7 MANAGING BIOSECURITY RISKS

7.1 Introduction

Managing risks, with the ultimate aim of safeguarding Australia's privileged biosecurity status, is the fundamental purpose of Australia's biosecurity arrangements. The arrangements, from their legislative and jurisdictional settings, to systems for inspection, auditing and verification, are all concerned with responding as necessary to biosecurity risks to allow the safe movement of people and goods across the border. This Chapter reviews the way Australia's biosecurity agencies perform their risk management tasks and makes recommendations for improvement.

In the course of the Panel's consultations and in considering the many submissions received, a number of themes concerning shortcomings of current arrangements emerged. The themes have been grouped as follows:

- the balance of risk management activities along the biosecurity continuum;
- the collection, sharing and analysis of information on biosecurity risks;
- the state of information technology systems used to collate, analyse and share this information;
- the skills needed for risk management; and
- research and development to support risk management.

7.2 Current arrangements

7.2.1 Risk management across the continuum

Australia's approach to managing the risk of incursions of exotic pests and diseases is multi-layered, involving complementary measures applied along the biosecurity continuum—at pre-border, border and post-border points.

Pre-border activities seek to prevent biosecurity risks reaching Australia's border. This task involves understanding global risks, working with foreign governments, the private sector (overseas and in Australia) and engaging with travellers about Australia's biosecurity requirements. Specific pre-border

activities include cooperation in multilateral forums, Import Risk Analyses, intelligence gathering and audit activities. Examples of pre-border activities are briefly described in Box 17.

BOX 17 Examples of pre-border activities

The Australian Government's **multilateral efforts** include its participation in international standard-setting organisations. These include the formal frameworks established for animal health (the OIE), food safety (Codex Alimentarius), plant health (the International Plant Protection Convention) and human health (the World Health Organization). This engagement includes meeting strict obligations to notify incursions of emergency pests and diseases, and report endemic status of pests and diseases.

Australia's **intelligence gathering and information sharing** activities involve establishing networks with the biosecurity agencies of trading partners and monitoring and surveillance of other sources of information about global pest and disease status.

A number of **capacity building and joint surveillance** programs conducted with developing countries in the region, such as the South East Asia Foot and Mouth Disease Campaign and a number of capacity building projects including the Australian Fumigation Accreditation Scheme, the Northern Australia Quarantine Strategy, and various other training and awareness raising activities.

AQIS's Offshore Development Unit is responsible for several other specific schemes, such as the Canadian Accredited Timber Scheme, the Ethylene Oxide Offshore Treatment Providers Scheme and the Gamma Irradiation Offshore Treatment Providers Scheme.

Border activities seek to intercept biosecurity risks that present at airports, seaports, mail centres and along Australia's coastline. Border activities include import permit decisions, inspection of passengers, goods, vessels and mail, audit activities and post-arrival quarantine. AQIS's post-arrival quarantine functions for live animals and plants are managed through government and privately operated facilities throughout Australia (see Box 18). These facilities allow monitoring and management of possible biosecurity risks which may not have been addressed prior to importation.

Finally, in the event that a pest or disease of biosecurity risk passes through Australia's pre-border and border measures or arrives naturally, **post-border** arrangements are designed to reduce the chances that the pest or disease will become established in Australia. Examples of post-border activities include Australia's monitoring and surveillance activities for exotic animal and plant pests and diseases, and emergency preparedness and response. Formal national arrangements exist for managing responses to emergency animal and plant pests and diseases, and food safety issues in aquatic and terrestrial environments. Details on these arrangements are available at www.outbreak.gov.au.

BOX 18 Australia's post-arrival quarantine facilities

AQIS operates four post-arrival animal quarantine stations—Eastern Creek (New South Wales), Spotswood (Victoria), Byford (Western Australia) and Torrens Island (South Australia). Dogs and cats represent the most significant proportion of imported animals at the stations in New South Wales, Victoria and Western Australia. Other animals that may be housed at quarantine stations include bees, horses, birds, hatching eggs and ruminants. Three private quarantine stations are approved to handle specific species. Sandown (Victoria) is approved for horses and there are two private hatching egg facilities (Bartter Enterprises and Ingham's).

Post-arrival quarantine for imported laboratory animals (mice, rats and insects) and zoo animals is conducted in specialised privately owned and operated facilities approved by AQIS.

There are two AQIS operated post-arrival plant quarantine stations—at Eastern Creek (New South Wales) and Knoxfield (Victoria). There are also several state government post-arrival plant quarantine stations—Kingston (Tasmania), South Perth (Western Australia), SARDI (South Australia), Berrimah (North Territory), South Johnston and Eagle Farm (Queensland). These provide post-arrival quarantine disease screening of high risk imported plants and seeds for government and private enterprise under compliance agreements with AQIS.

Increased Quarantine Intervention

The Nairn Report recommended that AQIS use risk-based approaches in determining its border inspection priorities. However, in 2001, mandated border inspection targets were implemented as a reaction to a sense of crisis engendered by the United Kingdom foot and mouth disease outbreak. This initiative is referred to as the Increased Quarantine Intervention. The specific targets associated with the Increased Quarantine Intervention are shown in Table 3. In response to the targets, over 1200 staff were recruited by AQIS over a period of four years, along with investment in an additional 46 detector dog teams and 64 x-ray machines.

These targets were based, at best, on a broad assessment of the biosecurity risk arising from foot and mouth disease. They had no particular regard to other threats, did not embody formal risk analysis and have remained unchanged over the subsequent seven years. The targets include a requirement for 81 per cent of all arriving passengers to have their baggage physically inspected, x-rayed or screened by detector dogs at peak arrival times and 100 per cent at non-peak times, regardless of the country of origin or its pest or disease status.

TABLE 3	Increased Quarantine Intervention and effectiveness targets		
IQI program	**Description of activity**	**Intervention target %**	**Effectiveness target %[a]**
Airports Program - passengers	X-ray or physical inspection of incoming passengers, crew and their baggage, conducted at international airports upon arrival into Australia.	81	Higher risk: 87 Risk: 50
Import Clearance Program - air containers	Physical inspection of the external surface of all air cargo containers, conducted at airports as air containers are unloaded from the aircraft.	100	96
Import Clearance Program - sea containers	Physical inspection of the external surface of all shipping containers performed prior to the sea cargo containers leaving the wharf areas on trucks or trains.	100	96
Import Clearance Program - High Volume Low Value cargo	High Volume Low Value air cargo is carried by a small number of express carriers. Inspection regime involves x-ray examination of cargo items at on-site x-ray facilities at the four major international air courier companies.	100	96
International Mail Program	X-ray or detector dog inspection of mail items at Australia Post mail centres that process arriving international mail.	100	Higher risk: 96 Risk: 50
Seaports Program - vessel inspection	Physical inspection of vessels occurs at proclaimed first port of entry when vessel is docked at close to arrival time as practical.	100	96
Seaports Program - passengers	Inspection regime involves x-ray, physical or detector dog examination at proclaimed first port of entry when vessel is docked.	100	Higher risk: 87 Risk: 50

a 'Higher risk' are those items that, if released, would cause the most serious quarantine consequences. Other items that would cause a significant, but lower quarantine consequence, are classified as 'Risk'.

7.2.2 Monitoring and surveillance activities

Historically, Australia had extensive state government networks for animal and plant pest and disease surveillance. However, over the past two decades there has been a reduction in the extent and scope of these surveillance networks in most states.

Monitoring and surveillance for incursions and possible establishment of pests and diseases enables Australia to direct and scale its response strategies. It also provides for the effectiveness of border and pre-border biosecurity arrangements to be assessed. Pest and disease information also allows Australia to support its claims regarding pest and disease status—which is particularly important given the trend towards a 'known not to occur' rather than a 'not known to occur' assurance. For its part, Australia frequently demands equivalent information from its trading partners, particularly when they claim area freedom from pests and diseases which they wish to see recognised in Australia's import decisions.

Domestic pest and disease surveillance can be separated into active and passive activities. Active surveillance involves deliberate, coordinated searching, diagnosis and reporting of pests and diseases. Passive surveillance involves reporting observations by farmers and/or investigations of pest and disease occurrences by private or government veterinarians or agricultural plant specialists.

A number of active monitoring and surveillance programs are managed and coordinated by Animal Health Australia for diseases such as BSE and to confirm continuing freedom from bovine tuberculosis. In comparison, and with the exception of surveillance for a number of fruit fly species, there are few specific programs for plant pests and diseases. The main active plant surveillance activities are incorporated in the Northern Australia Quarantine Strategy (see Box 19).

BOX 19 Northern Australia Quarantine Strategy

The Australian Government is responsible for the Northern Australia Quarantine Strategy which contains pre-border, border and post-border elements. This program conducts quarantine surveillance activities for plant and animal (but not marine) pests and diseases along Australia's northern zones from Broome to Cairns, including Torres Strait—with a 20km inland limit on the conduct of activities. As part of the program collaborative surveys and quarantine capacity building projects have been conducted in Indonesia, East Timor and Papua New Guinea.

The Northern Australia Quarantine Strategy uses sentinel cattle herds in northern Australia to monitor for a number of important animal diseases, including bluetongue virus, surra and screw-worm fly. The herds have recently been expanded with the establishment of a herd in the Northern Territory, complementing those already present in far north Queensland and northern Western Australia. Sampling the new herd for exotic diseases is due to commence in December 2008 at an Arnhem Land property managed through the Indigenous Pastoral Program. This will help to extend AQIS's engagement with indigenous communities, members of which already provide ranger services to enhance border surveillance for exotic pests and diseases.

The information flowing from Australia's animal disease monitoring programs is collated by Animal Health Australia in the National Animal Health Information System. This information is used to support trade in animal commodities and to meet Australia's international animal health reporting obligations. For plant health, a national database (called the National Plant Surveillance Reporting Tool) has recently been developed and will be used for collecting and recording plant surveillance information.

A new initiative, the Australian Biosecurity Information Network, has been developed to share monitoring and surveillance data between jurisdictions. The benefits are still to be realised and will be dependent on the quality of the data supplied by contributing parties.

7.2.3 Risks to the environment

Environmental biosecurity risks relate to pests and diseases in native and introduced flora and fauna, aquatic pest and disease incursions and invasive weeds. The biosecurity of the environment is a concern not only for the sake of Australia's environmental assets, but also because of the scope for wild animals and plants to act as a reservoir for pests and diseases that have broader effects. Feral pigs are a good illustration (see Box 20).

BOX 20 Feral pigs as reservoirs for pests and diseases

Feral pig populations exist over close to 40 per cent of mainland Australia—mainly large tracts of northern and eastern Australia. There are estimated to be between 4 and 23 million feral pigs in Australia, depending on environmental variables such as drought. They are the second most damaging animal (after rabbits) to Australia's agricultural industries, causing damage of around $106 million to livestock, habitats, fences and water sources each year.

Not only do feral pigs affect other animals, plants and the landscape, they also provide a potential reservoir for at least 20 exotic diseases. For example, pigs are susceptible to foot and mouth disease. If the disease were to arrive in Australia and spread to feral pigs, it would be extremely difficult to eradicate. This is because the feral pig population is largely beyond the reach of disease control measures.

Source: Invasive Animals Cooperative Research Centre 2007

Arrangements for dealing with risks to environmental biosecurity are not as well developed as those for risks to primary production—a fact which led in part to the establishment of AusBIOSEC (see Chapter 2). Other existing arrangements which relate to environmental biosecurity include:

- the Australian Wildlife Health Network, a small organisation established in 2002 to improve the investigation and management of wildlife health;
- the National Weeds Strategy, which includes a list of Weeds of National Significance; and
- the Defeating the Weed Menace Program, which operated for four years up to 2007-08.

Australian governments, aside from the Australian Capital Territory and NSW, signed an intergovernmental agreement in 2005 which establishes arrangements for dealing with risks to the marine environment. The *Intergovernmental Agreement on a National System for the Prevention and Management of Marine Pest Incursions* outlines responsibilities for implementing prevention strategies, emergency management and ongoing management and control of marine pests. Surveillance activities mainly rely on the states implementing targeted programs to an agreed standard in priority locations. The Intergovernmental Agreement is currently being revised with a view to signing in 2009.

The freshwater alga *didymo* is an example of an aquatic pest that has the potential to cause considerable harm to Australia's freshwater waterways (see Box 21).

BOX 21 Didymo: a potential environmental threat

Didymo (*Didymosphenia geminata*), colloquially called 'rock snot', is a freshwater alga that is widespread in the Northern Hemisphere. Although not present in Australia, it is a significant threat as it is highly invasive and considered impossible to eradicate once it infests waterways. A single drop of contaminated water contains sufficient inoculum to enable the pest to spread. The cells attach to rocks and submerged plants, multiplying quickly to form massive blooms, smothering streams and lake beds. These blooms adversely affect water quality, aquatic invertebrates and fish stocks, and are a hazard for hydro-electricity generation, irrigation and recreation.

Once assumed to be solely a Northern Hemisphere pest, it was discovered in New Zealand in 2004. The entire South Island is now considered a controlled area for didymo. It is continuing to cause major concern for fisheries managers and recreational fishers in New Zealand.

Anglers visiting Australia or returning home from a fishing trip overseas must declare and present all used fishing equipment for inspection. Any potentially contaminated fishing or other freshwater equipment (kayaks and wetsuits for example) may be seized and treated by AQIS staff, at the owner's expense.

7.2.4 Human health risks

Mitigating biosecurity risks to human health occurs at each stage of the continuum. The Department of Health and Ageing is responsible for policy development for matters related to human health and biosecurity. Border control measures are implemented by AQIS on behalf of the Department of Health and Ageing under a Memorandum of Understanding between that Department and the Department of Agriculture, Fisheries and Forestry.

The border measures implemented by AQIS focus on identifying people who are likely to have a listed serious disease, preventing the entry of insect vectors of human disease, and managing risks associated with the importation of biological material such as therapeutics, laboratory samples and human remains. Pratique arrangements apply to all aircraft and ships entering Australia. Positive pratique is a measure available to the Director of Human Quarantine if the threat of an exotic human health disease outbreak emerges (as occurred with severe acute respiratory syndrome) or when it is suspected that an airline or commander is failing to meet their automatic pratique responsibilities.

The Department of Health and Ageing and the states jointly determine monitoring and surveillance requirements for exotic human disease and disease vectors and collaborate in preparedness for emergency management of disease outbreaks.

7.2.5 Food safety risks

Controls on imported food are applied across the continuum. Pre-border and border controls are managed by AQIS through the *Imported Food Control Act 1992*. The states are responsible for any imported food controls post-border, through relevant state legislation.

The *Imported Food Control Act 1992* provides for the negotiation of certification arrangements with the competent authorities of countries that export to Australia. Such arrangements are voluntary on the part of the exporting country and are developed only where AQIS is satisfied that appropriate risk management measures are enforced by the competent authority of the exporting country.

The *Imported Food Control Act 1992* provides for an inspection scheme that targets foods differentially according to risk. Risk assessments are conducted by Food Standards Australia New Zealand, with 21 foods classified as 'risk food'. If risk food sourced from a particular foreign supplier consistently complies with food safety standards, border inspections of products from that supplier are reduced. The scheme stipulates that 5 per cent of all other food consignments be randomly sampled for compliance with the Food Standards Code.

The *Trans Tasman Mutual Recognition Act 1997* allows products made or imported into New Zealand that meet New Zealand's requirements also to be sold in Australia, and *vice versa*. Risk foods remain subject to inspection. In this respect the safety of food in Australia depends in part upon the effectiveness of controls implemented by the New Zealand authorities.

7.2.6 Research activities

Research improves Australia's understanding of the science of pests and diseases and assists with developing management strategies (see Box 22).

BOX 22 Research supports good biosecurity outcomes

A new strain of wheat stem rust was detected in Uganda in 1999. Since then it has spread through Kenya and has most recently been detected in Iran. The strain has overcome most existing resistance genes and will likely move around the world. India is particularly vulnerable as it grows limited varieties of wheat, most of which are susceptible to the disease. Recognising this threat, Australia is working with international breeding programs to identify sources of resistance to prevent the crop losses expected in the Far East. Should losses occur as anticipated, India may need to import wheat which could destabilise the international wheat market. Australian scientists have identified resistant genes in Australian varieties and will plan to ensure availability of stocks in case the new strain arrives.

CSIRO, as Australia's national science agency, is active in research and development of biosecurity technologies. CSIRO operates Australia's premier animal health laboratory, the Australian Animal Health Laboratory, in Geelong. The laboratory plays a vital role in animal disease diagnosis, research and policy advice.

No equivalent high security containment facility is available to the plant sector to undertake the full range of research and development into new diagnostic technologies for high risk exotic pests and diseases. There are however, facilities available in Australia, including some state laboratories, suitable for diagnosing most exotic plant pests.

Research on biosecurity aspects of animal and plant health is also supported by a number of Cooperative Research Centres and various academic and private sector research institutions. These Centres have been established to strengthen scientific capacity in priority areas including plant biosecurity and invasive animal species.

7.3 Current debates and views in submissions

7.3.1 Managing risk along the continuum

Concern was expressed to the Panel about how consistently Australia manages risks along the biosecurity continuum. The Panel heard that some risk pathways receive disproportionate levels of resourcing and others too little, with questions asked about whether resources could be used more strategically and effectively by applying risk-return principles. A risk-return approach means considering both the risk posed by alternative pest and disease pathways, and the likely reduction that could be achieved by applying additional resources across the continuum or changing risk management measures.

> 'Previously, there has been a disproportionate emphasis on the prevention of harmful organisms and pests entering Australia and the protection of the border, with insufficient effort directed at post-border activities – to the detriment of the biosecurity system as a whole.' (Animal Health Australia supplementary submission, p. 1)

The view was frequently expressed that biosecurity efforts at the border should be evaluated to ensure that priorities are determined by evidence-based risk assessments. Essentially, this would involve moving away from rigid and arbitrary intervention inspection targets. Box 23 describes the current limitations in more detail from the perspective of the Airports Program.

> 'QEAC has a number of significant concerns about the current deployment of resources at the border and recommends that AQIS to be given the authority to apply resources according to the relative assessment of quarantine risk.' (Quarantine and Exports Advisory Council submission, p. 25)

> 'AQIS's regime of intervention targets [should] be reviewed to determine whether a more focused risk-based inspection system might deliver greater net benefits to Australia.' (Plant Health Australia submission, p. 22)

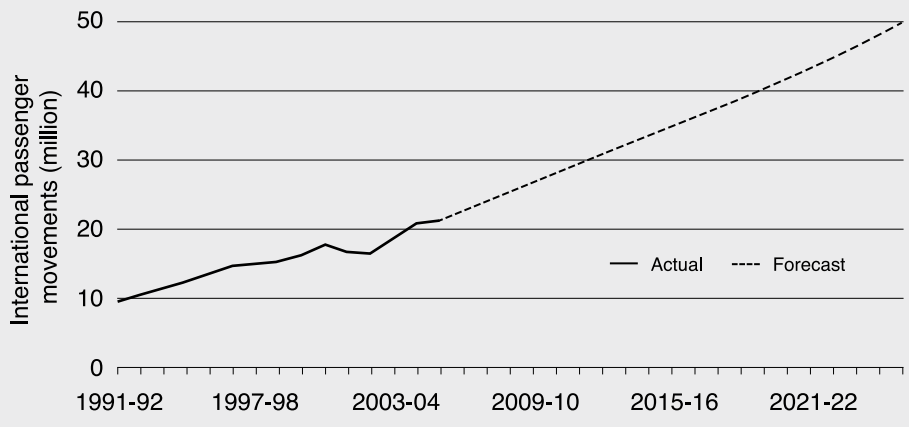
The Panel was provided with examples of how pre- and post-border activities could be changed to improve Australia's biosecurity. For example, more use could be made of offshore auditing of production facilities and pre-export quarantine locations. The off-shore risk-based program used for imported fertiliser is an example of where this already occurs (see Box 24).

Other areas for improvement post-border include animal and plant quarantine, monitoring and surveillance activities for national priority exotic pests and diseases, and planning and preparation for mounting appropriate responses to new detections and incursions.

BOX 24 Risk profiling

AQIS staff work under pressure at Australian airports to clear arriving passengers. The number of arriving international passengers is forecast to rise (Figure 8), meaning that the pressure on AQIS staff will increase if mandated intervention targets and current staffing levels are maintained. Currently, AQIS has little discretion to adjust staffing activity to respond to different levels of risk. More sophisticated risk profiling techniques (such as consideration of passenger's country of embarkation, the time of year, the frequency of visits to Australia and a passenger's compliance record), combined with technology improvements (such as transmission and analysis of pre-flight baggage x-ray images from departure airports) would enable AQIS to better utilise its resources at airports.

Figure 8 International air passenger movements (arriving and departing), all Australian airports



(Source: Bureau of Infrastructure, Transport and Regional Economics 2008)

BOX 25 Risk-based inspection improves biosecurity

Risk-return is used under the current system for fertiliser imports. The fertiliser scheme allows companies to reduce the biosecurity risk of imported fertilisers by implementing supply chain procedures and quality assurance that significantly reduce the risk of contamination. Since the introduction of this scheme in 2004, no fertiliser shipments have required re-export and no consignments have been imported with significant contamination. In 1996, prior to the introduction of the fertiliser scheme, the rate of contamination for fertiliser shipments was 18 per cent. This rate has now dropped to less than 2 per cent.

7.3.2 Dealing with the risks to the environment

A number of submissions pointed out that Australia has a relatively poor knowledge of the biosecurity threats to its natural environment. This is largely a function of the absence of commercial incentives to research and monitor environmental pests and diseases. As a result, the principal responsibility for biosecurity research as it relates to the natural environment lies with governments and the community. These activities have not received a high priority for funding. Unlike incursions that impact on primary production, where active engagement by business is motivated by self-protection, the effort required to respond to an incursion affecting the environment must be provided primarily by governments.

> 'The quarantine and biosecurity framework may not be adequate to analyse and manage risks to the environment. There are a lot of risks to environment and wildlife which are not fully understood or taken into account. There is a lack of research in this area.' (Australian Maritime College submission, p. 6)

> '… we lack national capacity to respond to pathogen and invertebrate threats to environmental biosecurity … a holistic approach covering all biosecurity threat types and both industry and environmental sectors developed through regular reviews of risk prioritisation …will be required. Research and development relevant to urban and environmental risks, as identified under AusBIOSEC, are unlikely to attract industry support.' (CSIRO submission, p. 16)

A tragic and salient reminder of Australia's vulnerability to pest and disease interactions with the natural environment occurred during the course of the Panel's Review. Hendra virus is understood to have crossed from fruit bats to a number of domestic horses before again crossing the species barrier to infect staff at a Brisbane veterinary clinic, where it killed one of the clinic's vets in August 2008. There are similar concerns that highly pathogenic avian influenza could affect Australia's native bird population and then transfer to domestic poultry and ultimately to humans. Efforts to understand these zoonotic risks and plan appropriate responses are not well resourced.

> 'In a global environment where approximately 60% of all human pathogens are zoonotic, 75% of emerging and re-emerging human diseases in the past 30 years have been zoonotic, and most of the emerging diseases over the past 10 years have originated in wildlife, there has never been more interest in wildlife health … Historically, wildlife and invasive species health surveillance in Australia has fallen into gaps between agriculture, conservation and human health agencies ... We lack an integrated policy approach, along with operational tools, and critical

> resources for nationally coordinated wildlife health surveillance, risk assessment, education, communication and research.' (Australian Registry of Wildlife Health submission attachment, p. 1)

The need for improved surveillance in this area was noted.

> 'The [Australian Wildlife Health Network] provides an effective surveillance framework for Australia for diseases with feral animals and native wildlife as part of their ecology that may impact on human and animal health, trade and biodiversity. However, it urgently needs support in both personnel and resources to make the services it provides both systematic and comprehensive for the nation.' (Australian Wildlife Health Network submission, p. 3)

In addition to concerns about biosecurity affecting the terrestrial environment, a number of submissions expressed concern about the management of aquatic biosecurity issues. There have been fewer controls and less understanding of risks to Australia's aquatic environment and associated businesses.

Submissions raised concern about the potential for pests and diseases to be transferred as a result of wildcatch fishing and aquaculture operations. The practice of flushing water tanks used to move live fish was raised as a potential risk, as was the transfer of pests and disease through fish stock movement, equipment and feeding practices (for example, feeding imported pilchards to tuna).

Concern was also expressed about the management of risk associated with ornamental fish and aquarium plants. There have been significant infestations of *Caulerpa taxiflora* in coastal lake systems arising from the inadvertent release of these organisms into the wild. The Panel was also alerted to the risk posed by the trade in 'live rocks' (artificial or natural rocks on which coral is grown) for the aquarium trade, which may introduce exotic species if unsafely discarded. Many of these invasive species, if established, could have dire consequences for aquatic environments.

Monitoring and surveillance to detect aquatic incursions early is more difficult than for terrestrial incursions. Response strategies, once an incursion has occurred, are similarly less likely to succeed than in the terrestrial environment. Some, including the Australian Shipowners Association, argued that as a result, more proactive vector management was needed to address the risks associated with exotic marine species. There was a consistent call in submissions for Australian Government leadership to address these issues.

> 'ASA considers that AQIS needs to assume a primary responsibility in, not only pre-border and border management of marine biosecurity, but

also in the post-border, uniform implementation of domestic measures to manage the risks associated with translocation of established, but not yet widespread, invasive marine pest species within Australian marine waters.' (Australian Shipowners Association submission, p. 2)

7.3.3 Human health

The Panel received little information to indicate problems with AQIS's administration of human health biosecurity. Qantas did raise an issue in relation to the change to positive pratique during the severe acute respiratory syndrome outbreak of 2002-03. Under that arrangement, airline commanders were required to provide a report of the health status of the passengers and crew rather than receiving the normal automatic access to the airport.

> 'This form of pratique is known as "Pratique by exception" but it was replaced by "Positive Pratique" during the SARS outbreak – that is, all aircraft report the status of all passengers and crew prior to arrival. The FLUBORDERPLAN provides for the introduction of Positive Pratique should the need arise. Qantas strongly supports the decision to implement a report by exception regime.' (Qantas submission, p. 3)

The Department of Health and Ageing supports the report by exception regime but argued that, in circumstances of an elevated international public health threat, measures such as a move to positive pratique were vital in reducing the threat to the Australian public.

7.3.4 Information to support risk management

A number of submissions highlighted the need for Australia to improve its pre-border pest and disease intelligence networks to increase awareness of emerging biosecurity threats. Submissions noted the traditional reliance on the international animal and plant health organisations for this information but suggested that due to increased trade and the potential rapid spread of major pests and diseases, more reliable information should be collected from other sources. Some submissions suggested that this could be achieved by building stronger links with neighbouring countries and major trading partners to share biosecurity information.

> 'The balance between being pro-active (new thinking about preparedness) and reactive (managing an outbreak) requires readjusting. More development and reliance on pre-border intelligence will be required …' (Australian Institute of Agricultural Science and Technology submission, p. 1)

> ‘Australia should show greater international leadership in forging a cooperative approach to biosecurity amongst major trading partners and regional neighbours.’ (CSIRO submission, p. 12)

Collection of biosecurity risk information at the border also received considerable comment—particularly around the availability of information relating to quarantine detections in imported material. Submitters argued that more effort should be made to diagnose organisms in intercepted material, with that information used to inform Import Risk Analyses and associated risk management measures. For example, Horticulture Australia Limited stated that:

> ‘Information regarding barrier interceptions is not routinely available and if provided often does not contain sufficient detail to determine if the intercepted organism is of quarantine concern ... This lack of information at the barrier makes it extremely difficult to determine if the initial risk analysis and subsequent import conditions are appropriate.’ (Horticulture Australia Limited submission, p. 12)

Plant Health Australia argued that the information should not only be collected, but should be more widely available.

> ‘PHA understands that while interception data is still collected it is not widely available, is not uniformly recorded and often predicated on visual diagnosis only, a procedure which may not be appropriate for the detection of all pests.’ (Plant Health Australia submission, p. 15)

Collection of information through post-border monitoring and surveillance programs was also advocated to enable early detection and assessment of pests and diseases. The argument was that early detection would increase the chance of control and eradication. CSIRO compared the cost of red imported fire ant and European house borer outbreaks—which were widespread by the time a response occurred—with the costs of an electric ant outbreak, which was quickly identified.

> ‘A lack of timely detection and rapid response mechanisms can result in considerable costs once an invasive species if found. For example, eradication and/or containment has cost Australia more than $123m on fire ants and $9m on European House Borer both which were widespread by the time a response was coordinated. Once tramp ant control mechanisms and awareness was raised, the outbreak of electric ants in Cairns required only $2m.’ (CSIRO submission, p. 11)

Similar case studies are provided in Box 25.

BOX 25 A small preventative effort spares a large incursion cost

To avoid a repeat of the incursion of papaya fruit fly in Cairns, and Philippines fruit fly in Darwin, the Torres Strait fruit fly trapping and response program was initiated. The program aims to detect seasonal incursions of fruit fly, allowing early responses to eradicate flies found on the islands of the Strait. A small investment ($200,000) each year has prevented expensive response actions ($35 million and $7 million respectively).

An outbreak of grapevine leaf rust in 2001 in Darwin cost approximately $2.5 million over 4 years to eradicate. Surveillance for the disease is now included in the Northern Australia Quarantine Strategy. Offshore changes in distribution are monitored and mitigation action taken as appropriate to prevent establishment on the mainland. Preventing large scale infestation and avoiding a response saves money.

Submissions also linked surveillance programs with Australia's ability to substantiate claims of pest and disease status as an exporter. For example, the Panel was advised that surveillance information collected in Western Australia enabled Australia to establish its freedom from Karnal bunt disease of wheat in 2003 following allegations of its presence in Australian wheat exports by Pakistan. As a result, the impact on Australia's other wheat markets was limited and temporary. In spite of these successes, the scepticism and scrutiny of Australia's claimed disease status—and its capacity to demonstrate it—that can now be expected is clearly illustrated in the European Commission submission to the Panel.

> 'Despite claims of being disease free, there are often questions over the veracity of these claims, particularly, over whether the Australian surveillance systems are capable of discovering all relevant pests or diseases on the premise that if you do not look for it, you are unlikely to find it.' (European Commission submission, p.10)

One particular surveillance program that received extensive comment was the National Sentinel Hive Program. This Program aims to detect foreign bees and the pests and diseases they can carry. Submissions that referred to the National Sentinel Hive Program unanimously supported its continuation if not enhancement, particularly because of the significant risks that honeybee disease would pose for those industries that rely on honeybee pollination services (see Box 26).

The House of Representatives Primary Industries and Resources Committee recently released a report *More Than Honey: the future of the Australian honey bee and pollination industries* (2008). This report described challenges facing the honeybee and related pollination industry in Australia and in particular the

BOX 26 Examples of support for honeybee monitoring and surveillance

'Due to this widespread reliance on honeybees for pollination, an incursion into Australia of a serious pest or disease affecting honeybees, such as *Varroa destructor*, will have a devastating impact with an estimated total impact of $3.7 billion.' (Australian Almonds submission, p. 1)

'The industries most at risk are those that have critical reliance on honeybee pollination, including almonds, apples and pears, avocadoes, melons, dried prunes and much of the summerfruit and vegetable industries.' (Pollination Australia submission, p. 1)

'The prime purpose of the National Sentinel Hive Program is early detection of a pest incursion, targeting the relevant border vicinity. This role is consistent with current post-border functions within AQIS, to wit, under the Northern Australia Quarantine Strategy (NAQS) "to develop and implement measures for the early detection of targeted pests and diseases."' (Pat Boland submission, p. 3)

'The Boland review of the National Sentinel Hive Program should be updated to take account of current risks and should include a recommendation on the case for including "baited" hives at some or all locations. On the basis of this review the National Sentinel Hive Program should be revised to reflect the recommendations of the updated Boland review.' (Australian Honeybee Industry Council submission, p. 3)

risk of the inadvertent importation of the highly destructive varroa mite that has had a devastating impact on populations of farmed and feral European honeybees when it has entered a new country. The Minister for Agriculture, Fisheries and Forestry formally referred this report to the Panel and asked that consideration be given to its biosecurity recommendations, in particular, the future of the National Sentinel Hive Program.

7.3.5 Information sharing

Numerous submissions indicated concern about the willingness of Australian Government agencies to share biosecurity information. The Quarantine and Exports Advisory Council raised the issue and suggested that a defensive approach had arisen in part because shared biosecurity information can be used to find fault with the system rather than to promote improved risk management.

> 'It has also resulted from an adversarial approach taken by State/Territory agencies, where data is sought more to find fault with the AQIS system rather than as a partnership approach to risk mitigation along the risk pathway.' (Quarantine and Exports Advisory Council submission, p.18)

The importance of sharing border information was particularly highlighted, with Plant Health Australia and others linking such information to detection of new and emerging pests and diseases and evaluating the biosecurity system.

> 'Up until 2003, detection information at the species level was available through the Pest and Disease Interception (PDI) database operated by AQIS. Since then, there has been a winding back of resourcing for routine confirmatory diagnostic work which is undermining the effectiveness of PRA processes and reducing capability to detect new and emerging pest species and strains.' (Plant Health Australia submission, p. 15)

A number of submissions noted the potential value of the Australian Biosecurity Information Network in promoting information sharing across the continuum. The importance of AQIS and Biosecurity Australia involvement in the initiative was emphasised by some submitters.

> '… the development of the Australian Biosecurity Intelligence Network (ABIN) is underway. It is proposed that ABIN will enable a virtual community of those involved in all sectors of biosecurity research / preparedness / surveillance / response and enable access to shared expertise, linked data sets and improved communication.' (Horticulture Australia Limited submission, p. 14)

> '… the Australian Biosecurity Intelligence Network (ABIN) project … will provide a workspace (both physical and virtual) where data and information can be shared across organisations, jurisdictions and sectors to support the delivery of improved biosecurity outcomes in Australia. Data and expertise held by AQIS and BA would be invaluable to this project and contribute directly to many of the proof-of-concept projects.' (Growcom submission, p. 23)

7.3.6 Information technology systems

As discussed earlier, the Panel heard about a lack of critical analysis of border information and limited feedback loops into risk management policy and measures. These activities are not only limited by available data, but by the systems needed to undertake proper risk analysis. The Quarantine and Exports Advisory Council identified AQIS information technology systems as a major obstacle to implementing comprehensive risk profiling and reporting, and argued for a comprehensive modernisation process to address this shortcoming.

> '... there is an urgent, critical need for the modernisation of AQIS's Information Technology systems. Other Commonwealth service delivery agencies, including Customs, Centrelink, the Australian Taxation Office and the Department of Immigration and Citizenship have been funded by Government for the modernisation of their IT systems in very recent years. The need for a significant capital injection for AQIS for this purpose is now overdue.' (Quarantine and Exports Advisory Council submission, p. 4)

Other submissions included similar comments.

> 'The [Customs Brokers and Forwarders Council of Australia] suggests a fully Government funded IT initiative be provided to address the upgrade of the current AQIS IT systems and the interconnectivity with the ICS and industry systems.' (Customs Brokers and Forwarders Council of Australia submission, p. 12)

> 'AQIS IT systems, which are old, do not facilitate the collection and analysis of data that would be required to direct operations with a risk focus.' (Food and Beverage Importers Association submission, p. 6)

The Panel was advised that investment in AQIS's information technology systems compared poorly with analogous Commonwealth service agencies. Investment in information technology averages around 4 per cent of total AQIS expenditure and has not had significant renewal since the AQIS Export Documentation system, implemented in 1992. A number of business clients have more technically advanced systems and complained of the amount of paperwork that AQIS still requires, rather than electronic data interchange, and the constraints that the current AQIS systems place on business effectiveness. The Panel was provided with a number of examples where AQIS could make greater use of technology to improve risk management and, at the same time, reduce costs to businesses and customers.

> 'Shipping lines are progressively introducing Electronic Import Delivery Orders and an issue has arisen in identifying electronically coastal shipping containers that would not have to be inspected for possible external contamination. AQIS is presently unable to accommodate that request from an IT perspective …' (Shipping Australia Limited submission, p. 7)

> '… existing Cargo Management processes are, in the CBFCA's opinion, neither efficient or necessarily effective and rely heavily on face to face interaction by industry with AQIS front counter staff in documentary assessment.' (Customs Brokers and Forwarders Council of Australia submission, p. 7)

The Panel was told that Australia's biosecurity system could be enhanced if an electronic import certification system was developed to provide advanced notice of goods being imported to enable more rigorous risk assessment. This system would effectively be an import counterpart of E-cert (Australia's export certification system) which allows trading partners to conduct better risk profiling of goods coming from Australia.

The AQIS Import Conditions database (generally known as 'ICON') was recognised as an extensive resource for importers on the conditions against which they must comply. However, the Panel received comment that it is cumbersome in comparison to Australian Customs Service systems which have benefited from recent investment and renewal.

The Panel is aware that AQIS recently commissioned a review of its information technology systems, which is intended to be a precursor to a major redevelopment.

7.3.7 Skills shortages

Numerous submissions highlighted the difficulties in attracting and retaining staff with the skills needed to support effective biosecurity risk management. As is the case in several other fields, the Panel heard that many skilled staff are approaching retirement in the next few years, with a shortage of new people entering important fields such as diagnostics, taxonomy, epidemiology and entomology. The impact of this trend on Australia's ability to deal with a significant emergency disease outbreak was highlighted.

> 'There is a shortage of people with appropriate quarantine and biosecurity skills. Significant numbers of quarantine and biosecurity experts have left the system or are nearing retirement and students coming out of university do not have the broad based experience to meet the immediate needs of peak industry bodies, government departments, research centres and university teaching and research positions.' (Horticulture Australia Limited submission, p. 22)

> 'Australia is facing declining capability in biosecurity expertise diagnostics and the underpinning research. There is a major shortage of skilled young talent coming into the field, and declining opportunities for those who do.' (CSIRO submission, p. 14)

Increased training was identified as one way of addressing skills shortages. CSIRO's submission identified some existing training initiatives, but noted that training was not the whole solution and recommended that Australia develop a national strategy to overcome the shortage of skilled diagnosticians.

> 'The National Plant Biosecurity CRC (NPBCRC) and the Invasive Animal CRC are trying to address the training crisis through education programs, with courses at a number of levels … However, offering training is only part of the solution. Attractive positions for graduates must be made available within the jurisdictions.' (CSIRO submission, p. 15)

Similar strategic approaches were recommended by other submitters, such as Plant Health Australia.

> ‘That a national biosecurity succession, training and resourcing plan be developed and agreed by governments and industry to ensure Australia has the essential skills and personnel to effectively meet commitments under the Emergency Plant Pest Response Deed and National Plant Health Strategy.’ (Plant Health Australia submission, p. 33)

Several submissions also observed that the Increased Quarantine Intervention program with its mandatory intervention rates had diminished the need, and as a result, capability of AQIS staff to evaluate risk.

7.3.8 Research needs

The Panel heard a range of views regarding the coordination of national priorities and strategies for biosecurity research to support risk management. In some cases, AusBIOSEC was noted as an initiative that would promote coordination and cooperation, particularly in relation to environmental biosecurity.

> ‘Support the adoption and promulgation of AusBIOSEC research priorities to increase the strategic alignment and impact of the national biosecurity research effort on environmental biosecurity.’ (CSIRO submission, p. 19)

Other groups suggested there was no consistent arrangement for prioritising and coordinating biosecurity research at the national level, and argued that a mechanism should be established for this to occur.

> ‘There is a need for a national strategic R&D plan for quarantine and biosecurity, which needs to be implemented within an overarching R&D management framework.’ (South Australian Government submission, p. 11)

> ‘At present there appears to be no identifiable resource or process for establishing research priorities for quarantine and biosecurity within DAFF ...’ (Quarantine and Exports Advisory Council submission, p. 33)

Issues were also raised in relation to facilities for biosecurity research. The Panel was told that there are a number of standards that need to be met before quarantine facilities (for animal and plant research laboratories) can be approved. CSIRO indicated that the ability to gain accreditation for research facilities had become problematic, citing as an example, a facility in Perth that has been constructed but remains unused partly due to the complex nature of the approval and accreditation process (CSIRO submission, p.13).

Access to research material was also raised, particularly in relation to exotic pathogens of concern to the community. Submitters such as Horticulture Australia Limited pointed to the need for protocols for handling samples for research, but argued that the ability to develop and validate these protocols was limited by the restrictions on importation and distribution of these materials.

> 'However, the ability to develop and validate these protocols faces difficulties with current importation and distribution restrictions of positive and negative controls of plant-related microbial isolates and strains in place.' (Horticulture Australia Limited submission, p. 23)

Access to plant facilities with a suitable level of containment to handle such material was also raised.

> '… if research is to be conducted on an exotic plant pest there is no current facility that is suitable and would provide the required level of containment. Cost limitations in building and operating such facilities for research would suggest that consideration should be given to undertaking such research off shore in countries where the pest is endemic and there is no need to contain.' (Cooperative Research Centre for National Plant Biosecurity submission, p. 11).

Support was also provided for greater investment in research into technologies to assist biosecurity risk management. There have been significant advances in the tools used to detect, prevent, analyse and eliminate pests and diseases. Risk management policies as reflected in import conditions need to be modified to take into account technological changes.

> 'Australia's quarantine and biosecurity agencies … need to reassess constantly the shifting nature of the risks being faced and improvement in the tools at our disposal to combat these risks.' (Quarantine and Exports Advisory Council submission, p. 2)

7.3.9 Post-arrival quarantine stations

The Panel received a number of views about Commonwealth-run post-arrival quarantine stations. The operation of the stations, and in particular the Eastern Creek Quarantine Station near Sydney, was scrutinised by Commissioner Callinan in his Report into the outbreak of equine influenza. In addition, the Panel received views on aspects of quarantine facilities operated by state governments, along with privately-operated quarantine stations and Quarantine Approved Premises. Views covered the Commonwealth's security of tenure and ownership of its facilities, cost recovery and resourcing arrangements, the appropriateness of privatised or outsourced facilities, auditing arrangements and the relationship of the Commonwealth's facilities to those operated either

privately or by state governments. Each has, to a greater or lesser degree, a bearing on the way Australia manages biosecurity risks associated with imported plants and animals.

One general theme was that AQIS needs to provide clear policy and management of post-arrival quarantine stations. The Panel notes that these establishments represent a significant investment, handle a range of plants, animals and associated risk materials, and are an important biosecurity control measure to prevent the introduction of quarantinable pests and diseases.

Facilities for post-arrival quarantine of plants received particular attention in several submissions, with concern expressed about the future status of the two Australian Government-owned and operated facilities.

> 'Currently the Australian Government operates two high-health post-entry quarantine facilities at Eastern Creek in Sydney and Knoxfield, in Melbourne. PHA is aware that the leases on these two facilities are coming to an end and that they will not be renewed. There is a need within Australia for facilities that can house high risk nursery stock as the risk posed by nursery stock is far greater than for produce.' (Plant Health Australia submission, p. 15)

> '… the Commonwealth and states should actively cooperate to ensure an efficient and effective network of post-entry plant quarantine facilities for Australia.' (Peter Lawrence and David Spence submission, p. 5)

7.3.10 Export certification

The Panel heard concerns from state food inspection agencies about the export certification standards required by AQIS. These agencies questioned the implementation of aspects of the review of the *Export Control Act 1982*, conducted in 2000, which recommended that domestic standards should form the first tier of export standards (Frawley *et al* 2000). The NSW Food Authority stated:

> '[N]on recognition of the domestic system has resulted in Australian food businesses having to comply with stringent export requirements which are generally the EU or US importing standards. This standard even applies to businesses wishing to export to countries that have food safety standards below the Australian domestic system. More effort is required by AQIS to promote and support the Australian domestic regulatory system to export customers with a need to shift the regulatory focus from the "product" to the overall system.' (NSW Food Authority submission, p. 3)

Some commodity sectors, most notably the dairy sector, supported this line of argument.

> 'Australian industries are concerned Australia's highly safe food standards be recognised and accepted worldwide for food exports. The Australian Standards should be promoted as the platform for export of highly safe Australian food internationally.' (Australian Dairy Industry Council and Dairy Australia submission, p. 25)

Conversely, some meat export businesses argued that allowing exports from businesses that only meet domestic standards would be retrograde.

> 'Some 8 years ago it became government policy to permit meat exports from "domestic" plants where a market was willing to accept this standard. The standard is the Australian Standard which relies on company controlled meat inspectors without the presence of a government veterinarian. On the face of it, it is an unsatisfactory system which has resulted in market failure ...' (Fletcher International Exports submission, p. 2)

The reasons given in the Fletcher International Exports submission included non-uniform application by state authorities of the Australian Standard for the Hygienic Production and Transportation of Meat and Meat Products for Human Consumption (AS 4696: 2007), and anecdotal reports that AQIS staff are uncomfortable about the variable level of hygiene in domestic plants.

The Panel also heard from the live animal export industry that while some improvements were needed to improve the export regulatory system, the (Commonwealth) government should continue to provide oversight.

> '… the industry is firm in its resolve that the Government should continue to play a key role in the export of livestock. While the industry desires to move to a more co-regulatory approach in the future, current arrangements provide valuable assurance to exporters and customers alike.' (Australian Livestock Exporters' Council submission, p. 3)

7.4 Panel's consideration

7.4.1 Balance of activities—managed risk

The international movement of people and goods will continue to grow, increasing the associated biosecurity risks. Enabling this increased movement of people, live animals and plants, genetic material, animal and plant products, activities and services to and from Australia to occur safely will significantly increase the biosecurity risk management task. This makes it even more important that Australia is clever in the way it develops risk management strategies and deploys inevitably scarce resources.

The Panel envisages a biosecurity system where activities along the continuum are conducted on the basis of risk-return assessments. Strategies and resources must be targeted at those areas that will produce the greatest reduction in the probability and consequence of an outbreak or incursion of an exotic pest or disease, for the least cost to the community. Prevention or early detection significantly reduces the probability and costs of pest or disease outbreaks. Knowing where to apply resources using an evidence-based risk approach should provide considerable savings for the Australian economy.

Depending on the pest or disease, the cost savings from promptly and appropriately responding to an incursion can be large. In 2002, the Productivity Commission modelled the impact of different scenarios of an outbreak of foot and mouth disease in Australia. In a hypothetical scenario where a small single point outbreak of foot and mouth disease took three months to control and eliminate, the losses to the national economy were estimated to be around $2 billion to $3 billion. However, in a scenario where a multi-state outbreak took 12 months to control, the losses to the economy rose to $8 billion to $13 billion. From this research, it is clear that effective investment in post-border surveillance and emergency response arrangements can yield substantial benefits in terms of the avoidance of even larger economic losses (Productivity Commission 2002).

The inspection regimes for sea (shipping) cargo containers and air canisters (air cargo containers) mandated under Increased Quarantine Intervention illustrate the current mismatch between biosecurity risk and effort. At present, AQIS is required to physically inspect 100 per cent of the outside of sea cargo containers and air canisters. While inspection of sea cargo containers appears to address some potential risk—for example, in 2005-06, 23 per cent of sea containers were found to have some actionable contamination (Ernst & Young 2007)—only a tiny proportion of air canisters have presented a biosecurity concern. While some of those air canister finds could be significant, it is quite likely that the resources involved, applied elsewhere (including through an enhanced post-border surveillance program at and near ports), would have a higher pay-off in terms of management of risk.

The mandated targets also fail to address what is already known to be a risk area—that is the consignments carried in sea cargo containers. At the moment, AQIS inspects or treats around 12 per cent of sea cargo consignments, yet AQIS surveys indicate that approximately 8 per cent of the consignments cleared on the basis of documentation alone (in other words, not inspected) were found to have a quarantine issue. It is thought that the vast majority of pests and diseases that have entered Australia are likely to have arrived inside containers or in timber shipments.

Increased Quarantine Intervention targets have not been modified since their introduction seven years ago, in spite of accumulating evidence that not all the pathways are high risk. In its review of Increased Quarantine Intervention activities in July 2004, the Quarantine and Exports Advisory Council noted that biosecurity needed to be more automated, conducted offshore and be more selective or targeted using the best and most recognised global risk management principles (Quarantine and Exports Advisory Council 2004). The Panel agrees with this conclusion.

On that basis, the Panel recommends that the government should move away from the current mandated target approach and instead adopt a comprehensive risk-return approach to deciding where to direct resources across the continuum. The Panel's expectation is that consistent analysis of this type would find that more resources should be directed toward pre- and post-border activities, and that resources at the border should be focused on higher risk pathways.

The transition to a risk-return approach will take some time, as much of the data and analysis on which crucial decisions depend do not yet exist. In addition, it will require the development of an analytical framework for assessing risk. Ironically, reliance on mandated intervention rates has reduced the incentive and competence of AQIS to collect the relevant data and systematically analyse it. While adjustment of strategies and resources on a risk-return basis should happen continuously, the Panel sees merit in a comprehensive review of resource allocation against risk-return profiles every five years. The initial resourcing implications of this change are discussed in Chapter 9.

Australia's approach to managing the risks for the entry of pests and diseases recognises that these can come from many different sources. One important potential source is agri-terrorism, that is, the deliberate use of harmful agents, including biological, chemical or radiological agents, to damage animal or plant health or the food supply. Australia uses an 'all-hazards' approach to managing biosecurity threats which means the same prevention and response principles are used no matter the pest or disease and host or target, or whether the event is deliberate, accidental or natural. The Panel considers that the National Biosecurity Authority should continue to work collaboratively with relevant portfolios, including the police and intelligence agencies, on these issues. These potential biosecurity threats highlight the need for well developed pest and disease emergency preparedness plans.

To help focus attention on the most potentially serious risks, the Panel recommends that the National Biosecurity Authority should develop a national priority list of exotic pests and diseases and, as far as practical, align its

monitoring and surveillance systems with the list. Animal Health Australia and Plant Health Australia can assist in the development of the priority list, which should also include pests and diseases affecting terrestrial or aquatic environments.

Recommendations

44 The balance and level of biosecurity resources across the continuum should be determined by a consistent analysis of risks and returns across programs. The level and allocation of resources should be comprehensively reviewed against risk-return profiles at least every five years.

45 The National Biosecurity Authority, in consultation with relevant stakeholders and the Biosecurity Advisory Council, should develop a list of national priority exotic pests and diseases, with their respective pathways, on the basis of the likelihood of incursion and the consequences for businesses, human health and the environment. This list should be used to prioritise the review and development of comprehensive biosecurity risk management plans across the biosecurity continuum.

7.4.2 Risks to the environment and human health

Adoption of risk-return principles across the continuum should extend to the environment as well as agricultural production. For the National Biosecurity Authority to undertake this effectively, it will need staff with expertise in environmentally significant terrestrial and aquatic pests and diseases.

In relation to human health, the Panel notes that the current memorandum of understanding between the Department of Health and Ageing and the Department of Agriculture, Fisheries and Forestry could more clearly set out the roles and responsibilities with respect to human health risks at the border. The Department of Health and Ageing should provide clear operational guidelines and requirements to the National Biosecurity Authority. The memorandum of understanding should also set out procedures for validating health biosecurity measures, training and competency of inspection staff, resources, data collection, reporting and communication. The Authority's performance against these requirements should fall within the audit role of the Inspector General of Biosecurity (see Chapter 8).

The Panel has also recommended a memorandum of understanding between the National Biosecurity Commission and the Department of Health and Ageing in relation to human health elements of Biosecurity Import Risk Analyses (see Chapter 5).

Recommendation

46 A new memorandum of understanding should be developed between the Department of Health and Ageing and the National Biosecurity Authority on delivery of human biosecurity services at the border, including clear operational guidelines for the Authority and procedures for validating health biosecurity measures, training and competency of inspection staff, resources, data collection, reporting and communication.

7.4.3 Food safety risks

Risk-return principles should also be applied to imported foods. The Panel recommends that the current performance-based approach to border sampling and analysis arrangements be continued. In addition, the National Biosecurity Authority needs to have the capacity to accredit and audit food supply chain safety systems of importers including their product providers. The National Biosecurity Authority should be empowered to require, as a condition of entry to the Australian market, that importers provide certification by the exporting country's competent government authorities that Australian food safety standards are met.

The Panel considers that, providing food safety management systems meet Australian standards, importing food businesses could be regulated by the National Biosecurity Authority through compliance agreements. These arrangements should be analogous to those under the *Quarantine Act 1908* and should provide for a power of audit, inspection, suspension or removal of approvals, and penalties where appropriate for breaches of the compliance agreement. There should be consultation with state food safety authorities to ensure mutual recognition and avoid duplication.

As noted earlier, the Panel is concerned that Australia's imported food legislation does not empower Australia to require competent authority certification of imported foods from the exporting country. This is particularly an issue where safety can only be assured by the application of food safety management systems during production and processing. As with certification processes under the *Quarantine Act 1908*, the Australian authorities should reserve the right to review and accredit, and subsequently audit, these certification arrangements (see Chapter 8).

Further cooperation with New Zealand in harmonising measures for imported food control is desirable. This is particularly relevant given that the *Trans Tasman Mutual Recognition Arrangement* facilitates free trade between Australia and New Zealand.

Recommendations

47 The Authority should enter into compliance agreements to recognise formally the food safety management systems of importing businesses. These arrangements should provide for a power of audit, inspection, suspension or removal of approvals, and penalties where appropriate for breaches.

48 The National Biosecurity Authority should be empowered to require in specific circumstances, as a condition of entry to the Australian market, that importers provide certification by the exporting country's competent government authorities that Australian food safety standards are met.

7.4.4 Strategic intelligence to underpin risk-return

Australia can only know which risk pathways and commodities are most threatening if it has collected and analysed relevant information. Good strategic intelligence on the animal and plant pest and disease status of neighbouring countries and trading partners is vital. This information ensures that biosecurity agencies can respond appropriately, including possibly modifying import requirements.

For example, information on the distribution or prevalence of a pest or disease within the territory of a trading partner allows Australia to substantiate claims of regional disease freedom and ensure biosecurity arrangements remain appropriate for products imported from areas (regionalisation) or businesses (compartmentalisation) claimed to be disease-free. This practice benefits Australia and its trading partners by allowing trade to continue while also managing biosecurity risks.

Traditional information collection methods rely on data from international organisations such as the OIE and International Plant Protection Convention. While these processes are useful, the Panel heard that this information should not be the only intelligence source in a modern, timely biosecurity system. Instead, Australia should be investing in a proactive intelligence gathering service—using essentially open source material—to improve risk management decision making.

The Panel considers that Australia should be cooperating more closely with major trading partners and neighbouring countries to share pest and disease intelligence. This information could be obtained by strengthening data sharing programs such as:

- the Biosecurity Consultative Group on Biosecurity Cooperation—Australia and New Zealand;

- the 'Quads'—Quadrilateral Animal and Plant Health Groups—Australia, Canada, United States and New Zealand;
- the Northern Australia Quarantine Strategy—with Indonesia, Papua New Guinea and East Timor;
- the Australian Fumigation Accreditation Scheme—in Indonesia, Malaysia, Thailand and India, and planned for the Philippines, Papua New Guinea and China;
- capacity building programs through AusAID—predominantly in Asia and the Pacific; and
- greater utilisation of overseas agricultural counsellors.

The information from these initiatives should be provided to a pre-border intelligence gathering unit in the National Biosecurity Authority. This unit would create collaborative links with similar units overseas, such as the team in the United Kingdom's Department for Environment, Food and Rural Affairs. The unit should analyse international scientific literature, agriculture and food industry publications and media to find relevant information on exotic animal and plant pests and diseases and outbreaks.

When data is generated from intelligence gathering and analysis activities, it should, wherever consistent with the *Privacy Act 1988*, and where appropriate, be shared freely between jurisdictions in Australia and abroad, and with business groups and the research community (see Section 7.4.7).

Recommendations

49 The National Biosecurity Authority should work with other countries and the states and territories to share pest and disease intelligence and consider working together with trading partner countries on issues such as regionalisation and compartmentalisation assessments and systems assurance.

50 The National Biosecurity Authority should establish an intelligence gathering and assessments group to monitor animal and plant pest and disease status internationally, with a particular focus on the region and our trading partners.

7.4.5 Border surveillance to underpin risk management

The Panel has found that the information collected on biosecurity risk material at the border is either incomplete or not in a suitable form to support systematic analysis. One reason is that quarantineable items found in interceptions at the border are not necessarily analysed. When goods are rejected on the suspicion

of a pest or disease, or on the basis of not meeting the import requirements, the specific pest or disease is not usually identified because the importer is given the choice to treat the item (for example, fumigate), have it re-exported or destroyed. Usually the least cost alternative is chosen, which seldom allows the identification of the biosecurity concern.

To support an evidence-based risk-return approach, the National Biosecurity Authority should have the capacity to ensure that a proportion of interceptions are pursued through to diagnosis at public expense. Data from interceptions and diagnosis need to be collected in a way that informs future risk profiling and modification of import conditions if appropriate. The information should also be shared with the states and, as appropriate, with businesses and others involved in the import chain.

Recommendations

51 To improve the management of biosecurity risks, a sample sufficient to identify risks and risk pathways should be collected and analysed from cases where imported goods have been rejected because of suspicion of an exotic pest or disease. This should be done at the public expense.

52 The National Biosecurity Authority should undertake a continuing program of analysis of risk pathways using data collected from pre-border intelligence and border inspections at control points along the continuum. The results of this analysis should be used to update risk management strategies and measures.

7.4.6 Comprehensive post-border monitoring and surveillance

The Panel believes that there is a strong case for a substantially greater effort to assist in detecting and managing post-border risks. As outlined in Chapter 2, the Panel is recommending that the Commonwealth extend its legislative reach to assist in this effort.

The Panel recommends that the Commonwealth establish a comprehensive monitoring and surveillance program for national priority exotic pests and diseases—covering terrestrial and aquatic environments as well as traditional agriculture. The design of the program should reflect the risk pathways and probability of occurrence to ensure early detection. The data collected should provide early warning for new or emerging pathogens or alternatively demonstrate Australia's freedom from exotic pests and diseases.

The program should include the Northern Australia Quarantine Strategy. Consistent advice to the Panel is that this is a highly effective Commonwealth

investment that with some relatively minor changes, could be enhanced significantly. In particular, the current limit on the conduct of activities (no more than 20km from the coast) should be replaced with a risk-return approach to the geographic coverage. Part of this should include increasing the frequency of surveillance in higher risk areas to provide greater confidence of detecting significant pests and diseases.

The monitoring and surveillance program should also incorporate existing port surveillance activities, such as the monitoring for Asian gypsy moth and various species of exotic fruit fly. These activities should be consolidated into a single program, ensuring that they are conducted on a risk-return basis and promoting collation and analysis of information collected. If deemed appropriate, port surveillance should be expanded to other insect species that could be carried into Australia on, for example, cargo containers or ships.

Responsibility for investigating suspected pest and disease detections associated with imports that have cleared the border was discussed in Chapter 2. The Panel concluded that this should be a responsibility of the Commonwealth, in line with its expanded legislative reach. This task should be incorporated into the national monitoring and surveillance program, to promote collation and analysis of information nationally.

In line with the expanded role for the Commonwealth in relation to ballast water (see Chapter 2), the post-border program should include monitoring of national priority marine pests and diseases at selected locations around the coast. This element of the program should serve as an early warning system for new marine incursions or the spread of species already established in other areas of Australia. The analysis of data generated by the monitoring program could underpin risk-based exemptions from ballast water management to coastal ships operating where there is a low risk of translocating pests of concern.

The monitoring and surveillance program should address exotic pests and diseases in Australia's flora and fauna and within feral populations. As evidenced by the work of the Australian Wildlife Health Network, relatively small investments in this area can achieve valuable biosecurity benefits. Investment in community based surveillance, including in peri-urban areas and through indigenous land managers, may also increase the range and effectiveness of the Commonwealth's national program.

National Sentinel Hive Program

Given the substantial economic cost of a varroa mite incursion, the Panel's view is that appropriate monitoring and surveillance arrangements need to be in place to support early detection. The investment required for this is insignificant relative to the risk of losses to the Australian economy that could result from an incursion.

The existing National Sentinel Hive Program should be continued until a more comprehensive arrangement is developed based on an assessment of risks. This more comprehensive arrangement would most likely use a mix of approaches at or around possible entry points (ports and airports)—including sentinel hives and bait hives (traps) that contain pheromones to attract bees. The mix of hives and traps would need to be in sufficient numbers with regular inspection to increase the likelihood of early detection. To ensure that it remains risk-based and effective, the new comprehensive arrangement should be built into the Commonwealth's national monitoring and surveillance program.

Recommendation

53 The National Biosecurity Authority should develop and maintain, in consultation with the states and territories and business organisations, a comprehensive post-border monitoring and surveillance program for national priority exotic pests and diseases, which should include:

- a an enhanced Northern Australia Quarantine Strategy that extends beyond the current 20km zone to provide coverage for at-risk areas around international airports, seaports and vulnerable areas of Australia's coastline;
- b existing and additional port surveillance activities;
- c the Commonwealth's responsibility for investigating suspected post-border detections of pests and diseases in imports;
- d strategic surveillance to support Australia's pest and disease free export claims and the conduct of Biosecurity Import Risk Analyses;
- e national priority marine pests and diseases to support the Commonwealth's expanded role in relation to managing risks associated with ballast water; and
- f the current National Sentinel Hive Program and its eventual replacement with a more comprehensive approach based on an assessment of risks.

7.4.7 Information sharing

The Panel considers that information obtained from biosecurity activities should be shared with governments, businesses and research organisations to the maximum extent feasible. Data sharing will enable further insights to be drawn by groups outside the National Biosecurity Authority. This will assist independent verification of risk pathways and reinforce a partnership approach to risk analysis. The National Biosecurity Authority should provide information to initiatives such as the National Biosecurity Information Network that are enabling data sharing and analysis within Australia.

The Panel notes that under the *Privacy Act 1988*, there may be limitations on the disclosure of personal information including the proposed sharing of information with other Commonwealth and state agencies. These limitations could be overcome if the proposed Biosecurity Act provides for the establishment of a data sharing scheme with provision for state agency involvement. This would provide statutory authority for information sharing in accordance with a number of Information Privacy Principles contained in the *Privacy Act 1988*.

Recommendation

54 The information and analysis obtained from pre-border, border and post-border biosecurity activities should be made available for use by state and territory governments, industry and research organisations. This should be done in a manner consistent with obligations under the *Privacy Act 1988* and should be supported by a biosecurity risk information sharing protocol and data sharing infrastructure.

7.4.8 Information technology systems to support risk management

The Panel believes that current information technology systems are lacking in a number of areas. Existing information technology systems do not meet the requirements for effective risk management, biosecurity research or trade facilitation.

The Panel recommends a comprehensive redesign of biosecurity information technology systems. In principle, the redesigned system should support the risk-return approach advocated earlier in this Chapter. It should be compatible with business and trading partner systems as far as possible, as well as those of other Commonwealth agencies and state governments. It is particularly important that the new system link smoothly with that of the Australian Customs Service. Consideration could be given to the opportunity to use an Australia-Pacific Economic Cooperation working group to support regional integration, as the Australian Customs Service has done. The Panel also encourages the exploration of opportunities to improve functionality and useability.

The Panel is aware that there is a considerable risk with developing software systems that strive to be 'all things for all people'. That is, as systems become more complex, development, training and maintenance costs can soar and the useability of systems can suffer. This trade-off will need to be carefully judged by the National Biosecurity Authority.

The resourcing implications of redesigning biosecurity support systems are discussed in Chapter 9.

Recommendation

55 Redevelopment of biosecurity information technology systems for the National Biosecurity Authority should occur promptly. As part of this task:

- a information technology systems should be developed to provide intuitive and user friendly interfaces and processes;
- b biosecurity risk research should be supported by providing reports and data in formats that are useful for government and other researchers, preferably via a free-to-access web interface;
- c paper work generated between the Authority and businesses should be eliminated wherever feasible through electronic interfaces, on-line approval systems and electronic certification; and
- d connectivity with other border agencies (particularly Customs) should be central and should also be enabled where possible with trading partner authorities, particularly with New Zealand.

7.4.9 Skills to support risk management

Efforts to improve the management of Australia's biosecurity risks may well be constrained by the limited availability of people with the expertise to implement a risk-return system. The Panel observes that suitably qualified science graduates may be insufficient to meet anticipated demand given prospective retirements. The skills shortages would become acute during an incursion where a surge response is needed to control it. Working with the states, businesses, research laboratories and academic institutions to address this risk will be crucial for the National Biosecurity Authority.

Options that the Authority could consider include developing partnerships with universities to offer holiday placements within biosecurity agencies, new postgraduate programs, scholarships, and sponsored research programs. The National Biosecurity Authority could also consider providing cadetships and other means of support for studies in for example, taxonomy, entomology, epidemiology and marine biology.

To raise awareness about biosecurity career options, the Panel recommends that a national biosecurity course be developed for incorporation into the curricula for agriculture and veterinary science colleges and universities. The biosecurity course should also be adapted for and delivered to all National Biosecurity Authority staff.

Recommendation

56 The National Biosecurity Authority should work with state and territory agencies, professional associations and higher education providers to develop a general biosecurity course to be incorporated in health, environmental, marine biology, veterinary and agriculture science curricula. All staff employed in the National Biosecurity Authority should be taught an appropriate adaptation of the general biosecurity course upon commencement of their employment in the agency.

7.4.10 Research and infrastructure to support risk management

The Panel heard conflicting views about arrangements for prioritising biosecurity research in Australia. AusBIOSEC was cited as a strategy for improving coordination in this area however, no single arrangement or institution was identified as leading research prioritisation and resourcing. The Panel sees a role for the Authority in this regard, and recommends that it develop a set of national priorities for biosecurity research. It should then work with research bodies to coordinate the research effort towards the national priorities. In developing the national priorities, the Authority should research needs in relation to new technologies, for example updating of in-line x-rays, new rapid diagnostic tools, vaccines, pest and disease control methods and humane animal disposal methods.

The National Biosecurity Authority, in conjunction with the states, should review the capacity of Australia's diagnostic laboratories to handle the anticipated workflow arising from a major incursion and rectify identified shortcomings. The Authority should also review the capacity of laboratories to act collaboratively, noting that a National Animal Health Laboratory Strategy is currently under development. The Panel notes that significant challenges remain in connecting public and private diagnostic laboratories into a national system for plant pests and diseases. The Panel also notes that more needs to be done to strengthen laboratory networks for animal and plant health, including the environment.

A significant biosecurity research issue is the availability of rapid and reliable diagnostic tests and vaccines for exotic plant and animal pests and diseases of national priority. The Panel was provided with evidence that access to exotic pest and disease material to develop these tests and vaccines is important, but currently difficult. Live foot and mouth disease virus was mentioned as a specific example. The Panel's view is that access to positive control samples, such as the foot and mouth disease virus, is vital and should be permitted under the strictest import permit conditions to approved laboratories such as the Australian Animal Health Laboratory.

While some plant research is undertaken in overseas facilities, there is a need for improved facilities within Australia. This may be achieved by identifying and upgrading existing laboratory capability. A high level containment facility would be required if extensive research into major exotic plant pest threats were to be undertaken in Australia.

At the same time, the National Biosecurity Authority should work with other regulatory agencies, such as the Australian Pesticides and Veterinary Medicines Authority and the Office of the Gene Technology Regulator, to harmonise requirements for approving facilities for animal and plant research. The existing standards arrangement is complex and confusing for those seeking approval. This is not in the interests of Australia's biosecurity system. The Panel's view is that the regulatory agencies involved need to agree a single standard for the approval of biosecurity requirements for animal and plant health laboratories.

Recommendations

57 The National Biosecurity Authority should develop national research priorities, including for new technologies to better address biosecurity risk, and should work with research bodies to coordinate the research effort towards those priorities.

58 The National Biosecurity Authority should ensure Australia has the laboratory capability and capacity to manage exotic pest and disease incursions of national significance. The Panel recommends that the Authority, working with the states and territories, should improve the quality and use of state and territory laboratories to support national biosecurity priorities.

59 The import of positive control samples (including the foot and mouth disease virus) for use in laboratory diagnostic research and capacity building for exotic disease pathogens is vital and should be permitted under strict import permit conditions to laboratories such as the Australian Animal Health Laboratory.

60 The Commonwealth government should move toward a unified coordinated system for the approval of quarantine facilities (for animal and plant research laboratories). This would require agreement between the National Biosecurity Authority, Australian Pesticides and Veterinary Medicines Authority and the Office of the Gene Technology Regulator for one system of approval of laboratories.

7.4.11 Post-arrival quarantine stations

Having access to appropriate post-arrival quarantine facilities for imported animals and plants is a fundamental part of managing biosecurity risks.

The Panel recommends that the uncertainty of the Commonwealth-operated quarantine stations should be resolved urgently. The Panel shares Commissioner Callinan's view that there has been an unacceptable delay in resolving the number of Commonwealth-operated stations and their lease tenure arrangements. Leases on existing stations are due to expire within the next few years and, given the time to establish alternative facilities, the Commonwealth is fast running out of time to make considered decisions.

The Panel believes the assumption that the Commonwealth should be exclusively responsible for services for high biosecurity risk plants and animals is flawed—an example of the successful private provision of such high-risk biosecurity facilities is the operation over many years of egg hatching facilities by major poultry businesses. The Panel reiterates the Nairn Report's conclusion that with appropriate auditing, there is no reason why private sector operators cannot also provide biosecurity services, even for high-risk imports.

Equally, the Panel believes there is a case for the Commonwealth to own and operate specialised facilities where monopoly rents might be charged (either to the Commonwealth in a lease-back arrangement, or to biosecurity customers) if such facilities were operated privately. In the case of low volume products, the private provision of biosecurity services may not be viable. One view is that such imports should simply be not allowed, but the Panel considers that facilities need to be provided to ensure a legal and biosecurity-safe method of importing organisms. An example is the importation of honeybee brood stock which could be smuggled into the country if no accessible, legitimate means were made available.

An anti-smuggling subsidy has been paid for several years to reduce the cost of importing some high-risk plant material and therefore the incentive to smuggle. The Panel notes that this was primarily intended for commercial horticultural material, to improve local production or provide new species. The Panel received no evidence one way or the other on the effectiveness of the subsidy, the real value of which has declined significantly. The Panel considers that other avenues for improving compliance with biosecurity requirements should be explored. These include investigating options for reducing the commercial incentive to smuggle by enhancing the scope to use private quarantine approved premises to 'bulk-up' (propagate additional material for commercial release) plant material once initial testing is complete. The Panel's recommendations to increase the rigours of pre-border biosecurity assessments, improve risk management at the border and enhance prosecutions for smuggling offences, are all relevant. The Panel also recommends a review of the penalties for smuggling.

Recommendations

61 The Commonwealth should own and operate specialised quarantine facilities where monopoly rents might be charged if such facilities were operated privately.

62 The Commonwealth should immediately clarify its intentions with respect to the future ownership, management and operation of the quarantine facilities currently located at Eastern Creek and Knoxfield.

63 All quarantine stations that manage equivalent risks should have their performance accredited and audited to equivalent standards, irrespective of whether the quarantine station is privately or publicly owned and operated.

64 The effectiveness of the anti-smuggling subsidy for plant material should be reviewed, with other avenues explored for improving compliance with biosecurity requirements, including a review of smuggling penalties.

7.4.12 Risk management for exports

The Panel notes that inspection and certification systems for exports are generally working well, although some sectors have suggested that costs are unnecessarily high and standards are imposed beyond those required for domestic food safety and biosecurity purposes. The Panel acknowledges the commercial imperative for business to comply with export requirements. The Panel notes there are opposing views regarding the acceptance of domestic standards for export certification purposes.

The Panel recognises that in some cases, the export specifications to meet the requirements of importing countries are additional to Australian standards. The Panel notes that state food inspection agencies have, or are, developing inspection systems based on quality assurance arrangements for major agricultural commodities. In some cases (for example, in the dairy sector), these appear to deliver nationally consistent assurance. The Panel concludes that the Australian standards could be appropriate as the basis for export in some, but not all, agricultural commodities, providing this is accepted by importing authorities. The Panel strongly supports efforts to overcome artificial barriers to exports including the recognition of equivalence of Australian standards meeting importing country requirements where possible.

To support such an approach, the Panel recommends that Australia should expend more effort in ensuring that the performance of state systems for regulating food and agricultural commodities are consistent with agreed national standards through a national auditing process.

The Panel notes that 'AQIS export certification' carries considerable status internationally. As discussed in Chapter 3, the provision of export certification should be a function of the National Biosecurity Authority.