

Queensland Biosecurity

A discussion paper



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The Department of Primary Industries and Fisheries (DPI&F) seeks to maximise the economic potential of Queensland’s primary industries on a sustainable basis.

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Foreword

Biosecurity is a Queensland Government priority. Our ultimate objective is to develop an internationally recognised 21st century biosecurity strategy in which all Queenslanders are confident that our economy, unique environment and way of life are adequately protected from the full range of pests, diseases and contaminants.

The Queensland Government cannot achieve this alone. Biosecurity is everyone's business. The active involvement—and investment—of industry and the community, along with all three levels of government, is critical to achieving sound biosecurity outcomes.

Nor can we achieve our objective in a piecemeal fashion. We need a biosecurity blueprint for the future, and to this end we are developing the first Queensland biosecurity strategy - with a five-year time frame and in consultation with stakeholders.

We need to recognise that biosecurity is not only about protecting agriculture, but managing negative impacts on other industries, our natural and built environments, our biological diversity, the many impacts on human health and amenity and our cultural heritage.

For those who might think biosecurity is not important, perhaps they have not yet identified with the fire ants, red-eared slider turtles, citrus canker, Siam weed, sugarcane smut, tilapia, locusts, wild dogs, equine influenza and a long list of other pests and diseases, not to mention the responsible use of agricultural and veterinary chemicals, the management of food contamination, and satisfying community expectations for animal welfare.

Given the host of potential over-the-horizon threats, such as eucalyptus rust, rabies, foot and mouth disease, avian influenza, witchweed, Japanese encephalitis, salmonella enteritidis, red vented bulbuls, Burmese pythons, Asian tiger mosquitoes and fish eating macaques, Queensland has much to lose if we are not fully prepared.

We can not afford to be complacent.

Major biosecurity incidents are expected to become more frequent as the movements of products and people around the world increases, climates and environments change, trade agreements become more common and market requirements intensify.

Fortunately, Queensland already is well positioned to build a world-class biosecurity system. Clearly though, we can not mitigate against all biosecurity threats—there is no such thing as zero risk or zero impact when it comes to biosecurity. Migratory species that carry pests and diseases cannot be stopped at Queensland's borders. The movements of people and products into Queensland will always bring with them inherent risks that must be managed.

However, we can reduce the likelihood of many biosecurity incidents occurring and we can reduce their negative impacts should they eventuate.

We need to be far smarter in deciding how we direct our biosecurity efforts.

Decision-making in biosecurity is about defining risk as accurately as possible, determining the most appropriate intervention to minimise the risk while tolerating a certain level of risk in the system.

Queensland already is recognised for many of its biosecurity achievements, including our successful response to the recent equine influenza outbreak but we will need to continually build on our experiences if we are to confidently respond to the biosecurity challenges of the future.

Queensland needs a highly effective biosecurity system resilient flexible enough to manage new and existing threats to the economy, human health, the environment and, ultimately, our way of life.

I invite you to use this discussion paper as a stimulus for contributing your ideas and views to assist in the development of the biosecurity strategy for Queensland.

Minister for Primary Industries and Fisheries
The Honourable Tim Mulherin MP

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Introduction

To assist you in contributing your ideas and views, the discussion paper:

- Outlines the challenges affecting the future of biosecurity and a vision for the future. Your comments and views are particularly sought on:
 - the vision, outcomes and principles for the Queensland biosecurity strategy (Refer to Part 2 pages 4–6)
 - issues to be considered in developing the Queensland biosecurity strategy (Refer to Part 3 pages 7–19).
- Includes a booklet to provide you with easy access to information about the significance of biosecurity to Queensland, the national biosecurity system, and the role of Biosecurity Queensland.

The public consultation process will run until 30 September 2008 coordinated by a Project Team in Biosecurity Queensland. To make sure that we hear your views you can:

- Send a personal response by mail, fax or online.
- Contribute to a response from a particular group or organisation.
- Take part in a forum (details will be provided on Department of Primary Industries and Fisheries website).

It will greatly assist the Project Team if your responses:

- Include your name and a brief description of the capacity in which you write (e.g. as an individual land owner or an association representative).
- Identify the issue/s that you are responding to—either those issues raised in the discussion paper or other issues you would like to raise. You may like to organise your responses in terms of: current strengths, major limitations, areas for improvement, who should be involved, and other comments you'd like to make.

The material received by the Project Team will be collated and analysed and a report will be published late in 2008.

Your comments relating to Queensland's biosecurity system will be used to inform the drafting of the biosecurity strategy. Those relating to the national biosecurity system will be used to inform Biosecurity Queensland's role in national policy debates and forums.

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If you have any questions about the consultation process please call the Project Team

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Web: Visit www.dpi.qld.gov.au. Information about public forums is also available on the website.

Part 1: Setting the scene

1.1 What is biosecurity?

Biosecurity is the protection of the economy, the environment, human health and social amenity from the negative impacts of pests, diseases and contaminants.

The Queensland biosecurity strategy will focus on the management of the risks associated with:

- a) exotic and endemic pests and diseases that impact on
 - plant and animal industries, including agriculture, horticulture, aquaculture, fisheries, forestry and racing
 - biodiversity and the natural environment (terrestrial, freshwater and marine)
 - cultural heritage, recreation, sport and social amenity
 - infrastructure and service industries, including power, communication, shipping, and water supplies
 - tourism, lifestyle and pleasure industries
 - built environment.
- b) pests and diseases that transfer from animals to humans (zoonoses)
- c) biological and chemical contaminants of food supplies and the environment
- d) the impacts of pests, diseases, and contaminants, and associated biosecurity activities on the welfare of animals
- e) the keeping of exotic animals.

Communicable pests and diseases that impact on human health are beyond the scope of this biosecurity strategy.

1.2 The need for a Queensland biosecurity strategy

Developing a biosecurity strategy for Queensland is an important step in achieving a shared vision among key stakeholders for biosecurity in Queensland.

This will be the first biosecurity strategy for Queensland. It is the beginning of a longer and more detailed program of work to build on our current biosecurity system to provide a proactive modern 21st century biosecurity system. The biosecurity strategy will be supported by a series of more detailed strategies and action plans.

The biosecurity strategy will take account of Queensland's obligations to national biosecurity policies, actions and priorities, and provide the framework for decision-making and actions at the state level. The roles, responsibilities and actions of Biosecurity Queensland and other key stakeholders will be considered in the development of the strategy.

It will not be a static document—biosecurity risks, responsibilities and pressures on resources, capability and service delivery can change very quickly. The biosecurity strategy will be periodically evaluated and reviewed so that progress against short-, medium- and longer-term objectives and outcomes can be used to inform future iterations of the strategy.

The Queensland biosecurity strategy will:

- Articulate a vision and outcomes for a modern, integrated biosecurity system.
- Set some broad policy principles to underpin our actions.
- Identify areas for immediate and longer-term action.
- Describe the roles and responsibilities of key stakeholder groups—government, non-government, industry and community.
- Define how success will be evaluated and reported.

1.3 The challenges ahead

Queensland's biosecurity strategy will need to address a diverse range of complex factors that are shaping the future directions for biosecurity.

The following points identify the most significant challenges and these are referred to in more detail in the issues discussed in Part 2.

- Biosecurity operates within an uncertain, unpredictable environment—it is not a matter of if but when there is a significant biosecurity event. What that biosecurity event may be and how it will impact on the economy or the environment is not possible to predict with certainty. The challenge is not so much about how to predict future biosecurity events, but how to plan for future biosecurity events.

Between 40 000 and 70 000 people die of rabies worldwide each year, with a further 10 million receiving treatment after being exposed to animals suspected of having rabies. Rabies could profoundly change our way of life and the disease would be difficult to eradicate if it became established in dogs and cats or native wildlife.

- There is no such thing as zero risk when it comes to biosecurity. No measures or mitigation strategies can completely remove the risk of a pest or disease entering or establishing in Queensland. Nor may it be possible to remove all biosecurity threats once they enter the state. The challenge is to ensure appropriate decision-making frameworks are in place, taking into account the best scientific information, sound risk analysis and cost–benefit considerations to support the best approach to prevent or manage a biosecurity event.
- More and more of the state's biosecurity activities are determined locally in response to obligations and commitments nationally and internationally. A challenge is to ensure that sufficient funds are allocated to fulfil national obligations and state priorities. This may require shifts from activities that have been a priority in the past but are now a lower priority when faced with building a strong, integrated biosecurity system.

- Mounting a response to a major biosecurity event is resource intensive. The challenge is ensuring all stakeholders have access to resources, appropriate trained personnel and systems to mount an efficient and effective emergency response. It is also important to ensure that key biosecurity activities continue to be resourced during an emergency response.
- Inability to manage established pests and diseases, invasive plants and animals, or contaminants and maintaining high standards of animal welfare can have a severe negative impact on the state's economy, environment and social amenity. The challenge lies in providing emergency readiness and response capacity as well as adequately resourcing the ongoing management of biosecurity risks.
- Agricultural biosecurity remains a top priority for Queensland; however, biosecurity programs and investment must also cover a much wider range of pests, diseases and contaminants, and their impacts on marine, freshwater, terrestrial and built environments. The extent to which pests, diseases and contaminants already impact on the natural terrestrial and aquatic environments is uncertain and the over-the-horizon threats are potentially devastating to the natural environment (e.g. eucalyptus rust and Varroa mite in bees). Addressing the gaps in Queensland's biosecurity system will be a major challenge and generate additional resourcing pressures.

Bees are humble little insects responsible for pollinating much of the food we eat. Without them, we'd starve. A tiny parasite, the Varroa mite already destroying bee populations around the world is now on our doorstep in New Zealand. The cost of attempting eradication in New Zealand is estimated to be between \$55–70 million.

- Managing the competing interests of stakeholders and ensuring meaningful and useful levels of involvement in preparing for, preventing, and responding to biosecurity events can be difficult. Clearly identifying and understanding the relative roles and responsibilities of Commonwealth, state and local governments, non-government organisations, industry, land owners and the community is critical to achieving sound biosecurity outcomes.

- The national biosecurity policy agenda has shifted to one of shared responsibility between government, industry and the community. Yet, no consistent frameworks exist to determine whether a particular activity is for the public good (and therefore an issue for government) or private benefit (and therefore an issue for industry or individuals). Balancing the two is a challenge, particularly when decisions need to be made about resourcing and who pays.

AusBIOSEC is the Australian Biosecurity System for Primary Production and the Environment. The system is being enhanced through a whole-of-government project, which was established in October 2005. The aim is to bring together, under an overarching national framework, biosecurity activities being undertaken by the Australian Government, state and territory governments, industry, landholders and other key stakeholders in primary production and the environment.

- The shared responsibility notion can only be realised if people actually know more about biosecurity and understand what is at risk, what to look for, how to report, what actions will be taken and what they can do to assist. This can be challenging since biosecurity threats don't tend to focus people's attention until an incident occurs. People don't understand invasive or exotic pests and diseases as easily as they understand floods or cyclones. A major challenge lies in improving community and industry engagement and education about biosecurity risks and impacts.

Almost half of Australia's 220 declared noxious weeds were introduced deliberately, while approximately 34 species of alien fish have established in Australian freshwaters and 250 introduced marine organisms have become established in Australian waters.

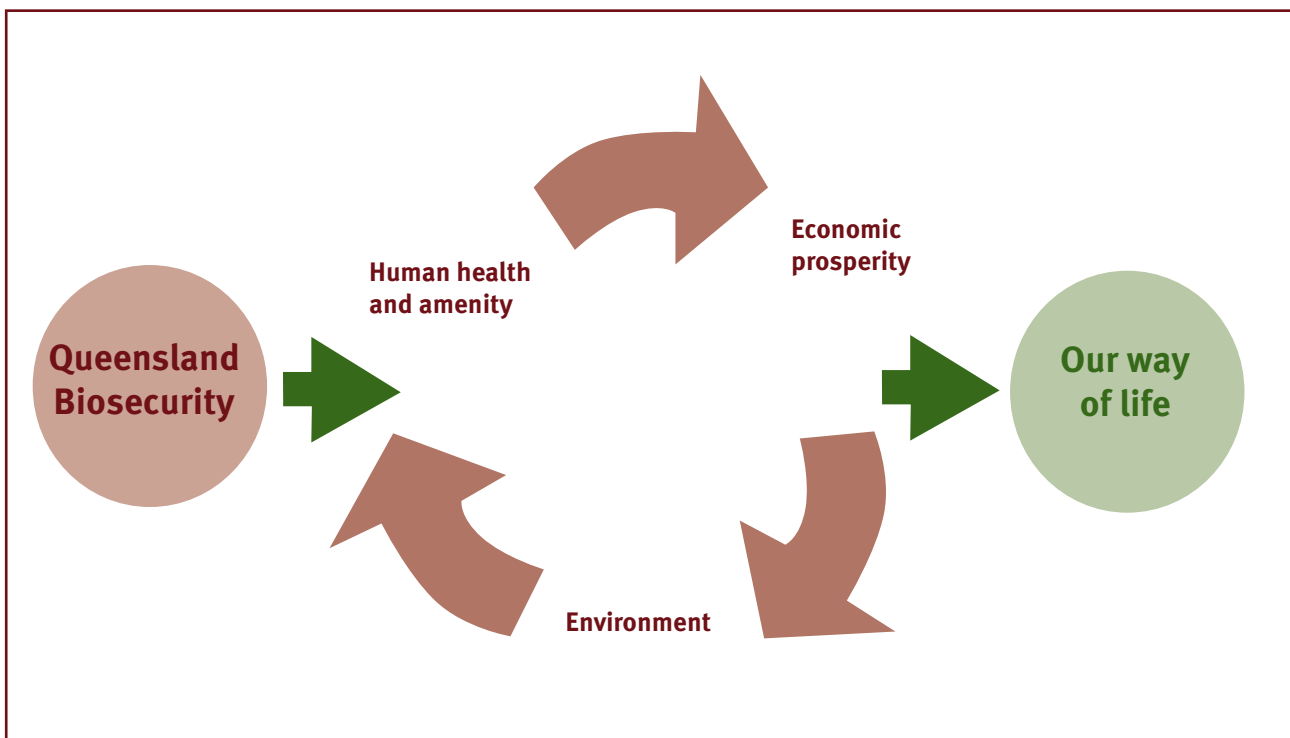
- If biosecurity is everyone's business and a shared responsibility, the challenge is to find a broader range of mechanisms—both formal and informal— to secure a wide range of stakeholder participation in good biosecurity practices including incentives for good practice that encourages voluntary participation and compliance. Queensland's biosecurity legislation will also need to be reviewed to ensure it supports a modern approach to biosecurity management.

Part 2: The future

2.1 A vision for the future

The Queensland biosecurity strategy will articulate a vision for the future of biosecurity. The following statement is proposed – you may like to provide comment or outline your vision for Queensland biosecurity.

Queenslanders are confident that our way of life is adequately protected from the negative impacts of pests, diseases and contaminants.



The vision is for Queensland to have a highly effective biosecurity system with the resilience to manage new and existing biosecurity threats to the economy, human health and amenity, the environment and, ultimately, our way of life.

Part of this vision is for Queenslanders to gain a much better understanding the importance of biosecurity and how they can play their part in protecting Queensland. We will have a clear picture of the biosecurity risks faced by Queensland and a rigorous risk analysis process and good communication mechanisms to inform people about those risks.

Based on risk analysis, Queensland will have an integrated system for preventing, eliminating or managing major threats. Effective detection systems will be in place, taking into account the latest surveillance technologies. Queenslanders will know what to look for and report any serious biosecurity threats.

Emergency responses will be rapidly and effectively mounted for serious incursions and will be underpinned by efficient systems. A network of appropriately skilled people will be called upon in times of emergency. The full range of economic, environmental and social impacts will be taken into account when making decisions during major responses.

When it is not scientifically possible or feasible to eradicate a pest or disease, or when dealing with the management of established species, decisions about what to do will balance the cost and benefits of taking action or no action.

Interstate and international market access issues will be addressed collaboratively between government and industry with the goal of maximising trade opportunities while minimising impacts on business for meeting biosecurity requirements.

Any inspection and certification systems underpinning market access will be streamlined nationally and as client-friendly as possible.

Decisions will be based on good information and sound science and will be transparent. Information will be current, well organised and rapidly communicated.

Queenslanders will be confident that Biosecurity Queensland is effectively managing biosecurity threats facing Queensland while actively contributing to the national biosecurity system.

Biosecurity will be appropriately resourced and a balance of public good and private benefit considerations will be applied to securing necessary investment. Resource allocation decisions will be made within a consistent and transparent prioritisation framework.

2.2 Queensland biosecurity outcomes

Within this vision for Queensland biosecurity, a small number of agreed priority high-level outcomes will drive the strategy. The following outcomes are proposed—you may like to provide comment or to suggest other outcomes.

- Biosecurity threats in Queensland are effectively managed through a proactive, biosecurity system where responsibilities are shared and decision-making is based on sound risk management principles.
- New exotic pests and diseases are prevented from entering, spreading or becoming established in Queensland.
- Contaminants are managed through the development of nationally consistent standards, systems and regulatory frameworks.
- Biosecurity incidents are detected, prioritised and responded to on the basis of sound risk management principles and emergency response frameworks.
- Significant established invasive animal and plant pests, diseases and existing contaminants are contained, suppressed or managed to reduce negative economic, social and environmental impacts.

2.3 Principles to underpin the Queensland biosecurity system

Consistent with the vision for biosecurity and the outcomes we aim to achieve, we can identify several key principles to underpin decision-making processes and resource prioritisation—to guide priority setting—and inform regulatory frameworks. Agreed principles can help to manage the complexities inherent in a modern biosecurity system.

The following principles are proposed—you may like to provide comment or to suggest other principles.

Prevention—Early recognition and intervention of biosecurity threats provide the best return on investment—prevention is better than cure.

Risk management approach—There is no such thing as zero risk and acceptable levels of risk will mean there will be biosecurity incidents. These incidents and their impacts require mitigation within a risk and cost–benefit framework.

Responsiveness—Biosecurity stakeholders respond quickly and confidently to new and emerging biosecurity threats and opportunities.

Sharing of responsibility—Biosecurity is everyone’s business. The success of Queensland biosecurity is dependent on government, stakeholders and the community working together to achieve common outcomes. Stakeholders must own the problem and equally own the solution.

Funding responsibilities—The responsibilities for the costs of biosecurity are aligned to ownership of risk, and apportioned according to direct and indirect, and public and private benefits.

Integration and harmonisation—Queensland’s biosecurity arrangements work in harmony and are integrated with national biosecurity arrangements and broader objectives of community, government and industry.

Science and knowledge—Queensland’s biosecurity decision-making frameworks and associated investments are well informed.

Accountability and transparency—Responsibilities for biosecurity are known and respected by all stakeholders and decisions are transparent, justified and well understood.

To address the challenges facing the future of Australia's biosecurity the Queensland biosecurity strategy will need to deal with a number of key issues.

This section outlines 11 key issues and some actions that could be included in the strategy.

Some of these issues are strategic—relating to critical inputs such as leadership, investment, and decision-making—while others are more operational, relating to the biosecurity delivery initiatives and the underpinning capabilities and capacities needed to achieve Queensland's biosecurity vision.

We would like to hear your views and ideas on these issues and the suggested areas for action. You can respond either as an individual or as an organisation on all of the issues or just the ones that are most relevant to your interests.

You may like to comment in terms of:

- current strengths
- major limitations
- areas for improvement
- who should be involved
- other comments.

3.1 Sharing leadership

Achieving the vision for biosecurity will rely on strong leadership from both government and key stakeholders. This leadership must work to build and sustain the relationships, systems, capacity and capability to adequately manage the biosecurity risks as they affect the economy, the environment and our lifestyle.

Queensland now has a single point of leadership and coordination for the State Government's role in biosecurity through Biosecurity Queensland. One of Biosecurity Queensland's major tasks over the next five years is to build on and improve systems, capabilities and capacities to coordinate and lead the government's biosecurity efforts and to establish mechanisms that facilitate shared leadership and commitment from non-government stakeholders.

Queensland must ensure that it maximises the opportunities from collaborative national arrangements to meet Queensland's biosecurity needs. It must also ensure that policy developments and reviews recognise Queensland's rights and obligations in managing our unique biosecurity status within the national and international biosecurity context. This will be an important leadership role for Biosecurity Queensland. Queensland industry groups also have a strong leadership role in shaping the national policy agenda for biosecurity and this capacity should be harnessed alongside that of government to maximise Queensland's policy leadership.

A shared responsibility approach means that roles and responsibilities for the prevention, preparedness and response measures need to be clearly defined and accepted by stakeholders. Leadership aimed at developing and maintaining effective partnerships as well as co ordination will assist to build resilience and confidence in Queensland's biosecurity system.

Conflicts of interest are common in biosecurity and government must fulfil multiple roles to achieve biosecurity outcomes. For example, Government often seeks voluntary stakeholder participation while at the same time is obliged to ensure regulatory compliance. Leadership from government is important to ensure that while competing interests are recognised and valued, they cannot be an impediment to responsible biosecurity.

The Queensland biosecurity strategy could include:

- building Biosecurity Queensland's capacity and capabilities as the government's point of leadership and coordination for managing biosecurity risks
- government and industry participating in and influencing national biosecurity policy and decision-making processes
- establishing and using governance and advisory arrangements that support a shared responsibility approach to biosecurity in Queensland.

Australia has been free of brucellosis since 1989 as a result of a nationally coordinated eradication program that commenced in 1970.

3.2 Justifying and prioritising investment

What is the appropriate level of investment for Queensland to make in biosecurity and in what activities? These are important questions for stakeholders and government, and must be answered in an environment characterised by the uncertainty of incursions competing interests and increasing pressures on public funding. They also must be answered with a view to the future, recognising and planning for changing climate and land use patterns, and the global business environment. Better use of limited resources through better planning, policies and practices across all stakeholders will be important to the future success of biosecurity in Queensland.

Any assessment of total investment in biosecurity needs to recognise the funds committed by public and industry sources in addition to the efforts, time, and funds contributed by land owners and the general community. The effectiveness of biosecurity investment will depend on the long-term cooperation between government, industry and the community, and between the levels of government, and their willingness to co-invest.

Determining the total investment needed for biosecurity involves not only the questions of how much to invest and who should invest, but also the questions of how investment is justified and prioritised—deciding what is done, when it stops and what is not done. In fact, there is a primary need to determine why there should be any investment in a particular biosecurity issue in the first place.

The assessment of whether to respond to a biosecurity incident needs to consider the economic, social and environmental costs of not responding and the efficiency and feasibility of a response. It also needs to consider the cost of mounting the response, which includes lost income and recovery for industries directly affected by the outbreak, indirect costs to the community or other industries as well as the actual investment in eradication or containment.

The papaya fruit fly incursion cost Queensland industry approx \$110 m from 1995 to 1998 (DPI&F).

Prioritisation of biosecurity investment is currently fragmented and seldom takes into consideration the full range of economic, environmental and social benefits/consequences, the diversity of new and existing biosecurity threats or the myriad of biosecurity functions such as prevention, response and ongoing management, or support processes such as science, communication, regulation. Developing a single decision-making (investment) framework that balances all interests as well as addressing the obligated responsibilities associated with legislation and the requirements imposed by national and international policies should be a priority for the biosecurity strategy.

Traditionally, government has been the major funder of biosecurity. National and international agreements and obligations determine much of this investment, particularly in terms of emergency response capability and the specific activities for the ongoing management of established pests and diseases. Over recent times, investment from private sources has become more significant as expectations grow for user-pays arrangements where there are private benefits and where industry can see the value to their business of adopting sound biosecurity practices.

The ability of locusts to form dense aggregations makes them formidable pests. Locusts can rapidly devastate crops and have the ability to migrate over large distances, which places virtually all agricultural areas at risk. Landholders and local, state and Australian governments share the costs of collaborative control programs aimed at preventing locusts from reaching their plague potential.

When thinking about the future, experience tells us that biosecurity investment must provide for both core capacity and emergency responses. Core funding must support the basic resources (including staff, information systems, and infrastructure) as well as the technical capabilities to support delivery initiatives and program outputs other than emergency responses.

The expanded focus of biosecurity, coupled with the tightening fiscal constraints and the need to prioritise risks, requires rigorous evaluation of all programs and our capacity to make investment decisions based on demonstrated and reported achievements.

Ultimately, Queensland needs an investment model that recognises the full scope of biosecurity activities—beyond the traditional areas of investment—and satisfies the need for adequate and non-competing investments in prevention, preparedness, response and ongoing management. This model needs to recognise both public and private investment and provide investors with confidence that the best use is being made of available resources. It should also work to encourage new sources of investment.

The Queensland nursery industry surveyed its members in 2007 on the impacts of red imported fire ant (RIFA) based on the interstate and intrastate movement protocols imposed. The results show that the industry is investing over \$18 million per year in RIFA inspection and compliance costs, movement protocol implementation and loss of market share that total approximately \$126 million over the past seven years.

The Queensland biosecurity strategy could include:

- developing an integrated risk based decision-making framework that can guide the prioritising and reprioritising of public and private expenditure to meet competing biosecurity demands
- investigating opportunities to expand private investment in biosecurity
- developing ongoing evaluation and cost/benefit analysis approaches for all major biosecurity programs.

3.3 Taking a strategic approach to the science

Biosecurity is heavily reliant on science¹ built on multi-disciplinary approaches and private and public sector cooperation across state, national and international borders.

High quality scientific information underpins risk assessment, decision-making and management of biosecurity. Science also provides the way forward for biosecurity, with research to identify new and better ways to prevent, prepare for and manage biosecurity risks. Biosecurity science contributes to the high standards of animal welfare which are essential to market access and to meet public expectations. Modern biosecurity systems also require better understanding of the human factors associated with biosecurity threats and, increasingly, social sciences and social marketing are important contributors.

The need to prioritise and undertake science should feature in the biosecurity strategy. Making sure the best outcomes from investments are realised, requires a strategic approach to guide future efforts. A biosecurity science action plan developed as a complementary part of the biosecurity strategy would provide that guidance and address the following questions:

- **Science direction**—What needs to be done? Prioritising actions and investments.
- **Science delivery**—Who does it? Linkages, alliances and strategic partnerships.
- **Science uptake**—How do we make it relevant and used? Translating research into tools and management strategies.

Queensland is already well positioned with many linkages, alliances and strategic partnerships with state, national and international scientific organisations. Strengthening these relationships and exploring opportunities for new partnerships with industry and natural resource and land management organisations will be important.

A private international company is set to commercialise a natural bacteria that can kill pest shellfish that have overwhelmed north-eastern US freshwater lakes and encrusted ships and pipelines.

Another area of growing interest, both nationally and internationally, is the relevance and importance of social sciences in modern biosecurity systems. Biosecurity risks and impacts are inherently social and this means that understanding human behaviours values and attitudes—particularly in relation to response to risk—provides opportunities to better target biosecurity measures and achieve greater community engagement. Improving social science capacity will support better decision-making, risk management and community engagement.

With an estimated 12% of the Australian population keeping aquarium fish it is not surprising that some 22 unwanted species have been released into the wild through the aquarium pathway. Fish make up almost half of the 73 vertebrate animals that have established wild populations in Australia.

There are also opportunities to position Queensland's biosecurity science community as leaders in the national and international biosecurity science community. For example, the Queensland Government's Smart State science initiatives can be capitalised on to establish internationally recognised centres of excellence in 'niche' biosecurity science.

The biosecurity science action plan could include looking at innovative ways of adapting existing and new technologies capable of improving the efficiency of biosecurity implementation programs.

*Research is underway in Queensland to determine if *lantana* can be mapped using satellite imagery. Determining the density and distribution of invasive weeds remains a considerable stumbling block to effective control and remote sensing may provide a real solution. Satellite imagery has already shown to be very effective in determining the extent of water weeds such as *water hyacinth*.*

The Queensland biosecurity strategy could include:

- developing a biosecurity science action plan
- building social science capacity
- establishing centres of excellence for niche biosecurity science.

¹ The term 'science' is inclusive of research and development, provision of scientific knowledge and systems for decision makers and the development of technologies and tools for biosecurity related activities such as laboratory diagnostic testing and vaccination against disease.

3.4 Focusing on the tropics

The Queensland biosecurity strategy could include a particular focus on tropical biosecurity. Queensland is one of the few highly developed regions in the tropics and the Queensland Government has identified this as an opportunity to gain significant economic, social and environmental benefits for the state. Changes in pests and disease distribution, shifting growing conditions for different plants and animals, and the expected increase in water in the north through climate change will impact on biosecurity in the region.

This whole-of-government focus on the tropical north is an opportunity for improving Queensland's biosecurity system. Tropical Futures is one of the government's six research and development priorities and a recent report by the Smart State Council highlighted tropical health, including emerging zoonoses, and tropical environmental science and management as well as tropical primary industries. As mentioned in Section 3.3, tropical biosecurity would be a key theme in a Queensland biosecurity science action plan.

Queensland is in the position to be influential in tropical biosecurity, working with our closest neighbours to improve pre-border biosecurity and keep the risks offshore. Queensland's biosecurity outcomes can also be improved through developing and sustaining cooperative relationships and partnerships with neighbouring tropical countries, assisting them to improve their own biosecurity while improving our capacity to keep pests and diseases offshore. There is also the opportunity for Queensland to create a competitive advantage for tropical industries through good biosecurity practices and favourable pest and disease status.

Sound working relationships between government agencies, local councils and Indigenous communities in the Far North also underpin efforts in managing invasive plants and animals, improving animal welfare and early warning surveillance activities.

The Queensland biosecurity strategy could include:

- recognising north Queensland's unique values and its proximity to biosecurity threats in neighbouring countries
- capitalising on opportunities to lead collaborative tropical biosecurity science.

3.5 Improving emergency response

The equine influenza outbreak

Early on Saturday 25 August 2007 the Department of Primary Industries and Fisheries (DPI&F) was notified that horses suspected of having a highly virulent exotic disease called equine influenza (EI) had been detected in an equestrian centre in Sydney.

By that afternoon, DPI&F announced a state-wide standstill, meaning no horses could move from where they were situated until further notice. Approximately three weeks into the EI response in Queensland, horse owners were introduced to a series of movement zones – red, green and orange.

At its peak, Queensland had over 3 800 known infected properties and nearly 70 000 horses had been vaccinated. However the disease was contained and there have been no reported cases of EI in Queensland since 25 December 2007.

The outbreak of equine influenza had a profound financial affect on the horse sector which is worth \$6.2 billion per year to Australia, and with volunteer support, is worth \$8 billion per year. The response to EI heavily impacted on social and recreational activities, and the many businesses that support the horse industries.

The key learning from the response has been the need to engage with all relevant organisations in open and frank discussions, particularly in relation to striking a balance between minimising the negative impacts of the response and achieving the ultimate goal of eradication. Queensland horse owners responded diligently to the standstill and this high level of compliance was a key factor in containing the spread of the disease.

Industry stakeholders and national partners highlight the importance of having high quality emergency response systems in place and the need to improve the level of preparedness to respond to a biosecurity incident.

Queensland's emergency response capability is underpinned by the existing AUSVETPLAN, PLANTPLAN and the AQUAVETPLAN and conforms to principles agreed among the Australian Government, the states and territories, and industries with regards to coordination and cost-sharing. There is also community expectation that emergencies are dealt with quickly and efficiently and with minimal impact on members of the community. Key biosecurity activities also need to continue to be resourced during an emergency response.

Recent experience dealing with multiple biosecurity incidents, such as equine influenza, Asian green mussels, electric ants and fire ants, as well as continuing surveillance for citrus canker and sugarcane smut, together with the changing risk environment outlined earlier, suggests that improving our capacity to respond to biosecurity emergencies should be a major focus for the next three to five years.

Even though each biosecurity emergency response is different, good preparation, training and systems can significantly reduce the costs of responding to outbreaks and the impacts on industry and the community. While national plans provide guidance for biosecurity emergency responses, Queensland has not had a formal integrated structure or resourcing dedicated to developing or maintaining readily deployed infrastructure, staff and systems necessary to underpin an effective biosecurity emergency response capability.

Investing in emergency response management and the capacity and capability to mount a response requires some core allocation of funding to meet initial costs and to provide a basic level of preparedness. It also requires resources in proportion to the scale of the emergency once it has occurred and is better understood. A transparent risk analysis process is needed so that these decisions can be made on a case by case basis where the total benefits are considered relative to the total cost of the response.

Specific action is also required to build the capacity of industry and other government agencies to operate in a biosecurity emergency situation. This could involve creating a 'biosecurity reserve' to draw on as needed.

Queensland needs to take advantage of opportunities to capture and learn from each response, plan for future incursions or scenarios, and to use 'corporate' knowledge to continuously improve systems and practices. An important input to response management is to ensure that there is adequate training of staff, clearly defined procedures and policies, and the physical resources needed to mount a response.

The success of emergency responses, including the recovery phase, also relies on strong working relationships between government, industry and community organisations—it is too late to establish relationships once an outbreak is detected. By working together, government, industry and community organisations are better able to work out what needs to be done to achieve best biosecurity outcomes and meet national obligations while minimising the impacts on industry in Queensland.

Commercial fishing, seafood harvesting and marine species were affected by an oil spill in Gladstone harbour in 2006 after 25 000 litres of heavy fuel poured from a coal carrier. The accident happened when a tug rammed into a Korean coal carrier, rupturing its fuel tank. The oil spill at Gladstone has been described as a tragedy for the area's marine life and the biggest oil spill in 35 years.

Emergency response is one area of biosecurity where cross-government support and involvement is often needed. Improving Biosecurity Queensland's emergency response capabilities will involve connecting with Queensland's emergency management and disaster management networks. A formalised cooperative framework across government for the release of staff and sharing of resources in an emergency situation would also be beneficial.

Queensland has much to gain from taking a strong role in the national biosecurity arena to refine and improve the nationally developed emergency plans. Updating these plans to reflect modern approaches to emergency response management is consistent with Queensland industry's emphasis on continually improving emergency response and preparedness.

The Queensland biosecurity strategy could include:

- developing, in consultation with stakeholders and other government agencies, an improved model of emergency response and recovery as well as improved capabilities that better address biosecurity threats and consequences
- improving consistencies and linkages with national and state-based emergency management arrangements
- improving community engagement so that the community is better able to contribute to emergency response, threat containment/eradication and recovery.

3.6 Improving surveillance (detection, diagnostics and notification)

Comprehensive and competent detection, diagnostics and notification services are a hallmark of modern biosecurity. Queenslanders want to be confident in the timely detection and identification of pests, diseases or contaminants. Early detection of a biosecurity threat enables action to be taken to prevent establishment and spread and thereby reduce potential long-term impacts and associated management costs.

As well as detection, an essential surveillance function is to demonstrate proof of freedom or ‘evidence of absence’ through structured surveys or other targeted methods. This is an increasing requirement for access to important international markets, even when we are confident that a particular pest, disease or contaminant is not present.

Improving the full spectrum of early detection services and capacities drawing on modern technologies, strong stakeholder engagement and better risk assessment practices should be a priority. Similarly, more efficient ways of demonstrating proof-of-freedom (given the high cost of surveillance) are needed.

Queensland’s surveillance efforts need to be complemented by working with the Australian Government to improve pre-border and border detection activities.

Four key elements contributed to the apparently successful response to (eradication of) black sigatoka in bananas in the Tully area: early detection, a prompt decision to eradicate, molecular diagnostics, and committed leadership and teamwork (L Burgess, Australasian Plant Pathology, 2003)

The detection and diagnostic activities currently in place have been driven mostly by economic needs—protecting valuable plant and animal health and primary industries. Modern biosecurity systems require structured detection, diagnostics and notification activities for pests and diseases with social or environmental impacts.

Improving prevention of entry for Queensland requires national collaborative action to reduce pathways for species that pose high biosecurity threats for Queensland.

There is significant opportunity to expand and improve the passive or informal surveillance mechanisms involving landowners, industry, community groups and interested individuals. This would be consistent with a ‘shared responsibility approach to biosecurity’ and build on the success of existing government and community-driven ‘spotters’ programs. To be successful, surveillance mechanisms need to be backed up with adequate information management systems to process and handle the reported data and, where feasible, to be backed up with eradication or management actions.

A strategic approach may involve the identification of the strengths, weaknesses or vulnerabilities within current detection, surveillance, diagnostic and notification systems so that future actions and investments can be better informed. A key part of this approach lies first in developing a fully streamlined and integrated biosecurity risk management based decision-making framework for Queensland.

The Queensland biosecurity strategy could include:

- taking a strong leadership role to influence pre border and border biosecurity
- identifying and prioritising pathways of entry and spread of pests and diseases into Queensland.

3.7 Management of established pests and diseases, and existing contaminants

Numerous pests and diseases are already well established in Queensland—in agricultural systems and in natural and built environments. Many of these have yet to reach their full distribution and/or impact and are therefore subject to coordinated management programs that often involve containment through, for example, barrier fences, movement controls and/or the minimisation of impacts through measures such as biological control and vaccination.

There are currently two large pest barrier fence systems in Queensland: the 2560 km wild dog barrier fence, overseen by a local government lead committee, protects sheep grazing areas of the south and south-west, and the 550 km Darling Downs–Moreton Rabbit Board fence, managed by operational board, protects agricultural land in the south-east. A series of wild dog check fences, managed by local governments, also protect areas of grazing land in southern Queensland from wild dogs.

The extent to which established pests and diseases can be managed through coordinated programs varies considerably. Many established weeds such as lantana, prickly acacia, and rubber vine are already managed through cooperative programs. Most of the major pest animals such as wild dogs, rabbits, feral pigs and field mice are managed through coordinated programs at state, regional or local levels. Some pests, diseases or contaminants of production systems (such as cattle ticks, Panama disease in bananas, or organochlorine in beef) are subject to coordinated programs but most are dealt with through normal ‘on-farm’ practices.

Australia’s geographic isolation, establishment of a large number of exotic species and human-induced changes to ecological systems are placing numerous endemic species under threat, resulting in some native species becoming locally overabundant and causing impacts on other species.

There are also many established pests and diseases that could be more effectively managed with coordinated action, whether by eradication, limiting their spread or reducing their distribution, density or impact. These include water weeds, Indian mynas, feral cats, and cane toads.

Regardless of the current status of established pests, diseases or contaminants there is a need to reassess government, community and industry priorities and responsibilities for their long-term management. Priorities need to be considered relative to other higher priority biosecurity threats, both current and potential, that may warrant coordinated intervention. Particular consideration needs to be the protection of the benefits of past investments in pest management and invasive plant control.

The economic impact of weeds and the main vertebrate pest animals already established in Australia is approximately \$4 billion and \$0.7 billion per annum respectively. These figures primarily represent production losses and control costs, as the cost of weeds to the environment and biodiversity is largely incalculable (AusBIOSEC).

Industry takes a strong leadership role in the management of some established pests and diseases (such as grape mildew, sugarcane smut, cane rats and blow flies), whether it be through investment in research, improved awareness, or product certification. Where there are significant direct or indirect public benefits there is an ongoing role for government investment in strategic planning and the development of improved management options.

Mulesing is a controversial practice involving the removal of skin from the rear of a sheep to prevent flystrike. Australian wool producers have agreed to phase out mulesing by 2010. The WA government has banned mulesing on its research stations from April 2008.

A future approach to managing established pests, diseases or existing contaminants will need to reflect the shift towards applying increasingly objective and transparent risk management approaches in modern biosecurity systems. This will enable better identification of the key risks to Queensland and prioritisation of public expenditure.

The Queensland biosecurity strategy could include:

- reviewing long-term policy objectives, investment priorities and management responsibilities for established pests, diseases and existing contaminants, particularly with respect to their impacts and associated management costs and benefits
- promoting shared responsibility for on-ground operations.

3.8 Achieving active participation in biosecurity

A proactive biosecurity system where there are shared responsibilities relies on active participation not only from people involved in rural communities or primary production, but also from the broader community—particularly people who are part of biosecurity risk pathways. People on the ground are best placed to detect and respond to a biosecurity threat but they must know what to look for, what to do, who to report it to and what might happen.

The three-year, \$11 million ‘Reclaim the Bush—a Pest Offensive’, part of the Blueprint for the Bush, provides funding for 48 collaborative projects aimed at the control of woody weeds, management of wild dogs and feral pigs, identification of new weed threats, prevention of weed seed spread, and pest management in Aboriginal and Torres Strait Island communities.

Education, awareness raising and community engagement are some of the most powerful non regulatory measures we can use. These measures help people to see the benefits of good biosecurity practices not only for themselves but also for the community at large. Investing in education and community engagement achieves:

- greater compliance during an emergency response
- support for recovery efforts, inspection and enforcement
- expansion of the overall capacity and capability to reduce the establishment and spread of pests and diseases.

Education is also important because good biosecurity techniques and goals may be in conflict with interests or values in parts of the community (e.g. animal welfare considerations in disease eradication or culling of native animals).

The Carnarvon National Park Feral Animal Management Program to reduce numbers of pest animals, including horses that are damaging the park’s natural and cultural values, was developed by Queensland Parks and Wildlife Service (QPWS) in close consultation with DPI&F, RSPCA Queensland, neighbouring landholders, conservation groups (including Wildlife Queensland) and AgForce. The QPWS has worked closely with DPI&F and the RSPCA to ensure that the program is humane and meets best-practice animal welfare standards.

Whole of community participation in biosecurity activities that are largely of public benefit, particularly where there are environmental or social impacts, can be achieved indirectly through an expanded set of market and social incentives. These may include quality assurance or certification processes, peer or public recognition, discounting of levies or charges, or easier access to specialist services. For example, an enterprise that is publicly recognised as actively managing biosecurity threats would be more likely to command a market premium. Many successful community, industry and government-driven incentives already exist within (and beyond) biosecurity and are worth exploring further in the interests of achieving substantially greater participation across the full range of biosecurity issues.

Biosecurity Queensland has worked closely with Queensland Health, Department of Local Government, Sport and Recreation, Environmental Protection Agency and Aboriginal and Islander Councils to implement the Animal Management in Indigenous Communities Program. This program provides councils with the financial and technical support to set up management programs for the health, welfare and control of companion and pest animals in Aboriginal and Islander communities.

Active participation is also achieved through the regulatory frameworks provided by state and Commonwealth governments. Legislation helps prevent biosecurity events through border and pre-border controls and specific risk management practices (such as vaccination, on-farm biosecurity, and restrictions on feeding practices). Legislation also enables the state to mount a biosecurity response.

Queensland's current regulatory framework has served us well; however, it is time to develop contemporary legislation that will support us into the future. The current framework is principally based on rural and allied rural enterprises, with animal and plant health interests heavily represented. It also relies on a narrow range of tools to address biosecurity issues. This means it is not well suited to the future biosecurity context where government must respond to a much broader range of risks, where shared responsibility is emphasised and where the 'beneficiary pays' principle is increasingly applied.

Providing biosecurity legislation for Queensland based on a strategic policy framework and using modern tools to achieve compliance will be a major task for Biosecurity Queensland over the next three to five years. It requires expansive thinking and consultation with stakeholders, not only from the traditional primary industries but also from the new areas of biosecurity that government must increasingly operate in. The review of Queensland's biosecurity legislation has begun and a consultation process will be run over the next 12 months to shape the new legislation. The new legislation will reflect modern legislative principles, including red tape reduction and natural justice, and be in harmony with national regulatory frameworks.

It has been estimated that up to 10 000 marine species are being carried in ships around the world every day. Queensland is developing ballast water legislation to reduce the risk that ballast water poses to the marine environment.

The Queensland biosecurity strategy could include:

- building an improved community engagement capacity within Biosecurity Queensland
- exploring opportunities to provide market and social incentives for carrying out good biosecurity practices
- developing new biosecurity legislation for Queensland.

3.9 Enhanced service delivery

The effective delivery of biosecurity services to clients, either by government or through intermediaries, will be fundamental to developing a highly effective biosecurity system for Queensland. Decisive, well-coordinated responses, coupled with good communication, are particularly important when it comes to emergency responses for pest, disease and contamination incidents.

There is a diverse range of clients when it comes to biosecurity—from large agribusinesses, to peri-urban dwellers to individual property owners either in a rural or urban location. The needs of these clients must be understood and a range of service delivery models designed to ensure those needs are met in the most effective and efficient way possible.

There is a need to explore new and emerging technologies, to make access to services and information easier and to investigate ideas and suggestions for service improvement. There may need to be a mix of the more traditional service-delivery methods and more targeted modern approaches to client service.

More efficient delivery of existing services is not enough—ways to provide new and better services must be found. Biosecurity services into the future should be client-focused, aim to foster greater self-reliance, be viable, provide value for money and focus on areas of high risk.

Government, through Biosecurity Queensland, has a significant presence in providing biosecurity services in Queensland. These resources will need to be aligned to the current biosecurity environment and positioned to provide cost-effective service.

Industry, local government and natural resource management groups also provide biosecurity services. There may be merit in exploring a more coordinated approach to service delivery across these groups and government to ensure consistent information is provided to clients, at least on major biosecurity issues.

The Queensland biosecurity strategy could include:

- improving responsiveness to service delivery needs and opportunities
- sharing of biosecurity service delivery systems and information.

3.10 Building capability

Achieving our vision for biosecurity relies on a range of underpinning systems (for example, information, decision-making, risk assessment, communication, compliance, and the development of the skills and capabilities of a wide range of people who make up the ‘biosecurity workforce’). Investment by governments, industry, land owners and communities in building improved systems, capabilities and capacity to deal with biosecurity issues will return significant benefits to the state.

One of Biosecurity Queensland’s major tasks over the next five years will be to build on and improve its operating systems, capabilities and capacities in order to fulfil its role as Queensland’s coordinating body for biosecurity.

The community and industry will continue to look to government to provide high-level technical skills, expertise and systems in biosecurity-related sciences and emergency response. Training and information management systems for emergency response have been highlighted as a priority and industry groups recognise the value of having some of their members also trained in emergency response. In terms of biosecurity science, Queensland—like the rest of Australia—is vulnerable to emerging skills shortages, particularly in highly specialised areas relied on for early detection (such as specialised pathology, taxonomic skills, virologists and entomologists).

The level of industry capacity varies, and in some very small emerging industries biosecurity knowledge is quite limited. Industry organisations play an essential role in educating their members about risk pathways, early detection, reporting and interventions. While industry groups represent the commercial sectors of primary production well, there is opportunity to improve outreach into the rapidly expanding peri-urban sector.

Modern biosecurity requires a broader range of skills than in the past. Such skills include policy development, program evaluation, risk assessment, conflict management, compliance monitoring, managing third-party delivery mechanisms, and community engagement skills. For government biosecurity officers working in the field there is growing demand for a greater range of skills and the ability to communicate and engage with much more diverse groups and interests. There is also a need for skills and knowledge suited to a contemporary regulatory model, ready access to information and improved synergies across the range of biosecurity activities.

A biosecurity industry skills development plan involving service providers, public and private employers and employees, as well as training and higher education providers, could be developed to address skills shortages and emerging skills needs.

The capacities and capabilities of a proactive biosecurity system can be greatly expanded by increasing participation through the non-regulatory measures as discussed earlier. There are opportunities to engage more people in managing risk pathways.

Finding ways to engage, train, coordinate and reward the growing numbers of people with the time, abilities and interests—particularly in surveillance, detection and management of pests and diseases (including invasive plants and animals)—supports a shared responsibility approach to biosecurity and will return multiple benefits to Queensland.

The Queensland biosecurity strategy could include:

- adopting an industry skills development approach to address skills shortages and emerging skills needs
- building capacity for delivery of biosecurity activities across a range of stakeholders
- harnessing the potential for all Queenslanders to participate in biosecurity.

3.11 Identifying gaps

Queensland's biosecurity strategy must take a forward-looking approach to deal with the gaps in Queensland's biosecurity arrangements.

Queensland's current approach is predominantly based on protecting valuable primary production; while this will always be important, the future approach must also consider the range of emerging environmental and social pests—including exotic birds, and animal and plant pathogens that primarily have an environmental impact.

The extent to which pests and diseases already impact on the natural environment—both terrestrial and aquatic—is uncertain, but over-the-horizon threats are potentially far greater.

Should eucalyptus rust become established in Australia, the total cost to the community could run into billions of dollars, through losses to the timber industry, recreational amenity, tourism, biodiversity, and carbon sequestration.

Many environmental and social pests and diseases are already well established (e.g. cat's claw creeper, cane toads, European carp, tilapia, water hyacinth and many others) are emerging as a significant threat (e.g. blackbirds and feral deer), but there is no complete picture as to what is at stake. There are also many over-the-horizon threats (e.g. Asian tiger mosquitoes, giant African snails, crab-eating macaques, red-vented bulbuls and Burmese pythons).

Some native bird species (such as galahs, white ibis and crows) can become over-abundant in response to environmental changes.

Most introduced environmental and social pests and diseases are being managed primarily for their economic impacts (e.g. tramp ants, Siam weed, and lantana). Only a few are managed primarily for their environmental impacts (e.g. red-eared slider turtles and Asian green mussels).

Identifying and addressing the gaps in Queensland's current biosecurity system will need to involve a range of stakeholders and at times it will involve having to find ways to resolve competing interests that may exist.

The Queensland biosecurity strategy could include:

- identifying, quantifying and prioritising current and potential threats
- incorporating environmental biosecurity into environmental management plans and biodiversity strategies
- recognising the need for greater emphasis on investment in prevention due to difficulty in detecting and treating many environmental pests and diseases.

3.12 Identifying other issues

Finally, are there other significant issues impacting on the future of Queensland biosecurity that you believe could be addressed through the Queensland biosecurity strategy?

Part 4: Measuring success

An important component of the Queensland biosecurity strategy will be identifying how success is measured at the strategic, tactical and operational levels.

You may like to comment on the strengths of the current performance evaluation systems and the areas for improvement.

The establishment of a single integrated performance evaluation system for biosecurity will be critical to building investor confidence, and to achieving improved accountability and governance.

Queensland's biosecurity performance evaluation systems should provide an assessment of the extent to which government and non-government programs deliver on whole-of-government priorities, particularly for building on economic success, protecting the environment, fostering healthy communities, and delivering accountable government. It should also provide an assessment of the extent to which programs deliver on national obligations, legislative charters and strategic policy objectives.

Decision-makers need to have access to meaningful and dependable performance information. Key considerations for a biosecurity performance evaluation system should include:

- coverage and alignment—strategic, tactical and operational levels
- simplicity—dealing with the essential, and ensuring ease in collecting, analysing and presenting performance information
- integrity and transparency of performance information and any subsequent interpretations
- accessibility of performance information, and its relevance to users
- extent to which performance evaluation is integrated into all biosecurity activities
- ability to compare performance over time and with other businesses.

Part 5: Acknowledgements

Queensland Biosecurity Strategy Reference Group membership list:

AgForce Queensland
Australasian Regional Association of Zoological Parks and Aquaria Queensland
Australian Banana Growers Council Inc
CANEGROWERS
Cotton Australia
Department of Agriculture, Fisheries and Forestry
Department of Premier and Cabinet
Department of the Environment, Water, Heritage and the Arts
DPI&F (Fisheries, Biosecurity Queensland, Strategic Policy)
Environmental Protection Agency
Growcom
Livestock Transporters Association Queensland
Local Government Association of Queensland Inc.
NRM Regional Groups Collective
Nursery Garden Industry of Queensland
Ports Corporation of Queensland
Queensland Conservation Council
Queensland Farmers Federation
Queensland Food, Fibre and Agribusiness Council
Queensland Health
Queensland Horse Council Inc
Queensland Seafood Industry Association
RSPCA Queensland
Timber Queensland
Treasury Queensland

Part 6: Glossary of terms

Animal welfare	Involves a duty of care based on the internationally recognised ‘five freedoms’ of animal welfare.
AGVET	Agricultural and veterinary (usually chemicals).
Aquatic	Refers to marine, freshwater and wetland environments.
AQUAVETPLAN	Australian Aquatic Veterinary Emergency Plan.
AUSVETPLAN	A series of technical response plans that describe the proposed Australian approach to an exotic disease incursion.
Biodiversity	Variety of life forms including the different plants, animals and microorganisms, the genes they contain, and the ecosystems they form. Biodiversity is usually considered at three levels: genetic, species and ecosystem.
Biosecurity	Biosecurity is the protection of the economy, human health and amenity, the environment human health and amenity, and ultimately our way of life from the negative impacts of pests, diseases and contaminants.
Built environment	Those areas of the Earth and components that are heavily influenced by humans.
Clean and green status	The reputation of Australia or an industry sector able to demonstrate that it is relatively free from serious animal or plant pests, diseases and contaminants.
Community engagement	A generic, inclusive term to describe the broad range of interactions between people. It can include a variety of approaches, such as one-way communication or information delivery, consultation, involvement and collaboration in decision-making, and empowered action in informal groups or formal partnerships.
Containment	Restriction of an incursion to a limited area, perhaps with quarantine measures enforced in order to prevent further spread. Containment may be an adjunct to or an approach used in an eradication campaign.
Contaminants	Includes biological or chemical substances whether naturally occurring or synthetic, (such as agricultural and veterinary chemical residues above acceptable levels) present in the environment and or food chain with potential harmful effects.
Cost-sharing	The process of proportional funding of a National Biosecurity Event Response by some or all of the parties.
Disease	Means the presence of a pathogenic agent in a host and/or the clinical manifestation of infection that has an impact, or poses a likely threat of having an impact. Disease includes micro-organisms, disease agents, infectious agents and parasites.

Equine influenza	An acute, highly contagious, viral disease that can cause rapidly spreading outbreaks of respiratory disease in horses, donkeys, mules and other equine species.
Eradication	The permanent elimination of the species from the ecosystem which, in practice, means that it can no longer be detected by recommended methods of survey and diagnosis.
Incursion	An isolated population or the detection of a species in a place where it has not previously been found.
Industry biosecurity plan	A plan developed by industry and government to identify and manage biosecurity risks facing a particular industry sector.
Invasive species	An exotic species that establishes a wild population and spreads beyond the place of introduction and becomes abundant.
Market access	Includes all the actions undertaken to maintain and improve the access for agricultural products to markets that represent Queensland's trading partners, both national and international.
Native species	A species found within its native range. In Australia this means that it is indigenous to Australia.
Natural resource management	The management of natural resources (e.g. land, water and biodiversity) in an integrated fashion recognising both the values of conservation and productive use of natural resources, striving to achieve sustainability in all resource use.
Natural environment	All living and non-living things that occur naturally on Earth or some region.
Outbreak	A recently detected new incursion or proliferation of a pest or disease, including: a known exotic pest or disease; a distinguishable variant form of a pest or disease that is established, but not a new incidence of an established pest or disease; a pest or disease of unknown or uncertain origin; or a pest or disease of potential importance to the area endangered and not yet present there or widely distributed and being officially controlled, but is occurring in such a fulminate outbreak form, that an emergency response is required.
Over-abundant natives	A term referring to populations of native species that are considered to be in excess numbers in relation to the environment and ecosystem in which they are present.
Pathway	The means by which invasive species move. Possible pathways include air, surface water, groundwater, plants, animals and humans.
Peri-urban (environments)	Those based around the perimeter of urban areas. Peri-urban properties can range from 2–40 hectares.
Phytosanitary measure	Any legislation, regulation or official procedure with the purpose of preventing or minimising the introduction and or spread of plant quarantine pests.
PLANTPLAN	PLANTPLAN provides a set of nationally consistent guidelines covering management and response procedures for emergency plant pest incursions affecting the Australian plant industries.

Quarantine	The legal restrictions placed on a place, plant, animal vehicle or other things limiting movement.
Recovery	In relation to pests and diseases means the reconstruction of the physical infrastructure and restoration of emotional, social, economic and physical well being following an emergency response to an outbreak of pest or disease.
Risk	Is a combination of both the likelihood and level of severity of a threat being realised.
Risk analysis	A process involving three steps: <ul style="list-style-type: none"> • Risk assessment—Identification and estimation of risks, including evaluation of the consequences. • Risk management—Identification, documentation and implementation measures to reduce risks. • Risk communication—Interactive exchange of information and opinions concerning risk between risk managers and stakeholders.
Risk management	The culture, processes and structures that are directed towards realising potential opportunities while managing adverse effects.
Smart State	A Queensland Government vision where knowledge, creativity and innovation drive economic growth to improve prosperity and quality of life for all Queenslanders.
Social amenity	Means any tangible or intangible resources developed or provided by humans or nature (e.g. dwellings, parks, a view or outlook).
Species	A group of organisms capable of interbreeding freely with each other but not with members of other species.
Stakeholders	Those people and organisations who may affect, be affected by, or perceive themselves to be affected by a decision, activity, or risk.
Surveillance	A systematic examination and testing of plants or animals or an area to determine the presence or absence of an invasive species.
Toxin	Poisonous substance produced by living cells or organisms.
Tramp ants	A diverse group of invasive ant species derived from many parts of the world.
Weed	A plant that requires some form of action to reduce its harmful effects on the economy, the environment, human health and amenity.
Zoonotic/zoonoses	Pertaining to diseases transmitted to humans from animals.

