years)

11.1.2.5 Risk analysis

As a result of its consideration of border functions, the Review Committee recommends that over the next three years risk analyses be undertaken to evaluate the quarantine risks associated with all border activities (see Section 8.3.1). In the absence of such definitive risk analyses, the Review Committee has generally refrained from making detailed recommendations for changes in staffing for border programs. However, based on current knowledge, limited additional resources have been recommended for some activities that appear to be of high risk where existing capacity has been severely depleted or seems inadequate to cater for current or likely future quarantine risk (e.g. international mail). An estimate of the cost to undertake risk analyses of all border activities is included here.

Estimated Cost: \$100 000 per annum (over three years, cost-recovered)

11.1.2.6 New technology

The Review Committee was impressed with the potential application of new technology for baggage X-ray machines, which have met with considerable success overseas and are

being tested in Australia by both customs and quarantine staff (see Section 8.5.1). The latest generation of X-ray machines regarded as best-suited to quarantine detection cost about \$100 000 each. The Review Committee recommends the purchase of 18 machines over two years for airports and mail exchanges, including three mobile units, which are more expensive, for seaports and container depots.

Estimated Cost: \$1 860 000 (over two years, partly cost-recovered)

11.1.2.7 Detector dog teams

The Review Committee acknowledges the success of the detector dog program and has made recommendations for additional resources for this program (see Section 8.5.3). The Review Committee estimates that an additional \$1 million is needed to provide dog teams to cover all shifts at major airports and inspection activities at seaports, mail exchanges and bond stores. However, the Review Committee also recommends that support for the Beagle Brigade be sought in the form of sponsorship from industry as a means of offsetting the cost of the program (see Section 11.1.3).

Estimated Cost: \$1 000 000 per annum from 1998–99 (recurring, cost-recovered)

11.1.2.8 Plant quarantine and diagnostic facilities

The Review Committee recommends that given the impending closure of the Biological and Chemical Research Institute at Rydalmere in Sydney, funding be provided to relocate the plant quarantine station and diagnostic facility on the site of the existing animal quarantine station at Eastern Creek (see Section 10.4.5.2).

Estimated Cost: \$1 000 000 (in 1998–99)

11.1.2.9 Additional human resources, databases and electronic systems

Throughout the Report, the Review Committee makes recommendations on the provision of additional human and other resources to maintain — and where necessary expand — quarantine programs. Areas identified as requiring additional resources include:

- further development of databases and electronic systems (see Section 8.5.2.1),
- the establishment of the Quarantine Development Unit as an ongoing entity (see Section 4.4.5.1); and
- provision of scientific support to trade negotiation initiatives (see Section 5.2).

Estimated Cost: \$400 000 (non-recurring) for database development and \$450 000 per annum (recurring, cost-recovered) for the other initiatives.

11.1.2.10 Risk Analysis Panels

The Review Committee recommends the establishment of Risk Analysis Panels to assess import access requests (see Section 7.4.5.1). Running costs for these panels have been assessed on the basis of the estimated annual cost of attendance for non-government members, plus travel costs.

Estimated Cost: \$150 000 per annum (recurring, cost-recovered)

11.1.2.11 Key Centre for quarantine risk analysis

The Review Committee recommends the establishment of a Key Centre for quarantine-related risk analysis (see Section 7.8). It believes that such a centre could be established with an initial five-year grant, which would be supplemented and gradually replaced by other sources of funds (e.g. external research grants, training and consultancy services). It is estimated that the initial five-year seed funding of the centre would be about \$500 000 per year, a total of \$2 500 000.

Estimated Cost: \$500 000 per annum (five years)

11.1.2.12 Office of the Chief Plant Protection Officer

The Review Committee identified a need for a Commonwealth-funded Chief Plant Protection Officer with a role similar to that of the Chief Veterinary Officer (see Section 9.6.4). A small number of officers will be needed to staff this office. Three or four additional staff should be sufficient to establish and run the office.

Estimated Cost: \$350 000 per annum from 1998–99 (recurring)

11.1.2.13 Onshore and offshore monitoring and surveillance

The Review Committee has recommended that nationally coordinated monitoring and surveillance programs be established both onshore and offshore, and that adequate ongoing funding be provided for these programs (see Section 9.3.2).

Estimated Cost: \$2 000 000 in 1998–99 rising to \$4 000 000 per annum after three years and then recurring.

11.1.2.14 Northern Australia Quarantine Strategy

Significant changes have already been made to Northern Australia Quarantine Strategy following a review in 1995 (Nairn and Muirhead 1995). As a result of that review, Government allocated the program an additional \$14.7 million over four years to enhance research, surveillance and public awareness of quarantine in northern Australia. The Review Committee believes funding for these initiatives, currently about \$7 000 000 per annum, will need to be ongoing, subject to regular analysis of effectiveness (see Section 9.5.1.1). Given that this is not a new initiative, funding for this program is not included in the budgetary requirements discussed in this section.

11.1.2.15 Subsidies for plant and avian quarantine facilities

Both plant and animal quarantine station programs receive subsidies, primarily intended as anti-smuggling incentives. These funds, \$1 000 000 for plant quarantine and \$298 000 for avian facilities, are included in the budget funded CSO allocations for quarantine stations and the Review Committee supports the continued provision of funds for this purpose (see Section 8.13.3 for further discussion on this topic). Given that this is not a new initiative, funding for this program is not included in the budgetary requirements discussed at Section 11.1.2.17.

11.1.2.16 Staff training

Staff training is an area often neglected in favour of operational imperatives, quarantine being no exception. The Review Committee is aware that staff training has suffered and this has been borne out by operational deficiencies noted by the Review Committee during its inspections. The Review Committee is aware that when delivery and inspection services were all under the direct control of States some States accorded a high priority to training. However, some States did not, resulting in large numbers of staff receiving insufficient training to equip them adequately for the range of tasks that they are required to undertake. Activities in need of additional staff training include pest and disease identification, multicultural awareness and the use of electronic information systems. Redundancies as a result of the transfer to the Commonwealth have exacerbated this problem, resulting in high recruitment levels in most States and newly recruited staff in need of induction and technical training. The Review Committee believes that increased levels of training are essential if quarantine services are to maintain the high level of effectiveness for which they have been recognised.

Estimated Cost: \$800 000 per annum (recurring, cost-recovered)

11.1.2.17 Total

On the basis of these estimates, an additional \$6 360 000 is needed for 1997–98 to fund the initiatives recommended by the Review Committee, of which the Review Committee estimates that \$2 200 000 can be cost-recovered. During the succeeding two years, about \$9 000 000 per annum is required, the increase due mainly to large extraordinary items such as the public awareness campaign, establishment of the Key Centre for risk analysis, and the relocation of the plant quarantine station and diagnostic facility to Eastern Creek. Of this amount, the Review Committee estimates that about \$2 800 000 per annum can be cost-recovered. Subject to the continuation of all new recurring programs recommended by the Review Committee, the additional annual expenditure is estimated at \$7 550 000 thereafter, of which \$2 700 000 per annum can be cost-recovered.

The Review Committee does not regard these allocations of funds as extravagant given the importance of quarantine and human, animal and plant health, to the Australian community. The Review Committee is aware that the New Zealand Government has recently allocated a total of NZ\$20 million over a three-year period to New Zealand quarantine authorities for the purchase of X-ray equipment, implementation of a detector dog program and a public awareness campaign. The Review Committee's

recommendations in these areas for Quarantine Australia amount to less than \$10 000 000 over a three-year period.

The net effect on the Commonwealth budget in 1997–98 of \$4 160 000 represents less than an 8% increase in the total 1996–97 budget allocation for quarantine. These additional funds do not even return CSO expenditure to 1993–94 levels in real terms. The level of net funds required after 1997–98, of just under \$5 000 000 per annum from financial year 2000–01 on, effectively maintains recommended Government funding at 1997–98 levels in nominal terms.

Recommendation 106: The Review Committee recommends that the Government increase its commitment to quarantine and quarantine-related activities to reflect community expectations by providing budgetary funding for the resources needed to implement the recommendations of this Review.

11.1.3 Sponsorship

Industry's role in the partnership of quarantine was discussed in Section 11.1.1.3. One aspect of industry participation in quarantine that does not appear to have been explored fully in the past is the sponsorship of quarantine programs. While great care must be taken to ensure that quarantine programs are not compromised by sponsorship activity and that no conflict of interest issues arise, industry participation would not only assist in meeting the cost of quarantine to the community but also reflect industry's acknowledgment of the direct benefits that accrue to it from quarantine programs. One program that appears ideal for the development of such an arrangement is the quarantine detector dog program, which has a high level of public exposure and acceptance. The sponsorship of some or all of the dogs in the program should have appeal to potential sponsors who could be seen to be playing an active part in maintaining Australia's quarantine security. Sponsorship in the form of merchandising rights could also be offered for the Beagle Brigade — the proposed national symbol of quarantine.

Other avenues for sponsorship could be advertising in public awareness programs including school project materials and possibly the Northern Australia Quarantine Strategy where two well-known football identities have already been successfully used in publicity material.

11.2 LEGISLATION

11.2.1 Current Powers and Scope of the Existing Act

Australian quarantine legislation consists of the following elements:

- *Quarantine Act 1908*;
- Regulations (Animal, Plant and General) under the Act; and
- Proclamations (Animal, Plant and General).

All three elements of the legislation have been updated many times in an attempt to keep pace with change — the inevitable result being that the legislative package is now disjointed and, for the most part, difficult to interpret and implement. Further, the Review Committee understands that over the years the *Quarantine Act 1908* has been used as a stop-gap for various activities, such as controls on ballast water discharge, imported food inspection, and (before the introduction of specific wildlife legislation) for some aspects of wildlife protection, usually in conjunction with the *Customs Act 1901*.

Section 4 of the *Quarantine Act 1908* (the Scope), describes quarantine as having 'measures for the inspection, exclusion, detention, observation, segregation, isolation, protection, treatment, sanitary regulation and disinfection of vessels, installations, persons, goods, things, animals, or plants, and having as their object the prevention of the introduction or spread of diseases or pests affecting human beings, animals, or plants'.

Although dated, the Act and subordinate legislation are still very powerful instruments. As an example, Section 2B of the Act empowers the Governor-General to proclaim any part of Australia where there exists a quarantinable disease epidemic or a danger of an epidemic, as being an area subject to quarantine direction by the Minister.

Generally, the Act does not comprehend contemporary quarantine situations and requires amendment as these situations arise. As a principle, such a band-aid approach is unsatisfactory as all it achieves is the specific short-term objective; it does not address the fundamental issue — that is, that the Act and subordinate legislation need to be updated and made relevant to the modern era.

11.2.2 Previous Amendments to Quarantine Legislation

There have been many attempts to update quarantine legislation over the years. Significant updates were undertaken between 1981 to 1984 following the Senate Standing Committee on National Resources' report on the adequacy of quarantine (Senate 1979). With the transfer of responsibility for animal and plant quarantine to the Department of Primary Industry in 1984, approval was given by Government to proceed with the drafting of two new Bills — a Human Quarantine Bill and an Agricultural Quarantine Bill. Work on these Bills progressed slowly between 1985 and 1993, when the then Minister agreed to defer indefinitely further work on the draft Bills. Since then, only essential amendments have been made to the Act, Regulations and Proclamations.

11.2.3 Reviewing the Legislation

It is important that the *Quarantine Act 1908* provides all the powers necessary to maintain Australia's relative freedom from pests and diseases. In examining quarantine legislation, the Review Committee had the benefit of a recently completed report by the Quarantine Development Unit. The Unit was established by the Secretary of the Department of Primary Industries and Energy (DPIE) to review specific aspects of quarantine operations. In mid-1996, it completed a comprehensive review of the 'condition' of the *Quarantine Act 1908*, Regulations and Proclamations. The Unit's report concluded, *inter alia*, that:

- the legislation was in urgent need of major attention;

- the Act should be comprehensively amended rather than continuing to work on shaping an entirely new Bill;
- the existing Regulations should be amended; and
- the Proclamations should be restructured and totally rewritten.

The report examined options for amending the legislation, identified Regulations that need amendment, and provided details of the restructure and amended wording needed.

Concerns related to a number of the deficiencies identified by the Quarantine Development Unit were also conveyed to the Review Committee in submissions and public hearings. Areas identified as needing amendment included sanctions for non-compliance (e.g. on-the-spot fines), the control of progeny from illegal imports, the inclusion of unwanted heritable traits of plants and animals, the registration of premises and their control, the power to order the re-export of goods, the lack of legislative reference to risk analysis, the revocation of permits, the powers for emergency search and related emergency activities, the application of the Act to ballast water, the return of goods seized under search warrant, and the protection of Quarantine Officers from liability. It was also believed important for the legislation to clarify that quarantine authorities do have legal access to all lands, including those in control of indigenous peoples, in the discharge of quarantine responsibilities. Establishment of the Travellers Statement (see Section 8.9.4) as a prescribed document under the Act would also assist in the prosecution of persons making false quarantine declarations.

It is understood that the DPIE Executive Board endorsed the approach recommended by the Quarantine Development Unit and noted that any amendments to the legislation must take into account:

- the requirement to review all Commonwealth legislation that restricts competition (including quarantine) as a result of the Council of Australian Governments' Competition Agreement of April 1995 arising out of the Hilmer Report. (The Review Committee understands that all Commonwealth quarantine legislation is to be reviewed in 1997); and
- the expected commencement of the Commonwealth's Legislative Instruments Bill (which is scheduled for enactment on 1 January 1997), which will require all legal instruments such as quarantine Proclamations and Regulations to be subject to Parliamentary scrutiny and to be recorded on a Commonwealth register.

11.2.4 Revisions following this Review

In keeping with the Executive Board's decision, the Review Committee believes that the day-to-day working tools of quarantine decision making — the Quarantine Proclamations — should be updated as a matter of urgency. In this regard, the Review Committee notes a consultant has been engaged to review the Proclamations, make recommendations, and draft proposed changes.

Furthermore, the Review Committee understands that the consultant has completed the first draft of the revised Proclamations and that these have been presented to senior management. The Proclamations have been consolidated from about 150 into a set of 20. They have been redrafted to make them more relevant, effective and responsive to the contemporary situation, particularly Australia's commitment to the World Trade Organization and the Agreement on the Application of Sanitary and Phytosanitary Measures. It is proposed that there will be attached to these Proclamations, a number of schedules that will list specific pests and diseases of animals and plants. Prohibitions on import, a feature of former Proclamations, have been supplemented by an approved list with a system of permits that will be granted subject to necessary conditions. This approach is consistent with the view expressed by the Review Committee in Section 8.4.3, recommending that seeds for import be covered by an approved list rather than solely the current 'prohibited' list. The consultant's report also makes recommendations on necessary amendments to the *Quarantine Act 1908* and Regulations that will be required to accommodate the changes to the Proclamations. Overall, the proposed amendments suggested by the consultant appear to address the shortcomings and concerns with the current legislation as expressed in submissions to the Review Committee, and also accord with Australia's international obligations and commitments.

Recommendation 107: The Review Committee recommends Quarantine Australia ensure that work on updating the Quarantine Proclamations and Regulations and facilitating their passage through Parliament, continue as a matter of urgency.

11.2.5 Legislative Support

The *Quarantine Act 1908* specifically refers to measures for the prevention of the introduction or spread of pests and diseases. The Act does not appear to preclude the wider coordinating responsibilities for Government quarantine authorities recommended by the Committee.

Chapter 7 (on Risk Analysis) deals with the Review Committee's philosophy of scientific risk analysis comprising risk assessment, risk management and risk communication and sets aside as a misconception, any suggestion of a 'no risk' policy in quarantine. The risk analysis approach together with the concept of a continuum of pre-border, border and post-border quarantine arrangements and the importance of the environment to the community, encapsulates the Review Committee's approach to quarantine policy. It may well be that as a result of the adoption by Government of this Report, some amendments to quarantine legislation will be necessary. Any amendments would be the responsibility of the group established to prepare the enabling Bills and any consequential legislative change.

Recommendation 108: The Review Committee recommends that relevant sections of the *Quarantine Act 1908* be revised as soon as possible to reflect fully the changed scope and focus of quarantine advocated in this Report.

In addition, it will be necessary to draft and enact legislation for the establishment of Quarantine Australia. As discussed in Section 4.5, the Review Committee believes that a task force should be established by DPIE with responsibility for this matter.

The Review Committee is aware of the requirement that all new legislation include a sunset provision for review or termination of that legislation. The Review Committee believes that it is important that the new processes recommended in this Review have time to be implemented, tested and amended where required. This natural process of evaluation, self analysis and revision is easily disrupted and can become disjointed in circumstances of ongoing external reviews.

Recommendation 109: The Review Committee recommends that legislation establishing Quarantine Australia have a sunset clause of 10 years, with a review of its performance in the development and delivery of national quarantine policy and programs to be undertaken within the two years preceding this date.

APPENDIXES

APPENDIX A: SUBMISSIONS RECEIVED

This appendix lists the names of individuals or organisations that provided a submission to the Review. In addition, four confidential submissions were received.

Agriculture Western Australia

Animal and Plant Control Commission of South Australia

Apple and Pear Growers Association of South Australia

AQIS–Industry Cargo Consultative Committee

Associated Birdkeepers of Australia

Association of Avian Veterinarians Australian Committee

ATHMAIZE Producers' Cooperative Association

Austrade

Australasian Mycological Society

Australasian Regional Association of Zoological Parks and Aquaria

Australia New Zealand Food Authority (formerly National Food Authority)

Australian Academy of Science

Australian Apple and Pear Growers' Association

Australian Avocado Growers Federation

Australian Banana Growers' Council

Australian Cane Farmers Association

Australian Chamber of Shipping
Australian Chicken Growers Council
Australian Citrus Growers Federation
Australian Conservation Foundation
Australian Customs Service
Australian Dairy Industry Council
Australian Dried Fruits Association, Australian Table Grape Growers Association, and
Murray Valley Wine Grape Industry Development Committee (Joint Submission)
Australian Egg Industry Association
Australian Entomological Society
Australian Food Council
Australian Horse Council
Australian Horticultural Exporters' Association
Australian International Movers Association
Australian Mushroom Growers Association
Australian Natural Sausage Casings Association
Australian Ostrich Association
Australian Quarantine and Inspection Service
Australian Queen Bee Breeders Association
Australian Recreational and Sport Fishing Confederation
Australian Seed and Propagation Technology Centre
Australian Timber Importers Federation
Australian Vegetable and Potato Growers Federation
Australian Veterinary Association
Australian Weeds Committee
Australian Wheat Board
Barkley, Dr P.
Bureau of Resource Sciences
Bureau of Sugar Experiment Stations
Buxton Red Deer Farm
Canberra Consumers
Canegrowers
Catley, Mr A.
Cattlemen's Union of Australia
Cherry Grower's Association of Western Australia

Coast and Wetlands Society
Cocos (Keeling) Islands Administration of the Department of the Environment, Sport and Territories
Cole Nominees
Commission of the European Communities
Community and Public Sector Union
Conservation Council of South Australia
Cooperative Research Centre for Tropical Plant Pathology
Cooperative Research Centre for Weed Management
Coopers and Lybrand
CSIRO
CSL
Customs Brokers Council of Australia
Cyanamid Websters
Darmody, Dr B.
Defence Coalition Against Rabbit Calicivirus Disease
Department of Finance
Department of Foreign Affairs and Trade
Department of Health and Family Services
Department of Industry, Science and Tourism
Department of the Environment, Sport and Territories
Division of Catchment and Land Management, Victorian Department of Conservation and Natural Resources
Ecological Society of Australia
Embassy of the Republic of Korea
F. and I. Baguley Flower and Plant Growers
Federal Council of Australian Apiarists Associations
Fisheries Environment and Health Committee
Flower Industry Association of Australia
Food and Beverage Importers Association
Gee, Dr W.R.
Gippsland Angus Breeders Association Incorporated
Goble, Dr A.J.
Goldbridge Fallow Deer
Grains Council of Australia

Grigg, Mr J.
Hambley, Mr J.R.
Hamblin, Mr J.
Hamilton Bridges and Associates
Harrison, Mr P.G.
Heritage Seed Curators Association
Hoare, Dr R.J.T.
Howes, Dr D.W.
Ilowski, Mr D.
Importers Association of Australia
Industry Commission
Jenkins, Mr P.T.
Kaye, Mr C.
Maher, Mr K.
Manbuynga ga Rulyapa
Micro Diagnostics
Ministerial Council on Forestry, Fisheries and Aquaculture
Murray Regional Development Board
National Biodiversity Council
National Farmers' Federation
National Racehorse Owners' Association
National Registry of Domestic Animal Pathology
New South Wales Agriculture
New Zealand Apple and Pear Marketing Board
New Zealand Ministry of Forestry
Northern Territory Exporters' Council
Northern Territory Department of Primary Industry and Fisheries
Nursery Industry Association of Australia
Nursery Industry Association of Victoria
Obendorf, Dr D.
Pacific Seeds
Parsonson, Dr I.M.
Philip Morris
Pine Australia

Pork Council of Australia
Primary Industries South Australia
Qantas Airways
Quarantine and Inspection Advisory Council
Queensland Chamber of Commerce and Industry
Queensland Chicken Growers Association
Queensland Conservation Council
Queensland Dairyfarmers' Organisation
Queensland Department of Primary Industries
Queensland Farmers' Federation
Queensland Flower Growers Association
Queensland Fruit and Vegetable Growers
Quinn, Mr N.
Rural and Agricultural Management
SAGRIC
Seed Industry Association of Australia
SGS Australia (Société Général de Surveillance)
Shelton, Dr J.N.
State Forests of New South Wales
Stephen, Mr N.P.
Tasmanian Apple and Pear Growers Association
Tasmanian Department of Primary Industry and Fisheries
Tasmanian Farmers and Graziers Association
Tasmanian Salmonid Growers Association
Taylor, Dr B.
Tenarra
Tender Plus
The Botanical Ark
Thursday Island Nursery and Gardening Service
Toomer, Mr W.F.
Torres Strait Regional Authority
Tourism Council Australia
United States Department of Agriculture
University of Adelaide, Department of Crop Protection

University of Sydney, Department of Agricultural Chemistry and Soil Science

University of Sydney, Faculty of Agriculture

Victorian Certified Seed Potato Growers

Victorian Deer Farmers Association

Victorian Deer Farmers Association — Gippsland Discussion Group

Victorian Deer Farmers Association — Goulburn Valley Group

Victorian Department of Natural Resources and Environment

Victorian Farmers Federation, Pastoral Group

Virus Consultants International

Walsh, Mr D.

Western Australia Farmers Federation

Western Australian Department of Conservation and Land Management

APPENDIX B: RECENT INCURSIONS OF QUARANTINE CONCERN

1 INTRODUCTION

The Australian Quarantine Review Committee commissioned a number of consultancies to provide information on recent incursions of pests and diseases to identify the number and rate of incursions over the past 25 years and to highlight any deficiencies in quarantine policy or procedures over that time. Four reports were commissioned, to cover recent incursions of:

- pests and diseases of animals;
- pests and diseases of forest trees and products;
- pathogens of plants; and
- weeds.

The Review Committee did not commission a report on pests of plants because of the availability of a review of incursions of insect pests undertaken in mid-1996 for the Bureau of Resource Sciences (Clarke in prep.).

1.1 Terms of Reference

The terms of reference for each commissioned report were:

- to document the introduction and establishment of the relevant pests and diseases in Australia from 1971 to 1995 by:

- identifying incursions leading to the establishment of new or formerly exotic organisms during this period;
 - summarising information on the timing, location and extent of spread within Australia;
 - providing details of reference sources of information on each incursion during this period; and
 - tabulating summary information on all such detections and incursions.
- where possible, to identify the probable means of introduction of each incursion:
 - resulting from natural migration or invasion (unrelated to quarantine policy or practice);
 - resulting from inadequate quarantine procedures (e.g. barrier controls); or

- resulting from inadequate quarantine policies (e.g. import protocols).
- to document (as far as possible from existing information) the economic and environmental cost of these incursions, including:
 - costs incurred through reduced production;
 - the cost of control and eradication measures;
 - how these costs were estimated; and
 - details of reference sources of information.

Each report was specifically to:

- exclude:
 - description of each pest or disease or details of its effects;
 - discussion of the life cycle, world distribution, or mode of transmission of each pest or disease;
 - detailed history of the pest or disease in other parts of the world; and
 - any specific recommendations.
- use summary tables where possible and discuss trends by examining incursions detected during each five-year period between 1971 and 1995.

1.2 Objectives

The Review Committee hoped that the commissioned reports would enable it to obtain comparable information on a range of taxa of potential pests and pathogens affecting a broad range of animal and plant species over the past 25 years. Comparable data were sought to enable an assessment of the relative number of pests and pathogens that have been introduced and become established. The Review Committee intended that the commissioned reports would provide information on:

- The number of cases of incursions and establishments

The Review Committee sought information on the number of incursions over the past 25 years so that numbers could be compared, both between sectors (animal and plant) and subsectors (e.g. aquatic animals and companion animals, or grains and horticulture), and with the cost of quarantine services.

- Methods of entry

The Review Committee sought information on the probable means of introduction of each incursion to try to identify the relative proportion of incidents resulting from inadequate quarantine policies, inadequate quarantine procedures, and natural migration or invasion unrelated to quarantine policies or procedures. It was also hoped that such analysis might identify any high risk pathways of entry that quarantine authorities might consider for closer examination in future.

- Costs

The Review Committee sought information on the costs of incursions over the past 25 years so that the magnitude of these costs could be compared, both between sectors (animal and plant) and against the cost of quarantine services.

- Trends

Comparable data were also sought so that the Review Committee could assess whether or not there has been any significant trend in the rate of incursions (either in total or of different types of pests and pathogens) over the past 25 years.

1.3 Interpretation of Data on Introduction and Establishment

For the purpose of this appendix, it is important to distinguish the different types of incidents relating to incursions of exotic pests and diseases. Many incidents involve merely detection of pests and diseases at the quarantine border — either at inspection on arrival or in post-entry quarantine — without multiplication and establishment. For example, Clarke (in prep.) notes that during the period from 1990 to 1994 alone more than 19 300 consignments of imported goods examined by quarantine border staff were found to have insect pests on arrival in Australia. From these, a total of 24 500 specimens were examined. About 10% were definitely known not to occur in Australia, 40% were known to occur in Australia, and for 50% it was not possible to be sure whether or not the pest occurred in Australia (e.g. because identification undertaken was insufficient to determine the precise species involved).

Other incidents involve introductions that were promptly detected and contained, leading to successful eradication. However, other incidents involve introduction and establishment, often with significant multiplication and spread within Australia from the site of the initial introduction.

The data on numbers of introductions and establishments in the commissioned reports and other sources examined by the Review Committee are not always directly comparable because of variations in the way authors have treated 'introduction' and 'establishment'. The Review Committee acknowledges that such data are only a crude indicator for several reasons, including:

- variation in monitoring, surveillance and diagnostic capacity between different host species, between different taxa of pests and pathogens, and over time during the study period;

- difficulties in ensuring comparability in enumerating incursions across different taxa and sectors (e.g. in counting variants such as strains or serotypes consistently as either a single incident or as multiple incidents);
- problems in making appropriate allowance for the emergence of new pests or diseases (or new discovery of host–pest or host–pathogen combinations previously not noticed), both overseas and in Australia;
- comparisons of the apparent number of incursions or establishments do not take into account significant differences between their consequences, which range from no detectable effect to significant spread and damage (either to primary industries or the natural environment);
- comparisons of the apparent number of incursions or establishments do not take into account the huge increases in trade (in terms of both volume and diversity) and travel during the past 25 years.

Australia's endemic pest and disease situation became clearer over the past 25 years with improvements in diagnostic technology — although the improvements have not been uniform across either different taxa of pests and diseases or across different species of hosts. Consequently, animal and plant health authorities have identified more pests and diseases already present in Australia, detected more potential pests and pathogens on entry at the quarantine border, and found evidence of more potential pests and pathogens in post-entry quarantine than previously. Thus apparent numbers of and trends in the number of incursions or establishments need to be interpreted with some care. Despite these difficulties, the Review Committee believes that information summarised in this appendix provides a useful overview — albeit imperfect and of a somewhat preliminary nature — of what is known of the number, rate and effect of incursions of exotic pests and pathogens over the past 25 years.

1.4 Preliminary Nature of the Reports

The Review Committee wishes to stress that the commissioned reports were completed in only a very limited time, so that they provide preliminary information that needs to be subjected to more detailed analysis. Each of the authors and co-authors of the reports recognised the fact that their reports could not be comprehensive and were not able to be subjected to formal peer review during the limited time available during the course of the Review.

The Review Committee commissioned scientists or scientific groups external to the Australian Quarantine and Inspection Service (AQIS) and other parts of the Commonwealth Department of Primary Industries and Energy so that they were produced by scientific experts with no direct links with quarantine policy or procedures. The contracts were issued through the Bureau of Resource Sciences, which the Review Committee anticipates will publish the reports in a discussion paper for future reference. This appendix summarises the main findings of the reports, with a particular focus on the information they provide on the number and rate of incursions, their probable means of entry, and their economic effect. The reports were being finalised as the Review went to

press, and there might be some minor adjustments to numbers shown in tables analysing the incursions and establishments in some reports (e.g. plant pathogens, weeds). Although there may be some minor differences in numbers shown in this appendix and those that finally appear in the finished contracted reviews, these will not have any substantive effect on the conclusions that can be drawn from the reports.

The Review Committee did not commission a report specifically on animal pests (that is, vertebrate or invertebrate animals that establish as pests of the natural environment). However, the report on animal pests and diseases noted that there had been some incursions of animal pest species during the study period (e.g. the Northern Pacific Seastar, *Asterias amurensis*). Similarly, the Review Committee did not commission a report specifically on incursions believed to have resulted from introductions through ballast water and fouling of vessels' hulls (see Section 6.2.1.1 of the Report). However, recent reports are available elsewhere on various aspects of this issue (AQIS 1995, Furlani 1996).

2 ANIMAL PESTS AND DISEASES

The report on animals was completed by Dr A.J. Foreman, a consultant veterinary virologist who is the former head of the diagnostic program at the Australian Animal Health Laboratory. The report examined recent incursions of pests and diseases of animals, including farmed domestic animals (including poultry and bees), pet and recreational animals, free-living and wild animals, zoo animals, and finfish and other aquatic animals.

Although the commissioned report considered incursions of aquatic animals, the lack of readily available and documented information on such incursions has led to an underestimate of numbers of incursions leading to establishment of newly recognised endemic pests and pathogens affecting aquatic animals. Thus no attempt was made to discuss ectoparasites or endoparasites (i.e. external and internal helminths, arthropods and protozoa) of aquatic animals. Similarly, the report noted that there had been a number of such incursions of pathogens of finfish, most of which were discussed under a single heading (on 'agents found in imported ornamental fish'). The report specifically mentions seven species of pathogens and one pest (a snail, *Lymnea columella*) believed to have been introduced with imported ornamental finfish during the study period. In addition, it includes one recently identified disease of shellfish (i.e. bonamiasis) that has probably been present for many years and may be an endemic Australasian species (or even a new endemic genus). The report also included two other recently identified endemic pathogens of finfish (i.e. epizootic haemorrhagic disease and 'red spot disease'). However, it did not consider other pathogens of aquatic animals, including several recently identified viruses of crustaceans (e.g. viruses of prawns) that are probably also endemic species. The report thus underestimates the total number of incursions leading to establishment and newly recognised endemic pests and pathogens affecting aquatic animals. Similarly, the report underestimates the total number of incursions leading to establishment of pathogens of bees by counting several bee viruses as a single incident (on the grounds that not all are known to have significant pathogenic effects).

2.1 Recent Incursions and Other Detections

The report divided the pests and pathogens of animals into six groups:

- recently introduced pests and pathogens;
- pests and pathogens established but not detected before 1971;
- agents associated with human disease;
- pests and pathogens detected in post-entry quarantine;
- recently recognised endemic pests and pathogens; and
- incompletely defined incidents.

2.1.1 Recently introduced pests and pathogens

The report identified 11 incursions of pests and pathogens that have occurred over the past 25 years. Two (Asian honeybee and varroa mite) were the result of natural migration. One (contagious equine metritis) has since been eradicated. One introduction (rabbit calicivirus disease) was deliberate in intent although not in the timing or method of its establishment. In three cases (contagious equine metritis, canine parvovirus and moxidectin-resistant *Ostertagia* spp.) the pests or diseases were new or not anticipated, so that import protocols had not accounted for them. The aquatic incursions (goldfish ulcer disease and Northern Pacific seastar) illustrate two areas that have received much recent attention — imports of ornamental fish and the discharge of ships' ballast water. The method of entry of chalkbrood has not been established definitively. The import of toxigenic *Pasteurella multocida*, resulting in severe atrophic rhinitis, was arguably avoidable — although, at the time, the complex aetiology of atrophic rhinitis was not completely defined nor was the status of Australian pigs with respect to the contributing pathogens. A similar situation existed with equine herpesvirus 1.

2.1.2 Pests and pathogens established but not detected before 1971

The report identified 13 pests or pathogens that have been detected in Australia over the past 25 years but have almost certainly been present for much longer — either continuously or intermittently — but not previously detected. Five of the agents (bluetongue viruses, bovine lentivirus, *Trichinella pseudospiralis*, equine arteritis virus and reticuloendotheliosis virus) do not normally cause disease in Australia, although they are still of importance, particularly with respect to international trade. One of the agents (*Babesia equi*) has probably since disappeared.

2.1.3 Agents associated with human disease

In recent years, a number humans infested or infected with animal pests or pathogens have been detected entering Australia. All but one case involved people transporting an agent from overseas in circumstances that would be difficult or impossible to prevent. The one exception (Japanese encephalitis) is an insect-borne virus that may not have been detected quickly had it not been for the occurrence of human cases of disease. The report did not attempt to identify other human cases of imported pests or diseases that could affect animals (e.g. *Brucella melitensis*, the cause of Malta or Mediterranean fever, and *Taenia saginata*, the pork tapeworm).

2.1.4 Pests and pathogens detected in post-entry quarantine

The report identified 14 incidents with animals in offshore or post-arrival quarantine stations in Australia, or in extended on-farm or zoo post-entry quarantine. Three incidents involved detection of antibody against an exotic disease— and not the presence of disease itself. However, these three incidents had repercussions for trade and illustrate the effectiveness of pre-import testing and the need to review protocol conditions continually. Some findings were fortuitous (e.g. the discovery of ear mites in alpacas and leishmaniasis in a dog in post-entry quarantine), resulting from examination by an alert veterinarian with particular expertise in the condition concerned. Other findings (e.g. African honeybee and screw-worm fly) are examples of border detection by alert quarantine staff.

2.1.5 Recently recognised endemic pests and pathogens

The report identified five diseases that do not represent recent incursions from overseas — equine morbillivirus pneumonia, kangaroo blindness, epizootic haemorrhagic necrosis, 'red spot disease' and chicken anaemia agent (of which the first three have been described only in Australia). They were included because two of them attracted considerable media attention, and at least two of them (equine morbillivirus pneumonia and epizootic haemorrhagic necrosis) had trade implications.

2.1.6 Incompletely defined incidents

The commissioned report identified seven incidents that involved suspected or actual disease that was initially thought to be possibly associated with an incursion of a previously exotic pathogen. It is still not definitely established whether Potomac fever or Lyme disease occur in animals in Australia or whether the serological reactions that have been recorded represent cross-reactions to related agents, possibly of low or no virulence. Viruses have been isolated from cases of ostrich fading syndrome and pilchard deaths, but their role in causing disease has not been established and there was no indication that these agents had been recently imported.

2.1.7 Summary

Table 1 summarises incidents relating to exotic or new pests and diseases of animals between 1971 and 1995. The report identified 64 such incidents and noted trends need to be interpreted with care. Several factors need to be considered in attempting to determine

both the number of incursions (and establishments) and any trends during the study period:

- what constitutes an incursion (e.g. whether or not detection of a new serotype of bluetongue virus counts, given that other serotypes are already present in Australia; or whether four imported cases of human infestations with exotic flies counts as one or four incursions);
- which of the report's six categories are included in the total (e.g. including the 11 recently introduced pests and pathogens, or including these and the five agents associated with human disease, or including both of these categories plus the five recently recognised pests and diseases gives a 'total' of 11, 16 or 21, respectively); and
- the effect of recent improvements in diagnostic methods (e.g. allowing for the first time the detection and identification of pests or pathogens already present in Australia, so that apparent trends in 'incursions' over time need to be interpreted with some care).

Table 1: Summary of exotic or new pest and disease incidents affecting animals from 1971 to 1995

Period	Category						Total
	RE	H	N	ND	ID	Q	
1971–75	2	–	1	3	–	1	7
1976–80	2	–	1	6	–	2	11
1981–85	–	–	–	1	–	1	2
1986–90	2	2	2	3	3	5	17
1991–95	5	3	1	5	4	9	27
Total	11	5	5	18	7	18	64

Key:

RE Recent establishments: pests and pathogens established after recent incursions

H Human agents: pests and pathogens associated with human infection or infestation

N Newly recognised endemic organisms: endemic pests and pathogens described since 1971

ND* New detections: pests and pathogens established but not detected before 1971

ID Incompletely defined incidents

Q Incursions detected in post-entry quarantine

* Note that ND includes repeat incursions of some agents (18 incursions involving 15 different agents)

2.2 Economic Effects

The report identified little documented information on the cost of recent incursions of pests and diseases of animals. Despite the lack of definitive studies, the report indicates that very few incursions have had significant economic effect — in part because of rapid control and eradication of those that might have had the greatest effect if unchecked (e.g. avian influenza, Japanese encephalitis). Some of the more significant costs identified are:

- avian influenza

Four outbreaks of avian influenza occurred in the period under study. The first outbreak was near Melbourne in 1976 and eradication costs amounted to at least \$554 000. The next two outbreaks both occurred near Bendigo. The 1985 outbreak resulted in the slaughter of 111 000 birds and eradication costs of about \$2 200 000. The 1992 outbreak resulted in the destruction of 128 000 birds and 540 000 eggs on four properties, with an estimated cost of about \$1 340 000. The last outbreaks occurred near Lowood in south-eastern Queensland in 1994, and resulted in the slaughter of 20 000 birds and eradication costs of about \$420 000.

- rabies, equine morbillivirus and Japanese encephalitis

Rabies, equine morbillivirus and Japanese encephalitis have each caused the deaths of two people in Australia during the period under study. For equine morbillivirus pneumonia, direct control costs for the initial Brisbane and subsequent Mackay incidents were about \$450 000. Costs were associated with the initial identification and subsequent characterisation of the virus, and further ongoing research to determine the epidemiology of this disease. In addition, significant costs resulted from movement control on horses and consequent suspension of racing programs. For Japanese encephalitis, control costs have included vector control programs and vaccination of people in high risk areas in the Torres Strait region.

- bluetongue

The identification of the presence of bluetongue viruses in Australia led to significant effort to investigate the pathogenicity and epidemiology of each serotype. These investigations were needed to assess risks to Australian livestock and to minimise effects on export trade. Ongoing monitoring and research continues to ensure Australia's preparedness for any outbreak of bluetongue disease and provide certification required to ensure continued access to overseas markets. The commissioned report noted that the cost of such monitoring and research is significant, amounting to almost \$9 million between 1989 and 1991 alone.

3 PATHOGENS OF PLANTS

3.1 Pathogens of Crop, Ornamental and Nursery Plants

The report on recent incursions of plant pathogens was prepared by Dr D. Hanold of the Department of Crop Protection, Waite Campus, University of Adelaide, with input from other staff of the Department. It considered nematodes, fungi, bacteria and phytoplasmas, viruses and viroids of all the major species of crop, ornamental and nursery plants (excluding forest trees).

This report covered probably the broadest range of host species and the largest combination of hosts and agents of the reports commissioned. The authors stressed that the report is not definitive, being compiled in a very short period from mainly published records and personal communication with plant pathologists in New South Wales, the Northern Territory, South Australia and Tasmania.

The report examined 562 incidents involving plant pathogens during the study period — 143 detected in post-entry quarantine and 30 records of occurrences on new host species — representing a total of 389 incursions that led to the establishment of exotic plant pathogens in Australia. The data demonstrated that although the annual rate of incursions leading to establishment is high relative to other taxa of pests and pathogens of animals or plants, there was no significant change in the rate of incursions or establishment of plant pathogens during the study period (see Table 2).

Table 2: Apparent rate of incursion and establishment of plant pathogens between 1971 and 1995

Period	Number of incursions	Number of establishments
1971–75	117	105
1976–80	118	70
1981–85	142	59
1986–90	104	81
1991–95	81	74
Total	562	389

The report attributed a probable route of introduction to 306 (78.5%) of the pathogens that established during the study period — one could not be ascribed to 83 incidents (21.5%). The report concluded that the main routes of introduction appear to be plant materials (160 or 41%) and seeds (132 or 34%). Very few pathogens that established appeared to be associated with imports of whole plants (4 or 1%), imports of tissue culture materials (2 or 0.5%), wind (6 or 1.5%) or soil and other means (2 or 0.5%). The designation 'plant material' includes cuttings, budwood, fruit, leaf waste and dried materials.

When analysed by host, exotic plant pathogens that apparently established in Australia during the study period were most commonly associated with fruits and vegetables (34.5%), nursery plants, ornamentals and flowers (22.5%), legumes (13%) cereals (11%) and other field crops and grasses (11%).

When analysed by type of pathogen, fungi (42%) and viruses and viroids (39%) predominated over bacteria and mycoplasma-like organisms (18%) and nematodes (1%). The report provided some evidence of possible trends in the types of pathogen detected during the study period — there may be a trend towards more detections of viruses and viroids (and fewer of fungi) in recent years. However, these apparent trends may be confounded by factors such as the number of scientists working on different groups of pathogens during the period and different rates in the development and availability of diagnostic tests (e.g. the relatively recent availability of tests for viruses and viroids).

3.2 Forest Pathogens

To ensure that forest pathogens were fully considered, the Review Committee commissioned a report on them as part of the report on forest pests and pathogens. The section in this report that dealt with forest pathogens was prepared by Drs Mark Dudzinski, Ken Old, Gary Johnson and Glen Kile of CSIRO Forestry and Forest Products. The report considered exotic invertebrate pests (insects) that entered Australia between 1971 and 1995 and established on native and naturalised (formerly exotic) trees.

The report noted that some of the most serious forest pathogens rely on insect vectors for transmission over significant distances (e.g. pine wilt nematode and Dutch elm disease). Thus quarantine measures that are effective against insects will also protect against a range of pathogens.

The report could not identify any documented examples of incursions by bacteria, nematodes, viruses or mycoplasma-like organisms that led to the establishment of a disease of forest trees in Australia between 1971 and 1995. Fungi provided the only unequivocal examples of the establishment of exotic pathogens of trees during the study period. Fungi, through their capacity to sporulate and release large numbers of spores into the atmosphere, are particularly well adapted for spread over long distances.

The report noted that in comparison with agriculture or horticulture, incursions of forest pathogens are more difficult to detect because:

- there is an incomplete knowledge of the range of pathogens currently present on woody vegetation in Australia, especially in regard to native forest vegetation;
- although there were many new records for tree diseases between 1971 and 1995, only few could be identified as recent introductions;
- recognition of incursions usually relies on opportunistic discovery;
- even high value plantation forests may only be surveyed irregularly for growth and health, and native forests receive even less attention; and
- diseases are rarely detected before reaching levels at which eradication is usually not feasible.

The report identified nine pathogens that established on forest trees in Australia between 1971 and 1995. All occurred on naturalised (formerly exotic) species of trees and were pathogenic fungi causing foliar diseases (see Table 3).

Table 3: Forest pathogens established in Australia between 1971 and 1995

Period	Pathogen	Date of incursion
1971–75	<i>Melampsora medusae</i>	1972
	<i>Melampsora larici-populina</i>	1973
	<i>Melampsora epitea</i>	1972
	<i>Phaeocryptopus gaeumannii</i>	1974
	<i>Dothistroma septospora</i>	1975
1976–80	<i>Melampsora coleosporioides</i>	1978
	<i>Oidium obductum</i>	1977
1981–85	<i>Marssonina castagnei</i>	1984
1986–90	<i>Marssonina brunnea</i>	1987
1991–95	Nil	–

3.3 Cost of Incursions of Plant Pathogens

The commissioned reports on plant pathogens were able to identify little information on the economic effect of exotic pathogens that established in Australia during the past 25 years. Some information on costs associated with plant pathogens was provided to the Review Committee by AQIS, which prepared a background paper on costs of control and eradication funded through the Standing Committee on Agriculture and Resource Management (SCARM) process between 1977 and 1992. The paper was prepared as input to the deliberations of the SCARM Task Force on Incursion Management (see Section 10.1 of the Report). Approximate costs attributed to joint Commonwealth–State control and eradication of plant pathogens between 1977 and 1992 are shown in Table 4. Although incomplete, these data provide an indication of the costs to governments associated with the control and eradication of incursions of plant pathogens in Australia, excluding losses to producers.

Table 4: Approximate costs attributed to joint Commonwealth–State control and eradication of plant pathogens between 1977 and 1992 (amounts in \$000)

Program	Joint	State
citrus canker (Torres Strait, 1978)	42.2	11.5
citrus canker (Northern Territory, 1978)	17.8	–
black sigatoka (Torres Strait, 1981–85)	18.3	95.0
potato cyst nematode (Western Australia, 1982–92)	295.5	70.0
potato cyst nematode (Victoria, 1991–92)	136.8	165.8
moko disease (Queensland, 1991–92)	19.1	17.5
Total	\$529.7	\$359.8

4 PESTS OF PLANTS

4.1 Pests and Hosts Considered

4.1.1 Crop, Ornamental and Nursery Plants

The Australian Quarantine Review Committee did not commission a report on pests of plants because of the availability of a major review completed in mid-1996 for the Bureau of Resource Sciences by Dr Geoff Clarke of the CSIRO Division of Entomology (Clarke in prep.). This report is a more comprehensive review of insect pests than any of the reports contracted by the Australian Quarantine Review Committee. The report covered insect pests of both animals and plants.

Because it commenced before the establishment of the Australian Quarantine Review Committee, the terms of reference for this report were not the same as for the four reports commissioned specifically for the Review. Its terms of reference were to:

- document the introduction of insects and related arthropods into Australia between 1971 and 1995;
- identify where possible the probable means of introduction;
- document the economic and environmental cost of introduction, including control and eradication measures; and
- provide recommendations for quarantine procedures to minimise future introductions with reference to major potential pests.

4.1.2 Forest Pests

To ensure that forest pests were fully considered, the Review Committee commissioned a report on them as part of the report on forest pests and pathogens. The section in this report that dealt with forest pests was prepared by Drs Fred Neumann and Nick Collett of the Centre for Forest Tree Technology of the Victorian Department of Natural Resources and Environment. Like Dr Clarke's report, the commissioned report focused on insect pests and did not include other taxa (e.g. snails).

The report concluded that during the past 25 years, only two species of forest insect pest have established in Australia, and one spread from Tasmania to mainland Australia:

- the elm bark beetle (*Scolytus multistriatus*), a potential vector of the Dutch elm disease fungus (*Ophiostomas ulmi*) was detected in Melbourne, Victoria, in 1974;
- the elm leaf beetle (*Pyrrhalta luteola*), a severe defoliator of *Ulmus* spp. was detected on the Mornington Peninsula 40 km south of Melbourne in 1989; and
- European wasp (*Vespula germanica*) was first recorded in Tasmania in 1959, but on the mainland in Sydney, New South Wales, not until 1975.

Dr Clarke's review of insect incursions also identified these forest pests, and the first two of these pests are included in the following discussion and tables on pests of plants. For the purposes of this appendix, European wasp is omitted because its initial establishment in Tasmania preceded the study period of 1971 to 1995. To ensure that individual agents are not counted more than once (by being included in more than one of the reports summarised in this appendix), insect pests of animals (i.e. varroa mite and Asian honeybee) included in Dr Clarke's review are also omitted from consideration here, but are included in the section on animal pests and diseases in this appendix.

4.2 Number and Rate of Incursions

Table 5 summarises information on insect pests of plants that established in Australia between 1971 and 1995. The significance of targeted surveillance is shown by the number of detections effected by the Northern Australia Quarantine Strategy (NAQS — see Section 9.5.1.1 of this Report). NAQS commenced in 1989, and detected six 'new' incursions of exotic pests and diseases during surveys of the Torres Strait region in its first two years of operation. Four of these detections occurred during the first NAQS survey in 1990 but were probably not introduced in that year, only first detected then because the NAQS survey specifically looked for potentially significant pests and diseases in that region. The effect of the NAQS detections is illustrated in Table 5, which shows the number of detections of established incursions of plant pests in five-year periods with and without the inclusion of those detected by NAQS.

Table 5: Insect pests (of plants) that established between 1971 and 1995

Period	Number established	
	Total	Excluding NAQS
1971–75	3	3
1976–80	9	9
1981–85	11	11
1986–90	13	9
1991–95	9	7
Total	45	39

In addition, Clarke (in prep.) regards five of the species that established during the study period as 'innocuous', and Table 6 shows the effect on the number of incursions of pests of quarantine concern if these five species are excluded.

Interpretation of trends is problematic with low numbers, as pertain in this case. Clarke analysed the data (including the three incursions excluded here — Asian honeybee, varroa mite and European wasp) and concluded that if the NAQS detections are included, there is a trend towards an increasing rate of incursions that established during the study period. However, analysis after excluding the NAQS detections did not support any change in rate of establishment of exotic insect pests of plants. Clarke concluded that this analysis supports the argument that any apparent increase in the number of exotic insect pests of plants establishing in the past few years is the result of more extensive surveillance (through NAQS). If the five 'innocuous' species are also omitted from the analysis, there is definitely no suggestion of any trend to an increasing rate of incursions of significant insect pests of plants during the study period.

Table 6: Insect pests (of plants) that established between 1971 and 1995, excluding 'innocuous' species

Period	Number established	
	Total	Excluding NAQS
1971–75	3	3
1976–80	9	9
1981–85	9	9
1986–90	12	8
1991–95	7	5
Total	40	34

4.3 Cost of Plant Pests

4.3.1 General

Dr Clarke's review and the commissioned report on forest pests were able to identify little information on the economic effect of plant pests that established in Australia during the past 25 years. Dr Clarke's review provides detailed estimates of the potential cost of recently established insect pests based on a series of assumptions including their establishment across the full geographical range of their preferred host species and cause a specific percentage loss in crop volume and value depending on their pest status (Clarke in prep.). Such calculations result in estimates of quite significant potential annual costs from both control costs and losses from decreased production (e.g. some \$750 000 and \$4.7 million, respectively, for all of the incursions considered). Calculations based on the sort of assumptions used by Dr Clarke tend to over-estimate the real cost because pests rarely behave as the assumptions imply (e.g. spreading across the full range of their host species). Thus estimates based on such assumptions need to be interpreted with some care — at best they provide an approximate figure that is likely to be an upper limit, and they should not be quoted out of context without reference to the underlying assumptions.

Additional information on costs associated with plant pathogens was provided to the Review Committee by AQIS, which prepared a background paper on costs of plant pest and disease control and eradication funded through the SCARM process between 1977 and 1992. The paper was prepared as input to the deliberations of the SCARM Task Force on Incursion Management (see Section 10.1 of the Report). Approximate costs attributed to joint Commonwealth–State control and eradication of plant pests between 1977 and 1992 are shown in Table 7. Note that the table includes snails, which were not otherwise specifically considered in Clarke's review (which focused on insect pests) and other sources examined by the Review Committee. Although incomplete, these data provide an indication of the costs to governments alone for the control and eradication of incursions of plant pathogens in Australia. The major additional expected cost since then is of the \$55 million anticipated expenditure for the control and expected eradication of papaya fruit fly.

Table 7: Approximate costs attributed to joint Commonwealth–State control and eradication of plant pests between 1977 and 1992 (amounts in \$000)

Program	Joint	State
giant African snail (Queensland, 1977)	6.5	7.6
green snail (Western Australia, 1981–89)	476.1	138.9
warehouse beetle (New South Wales, 1978–82)	991.5	–
Total	\$1474.1	\$146.5

4.3.2 Forest pest costs

The commissioned report on forest pests could not identify any detailed reviews of the economic effect of these pests. The report provides only an incomplete indication of the scale of their effect in that:

- control programs against elm bark beetle have cost some rural municipalities about \$5000 a year;
- research on the distribution, ecology and control of the elm leaf beetle since 1990 has cost about \$55 000 a year, and annual control costs vary from \$29 200 to \$180 000 per affected municipality, depending on the number of trees that need treatment; and
- continuing control measures against European wasp cost about \$644 000 in 1989 alone.

5 WEEDS

The report on weeds was compiled by a team convened by the Cooperative Research Centre for Weed Management Systems, which is based at the Waite Campus of the University of Adelaide. The team was convened by Dr Richard Groves of CSIRO Division of Plant Industry and the Cooperative Research Centre.

The report considered 'weeds' in its broadest sense, including terrestrial and aquatic plants that are regarded as weeds from both the agricultural and environmental aspects. It included weeds in all Australian ecosystems, from temperate to tropical.

5.1 Number and Rate of Incursions

The commissioned report concluded that at least 290 exotic species of plants have become naturalised in Australia over the past 25 years, and that there is a trend for an increasing number of naturalisations when considered in five-year periods during the study period. However, because plants may be present for some time before they are recognised as weeds, many species that have been recorded as naturalised during the study period were probably introduced before 1970. Invasive plants rarely spread as rapidly as pathogens or even insect pests, and most are localised and may remain so for many years. Thus the apparent increase in the rate of naturalisation may not necessarily bear a direct relationship to the number of species introduced and established during the past 25 years.

Species that have become naturalised represent a wide range of plant families — with the Asteraceae, Fabaceae, Iridaceae, Poaceae, Cyperaceae and Salicaceae being the main families represented. Asteraceae, Fabaceae and Poaceae are among the most commonly represented families in the weed flora of most regions, but the Iridaceae and the Salicaceae are significant additions.

The report noted that although most early weeds in Australia came from Europe (particularly northern Europe) there has been a gradual shift in the countries of origin of Australian weeds. This change is most clearly reflected in the weed flora of two Australian States — that of Queensland, in which weeds of American origin have become proportionally more significant recently, and that of South Australia, in which plants originating in the Mediterranean region have become the major group of weeds. For the 87% of cases where the country of origin is known, the report concluded that major sources of plants naturalised in Australia since 1971 were the Americas (25%), Europe (24%) and Africa (23%).

The data available suggest that there may be a trend towards an increasing rate of establishment of weeds over the past 25 years (see Table 8).

Table 8: Number of plants naturalised in Australia between 1971 and 1995

Period	Number naturalised
1971–75	39
1976–80	37
1981–85	70
1986–90	59
1991–95	85
Total	290

5.2 Probable Means of Introduction

Although it is often considered that most weeds are introduced accidentally (and usually as contaminants of imported crop or pasture seed), the report concluded that — based on the data available — most weeds have been introduced deliberately as plants for horticultural purposes. Only when they 'escape' from home or botanic gardens do they become naturalised and a problem as weeds.

The report ascribed a means of introduction for all but about 20% of all species naturalised over the past 25 years. Of those species for which information on means of introduction was available, most had been introduced deliberately, with 65% of the total having been introduced as ornamental plants for horticulture and only 7% for agricultural purposes. The number of species introduced as seed contaminants was low (2%). Few plant species introduced to Australia resulted from natural migration or invasion. For the South Australia flora, Kloot (1984) claimed that about 10% of the total number of plant species could have arrived by a process of long-distance dispersal. Such 'cosmopolitan' species (now regarded as 'native') may have arrived naturally in Australia in prehistoric times and over millennia. Such a group of species seem to be associated particularly with aquatic environments — seashores or wetlands — and could have been brought here by

migratory birds. The report found no documented evidence of examples of this means of introduction, and concluded that it is probably not of significance over the past 25 years.

The report's findings are consistent with other studies undertaken in Australia. For example, Kloot (1987) concluded that of 904 naturalised plant species in South Australia, 515 were intentionally introduced, 214 were unintentionally introduced, and no information was available for 175 species. Of the intentionally introduced species, 359 (about 40% of the total number of naturalised species) were ornamental species introduced for horticulture. Other categories of intentionally introduced species included those introduced as fodder plants, for culinary purposes, as hedges, and for medicinal purposes. Among the unintentionally introduced categories were those 'attached to stock', as contaminated seed, ballast plants, contaminated footwear, and contaminated fodder. Similarly, Carr (1993) estimated that as much as 65–70% of the 1221 naturalised introduced taxa in Victoria had been deliberately introduced. Within this group, Carr drew attention to the predominance of environmental weeds currently available in the nursery trade, often as highly popular garden plants. Several submissions to the Review also noted work on the weediness of species imported as pasture plants for grazing livestock in Australia. For example, Lonsdale (1994) reviewed exotic pasture species introduced into northern Australia between 1947 and 1985. Of the 474 species introduced during this period, only 21 (4%) were subsequently recommended for use, but 71 (15%) became recognised weeds and only 4 (0.8%) did not become weeds in any location and could be regarded as unconditionally useful.

5.3 Cost of Weed Incursions

The economic cost of weeds comprise both direct and indirect costs. Most weeds also have some perceived positive values or benefits that are occasionally assessable (e.g. their value in herbal medicine or their contribution to the honey industry). Although there have been some previous attempts to estimate the costs of certain major individual weeds, there has been only one attempt to assess the overall cost of weeds to the Australian community. Combellack (1989) estimated that the total annual cost of weeds was more than \$3000 million, including crop and pasture weeds but not the so-called environmental weeds. The indirect costs of the latter group are more difficult to estimate and little economic information is available for them.

The report concluded that it is an almost impossible task to assign even direct costs to most of the recently naturalised species, and noted that in 98% of all cases information is not available for the cost of individual species to Australia. The report considered three instances of species where some costs to Australia are available:

- *Chromolaena odorata*

The most economically significant recent naturalisation is probably the weedy form of *Chromolaena odorata* (Siam weed). Since it was inadvertently discovered near Tully in northern coastal Queensland in 1994, direct control costs to governments have amounted to about \$460 000. This weedy form of *Chromolaena odorata* is thought to have been introduced accidentally in the early 1970s as a contaminant of pasture seed. The plant is a major weed that hitherto has not been known to occur in Australia, although it occurs in Indonesia, the Philippines and Papua New Guinea. Before its recent discovery in northern Queensland, Australia funded (through the Australian Centre for International Agricultural Research) a four-year research program on biological control of this weed in South-East Asia at a cost of just under \$500 000.

- *Kochia scoparia*

The species *Kochia scoparia* is a variable taxon. One form of the species, *K. scoparia* var. *trichophylla*, has been grown as an ornamental plant in Australia for many years and apparently has never become weedy. However, in 1990 the weedy form of this species, *K. scoparia* var. *scoparia*, was deliberately introduced from the United States to Western Australia as a forage plant suitable for salinised soils. By early 1992, the weedy form had begun spreading from sites where it had been sown and efforts commenced to eradicate it from Western Australia. The eradication program has incurred a direct cost of \$50 000 and still has one year to run. More recently, a second incursion of the weedy form has been reported in northern Tasmania after introduction as an impurity in carrot seed.

- Parasitic weeds

Costs of incursions of certain parasitic weeds may be considerable. For example, *Cuscuta campestris* continues to be repeatedly introduced as a contaminant of seed of various spices, especially sweet basil. Seed of *C. campestris* may be present in spice seed at a level below that likely to be detected using International Seed Testing Association's protocols. Seed of *C. campestris* has been found at least three times in individual seed imports to South Australia over the past 25 years (in 1981, 1988 and 1990). Although the latter two incursions were detected rapidly and involved only trivial costs (less than \$1000), the 1981 incursion has already resulted in direct costs (for eradication, compensation paid to the landowner, surveys and ongoing inspections) of at least \$600 000 to date, and the program continues, with the species last found near Keith in 1993.

5.4 Discussion and Conclusions

The commissioned report examined changes in the rate of naturalisation of plant species in Australia over the past 25 years, and concluded that:

- at least 290 species of plants are known to have naturalised since 1971;
- the apparent annual rate of naturalisation has increased for the period 1981–95;

- those species that have naturalised originate equally in Africa, the Americas and Europe;
- most recently naturalised species are still only locally distributed;
- most of the recently naturalised species have been introduced deliberately and usually legally;
- the direct costs of these recent incursions are known in only few instances; and
- the environmental costs of these recent incursions are unknown and little studied.

The report notes the existence of weedy and non-weedy genotypes in some species such as *Chromolaena odorata* and *Kochia scoparia*. The proportion of new introductions that are different genotypes of the same species already in Australia is unknown — they comprise another (and significant) component of the total number of introductions. The report concludes that the number of species known to have naturalised is probably only a small proportion of the total number of introductions over the past 25 years.

6 CONCLUSIONS

Major conclusions arising from the contracted reports and other information summarised in this appendix are that:

- the number of incursions leading to the establishment of pests and diseases in Australia is more than 10 times greater for plants than for animals;
- there is little or no evidence for an increased rate of incursions leading to the establishment of pests and diseases of animals or plants over the past 25 years — although weeds appear to show an increasing rate of incursions over recent years;
- targeted monitoring and surveillance programs such as NAQS lead to demonstrable increases in both the number of detections and the rapidity of detection after incursions occur;
- there are significant gaps in knowledge of both the date and means of introduction of pest and disease incursions; and
- there has been very little investigation of the economic consequences of recent incursions of exotic pests and diseases affecting animals or plants, particularly in terms of their effect on the natural environment.

APPENDIX C: INTERNATIONAL OBLIGATIONS RELEVANT TO QUARANTINE

Several international agreements to which Australia is a signatory are relevant to human, animal and plant quarantine. This appendix provides short background summaries for those agreements most commonly referred to as influencing Australia's quarantine policies and obligations.

1 THE WORLD TRADE ORGANIZATION AND ITS SUBSIDIARY AGREEMENTS

The Uruguay Round of the General Agreement on Tariffs and Trade culminated in the formation in January 1995 of the World Trade Organization (WTO). The WTO's role and scope is defined in an agreement, of which two annexes have particular relevance to quarantine — the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement); and the Agreement on Technical Barriers to Trade (TBT Agreement). At the end of July 1996, 123 countries were members of WTO.

The following summaries of the SPS and TBT Agreements are drawn from the actual text, but the full text of the agreements should be consulted for detailed and definitive information.

1.1 The Agreement on the Application of Sanitary and Phytosanitary Measures

The SPS Agreement defines the basic rights and obligations of member countries with respect to taking 'sanitary and phytosanitary measures' to protect human, animal or plant life or health. Members shall ensure their measures are based on an assessment of the risks to human, animal or plant life or health, 'taking into account risk assessment techniques developed by the relevant international organizations' — that is, the Office of International Epizootics (OIE) for animals and the International Plant Protection Convention (IPPC) for plants.

The SPS Agreement defines nine principles governing sanitary and phytosanitary measures that may affect international trade:

- Basic rights and obligations (Article 2)

Members 'have the right to take sanitary and phytosanitary measures necessary for the protection of human, animal or plant life or health', provided that such measures are 'not inconsistent with' the agreement. Members shall ensure that any measure 'is applied only to the extent necessary to protect human, animal or plant life or health, is based on scientific principles and is not maintained without sufficient scientific evidence' — except where 'relevant scientific evidence is insufficient' (in which case members 'shall seek to obtain the additional information necessary for a more objective assessment of risk and review the sanitary or phytosanitary measure accordingly within a reasonable period of time', as provided in Article 5, on risk assessment). In addition, 'Members shall ensure

that their sanitary and phytosanitary measures do not arbitrarily or unjustifiably discriminate between Members where identical or similar conditions prevail, including between their own territory and that of other Members. Sanitary and phytosanitary measures shall not be applied in a manner which would constitute a disguised restriction on international trade'.

- Harmonisation (Article 3)

Members 'shall base their sanitary and phytosanitary measures on international standards, guidelines or recommendations' but 'may introduce or maintain sanitary or phytosanitary measures which result in a higher level of sanitary and phytosanitary protection ... if there is a scientific justification, or as a consequence of the level of sanitary or phytosanitary protection a Member determines to be appropriate in accordance with the relevant provisions of paragraphs 1 through 8 of Article 5' (on risk assessment).

- Equivalence (Article 4)

Members 'shall accept the sanitary or phytosanitary measures of other Members as equivalent, even if these measures differ from their own or from those used by other Members trading in the same product, if the exporting Member objectively demonstrates ... that its measures achieve the importing Member's appropriate level of sanitary or phytosanitary protection'.

- Risk assessment (Article 5)

Article 5 (entitled 'assessment of risk and determination of the appropriate level of sanitary and phytosanitary protection') outlines Members' obligations with respect to risk assessment. 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 organizations'. Members shall take into account relevant scientific evidence and relevant economic factors, and 'when determining the appropriate level of sanitary or phytosanitary protection, take into account the objective of minimizing negative trade effects'. In addition, to help achieve 'consistency in the application of the concept of appropriate level of sanitary or phytosanitary protection against risks to human life or health or to animal and plant life or health, each Member shall avoid arbitrary or unjustifiable distinctions in the levels it considers to be appropriate in different situations, if such distinctions result in discrimination or a disguised restriction on international trade'. Members shall ensure that 'measures are not more trade-restrictive than required to achieve their appropriate level of sanitary or phytosanitary protection, taking into account technical and economic feasibility'.

'In the assessment of risks, Members shall take into account available scientific evidence; relevant processes and production methods; relevant inspection, sampling and test methods; prevalence of specific diseases or pests; existence of pest- or disease-free areas; relevant ecological and environmental conditions; and quarantine or other treatment'. In addition, 'in assessing the risk to animal or plant

life or health and determining the measure to be applied for achieving the appropriate level of sanitary or phytosanitary protection from such risk, Members shall take into account as relevant economic factors: the potential damage in terms of lost production or sales in the event of the entry, establishment or spread of a pest or disease; the costs of control or eradication in the territory of the importing Member; and the relative cost-effectiveness of alternative approaches to limiting risks'.

Paragraph 7 of Article 5 states that 'in cases where relevant scientific information is insufficient, a Member may provisionally adopt sanitary or phytosanitary measures on the basis of available pertinent information, including that from the relevant international organizations as well as from sanitary or phytosanitary measures applied by other Members. In such circumstances, Members shall seek to obtain the additional information necessary for a more objective assessment of risk and review the sanitary or phytosanitary measure accordingly within a reasonable period of time'.

- Regionalisation (Article 6)

Article 6 (entitled 'adaptation to regional conditions, including pest- or disease-free areas and areas of low pest or disease prevalence'), outlines Members' obligations with respect to regionalisation. Members 'shall ensure that their sanitary or phytosanitary measures are adapted to the sanitary or phytosanitary characteristics of the area — whether of all of a country, part of a country, or all or parts of several countries — from which the product originated and to which the product is destined'. Members shall 'recognize the concepts of pest- or disease-free areas and areas of low pest or disease prevalence', and 'determination of such areas shall be based on factors such as geography, ecosystems, epidemiological surveillance, and the effectiveness of sanitary or phytosanitary controls'. In addition, 'exporting Members claiming that areas within their territories are pest- or disease-free areas or areas of low pest or disease prevalence shall provide the necessary evidence thereof in order to objectively demonstrate to the importing Member that such areas are, and are likely to remain, pest- or disease-free areas or areas of low pest or disease prevalence, respectively'.

- Transparency (Article 7)

Members 'shall notify changes in their sanitary or phytosanitary measures' and shall provide information on them promptly through a designated 'enquiry point'.

- Control, inspection and approval procedures (Article 8)

Members shall observe specified provisions 'in the operation of control, inspection and approval procedures ... and ensure that their procedures are not inconsistent' with the provisions of this agreement.

- Technical assistance (Article 9)

Members 'agree to facilitate the provision of technical assistance to other Members, especially developing country Members ... to allow such countries to adjust to, and comply with, sanitary or phytosanitary measures necessary to achieve the appropriate level of sanitary or phytosanitary protection in their export markets'. In addition, 'where substantial investments are required in order for an exporting developing country Member to fulfil the sanitary or phytosanitary requirements of an importing Member, the latter shall consider providing such technical assistance as will permit the developing country Member to maintain and expand its market access opportunities for the product involved'.

- Special and differential treatment (Article 10)

Article 10 states that 'in the preparation and application of sanitary and phytosanitary measures, Members shall take account of the special needs of developing country Members, and in particular of the least-developed country Members', including phased introduction of measures where possible. In addition, developing country Members, 'upon request', may be granted 'specified, time-limited exemptions in whole or in part' from obligations under the agreement, 'taking into account their financial, trade and development needs'.

1.2 The Agreement on Technical Barriers to Trade

The TBT Agreement covers food standards that are not related to the protection of human health and safety against risks arising from additives, contaminants, toxins, disease-causing organisms, or diseases carried by animals. It thus encompasses rules intended to provide relevant information and to protect consumers against deception and fraud. Labelling and nutritional requirements come within the scope of the TBT Agreement.

Under the TBT Agreement, members shall ensure that products imported from one country are accorded treatment no less favourable than accorded to like products of national origin and to like products originating in any other country. Members shall also ensure that technical regulations are 'not prepared, adopted or applied with a view to or with the effect of creating unnecessary obstacles to international trade'. Technical regulations shall be no more trade-restrictive than necessary to fulfil a legitimate objective, taking into account the risks non-fulfilment would create. Legitimate objectives specifically include: national security requirements; the prevention of deceptive practices; and the protection of human safety, animal or plant health or safety, or the environment.

2 THE OFFICE INTERNATIONAL DES EPIZOOTIES

The mission of the OIE is to promote international cooperation in research and control of animal diseases, thus improving animal production and human needs. Currently, 139 countries are members of the OIE.

OIE operates to achieve its aim by cooperation among government veterinary services, directed mainly against controlling the important List A and List B Diseases:

List A comprises transmissible diseases which have the potential for very serious and rapid spread, irrespective of national borders, which are of serious socio-economic or public health consequence and which are of major importance in the international trade of animals and animal products (e.g. foot-and-mouth disease); and

List B comprises transmissible diseases that are considered to be of socio-economic and/or public health importance within countries and that are significant in the international trade of animals and animal products (e.g. bovine tuberculosis).

From a trade perspective, accurate animal health information is required for two main purposes:

- import risk analysis; and

export certification of animals and animal products.

An importing country's decision on the risks involved in the importation of animals or animal products will be based on:

- confidence in the capabilities of the exporting country's veterinary services;
- the presence and effectiveness of a monitoring and surveillance system for major diseases and other diseases of particular concern;
- evaluation of the qualitative (and where possible quantitative) disease risk posed; and
- effectiveness of the exporting country's control over movement of animals and animal products between zones and regions of differing disease status within the country, thus preventing disease transmission.

The Commonwealth Chief Veterinary Officer within the Department of Primary Industries and Energy is Australia's permanent member of OIE, representing Australia's interests in this forum. In addition, Australia has been elected by secret ballot to be a member of the OIE's Administrative Commission, which manages the budget and strategic plan and gives guidance to the International Committee on global priorities. Australia is also an elected member of the International Animal Health Code Commission, which develops international technical rules to prevent disease transmission through trade in animals and animal products.

Under the SPS Agreement, OIE is recognised as one of the international organisations responsible for developing the standards, guidelines and recommendations that are accorded the status of reference norms under the Agreement. Accordingly, the work of OIE has assumed significant importance for Australia and other countries that have substantial international trade in agricultural commodities.

OIE's criteria for import risk analysis, including recognition of zoning and regionalisation of diseases, will be highly relevant to the shaping of national practices under the influence of the SPS Agreement.

3 THE INTERNATIONAL PLANT PROTECTION CONVENTION

The IPPC was adopted by the Food and Agriculture Organization (FAO) Conference in 1951 and came into force the following year. It was amended by the FAO Conference in 1979 and the amendments came into force in 1991. In 1996, there were 103 members of the IPPC. The Convention has as one of its main objectives securing common and effective action to prevent the spread and introduction of pests and diseases of plant and plant products and to promote measures for their control.

The IPPC describes the principles of plant quarantine and the relevant actions to be taken by national governments in the implementation of plant quarantine. The IPPC promotes cooperation among countries aimed at preventing the movement of serious pests that could spread through the activities of international trade. The IPPC will provide the rules for harmonisation of trade in plants and their products. Standards work to date has been done by its Regional Plant Protection Organizations.

The Asia–Pacific Plant Protection Commission is an FAO body set up under an Article of the IPPC to promote cooperation in plant quarantine and plant protection in the Asia–Pacific region. It was formed in 1956 and currently has 25 countries as members. Australia was one of the first adherents and has always been active in the work of the Commission. As a result of pressure from Australian and New Zealand, the Commission functions through a system comprising an Executive Committee, Standing Committees and Working Groups. Australia is currently one of three vice-chairs of the Executive Committee and chairs the Pest Risk Analysis Working Group of the Plant Quarantine Standing Committee. Australia is seen within the Commission as the main contributor of technical expertise to its activities. Together with New Zealand, Australia is the prime mover of work within the Commission on harmonisation of plant quarantine as part of the general work programs of FAO and WTO. The Asia Pacific Plant Protection Commission provides a forum for Australia to promote its views on plant quarantine and plant protection internationally.

4 THE CODEX ALIMENTARIUS COMMISSION

The United Nations Joint FAO–World Health Organization (WHO) Codex Alimentarius Commission (Codex) was established in 1962 to guide and promote the elaboration and establishment of definitions and requirements for foods, to assist in their harmonisation, and, in so doing, to facilitate international trade. Membership of Codex includes 146 countries.

Codex has produced 250 commodity standards and more than 40 hygienic and technological codes of practice, evaluated more than 700 food additives and contaminants, and developed more than 3200 maximum residue limits for pesticide–commodity combinations.

The SPS and TBT Agreements have accorded special status to the standards, guidelines and recommendations of Codex as reference points in determining whether food standards and other measures are being used unjustifiably as barriers to trade.

The Codex Contact Point for Australia is located in the Australian Quarantine and Inspection Service (AQIS) and liaises with State government health and agriculture agencies, the food producing industry, agricultural and veterinary chemical producing industries, consumer organisations, food technology research organisations, tertiary institutions, and other relevant groups such as dietitians. In 1993, an AQIS officer was elected to serve as Vice Chairman of the Commission and was re-elected to this position in 1995.

AQIS, in close cooperation with the Australia New Zealand Food Authority, coordinates all of Australia's input to the work of the 33 Codex committees, represents Australia at a range of expert committee meetings, and currently chairs one Working Group (on organic food guidelines). AQIS is particularly active in the work of Codex committees on residues of veterinary drugs in food, pesticide residues, food hygiene, meat hygiene, and fish and fish products. In this regard, Australia has been driving a major policy reform through Codex relating to residue management internationally by proposing member country acceptance of Codex maximum residue limits for imported product where specific country limits do not exist.

In 1991, Australia was chosen by Codex to serve as host country for a new Codex Committee on Food Import and Export Inspection and Certification Systems, which now meets annually in Australia. Sessions of the Committee are attended by representatives from up to 35 countries and 15 international organisations. Australia's policy approach to the Committee reflects the position that it provides the opportunity to harmonise inspection and certification systems internationally, so facilitating Australia's export trade. Australia has placed particular emphasis on the acceptance of quality assurance methods as a basis for achieving regulatory objectives.

5 THE WORLD HEALTH ORGANIZATION

WHO was established in 1946 and at the end of August 1996 had 190 member countries. The objective of the WHO is to attain the highest possible level of health for the world's population.

WHO, *inter alia*, acts as the directing and coordinating authority on international health work; assists governments, upon request, in strengthening national health services; furnishes appropriate technical assistance and, in emergencies, necessary aid; advances work to eradicate epidemic, endemic and other diseases; promotes, in cooperation with other specialised agencies, the improvement of nutrition, housing, sanitation, recreation, economic and working conditions and other aspects of environmental hygiene; proposes conventions, agreements and regulations and makes recommendations with respect to international health matters; establishes and revises, as necessary, international nomenclatures of diseases, of causes of death and of public health practices; standardises diagnostic procedures; and develops, establishes and promotes international standards with respect to food, biological, pharmaceutical and similar products.

6 THE CONVENTION ON BIOLOGICAL DIVERSITY

The Convention on Biological Diversity was negotiated in the lead-up to the United Nations Conference on Environment and Development in June 1992. The Convention's aims are the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources. It entered into force on 29 December 1993 and has been ratified by more than 130 countries. Australia ratified the Convention in June 1993.

Two provisions in Article 8 of the Convention are particularly relevant to quarantine issues:

- '(g) establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity; and
- (h) prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats and species'.

A major outcome of the first Conference of the Parties to the Convention on Biological Diversity, in December 1994, was a decision to initiate a process to 'consider the need for and modalities of a protocol on the safe transfer, handling and use of living modified organisms resulting from biotechnology that may have adverse effects on biodiversity' — a biosafety protocol. Following meetings of experts groups in Cairo (May 1995) and Madrid (July 1995), the second Conference of the Parties in November 1995 agreed to establish an open-ended *ad hoc* group to commence negotiations to develop a protocol on biosafety focusing, in particular, on transboundary movement of any living modified organism resulting from modern biotechnology that may have an adverse effect on the conservation and sustainable use of biological diversity. The negotiating group is seeking to complete its work by 1998.

The outcome of the protocol negotiations could have implications for Australia's animal and plant quarantine arrangements in terms of Australia's international obligations in relation to the safe transfer, handling and use of living modified organisms resulting from modern biotechnology (i.e. genetically modified organisms) that could have adverse environmental effects.

7 THE CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA

The trade in international wildlife has contributed to the decline in the numbers of many species of animals and plants. The scale of over-exploitation for trade led to an international treaty being drawn up to protect wildlife against such over-exploitation and to prevent international trade from threatening species with extinction.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) came into force on 1 July 1975 and now has more than 130 member countries. These countries participate in meeting the requirements of CITES by placing controls on trade in an agreed list of endangered species and by regulating and monitoring trade in others that might become endangered. In Australia, CITES controls are administered under the *Wildlife Protection (Regulation of Exports and Imports) Act 1982* by the Australian Nature Conservation Agency.

8 THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS

The International Convention for the Prevention of Pollution from Ships is the most comprehensive international initiative to regulate and minimise pollution from ships. The Convention deals with all forms of ship-generated marine pollutants, and more than 90% of the world's shipping tonnage is regulated under it. The massive transfer of ballast water and the potential for introductions of organisms could impact adversely on local and regional economies, human health and marine biodiversity. A new Annex on ballast water is being developed under this Convention to set international rules for all shipping.

9 THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

Member States to the United Nations Convention on the Law of the Sea have the general obligation to protect and preserve the marine environment (Article 192). Measures shall include those necessary to 'protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life' (Article 194).

10 SOURCES OF FURTHER INFORMATION

Full texts of the above agreements can be obtained from the Department of Foreign Affairs and Trade or from the Department of the Environment, Sport and Territories. The Department of Foreign Affairs and Trade also maintains a current list of the 103 treaties relating to conservation, the environment and heritage to which Australia is a signatory. A number of these agreements have relevance to Australia in the discharge of its quarantine duties. This extensive list has not been reproduced here, but may be obtained from the Treaties Secretariat of the Department of Foreign Affairs and Trade.

APPENDIX D: INTERNATIONAL STANDARDS IN QUARANTINE RISK ANALYSIS

This appendix provides details of current international developments in quarantine risk analysis. Note that the terms used in this appendix (e.g. pest, pest risk analysis) reflect the usage adopted by the organisations discussed.

1 ANIMALS

1.1 The OIE Animal Health Code

Animal health standards are set and maintained by the Office International des Epizooties (OIE). At the time of the publication of the *International Animal Health Code* (OIE 1992) OIE was still considering import risk analysis and a section on risk analysis has only recently been included in the Code. This appendix is adapted from the Code, including updates published in 1993 and 1994, particularly its Section 1.4 on Risk Analysis (OIE 1994). A prototype code for aquatic animals is available (OIE 1995).

1.2 Import Risk Analysis

The Code's Chapter 1.4.1 on import risk analysis states that 'the principal aim of import risk analysis is to provide importing countries with an objective and defensible method of assessing the risks associated with the importation of animals, animal products, animal genetic material, feedstuffs, biological products and pathological material. The analysis should be transparent in order that the exporting country may be provided with a clear and documented decision on the conditions imposed for importation, or refusal of importation ... Import risk analysis is preferable to a zero risk approach because it provides a more objective decision, and enables Veterinary Administrations to discuss any differences in conclusion which may arise concerning potential risks'.

The Code notes that import risk analysis may involve:

- risk assessment, which may be followed by risk management and risk communication;
- evaluation of veterinary services; and
- zoning and regionalisation of countries.

The Code notes that 'countries requiring to carry out an import risk analysis should design their own methodology for carrying out the exercise ... The analysis should be clearly documented and, if necessary, supported by references to the scientific literature. The information reported to the OIE should be the main source of disease occurrence data for the analysis ... In the event of a decision to refuse the importation of a commodity, or to impose significant constraints on the importation, the importing country should if requested be prepared to justify its decision by providing details of the procedures and results of the import risk analysis exercise to the exporting country' (OIE 1994, pp. 28–28/2).

1.3 Estimation of Risk

The Code states that 'an estimate of the risk associated with the import of a commodity in its usual commercial form is referred to as an unrestricted risk estimate. Because of the multiplicity of disease agents, it may be necessary to carry out multiple risk estimates for any commodity considered for importation ... The unrestricted risk estimate is the product of two probabilities, namely the probability of agent entry and the probability of exposure of susceptible species in the importing country. The probability of agent entry is the probability that at least one animal import unit is infected with the agent' (OIE 1994, p. 28/3–4).

1.4 Probability of Agent Entry

1.4.1 Country factor

For reporting to OIE, individual countries assign each disease into one of several categories of disease prevalence — for example, exceptional, low sporadic, enzootic (endemic) or high. Other countries assess this information in conjunction with an evaluation of the veterinary services of the exporting country, particularly in relation to its monitoring and surveillance systems.

OIE classifies animal diseases that are recognised internationally as being of significant importance to trade as List A diseases. These are diseases that can spread very rapidly and have serious socio-economic or public health consequences. Australia is free of all 15 List A diseases, including:

- African horse sickness (never occurred);
- African swine fever (never occurred);
- bluetongue (eight serotypes of bluetongue virus have been isolated in Australia but are limited to northern, mainly cattle producing areas — clinical disease has not occurred in commercial sheep flocks);
- contagious bovine pleuropneumonia (free since 1973);
- foot-and-mouth disease (free since 1872);
- hog cholera or classical swine fever (free since 1961);
- lumpy skin disease (never occurred);
- Newcastle disease — velogenic and mesogenic types (free since 1932; but lentogenic V4 type was identified in 1966);
- peste des petits ruminants (never occurred);
- Rift Valley fever (never occurred);

- rinderpest (free since 1923);
- sheep pox and goat pox (never occurred);
- swine vesicular disease (never occurred);
- vesicular stomatitis (never occurred); and
- virulent avian influenza or fowl plague (free since June 1995).

OIE also defines a second group of diseases (List B diseases) that are considered to be of socio-economic or public health importance within infected countries and are significant in international trade. Australia is free of a large number of diseases classified as List B diseases. In addition, Australia is free of most OIE List B diseases of aquatic animals, and is also free of many diseases listed by OIE as 'significant' diseases of aquatic animals, as well as a number of other serious but unlisted diseases.

The Food and Agriculture Organization defines a third group of animal diseases that are of socio-economic or sanitary importance at the local level. Details of Australia's status with respect to these and OIE-listed diseases are available in *Animal Health in Australia* annual reports (e.g. Nunn and Thornber 1994).

In the Code, 'the country factor is an estimate of the prevalence of the disease in the exporting country. For List A diseases and some List B diseases, a calculated prevalence is determined as a product of the number of outbreaks that occurred in the previous 12 months, the average herd or flock size, and the average duration of infection, divided by the number of animals in the population ... In the absence of quantitative data, an assigned prevalence is given to the occurrence of List B diseases as reported to the OIE in the categories of exceptional, low sporadic, enzootic (endemic) and high'.

1.4.2 Commodity factor

The commodity factor is an estimate of the probability of the agent being present in or on the commodity at the time of import, and the persistence or survival rate of the agent. Evaluation of the determinants such as the following, if applicable, provides this probability estimate:

- species, age and breed of animal;
- sensitivity of diagnostic tests;
- agent predilection sites;
- ease of agent contamination;

- pH;
- temperature and duration of heat processing;
- temperature and duration of freezing;
- other processing procedures;
- temperature and duration of storage;
- transit temperature and duration; and
- additives and treatments.

1.4.3 Animal import units

The number of animal import units being imported significantly influences the probability of agent entry. A single animal of any species represents one animal import unit for that species. Animal products should be given a kilogram weight equivalence for one animal import unit.

1.5 Probability Of Exposure in the Importing Country

The probability of exposure is the likelihood that the commodity is exposed to animals or humans in the importing country and that agent transmission, infection, disease, and disease spread occur, combined with the likelihood of these events being detected.

Exposure of a particular commodity to animals and humans in such a way as to result in infection of one or more species may depend on a number of factors including:

- the nature of the agent;
- the intended commodity use and distribution;
- presence of potential vectors;
- calendar period of import;
- primary, secondary and intermediate hosts of the agent;
- nature of the commodity;
- human and animal demographics;
- mode of transmission of the disease;
- customs and cultural practices; and
- animal health legislation and compliance.

The importing country should identify the scenarios that could expose animals or humans to the commodity and associated infecting or contaminating agent or agents of concern.

1.6 Risk Management

Options that exist to reduce risk associated with a particular import include:

- choice of the origin of the commodity;
- restricting the destination;
- pre- and post-shipment quarantine, with or without sentinel animals;
- diagnostic testing with tests of estimated validity parameters;
- vaccination;
- processing, maturation and storage for a specified time and temperature; and
- treatments (e.g. heat treatment for a specified time and temperature, use of veterinary drugs, washing of embryos, fumigation of eggs).

The application of a risk reduction option can reduce either the probability of agent entry or the probability of exposure to susceptible animals, or both in the case where more than one risk reduction option is selected.

1.7 Evaluation of Veterinary Services

For the purposes of the Code, every Member Country shall recognise the right of another Member Country to undertake, or request it to undertake, an evaluation of its Veterinary Services where reasons exist concerning trade in animals, animal products, animal genetic material, biological products and animal feedstuffs between the two countries.

The choice of criteria on which evaluation is conducted should be appropriate to the circumstances applying to the countries concerned. Criteria should be relevant to the type of the trade involved, the animal production systems in the respective countries, the difference in animal health status and veterinary public health standards between the countries and other factors that relate to the overall risk assessment.

1.8 Zoning and Regionalisation

The Code recognises five types of zones: disease-free without vaccination; surveillance; disease-free with vaccination; buffer and infected.

1.8.1 Disease-free zone without vaccination

A disease-free zone can be established in a country where a disease is still present. Suspected outbreaks of a disease should be immediately investigated. If necessary, the zone should be separated from the rest of the country and from infected neighbouring countries by a surveillance zone. Import from infected areas into the zone can only be undertaken under strict control.

1.8.2 Surveillance zone

A surveillance zone must have certain minimum dimensions. Vaccinations are not permitted and animal movements must be controlled. Import from infected areas into the zone can only be undertaken under strict control. Any outbreaks of disease in the zone must be eliminated.

1.8.3 Disease-free zone with vaccination

A disease-free zone with vaccination is only applicable for certain diseases. Such a zone can be developed in a country that is free of disease, but where it is considered prudent to apply vaccination because of the threat from outside, or in an already infected country. Animals imported into the zone must be tested for the infection, and then vaccinated and marked with a recognisable permanent mark before entering the zone.

1.8.4 Buffer zone

A buffer zone is a zone where the animals are systematically vaccinated for the protection of a disease-free country or zone. Vaccinated animals should have a recognisable permanent mark and there must be strict control over animal movements.

1.8.5 Infected zone

An infected zone is a zone where the disease is present in an otherwise disease-free country. A surveillance zone will separate the infected zone from the rest of the country. Four alternative controls over animal movements from the zone can be considered:

- no live animals may leave the zone;
- animals can be moved by mechanical transport to a special abattoir located in the surveillance zone for immediate slaughter;
- exceptionally, live animals can enter the surveillance zone under controls that include testing for freedom from infection; or
- live animals can leave the infected zone if the epidemiological conditions are such that disease transmission can not occur.

2 PLANTS

2.1 IPPC Standards for Phytosanitary Measures

The International Plant Protection Convention (IPPC) is the key international organisation covering phytosanitary measures. In the import regulations section of the International Standards for Phytosanitary Measures, draft standards have been prepared covering guidelines for pest risk analysis. The following section provides a summary of these drafts (IPPC 1995, IPPC in prep.).

Note that in IPPC usage, 'pest' is defined broadly as 'any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products' — equivalent to the use of 'pest and disease' in this Report. Similarly, IPPC uses the term 'pest risk analysis' as an alternative to import risk analysis.

IPPC defines three stages in pest risk analysis:

- initiating the process for analysing risk;
- assessing pest risk; and
- managing pest risk.

Initiating the process involves identifying the pests and pathways for which the analysis is needed. Pest risk assessment determines whether each pest identified, is a quarantine pest, characterised in terms of the likelihood of entry, establishment, spread and economic importance. The area for which the analysis applies is usually a country, but it can also be an area within a country or an area covering all or parts of several countries.

2.2 Initiating the Pest Risk Analysis Process

Initiation points for a pest risk analysis are generally the identification of a pathway (usually an imported commodity) and the identification of a pest that may qualify as a quarantine pest. The identification of a pathway will most frequently arise when international trade is initiated in a new commodity or from a new region. Other situations that are likely to force a new risk analysis include:

- imports for research;
- identification of a new pathway (e.g. mail, garbage, tourism);
- a decision to revise current arrangements is made; and
- a new process or new information that affects a previous decision.

If no potential quarantine pests are identified as likely to follow the pathway, the risk analysis stops at this point.

The requirement for a new risk analysis may also originate from considerations related to a specific pest. A number of reasons might necessitate this, including:

- the discovery of an established infestation;
- identification of a new pest;
- spread of a pest to an area previously free of the pest;
- reports that a pest is more damaging than previously thought;
- receipt of a request to import a pest (e.g. by university researchers); and
- demonstration in audit of imports that a particular pest is being continually intercepted.

2.3 Pest Risk Assessment

After the pests have been identified, they should then be examined according to whether or not they satisfy criteria for a quarantine pest. This involves assessing whether a pest is of potential economic importance to the area under potential threat, or is present but not widely distributed there and is being officially controlled. An endangered area has ecological factors that favour the establishment of a pest that if present in the area would result in an economically important loss. The risk analysis considers all aspects of the pest, including information about its geographical distribution, biology and direct economic importance. Of course, assessments may be limited by the amount of information about each pest.

2.4 Geographical and Regulatory Criteria

If the pest is present in the threatened area and has reached its ecological limit, then the risk analysis stops. However, if it is present but has not yet reached its limit, and is under official control, the analysis continues. If the pest is not under official control, it does not meet the criteria of a quarantine pest.

2.5 Economic Importance Criteria

Under these criteria, the risk of a pest (having entered) becoming established and spreading must be characterised. In looking at the establishment potential the following should be considered:

- availability, quantity and distribution of hosts;
- environmental suitability;
- potential for adaptation of the pest;

- reproductive strategy of the pest; and
- method of pest survival.

The potential spread of the pest after establishment should be estimated on receipt of biological information from an area where the pest already occurs. Factors that can be taken into account are:

- suitability of the natural or managed environment for natural spread;
- movement with commodities or conveyances;
- intended use of the commodity;
- potential vectors of the pest; and
- potential natural enemies of the pest.

To determine whether the pest is of potential economic importance in the area, factors that can be considered are:

- type of damage;
- crop losses;
- loss of export markets;
- increases in control costs;
- effects of current pest management programs;
- environmental damage;
- capacity to act as a vector for other pests; and
- perceived social costs such as unemployment.

2.6 Introduction Potential

The introduction potential depends on the pathways from the exporting country to the destination, and the frequency and quantity of pests associated with them. Factors that may affect entry include:

- opportunity for contamination;
- survival of pests during transport;
- the ease of detecting the pest on arrival;

- the frequency and quantity of the pest moving in by natural means; and
- the frequency and number of people entering the country from another country.

Establishment factors include:

- the number and frequency of consignments of the product;
- the number of individuals of a given pest associated with the means of conveyance;
- the intended use of the commodity; and
- environmental conditions and availability of hosts in the threatened area.

2.7 Pest Risk Management

The IPPC Reference Standard defines 16 principles of plant quarantine as related to international trade, and considers the first six as 'general' principles and the remainder as 'specific' (IPPC 1995). The general principles 'should be read as a single entity and not interpreted individually' and the specific principles 'either support the IPPC or are related to particular procedures within the plant quarantine system'. The IPPC's principles are:

- Sovereignty

'With the aim of preventing the introduction of quarantine pests into their territories, it is recognised that countries may exercise the sovereign right to utilise phytosanitary measures to regulate the entry of plants and plant products and other materials capable of harbouring plant pests'.

- Necessity

'Countries shall institute restrictive measures only where such measures are made necessary by phytosanitary considerations, to prevent the introduction of quarantine pests'.

- Minimal impact

'Phytosanitary measures shall be consistent with the pest risk involved, and shall represent the least restrictive measures available which result in the minimum impediment to the international movement of people, commodities and conveyances'.

- Modification

'As conditions change, and as new facts become available, phytosanitary measures shall be modified promptly, either by inclusion of prohibitions, restrictions or requirements necessary for their success, or by removal of those found to be unnecessary'.

- Transparency

'Countries shall publish and disseminate phytosanitary prohibitions, restrictions and requirements and, on request, make available the rationale for such measures'.
- Harmonisation

'Phytosanitary measures shall be based, whenever possible, on international standards, guidelines and recommendations, developed within the framework of the IPPC'.
- Equivalence

'Countries shall recognise as being equivalent those phytosanitary measures that are not identical but which have the same effect'.
- Dispute settlement

'It is preferable that any dispute between two countries regarding phytosanitary measures be resolved at a technical bilateral level. If such a solution cannot be achieved within a reasonable period of time, further action may be undertaken by means of a multilateral settlement system'.
- Cooperation

'Countries shall cooperate to prevent the spread and introduction of quarantine pests, and to promote measures for their official control'.
- Technical authority

'Countries shall provide an official Plant Protection Organization'.
- Risk analysis

'To determine which pests are quarantine pests and the strength of the measures to be taken against them, countries shall use pest risk analysis methods based on biological and economic evidence and, wherever possible, follow procedures developed within the framework of the IPPC'.
- Managed risk

'Because some risk of the introduction of a quarantine pest always exists, countries shall agree to a policy of risk management when formulating phytosanitary measures'.
- Pest-free areas

'Countries shall recognise the status of areas in which a specific pest does not occur. On request, the countries in whose territories the pest-free areas lie shall demonstrate this status based, where available, on procedures developed within the framework of the IPPC'.

- Emergency action

'Countries may, in the face of a new and/or unexpected phytosanitary situation, take immediate emergency measures on the basis of a preliminary pest risk analysis. Such emergency measures shall be temporary in their application, and their validity will be subjected to a detailed pest risk analysis as soon as possible'.

- Notification of non-compliance

'Importing countries shall promptly inform exporting countries of any non-compliance with phytosanitary prohibitions, restrictions or requirements.'

- Non-discrimination

'Phytosanitary measures shall be applied without discrimination between countries of the same phytosanitary status, if such countries can demonstrate that they apply identical or equivalent phytosanitary measures in pest management. In the case of a quarantine pest within a country, measures shall be applied without discrimination between domestic and imported consignments'.

Pest risk management should be proportional to the risk identified in the pest risk assessment. A list of options for reducing risks should be assembled. Examples of factors to be considered are:

- inclusion of pests in lists of prohibited pests;
- phytosanitary inspection and certification before export;
- definition of requirements to be satisfied before export;
- inspection at entry;
- treatment at point of entry, inspection station or, if appropriate, at place of destination;
- detention in post-entry quarantine;
- post-entry measures (restrictions on use of commodity, control measures); and
- prohibition of entry of specific commodities from specific areas.

The efficacy and impacts of various options in reducing risks to an acceptable level should be evaluated by considering factors such as:

- biological effectiveness;
- cost–benefit of the proposed import;
- impact on existing regulations;
- commercial impact;
- social impact;
- phytosanitary policy considerations;
- time taken to implement a new regulation;
- efficacy of option against other quarantinable pests; and
- effect on the natural environment.

Both positive and negative aspects of the options should be specified taking into account that phytosanitary measures shall be consistent with the pest risk involved, and should represent the least restrictive measures available that result in the minimum impediment to the international movement of people, commodities and conveyances.

A pest risk analysis should clearly document the sources of information and the rationale used in reaching its recommended phytosanitary measures. Such documentation is essential in the event of any dispute arising.

APPENDIX E: BORDER PROGRAMS

The Australian Quarantine and Inspection Service (AQIS) divides its quarantine delivery functions into several programs that reflect both operational reality and commodity groupings. Each program is managed by a designated national program manager located in the central office in Canberra. The program manager is responsible for the financial and general management of the program, and in some cases its technical management. In matters of technical management, the policy and operational staff in the Canberra office work together to set and review program policy and operational arrangements. Central to quarantine operational programs are the border functions (which were formerly referred to as 'barrier functions'). This appendix provides a brief outline of these functions.

1 IMPORT CLEARANCE

The Import Clearance Program is the largest of the quarantine operations programs in AQIS. The program includes verification, sampling, inspection and treatment of processed foods, agricultural products, shipping and air containers, imports of biological products, live plants and animals, sawn timber, logs, and mouldings. Under the program, approval is given for treatments and packaging of materials used within containers, premises are registered for treatment, unpacking, processing, inspection and/or storage, and electronic initiatives are developed to facilitate clearance at the border (e.g. the AQIS

Import Management System, AIMS). Once developed, these computer-based initiatives are implemented in daily operations procedures.

In its submission to the Review, AQIS stated that it has grouped the wide range of activities into a single program because this reflects the reality of its cargo clearance operations and the underlying electronic systems upon which the program relies. To achieve the program's objectives, staff are located at all major points of cargo entry throughout Australia. The program operates in circumstances of rapid and continuous change, with an average increase in the number of containers screened for quarantine purposes of about 12% per year between 1990 and 1996.

2 LIVE ANIMAL IMPORTS

The Live Animal Imports Program is concerned with ensuring that animals imported into Australia are not diseased or a source of infection. The program can cover such diverse activities as supervision of pre-embarkation quarantine to inspection of animals on arrival. The program covers all imported animals, including domestic and zoo animals, fish and other aquatic animals, bees, and semen and embryos.

In 1996, 11 veterinarians were employed to carry out a variety of border functions including import clearance for live animals at major ports around Australia. On average, 30% of the time of these officers is devoted to this program.

3 IMPORTED FOOD INSPECTION

Since the proclamation of the *Imported Food Control Act 1992*, all food imported into Australia is liable to inspection, or inspection and analysis under this program. The standards which are applied to imported food are principally those found in the Australian Food Standards Code, as developed by the Australia New Zealand Food Authority under the *National Food Authority Act 1991*. Although AQIS has operational responsibility for the program, the Authority is responsible for developing the food risk analyses and policy for food imports.

The Imported Food Inspection Program is included in this Review because it forms part of the overall border programs. Due to the substantial overlap between this program and the import clearance program, the two are currently being merged in a process described by AQIS as 'harmonisation'. Planning to complete the integration of these programs is well-advanced.

Pending full integration, staff from both quarantine and meat inspection programs are used on food inspection activities.

4 FRESH FRUIT AND VEGETABLES AND CUT FLOWERS

This program is responsible for ensuring the quarantine integrity of imports of fresh fruits, vegetables and cut flowers into Australia. Due to the similarity in operational activities, the program also deals with exports of fresh fruit, vegetables and cut flowers and the provision of appropriate certification to meet international obligations.

AQIS has advised that it does not specifically identify resources in the field to handle the quarantine clearance of these commodities which generally involve information and clearance system processors, permit issuing staff and inspectors at decentralised locations. Inspections of all commercially imported commodities are grouped under the import clearance program, and are charged the same fee for service.

5 BIOLOGICALS

With the exception of a small number of low risk products, all biological substances — whether laboratory, manufacturing or therapeutic products of human, animal, plant or microbiological origin — imported to Australia must be accompanied by a valid permit to import. Quarantine staff engaged on the program assess applications for permits to import biologicals, and issue permits subject to any conditions deemed necessary for the safe importation, use and disposal of these products. The current application rate is about 5000 permits a year.

In addition to assessing applications to import, the unit performs additional functions including providing advice to the general public, scientific bodies and commercial importers, and advice and training to AQIS field and office-based staff, as well as monitoring border performance.

6 TIMBER

All timber and timber products, including timber crates, pallets, dunnage, skids and exposed timber components of shipping containers, are subject to quarantine clearance on arrival. The timber program is responsible for inspection and clearance of all items of timber.

There are 10 broad categories of timber products. These are logs, sawn timber, mouldings, manufactured timber articles from sources other than South-East Asia, manufactured wooden items from South-East Asia, plywood veneer and particle board products, bamboo ware, rattan ware, sawdust and timber components of containers.

7 ELECTRONIC INITIATIVES

The Electronic Initiatives Program is concerned with the development and implementation of computer systems designed to improve the efficiency and reliability of AQIS's import clearance operations. In this regard, AQIS has developed AIMS, which is an innovative and technologically advanced computer system. AIMS is used to screen all incoming cargo for items of quarantine concern. It also allows AQIS to manage the clearance of cargo it targets for quarantine inspection. AIMS is fundamental to the way AQIS screens inbound commercial cargo, and is directly linked to the COMPILER cargo clearance system of the Australian Customs Service (ACS).

8 AIR CARGO CLEARANCE

Air cargo is a specialised and rapidly growing area of imported cargo. Clearance arrangements, including initial screening for items of quarantine risk, are facilitated through the ACS Air Cargo Automation system that is accessed by AQIS.

There has been a rapid expansion of product being imported in this way and this is due at least in part, to the large quantity of material previously carried by Australia Post and now despatched through international air couriers. This has resulted in a significant increase in workload for quarantine staff.

The task of screening this cargo is undertaken by ACS officers who manually screen each air way bill and refer relevant items to AQIS.

9 GENERAL CARGO CLEARANCE

General cargo clearance includes all the specific areas covered under import clearance separately, plus all the remaining imported cargo that does not fit into any one of the separate categories (e.g. machinery, yachts, break bulk cargo).

There are two primary points of entry for cargo — seaports and airports. Many of the cargo clearance issues are common to both. In addition to the clearance of the cargo itself, there are other quarantine concerns with general cargo clearance. The key points are inspection and control of dunnage or packaging, surveillance at points of entry, garbage control (for which primary responsibility rests with the Seaports Program), and vector monitoring (for which primary responsibility rests with the Seaports Program and the Airports Program).

The primary method for screening all imported cargo is via computer systems for which AQIS has links to the ACS electronic systems (i.e. COMPILE, Sea Cargo Automation and Air Cargo Automation). In addition to the screening of the cargo itself, AQIS also screens any timber being imported with the goods and inspection staff undertake surveillance of wharfs and depots to ensure quarantine goods are not moved unless under quarantine direction.

10 AIRPORTS

The Airports Program covers the clearance of international aircraft, passengers, crew and their baggage, at international airports around Australia. All aircraft arriving from overseas are required to land at approved landing places unless special permission to land elsewhere is obtained before arrival. Approved landing places are located in every State in Australia.

10.1 Aircraft Disinsection

Aircraft disinsection involves the treatment of aircraft cabins and holds with an insecticide to destroy insects that are potential exotic pests or vectors of exotic diseases. Aircraft disinsection is carried out in accordance with procedures approved by the Director of Quarantine and under protocols recommended by the World Health Organization (WHO).

Three methods are currently recommended by WHO:

- residual spray treatment of interior surfaces every eight weeks (preferred by WHO);
- pre-embarkation spray followed by a top-of-descent spray; and
- on-arrival treatment prior to the passengers and crew disembarking.

AQIS has advised the Review that these procedures have recently been the subject of review and are expected to be revised later this year. At present every aircraft arriving in Australia from overseas must have the cabins and holds disinsected. This is with the exception of aircraft travelling from New Zealand — these are only required to have their holds disinsected. The procedures require that the cabins, including the lockers, toilets, galleys and flight deck are given a pre-spray before the passengers board. The cabins only receive a further spray at top of descent. Holds are sprayed at the last overseas port just before the doors are closed.

As an alternative, the cabins and holds are treated with a residual insecticide at eight-week intervals. No further spray is required in the cabins, but the holds still require treatment at the last overseas port, but with a smaller amount of insecticide.

10.2 Waste Disposal

Galley waste from overseas aircraft is disposed of under quarantine direction. The methods of disposal most favoured and currently approved are incineration, deep burial or heat treatment.

10.3 Vector Monitoring

AQIS undertakes trapping and identification of mosquitoes around airport perimeters to check for the presence of vectors of human diseases. This is done under the International Health Regulations as part of a WHO-recommended vector monitoring program.

10.4 Quarantine Preclearance of Military Aircraft, Shipping and Cargo

AQIS field staff handle all quarantine matters relating to the transport of personnel and equipment by foreign defence forces wishing to travel to Australia for exercises, and for Australian forces returning from overseas deployments.

Since 1992, quarantine officers have been sent overseas on a full cost-recovery basis, to pre-clear the equipment of foreign military forces at the point of embarkation. Some exercises require a shipload of vehicles and equipment to be cleaned and cleared before departure. The advantages are that the clearance is done offshore thereby minimising risk and that the defence forces can commence exercising immediately on arrival, rather than having to wait for vehicles and equipment to be cleared in often difficult terrain and conditions.

10.5 Pratique (Aircraft)

In accordance with International Health Regulations (Article 35), pratique, or health clearance, must be obtained by all aircraft arriving in Australia from overseas. Pratique is granted to scheduled aircraft at main airports after receipt of a radio message from the captain of the aircraft via the handling agent, advising that there are no sick persons or live animals on board and that disinsection has been undertaken in accordance with AQIS requirements. Aircraft not meeting this requirement are checked on arrival by quarantine officers. Any sick persons on board are interviewed to ascertain if they are likely to be suffering from a quarantinable disease (plague, cholera, yellow fever, typhus fever, leprosy or a viral haemorrhagic fever). Any live animals on board are inspected on arrival by a quarantine officer.

10.6 Travellers Statement

Before entry into Australia, all aircraft passengers are required to declare in writing whether they have been in Central or South America or in Africa during the previous three weeks. If they have, further investigations are undertaken to ascertain if they are required to have a valid international vaccination certificate for yellow fever. Any passenger who does not possess a valid certificate is advised to attend a medical practitioner if he or she develops a fever.

Also included on the form are questions asking the travellers to declare whether or not they have been on a farm or in contact with farm animals in the past thirty days, and a number of

questions on what food or animal or plant material (if anything) they are bringing into Australia.

10.7 Detector Dogs

The Quarantine Detector Dog Program was introduced to counter the threat of items of primary quarantine concern passing undetected through international airports in passengers' baggage. AQIS currently operates fourteen detector dog teams at airports around Australia — five at Sydney airport, two at each of Brisbane, Cairns and Melbourne airports, and one at each of Adelaide, Darwin and Perth airports.

A team consists of a beagle and handler. Each team undertakes eight weeks of training at the National Training Centre at Heathcote, New South Wales. Before being matched with a handler, each dog undergoes a minimum of five weeks of training in scent discrimination. By the end of the course, each dog will successfully respond passively to up to 15 different scents. These range from meat and meat products, fruit, vegetables, plant foliage and cuttings, to eggs, live birds and reptiles.

11 SEAPORTS

The Seaports Program is responsible for the quarantine clearance each year of about 10 000 vessels — plus their crews and passengers — when calling at their first port in Australia. The clearance of cargo from these vessels is dealt with under a separate import clearance program.

All vessels arriving from overseas are required to enter at designated first ports of call unless special permission is obtained to enter elsewhere. There are 60 designated first ports around the Australian coastline. On disembarking, crew members and passengers must complete a Travellers Statement.

Each vessel arriving in Australia for the first time is inspected by AQIS and its details are entered into a computerised risk management system, the Vessel Monitoring System (VMS). If the vessel passes initial inspection without needing remedial work, it is not inspected again until its fourth visit. However, if a vessel fails its initial or any subsequent inspection, it requires three consecutive clear inspections before it is returned to the reduced inspection regime. High risk vessels such as yachts and livestock carriers are inspected at each visit. All AQIS officers have access to VMS and use it to examine the inspection history of any vessel visiting Australian ports.

11.1 Ballast Water

Ballast Water is a sub-program of the seaports program and involves both the development of ballast water management policy and management of related operations. Ships' ballast water has the potential to translocate harmful marine organisms — including human disease agents — into Australia's coastal marine environment from overseas ports and between Australian ports, and the program aims to implement strategies to minimise the risk of such translocations.

11.2 Pratique

All vessels arriving at Australian ports must obtain pratique (health clearance). Pratique is usually granted by a Quarantine Officer after the examination of answers to a questionnaire radioed in by all ships. The questionnaire covers the health of the crew, details of the vessel, presence of any animals on board, previous presence in any port subject to Asian gypsy moth infestation during certain risk periods, and details of the ballast water carried by the vessel.

11.3 Waste Disposal

All waste from overseas vessels is treated as a potential quarantine risk. It must be collected and disposed of in an approved manner — namely incineration, deep burial or heat treatment. Disposal is undertaken by contractors who, in most cases, work under quality assurance arrangements with AQIS.

11.4 Animals on Board Vessels

All animals resident on board vessels (particularly yachts) are subject to strict controls, and their health is monitored regularly. The number of international yachts coming into Australian ports is increasing (reaching some 925–950 in the 1995–96 financial year) with a consequent increase in the threat posed by this form of sea transport.

11.5 Vector Monitoring

Australia implements a WHO mosquito monitoring and breeding program at its ports (International Health Regulations, Article 19). Light traps and carbon dioxide traps are used for detection of adults and water containers are provided for breeding and subsequent identification of larvae.

In relation specifically to Asian gypsy moth, all vessels that have visited a Russian Far East port during certain months within the previous two years and that call at an Australian port with a climate suitable for this moth, must provide a certificate from a competent authority that the vessel is free of eggs of the moth. If this cannot be provided, the vessel is subject to a detailed inspection to ensure it is free from infestation, and a charge is levied for this inspection.

12 MAIL EXCHANGES

The Mail Exchanges Program aims to minimise the risk to human, animal and plant health from the potential introduction of exotic pests and diseases to Australia through the postal system, while facilitating the international movement of mail.

12.1 Screening of International Mail

ACS has 'screeners' located at all international mail exchanges who screen mail based on declarations and intuition, with screening of Letter Class and Other Articles (envelopes and small parcels weighing less than 2 kg) limited to ACS 'target country' lists.

12.2 Private Courier Operations

Australia Post estimates that about 40 private courier companies operate in competition with it on overseas mail operations. The substantial decline in Australia Post receipts of overseas mail is some measure of their market share. Quarantine screening of this material is largely done on the basis of referral of suspect items by ACS.

12.3 Detector Dog Program (Mail Exchanges)

During 1996, a trial was conducted on the use of an 'active' detector dog in the Brisbane mail exchange. This is an 'active' dog, in contrast to the dogs that are trained to be passive for passenger clearance at airports. The trial in Brisbane is proving very successful, with both a high coverage and detection rate. When the handler and detector dog are on duty, all classes of mail are covered. When the trial is completed in late 1996, it is expected that dogs will become a regular operational tool deployed by AQIS in mail exchanges.

13 QUARANTINE STATIONS

13.1 Plant Quarantine Stations

Imported plants and seeds that must be grown in post-entry quarantine are covered by two Programs — the Import Clearance Program, which deals with plants quarantined at private quarantine premises, and the Plant Quarantine Stations Program, which deals with plants and seeds that are quarantined at AQIS-funded government quarantine stations.

All plant and seed imports are initially screened as part of the Import Clearance Program, with only those activities performed at government stations being included in the Plant Quarantine Station Program. The latter program is primarily concerned with the post-arrival quarantine and disease testing of high risk plants (including seeds) in government plant quarantine stations.

Apart from the many small private facilities, the State-run plant quarantine stations at Berrimah (Northern Territory), Eagle Farm (Queensland) and Kingston are working under AQIS Approved Quarantine Directives.

13.2 Animal Quarantine Stations

The Animal Quarantine Stations Program comprises the management and operation of government facilities for the quarantine of imported animals after they have arrived in Australia. The examination and testing of animals for the exclusion of exotic diseases,

both overseas and in Australia, is included in the Import Clearance Program (see Section 1 of this appendix).

AQIS operates five government post-arrival animal quarantine stations:

- Byford — south of Perth;
- Cocos Islands — 2000 km off the coast of Western Australia;
- Eastern Creek — on the western outskirts of Sydney;
- Spotswood — inner Melbourne; and
- Torrens Island — north of Adelaide.

A pilot program for private sector operation of government facilities — the avian program at Torrens Island — was established on 28 January 1996. Conditions for the use of privately operated offshore quarantine station facilities for importing animals were completed by June 1996.

14 NORTHERN AUSTRALIA QUARANTINE STRATEGY

The Northern Australia Quarantine Strategy (NAQS) was established in 1989 following the Lindsay Review of quarantine in Australia (DPIE 1988). In its 1987 interim report, the Lindsay Review pointed out that northern Australia posed a number of special problems for quarantine that were not shared by more southerly regions. The then littoral coastal surveillance program, fully funded by AQIS, was primarily designed as a mechanism for early warning and detection of incursions. The Lindsay Review found that the program was not fully effective in achieving its aims, and that Commonwealth and State resources were not cohesively targeted to areas of greatest threat.

From its inception in 1989 until the end of 1995, NAQS was responsible for the identification and evaluation of quarantine risks in the northern Australia. It was also responsible for the development of cost-effective strategies to minimise the potential for entry of significant pests and diseases through northern Australia.

Following a review of NAQS in 1995 (Nairn and Muirhead 1995), the former Government announced that the scope of the program was to be expanded. This response to the 1995 review and a general reconsideration of the quarantine response capacity in northern Australia — especially the provision of additional funding for a range of activities across the north — provides an opportunity to put in place a consolidated and more cohesive AQIS operation for that region. For this purpose, the north of Australia from Broome to Cairns will now be managed as a single area with day-to-day operational support being located in Cairns because of proximity and transportation links to the Torres Strait and proximity to scientific institutions.

The new enhanced NAQS comprises three elements — scientific, operational, and public awareness. In essence, the major change is that while NAQS will continue to be a scientifically based program (like all other operational programs) it will in future include

all AQIS's operational effort in northern Australia rather than just the surveying and monitoring elements that previously characterised it. Previously, most of the 'border' elements were performed within the other border programs, particularly the Airports and Seaports Programs. The restructured NAQS will bring all of these elements together under a single program.

15 COMPLIANCE

In accordance with its the fraud control policy, Commonwealth agencies are responsible for investigating and prosecuting 'routine or minor' instances of fraud. The working definition of 'routine' fraud encompasses regulatory offences specified in the legislation being administered by individual Commonwealth agencies. As a result, the Australian Federal Police only become involved in investigations where the primary offence has been committed against the *Crimes Act 1914* or other legislation not administered by AQIS.

The core responsibilities of an agency's regulatory activity are therefore the detection of suspected breaches of its administered legislation, the conduct of investigations of suspected breaches, and the promotion of deterrence. Of course, it must be recognised that these activities have to be achieved within a specific resource framework and in accordance with the requirements of the Australian judicial system.

16 PROGRAM EVALUATION

The AQIS evaluation program examines and reports on the technical components of AQIS's performance. Activity of the Program Evaluation Unit is coordinated with other review, assessment and audit processes. Within AQIS, these include the technical review activity of the Quarantine Operations Division and the deterrence and detection role of the Compliance Program.

The internal AQIS evaluation method has program managers responsible, through an evaluation process, for developing strategic plans and for short and medium-term activity under these plans. The Evaluation Unit provides guidance on evaluation methodology and input into the performance monitoring and management aspects. This evaluation method gives ownership of the evaluation results to the program managers. The objective of the process is to ensure that all AQIS programs are evaluated in a three-year to five-year cycle.

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