

QUEENSLAND BIOSECURITY CAPABILITY REVIEW

FINAL REPORT
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This report was prepared by Renata Brooks, Ron Glanville and Tom Kompas.

INTRODUCTION FROM THE CHAIR

Effective biosecurity has played a major role in supporting Queensland's agricultural industry sector and protecting the environment and human health. However, Queensland is experiencing challenges to its ability to respond to the increasing number, scale and scope of exotic pests and disease threats. Recent examples include Panama disease tropical race 4 in bananas, red imported fire ants, cucumber green mottle mosaic virus and red witch weed.

Risk is increasing

Biosecurity risks are increasing for a range of reasons, including the expansion in movement of humans, livestock populations, animal and plant products, increased geographic distribution of plant species production and changing patterns of human activity impacting on ecosystems. The suitability of Queensland's climate for many pests and diseases, its proximity to northern neighbours and extensive coastline means it will continue to be the front line state for dealing with biosecurity threats.

Resources are under pressure

At the same time, there is increasing competition for resources within government and increasing pressure on businesses and the community. This is highlighting imperative to make wise investments with the resources available to tackle biosecurity challenges.

We will need to mine a complex world to find solutions

On the positive side, there are emerging opportunities to devise new solutions to tackle biosecurity threats more effectively and at lower cost. These solutions lie in two directions - there are better ways of tapping into the practical knowledge and creativity of all those who share responsibility for biosecurity and there are a multitude of new technologies which can be applied, and information sources which can be analysed, to improve the way we detect, manage and eradicate new biosecurity threats. Navigating an increasingly complex world to access these opportunities will be an increasing challenge.

Biosecurity Queensland needs to be rebuilt

Biosecurity Queensland, the agency charged with leading biosecurity, has a record of success and passionate, committed and expert staff. However, change in recent years has tended to be responsive rather strategic - driven by reduced resources and opportunities to consolidate functions - rather than designed to meet the needs of an evolving environment. We found that the organisation currently lacks capacity and will need increased capability to transform to meet the needs of the future.

Current needs

The most urgent and pressing need is to build Biosecurity Queensland's capacity to respond to incursions - the frequency of responses and the current approach to resourcing them is likely to see the organisation's capacity exceeded, with potentially serious results. Investment is needed in people, frameworks and systems as well as better defined arrangement for funding responses.

Future directions

Developments over recent years and the new Biosecurity Act are heading in the same direction. Good biosecurity needs to be "everyone's responsibility" - like workplace safety, this involves a change in culture and a change in the "way we do things". Shared responsibility cannot be driven solely by legislation. A partnership approach is required - with those partners sharing ownership of the Queensland Biosecurity System.

Biosecurity partners need to think nationally and internationally about accessing resources and sourcing solutions; and need to be smart about coordination, leveraging and focusing their collective resources on the highest priorities.

Business models and "who pays" regimes need to operate in a mutually reinforcing way to create incentives which support achievement of system outcomes.

Capability gaps in the system

The Panel's view is that the current biosecurity system in Queensland has critical gaps. There is no mechanism to gain agreement to priorities, across Government or with partners outside of Government. There is no mutually reinforcing system of incentives, little coordination and few opportunities to promote collective industry/landholder/community action.

Capability gaps in Biosecurity Queensland

The gaps in the system cannot be filled without first filling the gaps in Biosecurity Queensland. In short, investment is needed now to build the capacity of the organisation to deal with today's needs and build the capability to transform to meet tomorrow's needs. Investment is also needed to build the capability of the biosecurity system, recognising that not all capability needs to, or should, reside within Biosecurity Queensland.

Building the capability of the system

We propose the development of a strategy and action plan under governance arrangements that support a partnership approach. While the essence of this is that the partners will set the priorities and decide the actions that will be the focus of attention over the next five years, we are recommending an initial suite of initiatives that would sit under the action plan.

Work will be required to establish the governance framework for the new approach - we propose using the existing Biosecurity Queensland Ministerial Advisory Council (BQMAC) as an interim advisory body so that work can commence. Serious consideration needs to be given to the concept of an industry biosecurity fund or alternative mechanism to facilitate collective industry action.

These mechanisms will achieve coordination and focus and will ensure that those with an interest are engaged in the reprioritisation and implementation of sustainable funding models, which need to occur.

We expect that many of these activities will be self-funding through redirection of resources, efficiencies from new operating models, and capitalising on new sources of revenue. However, additional up-front investment will also be required.

Initiatives under the action plan will address gaps in capability and better manage risk with the ultimate result of reducing the likelihood of incursions.

The strategy and action plan will take forward the job of identifying the "low risk/low return" and "leveraging" opportunities in two ways.

Firstly, we propose a project to progress the reforms required to transition from the current regulatory and prescriptive approaches to more flexible and outcome driven approaches enabled by the new legislation. This might include, for example, more reliance on industry certification systems rather than prescriptive inspection regimes.

There are also opportunities to change the way some of the underpinning infrastructure of the Queensland Biosecurity System operates. A new, more commercial, approach to diagnostic laboratory management is proposed, as well as new systems for managing the property identification code register.

Secondly, action plan partners need to be engaged in a project to systematically review and reprioritise investment in biosecurity programs - this will assist recalibration of resources and funding sources.

Better biosecurity systems on farm will reduce the risk of future incursions and assist early detection and more cost effective response. A coordinated campaign is proposed, with clear targets, which leverages off current national investment.

There are opportunities to achieve far greater impact from regional investment through Local Government Authorities, regional Natural Resource Management organisations and other regional bodies. A pilot project is proposed to explore opportunities to leverage off the successful regional co-investment approach.

Adequate surveillance is critical to early detection, as is an environment that supports prompt diagnosis, investigation and reporting. The Panel proposes development of a coherent surveillance strategy that targets the most effective use of resources and leverages other information sources, as well as a serious examination of the current incentives and disincentives to reporting.

Building the capability of Biosecurity Queensland

Biosecurity Queensland's capability needs to be bolstered to deal with today's emergency and tomorrow's transformation.

Capacity issues need to be addressed by creating a dedicated response unit that can be activated when required and can build the competencies, tools, relationships and networks required to resource future responses. This initiative will also address capacity gaps outside the response area by taking some of the response load off operational staff and managers, allowing them to better attend to important activities to analyse risks and to prevent and detect incursions at an early stage. A particular task of the response unit will be the development of a biosecurity network.

Leadership attention needs to be given to innovation to guide new business approaches and source solutions to biosecurity challenges.

The information, systems and frameworks for guiding decisions on risk, resource allocation, planning, evaluating and managing projects need to be greatly improved. Leadership is required in this area as well as ongoing investment in the Biosecurity Information Management System (BIMS) project.

Internal budgeting and resource allocation systems need to support greater flexibility and a project approach - establishment of a commissioning function, and a framework for project based resource allocation is proposed. Amongst other things, this will facilitate development of collaborative projects with system partners.

Leadership is also required to make faster progress towards a sustainable model to deal with marine biosecurity risks, and to drive a tailored approach to the unique challenges of North Queensland.

Specialist expertise in key areas needs to be maintained and built through a combination of in house and outsourced models.

Organisational structure, culture and practices need to support transformation - those activities that are not addressing biosecurity outcomes or are effectively separate businesses need to be segregated so that they can be given appropriate focus and attention. The leadership structure and allocation of responsibilities needs to support attention to the priorities identified above, and needs to address the current inappropriate proportion of attention being given to reactive rather than strategic matters.

The skills base of the workforce will need to be rebalanced over time to strengthen capability in engagement and partnership development alongside appropriate capacity to enforce legislation where required as a last resort.

Implementation

The Panel's recommendations will take time to implement. An action plan to improve the capability of the Queensland Biosecurity System and a transformation plan for Biosecurity Queensland are both needed. As an immediate priority, the Panel recommends investment in the development of the biosecurity strategy and action plan and associated governance arrangements.

Concurrently, there should be investment in the establishment of the new biosecurity response unit and biosecurity network, as well as the recommended skills audit and organisational redesign. An additional investment of at least \$3m in the first year will be required, and will require supplementation in the event of incursions exceeding baseline response capacity. Completion of the initial steps will enable a more accurate assessment of the quantum of further investment required to implement the action plan and transformation plan to deliver the remaining recommendations.

A final comment

The Panel was presented with broad terms of reference for a comprehensive review of an important area, within a relatively short time frame. It is inevitable that some areas will have been given less attention in this report than they merit. However, the Panel's view is that implementation of our recommendations will achieve an appropriate balance across biosecurity.

The Panel would like to thank the many individuals and groups who committed time and energy to sharing their thoughts with us. The Panel would particularly like to thank and acknowledge the contribution of James Boyle who provided excellent research, analysis and logistic support as Secretariat to the Panel.

I would also like to thank my colleagues on the Panel, Dr Ron Glanville and Professor Tom Kompas for their expert insights and contributions to the report.

Renata Brooks

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EXECUTIVE SUMMARY

BACKGROUND

Biosecurity is the management of risks to the economy, the environment, and the community, of pests and diseases entering, emerging, establishing or spreading. It protects local businesses and the state and national economy from the negative impacts of pests and diseases, which can disrupt trade and productivity, affect animal and plant health, and threaten the viability of rural enterprise. It protects the community from emerging and exotic diseases, which can be transmitted by animals, and helps ensure stewardship of Queensland's environment.

Queensland is experiencing unparalleled challenges to its ability to respond to the increasing number, scale and scope of exotic and emerging pests and disease incidents, such as Panama disease tropical race 4 in bananas, red imported fire ants, cucumber green mottle mosaic virus, Hendra virus and red witchweed. Each biosecurity incident is a unique event and presents a different set of circumstances. It is essential that the biosecurity system has the capacity and the capabilities to respond to challenges over the horizon.

Queensland is a contributor to the national biosecurity system. This contribution recognises the fact that investment in effective biosecurity in Queensland benefits all Australians. A biosecurity incident in one part of Australia can have significant impacts on other states and territories, both in terms of risk of spread and damage, but also the potential impacts on export and trade.

New biosecurity legislation is due to commence in 2016 and will change the ground rules governing biosecurity in Queensland. The new laws are based on three foundational concepts: shared responsibility, risk-based decision making and the precautionary principle. Shared responsibility is the principle that all parties should bear a proportionate share of responsibility for the mitigation of biosecurity risks and share the cost of biosecurity responses. Risk-based decision-making considers the likelihood and consequence of biosecurity risks in an uncertain environment and ensures appropriate and proportionate action. Finally, the precautionary principle allows mitigation control action to be taken to manage biosecurity incursions in advance of scientific certainty, where unacceptable damage is likely.

These concepts represent a fundamental shift in focus for Biosecurity Queensland and have implications not only for changes to subordinate policies and procedures, but also for the necessary skills, knowledge and behaviours of partners in the biosecurity system.

Acknowledging the challenges facing Queensland's biosecurity system, on 27 March 2015, the Minister for Agriculture and Fisheries announced a review into Queensland's biosecurity capability.

The Panel was asked to:

1. Assess Queensland biosecurity responsibilities:
 - a. what are the appropriate roles and responsibilities of Biosecurity Queensland;
 - b. quantify the role of Biosecurity Queensland;

- c. outline the decision making and investment criteria that trigger cost sharing and/or a move to different levels of intervention – eradication, containment, management, etc.
2. Assess Queensland's baseline biosecurity capability to meet its current objectives and future challenges including:
 - a. leadership, strategy, policy and service delivery;
 - b. ICT systems and infrastructure.
3. Benchmark the capability Queensland requires to achieve world's best practice given its state-wide service delivery requirements;
4. Identify examples of best practice in interstate and external agencies, which could be used to benchmark Biosecurity Queensland's capabilities.

In addition, the Panel was required to deliver the report by September 2015. The report is to state the roles and responsibilities of Biosecurity Queensland and detail a five year plan with specific recommendations for actions, including costings and options, and key performance indicators to address gaps in biosecurity capability and address:

1. the gaps, priorities and timelines for investment;
2. opportunities for strategic shifts of existing capability/resources away from low risk or low return on investment activities;
3. where incremental investment could leverage capacity and capability from entities that share Queensland's biosecurity priorities to achieve world best practice;
4. where targeted investment in Biosecurity Queensland's own capability and capacity is required to restore responses to disease and pest outbreaks to world's best practice; and
5. the specific issue of Biosecurity Queensland's base funding and funding for responses.

CONSULTATION

The Panel's considerations were strongly informed by consultation with a range of experts and stakeholder groups on Queensland's biosecurity capability overall, as well as on particular issues. In tandem, the Panel provided the opportunity for any member of the public to provide comments in response to focus questions available online.

The Panel was particularly appreciative of input from the Biosecurity Queensland Ministerial Advisory Council (BQMAC), a committee representing a range of views and expertise on biosecurity in Queensland. Consultation also included meetings with Commonwealth and state biosecurity agencies, other Queensland government agencies, departmental staff and senior management, the research community, and peak industry and community groups.

The range of responses gave the Panel significant insight into external and internal views of the capability of the Queensland Biosecurity System. Importantly, many of the issues and opportunities raised were shared between stakeholders.

Overall, Queensland biosecurity is viewed positively for its achievements and the quality and commitment of departmental staff. However, concerns were raised about an aging and diminishing workforce, resourcing, competing demands on staff time and lack of succession planning.

Respondents also identified significant opportunities to invigorate the Queensland Biosecurity System. New technology, coordination between levels of government, industry responsibility and autonomy and cooperation were all identified as ways to improve the

system. Comments in stakeholder submissions encouraged government to involve more parties in the future biosecurity system to deliver better outcomes for the community.

TRENDS AND DRIVERS OF BIOSECURITY

CSIRO's publication, *Australia's Biosecurity Future* released in November 2014, noted the significant change in, and growing complexity of, biosecurity challenges and pointed to a future where existing processes and practice may not be sufficient. Biosecurity risks are changing due to the expansion in movement of humans, livestock populations, animal products; increased volume and range of plants/plant products traded; increased geographic distribution of plant species production; and increased changes in ecosystems including land-use changes. The suitability of Queensland's diverse climatic and geographic conditions for pest and disease establishment means it will be the front-line state for combating new biosecurity incursions.

These changing conditions and an increasing risk profile pose a range of challenges for policymakers, and primary industries. These include how to ensure that appropriate incentives are in place to maintain resourcing and priority for prevention activities. Opportunities to develop more effective and efficient approaches to dealing with biosecurity threats will increasingly be found in areas outside the traditional biosecurity arena, for example information sciences and robotics. In fact, the information revolution has the potential to transform the approach to biosecurity on farm, in the environment, in the community and in government organisations.

Other broad trends will influence the capacity of Queensland's biosecurity system to adapt.

In around 20 years, Queensland will have experienced significant population growth, with projections suggesting around seven million state residents by 2036. A recent report by the Regional Australia Institute noted the growing population of Australia's regional communities, particularly in Queensland and Western Australia, although differential growth in coastal and inland communities is still stark.¹ While domestic growth will create additional demands for produce (and opportunities for producers); it places pressure on maintaining the biosecurity system in a changing economic and social environment. These pressures will no doubt be acutely felt in rural and regional Queensland, given service delivery demands on local governments and the insecurity of funding for regional natural resource management groups. This trend may be a particular concern, given local government is a key service delivery partner in the biosecurity system.

This report endeavours to articulate the roles and responsibilities of Biosecurity Queensland and consider capability in the context of these future trends.

PRIORITISATION, RISK AND SHARED DECISION MAKING

In terms of biosecurity capability, there are three key tools that are essential to an effective biosecurity system - a framework to prioritise investment, a rigorous approach to risk and consequence analysis and shared responsibility for decision-making and action.

¹Graeme Hugo, Helen Feist, George Tan and Kevin Harris (2015) *Population Dynamics in Regional Australia*, a report to the Regional Australia Institute, Canberra.

PRIORITISATION OF INVESTMENT

Effective prioritisation of investment relies first on adequate financial information and a budgeting process, which supports meaningful allocation and reporting.

Queensland has limited biosecurity resources to address its ever-increasing risk of exotic pest and disease incursions, so it is critical that these resources are used efficiently. The problem is complicated by the presence of a large number of potential invasive species, many of which are already established, as well as a wide range of biosecurity-related activities. An efficient allocation of a biosecurity budget maximises net benefits, in terms of both avoided damages and relevant control costs.

The budget for biosecurity, in other words, has to be allocated across a range of activities: regulatory needs, emergency responses, surveillance and disease control measures, containment and eradication campaigns and support services (for example, traceability and information systems). Resources also have to be allocated across different threats or invasive species, with measures designed to protect plants, animals, the environment and human health. There are a host of competing alternatives in this setting.

The preferred approach is to try to find the best or optimal portfolio of investments across the various activities and threats. The question, put simply, is where should the next dollar be spent, either in terms of new monies, or in the shift of an existing budget within an organisation, across different activities, threats and operational needs. This cannot always be done quantitatively, or as precisely as what would be ideal, but it should always form part of the way of thinking about how resources for biosecurity are allocated.

The Panel has identified the following attributes of appropriate capability in investment prioritisation and decision-making:

- (1) The budget for biosecurity expenditure needs to be readily available and clear, and closely aligned with strategic priorities, once known. The performance and evaluation of budget expenditures should also be carefully monitored.
- (2) Expenditures, including salary expenditures, should be routinely subject to evaluation and review, to inform resource allocation and ensure cost-effectiveness.
- (3) Proper portfolio investment needs enhanced capacity in data capture along with accessing, translating and implementing existing and new knowledge relevant to biosecurity that can help inform decisions on the proper allocation of resources. In particular, information and analysis needs to be gathered on how biosecurity resources should be allocated across threats and biosecurity measures.
- (4) Where possible, resources should be directed to biosecurity threats and activities with the highest rates of return. This will generally imply a larger emphasis on prevention and surveillance and this, in turn, will require enhanced capability in this part of the organisation.
- (5) Even if quantitative measures are not available, or are only available for limited threats and biosecurity activities, best practice should be to direct funds to where returns are highest. This will entail a careful examination of low return activities to determine if they are truly needed or can be phased out over time.

(6) Significant time needs to be spent on devising strategies to make the required transitions to highest rate of return activities.

A portfolio allocation approach will help to establish priorities for investment, but does not establish who should pay. A variety of approaches to answering this question has been developed nationally. Examples include the decision tree developed by Biosecurity New South Wales (NSW) and the recent IDA Economics report, *New funding arrangements for eradication programs*, commissioned by the National Biosecurity Committee.²

RISK

The nature of biosecurity is such that a proper understanding of risk is critical to making decisions at the individual business, organisation and system level. Proper understanding of risk includes consideration of who bears the risk of a particular threat, how likely it is to occur and what the consequence would be. It also requires consideration of the options available to mitigate that risk and an analysis of the impacts (and vulnerabilities) of mitigation options.

It is a well-established principle that a 'nil risk' approach is neither possible nor desirable.

Biosecurity agencies need to account for various risk mitigating and control actions across different invasive threats and in terms of the effectiveness of various biosecurity measures. These agencies also have to account for the possibility of 'black swans', or the occurrence of low probability and high consequence events. Doing so requires the organisation to undertake careful risk assessments and act based on these analyses.

The Panel proposes the following minimum attributes for a 'risk sensitive' organisation

(1) A careful consideration and appreciation of the need for risk assessments, both when they can be made quantitatively, and when they must be based on more qualitative judgments. Effective risk management is best approached as an effort to reduce the potential for bad outcomes by combining 'what if' conjectures about what could happen, with a recognition that aiming simply to comply with prevailing risk management standards and guidelines can, in some circumstances, amplify rather than reduce the potential for unexpected outcomes. In short, this involves treating risk as something more than just a compliance exercise.

(2) An organisational culture that is conscious of risk and risk mitigating actions throughout, and that tests the system at both critical and unpredictable points.

(3) Sensitivity to operational needs and an ability to have resources appropriately directed to unexpected biosecurity events. This may require a financial arrangement that can be accessed as needed, rather than shifting funds from already useful activities in favour of emergency responses to an event.

(4) Preoccupation with 'weak signals', 'near misses' and 'false negatives and positives'. All of these events give valuable information on potential faults in the system and added

² IDA Economics (2014) *New funding arrangements for eradication programs*, a report to the National Biosecurity Committee, Canberra.

areas of concern. Existing risk measures thus have to be continually updated when such new information is available.

(5) Careful tracking and response to the failure (or success) of the system to handle a biosecurity event.

(6) An emphasis on surveillance activities for early detection of both things that are potentially known incursions, and for things unknown.

(7) A strong focus on intelligence gathering and analysis to identify current and future trends that will influence the 'risk environment'.

Application of sound investment principles and rigorous consideration of risk are necessary, but not sufficient, to achieve good decision making outcomes. Decisions must also be informed by the complexity and values of society.

SHARED RESPONSIBILITY AND DECISION MAKING

Shared responsibility is a critical concept at the heart of biosecurity risk management. Essentially it advocates that government, industry and individual producers and landholders – those that create risks and benefit from risk management – work together to mitigate the impact of biosecurity risks. However, for shared responsibility to function effectively, decision-making must be shared as well.

Good decision-making should bring together sound decision-making principles and an understanding of the environment in which the decision will be implemented - in other words, how the decision translates into action. There is a risk that a decision will look good on paper, but will be unworkable in practice or have profound or unintended consequences that render it unviable.

Joint decision-making approaches are a feature of good governance and bring a broader perspective to the application of decision-making principles and to an understanding of implementation, leading to better decisions.

Key features of effective shared decision-making models in biosecurity are the existence of a mechanism for contribution of funds from more than one source (typically industry and government) and a governance and decision making framework, which ensures "those who pay have a say".

Joint contributions recognise the different skills, levers and funding available to participants in a shared decision making process. For example, New South Wales, South Australia, Victoria and Western Australia have schemes for raising levies for biosecurity purposes, which provides primary producers the opportunity to meaningfully engage and leverage government investment. In Queensland, industry (with some exceptions) lacks a formal mechanism to raise and manage collective funds for biosecurity purposes, making it more difficult to measure and account for industry contributions to biosecurity outcomes.

Biosecurity Queensland has achieved some success with a model where government and other entities contribute to funding biosecurity programs in a pilot "co-investment model". The Co-investment Model is a joint initiative of the Local Government Association of Queensland (LGAQ) and the Department of Agriculture and Fisheries. The model is seeking

the development of a new investment approach for the resources in the Land Protection Fund, which is used for managing weeds and pest animals. The model focuses on state and local government joint decision making that will also allow potential investment by other parties.

A FUTURE QUEENSLAND BIOSECURITY SYSTEM

At the heart of the future challenges for biosecurity are three key factors:

1. Potential threats from pests and diseases to agricultural industries, the environment and human health are increasing.
2. There is increasing pressure on resources, particularly on government investment in all jurisdictions and an increasingly competitive business environment.
3. The knowledge base required to solve future problems is increasingly diverse and complex and requires a strong network of relationships to access it.

The characteristics of an ideal future Queensland Biosecurity System that addresses these challenges are set out below:

Shared leadership and ownership

- Broad agreement and understanding of what biosecurity is and why it is important
- Widespread community recognition, champions across all sectors and bipartisan political support
- Shared and widely understood objectives and decision making processes
- Appropriate forums for shared decision making
- Community confidence and trust in the capacity of all parties to contribute to system outcomes

Effective governance and accountability arrangements

- Measurable, readily understood and regularly reported outcomes in terms of:
 - protection of environmental values
 - human health and amenity
 - economic impact at enterprise, industry and state levels
- Optimal investment or the best portfolio of investments across activities and threats
- Cost effective biosecurity measures
- Rigour in risk analysis and management, a shared understanding of risk beyond basic compliance measures
- Transparent, effective, efficient and proportionate governance and decision making processes
- Clear and understood delineation of responsibility and accountability
- Integrity of underpinning science
- Focus on outcomes rather than inputs, process and activities

Innovation and adaptability

- A culture of innovation supported by optimal management of risk

- Relationships with partners within and outside the Queensland Biosecurity System that foster identification of problems and development of innovative solutions
- Harnesses new technologies to achieve continual improvement in performance and cost effectiveness
- Fit-for-purpose approaches that balance collaboration and coordination with simplicity and clear accountability
- Flexibility to respond to a dynamic environment and deliver a 'fast and light' approach
- Access to people with the right expertise, competence and experience for the purpose

System insight and understanding - focused activities

- Influences national priorities and leverages national resources to achieve the best for Queensland and Australia
- A business and human/natural system orientation as well as a risk/threat orientation
- Intelligence gathering and analysis
- Understanding of the differing business, physical and human environments that are threatened by pests and diseases translating to balanced outcomes – biosecurity vs impact on business
- Agreed approach to prioritisation (whether or not to respond), and adequate resources for high priority activities
- Risk mitigation strategies in place at all levels (e.g. on farm biosecurity plans, regional natural resource management plans)
- Leverages government policy opportunities and specialist resources which may reside outside the Department of Agriculture and Fisheries/Biosecurity Queensland (e.g. disaster response capability, conditions on planning approvals)
- Leverages signals in the marketing chain
- Social media and community networks supporting an active biosecurity aware culture and complementing formal response structures

Delivery effectiveness

- Human, physical and system capacity to undertake activities aimed at achieving prevention, preparedness, surveillance, incident and emergency response and endemic threat management effectively and efficiently across terrestrial and aquatic natural, farmed and built environments
- Plans and policies to manage key biosecurity risks
- Culture and processes that ensure timely risk assessments and decision-making
- Systems and processes to prevent new incursions or expansion of priority threats
- Surveillance to identify the presence of threats and when they can most effectively be treated, to meet the demands of market access and maintain profitability
- Tailored diagnostic tools and skills for routine monitoring and emergency response
- A 'response ready' core capability supported by appropriate operational policies, systems, processes and training, supplemented by access to surge capacity, deployable with rapid pre-deployment training ('just in time' training packages)
- Pre-arranged access to physical and human resources required in an emergency response
- Systems and processes to minimise the impact of an outbreak on business and the community, as well as to assist recovery from a response

- Information systems that support analysis of biosecurity risk and impacts as well as effective business management
- Risk based legislation and appropriate enforcement capacity
- Effective and efficient biosecurity measures and traceability systems
- Best practice communications approaches utilising technology and channels most appropriate to the circumstances

The Panel's view is that there are four complementary tools to deliver an effective future Queensland Biosecurity System.

Biosecurity Strategy and Action Plan

A biosecurity strategy and action plan co-authored by core partners is essential to creating a cooperative environment for shared responsibility and a true partnership for achieving biosecurity outcomes. By participating in the development of the action plan, partners are able to exercise more influence over the policy process and to shape a plan, which gives industry and the community the best chance to manage future biosecurity challenges. A strategy and action plan will also drive commitment and accountability.

Formal governance framework

An action plan is a start, but a formal arrangement is required within the Queensland Biosecurity System to facilitate a partnership approach. Formalising a governance framework provides an opportunity to embed shared responsibility into the future system design.

Industry funds

The Queensland Biosecurity System would benefit from mechanisms to raise and hold industry funds to facilitate co-investment in action plan initiatives. These will enable industry to more effectively influence the priorities of the biosecurity system, create a more equal partnership and might include better leveraging of national institutions and levy collection mechanisms.

Allocation framework

Funding arrangements within the department also need to be configured to support a shared responsibility and shared decision-making model. Implementation of a resource allocation decision tool and commissioning function will be required to support an effective shared investment decision-making framework. In practice, this will involve transition to a model for the proper allocation of resources to projects rather than operating units and the flexible redeployment of people to high priority projects.

RECOMMENDATIONS

1. Build the framework for the future Queensland Biosecurity System

- 1.1. Develop a revised biosecurity strategy and action plan and statement of shared responsibility signed off by key stakeholders within and outside government – this should clearly establish key performance indicators (KPIs), timeframes, resource commitments and responsibility for delivery.
- 1.2. Work with BQMAC to develop recommendations on options for governance arrangements, which embed shared decision-making and clearly articulate

responsibilities and obligations.

1.3. Further explore potential approaches for an industry biosecurity fund or funds.

1.4. Implement a project based resource allocation framework for biosecurity activities.

ROLE AND RESPONSIBILITIES OF BIOSECURITY QUEENSLAND

Scope: 1 (a) *Appropriate roles and responsibilities of Biosecurity Queensland*

1 (b) *Quantify the role of Biosecurity Queensland*

Deliverable: *The report is to state the roles and responsibilities of Biosecurity Queensland*

CURRENT ROLE

The Panel considered the current role of Biosecurity Queensland as the agency with principal responsibility for the Queensland Biosecurity System. The Panel's observations are that:

- Biosecurity Queensland is primarily focused on regulatory administration, operations and program delivery.
- The current policy role is primarily focused on technical and operational policy development and review, with a heavy emphasis on national policy imperatives. Special projects are established to review legislation as required.
- The current planning approach is predominantly operational, with others outside Biosecurity Queensland being approached to provide resources or technical assistance.
- Biosecurity Queensland's relationship with partners in the biosecurity system is predominantly built on communication and engagement on their specific program responsibilities, or consultation to seek input on policy or legislative matters.
- The current role and responsibility of Biosecurity Queensland within the Department of Agriculture and Fisheries is not fully aligned to the delivery of biosecurity outcomes, as a consequence of having responsibility for non-biosecurity functions and not having responsibility for some biosecurity functions undertaken elsewhere in the department. The non-biosecurity functions are not high priority in terms of the 'core' needs of a Queensland Biosecurity System.
- The current role and responsibilities appear to be the result of incremental change built on previous operational responsibilities of historical functional units.
- The Biosecurity Leadership Team's stated intention to move Biosecurity Queensland towards becoming a leader and enabler is the right direction but has not been implemented yet.
- There needs to be clear agreement and understanding regarding Biosecurity Queensland's leadership/enabler roles and operational responsibilities and accepted protocols for meeting customer service expectations without losing focus on priority activities.

FUTURE ROLE AND RESPONSIBILITY OF BIOSECURITY QUEENSLAND

To meet the needs of the future, the role and responsibility of Biosecurity Queensland should be defined in the context of the characteristics of a best practice future Queensland Biosecurity System and the directions set by the *Biosecurity Act 2014*.

The role of Biosecurity Queensland should be to:

- lead the Queensland Government's contribution to the Queensland Biosecurity System
- partner with other organisations within and outside government to plan, prioritise and deliver biosecurity outcomes
- build common understanding of the objectives of the Queensland Biosecurity System
- build trust and confidence in the integrity of the System and its capacity to deliver
- work with partners to develop governance and accountability arrangements, which are transparent, deliver decision-making processes underpinned by evidence and provide confidence that resources are being used wisely
- plan for future challenges and opportunities, identify roadblocks and harness innovation to solve problems
- build common understanding of the business, human and environmental value which the Queensland Biosecurity System seeks to protect, and the impact of threats and mitigation strategies
- deliver quality services through internal and external arrangements, with the choice of a delivery model based on considerations of value and risk
- establish a community and customer service culture.

In summary, in the future model, Biosecurity Queensland will become a leader and enabler for the Queensland Biosecurity System, with a range of levers to realise biosecurity outcomes.

The organisational structure and allocation of responsibilities within Biosecurity Queensland needs to evolve to keep pace with fundamental shifts, such as the commencement of the new legislation, which resets the approach to managing biosecurity, and the vastly increased technical and policy breadth, which the organisation needs to span.

Clearly, Biosecurity Queensland will need to continue to administer the legislative framework for biosecurity, but this should not be the sole 'reason for being' of the organisation.

In the context of the future System, Biosecurity Queensland should be responsible for the following functions:

SHARED RESPONSIBILITY AND STRATEGY

- developing strategy and delivery plans to support the Queensland Biosecurity System
- developing and delivering an innovation strategy
- partnerships and formal governance arrangements to support the System
- strategic engagement with the national biosecurity system and influencing national priorities
- workforce skills needs analysis and workforce planning

INVESTMENT

- risk analysis and evaluation
- prioritisation and resource allocation
- commissioning internal and external services, programs and advice, including setting standards for contract management and performance evaluation

PREVENTION AND SURVEILLANCE

- identifying and evaluating biosecurity threats to agricultural systems, the environment and human amenity
- designing prevention and surveillance programs
- data gathering and analysis
- scenario modelling
- establishing diagnostic needs

PREPAREDNESS AND RESPONSE

- developing response plans
- establishing competency and training standards and needs for response personnel
- leading response to incursions

PROGRAM DELIVERY

- establishing project planning, management and evaluation standards and protocols
- delivering priority biosecurity programs where appropriate for government, particularly prevention, surveillance and preparedness
- managing and overseeing programs delivered wholly or partly by third parties
- delivering reform and business improvement programs
- essential regulatory compliance programs
- investigation and enforcement (prosecutions)
- evaluating and prioritising existing biosecurity threats to agricultural systems, the environment and human amenity
- brokering partnerships for design, funding and delivery for high priority pests and diseases, including research and development (R&D)

MARKET ACCESS

- establishing market access protocols
- supporting industry development initiatives

SPECIALISED SYSTEMS AND TOOLS

- establishing system standards, for example for information, tracing and property registration
- administering and reviewing the *Biosecurity Act 2014*, subordinate legislation and policies
- developing assurance and certification schemes as alternatives to legislation
- developing legislative compliance programs
- developing and applying graduated regulatory sanctions

BUSINESS MANAGEMENT

- managing a diagnostic laboratory service

The research and development functions currently undertaken by Biosecurity Queensland should be reviewed to determine whether synergies arising from housing the function within Biosecurity Queensland will enhance the delivery of biosecurity outcomes enough to warrant the additional cost and effort involved in managing an additional function well.

Finally, a number of activities currently conducted by Biosecurity Queensland appear not to be consistent with its efforts to improve biosecurity outcomes as part of the biosecurity system. The Panel considers non-core activities to include:

- administering legislation without a clear biosecurity purpose (e.g. *Animal Management (Cats and Dogs) Act 2008*)
- managing the tick fever vaccine centre
- brands registration
- industrial hemp licensing.

In the short term, if the agency considers it desirable to continue to manage the above responsibilities within Biosecurity Queensland, they should be managed in an organisational unit separate from core biosecurity functions to maintain clarity of focus on core biosecurity outcomes.

In the longer term, each function should be reviewed to determine its primary objective, whether it should be continued and which organisation is best placed to undertake it. For example, it was suggested to the Panel that local government may be better placed to undertake dog and cat management functions. Appropriate resourcing arrangements would need to be considered, to minimise the impacts on other priorities of both organisations.

An effective investment function within Biosecurity Queensland will be critical to the success of the Queensland Biosecurity System. The Panel characterisation of an investment function comprises analysis and decision making as well as commissioning high performance delivery. In this respect, it is similar to the commissioning function in organisations such as Queensland Health.

RECOMMENDATIONS

2. *Refocus Biosecurity Queensland*

2.1. Transition non-biosecurity responsibilities to management in a separate organisational unit.

CAPABILITIES OF BIOSECURITY QUEENSLAND

Scope: Assess Queensland's baseline Biosecurity capability to meet its current objectives and future challenges including:
2 (a) Leadership, strategy, policy and service delivery
2 (b) ICT systems and infrastructure
3 Benchmark the capability Queensland requires to achieve world's best practice given its state-wide service delivery requirements

Deliverable: The report is to identify the gaps, priorities and timelines for investment

CONTEXT

Biosecurity Queensland operates within a complex system - as a division within the Department of Agriculture and Fisheries, an agency within the Queensland Government, a

jurisdiction within a national system, and with extensive partnerships with organisations and groups outside government.

In keeping with other parts of the Department of Agriculture and Fisheries, ongoing pressure on consolidated revenue resources has resulted in a decline in the budget allocated to Biosecurity Queensland over the years since its establishment. In fact, the Panel was made aware that core staff numbers have been declining gradually since the early 1990s. More recently, targets set in 2012 saw a more significant reduction and the Panel was presented with information indicating a loss of 26 per cent of staff. This decrease was unevenly spread, with retention of around 90 per cent of frontline positions.

Because of the variability in special projects funded on a time limited basis, seasonal variability of temporary employment and other fund sources available to employ staff it is difficult to draw quantitative conclusions about the decline in capacity over time. Similarly, the Panel was not able to quantify the impact on biosecurity capacity and capability of staff losses in other areas of the department. However, there has undoubtedly been a significant decline and the Panel received many comments about the departure of individuals with specialist expertise and loss of staff in regional areas.

Because Biosecurity Queensland is embedded in the Department of Agriculture and Fisheries and the national system, the Panel needed to consider capability needs within the broader context of skills, supporting systems and physical facilities available within the department (and its partner universities), broader government and the national system. The Panel noted the work, which has been done in recent years at a national level to catalogue specialist skills and services required for biosecurity, on the basis that no single jurisdiction can or should maintain the breadth of expertise needed to cater for all biosecurity threats.

The Panel was not in a position to undertake a detailed review of individual staff capabilities or competencies. Consequently, the conclusions in this report should be viewed as indicative and subject to confirmation against a finer grained skills audit.

The Panel also noted the review undertaken by Sapere in 2012, which assessed the skills needed to meet the biosecurity challenges of the future. In its review, Sapere noted that Biosecurity Queensland needed to develop skills in engagement (to build support and shared governance), partnership (to work with others to achieve biosecurity outcomes) and managing complexity and uncertainty (to adapt to future challenges).

IDENTIFYING CAPABILITY GAPS

Gaps were identified through the use of formal tools to assess specialist biosecurity capability and general organisational capability, augmented by comments received through internal and external consultation processes. The focus of the processes used was to identify capability gaps in the context of future needs, although capacity to deal with current needs was also considered. The output of these processes is embedded in the overview of capability gaps below.

There was significant consistency in issues identified through different processes, providing confidence in the conclusions contained within the report.

Areas of concern identified through engagement with a range of internal and external stakeholders were:

RESPONSE

- overall lack of capacity and declining capability
- 'surge capacity' for response (generic emergency roles) and technical capability
- managing temporary work forces and rapid training for responses
- excessive impact of responses on the ability to maintain other priority biosecurity activities

PRIORITISATION AND RISK

- risk pathways for new environmental threats - birds, marine pests, ants
- insufficiently pro-active approach to environmental biosecurity
- intelligence, epidemiology, analysis and strategy development
- biosecurity risk and risk management strategies, including the determination of risk, consequence measures and scenario modelling
- marine and aquatic biosecurity
- investment decision making practice – too much reliance on historical approaches and not enough rigour and evidence
- difficulty reconciling long term, strategic objectives with immediate issues driven priorities, particularly where this is viewed as conflict between bureaucratic and political objectives
- neither internal budget allocation processes, nor national cost sharing arrangements support good decision-making

SURVEILLANCE AND REPORTING

- lack of capacity in diagnostic plant pathology, entomology, taxonomy, biosecurity in forests
- lack of attention to prevention and surveillance, particularly early detection

INNOVATION

- influencing ongoing R&D investment to leverage investment through the Invasive Animals and Plant Biosecurity Cooperative Research Centres
- not effectively leveraging know how in other parts of the department or industry to better utilise supply chains to drive behavioural change
- lack of explicit and strategic focus on innovation and opportunities

PROGRAM DELIVERY

- limited use of management information
- uneven project management capability – particularly in an ambiguous and unpredictable environment – a need for more adaptive management approaches, staged implementation, and formal project wind up

- planning, prioritisation and delivery – a tendency to take on more than they can deliver, not allowing for inevitable (albeit unpredictable) events, limited resource planning outside a response context

SYSTEMS

- not enough customer focus
- slow to respond to customer requests
- quality management systems are variable at best

OVERVIEW OF CAPABILITY GAPS AND PROPOSED STRATEGIES TO ADDRESS THEM

SPECIALIST BIOSECURITY CAPABILITY

- Strategic policy development, risk based decision-making and stakeholder engagement. Better risk analysis will help ensure that biosecurity investment is directed into the areas of highest impact. Better strategic policy development processes, combined with better stakeholder engagement, are required to steer a course to make the desired changes, particularly in areas requiring divestment. These improvements should be made through some strategic staff appointments, as well as adjustments to internal processes.
- Better stakeholder engagement will be part of the broader evolution of a culture of shared responsibility within the Queensland Biosecurity System. However, in the short term there needs to be a greater emphasis on consistent stakeholder engagement processes across the organisation. A first step would be development of a communications and engagement plan, with a senior staff member assigned the responsibility to ensure it happens. Part of the plan needs to be a focus on internal communications so that engagement is embedded as a way of operating across the organisation and that all staff have access to consistent messaging.
- To better inform risk based decision making, there needs to be better processes for gathering, and particularly analysing, intelligence information. There is significant data within existing systems, but a lot of data that could be gathered relatively easily is not collected in any useable form. Further, there is no organised process for analysing data. Epidemiological skills within the Queensland Biosecurity System have also degraded, with virtually no high-level epidemiological analysis skills within Biosecurity Queensland. Establishment of a small but dedicated group to perform this function is required. A broader “virtual epidemiology / intelligence network” could support this. The latter would require coordination of appropriately skilled people across a range of organisations, particularly the university sector.
- To ensure better program implementation and system learning within Biosecurity Queensland, a more integrated system of strategic planning, operational planning, financial management, reporting and evaluation is required. This should be led by senior management, but may require some specialist support.
- There is a general recognition that there needs to be greater relative investment in prevention and surveillance (particularly early detection). While this will be guided by risk based decision making processes and pathway analysis, areas that require added attention currently include:

- greater emphasis on the importance of on-farm biosecurity practices, including ensuring that DAF staff “practice what they preach” when visiting farms
- better community and industry awareness of biosecurity, with an emphasis on the absolute imperative for early reporting
- increased focus on Queensland’s northern border
- implementation of a marine biosecurity initiative
- improvements to the network of people who can conduct field investigations, for example private vets and horticultural consultants
- better coordination and data management for plant pest and disease diagnostics.
- There needs to be greater flexibility, but at the same time more consistency, in the approach to conducting responses. Greater flexibility should apply to the approach to small, medium and large responses, as well as the actual control strategies that are applied. Greater consistency should apply across responses of a similar size or nature. The suggested approach to achieving this consistency is the establishment of a biosecurity response unit that has the responsibility to ensure training and systems are in place, as well as to manage the response unit where possible or at least oversee the management of responses.
- A function of the biosecurity response unit should be to ensure that adequately trained and sufficient human resources are available for responses. A multi-pronged approach is required that includes an adequately resourced internal training program, ensuring people gain experience in real responses, engagement of external organisations that can supply personnel and “just in time” training processes.
- Market access protocols based on quality assurance principles could be more widely applied across biosecurity. However, resources to develop such systems are limited and some strategic investment in this area may be required.

GENERAL ORGANISATIONAL CAPABILITY

In the Panel’s judgement, primarily based on the Australian Public Service Organisational Capability framework, key areas for improvement in organisational capability are:

- setting leadership direction in the context of the Queensland Biosecurity System
- succession planning (formal)
- performance management
- individual work plan alignment to strategic priorities
- strategic planning, review, monitoring and evaluation
- clarity of benefits articulation
- prioritisation and trade offs
- working effectively within a political system
- evidence and analysis to inform strategy
- evaluation and measurement of outcomes
- understanding of cost-effectiveness
- rigour in risk analysis
- building common ownership
- developing innovation strategy, including culture, people capacity, enabling systems and evaluative feedback loops
- building innovation partnerships

- decision making in risk and uncertainty
- financial risk management and cost driver analysis
- establishing roles and responsibilities of delivery agents and partners
- management of effectiveness of delivery agents
- performance information and analytical capability.

The Panel suggests that the following approaches, if implemented, will collectively address key organisational capability areas:

- Leadership development as part of a formal workforce development plan
- Build on the findings of this report and the existing Biosecurity Queensland and Department of Agriculture and Fisheries workforce development plan to undertake a skills audit and develop a formal succession plan
- Invest in the development of a revamped biosecurity strategy and action plan with KPIs including cascading priorities down to the level of individual work plans
- Invest in initiatives to improve risk analysis, investment decision making, resource allocation and business and financial risk management
- Invest in an initiative to develop and implement an innovation strategy
- Establish an internal investment, resource allocation and evaluation framework and commissioning function
- Develop skills in management of third party delivery and other areas of relative weakness as part of the workforce development plan
- Undertake a project to develop appropriate management reports, which better inform performance management as well as investment decision making.

The processes used by the Panel to assess capability identified many opportunities for improvement. Few organisations are able to demonstrate high capability across all areas of performance so it is not surprising that weaknesses were identified in an organisation that has experienced significant change in resourcing levels at the same time as the need to respond to unexpected events in recent years.

In summary, the Panel considered that the following weaknesses in capability are the most significant and the highest priority for improvement:

General organisational capability

- investment prioritisation and evaluation
- shared decision making and resource allocation
- engagement and partnership building
- resource planning, project management and third party delivery
- innovation

Specialist biosecurity capability

- prevention
- early detection (surveillance and reporting)
- response consistency and flexibility
- surge capacity for response - operational and specialist expertise
- supporting information and other specialist systems

Developing solutions to organisational capability gaps is rarely a linear process. Further, the Panel's terms of reference also asked for consideration of sustainable funding models and opportunities to enhance the system through leveraging. The Panel's recommendations are designed to meet multiple objectives drawn from the terms of reference including addressing the capability gaps identified above.

FILLING CAPABILITY GAPS

Deliverable: 2 Address opportunities for strategic shifts of existing capability/resources away from low risk or low return on investment activities

IDENTIFYING LOW RISK/LOW RETURN ACTIVITIES

The Panel proposes two key strategies to realise opportunities to move existing capability/resources away from low risk or low return activities.

The first is the development of the new biosecurity strategy and action plan, under the leadership of core partners across government, industry and others who share biosecurity objectives. This approach should result in agreement on high priority activities and automatically divert resources away from those, which are lower priority.

The second is the systematic review of investments using an appropriate information base and methodology. A portfolio approach to investment prioritisation is outlined in Chapter 4 of the report. Systematic application of the recommended prioritisation approaches in an appropriate decision making environment should result in recalibration of investment over time to a more optimal level.

A key impediment to such a review is that the organisation currently lacks the information systems, the decision-making framework and discipline to underpin the systematic approach that is required.

It is important to recognise that the question of whether a threat is low risk and whether intervention generates low returns is separate from the question of who should pay. In the shared responsibility model of the future, all interested parties should have access to information and evidence to inform decisions about their respective investment.

In the absence of an evidence-based analysis, the Panel identified some areas, for further examination in terms of efficiency or return on investment. These were:

- the Panama disease tropical race 4 response - the Panel queries whether there are lower cost options to the current intensive surveillance program that would have the same or similar risk profile.
- surveillance - the Panel was provided with 2014-15 Biosecurity Queensland budget figures which indicate an amount of \$8,139,667 allocated to surveillance from consolidated revenue, with offsetting revenue from other sources of \$636,679. These figures do not account for much of the resources for plant biosecurity surveillance, particularly diagnostics, which reside outside of Biosecurity Queensland. This forms a significant proportion of the organisation's budget and is at odds with feedback and the Panel's observations that the organisation lacks a coherent surveillance strategy and is underinvesting in prevention and surveillance relative to response. Further, there appears to be little analysis and value-added from the data and information generated by

the surveillance system. There is an opportunity to undertake a review of the surveillance area, applying investment principles, to inform optimal investment across the surveillance portfolio.

RECOMMENDATIONS

3. Review and reprioritise investment in biosecurity programs

- 3.1. Establish an investment function in Biosecurity Queensland with responsibility for:
 - a) Leading a systematic review of Biosecurity Queensland's investments;
 - b) Building risk and information analysis capability and improving investment decision making practice;
 - c) Developing and implementing an internal investment framework to drive explicit, risk based, consideration of resource allocation (commissioning function).
- 3.2. Undertake a systematic review of Biosecurity Queensland investments, using the principles outlined in this report, with a view to redirecting resources from lower risk/return to higher risk/return areas. This will need to be a multiyear project undertaken in the context of the new legislative environment - using steering processes (governance) with stakeholder representation.
- 3.3. Biosecurity Queensland, together with key stakeholders, should develop a strategy to transition government out of significant investment in managing established pests and diseases where there are clearly identifiable beneficiaries, toward prevention and surveillance activities.

4. Develop a Queensland biosecurity surveillance strategy

- 4.1. Develop a coherent surveillance strategy guided by risk management principles, pathway analysis, consequence measures and cost effectiveness.

5. Create incentives to report disease

- 5.1. Implement a multi-pronged approach to improving pest and disease reporting, primarily focused on education and awareness, creating incentives to report and removing disincentives, improving recording, analysis and intelligence systems and encouraging investment in reporting and feedback systems.

ALTERNATIVE BUSINESS MODELS FOR SOME ACTIVITIES

The Panel examined the business approach taken by Biosecurity Queensland for some activities, relative to those used in other jurisdictions. The Panel's view is that there are opportunities to reduce costs, increase effectiveness and supplement funds available for biosecurity outcomes in a number of areas.

- There are opportunities to use the new legislation to develop approaches, which do away with the need to regulate, or significantly reduce the regulatory burden on business (for example, moving from plant certifications and inspections to market access protocols based on quality assurance principles). However, changes of this magnitude require an up-front investment to develop the necessary protocols and negotiate market agreements.

- In some cases, alternative business models may provide either an opportunity to reduce costs of operation, or supplement revenue from non-government sources by moving to a fundamentally different model, or both approaches could be considered (for example, by moving to a commercial model for diagnostic laboratory services, property identification code registration).
- There are opportunities to implement full cost recovery for services which are purely for private benefit, or where cost recovery will bring improvements in efficiency, for example the operation of the tick fever centre, and the Property Identification Code (PIC) registration system. As a further example, any savings realised by implementing full cost recovery for the Veterinary Surgeons Board could be redirected to fund enhancements to the surveillance program by establishing arrangements with private veterinarians and other service providers. Such arrangements can incorporate explicit subsidies if a public benefit is considered to exist, for example to encourage submission of samples to laboratories as part of a surveillance program.

RECOMMENDATIONS

6. Dismantle red tape to improve flexibility for agricultural businesses

- 6.1. Undertake a systematic review of activities where a less regulatory and costly approach could be developed under the new legislative framework. Build in appropriate contribution (risk creator) mechanisms where the systematic review agrees there is a need for ongoing intervention.

7. Implement new approaches to build better support systems

- 7.1. Implement a full cost recovery policy for the tick fever centre and the Veterinary Surgeons Board with the resulting savings reinvested to support an enhanced passive surveillance system.
- 7.2. Review the current approach to the Property Identification Code register to implement a new system, which delivers enhanced benefits and a sustainable funding model.
- 7.3. Implement a new commercial, in-house business model for diagnostic services across Biosecurity Queensland and Agri-Science Queensland with a subsidy policy designed to meet surveillance outcomes.

INTERNAL REORGANISATION, ORGANISATIONAL DEVELOPMENT AND PROCESS IMPROVEMENT

The Panel gave consideration to both the capability and capacity of Biosecurity Queensland. The Panel formed the view that Biosecurity Queensland does not have the capacity to implement the changes required to meet the needs of the future and address current needs. The Panel believes targeted investment is required to build both capacity and capability to allow the organisation to focus on implementing the reprioritisation and new business model approaches identified in the report.

There are a number of areas where the Panel believes apparent capability gaps are a result of strained capacity, and that the organisation does have the inherent capability (or would be better placed to acquire or develop it) once capacity has been increased through the initiatives identified in the next section. These have largely been identified in preceding sections and are summarised below:

- the need for a coherent surveillance strategy guided by risk based decision making processes and pathway analysis
- the opportunity to take advantage of the new legislation to develop less regulatory and costly approaches and market access protocols based on quality assurance principles
- the opportunity to improve traceability for plant products
- the need for improved strategic and operational planning, performance management and alignment of individual work plans
- the need to address skills gaps, training needs and succession planning through an enhanced workforce development plan
- the need to provide appropriate leadership to transition to the future Queensland Biosecurity System and deliver an organisational structure that aligns to the demands of the new biosecurity legislation.

Significant investment is also needed in information systems and the Panel's view is that the current Biosecurity Information Management System (BIMS) program is appropriate and adequately resourced to be a platform for the future. It will be important that the system will be able to be adapted to address future opportunities, such as greater participation by industry and community in surveillance.

RECOMMENDATIONS

2. Refocus Biosecurity Queensland

- 2.2. Develop an organisational design, which drives attention to the core functional areas identified and positions the organisation to transition to a system leader and enabler role.
- 2.3. Undertake a skills audit and develop a training and development plan with particular emphasis on:
 - a) Project management;
 - b) Use of business intelligence systems to inform business and risk management;
 - c) Financial management;
 - d) Engagement and partnership development.

8. Continue Investment in Flexible Specialist Systems

- 8.1. Lock in ongoing investment in the Biosecurity Information Management System (BIMS) and build in sufficient flexibility to the system and business processes to accommodate future opportunities such as greater participation by industry and the community in surveillance.

FILLING CAPABILITY GAPS - ADDITIONAL TARGETED INVESTMENT IN BIOSECURITY QUEENSLAND

Deliverable: 4 Identify where targeted investment in Biosecurity Queensland's own capability and capacity is required to restore responses to disease and pest outbreaks to world's best practice.

There remain some areas where additional investment in Biosecurity Queensland's capability and capacity is required to meet the immediate need to be 'response ready' and for the strategic needs of the future. The detailed skills audit recommended should be used to test the availability of individual skills and capabilities and whether staff development or recruitment is required to address capability gaps at an individual level. Nonetheless, it is the

Panel's view that the capacity is lacking and that the areas identified below require additional resourcing, irrespective of whether key roles can be filled from within the organisation.

Given the escalating frequency of responses, the Panel also recommends establishment of a standalone response function led by a dedicated leader of responses, to be tasked with building partnerships and community capability and with skills sets in these areas. As noted in the report, there needs to be greater flexibility, but at the same time more consistency, in the approach to planning, evaluating and conducting responses. Greater flexibility should apply to the approach to small, medium and large responses, as well as the actual control strategies that are applied. Greater consistency should apply across responses of a similar size or nature. The suggested approach to achieving this consistency is establishment of a biosecurity response unit (under the leadership of the specialist leader of responses) that has the responsibility to ensure training and systems are in place, as well as to manage responses.

A function of the biosecurity response unit should be to ensure that adequately trained and sufficient human resources are available for responses. A multi-pronged approach is required that includes an adequately resourced internal training program, ensuring people gain experience in real responses, engagement of external organisations that can supply personnel and “just in time” training processes.

In keeping with Biosecurity Queensland's transition to a leader and enabler of the Queensland Biosecurity System, the Panel's view is that the additional investment should focus on people with the leadership skills to develop capability in the areas of risk and consequence analysis and investment prioritisation; and innovation at a technical level and in business processes.

Given the nature of the challenges facing the system, it is clear that innovation will be required to develop and deliver solutions, which deal with the increasing number and complexity of biosecurity threats, with fewer resources, by capitalising on a networked world. A particular opportunity will be improving the business and delivery through emerging digital technologies.

The Panel has also identified capacity and future capability gaps in technical expertise, which needs to be filled through a variety of approaches, acknowledging the increased breadth of specialist knowledge, which will need to be accessed. Proposed approaches include:

- appointing ‘technical specialists’, that is individuals with high level technical expertise, extensive knowledge of industry and/or the environment in a particular region or commodity, and also significant strengths in building relationships. The Panel's view is that this gap should be filled by an active program of staff development and recruitment, with a focus on locating these specialists in regional areas
- establishing virtual networks in collaboration with other jurisdictions to access expertise, such as epidemiological and economic skills
- establishing a graduate recruitment program informed by national assessments of needs and gaps and building on linkages with tertiary institutions developed through relevant cooperative research centres and other research alliances.

A particular area of capacity and capability concern is marine biosecurity – there are currently very few resources being applied to a high risk area with potential for significant impacts on industries and iconic environmental assets such as the Great Barrier Reef.

The Panel is recommending investment in core leadership and partnership building capability to undertake the following tasks:

- education and awareness of the impacts of marine pests to the environment, infrastructure and implications for trade including tourism
- build relationships with port and shipping industries
- improve collaborations with other agencies such as harbours and marine, Maritime Safety Queensland
- identification of high risk pathways with industry and implementation of mechanisms aimed at preventing introduction along with surveillance for early detection of potentially highly invasive species
- commissioning research or 'on site' trials with regards to appropriate surveillance/monitoring methods likely to successfully detect marine pests at an early stage as a means of prevention. The Panel was advised that research to develop eDNA probes for multiple species is underway in South Australia, however requirements for spatial and temporal application of these tests to provide effective coverage is yet to be determined. The Panel was also made aware of remote monitoring (robotic) technology being developed at CSIRO.

The Panel is also concerned about capability in engagement and development of partnerships, however believes that these capabilities need to be built in to role descriptions at all levels rather than being housed under a dedicated leader. Capability in these areas will need to be built through a combination of targeted training and development of existing staff and attention to these capabilities as part of the recruitment process. In addition, specialist resources may need to be contracted for particular tasks, as they were during the development of the *Biosecurity Act 2014*.

Development of a communications and engagement plan with accountability for delivery assigned to all senior managers is proposed as a way of embedding a more customer, community and partner-focused culture in the organisation.

North Queensland has unique characteristics, which demand special attention. The Panel's view is that a biosecurity leader based in North Queensland is required to develop and drive a suite of initiatives to address the unique needs of the region. There should be a particular focus on delivering biosecurity risk mitigation and control strategies, which enable agriculture and aquaculture sector growth.

RECOMMENDATIONS

2. Refocus Biosecurity Queensland

2.4. Create leadership positions at appropriate levels in incident preparedness and response risk and decision-making; innovation and business improvement; marine and aquatic biosecurity and northern Queensland biosecurity strategy.

9. Establish a preparedness and response unit

9.1. Establish a response unit tasked with responsibility for building relationships within Government and a community biosecurity reserve, ongoing training (including exercises), as well as revisiting response protocols to establish a set of tailored templates, suited to responses of varying degrees of urgency, size and scope.

- a) Undertake a desk top exercise specifically designed to test whole of Government response capability.
- b) Clearly define the circumstances under which departmental resources should be redirected to response, bearing in mind broader business continuity needs, as well as opportunities for personal development.

10. Establish a biosecurity network

10.1. Build a biosecurity network – explore opportunities to utilise other response agencies e.g. SES volunteers with a “rapid deployment training package” and to work with other volunteer and community organisations, as well as agreements with private sector organisations.

- a) Specifically explore opportunities to leverage relationships developed in the enhanced surveillance approach (for example, indigenous rangers, private veterinary practitioners) to increase the capacity of the biosecurity network.

11. Establish an innovation function and develop and innovation strategy

11.1. Establish a biosecurity innovation function and develop an innovation strategy – with priority consideration of opportunities such as for data capture and analysis in collaboration with the community, business, other jurisdictions and agencies; the potential for breakthrough technologies and achieve internal operating efficiencies to lower costs of prevention, surveillance, response.

- a) As a component of the innovation strategy, and in collaboration with Agri-Science Queensland, identify priorities for research and development, including in the area of building more resilient farming systems.

12. Build expert and regional capability

12.1. Develop position specifications and recruit 5 technical specialists, to be located in the regional locations in north and central Queensland as part of a work force development plan, which builds capacity in this area.

12.2. Expand capability by building access to expert networks including through:

- a) A fellows program which retains access to retiree expertise and provides mentoring for less experienced staff;
- b) A virtual network for epidemiologists and other experts.

12.3. Develop a succession plan which incorporates a graduate program targeting biosecurity expertise gaps in the context of national capacity.

12.4. Create a leadership position and specific marine biosecurity function.

12.5. Include engagement and partnership development in the recommended training and workforce development plan, assign responsibility for driving a change in culture to all leaders and establish access to specialist skills.

12.6. Develop a biosecurity initiative for northern Australia incorporating a focus on delivering biosecurity risk mitigation strategies, which support agriculture sector growth, protect the environment and mitigate risks to human health.

IMPROVING THE EFFECTIVENESS OF THE BIOSECURITY SYSTEM THROUGH LEVERAGING

Deliverable: 3 Identify where incremental investment could leverage capacity and capability from entities, which share Queensland's biosecurity priorities to achieve world's best practice.

A future Queensland Biosecurity System requires a partnership between Biosecurity Queensland and others to deliver project and system outcomes. The advantage of a partnership approach is that both partners are able to leverage their contributions to achieving shared goals. The availability of incremental investment offers the opportunity to encourage partnerships – in the long run, this will build the capability of the system as a whole.

Organisations which share Queensland's biosecurity priorities include other Queensland state and local government agencies, other jurisdictional government agencies, peak bodies representing primary industries, environment and conservation and communities, primary producers and landholders, supply chain participants, service providers, the research community and members of the broad Queensland community.

Key themes from the consultation process were:

- There is capacity across the Department of Agriculture and Fisheries, the rest of government, tertiary institutions, community, other entities (for example, regional natural resource management bodies and local government authorities) and the national system, which is not being fully utilised for prevention/strategic priorities and response activities.
- There are numerous examples of industry specific and generic programs to improve on farm biosecurity practices and community engagement in early detection. However, there does not seem to be a coordinated approach with explicit key performance indicators or incentives.
- There is an opportunity to better pull government levers to meet biosecurity objectives, for example, through the planning system, logistics/infrastructure, recovery arrangements, and operating agreements/licences.
- There is an emerging realisation that individual jurisdictions cannot all 'do it all' – questions include should some things be delivered nationally on behalf of individual jurisdictions? Should there be more sharing of capacity along the lines of the national Research, Development and Extension framework established under the national Agriculture Ministers' Forum? For example, should other jurisdictions simply contract Biosecurity Queensland to deal with any ant incursions?
- Opportunities to improve biosecurity capacity and capability through networking of specialists across organisations will require active management.

The Panel concluded that there are many opportunities to leverage whole of government, industry, other organisations and/or community action to achieve biosecurity outcomes through the Queensland Biosecurity System. The development of a new biosecurity strategy and action plan, and the new governance and funding arrangements recommended in this report will establish the shared biosecurity priorities and identify the partnering opportunities to assist realisation of these opportunities.

The Panel identified a small number of specific opportunities, which it recommends pursuing as a priority under the new action plan. These opportunities will require some targeted investment from both the Queensland Government and partner entities, but will generate leveraging opportunities for both.

Surveillance

A review of surveillance investment and development of a coherent surveillance strategy has already been recommended. There is an opportunity to leverage information currently being collected by service providers (for example, agronomists, horticultural advisors, veterinarians), as well as on farm and at other points in the supply chain. There is also an opportunity to target additional information through these routes. This approach would complement the development of a biosecurity reserve (as recommended elsewhere in the report) by establishing relationships, which could be drawn upon in the event of an incursion requiring a response.

The Panel also noted the development of a national surveillance strategy under the auspices of the National Biosecurity Committee and the importance of alignment with other jurisdictional investments to leverage maximum value for Queensland and Australia. In particular, given the particular risk of threats from the north, it is critical that there is ongoing Commonwealth Government investment in the Northern Australia Quarantine Strategy and marine biosecurity and that this is planned and delivered cooperatively.

A particular opportunity is to leverage the existing indigenous ranger network in Far North Queensland and the proposed additional investment referenced in the Commonwealth Government's White Paper on Developing Northern Australia.

The Panel is also of the view that there could be more effective leveraging of 'citizen science' in relation to biosecurity threats to the environment.

The Panel recommends that the new surveillance strategy includes targeted investment in leveraging information from other sources in this way. Tools could include formal memoranda with organisations (as used in New Zealand) or a grants program for initiatives designed to meet established criteria and which include co-investment.

Biosecurity Network

It is the Panel's view that many organisations have arrangements in place to train staff and volunteers in skills that are highly relevant to biosecurity response and that these skills and training could be leveraged more effectively.

On farm biosecurity

Appropriate investment in prevention is critical. In the agricultural biosecurity sphere, good on farm biosecurity systems are an important component of managing biosecurity risk. The same applies to aquaculture and plantation forestry. Effective on farm biosecurity increases profits by enabling effective management of pest and disease impacts on productivity and reducing costs of mitigation strategies. It also helps prevent new incursions happening in the first place and in the event of an incursion, it reduces risk of spread and the need for onerous regulatory controls. The Panel was provided with information about many excellent initiatives to improve on farm biosecurity, developed under the auspices of Animal Health

Australia (AHA) and Plant Health Australia (PHA) and industry research and development corporations. Examples include the Livestock Biosecurity Network and Grains Research and Development Corporation funded crop protection officers.

The Panel also identified a number of programs that are currently being delivered to farmers and which could be readily modified to include material to address on farm biosecurity. For example, the Queensland Government is heavily investing in 'Best Management Programs' (BMP) to minimise agricultural impacts on the Great Barrier Reef. BMPs give producers and landholders advice and detail practices in a digestible format. The Panel suggest that inclusion of biosecurity considerations would be a simple, low cost, high impact mechanism to achieve better biosecurity outcomes. Biosecurity Queensland is currently involved with the Great Barrier Reef Water Science Taskforce.

With a relatively modest investment (for example, a program leader or coordinator, and development of some additional materials) and the establishment and agreement to "stretch" goals for uptake of on farm biosecurity systems, the Panel believes significant gains could be made.

The Panel also noted that recent events, particularly Panama disease tropical race 4 affecting the banana industry, have heightened interest in the value of on farm biosecurity.

Regional networks

As detailed above, at a regional level, there are a number of organisations engaged in delivering biosecurity outcomes to meet shared objectives.

These include Local Government Authorities, Regional Organisations of Councils, Regional Natural Resource Management (NRM) groups, LandCare groups, government land management agencies, including the Department of Transport and Main Roads and Department of Environment and Heritage Protection.

In Far North Queensland, this is compounded by region specific bodies, such as the Wet Tropics Management Authority and indigenous land management councils.

These bodies collectively make a very significant investment in managing threats from invasive plants and animals, but the Panel received feedback from many quarters querying the impact of this investment. Concerns centred on both 'investment in the wrong things' and 'lack of coordination'.

The Panel identified two opportunities to leverage existing investment.

The first is to improve coordination of regional investment processes by gaining agreement to align regional investment priorities and include a broader consideration of biosecurity within these priorities. This would require development of an agreed approach to bring together the biosecurity plans developed by Local Government Authorities (LGAs), the regional natural resource management plans developed by regional natural resource management organisations and relevant regional plans developed by state agencies, including Transport and Main Roads and Environment Heritage and Protection. The Panel was provided with some examples of good coordination, which could be built on, including the regional co-investment model for pest animal control, and coordination of council

investment through a regional NRM plan. There is undoubtedly an opportunity to more effectively:

- leverage investment from all regional bodies
- expand the reach of Biosecurity Queensland into private and public landholders
- potentially provide a vehicle to set and achieve broader biosecurity outcomes at a regional level.

Secondly, NRM organisations advised the Panel that they have extensive information resources, which are currently not being shared or utilised effectively for biosecurity outcomes. The Panel believes this opportunity should be further explored in the development of the biosecurity surveillance strategy recommended above.

Partnerships with Private Professionals

Improving the effectiveness of the passive surveillance system, which is required for early detection of new pest and disease outbreaks, is critical to ensuring the future of Queensland's biosecurity system. Early detection minimises spread, maximises the likelihood of control and early recovery, reduces the duration of response activities and minimises losses, costs and impacts.

There are a range of professional veterinarians, agronomists and others who supply private services to primary industries and are on-farm on a regular basis. During consultation, the Panel was advised that many of these service providers were likely to be willing to play a greater role within the surveillance system.

Leveraging opportunities across government

The Panel identifies a number of government initiatives, which could provide leverage points, including two recent Commonwealth Government White Papers and several Queensland Government initiatives, including Advance Queensland. There is an existing level of coordination of biosecurity activities across government, for example, there is a coordinating committee for pest and weed control by land management agencies, and the Panel noted that existing coordination arrangements between Biosecurity Queensland and the Queensland Health appear to work well.

However, the Panel identified three areas of opportunity to better leverage existing Queensland Government investment. In addition, opportunities to tap more effectively into emergency and disaster response capability are discussed earlier in the report.

Integrated service delivery in regional areas

Department of Agriculture and Fisheries staff occupy 44 locations across Queensland in addition to the Brisbane CBD. Approximately 85 per cent of Biosecurity Queensland staff are located outside the Brisbane CBD, although only 34 per cent are located outside the south east region. Other agencies, such as the Department of Natural Resources and Mines, also have a strong regional footprint and there would appear to be a significant opportunity, particularly outside the south east region, to develop a landholder focused customer service approach across DAF and across government.

Options include:

- co-location and single 'shop fronts' (the Panel understands this is being trialled in Charleville and Emerald)
- close collaboration with the customer service centre
- agreements between divisions and/or agencies to 'warm referrals' (where the primary contact officer organises for the right person to deal with an inquiry outside their area of expertise)
- cross authorisation for regulatory functions
- creation of a single integrated 'front line service'.

All these options would increase the reach of Biosecurity Queensland and the breadth of understanding of good biosecurity practice.

Due to time constraints, the Panel did not explore any of these options. However, they could potentially achieve significant improvements to both the effectiveness and efficiency of the biosecurity system.

Incorporating biosecurity objectives where they align with the objectives of programs designed for other purposes

A range of programs delivered across government could be adapted with relatively little effort to address biosecurity objectives, for example the Hort360 program, a collaborative initiative between the Queensland Department of Environment and Heritage Protection and Growcom.

Implementation of the Panel's recommended approach to development and governance of a strategy and action plan should facilitate identification of opportunities such as this.

Utilising other government policy levers to achieve biosecurity outcomes

There are a variety of potential policy levers across government that could achieve biosecurity outcomes more efficiently and effectively than through direct intervention by Biosecurity Queensland. Examples include:

- using the planning system to drive appropriate location of intensive agricultural production enterprises to minimise risk of spread of pests and diseases
- using lease conditions for port infrastructure to set expectations for the management of marine biosecurity risks
- imposing conditions on major development applications to manage biosecurity risks, for example from relocation of heavy equipment.

As above, the development and appropriate governance of a strategy and action plan should assist in identifying these opportunities.

RECOMMENDATIONS

4. Develop a Queensland biosecurity surveillance strategy

4.2. Build leveraging strategies into the Queensland biosecurity strategy including better engagement of private professionals and service providers to agricultural industries,

supply chain data, Commonwealth Government, other jurisdictional investment and indigenous ranger programs.

- a) Engage the environment and natural resources portfolios to work with environmental non-government organisations and community groups to develop options for community driven passive surveillance, building on 'citizen science' models.

13. Joint investment in a coordinated on farm biosecurity campaign

- 13.1. Design and deliver a coordinated project to set targets and drive measurable uptake of on farm biosecurity under the umbrella of shared governance arrangements and in collaboration with other organisations such as Animal and Plant Health Australia.

12. Build expert and regional capability

- 12.7. Design and deliver a pilot project with a subset of volunteer Local Government Authorities and natural resource management groups to explore opportunities to better coordinate and leverage investment at a regional level, including taking on a broader biosecurity focus and improving surveillance outcomes.

FUNDING ARRANGEMENTS

Scope: 1 (c) Outline the decision making and investment criteria that trigger cost sharing and/or a move to different levels of intervention - eradication, containment, management etc.

Deliverable: 5 The specific issue of Biosecurity Queensland's base funding and funding for responses

Queensland operates within a strong national biosecurity system that provides a national framework to manage the governance, funding and response to exotic pest and disease incursions, as well as policy guidance and frameworks for all aspects of biosecurity, including the management of established pests and diseases.

Queensland is a signatory to three national cost-sharing agreements with the Commonwealth, state and territory governments, and plant and animal industries. These agreements recognise that a biosecurity risk in one state has the potential to impact strongly on the economy and environment elsewhere in Australia.

Simply put, these agreements are activated when a National Management Group agrees that it is in the national interest, and it is technically feasible and cost beneficial, to eradicate an exotic pest or disease. Under these agreements, governments and affected industries share the decision-making of the response, and share the costs based on public versus private benefits, until such time that an eradication response is finalised or no longer considered feasible.

Funding for Biosecurity Responses

The Panel note the history of decision-making processes to secure funding for responses and the potential operational risks associated with funding uncertainty. With this in mind, they commissioned Synergies Economic Consulting to prepare a report based on the nature of the funding challenges expressed during consultation and recommend options to establish a more certain funding environment.

The report noted a range of problems with the current model for funding for biosecurity incidents and responses. The most challenging is the uncertainty created by delays in the

funding process. It also identified the increasing expenditure on responses, and the increasing gap in nationally cost-shared funding.

The consultant report made two recommendations to fine tune the current funding model for responses. These involved:

- Rolling over underspent revenue
- Optimising governance around funding for responses by:
 - explicitly distinguishing between the immediate response phase and the main response;
 - enhancing internal capacity for review and evaluation within Biosecurity Queensland;
 - improving performance management information within DAF, and within the central agencies of the Department of Premier and Cabinet and Queensland Treasury.

The Panel agrees with the two recommendations made in the Synergies report, whose overall intent is to improve the quality of information provided to decision makers and hence the quality and timeliness of decisions. They are consistent with the broader findings of the panel, and the panel's recommendations elsewhere.

The Panel also recommends a modest increase to the allocation to the Exotic Pest and Disease Fund to \$1.5m and restricting its use to new outbreaks.

RECOMMENDATIONS

14. Fine tune funding for responses

14.1. The panel recommends that the annual allocation to the Exotic Pest and Disease fund is increased to \$1.5m and its governance revised to restrict its application to new incursions and provide for enhanced oversight. The fund should be reviewed after three years to review the appropriateness of the allocation in an environment of increased risk.

14.2. The Panel recommends that development of the investment and commissioning function for responses and the biosecurity response unit build in:

- a) Clearly differentiated and articulated response phases, with clear purposes;
- b) Enhanced capacity for review and evaluation, particularly of responses and response strategies;
- c) Improved performance management information for DAF and central agencies.

IMPLEMENTATION

Deliverable: Detail a five-year plan with specific recommendations for actions, including costings and options and KPIs to address gaps in biosecurity capability

The Panel's recommendations form an integrated set designed to build both the capability of the Queensland Biosecurity System and Biosecurity Queensland.

Two parallel processes will be required to drive the necessary change over the next five years. These are illustrated schematically in Table 1 – implementing recommendations overview.

Table 1: Implementing Recommendations Overview

BUILD CAPABILITY OF THE QUEENSLAND BIOSECURITY SYSTEM	BUILD CAPABILITY OF BIOSECURITY QUEENSLAND TRANSFORMATION PLAN
STRATEGY AND ACTION PLAN	
Build the framework for the future Queensland Biosecurity System	Refocus Biosecurity Queensland, including leadership in emergency preparedness and response, risk and decision-making, innovation and business improvement, marine and aquatic biosecurity, and northern Queensland.
Dismantle red tape and improve flexibility for agricultural businesses	Establish a biosecurity innovation function and develop an innovation strategy
Implement new approaches to build better supporting systems	Continue investment in flexible specialist systems
Review and reprioritise investment in biosecurity programs - systematic review	Review and reprioritise investment in biosecurity programs - establish an investment function and leadership
Deliver a coordinated "improving biosecurity on farm" initiative	
Deliver a marine biosecurity initiative	
Build expert and regional capability - coordination and leveraging	Build expert and regional capability - technical and leadership
Develop a Queensland biosecurity surveillance strategy	
Create incentives to report disease	
Establish a biosecurity network	Establish a new preparedness and response unit

Immediate Investment

As an immediate priority, the Panel recommends investment in the development of the biosecurity strategy and action plan and associated governance arrangements. Concurrently, there should be investment in the establishment of the new biosecurity response unit and biosecurity network, as well as the recommended skills audit and organisational redesign. An additional investment of at least \$3m in the first year will be required, and will require supplementation in the event of incursions exceeding baseline response capacity. Ongoing funding of this order will be required to maintain the capacity of the response unit.

Completion of the initial steps will enable a more accurate assessment of the quantum of further investment required to implement the action plan and transformation plan to deliver the remaining recommendations. Dollar symbols in the tables in the sections below indicate the relative size and weight of the different initiatives.

Separately, the panel has recommended the allocation to the Exotic Pest and Disease fund is increased from the current \$0.784m to \$1.5m and its governance reviewed. This will require an additional investment of \$0.716m, over and above the minimum of \$3m initial investment detailed above. As noted above, an increased allocation to the fund is unlikely to represent an increase in funding provided to DAF given funds for new incursions are almost always provided through the Mid-Year Fiscal and Economic Review process.

Biosecurity strategy and action plan - building the capability of the Queensland Biosecurity System

A new biosecurity strategy and action plan is required to set the priorities, milestones and key performance indicators (KPIs), and assign responsibilities for biosecurity activities.

The action plan should be the vehicle for setting the priorities for Biosecurity Queensland as well as for partner organisations and should embody the changes required to implement the new *Biosecurity Act 2014*, which is due to commence in July 2016.

A number of industry submissions flagged the need for a transition plan – transitional activities should also be accommodated in the Action Plan, along with the ‘outcome oriented’ recommendations in this report.

Table 2 proposes a tentative prioritisation and schedule for implementation of the Panel’s recommendations in the context of the Action Plan. However, the new Strategy and Action Plan will need to be developed in partnership, and will need to accommodate a far broader range of activities, which will undoubtedly require adjustment of the prioritisation and scheduling of the recommendations. Time frames, milestones and KPIs will need to be developed as each project is properly scoped and planned out.

Table 2: Building the System - 5 Year Action Plan

Recommendation	Year 1	Year 2	Year 3	Year 4	Year 5
1. Build the framework for the future Queensland Biosecurity System \$\$	<ul style="list-style-type: none"> • Confirm core partners • Negotiate roles, responsibilities and contributions • Agree objectives • Develop new biosecurity strategy and action plan • Develop and select options for industry fund(s) 	<ul style="list-style-type: none"> • Formalise governance arrangements • Publish strategy and action plan • Commence implementation of fund option • Report on progress to Cabinet 	<ul style="list-style-type: none"> • Governance in place • Monitor progress and fine tune action plan • Fund in place • Report on progress to public and Cabinet 	<ul style="list-style-type: none"> • Monitor progress and fine tune action plan • Fund in place • Report on progress to public and Cabinet 	<ul style="list-style-type: none"> • Review progress over 5 years • Develop proposals for the future • Fund in place • Report on progress to public and Cabinet
2. Dismantle red tape and improve flexibility for agricultural businesses \$	<ul style="list-style-type: none"> • Develop project for systematic review of regulatory schemes: <ul style="list-style-type: none"> - using commencement of new Act - to decrease costs and increase flexibility for industry - to decrease costs to Government - assign costs to "risk creators" - including transition plan 	<ul style="list-style-type: none"> • Project implementation 	<ul style="list-style-type: none"> • Project completion and evaluation 		
3. Implement new approaches to build better supporting systems \$\$	<ul style="list-style-type: none"> • Review PIC register in context of national systems • Determine diagnostic needs • Evaluate options and implement preferred option for commercial, in house diagnostic service 	<ul style="list-style-type: none"> • Implement new approach to PIC registration • Develop and approach to engagement of private vets for surveillance 	<ul style="list-style-type: none"> • Implement private vets surveillance scheme • Implement full cost recovery for Veterinary Surgeons Board. • Explore engagement of service providers in the plant industries for surveillance 	<ul style="list-style-type: none"> • Implement plant biosecurity service providers scheme for surveillance 	<ul style="list-style-type: none"> • Review surveillance initiatives

Recommendation	Year 1	Year 2	Year 3	Year 4	Year 5
4. Review and reprioritise investment in biosecurity programs - systematic review* *costed in transformation plan	<ul style="list-style-type: none"> Develop project for systematic review of investments Agree objectives Agree sequencing and information needs 	<ul style="list-style-type: none"> Project implementation 	<ul style="list-style-type: none"> Project implementation 	<ul style="list-style-type: none"> Project completion and evaluation 	
5. Deliver a coordinated 'improving biosecurity on farm' initiative \$\$	<ul style="list-style-type: none"> Identify project partners and related initiatives Develop project and agree targets and time frames. 	<ul style="list-style-type: none"> Project implementation 	<ul style="list-style-type: none"> Project implementation 	<ul style="list-style-type: none"> Project implementation 	<ul style="list-style-type: none"> Review and evaluation
6. Build expert and regional capability - coordination and leveraging \$	<ul style="list-style-type: none"> Build biosecurity objectives into planning for the Northern CRC Build linkages to Commonwealth Department of Agriculture to leverage biosecurity investment in northern Australia and agriculture white papers Develop and commence implementation for project for regional organisations leveraging and coordination pilot 	<ul style="list-style-type: none"> Implement leveraging and coordination pilot 	<ul style="list-style-type: none"> Implement leveraging and coordination pilot 	<ul style="list-style-type: none"> Review leveraging and coordination pilot 	
7. Develop a Queensland biosecurity surveillance strategy \$	<ul style="list-style-type: none"> Establish surveillance priorities 	<ul style="list-style-type: none"> Review and reallocate current surveillance investment to meet priorities 			
8. Create incentives to report disease \$		<ul style="list-style-type: none"> Explore in the context of industry fund and dismantle red tape initiatives 			
9. Establish a biosecurity network \$\$	<ul style="list-style-type: none"> Identify potential partners Identify employment / engagement mechanisms 	<ul style="list-style-type: none"> Desktop exercise to test whole of government capacity Formally engage reserve partners Develop 'just in time' training packages 	<ul style="list-style-type: none"> Deliver training 	<ul style="list-style-type: none"> Desktop exercise with reserve partners 	

Funding arrangements

Funding for implementation of the Action Plan should largely be drawn from reprioritisation of the existing core Biosecurity Queensland budget, excluding 'infrastructure' costs such as management, systems and corporate support. As noted above, some initial funding will be

required to implement the framework and will be required to develop, maintain and activate the biosecurity network.

This funding should be quarantined in a separate account, and any savings or additional revenue generated as a result of Action Plan initiatives should be returned to this account to be reinvested in other initiatives. This will provide a source of revenue to implement initiatives requiring new funding.

The establishment of one or more industry biosecurity funds or other mechanisms for contributions from industry or other parties will facilitate joint funding of Action Plan projects. Funds could also potentially be matched on a project basis by contributions from other government agencies with shared objectives.

It would be expected that priority for new funding would be given to projects where there are significant contributions from other parties.

It is important to note that the flexibility of reprioritisation will be constrained by the fact that an estimated 75 per cent of the core Biosecurity Queensland budget is assigned to staff costs. Nonetheless, the process of prioritisation, leveraging contributions from other sources and coming up with new and more effective ways of delivering outcomes will still deliver a more balanced and higher impact portfolio of biosecurity activities and will build the capability of the system for the future.

Leadership and governance

Leadership and governance arrangements for delivery of the Action Plan will be needed at two levels.

An appropriately skilled and qualified committee or board should oversee development and delivery of the Action Plan, should make prioritisation decisions and ensure that appropriate accountability and reporting mechanisms are in place. While the agreed core parties should be represented on the board or committee, it should be a skills-based, rather than a representative entity. It should be chaired independently by an appointee of the Minister.

The Biosecurity Queensland Ministerial Advisory Council should be tasked with developing and recommending the detail of the governance arrangements and should operate as the interim governing committee, albeit with the capacity to make recommendations rather than decisions, consistent with its role in advising the Minister for Agriculture and Fisheries.

This will enable development of the new Biosecurity Strategy and Action Plan and other initial steps to be undertaken.

In addition, there will need to be governance arrangements at the individual project level involving project level partners to ensure joint ownership and accountability for delivery of project outcomes.

These mechanisms will together achieve the coordination and leveraging across the Queensland Biosecurity System, which the review has found to be lacking.

Biosecurity Queensland Transformation Plan

Targeted investment in building the capability of Biosecurity Queensland will be required if the organisation is to meet immediate demands as well as transform itself into the leading and enabling role required for the future.

A Biosecurity Queensland transformation plan will be required to sequence and manage the roll out of these investments in parallel with the Biosecurity Strategy and Action Plan.

Table 3 sets out a high level schedule as the basis for a transformation plan.

Table 3: Building BQ Capability - 5 Year Transformation Plan

Recommendation	Year 1	Year 2	Year 3	Year 4	Year 5
1. Refocus Biosecurity Queensland \$\$	<ul style="list-style-type: none"> • Appoint strategic change manager, commence engagement with staff and fine tune transformation plan using project management methodology • Identify non-biosecurity functions (for example, animal welfare) and transition into a separate organisational unit. • Commence strategic engagement with internal and external partners to explore options for management of non-biosecurity functions. 	<ul style="list-style-type: none"> • Change management and staff engagement • Commence transition out of non-biosecurity functions 	<ul style="list-style-type: none"> • Change management and staff engagement • Continue transition out of non-biosecurity functions 	<ul style="list-style-type: none"> • Change management and staff engagement • Continue transition out of non-biosecurity functions 	<ul style="list-style-type: none"> • Change management and staff engagement • Complete transition out of non-biosecurity functions
2.	<ul style="list-style-type: none"> • Develop a new organisational design for Biosecurity Queensland • Appoint leaders and establish function in emergency preparedness and response*, risk and decision-making*, innovation and business improvement*, marine and aquatic biosecurity*, and Northern Queensland*. *costed elsewhere 	<ul style="list-style-type: none"> • Implement new organisational design 			
3.	<ul style="list-style-type: none"> • Undertake a skills audit. 	<ul style="list-style-type: none"> • Prepare a training and development plan • Prepare a succession plan 	<ul style="list-style-type: none"> • Implement training and development plan • Implement succession plan • Implement a graduate program • Develop and implement expert virtual networks • Develop and implement a fellows program for retiring staff 	<ul style="list-style-type: none"> • Implement training and development plan • Implement succession plan • Run graduate program • Run virtual networks • Run fellows program 	<ul style="list-style-type: none"> • Review and evaluate capability using NEBRA and APS frameworks • Run virtual networks • Run fellows program

Recommendation	Year 1	Year 2	Year 3	Year 4	Year 5
4. Establish a biosecurity innovation function and develop an innovation strategy \$\$	<ul style="list-style-type: none"> Consider preferred model for the innovation function as part of the organisation redesign Appoint innovation leader 	<ul style="list-style-type: none"> Develop formal innovation strategy 	<ul style="list-style-type: none"> Implement strategy initiatives 	<ul style="list-style-type: none"> Implement strategy initiatives 	<ul style="list-style-type: none"> Implement strategy initiatives
5. Continue investment in flexible specialist systems \$	<ul style="list-style-type: none"> Review proposed functionality of BIMS in the context of a distributed surveillance system 	<ul style="list-style-type: none"> Continue to implement BIMS 	<ul style="list-style-type: none"> Continue to implement BIMS 	<ul style="list-style-type: none"> Expand functionality to operationalise for external partners 	
6. Review and reprioritise investment in biosecurity programs - establish an investment function and leadership \$\$	<ul style="list-style-type: none"> Appoint investment (risk and decision making) leader Identify capability gaps in risk and information analysis at fine grain Incorporate staff skills development/recruitment plan in to training and development plan Commence building relationships with key partners in investment decision making 	<ul style="list-style-type: none"> Implement development / recruitment plan Establish internal investment framework (commissioning function) Implement new budget allocation processes to prioritise investment for actions identified in the Biosecurity Strategy and Action Plan. Support systematic review of investments 	<ul style="list-style-type: none"> Support systematic review of investments under the biosecurity action plan Implement commissioning function 	<ul style="list-style-type: none"> Support systematic review of investments under the biosecurity action plan Implement commissioning function 	<ul style="list-style-type: none"> Implement commissioning function
7. Build expert and regional capability - technical and leadership \$\$\$	<ul style="list-style-type: none"> Appoint leader for NQ Develop northern biosecurity action plan 	<ul style="list-style-type: none"> Implement northern action plan Appoint "regional technical specialists" 	<ul style="list-style-type: none"> Implement northern action plan Regional technical specialists 	<ul style="list-style-type: none"> Implement northern action plan Regional technical specialists 	<ul style="list-style-type: none"> Implement northern action plan Regional technical specialists
8. Establish a new preparedness and response unit \$\$\$\$	<ul style="list-style-type: none"> Appoint leader for preparedness and response Establish preparedness and response unit Develop staff training plan and agree delivery approach Commence training delivery 	<ul style="list-style-type: none"> Commence review of response protocols Continue training Commence establishment of biosecurity network (see action plan) 	<ul style="list-style-type: none"> Continue review of response protocols Continue training Continue building biosecurity network 	<ul style="list-style-type: none"> Conduct major series of exercises (subject to concurrent responses) Continue training Continue building biosecurity network 	<ul style="list-style-type: none"> Review preparedness Continue training Continue building biosecurity network
9. Establish marine biosecurity function \$\$	<ul style="list-style-type: none"> Appoint leader and establish marine biosecurity function Pathway and risk analysis Establish project with key partners and appropriate governance arrangements Evaluate suitability of Western Australian tools 	<ul style="list-style-type: none"> Implement enhanced approach to marine biosecurity 	<ul style="list-style-type: none"> Implement enhanced approach to marine biosecurity 	<ul style="list-style-type: none"> Implement enhanced approach to marine biosecurity 	<ul style="list-style-type: none"> Implement enhanced approach to marine biosecurity

Funding arrangements

The Panel has identified that there does need to be investment in capability and believes this should be provided as an ongoing supplement to the current budget. It will be important for this investment to be made as a sign of good faith and to encourage co-investment in the strategy and action plan. There should be an assessment of progress after four years to establish the need for ongoing funding, with the expectation that implementation of the Panel's recommendations should have realised opportunities for the organisation to operate more effectively within fiscal constraints.

Leadership and governance

The transformation plan will need to operate under an effective project management framework with a dedicated project director and should report to the DAF Executive Board or a subcommittee of its members.

Reporting of progress

Progress with delivery of both plans should be reported to Cabinet and publicly.

OTHER COMMENTS

The Panel's review and approach to this report has assumed a continuation of current arrangements whereby Biosecurity Queensland operates as a division of the Department of Agriculture and Fisheries.

The Terms of Reference for the review did not require consideration of business models for Biosecurity Queensland. However, a number of submissions recommended that Biosecurity Queensland be set up as an independent statutory authority for a variety of reasons. Consideration of alternative business models is also a logical extension of a shift to a system focus, rather than a regulatory focus.

The Panel did explore some of these models and considered that the concerns raised could be addressed through other mechanisms recommended in the report.

While none of these models is being recommended for immediate consideration by the Panel, the Panel considers that models which involve joint industry and government investment in an incorporated entity are effective at achieving shared responsibility for biosecurity outcomes.

Relevant models should be considered as the Queensland Biosecurity System matures, and in the context of further exploring the concept of an industry fund.

RECOMMENDATIONS

The Panel provide a summarised list of recommendations for consideration.

1. Build the framework for the future Queensland Biosecurity System

- 1.1. Develop a revised biosecurity strategy and action plan and statement of shared responsibility signed off by key stakeholders within and outside government – this should clearly establish key performance indicators (KPIs), timeframes, resource commitments and responsibility for delivery.
- 1.2. Work with BQMAC to develop recommendations on options for governance arrangements, which embed shared decision-making and clearly articulate responsibilities and obligations.
- 1.3. Further explore potential approaches for an industry biosecurity fund or funds.
- 1.4. Implement a project based resource allocation framework for biosecurity activities.

2. Refocus Biosecurity Queensland

- 2.1. Transition non-biosecurity responsibilities to management in a separate organisational unit.
- 2.2. Develop an organisational design, which drives attention to the core functional areas identified and positions the organisation to transition to a system leader and enabler role.
- 2.3. Undertake a skills audit and develop a training and development plan with particular emphasis on:
 - a) Project management;
 - b) Use of business intelligence systems to inform business and risk management;
 - c) Financial management;
 - d) Engagement and partnership development.
- 2.4. Create leadership positions at appropriate levels in incident preparedness and response risk and decision-making; innovation and business improvement; marine and aquatic biosecurity and northern Queensland biosecurity strategy.

3. Review and reprioritise investment in biosecurity programs

- 3.1. Establish an investment function in Biosecurity Queensland with responsibility for:
 - a) Leading a systematic review of Biosecurity Queensland's investments;
 - b) Building risk and information analysis capability and improving investment decision making practice;
 - c) Developing and implementing an internal investment framework to drive explicit, risk based, consideration of resource allocation (commissioning function).
- 3.2. Undertake a systematic review of Biosecurity Queensland investments, using the principles outlined in this report, with a view to redirecting resources from lower risk/return to higher risk/return areas. This will need to be a multiyear project undertaken in the context of the new legislative environment - using steering processes (governance) with stakeholder representation.
- 3.3. Biosecurity Queensland, together with key stakeholders, should develop a strategy to transition government out of significant investment in managing established pests

and diseases where there are clearly identifiable beneficiaries, toward prevention and surveillance activities.

4. *Develop a Queensland biosecurity surveillance strategy*

- 4.1. Develop a coherent surveillance strategy guided by risk management principles, pathway analysis, consequence measures and cost effectiveness.
- 4.2. Build leveraging strategies into the Queensland biosecurity strategy including better engagement of private professionals and service providers to agricultural industries, supply chain data, Commonwealth Government, other jurisdictional investment and indigenous ranger programs.
 - a) Engage the environment and natural resources portfolios to work with Environmental non-government organisations and community groups to develop options for community driven passive surveillance, building on 'citizen science' models.

5. *Create incentives to report disease*

- 5.1. Implement a multi-pronged approach to improving pest and disease reporting, primarily focused on education and awareness, creating incentives to report and removing disincentives, improving recording, analysis and intelligence systems and encouraging investment in reporting and feedback systems.

6. *Dismantle red tape to improve flexibility for agricultural businesses*

- 6.1. Undertake a systematic review of activities where a less regulatory and costly approach could be developed under the new legislative framework. Build in appropriate contribution (risk creator) mechanisms where the systematic review agrees there is a need for ongoing intervention.

7. *Implement new approaches to build better support systems*

- 7.1. Implement a full cost recovery policy for the tick fever centre and the veterinary surgeon's board with the resulting savings reinvested to support an enhanced passive surveillance system.
- 7.2. Review the current approach to the Property Identification Code register to implement a new system, which delivers enhanced benefits and a sustainable funding model.
- 7.3. Implement a new commercial, in-house business model for diagnostic services across Biosecurity Queensland and Agri-Science Queensland with a subsidy policy designed to meet surveillance outcomes.

8. *Continue Investment in Flexible Specialist Systems*

- 8.1. Lock in ongoing investment in the Biosecurity Information Management System (BIMS) and build in sufficient flexibility to the system and business processes to accommodate future opportunities such as greater participation by industry and the community in surveillance.

9. *Establish a preparedness and response unit*

- 9.1. Establish a response unit tasked with responsibility for building relationships within Government and a community biosecurity reserve, ongoing training (including

exercises), as well as revisiting response protocols to establish a set of tailored templates, suited to responses of varying degrees of urgency, size and scope.

- a) Undertake a desk top exercise specifically designed to test whole of Government response capability.
- b) Clearly define the circumstances under which departmental resources should be redirected to response, bearing in mind broader business continuity needs, as well as opportunities for personal development.

10. Establish a biosecurity network

- 10.1. Build a biosecurity network – explore opportunities to utilise other response agencies e.g. SES volunteers with a “rapid deployment training package” and to work with other volunteer and community organisations, as well as agreements with private sector organisations.
 - a) Specifically explore opportunities to leverage relationships developed in the enhanced surveillance approach (for example, indigenous rangers, private veterinary practitioners) to increase the capacity of the biosecurity network.

11. Establish an innovation function and develop an innovation strategy

- 11.1. Establish a biosecurity innovation function and develop an innovation strategy – with priority consideration of opportunities such as for data capture and analysis in collaboration with the community, business, other jurisdictions and agencies; the potential for breakthrough technologies and achieve internal operating efficiencies to lower costs of prevention, surveillance, response.
 - a) As a component of the innovation strategy, and in collaboration with Agri-Science Queensland, identify priorities for research and development, including in the area of building more resilient farming systems.

12. Build expert and regional capability

- 12.1. Develop position specifications and recruit 5 technical specialists, to be located in the regional locations in north and central Queensland as part of a workforce development plan, which builds capacity in this area.
- 12.2. Expand capability by building access to expert networks including through:
 - a) A fellows program which retains access to retiree expertise and provides mentoring for less experienced staff;
 - b) A virtual network for epidemiologists and other experts.
- 12.3. Develop a succession plan which incorporates a graduate program targeting biosecurity expertise gaps in the context of national capacity.
- 12.4. Create a leadership position and specific marine biosecurity function.
- 12.5. Include engagement and partnership development in the recommended training and workforce development plan, assign responsibility for driving a change in culture to all leaders and establish access to specialist skills.
- 12.6. Develop a biosecurity initiative for northern Australia incorporating a focus on delivering biosecurity risk mitigation strategies, which support agriculture sector growth, protect the environment and mitigate risks to human health.
- 12.7. Design and deliver a pilot project with a subset of volunteer Local Government Authorities and natural resource management groups to explore

opportunities to better coordinate and leverage investment at a regional level, including taking on a broader biosecurity focus and improving surveillance outcomes.

13. Joint investment in a coordinated on farm Biosecurity campaign

13.1. Design and deliver a coordinated project to set targets and drive measurable uptake of on farm biosecurity under the umbrella of shared governance arrangements and in collaboration with other organisations such as Animal and Plant Health Australia.

14. Fine tune funding for responses

14.1. The panel recommends that the annual allocation to the Exotic Pest and Disease fund is increased to \$1.5m and its governance revised to restrict its application to new incursions and provide for enhanced oversight. The fund should be reviewed after three years to review the appropriateness of the allocation in an environment of increased risk.

14.2. The Panel recommends that development of the investment and commissioning function for responses and the biosecurity response unit build in:

- a) Clearly differentiated and articulated response phases, with clear purposes;
- b) Enhanced capacity for review and evaluation, particularly of responses and response strategies;
- c) Improved performance management information for DAF and central agencies.

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CHAPTER 1. BACKGROUND TO THE REVIEW

THE IMPORTANCE OF BIOSECURITY TO QUEENSLAND

Biosecurity is a critical, but largely invisible contributor to Queensland. It protects local businesses and the economy from the negative impacts of pests and disease, which can disrupt trade and productivity, affect animal and plant health, and threaten the viability of rural enterprise. It protects communities from emerging and exotic diseases, which can be transmitted by animals, and helps maintain biodiversity and environmental assets.

Biosecurity is also important to maintain Queensland's agricultural competitiveness in an increasingly global marketplace. It underscores intangible benefits, like the clean, safe, green and locally grown produce consumers demand. Biosecurity achieves these outcomes through effective preparedness, prevention, surveillance, response and ongoing management of biosecurity risks. In effect, biosecurity is risk management. In this sense, it is no different to the management of other risks, for example the risks and impacts of natural disasters, or water quality and safety risks. Put simply, getting biosecurity right is critical to protect Queensland's economy, environment and the health and wellbeing of individuals and communities. More so than this, it protects the broader Australian community from the negative impacts of pests and diseases.

Biosecurity is formally recognised in the Intergovernmental Agreement on Biosecurity (IGAB) as a shared responsibility of government, industry, natural resource managers and the community. It is important to recognise that biosecurity has broadened beyond its traditional role in animal and plant health, to keep pace with evolving community expectations for the management of risks to human health and wellbeing, the environment, the cohesion and prosperity of regional communities and the economy as a whole.

For the purposes of this report, biosecurity is considered to be the management of risks to the economy, the environment, and the community, and of pests and diseases entering, emerging, establishing or spreading, consistent with IGAB.

Queensland is inherently vulnerable by virtue of its unique risk status, and the potential economic environmental and community impacts of biosecurity incidents. These features are a result of a number of unavoidable factors, including the state's (largely) tropical climate, diverse agricultural industries, geography and proximity to neighbours in the Asia Pacific Region. Queensland's extensive mainland and island coastlines (6,973 km and an additional 6,374 km respectively) demonstrate the scale of territory susceptible to biosecurity incursions and the difficulty in protecting the state from potential biosecurity risks.

The state's extensive network of 20 ports and other entry points, ranging from small community ports to world-class coal and container export terminals to international airports, are essential for the health of Queensland's economy, but also represent key entry points for potential biosecurity risks. The rise of internet trading has increased the risk of entry through the post. The state is not immune from home-grown risks, with emerging diseases like Hendra virus and Lyssavirus causing significant social concern over the past two decades.

As a result, Queensland is a frontline state for biosecurity in Australia, combatting more pest and disease incursions in the last four years than any other state.³

Queensland, and Australia's reputation as a source of clean and healthy produce, and ongoing market access, is dependent on the government's ability to play its part in quickly responding to biosecurity risks as they emerge and managing the ongoing risk if the pest or disease becomes established.

THE ECONOMY

Queensland's agricultural industries are significant contributors to the state's economy. Geographically, Queensland is Australia's second largest state, covering more than 173 million hectares. Almost 144 million hectares (or 83 per cent) of the land area is used for agriculture. Queensland has the largest agricultural land area of any Australian state and the highest proportion of land area dedicated to agriculture. With agriculture a key feature of the state economy, continued access to key export markets for these industries is vital.

For 2014–15, the total value of Queensland's primary industry commodities (combined Gross Value Product and first-stage processing) is forecast to be \$15.02 billion and \$11.89 billion at the farm gate. That is 3 per cent higher than the average for the past five years⁴.

While a significant amount of Queensland's agricultural produce is consumed locally or interstate, there are increasing opportunities for clean, green, Queensland produce on the international market. Agricultural exports from Queensland to overseas markets totalled \$7.6 billion in 2014-15, which was 16 per cent of Queensland's export earnings.⁵ In 2010–11, the combined employment associated with the whole food supply chain equated to an estimated 323 800 employees. This means that one in seven Queenslanders were either partly or entirely supported by the food sector.

However, maintaining market access and developing new markets for high quality, disease-free products is heavily dependent on biosecurity. Queensland's pest and disease free status ensures ongoing access to a broad range of market opportunities, and enables local products to attract valuable premiums. The rigour of market access demands is only likely to increase as overseas markets insist on improved quality and timeliness of information to provide confidence in Queensland's freedom from pests, diseases and contaminants.

Pests, diseases and weeds also have the capacity to adversely impact on productivity. They can cause significant mortalities, reduced growth rates, reduced yield and in some extreme cases preclude production entirely.

³ Since 2012, Queensland has dealt with 71 new incidents or responses. Over the same period, 112 new incidents or responses have occurred in other jurisdictions requiring a national response.

⁴ Department of Agriculture and Fisheries (2015) *AgTrends Update April 2015* <https://publications.qld.gov.au/dataset/f3dc0525-a23a-4486-8841-f8b16743895a/resource/d9ecec3b-1f6d-45a7-952e-cb33a12c7c59/download/agtrends2015.pdf>.

⁵ Queensland Government Statisticians Office (2013) *Overseas Exports of Goods from Queensland and Australia by Commodity, Value, 2014-15p* <http://www.qgso.qld.gov.au/products/tables/exports-qld-aus-all-countries-commod/index.php>.

THE ENVIRONMENT

Biosecurity protects more than just Queensland's agricultural economic interests. Queensland's natural assets, such as the Great Barrier Reef, underpin a \$10.9 billion tourism industry and 140,000 jobs.

Queensland is home to five World Heritage sites, among some of the most diverse natural environments on the planet. These include the Great Barrier Reef, Fraser Island, the Wet Tropics, Gondwana Rainforests and Riversleigh Fossil Deposit. World Heritage listed areas aside; Queensland also hosts a range of parks, marine parks and forests, home to unique native flora and fauna.

Environmental stewardship is a priority for Queensland, and it is essential to protect the environment for future generations. CSIRO modelling indicates a range of challenges facing the Queensland and global environment, including from climate change.⁶ Exotic pests, diseases and weeds have the potential to adversely impact on marine, terrestrial and aquatic ecosystems through increasing competition and predation, reducing suitable habitat, threatening the existence of some species or causing others to become endangered. Invasive animal and plant species have been identified as one of the two major threats to Australian biodiversity, and also contribute to the other – habitat loss.⁷

THE COMMUNITY

Effective biosecurity measures are important to protect the health of the community and contribute to the prosperity of the state. A number of animal diseases can be transmitted to people, with many new diseases that have emerged globally in recent years having an animal origin. Two of these fatal human diseases have emerged in Queensland. Biosecurity management reduces the risk of transmission and protects the community from the impact of these 'zoonotic' diseases.

Biosecurity also contributes to food security by increasing productivity. It supports Queensland's growing value-added food industries as consumers move towards differentiated, locally sourced produce (as well as facilitating supply to households).⁸ It also reinforces the implicit trust in the food system, a competitive advantage not shared by many of Australia's close geographic neighbours.

Queensland is significantly decentralised, with substantial populations outside of the south east corner. Queensland's regional communities are essential for future economic and social wellbeing – in 2010-2011, Queensland's regions contributed \$90.1 billion to gross state product. Biosecurity serves an important function in protecting the income sources of many regional community members.

⁶ Michael Dunlop, David Hilbert, Simon Ferrier, Alan House, Adam Liedloff, Suzanne Prober, Anita Smyth, Tara Martin, Tom Harwood, Kristen Williams, Cameron Fletcher and Helen Murphy (2012) *The Implications of Climate Change for Biodiversity Conservation and the National Reserve System: Final Synthesis*. A report prepared for the Department of Sustainability, Environment, Water, Population and Communities, and the Department of Climate Change and Energy Efficiency. CSIRO Climate Adaptation Flagship, Canberra, 28-33.

⁷ *Australian State of Environment Report*, 2011: 633, 637.

⁸ The impact of Cyclone Yasi on the supply of fruit to the domestic market was keenly experienced by consumers through sharp price rises.

Some communities are heavily reliant on agricultural or tourism industries with significant biosecurity risk profiles. For example, Australia's \$600 million banana industry is concentrated in far north Queensland. Approximately 280 banana farms in the wet tropical coast around Tully and Innisfail account for 80 per cent of Australia's total banana industry. The economic prosperity of these communities is highly dependent on effective biosecurity measures.

Pests, diseases and weeds also have the capacity to negatively impact on the amenity of public spaces (such as parks and gardens). For example, uncontrolled fire ant infestations would make public parks unusable. Impacts on social amenity may have flow on consequences – the fire ant infested backyard or park may discourage children playing outdoors, affecting their wellbeing.

Finally, lifestyle agriculture is a growing sector in Queensland, particularly in the southeast corner of the state, with large numbers of people living on small acreage blocks. Biosecurity presents particular challenges in this sector, given the diversity of people involved and the risks when their knowledge of biosecurity is poor.

PUTTING A VALUE ON BIOSECURITY

Biosecurity is a difficult concept to value – its value is implicit in Queensland's food system, the environment and local communities. However, it is essential to recognise the contribution biosecurity makes to the wellbeing of Queenslanders now and into the future.

The most visible benefits of biosecurity are seen in the agricultural industries. Biosecurity measures improve the profitability of farming by reducing costs, these are also known as 'avoided losses'. For example, a pest or disease may cause direct production losses by inhibiting productivity, or it may impact on access to export markets, closing trade or reducing price premiums. A pest or disease may also require mitigation measures (e.g. control), which manifest as additional expenditure.

A recent report by the Australian Bureau of Agricultural and Resource Economics attempted to quantify the farm gate value of biosecurity measures to farmers. Although the report notes the numerous challenges of quantifying the value of biosecurity, it conservatively estimates an annual value of \$17,500 per farmers (in improvements to annual profits).⁹

Many of the benefits of biosecurity measures, such as fewer bites from insects, fewer weeds in the environment and protections against losses in biodiversity, are hard to determine. There are no market values or dollar amounts that can be used to value these measures. Fortunately, there are now well-established techniques in place to help determine non-market values.

There are many options to determine non-market value; contingent valuation, hedonic pricing and travel cost methods are among the most useful approaches. Recent work on choice modelling has now added to this array of research methods, and performs much better in many situations. Choice modelling is essentially an exercise conducted through a

⁹ Ahmed Hafi, Donkor Addai, Kyann Zhang and Emily Gray (2015) *The Value of Australia's Biosecurity System at the Farm Gate: An Analysis of Avoided Trade and On-Farm Impacts*, ABARES, Canberra.

survey instrument. A choice experiment constructs a hypothetical market by presenting respondents with a series of choice sets comprised of paired alternative scenarios (e.g. Scenario A, Scenario B). Each scenario consists of a number of attributes (typically 3–5 in number and are defined by two or more levels) that define and describe the outcome under each scenario (e.g., a biosecurity management plan). For each attribute of the hypothetical scenario, the individual willingness to pay (or implicit price) is determined with statistical procedures – not by asking directly what they would pay, but through a voting mechanism that implicitly determines relative values.

Recent measurements of willingness to pay for biosecurity measures in Queensland, New South Wales and Victoria, have shown that households highly value these biosecurity measures.¹⁰ The attributes of the choice experiment in this case were chosen to reflect the harmful impacts of pest invasion on the three broad groups of environmental assets (native plant and animal species, landscape and water bodies, and recreational opportunities in backyard and outdoor areas). Results vary by demographic characteristics, income and education levels, and so on. For example, households were willing to pay anywhere from \$15 to \$231 per year to prevent an insect bite (reducing the chance of a bite in a backyard or a common recreational area from a high (50 per cent to 70 per cent) to low (30 per cent to 50 per cent) chance. For the control of weeds, the range is 3 cents to 6 cents per year, and for protecting biodiversity, from \$8 to \$47 per year, per household. There are more than 1.2 million households in Queensland. In terms of willingness to pay, the total value of these biosecurity measures, across what is clearly a limited range of biosecurity services, compared to what is currently in place, is considerable.

Although difficult to value, there is no doubt that biosecurity plays a critical role in the features of daily life that Queenslanders accept and expect. It is therefore important that Queensland has a biosecurity system that not only safeguards primary industries, the environment and the community from the threat of pest and disease, but that the value of these measures is understood and appreciated.

QUEENSLAND'S BIOSECURITY SYSTEM

Queensland is a contributor to the national biosecurity system. This contribution recognises that investment in effective biosecurity in Queensland benefits all Australians - a biosecurity incident in one part of Australia can have significant impacts on other states and territories, both in terms of risk of spread or damage, but also the potential impacts on export and trade.

A range of participants across tiers of government, industry and the broader community participate in the Queensland Biosecurity System. Further, relationships across borders and with the Commonwealth Government synchronise and coordinate ongoing protection through the national biosecurity system. A number of peak industry groups also contribute significantly to the Queensland Biosecurity System by representing the interests of primary producers and other important interests. However, it is important to note that industry capability varies significantly, in many ways a product of the scale and economic capacity of different industries.

¹⁰ Sonia Akter, Tom Kompas and Michael Ward (2015) "Application of Portfolio Theory to Asset-Based Biosecurity Decision Analysis, *Ecological Economics*, 117: 73-85.

An indicative map of system participants is provided below.

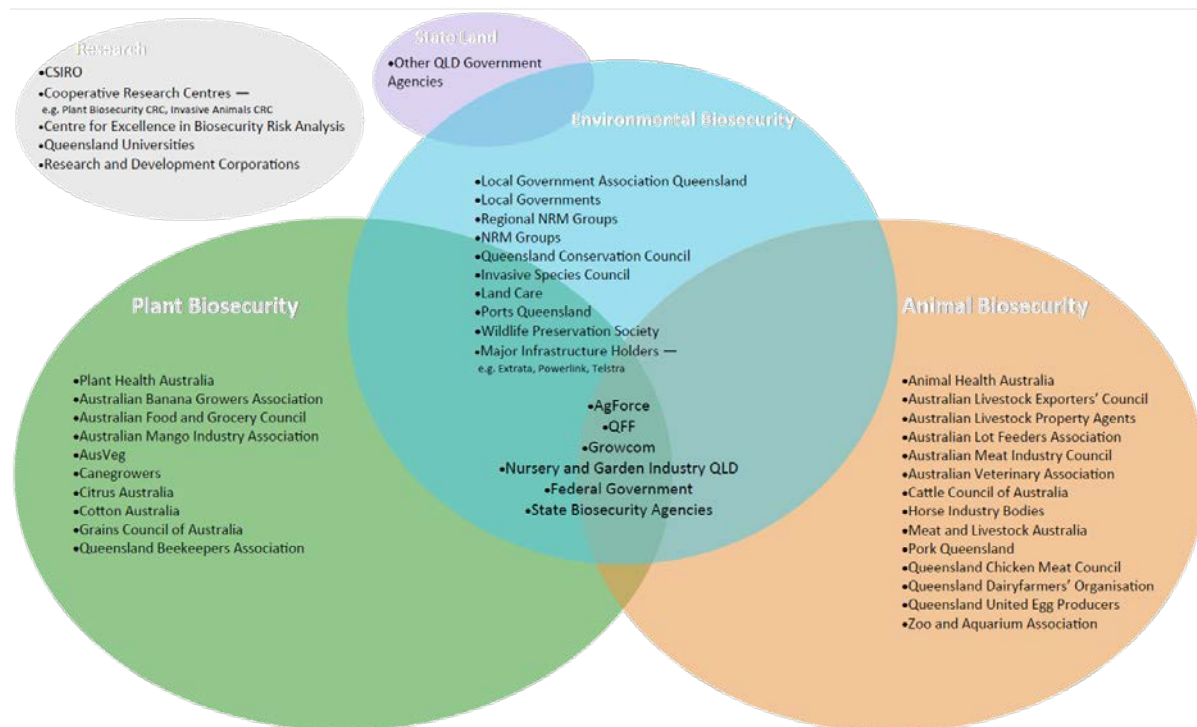


Figure 1: Indicative Map of Biosecurity System Participant Representatives

The success of the Queensland Biosecurity System depends on sharing of responsibility within government, with the agricultural and other industries and with the community. Everyone has a part to play. Although some progress has been made towards a 'shared responsibility' model (generally accepted in the wake of the 2008 Beale Review), there is significantly further to go.¹¹

Biosecurity Queensland is the lead government agency with responsibility for biosecurity in Queensland. While Biosecurity Queensland takes a leadership role in all aspects of biosecurity, including preparedness and responses, it also coordinates action with other agencies that share capability in managing biosecurity responses in Queensland. These agencies include other Queensland government agencies, local governments, federal government agriculture and environmental agencies, other state and territory governments, AHA, PHA, peak industry bodies and natural resource management bodies. This is essential as responses to major pest and disease incursions, such as foot and mouth disease (FMD) are beyond the capacity of any one agency and will often require involvement of the private sector.

Biosecurity Queensland's stated purpose is to protect Queensland's agricultural production, environment, human health and social amenity from animal and plant pests and diseases and invasive pests. Its current functions include to maintain and facilitate trade and market access, to manage agricultural chemical use and food contaminants and ensure animal welfare standards meet community expectations.

¹¹ Roger Beale, Jeff Fairbrother, Andrew Inglis David and Trebeck (2008) *One Biosecurity: A Working Partnership*, Report to the Australian Government, Canberra.

THE LEGISLATIVE ENVIRONMENT

Biosecurity in Queensland is currently governed by a number of different pieces of legislation, developed over the past 100 years. New Queensland legislation, the *Biosecurity Act 2014* (Biosecurity Act) is due to succeed old laws by 1 July 2016. The Biosecurity Act will deliver a single, cohesive legislative framework with proportional powers and the flexibility to respond in a timely and effective way to emergency events and ongoing animal and plant diseases and pests. Its scope includes managing risks of biological, chemical and physical contaminants associated with carriers such as livestock, plants, machinery, animal feed and fertilisers. It also includes comprehensive regulatory powers and flexible tools to address the unique nature and tactical challenges presented by individual biosecurity threats.

The new legislation will replace a range of earlier legislation and is intended to shift the focus from prescription and control measures to a shared stakeholder responsibility for prevention, management and responses across the diverse range of biosecurity risks that threaten industries, environment, human health and social amenity. The existing legislation includes reliance on listing biosecurity threats and specific obligations prescribed before desired action can be taken. As Queensland faces a more diverse range of risks, the historically narrow focus was considered to restrict the capacity of Biosecurity Queensland to respond to issues quickly and flexibly.

The new laws are based on three foundational concepts: shared responsibility, risk-based decision making and the precautionary principle. Shared responsibility is the principle that all parties should bear a proportionate share of responsibility for the mitigation of biosecurity risks and share the cost of biosecurity responses. Risk-based decision-making considers the likelihood and consequence of biosecurity risks in an uncertain environment and ensures appropriate and proportionate action. Finally, the precautionary principle allows mitigation control action to be taken to manage biosecurity incursions in advance of scientific certainty, where unacceptable damage is likely.

These concepts represent a fundamental shift in focus for Biosecurity Queensland and have implications not only for changes to subordinate policies and procedures, but also for the necessary skills, knowledge and behaviours of partners in the biosecurity system.

A substantial implementation program is in place with the intention of ensuring a smooth transition to the Biosecurity Act.

Biosecurity Queensland manages a number of other pieces of legislation, including:

- *Animal Care and Protection Act 2001*, which promotes the responsible care and use of animals. It places a legal duty of care on people in charge of animals to meet those animals' needs in an appropriate way.
- *Animal Management (Cats and Dogs) Act 2008*, which sets out the framework for effective cat and dog management in Queensland.
- *Agricultural Chemicals Distribution Control Act 1966* and *Chemical Usage (Agricultural and Veterinary) Control Act 1998*, which set out rules for the use of agricultural and veterinary chemicals in Queensland. These Acts are currently under national review.
- *Brands Act 1915*, which regulates the branding of livestock in Queensland.

- *Exhibited Animals Act 2015*, which is designed to meet community expectations for management of animal welfare, biosecurity and safety risks associated with exhibited animals while streamlining and simplifying the licensing of exhibitors.
- *Veterinary Surgeons Act 1936*, which regulates the veterinary profession.

CHALLENGES FACING BIOSECURITY IN QUEENSLAND

Queensland is experiencing unparalleled challenges to its ability to respond to the increasing number, scale and scope of exotic and emerging pest and disease incidents, such as Panama tropical race 4 in bananas, red imported fire ants, cucumber green mottle mosaic virus, Hendra virus and red witchweed. Each biosecurity incident is a unique event and presents a different set of circumstances. Chapter 3 discusses the trends and drivers affecting biosecurity in detail.

With Queensland facing more biosecurity threats more often, it is essential that the biosecurity system has the capacity and the capabilities to respond to challenges over the horizon. As of September 2015, Biosecurity Queensland employed 497 staff across Queensland with a significant number of contractors meeting seasonal and surge requirements. Current staffing numbers reflect a reduction of approximately 26 per cent since 2012, recognising the fiscally constrained operating environment.

A CAPABILITY REVIEW

Acknowledging the challenges facing Queensland's biosecurity system, on 27 March 2015, the Minister for Agriculture and Fisheries announced a review into Queensland's Biosecurity Capability.

The Panel was asked to:

1. Assess Queensland biosecurity responsibilities:
 - a. what are the appropriate roles and responsibilities of Biosecurity Queensland;
 - b. quantify the role of Biosecurity Queensland;
 - c. outline the decision making and investment criteria that triggers cost sharing and/or a move to different levels of intervention – eradication, containment, management, etc.
2. Assess Queensland's baseline biosecurity capability to meet its current objectives and future challenges including:
 - a. leadership, strategy, policy and service delivery;
 - b. ICT systems and infrastructure.
3. Benchmark the capability Queensland requires to achieve world's best practice given its state-wide service delivery requirements:
4. Identify examples of best practice in interstate and external agencies which could be used to benchmark Biosecurity Queensland's capabilities.

In addition, the Panel was required to deliver the report by September 2015. The report is to state the roles and responsibilities of Biosecurity Queensland and detail a five year plan with specific recommendations for actions, including costings and options, and key performance indicators to address gaps in biosecurity capability and address:

1. the gaps, priorities and timelines for investment

2. opportunities for strategic shifts of existing capability/resources away from low risk or low return on investment activities
3. where incremental investment could leverage capacity and capability from entities that share Queensland's biosecurity priorities to achieve world best practice
4. where targeted investment in Biosecurity Queensland's own capability and capacity is required to restore responses to disease and pest outbreaks to world's best practice and
5. the specific issue of Biosecurity Queensland's base funding and funding for responses.

The Panel was asked to consult with relevant stakeholders including:

- industry stakeholders including BQMAC members
- other entities which share capability in managing biosecurity responses in Queensland
- Federal Department of Agriculture and other state and territory biosecurity agencies
- Biosecurity Queensland leadership team and the DAF Board of Management
- relevant Queensland agencies with an interest in emergency response recovery
- other persons identified by the Steering Committee.

This report endeavours to articulate the roles and responsibilities of Biosecurity Queensland and provides a five year plan with specific recommendations to ensure Queensland has the strongest biosecurity capability in place to deal with the increasing range of risks we face now and in the future.

The terms of reference from the Minister for Agriculture and Fisheries can be found at Appendix 1.

CHAPTER 2. APPROACH TO THE REPORT

The Panel's approach to developing a framework to ensure Queensland's biosecurity capability is at 'world's best practice' was multifaceted, and relied heavily on consulting with government, industry and the community.

In order to gather the feedback and views necessary to inform the review, the Panel:

- Met with key individuals and organisational stakeholders
- Consulted with the community and with staff using an online survey tool
- Reviewed and analysed departmental information
- Developed tailored tools and applied them to identify capability gaps
- Collected case studies, which exemplified best practice, or neatly articulated a particular issue.

Over the course of the review, the Panel has tested their findings with a reference group consisting of senior public servants from the Department of Agriculture and Fisheries, the Department of Premier and Cabinet and Queensland Treasury.

To develop the report, the Panel needed to understand the operating environment of biosecurity in Queensland, the institutions and organisations who are part of the Queensland Biosecurity System and how the biosecurity landscape is changing. This is detailed in Chapter 1, which provides background to the review and considers the importance of biosecurity to Queensland and Australia. Chapter 3, outlines the trends and drivers of biosecurity into the future, focusing on both the emerging challenges, and the contextual features of the likely operating environment.

Shared responsibility and investment decision making were consistently identified as the critical enablers of biosecurity. Responding to this, Chapter 4 provides an overview of the principles of investment prioritisation, risk management and shared decision-making at the heart of an effective biosecurity system.

The Panel needed to define what a future Queensland Biosecurity System would look like to achieve 'world's best practice' and to determine the role and responsibility of Biosecurity Queensland as the key Government agency in the Queensland Biosecurity System. Chapter 5 articulates a future direction for the Queensland Biosecurity System and guiding principles to achieve a best practice biosecurity system, as well as identifying the current and future role and responsibilities of Biosecurity Queensland.

The Panel undertook two separate capability assessments of Biosecurity Queensland. The purpose of these assessments was to evaluate the current capability of Biosecurity Queensland and to identify the capability gaps that need to be bridged to achieve the future system. Chapter 6 provides the findings of the Panel's capability assessment of Biosecurity Queensland, with a particular focus on capability gaps.

Consistent with the terms of reference, the Panel explored opportunities for strategic reprioritisation of current resources or capability to better achieve biosecurity outcomes. Chapter 7 identifies a number of ways in which Biosecurity Queensland needs to address capability gaps through internal investment. However, the Panel believes that targeted

investment is required both to address the immediate challenge of biosecurity responses, and to meet the future needs of the Queensland Biosecurity System. Chapter 8 outlines the required additional targeted investment in Biosecurity Queensland. Chapter 9 focuses on improving the effectiveness of Queensland's biosecurity system by better tapping into shared priorities and leveraging investment.

The Panel commissioned additional work from Synergies Economic Consulting on the question of funding for responses, based on the nature of the funding challenges expressed during consultation.¹² Chapter 10 considers current funding arrangements for biosecurity responses and opportunities for improvement.

The Panel was asked to provide a five year plan. Chapter 11 sets out a framework for implementing the Panel's findings and articulates a five year plan for biosecurity in Queensland. Importantly, this plan provides an indicative transition strategy from the current system to the future model identified in the report.

Chapter 12 provides some additional comments from the Panel in response to feedback received during consultation.

CONSULTATION

The Panel's considerations were strongly informed by consultation with a range of experts and stakeholder groups on Queensland's biosecurity capability overall, as well as on particular issues. In tandem, the Panel ran a formal submission process where the general public was able to respond to focus questions.

The panel was particularly appreciative of input from BQMAC, a group representing a range of views and expertise on biosecurity in Queensland. Consultation also included meetings with federal and state biosecurity agencies, other Queensland government agencies, departmental staff and senior management, the research community, and peak industry and community groups.

Views expressed in the consultation process, both through formal submissions and meetings with the panel have informed the formulation of this report. A full list of organisations and individuals that made submissions, or met with the panel is available at Appendix 2.

SUBMISSION PROCESS

The panel sought feedback from industry stakeholders and the community on the Queensland Biosecurity Capability Review. An online survey was linked from the DAF website to invite external stakeholders to lodge submissions by the survey, or alternatively by mail or email. Staff were invited to participate in a separate survey, to facilitate comparison by the Panel. The consultation period started on 6 July 2015 and closed on 31 July 2015. This gave participants four weeks to provide the Panel direct feedback.

¹² The project brief aimed to confirm the nature of the problem and design criteria through consultation with key individuals in BQ, DAF and Treasury. It aimed to describe, review and evaluate approaches in place in Queensland and other jurisdictions which offer a potential solution to the problem, and to advise whether any of these approaches would be suitable to solve the problem and, if so, how each could be configured.

A series of 20 focus questions were developed, directly sourcing views on issues relevant to the terms of reference. Questions covered: roles and responsibilities in the Queensland Biosecurity System, capability, gaps and priority areas, examples of best practice, low return activities, and opportunities for leveraging. The online survey allowed for questions to be skipped; questions were open ended.

A total of 198 external respondents accessed the focus questions resulting in 60 sets of responses to the open ended questions. Seven other submissions did not follow the questions and provided detailed written submissions. Respondents were classified into nine different categories, with a wide array of views contributing to the report. Figure 2 shows respondent categories and submission frequency.

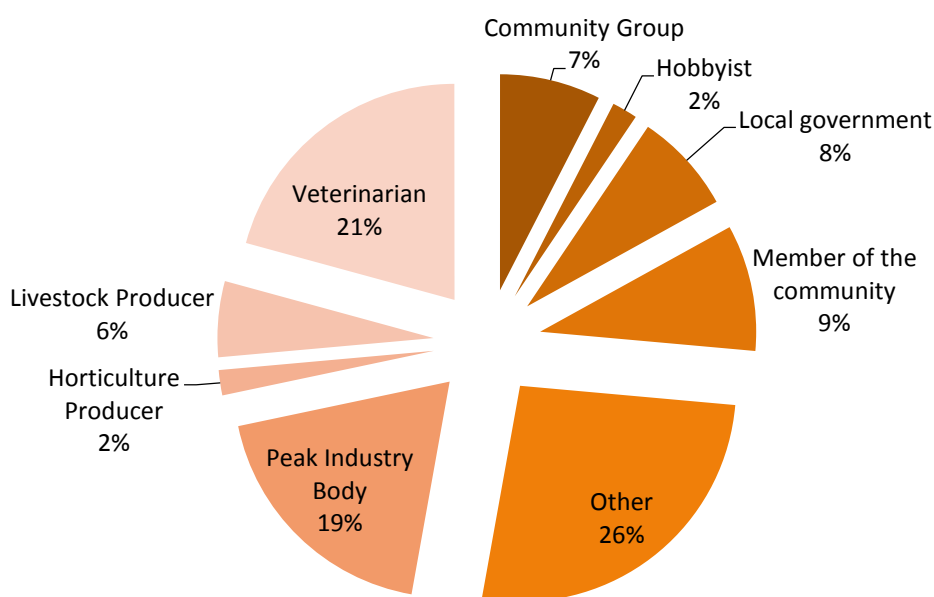


Figure 2: Community Feedback by Submitter Interest

A total of 42 staff completed the survey. The staff survey was anonymous and was provided to staff within Biosecurity Queensland, and also the broader Department of Agriculture and Fisheries.

Summaries of internal and external submissions are included in the report at Appendix 3.

KEY THEMES

The range of responses gave the Panel significant insight into external and internal views of the capability of the Queensland Biosecurity System. Importantly, many of the issues and opportunities raised were shared between external stakeholders and staff.

The key themes which emerged from the Panel's extensive consultation process are summarised in Table 4. Key points from submissions are referenced throughout the report.

Table 4: Summary of Key Consultation Themes

Theme	Summary of Feedback
Biosecurity Queensland has talented, capable staff, but needs to plan for the future	Overall, Biosecurity Queensland is viewed positively for its achievements and the quality and commitment of departmental staff. However, concerns were raised about an aging and diminishing workforce, resourcing, competing demands on staff time and lack of succession planning.
Capacity is the limiting factor for Biosecurity in Queensland	Current system resourcing levels were universally identified as inadequate and are detracting from the effectiveness of the system to protect Queensland. This also included a number of submissions which highlighted the impacts of competing demands on staff time, particularly during an emergency response. However, limited capacity also inhibits service delivery and opportunities to take advantage of new ways of doing business.
Allocation of resources across Biosecurity Queensland is not optimised	Internal and external stakeholders identified the allocation of resources as a key area of concern. This was primarily highlighted in two specific cases: relative funding for animal biosecurity and plant biosecurity, and funding for ongoing management over prevention and preparedness.
There are significant opportunities to take advantage of innovation for biosecurity outcomes	Respondents identified significant opportunities to invigorate the Queensland Biosecurity System. New technology, coordination between levels of government, industry responsibility, autonomy and cooperation were all identified as ways to improve the system. Comments in stakeholder submissions encouraged government to involve more parties in the future biosecurity system to deliver better outcomes for the community. However, it was noted that Biosecurity Queensland currently has limited opportunities to influence biosecurity R&D priorities.
On farm biosecurity is a critical pathway to better managing risks.	Consultation suggested that on farm biosecurity is essential to managing Queensland's increasing and changing risk profile. It provides a key platform to manage biosecurity risk. However, some respondents noted that industry has been slow to implement risk management measures, and has required a crisis to stimulate action. This 'implementation gap' was identified as a key system challenge but also an opportunity.
Other agencies have roles to play in Biosecurity incidents and responses	Both staff and external stakeholders stressed the wide range of participants with the potential to assist during a biosecurity incident or response. These ranged from service providers like veterinarians and agronomists, to other Queensland government agencies and local governments. One respondent suggested that Emergency Management Queensland may be better placed to coordinate emergency responses with Biosecurity Queensland providing technical advice and support.
Communication and engagement is an important tool to build system capability	Many industry and community groups viewed communication and engagement as an important and growing skill set within Biosecurity Queensland, and one in need of further development.
New biosecurity laws represent significant opportunities for the biosecurity system	The <i>Biosecurity Act 2014</i> is widely acknowledged as a paradigm change for biosecurity management in Queensland. Many industry groups recognise the benefits of the new laws, and staff are willing to develop new skills. However, there is a great deal of uncertainty around implementation and how the new laws will operate in practice.
Compliance and enforcement are important to support shared responsibility	Respondents suggested that Biosecurity Queensland needed to improve compliance and enforcement efforts, particularly to support industries taking on additional responsibilities. Submissions noted the importance of targeting compliance efforts.
There is an acute lack of incentives to report biosecurity threats, which leaves the State exposed	Respondents also identified the lack of mechanisms to facilitate the active reporting of biosecurity threats as a significant concern. Importantly some suggested a biosecurity fund, or insurance-type model to better achieve this outcome.

TARGETED MEETINGS

The Panel met with a range of government groups, stakeholder groups, research groups and other community interests in parallel to the survey process. This included meeting with the Commonwealth Departments of Agriculture and the Environment, APVMA, Animal and Plant Health Australia and several Canberra-based biosecurity Cooperative Research Centres. These meetings enabled the Panel to understand the role of Queensland in the national biosecurity system and provided important insights into the applied research sector. At various points, the Panel also drew upon biosecurity experiences interstate and overseas, meeting with representatives from New South Wales, Victoria, Western Australia and New Zealand. The Panel also considered broader disaster management learnings from the Bushfires and Natural Hazards CRC.

The Panel canvassed views from other stakeholders in the biosecurity system within the Queensland Government, including Queensland Health, Queensland Police (around State Disaster Management Arrangements), Queensland Public Service Commission and the Queensland Chief Scientist. The review reference group, with representatives from the Department of Premier and Cabinet and Queensland Treasury also provided regular input. The Panel has extensively consulted senior DAF and Biosecurity Queensland management over the course of the review.

The Panel embarked on a consultation tour of North Queensland to discuss the emerging challenges of biosecurity in the north and to observe the emergency response to Panama disease tropical race 4 in bananas. This involved meeting with indigenous rangers, representatives from local government, Australian Banana Growers Council, AgForce, Port of Townsville Authority, NQ Dry Tropics (a regional natural resource management group), and James Cook University. Discussions ranged from the commercial drivers of biosecurity and the challenges of timely reporting of suspicious diseases, to the agricultural development of North Queensland and its implications for biosecurity. The Panel also met with DAF staff in Cairns, South Johnstone and Townsville.

Following the conclusion of the submission process, the Panel arranged a series of meetings with peak industry and community bodies to listen to their views on biosecurity in Queensland, particularly around capability outside of government, and their ideas for creating an environment for better biosecurity outcomes. Not all groups approached took advantage of the opportunity to participate. The following groups met with the Panel:

- Australian Banana Growers Council
- Australian Melon Association
- Australian Veterinary Association
- Growcom
- Invasive Species Council
- Local Government Association of Queensland
- Nursery and Garden Industry Queensland
- Queensland Conservation Council
- Queensland Farmers' Federation
- Regional Natural Resource Management Groups' Collective.

CHAPTER 3. THE CHALLENGES OF TOMORROW – TRENDS AND DRIVERS OF BIOSECURITY

A key feature of the future operating environment is constant change - this will require a focus on continually renewing relationships and flexible operating frameworks. The rigidity of current national and state systems is not well suited to this environment. Similarly, dealing with ambiguity and uncertainty are becoming increasingly important leadership capabilities.

The following section describes the challenges biosecurity in Queensland will face into the future. It explores Queensland's increasing risk profile. It considers the demands on the operating environment, particularly government and industry funding challenges, which manifest as continuing pressure to justify investment. It also provides some information on existing state and federal government initiatives that will inform the future operating environment for Queensland's biosecurity system and may form points of leverage for system partners.

RISKS ARE INCREASING

CSIRO's publication, *Australia's Biosecurity Future* released in November 2014 noted the significant change in, and growing complexity of, biosecurity challenges and pointed to a future where existing processes and practice may not be sufficient.¹³ Biosecurity risks are changing due to the expansion in movement of humans, livestock populations, animal products; increased volume and range of plants/plant products traded; increased geographic distribution of plant species production; and increased changes in ecosystems including land-use changes. The suitability of Queensland's diverse climatic and geographic conditions for pest and disease establishment means it will be the front-line state for combating new biosecurity incursions.

These changing conditions and an increasing risk profile pose a range of challenges for policymakers, and primary industries. These include how to ensure that appropriate incentives are in place to maintain resourcing and priority for prevention activities. Opportunities to develop more effective and efficient approaches to dealing with biosecurity threats will increasingly be found in areas outside the traditional biosecurity arena, for example information sciences and robotics. In fact, the information revolution has the potential to transform the approach to biosecurity on farm, in the environment, in the community and in government organisations.

The biosecurity system in Queensland will need to continue to evolve to meet these changing requirements. There are a range of drivers influencing Queensland, and affecting and enhancing its biosecurity risk profile, which are detailed as follows.

Increased international travel of people

The volume of interceptions by the Australian Department of Agriculture of risk materials in personal baggage and mail articles is significant. Risk materials range from animal products

¹³ Meredith Simpson and Vivek Srinivasan, (2014) *Australia's Biosecurity Future: Preparing for Future Biological Challenges*, CSIRO Biosecurity Flagship, Canberra.

presenting a risk of foot and mouth disease (FMD) if fed to livestock, to plant seeds that could introduce diseases or become weeds in their own right. Seeds have also been found in clothing purchased over the internet. The cosmopolitan nature of Australian society also brings risks in terms of a significant proportion of the population having relatives living overseas. Skilled migrants are also coming to Australia in increasing numbers for temporary or itinerant work, some helping to address a critical labour shortage in agriculture.

Changing patterns of commodity imports

Imports from countries with lower biosecurity standards present risks both in terms of the commodity itself, as well as packaging and containers. An example of the former is the rapid increase in post border detections of wood borers in wood products in recent years, mainly originating from Asian countries. Examples of the latter are Asian honey bee and tramp ant incursions through container and machinery movements.

One particular area of significant concern is the importation of ornamental fish. This is a growing trade and subject to relatively minor controls. This brings with it risks not only from aquatic animal diseases, but also from the fish themselves that can be released into the environment.

Spread of invasive species within nearby neighbour countries and trading partners

The level of investment in biosecurity in neighbours Papua New Guinea (PNG) and Indonesia is low. There have been reports of the spread of diseases such as avian influenza and classical swine fever through West Papua, with limited ability to prevent spread into PNG. The proximity of PNG to Australian Islands in the Torres Strait, together with traditional movements in this region presents an obvious entry pathway, particularly for plant pests such as papaya fruit fly. The promotion of market gardens in indigenous communities for social /human health purposes, together with the generally low human density in Cape York increases the risk of invasive species spreading prior to detection.

Another very significant risk is the introduction of marine pests through shipping movements from heavily infested ports, especially in South East Asia.

Changing attitudes and increased commercial competition

Agricultural industries operate within a competitive environment. In situations where superior genetic material may exist overseas, people may be tempted to introduce material illegally, especially where our quarantine system either prevents introduction or it is costly. Legal imports also increase the risk, especially where there are large volumes of imports. Changes in seed production and import patterns for the melon industry is a recent example of this, where the existing protocol did not cater for a changed risk profile.

Length of coastline

Queensland has the second longest coastline of all Australian states and territories, and it is easily accessible to both illegal and legal travellers. Interception of all of these travellers is not possible. This pathway is perhaps the most likely way that diseases like rabies would be introduced into Australia.

Access by migrating species

A number of bird species migrate to Australia annually, potentially bringing new strains of diseases like avian influenza. Transfer into local species and then introduction into poultry farms through poor biosecurity is one way that we would experience an outbreak of a highly pathogenic strain. Bat species also interchange between Australia and South East Asia, bringing risks of diseases like Nipah virus. Introduction of arbo (insect borne) viruses like pathogenic strains of bluetongue virus, as has happened in Europe, can also occur through wind-borne spread.

Changing demographics

The 'sea change' phenomenon has seen an increasing peri-urban agriculture sector. These farmers have varying levels of understanding about biosecurity, and through poor biosecurity practices may allow establishment of invasive species that would not otherwise occur. This is compounded by arguably lower reporting rates in these areas and an increased propensity for many pests and diseases to spread in closely settled areas.

Sparsely populated areas

In contrast to the risks associated with the peri-urban sector as outlined above, Queensland also has vast areas that are relatively free of biosecurity risks. However, if an incursion of an animal disease or an invasive weed species does occur then it may go unnoticed for some time, allowing significant spread and making an eradication program either more difficult or impossible.

Diversification of industries and changing land use

In difficult economic times, many producers are diversifying and growing new commodities, for example new tropical fruits. This brings risks in terms of the level of knowledge of these crops and the associated risks, both through pests and diseases and associated chemical use. The recent release of the *Developing Northern Australia White Paper*, including proposals to increase agricultural production in North Queensland, includes significant biosecurity risks unless managed appropriately.

Appearance of new or emerging diseases

Over the past 15 years there have been a number new diseases that have emerged both in Australia and overseas. These include Hendra virus, Nipah virus, Australian Bat Lyssavirus, Menangle virus, Bungowannah virus, H5N1 avian influenza, Ebola Reston virus and SARS. There are a range of factors involved here, including the ability of new technology to detect diseases that may have always been present, mutation of viruses, and the impact of human activity on wild and domestic animal populations, creating overlaps that allow disease transfer. Another feature of many of these diseases is that they are zoonoses – diseases that transfer from animals to man.

Climate change

The natural distribution of many invasive species is determined by climate and geography, with temperature and rainfall patterns two of the most important determinants. Global warming will thus affect the potential distribution and intensity of many invasive species infestations, both positively and negatively. Some species may emerge as more important

threats than currently assessed, while some may become less important. This applies to both endemic species as well as exotics and there is a risk that endemic species could become biosecurity risks as their distribution changes. Ecosystems involve complex interactions of many species that can be easily upset by changed conditions.

Our responses to climate change also contain risks. There is growing interest in developing alternatives to fossil fuels, including biofuels. A range of plants are being considered for biofuel production, through processes such as ethanol production, oil extraction or synthetic fuels from biomass. Some of these plants by their nature have weedy properties and present an environmental risk from that perspective.

Naturalisation of garden and pasture species with weed potential

A large number of plant species were introduced into Australia for garden or pasture purposes prior to the commencement of weed risk assessment in the late 1990s. Some species are widely distributed as major weeds but many are still at early stages of naturalisation and invasion, and it is likely that many have not yet naturalised (that is, established outside cultivation).

Technology

Modern diagnostic tests are now much more sophisticated at diagnosing invasive species, especially animal and plant diseases. While they have brought major improvements in how we manage disease incidents, their use can also create biosecurity incidents from the very fact that we become aware of a pathogen's existence, especially if it may be transmissible to man. Hendra virus is a good example. It has probably always been present in fruit bats and has probably infected and killed the occasional horse for decades. It was only because of unusual circumstances in 1994, as well as more modern diagnostic tests that we came to know of its existence. Similarly, we now know about Ebola Reston virus in Indonesia, which is a relatively mild pathogen, but can cause concern owing to its far more serious close relative.

Competing demands of agriculture, amenity horticulture and the environment

Some plants that are introduced and cultivated by the agriculture sector can also become environmental pests. This is also very much the case with garden plants, with many of Queensland current problem weeds having been previously introduced by gardeners or the nursery industry.

This is an example where there can be conflicting policies between different areas of government and also highlights where the current Australian biosecurity system may have features that do not encourage good biosecurity practices or risk management. In practice, government underwrites risk in many cases. For example, when industry receives government approval to introduce a new plant, there is seldom any adverse consequences for the proponent if the plant subsequently becomes a weed.

THE FUTURE OPERATING ENVIRONMENT

Given the challenges Queensland faces today from pests and diseases, and the challenges appearing over the horizon, it is essential to acknowledge the parameters of the future operating environment. As has been clearly demonstrated, the only constant Queensland

faces in terms of future biosecurity challenges is constant change. Other broad trends will influence the capacity of Queensland's biosecurity system to adapt.

In around 20 years, Queensland will have experienced significant population growth, with projections suggesting around 7 million state residents by 2036.¹⁴ A recent report by the Regional Australia Institute noted the growing population of Australia's regional communities, particularly in Queensland and Western Australia, although differential growth in coastal and inland communities is still stark.¹⁵ While domestic growth will create additional demands for produce (and opportunities for producers), it places pressure on maintaining the biosecurity system in a changing economic and social environment. These pressures will be acutely felt in rural and regional Queensland, given service delivery demands on local governments and the insecurity of funding for regional natural resource management groups. This trend may be a particular concern, given local government is a key service delivery partner in the biosecurity system. Further, an ageing population places pressure on maintaining services with a diminishing percentage of the population represented in the workforce.¹⁶

However, other trends may disrupt projections, or radically transform the services of today. For example, the average home may have 20 devices connected to the internet by 2030.¹⁷ The wealth of data generated by these devices will reveal productivity gains and new ways to deliver services.

Ongoing competition for public resources and fiscal constraints are mirrored in pressures on profitability of primary industries businesses and increasing demands on volunteer and community resources.

Industry

Queensland's primary industries are facing a challenging and exciting future, which will affect their capacity to deal with biosecurity risks.

With growth in many of Queensland's export destinations slowing, pressure on primary producers and industry will continue to control costs and shrink margins. At the same time, industry must position itself to take advantage of new and emerging market opportunities.

The same trends that impact on biosecurity risk are also changing trade dynamics. Consumer expectations are evolving and an increasingly diverse range of products and services are being tailored in response. This may further stretch industry capacity and has the potential to result in partial market failures. Rising community expectations of production and industry practice complicates the outlook and challenges industry to adapt.

¹⁴ Queensland Government Statisticians Office (2013) *Queensland Government Population Projections 2013* <http://www.qgso.qld.gov.au/products/reports/qld-govt-pop-proj/qld-govt-pop-proj.pdf>, Australian Bureau of Statistics (2013) *Population Projections, Australia, 2012 (base) to 2101* [http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3222.0Main+Features12012per cent20\(base\)per cent20to per cent202101](http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3222.0Main+Features12012per cent20(base)per cent20to per cent202101)

¹⁵ Graeme Hugo, Helen Feist, George Tan and Kevin Harris (2015) *Population Dynamics in Regional Australia*, a report to the Regional Australia Institute, Canberra.

¹⁶ Queensland Government (2014) *Queensland Plan*, Brisbane.

¹⁷ Catherine Livingstone (2015) *Address to the National Press Club*, 29 April 2015.

All of these pressures are resulting in two parallel trends. On the one hand, the need for efficiency and economies of scale is driving consolidation among farm businesses. For example, large farms have steadily increased their market share at the expense of smaller enterprises.¹⁸ This has occurred in parallel with the gradual decline in the number of total farm businesses over the past two decades.¹⁹ Consolidation is accompanied by the increasing specialisation and diversification of primary industries servicing specialist markets. This is both present in primary production, and the post-farm processing sector. It is essential that these trends are understood, particularly their implications for biosecurity.

Industry needs a level of certainty to continue to create jobs and grow the economy. It is important that confidence is maintained in Queensland's ability to respond to emerging biosecurity challenges

Government

Increasing competition for finite state resources heightens demands on governments to justify investment (and reinvestment if savings are found). It also increases demands for scrutiny over current investment levels. Governments are also expected to deliver public value. Fiscal pressures are occurring in the context of rising community expectations and customer demands for unique services. These trends increase pressure on governments to adapt and innovate to get better results by improving public services and delivering at lower cost.

New technology and greater expectations for service quality contribute to an environment of pressure. However, the information revolution also provides government with unique opportunities, allowing access to better information at lower costs.

There is also a growing expectation that governments will air resource allocation dilemmas and share responsibility for making decisions with the community. Trends towards providing access to government information reflect community interest in understanding the information behind decision making.

RELATED GOVERNMENT INITIATIVES

The challenges of increased biosecurity risk and the challenges of evolving government and industry have been widely recognised. During consultation the Panel identified a series of initiatives, sponsored by either the Queensland or Australian Governments that will inform the future operating environment for Queensland's biosecurity system and may form points of leverage for system partners.

Queensland's Food and Fibre Policy

The Queensland Government recently released its *Food and Fibre Policy*, which outlines some of the challenges facing Queensland's agricultural industries and initiatives to help improve outcomes. The policy has five focus areas:

¹⁸ ABARES (2015) *Australian farm survey results 2012–13 to 2014–15*, Canberra, 56.

¹⁹ There is some variation in the definition used by the Australian Bureau of Statistics in counting farm businesses. At present, only businesses undertaking agricultural activities above a minimum cut-off (\$5,000) are counted.

- I. Drive growth, efficiency and sustainability
- II. Support a modern and skilled agricultural workforce
- III. Advance research and development
- IV. Improve Queensland's biosecurity capability
- V. Deliver service innovation.

Advance Queensland

Advance Queensland is the Queensland Government's flagship innovation policy, which aims to drive future sustainable economic growth. Advance Queensland is a \$180 million investment over four years. The funds have been split over a number of initiatives:

- \$50 million Advance Queensland Best and Brightest Fund, which will develop, attract and retain world-class talent both scientific and entrepreneurial;
- \$46 million Advance Queensland Future Jobs Strategy that will open the door to new industry/research collaborations, tackle the big innovation challenges, focus on translation, and deliver 10 year roadmaps for industries with global growth potential;
- \$76 million Business Investment Attraction package, which will encourage a new wave of Queensland start-ups, support proof-of-concept projects and attract co-investment through the Business Development Fund;
- \$8 million will be set aside to give the government flexibility to respond as new opportunities arise, especially as roadmaps are developed with industry partners.

Primary industries are an important feature of Queensland's economy and research sectors. There are significant opportunities for the department to partner with research and industry partners to reinforce Queensland's economic prosperity.

For example, a portion of the \$50 million Advance Queensland Best and Brightest Fund will be set aside for *Global Partnership Awards*. These awards offer graduates and others the opportunity for a placement in overseas research institutions or companies. Queensland's biosecurity system would benefit from a pipeline of graduates familiar with cutting edge agricultural and biosecurity practices. This fund also supports *Knowledge Transfer Partnerships*, aimed at facilitating postgraduate students applying their skills. Queensland's biosecurity system would benefit from a pipeline of graduates familiar with cutting edge agricultural and biosecurity practices.

Similarly, the \$46 million Advance Queensland Future Jobs Strategy aims to capitalise on ideas, returning a dividend in jobs. The fund includes a \$19 million *Innovation Challenges* pool – industry and researchers will be offered incentives to develop solutions to the challenges of tomorrow.

Rural Skills and Jobs Alliance

The Rural Skills and Jobs Alliance is a joint partnership between the Queensland Government and Queensland Farmers' Federation, AgForce, Growcom and Canegrowers. The government has announced investment of \$3 million into the initiative, with the stated aim of providing practical solutions to the workforce issues that affect rural employers.

Skilling Queenslanders for Work

Skilling Queenslanders for Work is a targeted suite of initiatives aimed at matching employers with skilled workers. The government has announced investment of \$240 million over four years. Organisations are able to apply for some of the funding to deliver projects in their areas of expertise. There are two funding rounds each year.

Four of the six initiatives are targeted at building skills. Two others, *First Start* and *Work Start* wage are incentives to encourage councils and private sector employers to take on those who have participated in other Skilling Queenslanders for Work initiatives.

White Paper on Agricultural Competitiveness

The Australian White Paper on Agricultural Competitiveness identifies biosecurity as a significant challenge for Australian farmers. A foreshadowed investment of \$200 million aims to deliver more effective biosecurity to protect agriculture industries and the community from the impact of exotic pests and diseases, and support access to overseas markets. It remains unclear how this investment will be allocated.

However, a number of other initiatives may also have potential applications for biosecurity. For example, the White Paper makes provision for a \$29.9 million investment over four years to assist farmers in acquiring farm insurance advice. This initiative allows for a \$2,500 grant per farm for cost of advice for insurance such as multi-peril crop insurance.

It also includes an additional \$50 million for the management of established pest animals and weeds and a \$50 million investment for increased emergency eradication and national response capability.

NORTH QUEENSLAND

North Queensland has been identified as a significant priority for the Queensland and Australian Governments. The Queensland Government has clearly signalled its priority for the north with the appointment of a Minister for North Queensland and the opening of an office of the Department of Premier and Cabinet in Townsville.

White Paper on Developing Northern Australia

The Australian Government recently released its blueprint for the economic development of northern Australia. This included a range of new and expanded initiatives to facilitate the growth of Queensland's food and fibre industries, and by implication industries that have biosecurity impacts.

Of particular significance was a \$75 million drawcard for a cooperative research centre for Developing Northern Australia. There is significant potential for a new CRC to perform work on the specific biosecurity challenges of the wet and dry tropics.

The paper also states \$12.4 million in Australian funding will be devoted to expanding the work of indigenous rangers in northern Australia. This has the potential to enhance the surveillance system of northern Australia.

CHAPTER 4. PRIORITISATION, RISK AND SHARED DECISION-MAKING

The Terms of Reference for the Queensland Biosecurity Capability Review required the Panel to consider both the current and future shape of the Queensland Biosecurity System. In this part of the report, the Panel outlines approaches to three key tools that are essential to the effectiveness of both the current and future Queensland Biosecurity System. Understanding system capability with respect to these tools was a critical part of our review. The three tools are as follows:

- Prioritisation of investment
- Risk management
- Shared responsibility and decision making.

PRIORITISATION OF INVESTMENT

BASIC BUDGET PRINCIPLES

Effective prioritisation of investment relies first on adequate financial information and a budgeting process, which supports meaningful allocation and reporting.

Financial information should be readily available and useful to inform allocation decisions. The budget allocation and financial reports should also be closely aligned with strategic priorities, once known, and the performance and evaluation of budget expenditures should be carefully monitored. Expenditures, including associated staff resourcing, should be routinely subject to evaluation and review, to inform resource allocation and ensure cost-effectiveness.

BUDGETING AND PORTFOLIO INVESTMENT

Queensland has limited biosecurity resources to address its ever-increasing risk of exotic pest and disease incursions, so it is critical that these resources are used efficiently. The problem is complicated by the presence of a large number of potential invasive species, many of which are already established, as well as a wide range of biosecurity related activities. An efficient allocation of a biosecurity budget maximises net benefits, in terms of both avoided damages and relevant control costs.

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The budget for biosecurity, in other words, has to be allocated across a range of activities: including regulatory needs, emergency responses, surveillance and disease control measures, containment and eradication campaigns and support services (for example, traceability and information systems). Resources also have to be allocated across different threats or invasive species, with measures designed to protect plants, animals, the environment and human health. There are a host of competing alternatives in this setting.

The preferred approach is to try to find the best or optimal portfolio of investments across the various activities and threats. The question, put simply, is where should the next dollar be spent, either in terms of new monies, or in the shift of an existing budget within an organisation, across different activities, threats and operational needs. This cannot always be done quantitatively, or as precisely as what would be ideal, but it should always form part of the way of thinking about how resources for biosecurity are allocated.

LIMITS TO COST-BENEFIT ANALYSIS

Cost-benefit analysis (CBA) is of limited use in the allocation of a budget for biosecurity across activities and threats. A common method for using CBA information to allocate budgets is to rank alternative projects by their benefit-cost ratios (BCRs), and to select projects in declining order of BCRs until the budget is exhausted. This approach considers, for each candidate project, the benefit it would provide (per dollar spent on it) if the project received a specific level of funding. The problem is that the benefits that each project would provide at different levels of funding are not considered. This prevents consideration of the potential gains from reallocating the budget, spending more on some projects, and less on others.

Applying the same approach to allocating biosecurity budgets would almost certainly result in a misallocation of resources because the benefits of a biosecurity project per dollar spent on it can be highly sensitive to its scale. This may reflect the fact, for example, that increased spending on an eradication project allows for eradication to be achieved sooner, with smaller eradication costs, or that increased spending would increase the probability of achieving eradication, increasing the project's probability-weighted benefits. A third potential benefit of achieving eradication sooner is that it may reduce the area infested before eradication is achieved, reducing the amount of damage the pest causes before it is eradicated. If the extra benefit from increased spending on a specific project exceeds the extra losses from reduced spending on other projects, reallocating the program budget can increase total program or overall benefits.

To illustrate these points, take as an example a local surveillance program for exotic fruit flies with a trapping system already in place. A CBA could be easily constructed for this activity. The cost of the number of traps, say there are 1000 in place, and their inspection and relevant diagnostics are known or could be easily determined from budget. An economist could calculate the avoided losses that go with having a trapping program – the losses that would have occurred to agricultural production without the trapping system or the 'early detection' program in place. There is little doubt that the BCR in this case would be positive. Most biosecurity activities indeed have positive BCRs. However, the CBA does not tell us how many traps there should be. Should it be more or less than 1000, or is 1000 correct? It provides no information on scale. Cost-effectiveness, or a better portfolio allocation of funds, could occur with more or less traps. The CBA is no help in this regard.

It is also no help in determining allocations across activities. It may be the case that the return on an alternative activity, such as further allocations to contain and eradicate red imported fire ants is higher. If so, it will be best to shift funds in this direction. A CBA cannot answer these questions or determine where monies should go.

PORTFOLIO ALLOCATION

A better rule for allocating a budget for biosecurity is to shift funds to activities or threats with the highest rate of return. This is what is meant by a portfolio allocation of investments. The allocation principle cares about which investments have the highest rate of return, or the highest ratio of the extra benefits to the extra costs of investing in that activity, and not the ratio of benefits to costs. This is equivalent to asking where each dollar in a biosecurity budget should go. In other words, starting with the first dollar in the budget, the principle is that each successive dollar be spent on the activity or threat with the highest extra benefit or return. In most cases, the more funds that are directed to an activity or threat the lower its rate of return will be over time – a typical example of diminishing returns – and we should thus invest accordingly across all activities and threats until (ideally) rates of return are equalised everywhere.

To illustrate, take again the example of a single, specific activity or local surveillance with a trapping program for fruit flies. How many traps should there be? For an economist, there is a natural trade-off to consider here. We know if there are no traps in place that damages from a fruit fly incursion and establishment will be potentially very high, but of course the cost of the fruit fly program is zero. If we have a huge number of traps in place, we'll detect an incursion very early, and avoided losses with a mitigation or eradication program will be much smaller, but then the cost of the fruit fly trapping system itself is very high. The best rule to follow is to minimise all of the costs of a potential incursion (e.g., the costs of containment and eradication, losses from market closure, damages to industry.) and the cost of the trapping program itself. In effect, you're asking the question: is the extra cost of an additional trap less than the extra benefits that accrue from having the trap in place? If so, we should invest in the trap and continue adding traps until the extra cost of doing so just equals the extra benefits in terms of avoided losses. This generates the highest return.

Of course, it is often difficult to determine the effectiveness of additional scale (i.e., an extra trap) in an activity, and compare this across all other activities and threats, but this way of thinking about the issue is, in itself, of great value. It conditions decision-makers to think about where returns are highest, and to direct resources in that direction.

A further benefit of applying a portfolio allocation approach with agreed and well understood parameters for application is that decision making processes and decisions become more predictable and transparent, enhancing confidence in the appropriate use of resources.

PRACTICAL CONSIDERATIONS TO PORTFOLIO ALLOCATION

There are a number of practical points to make:

(1) Following a portfolio allocation rule for investments in biosecurity provides a structured and transparent method to allocate investments across different invasive species or threats and biosecurity activities; investments or allocations that can be scaled according to the available budget. Implementing the approach provides a mechanism for determining the best 'investment portfolio', including or accounting for the size of the budget and its needed allocation to obtain the best results.

(2) Finding the optimal allocation across all threats and biosecurity measures, focusing on relative rates of return, implies that the highest average level of benefits to costs across all threats and activities is obtained. Focusing on rates of return, in other words, and not BCRs, generates the highest average BCR in the end.

(3) When a budget constraint matters, or when the budget is limited, the investments with the highest rates of return should be chosen first. As their rates of return fall, with added investment, other activities or measures are then funded according to their 'place in the queue', or their relative rates of return.

(4) It is possible that some activities or threats will have rates of return that are always lower than all other alternatives and will not be allocated a budget. These are generally the 'low risk-low consequence' activities. Unless there are significant political or social considerations to take into account, these activities should not be funded, or at least phased out over time with funds directed to areas with higher rates of return.

(5) The practical effect of a portfolio allocation rule is generally to shift funds away from managing an existing pest or disease toward prevention and surveillance. The reason is simple. The fundamental trade-off faced by the decision-maker is that the cost of managing an existing pest, through containment or eradication campaigns, will on average be smaller when an increased share of the biosecurity budget is allocated to prevention and surveillance. Across the spectrum of biosecurity activities, early detection is often the key to minimising the cost of a biosecurity event. Indeed, the main purpose of surveillance, both active and passive, is to detect new invasions sooner to allow for containment or eradication to take place while the problem is still small. Prevention, alternatively, covers spending on all measures that reduce the frequency of occurrence, including local and border quarantine, and the removal of potential threats (including the removal of exotic species that have not yet become established).

(6) For an organisation that is always dealing with emergency responses to new incursions, shifting monies to surveillance and prevention is difficult, but marginal changes can and should be made over time. More monies for these activities almost always imply a lesser need for emergency response, or for emergency responses that are less costly.

(7) Given that the majority of the budget in Biosecurity Queensland is allocated to salaries, budget allocation decisions in a large part mean either re-assigning what people do and/or what recruitment decisions are made. Hence, making decisions around budget priority is only part of the process for managers. It is critically important that the leadership team put time and effort into devising effective strategies for making the required transitions.

CONSIDERATIONS FOR IMPLEMENTATION

There are four additional points to acknowledge on the implementation of a portfolio investment rule. First, it is important to first recognise that portfolio allocation approaches, whether done quantitatively or qualitatively, say nothing about 'who pays?' for a biosecurity measure. Cost sharing is a separate issue and roughly independent of the quantitative measures that allocate investment funds by relative rates of return.

Second, any decision-making framework needs to take into account the time frame over which the investment is made. An invasive weed, for example, may not generate substantial

damages for decades, although waiting that long to respond may close the door to eradication options. The spread of foot-and-mouth disease, on the other hand, and the consequences that follow are much more immediate. If the portfolio analysis is handed in a quantitative framework these differences in time frame are handled with a time discount, knowing that ‘future costs’ are worth less today whenever the interest rate is positive. There will be inevitable debates over the size of the discount rate, with strong arguments for low rates of discount for environmental assets, but these can usually be resolved.

Third, it is important to note that the best approaches to resource allocation take into account not absolute amounts (e.g., damages that may occur with an incursion), but marginal changes in costs and benefits, along with likelihood of an incursion, establishment and spread. For example, we know the potential damages from a foot-and-mouth disease incursion can be enormous, but the likelihood of arrival may be small and, perhaps more to the point, additional expenditures for active surveillance for the early detection of foot-and-mouth disease – on top of an effective passive surveillance system – may not be cost effective.²⁰ When a biosecurity organisation decides where to put its resources it needs to account, even if only with qualitative assessment, the extra costs relative to extra benefits and the likelihood of an event relative to existing capacity.

Finally, a portfolio allocation approach needs, as a prior condition, basic infrastructure capability, e.g., information systems, data capture, diagnostic capabilities and legislative processes. These might be required irrespective of which biosecurity activities are ultimately funded, but their scale and relative amounts often depend on the portfolio of biosecurity measures that are put in place.

CASE STUDY: THE FIRE ANT PROGRAM

The National Fire Ant Eradication Program (NFAEP), which is managed by Biosecurity Queensland Control Centre (BQCC), began with the discovery of two large infestations, apparently arising from two separate introductions of the species. The smaller of the two invasions, in the Port of Brisbane, has apparently been eradicated but the larger of the two invasions has greatly expanded in area despite concerted efforts to eradicate it. Although the latter invasion has not yet been eradicated, densities of ants within that area have been maintained at a low level with minimal urban and agricultural impacts.

The initial agreement to fund the program hinged on two main assessments: first that eradication within an acceptable period was feasible, and second, that successful completion of the program would produce much larger benefits than costs. Recommendations by the program’s Scientific Advisory Panel (SAP) about treatment effectiveness and an initial cost benefit analysis of the program provided the scientific and economic rationales for the program to be funded.²¹ An agreement was reached between the program’s cost-sharing partners and the program commenced.

²⁰ Tom Kompas, Hoa Thi Minh Nguyen and Pham Van Ha (2015) “Food and Biosecurity: Livestock Production and Towards a World Free of Food-and-Mouth Disease” *Food Security*. 7(2), 291-302.

²¹ Tom Kompas and Nhu Che (2001) *An Economic Assessment of the Potential Costs of Red Imported Fire Ants in Australia*. Consultancy report, ABARE, Canberra.

One of the main shortcomings of the process used to determine whether, and how, to attempt eradication of fire ants, was that only one eradication strategy seems to have been considered instead of multiple strategies. The initial eradication strategy applied high levels of pesticide within a relatively small area of known or likely areas of infestation. Importantly, it appears that no consideration was initially given to alternative eradication strategies that were less vulnerable to the risk that program resources would be applied over too small an area to achieve eradication. Applying available resources more thinly over a larger area could have increased the area managed. This would have involved fewer rounds of repeat treatment of the same locations, and increased surveillance near the outer boundary of the treated area to confirm the absence of fire ants beyond that area. It is not clear whether this alternative strategy would have succeeded, but this could have been assessed by explicitly considering this strategy. In this regard, it was recently estimated that the invasion had spread further than expected during the NFAEP's early stages, and that a modest increase in the area managed in those stages may have achieved eradication.²²

Since alternative eradication strategies that were less vulnerable to the risk of delimitation failure could have been considered, and were not, it is useful to assess whether there were institutional impediments to these strategies being considered. Indeed, there were no explicit requirements for this to be considered in the scientific or economic assessments of the program. Another institutional factor that may have deterred the consideration of more robust eradication strategies was a clear preference of program funders for eradication to be achieved quickly. This may have deterred the use of a more robust but slower strategy involving fewer rounds of repeat treatment of the same locations.

A second major shortcoming of the overall process was a decision made at the national level a few years into the program to not fully follow the originally agreed plan. There were early, spectacular reductions in RIFA infestation rates, which prompted a decision to reduce funding, with the effect that large areas could no longer be treated, thus allowing residual infestations to spread. The decision to cut back funding for RIFA in the early phase of the program (against the program's recommendation) was a significant error in judgement. Often the hardest part of an eradication program is getting rid of the remnants of the infestation, with early gains being relatively easy. Once you make a decision that you are going to attempt eradication, it must be resourced properly.

Despite the setbacks faced by the program since its commencement, it has successfully prevented fire ants reaching damaging population sizes and thereby achieved substantial benefits already (Note that there have been 5 separate RIFA incursions in Australia based on genetic testing and 4 of these have been eradicated). Evidence for this comes from invasions of fire ants in the southern

²² Jonathon Keith and Daniel Spring (2013) "Agent-based Bayesian approach to monitoring the progress of invasive species eradication programs" *Proceedings of the National Academy of Sciences of the United States of America*, 110 (33), 13428-13433.

United States, where fire ant infestations have reached very high densities and have caused substantial harm in urban and agricultural areas.

In addition to preventing a large increase in fire ant abundance, the NFAEP has contributed useful information on eradication strategy, and developed innovative analytical methods and control methods that will become more widely used, as the methods are further refined. These include remote sensing methods for monitoring invasions and improvements in citizen engagement programs to enhance the effectiveness of citizen monitoring. The program has been open to collaboration with external organisations having specialist expertise in areas of importance for the eradication program. This includes universities with expertise in the development of remote sensing, and in the development of innovative inference methods for ongoing monitoring of eradication programs to provide an early warning when programs are not on track to succeed. Lastly, the program has also demonstrated several aspects of emergency biosecurity response in Australia that could benefit from a reappraisal. The program's initial scientific and economic assessments do not appear to have considered the robustness of the fire ant eradication strategy. That has changed over time, with the most recent assessments explicitly considering the risk of delimitation failure. However, there is no explicit requirement for the robustness of proposed eradication strategies to be considered in assessments conducted to inform decisions by cost sharing partners.

IMPLEMENTATION

Finding a full suite of portfolio allocations across all biosecurity measures and threats faced by a biosecurity organisation is not currently possible, however much can be done. There are already a range of studies that provide information on optimal allocation and rates of return for some threats and biosecurity activities. The Panel is at least aware of the following work:

- Optimal investment in the general fruit fly trapping program
- Optimal surveillance for the early detection of papaya fruit flies
- Active surveillance measures and an optimal response to a potential foot-and-mouth disease outbreak
- Possible rates of return on a host of active surveillance measures, pre-incursion, for foot-and-mouth disease
- Optimal expenditures on the containment and possible eradication of red imported fire ants
- Investments in the control of various weeds.

A biosecurity organisation needs to systematically search for these contributions, find ways of translating and implementing their results and form collaborations with researchers in other organisations to assist with these measures.

With this, there are also model frameworks already in place to assist with rates of return measures. They range in complexity from simple portfolio rules, common to financial analysis, to very complicated bioeconomic and spatial modelling for specific threats or

biosecurity activities. A relatively simple model recently presented to the National Biosecurity Committee provides a start at an overarching framework.²³ Its data requirements by threat and activity are modest (e.g., an estimate of spread rates, eradication and containment costs, the effectiveness of surveillance and prevention measures and possible arrival), providing one possible template for investment going forward. There are other frameworks also available.

It will obviously take any organisation time and effort to build up rates of return measures for threats and activities in its areas of concern. However, monies have to be allocated and decisions have to be made. Portfolio allocation rules suggest that the best place to start is by critically examining activities and threats that are apparently of low return. These are usually low-risk and low-consequence threats that are being funded based on history or simply out of inertia. Even if precise quantitative measures are not available, it's often possible to determine which of these should continue or be phased out over time.

Finally, another interim measure for proper allocation or investment, before a full portfolio approach can be developed, is to think of expenditures across threats in terms of risk profiles – as a measure of likelihood of occurrence multiplied by economic consequences (see 'risk culture' section). Proper 'expert elicitation' may be needed to estimate these likelihood measures, but those threats with high risk measures, relative to the cost of control and mitigation, should have the first priority.

The Panel has identified the following attributes of an organisation with appropriate investment and prioritisation decision making:

- (1) The budget for biosecurity expenditures needs to be readily available and clear, and closely aligned with strategic priorities, once known. The performance and evaluation of budget expenditures should also be carefully monitored.
- (2) Expenditures, including salary expenditures, should be routinely subject to evaluation and review, to inform resource allocation and ensure cost-effectiveness.
- (3) Proper portfolio investment needs enhanced capacity in data capture along with accessing, translating and implementing existing and new knowledge relevant to biosecurity that can help inform decisions on the proper allocation of resources. In particular, information and analysis needs to be gathered on how biosecurity resources should be allocated across threats and biosecurity measures.
- (4) Where possible, resources should be directed to biosecurity threats and activities with the highest rates of return. This will generally imply a larger emphasis on prevention and surveillance and this, in turn, will require enhanced capability in this part of the organisation.
- (5) Even if quantitative measures are not available, or are only available for limited threats and biosecurity activities, best practice should be to direct funds to where returns are highest. This will entail a careful examination of low return activities to determine if they are truly needed or can be phased out over time.

²³ Tom Kompas, Long Chu, Pham Van Ha, Daniel Spring(2015) *Budgeting and Portfolio Allocation for Biosecurity Measures*, a report for the Department of Agriculture, Canberra

(6) Significant time needs to be spent on devising strategies to make the required transitions to highest rate of return activities.

(7) A strong focus on intelligence gathering and analysis to identify current and future trends that will influence the 'risk environment'.

Application of sound investment principles and rigorous consideration of risk is necessary, but not sufficient, to achieve good decision making outcomes. Decisions must also be informed by the complexity and values of society.

WHO SHOULD PAY?

As noted above, a portfolio allocation approach will help to establish priorities for investment, but does not establish who should pay. However, this question can often be critical to the question of how to make the investment transition, particularly if the particular activity has lower rates of return for the overall biosecurity system but is valued highly by some stakeholders. A number of approaches have been developed nationally to address this question. Examples include the decision tree developed by Biosecurity New South Wales and the recent IDA Economics report, *New funding arrangements for eradication programs*, commissioned by the National Biosecurity Committee.²⁴

The choice and application of any such approach is a necessary prerequisite to implementing effective investment decision making and resource allocation protocols.

The question of cost recovery is addressed later in the report.

SNAPSHOT: OPTIMAL SURVEILLANCE MEASURES

Local or post-border surveillance for early detection and rapid response is an important line of defence, and increases the likelihood that localised invasive populations will be found, contained, and potentially eradicated before they become widely established. As early detection generally requires substantial upfront investment, while delayed detection can cause potentially devastating damages, there exists a clear trade-off between surveillance expenditures for an invasive species, for early detection, and any potential damages and control costs that go without detecting early. Best practice is to ensure that the extra dollars invested in surveillance are just offset by the additional avoided damages that go with that activity. In others, to maximise returns, it is best to reach a point where the marginal costs of extending a surveillance measure are equal to its extra benefits in terms of additional avoided losses from undertaking the early detection campaign. Alternatively, optimal surveillance expenditures are achieved when all of the costs associated with a potential incursion, spread and establishment of a pest or disease, including the cost of the surveillance program itself, are minimised.

Much of this work, the work of determining how to invest funds to maximise returns from surveillance, can and should be done quantitatively. Recent work associated with the Centre of Excellence for Biosecurity Risk Analysis at the University of Melbourne offers a good

²⁴ IDA Economics (2014) *New funding arrangements for eradication programs*, a report to the National Biosecurity Committee, Canberra.

example of this; providing two case studies for active surveillance measures against foot-and-mouth disease (FMD) and optimal surveillance measures, with the current trapping program in place, for detecting a potential incursion of papaya fruit fly (PFF) in Queensland.

The current surveillance system for FMD in Australia relies on effective cooperation between a range of stakeholders, including various levels of government, Animal Health Australia, industry groups, individual farmers and the general public. Detection of exotic and emergency diseases primarily relies on individual farmers, stock inspectors and others working with livestock and then providing notice of a potential disease in their animals to an appropriate animal health professional. This is called the passive surveillance system. Recent work through Animal Health Committee's General Surveillance Expert Working Group found that for many parts of Australia it could take many weeks for an FMD incursion to be notified. The Matthews Review reported that any delay in detecting FMD could seriously amplify the scale and duration of an outbreak, the losses that are experienced and the nation's ability to recover. That brings into question the need for additional, more active surveillance. Given the potential damages that may occur from an FMD event, the presumption is that additional measures may be warranted.

The work done by CEBRA on FMD investigated a wide range of enhanced and active surveillance protocols.²⁵ The study area was the State of Victoria, with emphasis on dairy regions. In terms of passive surveillance, the research concluded that the reporting of suspect disease by livestock owners could be improved by increasing their awareness of serious disease, by increasing the frequency and extent of livestock inspections by owners, and by improving willingness of owners to have problems investigated (e.g. by a government or private veterinarian). In terms of active surveillance measures, on top of or in addition to the current passive surveillance system, the work investigated both sale-yard inspections and bulk milk testing (BMT) protocols, using rRT-PCR tests. Although not yet commercially available, it was determined that BMT had the highest potential. The economics of BMT, however, did not support its use, indicating that BMT prior to an incursion is only justified when FMD is expected to occur much more frequently than 1 outbreak in every 50 years, or when the unit cost per BMT is much cheaper than the existing charge of \$36, or roughly \$2 per test. The report concludes that the most effective way to achieve early detection of incursions of foot and mouth disease into Australia is to invest in improving producer reporting, or enhancing the passive surveillance system. That said, BMT has also been shown by work done by CEBRA to be a valuable response measure, designed to return the system back to market access more quickly, should an FMD outbreak occur.²⁶ Post-incursion, in other words, it is very cost-effective as an active surveillance measure.

There are two lessons to be drawn from this case study. First, the possibility of large economic consequences from an FMD outbreak (estimated to be up to \$50 billion by ABARES) is not, by itself, justification for additional expenditures on active surveillance. Both the extra benefits and costs of any investment in surveillance need to be considered, all

²⁵ Graeme Gardner, East, I.J., Kompas T., Ha, P.V., Roche, S.E., and Nguyen, H.T.M, (2015) Assessment of approaches to enhance passive surveillance to detect emergency animal diseases in Australia, Centre of Excellence for Biosecurity Risk Analysis, University of Melbourne, Melbourne.

²⁶ Tom Kompas, Pham Van Ha, Hoa Thi Minh Nguyen, (2015) Optimal Surveillance against Transboundary Diseases in Heterogeneous Spaces, Centre of Excellence for Biosecurity Risk Analysis, University of Melbourne, Melbourne.

relative to the risk assessment that goes with a potential outbreak. The 1 in 50 year event, as a presumed likelihood of entry, should also be carefully considered. Second, and more importantly, the case against active surveillance for FMD outlined above is conditional on having an effective passive surveillance system in place. If there has been a significant loss in capacity in the passive surveillance system not only does it call for more active measures to detect an incursion of FMD early, but begs the effectiveness of the entire surveillance system itself.

Work on PFF done by CEBRA, alternatively, suggests that there may be a clear under-investment in surveillance activity for this pest. Fruit flies are a major threat to horticultural crops. Thanks to an ongoing strong surveillance and trapping program in the Torres Strait Islands and in Queensland, there have been no recent outbreaks on the mainland in Australia. However, the threat remains high, and a countrywide spread of papaya fruit fly (*Bactrocera papayae*) could cost Australia as much as \$3.3 billion.²⁷ Indeed, the first outbreak of PFF in 1995 in Queensland cost \$34 million and took over four years to be eradicated.²⁸

The method in determining optimal surveillance methods against a pest like PFF is to design a surveillance grid (through a trapping system) that is the most cost-effective. The smaller the grid, or the larger the number of traps, the more likely and more early PFF would be detected – but then the cost of the trapping program itself is higher. With a smaller grid, and less traps, the cost of the surveillance program is smaller but then potential damages from the incursion and spread of PFF are potentially much larger, since detection is later.

Applying an optimisation procedure and a surveillance grid to a raster map in this way, the spatial bioeconomic modelling work suggests the need for a stricter surveillance measure, or a 1 km surveillance grid in relevant horticultural areas in Queensland.²⁹ Although this result is preliminary, it does indicate the need for careful study of how surveillance systems are funded and at what scale. Getting the scale of active surveillance programs correct, in particular, is an important part of what Biosecurity Queensland needs to do.

Both case studies, again, underscore the need for Biosecurity Queensland to have the capacity to access, communicate and implement relevant information and research on biosecurity in Australia. These are just two case studies, but there are many agencies and other research groups, both in Australia and overseas, whose work can be freely accessed and used.

RISK MANAGEMENT

The diversity and complexity of the biosecurity system is outlined in the preceding section. The nature of biosecurity is such that a proper understanding of risk is critical to making

²⁷ Ahmed Hafi, Tony Arthur, Michael Symes and Nicola Millist. (2013) *Benefit-cost analysis of the long term containment strategy for exotic fruit flies in the Torres Strait*, Report to National Biosecurity Committee, ABARES, Canberra.

²⁸ Bryan Cantrell, Blair Chadwick and Anna Cahill (2002) *Fruit Fly Fighters: Eradication of Papaya Fruit Fly*. CSIRO Publishing, Victoria, Australia.

²⁹ Tom Kompas, Pham Van Ha, Hoa Thi Minh Nguyen, (2015) *Optimal Surveillance against Transboundary Diseases in Heterogeneous Spaces*, Centre of Excellence for Biosecurity Risk Analysis, University of Melbourne, Melbourne.

decisions at the individual business, organisation and system level. Proper understanding of risk includes consideration of who bears the risk of a particular threat, how likely it is to occur and what the consequence would be. It also requires consideration of the options available to mitigate that risk and an analysis of the impacts (and vulnerabilities) of mitigation options.

A zero risk to biosecurity is neither possible nor desirable. As was identified in the Beale Review of Biosecurity in Australia, active risk management is the most sustainable and cost effective approach to dealing with biosecurity threats to Australia.³⁰ With the complexity of threats only continuing to increase, the biosecurity system must retain its capacity to prevent pest and disease incursions, but also to manage those detected.

Consideration of risk is also context specific. An overly narrow or technical focus may inhibit appreciation of the broader impacts of a specific pest or disease. For example, one stakeholder suggested that the greatest risk to biosecurity in Queensland may be the catastrophic failure of the Northern Territory biosecurity system. Strategies to mitigate such a risk may represent a worthwhile investment.

A CONSTRUCTIVE APPROACH TO RISK ASSESSMENT AND MANAGEMENT

There is a strong need in contemporary governance measures to focus not only on evidence-based policy making, including a high priority on the collection and analysis of data and the use of quantitative measures, but also an emphasis on effective risk assessment and risk management. This must involve compliance-based approaches to risk management (e.g., ISO 31000), but it must also be more than this. Biosecurity agencies, in particular, need to account for various risk mitigating and control actions across different invasive threats and in terms of the effectiveness of various biosecurity measures. These agencies also have to account for the possibility of 'black swans', or the occurrence of low probability and high consequence events. Doing so requires the organisation to value risk assessments and act on these analyses. However, the risk assessments themselves, must be done properly, and Biosecurity Queensland needs to approach this carefully and with priority.

PROBLEMS WITH RISK HEAT MAPS

It is common for risk management to be based on classifications using 'risk matrices', or 'risk heat maps', that relate likelihood to consequences, and use scoring techniques to aggregate across these measures. Areas of high consequence and high likelihood are often designated in 'red' in the matrix, and hence indicate 'heat zones'. The result is a series of 'boxes' in a matrix which array by likelihood and consequence, with low probability and low consequence events largely ignored.

The use of risk matrices, while useful in some settings, can also increase the potential for bad outcomes, and hence amplify risk. There are five reasons for this concern.³¹ First, the matrices specifically downplay low probability and high consequence outcomes. Since the focus is on 'red zones' or the areas that score highest, black swan events get ignored. This can be critical in biosecurity since the most damaging outbreaks are usually the ones that

³⁰ Beale, Fairbrother, Inglis, and Trebeck, (2008) *One Biosecurity: A Working Partnership*.

³¹ Mark Matthews and Tom Kompas (2015) "Coping with Nasty Surprises: Improving Risk Management in the Public Sector using Simplified Bayesian Methods" *Asia & the Pacific Policy Studies*, 2(3), 452-466.

are either low probability or are ‘surprises’ – events that were not expected to happen. Planning for biosecurity measures needs to account for these possibilities.

Second, the matrices always result in ‘range compression’.³² In one category or box, for example, the designated range in a probability measure may range from, say, 0 to 20 per cent. The problem here is that for many especially high consequence outcomes, a change in probability from 10 to 15 per cent of a given outcome can be crucial. However, this distinction is buried in the given range or box being considered.

Third, the ranges themselves do not always map out in symmetric boxes (for example, 20 per cent blocks), and this can cause confusion over range intervals and what is being measured.

Fourth, a lack of a ‘common language’ often causes misunderstanding. Categories in the matrix designated as ‘catastrophic’ or ‘almost certain’ can mean very different things to those who do risk assessments.

Finally, risk matrices totally obscure problems with ‘false negatives’ and ‘false positives’ in security and risk measures, and can never account for ‘jumps’ in probability assessments or states of nature that are common with bad outcomes or surprises. This latter point is important. Probability measures on potentially severe outcomes cannot only change or ‘drift’ from one box in the matrix to another over time, but take discrete jumps.

A disease outbreak in a neighbouring country, say rabies in countries to the north, for example, would greatly affect the risk profile for the possible entry and establishment of that threat. Accounting for these jumps and militating against and controlling them is especially important for high consequence events.

RISK AS LIKELIHOOD MULTIPLIED BY CONSEQUENCES

A much more refined, and often quantitatively precise, version of a risk matrix, is to formally calculate risk measures defined by a multiple of the probability of a biosecurity event and a measure of its consequence (usually in dollar amounts). The more precise the measure, the better it is. The procedure requires not only consequence measures and a measure of the likelihood of a biosecurity event, but also how vulnerable the biosecurity system is to an incursion and resulting needed measures for preparedness and response. Overall, these measures can be very informative of the severity of biosecurity events and where attention should be drawn. They should be systematically pursued for this reason alone.

That said, and although valuable for many varied purposes, it is also important to note that risk measures constructed in this way are not especially useful in the allocation of resources across biosecurity threats and measures – except when nothing else is available or when better portfolio allocation rules are not able to be obtained or cannot be developed. Risk is a combined measure of potential damages. It doesn’t account for the cost of an action, mitigation or control, or for the extra benefits relative to the extra costs that go with these measures.

³² Tony Cox (2008) What’s Wrong with Risk Matrices. *Risk Analysis* 28(2), 497–512.

For example, assume hypothetically, with given control measures in place, that the probability of an incursion and establishment of a significant animal disease is a 1 in 50 year event with potential total damages (i.e., the effect of market closures, containment, eradication, etc.) of \$50 billion. Setting aside issues of vulnerability, the risk measure for this event is thus roughly \$1 billion. Assume again hypothetically, with existing control measures, that the probability and establishment of an exotic plant pest is a 1 in 10 year event with \$20 billion in damages. The risk measure for this event is \$2 billion. Would it be right to allocate more biosecurity resources to the plant pest away from the animal disease?

There are a number of reasons not to jump to this conclusion. First, there would be special concern to get the probabilities of an incursion and establishment right. This would normally involve a careful expert elicitation that establishes not single point values for probabilities, but maximum and minimum values, a most likely value and a measure of confidence that the likelihood of an occurrence would be between the maximum and minimum values.³³ Second, the consequence measures would also have to be equally and carefully scrutinised. They are often represented as maximum potential damages assuming no intervention, additional controls or response actions. But this is rarely the case. In almost all cases, final consequence measures are not independent of actions taken. A proper response to an animal disease and or plant pest incursion, in other words, could result in far less consequences or economic damages than the maximum predicted. Finally, and most importantly, risk measures cannot directly inform resource allocation, since they provide no information on the marginal effect of investments in an activity. What is of concern is the extra benefit, in terms of avoided damages from a biosecurity measure or control action, in this case for an animal disease or plant pest, either before a potential incursion or after an actual or hypothetical event, compared to the extra cost of the measure or action. What is of concern, in other words, is the rate of return on an investment, not absolute measures of risk.

A RISK-SENSITIVE WORK CULTURE

Biosecurity agencies need to account for various risk mitigating and control actions across different invasive threats and in terms of the effectiveness of various biosecurity measures. These agencies also have to account for the possibility of 'black swans', or the occurrence of low probability and high consequence events. Doing so requires the organisation to undertake careful risk assessments and act based on these analyses.

The Panel has, as a minimum, the following attributes for a 'risk sensitive organisation' in mind:

(1) A careful consideration and appreciation of the need for risk assessments, both when they can be made quantitatively, and when they must be based on more qualitative judgments. Effective risk management is best approached as an effort to reduce the potential for bad outcomes by combining "what if" conjectures about what could happen, with a recognition that aiming simply to comply with prevailing risk management standards and guidelines can, in some circumstances, amplify rather than reduce the potential for

³³ Mark Burgman (2015), *Trusting Judgements: How to get the Best out of Experts*, Cambridge University Press, Cambridge.

unexpected outcomes. In short, this involves treating risk as something more than just a compliance exercise.

(2) An organisational culture that is conscious of risk and risk mitigating actions throughout, and that tests the system at both critical and unpredictable points.

(3) Sensitivity to operational needs and an ability to have resources appropriately directed to unexpected biosecurity events. This may require a financial arrangement that can be accessed as needed, rather than shifting funds from already useful activities in favour of emergency responses to an event.

(4) Preoccupation with 'weak signals', 'near misses' and 'false negatives and positives'. All of these events give valuable information on potential faults in the system and added areas of concern. Existing risk measures thus have to be continually updated when new information is available.

(5) Careful tracking and response to the failure (or success) of the system to handle a biosecurity event.

(6) An emphasis on surveillance activities for early detection of both things that are potentially known incursions, and for things unknown.

SHARED RESPONSIBILITY AND DECISION-MAKING

Shared responsibility is a critical concept at the heart of biosecurity risk management. Essentially it advocates that government, industry and individual producers and landholders – those that create risks and benefit from risk management, work together to mitigate the impact of biosecurity risks.

Although shared responsibility is the appropriate model for biosecurity risk management and there is broad agreement on this, as a concept it has not become embedded within the biosecurity system. Many stakeholders have construed efforts to share responsibility as cost shifting, perhaps the result of poor engagement, and hesitancy on the behalf of government to share decision making and create a governance framework to enable true shared responsibility.

In this section, we describe some current models for shared governance and decision making as context to the description of the future Queensland Biosecurity System later in this report.

THE CONCEPT OF SHARED RESPONSIBILITY

The concept of 'shared responsibility' has been included in numerous biosecurity strategy and policy documents since the Nairn Report in 1996. The establishment of AHA and PHA and cost sharing deeds were instrumental in delivering co-investment and decision-making. Beale et al in 2008 constructed his report along three principles: shared responsibility, science-based assessments and the biosecurity continuum.

The concept of shared responsibility underpins the Australian biosecurity system. Despite this, jurisdictions across Australia have faced difficulties in implementing shared

responsibility, in part as a result of opposition and challenge from key stakeholder groups. However, this is underpinned by a failure to clearly articulate what shared responsibility is and what it looks like in practice (i.e. the additional rights that come with the responsibility).

Also largely missing from the shared responsibility conundrum is infrastructure, in effect governance arrangements that allow for and facilitate meaningful shared responsibility, as well as shared financial stakes in the decisions being made (particularly at the state level). Political pressures may also see the government of the day rushing to intervene in a biosecurity incident, thereby creating a precedent for constant government interventions.

There are a number of challenges that must be overcome before shared responsibility is capable of being achieved, including a substantial shift in current biosecurity 'culture' and expectations. One of the key challenges relates to developing a community understanding of what shared responsibility means and how this applies to our management and response to biosecurity issues.

WHAT IS SHARED RESPONSIBILITY AND WHY DO WE NEED SHARED RESPONSIBILITY FOR BIOSECURITY?

A common understanding of shared responsibility must stem from the recognition that government cannot be responsible for managing all aspects of biosecurity across the spectrum if biosecurity is to be achieved. Private entities, industry and the broader community all have a role to play in preventing biosecurity incursions and responding to outbreaks.

Similarly, neither is government in itself a beneficiary of a good biosecurity system, with much of the benefit of a strong biosecurity system flowing to primary producers in terms of access to export markets and avoided losses associated with damages to stock and/or produce. A second major beneficiary of good biosecurity outcomes is the community as a whole, which is able to avoid damage to the environment, spaces of public amenity and of course public health imperatives.

The concept of shared responsibility perhaps may be better described as “proportionate responsibility” for biosecurity risks. That is, that players are and ought to be responsible for avoiding or minimising biosecurity risks where they are reasonably able to do so. Queensland’s new biosecurity legislation (due to come into effect in 2016) will also allow the agency to respond to biosecurity risks and issues of non-compliance in a proportionate manner.

The objective for government, on behalf of the community, is to target consolidated revenue investment in biosecurity where it yields the highest return on investment for the community as a whole while facilitating an environment in which important biosecurity services are provided by the most appropriate parties in accordance with the public interest. There should also be opportunities for beneficiaries to invest in government biosecurity services where it is appropriate to do so.

“Government cannot impose [shared responsibility] and walk away expecting industry/stakeholders to independently build capability.”

DAF Staff Member

However, asymmetries of information exist. Government is not always aware of all the relevant factors in making a decision (for example specific industry economic data). Industry participants and community members are closer to the environment in which decisions are made on a day-to-day basis, and may have alternative, important perspectives and practical solutions to risks and risk management. Yet there are times where industry and community interests may be competing and government has a role to play in brokering policy consensus.

With this in mind, the parameters of how shared responsibility for biosecurity is managed should be largely determined in a consultative fashion with industry, community and other key stakeholders.

It is important to note that shared responsibility is not a challenge restricted to the biosecurity domain. It is a common policy problem increasingly facing governments across Australia and around the world. For example, a cooperative research centre for bushfires recently completed a project on realising shared responsibility for the management of risks associated with bushfires, and their associated social, environmental and economic impacts.

The final report “*Sharing Responsibility in Australian Disaster Management*” provides a useful summary of mechanisms for achieving shared responsibility.³⁴ The report identified a number of mechanisms for sharing responsibility that have relevance to biosecurity in Queensland and may be useful for incorporating into future programs.

Type	Example	Intended influence
Vision statements	<ul style="list-style-type: none"> • National strategies and policies • Statements of principle • Mission statements • Social and ethical codes • Non-binding declarations of rights 	Steer and mobilise responsibility sharing by outlining what it should achieve or look like (not strongly enforced or formally agreed to by the parties involved).
'Hard' laws and regulations	<ul style="list-style-type: none"> • Constitutions • Charters • New, amended or extended laws • Traditional regulation • Quasi-regulation (enforced) 	Prescribe and compel responsibility sharing through the use of legal obligations and authorised sanctions/penalties.
'Soft' interventions	<ul style="list-style-type: none"> • Financial incentives and disincentives • Direct government delivery of public services • Quasi-regulation (voluntary) • Monitoring and evaluation systems • Informational/persuasive campaigns 	Encourage responsibility sharing by influencing decision-making, behaviour or access to services and resources.
Contracts and agreements	<ul style="list-style-type: none"> • Treaties and conventions • Legally-binding voluntary contracts • Public-private partnerships • Hybrid public/private administration • Voluntary non-binding agreements • Agreed declarations of intent • Social relationships of reciprocity 	Establish relationships for responsibility sharing and clarify what is expected of the parties involved (may be binding and subject to penalty or non-binding and without penalty).

³⁴ Blythe McLennan and John Handmer (2014) *Sharing Responsibility in Australian Disaster Management – Final Report for the Sharing Responsibility Project*, Bushfire CRC, Melbourne.

Collective inquiry and decision-making	<ul style="list-style-type: none"> • Votes • Formal public inquiries - binding • Formal public inquiries – non-binding • Public consultation • Deliberative/collaborative decision-making • Participatory disaster/risk management 	Collectively query and/or decide where responsibility lies and/or how to share it.
Organisations and associations	<ul style="list-style-type: none"> • New department, committee or overseeing body • Restructure of existing agencies/ institutions • Government-initiated community or industry associations • Self-initiated civic or industry associations • Multi-party partnerships and collaborations • Policy networks • Interagency coordination and collaboration 	Change or strengthen relationships amongst parties to facilitate responsibility-sharing, or create authority to influence responsibility-sharing
Social norms	<ul style="list-style-type: none"> • Workplace/ professional culture • Traditional knowledge/ management regimes • Emergent organisation and leaders • Social movement/ protest 	Establish informal, shared rules of engagement to share responsibility and/or impose social incentives and sanctions

SHARED RESPONSIBILITY FOR DECISION MAKING

As reflected in current cost sharing and institutional arrangements, there are good arguments for a shared approach to investing in biosecurity activities. Approaches to considering investment choices and a rigorous approach to risk are relevant to all decision makers. The notion of "shared responsibility" built into the new Biosecurity Act needs to imply "shared decision making" to achieve results.

“Government often states it wants to work in partnership but it is quite prescriptive about it.”

Community Member

Good decision-making should bring together sound decision-making principles and an understanding of the environment in which the decision will be implemented - in other words, how the decision translates into action. There is a risk that a decision will look good on paper, but will be unworkable in practice or have profound or unintended consequences that render it unviable.

Joint decision-making approaches are a feature of good governance and bring a broader perspective to the application of decision-making principles and to an understanding of implementation, leading to better decisions.

The Panel received comments from system partners, which illustrate their interest in joint decision making. Some suggested that this would require the State to support industry in other ways, for example by taking a proactive approach to enforcement. Others noted mixed signals coming from government, particularly in light of the precedent set by the recent response to Panama Tropical Race 4. Staff also advocated a shared governance approach:

“Industries need to be involved in prioritisation work that flows into the development of work plans... Meaningful consultation with industry requires skill and many Biosecurity Queensland staff do not have the necessary skill.”

DAF Staff Member

AHA and PHA, and the deeds of agreement for cost sharing in emergency response have set benchmarks in shared decision-making, allowing all relevant parties to have involvement in policy development and actively participate in the management of emergency responses.

Key features of effective shared decision-making models in biosecurity are the existence of a mechanism for contribution of funds from more than one source (typically industry and government) and a governance and decision making framework, which ensures "those who pay have a say".

“If you are being asked to fund or partner up you should have a seat at the consultation and decision table.”

Community Member

INDUSTRY CONTRIBUTIONS TO BIOSECURITY

For a shared governance model to work, participants need to make a joint contribution. This recognises the different skills, levers and funding available to participants in a shared decision making process.³⁵ Queensland industry (with some exceptions) lacks a formal mechanism to raise and manage collective funds for biosecurity purposes, making it more difficult to measure and account for industry contributions to biosecurity outcomes. This also limits the capacity of Queensland’s primary producers to meaningfully engage and leverage government investment.

In contrast, New South Wales, South Australia, Victoria and Western Australia have schemes for raising levies for biosecurity purposes. Some of these levies are discussed in the section below. However, all provide a mechanism for industry to co-invest with government to achieve biosecurity outcomes. Importantly, they enable industry flexibility in negotiating biosecurity priorities with government and facilitate better leveraging of government funds. Separately, the Panel note efforts are underway at the national level to consider a broad biosecurity levy.³⁶

WESTERN AUSTRALIA AND SOUTH AUSTRALIA CATTLE INDUSTRY FUNDS

³⁵ A similar model is employed in the growing area of social impact investing, in which different parties contribute different resources (labour, expertise, capital) to achieving important social returns, and monetary returns for investors.

³⁶ A range of *zero rated levies* are currently in place under Commonwealth legislation to facilitate compensation arrangements under national biosecurity response deeds. Some industries have opted for a *positive rated levy*, ensuring some industry funded biosecurity outcomes (for example industry biosecurity officers).

Western Australia and South Australia have successfully established cattle industry biosecurity funds. A comparison of the key features of these two industry funds are set out below:

Feature	South Australia's Cattle Industry Fund	Western Australia's Cattle Biosecurity Industry Funding Scheme
Established in	2010	2000
History	Replaced the previous fund (<i>Cattle Compensation Act 1939</i>).	Replaced the previous scheme under the <i>Cattle Industry Compensation Act 1965</i> (CICA). The previous fund transferred \$5.4 million to the new fund in 2010.
Rate of levy	\$1.10 (increased in 2013 from \$0.65, and intent to raise to \$1.60 in future)	\$0.20 (rate maintained from previous scheme)
Levy collection base	671,000 head (Estimated breeding herd 2012-13)	1,078,268 transactions (Estimated 2012-13)
Levy point	NLIS tag sales (note – sheep industry funds are collected through a transaction levy)	Transactions
Levy collectors	5 NLIS tag manufacturers	22 (agents/processors) in 2013/14
Compliance	Tag manufacturers are based outside SA and are unable to be penalised for non-collection, but require accreditation from the SA government to sell in SA. A condition of accreditation is that they are a collection agent.	Penalties exist for non-collection (fines of up to \$10,000). Remitted quarterly and need to follow up intermediaries with reminders. Auditing is by the committee's direction only.
Traceability	Tag manufacturers are required to provide the PIC of each property a levy has been paid by	Agents and processors are required to give the name of the persons who have paid levies
Amount raised via levies	\$546,026 (2013/14)	\$174,494 (2012/13)
Other income		\$163,150 (interest earned from the \$5m raised by the previous fund)
Administration costs	\$30,000 paid by the fund for advisory committee expenses, fund administration and executive officer services. 5 days / annum to bank levies.	\$18,062 paid by the fund for committee expenses. Secretariat support provided free of charge by WA Government (value estimated at \$100,000/annum)
Levels of opt out	3-4 per year, typically deceased estates. One refund in 2012-13, however levels of opt out at the higher levy rate are expected to increase, and \$60,000 in refunds has been budgeted for 2013-14.	2 producers opted out and \$102 was refunded in 2012/13. This has decreased from 29 producers opting out in 2010/11

Benefits to industry	<ul style="list-style-type: none"> - Dairy and beef BJD programs - NLIS compliance programs - follow up on residues - youth programs - representative body funding - Compensation for cattle destroyed as part of the control or eradication of bovine brucellosis, bovine Johne's disease or tuberculosis 	<ul style="list-style-type: none"> - EBL/BJD/BTB surveillance - BJD surveillance in the Kimberley - NLIS helpdesk - R&D (Parkinsonia and Kikuyu) - Compensation for loss - Costs and expenses for the destruction of cattle or other related things
Biosecurity programs the departments run on behalf of industry	NLIS compliance work and BJD disease control are funded. These costs represent 100 per cent of the department's costs for salaries, project funds and on costs (\$600,000 per annum)	The department and others submit 'bids' to the industry committee to consider. The committee then recommends funding to the Minister
Compensation	<p>Levels are set in the regulations for animals destroyed:</p> <ul style="list-style-type: none"> - TB- maximum of \$2,000 per animal - BJD - \$100 per animal if infected, \$300 per animal otherwise - no compensation for loss of profit or production, breach of contract or other consequential losses 	Compensation is decided by the committee using principles and policies for compensation

Other states have other mechanisms for industry to directly contribute to biosecurity services. For example, Local Land Services (LLS) in New South Wales directly levy landholders to provide a range of services. Currently, landholder rates make up 19 per cent of the \$165 million annual budget of LLS, a \$31 million opportunity for landholders to contribute to and influence investment in biosecurity outcomes.

LLS rates are used to fund a range of activities, not just biosecurity. These include:

- The control of declared pest animals and insects (access to baits, traps and chemicals, advice on control methods and assistance in forming groups to tackle pests)
- The provision of animal health services (animal health and drought feeding advice, diagnosis of flock and herd issues and response to emergency disease outbreaks)
- The management of travelling stock reserves (TSRs) (issue of movement permits, permits to graze or walk stock on TSRs and roads, and advice about feed/water availability on TSRs)
- The administration of stock identification systems (property identification codes, brands and earmarks and compliance with National Livestock Identification System)
- Local administration of drought and other natural disaster relief.

Biosecurity Queensland has achieved some success with a model where government and other entities contribute to funding biosecurity programs in a pilot co-investment model.

CO-INVESTMENT MODEL

The Co-investment Model is a joint initiative of the Local Government Association of Queensland (LGAQ) and the Department of Agriculture and Fisheries. The model is seeking the development of a new investment approach for the resources in the Land Protection Fund, which is used for managing weeds and pest animals. The model focuses on state and local government joint decision making that will also allow potential investment by other parties.

The goal of the co-investment approach is to deliver services that best address regional weed and pest animal priorities determined by key stakeholders.

The project is overseen by a Project Board, comprising four local government mayors, one LGAQ representative and two departmental representatives. A Think Tank with 11 local government and two departmental members provided technical input during development of the model.

Local Governments are estimated to invest \$25 million to weed and pest animal management of which \$5 million goes into the Land Protection Fund, which is administered by DAF.

Regional priorities will be established through the Biosecurity Act, which requires all local governments to work individually or collectively to develop a Biosecurity Management Plan for Invasive Biosecurity Matter (weeds and pest animals). DAF will encourage local governments to work with key regional stakeholders in the development and collective implementation oversight of the regional Biosecurity Management Plans.

The Regional Biosecurity Plans will align to the Queensland Weed and Pest Animal Strategy and specific elements that relate to the area identified in other national and regional plans including feral animal threat abatement plans and/or natural resource management plans. This will ensure a coordinated and efficient approach.

The co-investment approach will establish greater integration and commitment at a federal, state, industry and regional level and provide increased quality on ground services for established pest and diseases. It also creates opportunities to leverage additional investment from partners.

EXAMPLES OF SHARED RESPONSIBILITY AND DECISION MAKING IN BIOSECURITY

Plant Health Australia

Plant Health Australia (PHA) manages PLANTPLAN, which provides a set of nationally consistent guidelines covering management and response procedures for emergency plant pest incursions affecting the Australian plant industries. It is also the custodian of the Emergency Plant Pest Response Deed (EPPRD.) The EPPRD is a formal legally binding agreement between PHA, the Australian Government, all state and territory governments and plant industry signatories covering the management and funding of responses to Emergency Plant Pests. PHA also maintains a central role in the management and negotiation of Industry Biosecurity Plans (IBPs), which aim to bring together industry representatives, government officials and other relevant experts to identify key pests for particular plant industries and to develop comprehensive means of reducing and managing biosecurity risks to those industries.

Animal Health Australia

Animal Health Australia (AHA) was created in 1996 to promote collaboration and resolve funding arrangements between governments and industry. AHA manages the

AUSVETPLAN, which is a coordinated national response plan for the control and eradication of a range of emergency diseases and certain emerging or endemic animal diseases, and is also the custodian of the Emergency Animal Disease Response Agreement (EADRA). The EADRA is a formal agreement that brings together Animal Health Australia, the Australian, state and territory governments and the livestock industry and provides an innovative means to combine approaches to combating emergency animal diseases.

Both AHA and PHA's services are funded through member subscriptions as well as non-subscription contributions. Subscription funding is roughly shared by the Australian states, and industry. Industry contributions are made by a number of mechanisms such as levies and membership charges.

These bodies successfully model 'shared responsibility' because 'those that pay get a say' allowing for all relevant parties to have involvement in policy development, and actively participate in the management of emergency responses.

Both the EPPRD and EADRA also set out cost share arrangements for emergency biosecurity responses (within certain parameters) to new incursions or outbreaks of significance. The deeds establish the industries party to the cost sharing agreement, identify key risks and threats, detailed cost sharing proportions and formulae, set out limits on the total costs that can be borne by a given industry and establish mechanisms by which industries will meet their share of costs. The deeds also establish a 'sliding scale' of how costs are apportioned between government and industry, depending on the level of public vs private benefit from the response.

Despite the existence of these "binding" arrangements, there remains a great deal of uncertainty for both industry and government in relation to the availability of national cost share funding. Decision-making can be unwieldy owing to the number of relevant parties, as well as arguments around issues such as whether an incursion is eradicable.

There is also significant scope for investigating further options for these bodies to assume responsibility for biosecurity preparedness, surveillance, response and recovery such as through expanded contributions from both government and industry.

CASE STUDY - ENHANCED ABATTOIR SURVEILLANCE IN SHEEP INDUSTRY – SOUTH AUSTRALIA

The South Australia Sheep Advisory Group (SASAG) was established in September 1998 under the *Livestock Act 1997* for the purpose of providing advice to the Minister for Agriculture, Food and Fisheries on the operation of this Act as it relates to: property registration; industry codes of practice (including welfare); vendor declarations; and relevant regulations for the sheep industry as appropriate.

The SASAG is also responsible for providing the Minister with advice on the use of the Sheep Industry Fund as set out in the Primary Industry Funding Schemes (Sheep Industry Fund) Regulations. The Sheep Industry Fund receives revenue through a \$0.35 per head transaction levy collected whenever 5 or more sheep are traded within SA for more than \$5 per head. Although collection of the levy is mandatory, sheep producers may claim a refund of the their previous year's

contributions. However, in this case the producer would not be entitled to any direct service or benefit from the fund for two years.

Revenue into the fund amounts to around \$2.2 million per annum and this is used to sponsor a number of industry programs. Given its role in providing advice to the Minister on the use of the fund, SASAG receives annual funding proposals from each program sponsored through the fund and also requests periodic, formal program reviews.

An example of one such industry program is the Enhanced Abattoir Surveillance program (EAS). It was established in 2007 following a pilot project in 2006 and is designed to complement National Sheep Health Monitoring Project (NSHMP) and is funded through the SA Sheep Industry Fund. Data is currently collected at Thomas Foods International (TFI) abattoirs (Murray Bridge and Lobethal), with negotiations currently taking place to commence operations at JBS Australia at Bordertown. Further, a system has recently been established to receive data from Victorian abattoirs where data is collected for the NSHMP.

The program refreshes the disease knowledge of existing abattoir inspectors and trains them to record their findings following carcass inspection for 21 endemic diseases/conditions of sheep. The data is then recorded within the abattoir and relayed electronically to Biosecurity SA for validation, analysis and notification of affected producers. A special purpose database has been built for this purpose. The abattoirs are provided with funds for one additional full time equivalent inspector per shift to cover the additional duties.

The primary aim of EAS is to provide regular, timely and useful abattoir feedback to producers that they would otherwise not have received. The underlying principle is the notion that sheep producers, when supplied with this information, are able to make management decisions that will help to maximise their production efficiency and reduce the incidence of conditions that are not obvious on-farm. This will result in less trimming / condemnation on the slaughter floor and thus increase profitability.

The EAS builds upon the NSHMP by adding additional conditions relevant to SA and special purpose data management and reporting systems. SA is currently the only State regularly reporting results back to individual producers.

A formal evaluation of the impact of this program has not been conducted to date. However, a recent program review revealed that abattoirs are supportive of the program owing to at least the perception that feedback to producers will result in reduced incidence of preventable conditions that result in excess trimming, particularly broken ribs, grass seeds, sheep measles, arthritis and pleurisy. Although largely anecdotal, inspectors claim to have noticed an improvement in some conditions in sheep lines coming from particular areas following EAS feedback. Generally, producers interviewed were appreciative of receiving EAS feedback.

Irrespective of whether the program ultimately proves to provide useful industry outcomes, it is a great example of shared responsibility because:

- Industry and government are sharing in both the funding and high level management decisions around the program.

- In particular, industry is actively reviewing the program on an ongoing basis to determine whether it represents good value for money. They have the power to decide to allocate the funds to a more worthwhile initiative.
- The program builds on existing systems to enhance biosecurity, and helps maintain a focus on the passive general surveillance system, which is the primary mechanism for detecting new incursions of exotic pests and diseases.
- The program helps to maintain SA's overall biosecurity capacity and capability by funding some PIRSA staff, who can be deployed during other biosecurity incidents.

CONSIDERATIONS FOR IMPLEMENTATION

Shared responsibility is not something that can be imposed. It will require a change in approach from all parties. Government must commit to establishing the appropriate governance arrangements to facilitate shared responsibility. A resounding message from stakeholders is that if government expects them to pay, they must also have a say.

Industry and community groups will also need to more broadly consider the ways in which they can contribute to Queensland's biosecurity system. This may entail mechanisms for industry to make direct financial contributions to biosecurity outcomes. It is encouraging to see a trend in this direction, both from the Co-Investment model proposal and in the way in which government and the banana industry are working together to manage the incursion of Panama Tropical Race 4. Thought will also need to be given to reducing reliance on punitive approaches to encourage behaviour change.

Shared responsibility and shared governance are not easy concepts to implement, and the Panel anticipates a challenging implementation process ahead which will require a level of goodwill and commitment to the ultimate goal of more effective biosecurity.

CHAPTER 5. QUEENSLAND BIOSECURITY – A FUTURE MODEL

OVERVIEW

Biosecurity is becoming increasingly complex, and for a range of reasons, Queensland's risk profile will continue to leave the economy, the environment and the community exposed. Put simply, there are three key factors at the heart of the future challenges:

1. Potential threats from pests and diseases to agricultural industries, the environment and human health are increasing.
2. There is increasing pressure on resources particularly on government investment in all jurisdictions and an increasingly competitive business environment.
3. The knowledge base required to solve future problems is increasingly diverse and complex and requires a strong network of relationships to access it.

To meet these challenges, Queensland needs to ensure its biosecurity capability is sufficient. The Panel have defined what a future Queensland Biosecurity System would look like to achieve 'world's best practice'. The future model and guiding principles detailed in this chapter articulate a strategic direction for biosecurity in Queensland over the coming years. Importantly these focus on practically achieving shared responsibility through shared governance. This chapter also provides the Panel's analysis of the current and future role and responsibilities of Biosecurity Queensland.

RECOMMENDATION SUMMARY

1. *Build the framework for the future Queensland Biosecurity System*

- 1.1. Develop a revised biosecurity strategy and action plan and statement of shared responsibility signed off by key stakeholders within and outside government – this should clearly establish key performance indicators (KPIs), timeframes, resource commitments and responsibility for delivery.
- 1.2. Work with BQMAC to develop recommendations on options for governance arrangements, which embed shared decision-making and clearly articulate responsibilities and obligations.
- 1.3. Further explore potential approaches for an industry biosecurity fund or funds.
- 1.4. Implement a project based resource allocation framework for biosecurity activities.

2. *Refocus Biosecurity Queensland*

- 2.1. Transition non-biosecurity responsibilities to management in a separate organisational unit.

A FUTURE QUEENSLAND BIOSECURITY SYSTEM

DEFINING 'BEST PRACTICE' BIOSECURITY

The Panel considered how to define 'world's best practice' under its terms of reference. The term 'world's best practice' is a dynamic concept that demands a process of continual improvement and innovation and requires participants in the biosecurity system to look outside for new ideas. In considering a future Queensland biosecurity system, the panel took into account the importance of the innovation and improvement process rather than attempting to create a standard that would become out of date almost immediately.

However, the Panel did identify many examples of best practice approaches to specific activities, functions and frameworks within the biosecurity system and we used these to inform the capability assessment covered later in this section. These case studies are documented in boxes throughout the report.

In the absence of an accepted definition of 'world's best practice', the Panel asked how an ideal future Queensland biosecurity system would look if it was to meet the challenges and expectations identified in the preceding section. Our views were also informed by public submissions, meetings with key stakeholders and discussion with BQMAC.

"We also suggest that rather than trying to plug gaps, the Panel looks at the kind of system that would truly deliver world's best practice and determine a pathway to achieve that."

Growcom

A number of submissions encouraged the Panel to focus on how Queensland's biosecurity system could best adapt to the challenges of tomorrow.

CHARACTERISTICS OF A FUTURE BEST PRACTICE QUEENSLAND BIOSECURITY SYSTEM

The characteristics of an ideal future Queensland Biosecurity System that addresses the challenges facing the biosecurity system are set out below:

SHARED LEADERSHIP AND OWNERSHIP

- Broad agreement and understanding of what biosecurity is and why it is important.
- Widespread community recognition, champions across all sectors and bipartisan political support
- Shared and widely understood objectives and decision-making processes
- Appropriate forums for shared decision-making
- Community confidence and trust in the capacity of all parties to contribute to system outcomes

EFFECTIVE GOVERNANCE AND ACCOUNTABILITY ARRANGEMENTS

- Measurable, readily understood and regularly reported outcomes in terms of:
 - Protection of environmental values

- Human health and amenity
- Economic impact at enterprise, industry and state levels
- Optimal investment and best portfolio of investments across activities and threats
- Cost effective biosecurity measures
- Rigour in risk analysis and management, a shared understanding of risk beyond basic compliance measures
- Transparent, effective, efficient and proportionate governance and decision making processes
- Clear and understood delineation of responsibility/accountability
- Integrity of underpinning science
- Focus on outcomes rather than inputs, process and activities

INNOVATION AND ADAPTABILITY

- A culture of innovation supported by optimal management of risk
- Relationships with partners within and outside the Queensland Biosecurity System which foster identification of problems and development of innovative solutions
- Harnesses new technologies to achieve continual improvement in performance and cost effectiveness
- Fit for purpose approaches which balance collaboration and coordination with simplicity and clear accountability
- Flexibility to respond to a dynamic environment and deliver a "fast and light" approach
- Access to people with the right expertise, competence and experience for the purpose

SYSTEM INSIGHT AND UNDERSTANDING - FOCUSED ACTIVITIES

- Influences national priorities and leverages national resources to achieve the best for Queensland and Australia
- A business and human/natural system orientation as well as a risk/threat orientation
- Intelligence gathering and analysis
- Understanding of the differing business, physical and human environments which are threatened by pests and diseases translating to balanced outcomes – biosecurity vs impact on business
- Agreed approach to prioritisation, (whether or not to respond) and adequate resources for high priority activities
- Risk mitigation strategies in place at all levels (e.g., on farm biosecurity plans, regional NRM plans)
- Leverages government policy opportunities and specialist resources which may reside outside DAF/Biosecurity Queensland (e.g. disaster response capability, conditions on planning approvals)
- Leverages signals in the marketing chain
- Social media and community networks supporting an active biosecurity aware culture and complementing formal response structures

DELIVERY EFFECTIVENESS

- Human, physical and system capacity to undertake activities aimed at achieving prevention, preparedness, surveillance, incident and emergency response and endemic threat management effectively and efficiently across terrestrial and aquatic natural, farmed and built environments
- Plans and policies to manage key biosecurity risks
- Culture and processes that ensure timely risk assessments and decision making
- Systems and processes to prevent new incursions or expansion of priority threats
- Surveillance to identify presence of threats when they can most effectively be treated, to meet the demands of market access and maintain profitability
- Tailored diagnostic tools and skills for routine monitoring and emergency response
- An "emergency response ready" core capability supported by appropriate operational policies, systems, processes and training, supplemented by access to surge capacity, deployable with rapid pre-deployment training ("just in time" training packages)
- Pre-arranged access to physical and human resources required in an emergency response
- Systems and processes to minimise impact of an outbreak on business and the community, as well as to assist recovery from a response
- An appropriate client service culture
- Information systems which support analysis of biosecurity risk and impacts as well as effective business management
- Risk based legislation and appropriate enforcement capacity
- Effective and efficient biosecurity measures and traceability systems
- Best practice communications approaches utilising technology and channels most appropriate to the circumstances

TOOLS TO DELIVER A FUTURE QUEENSLAND BIOSECURITY SYSTEM

BIOSECURITY STRATEGY

The Panel received many positive comments about the quality and value of the 2009-2014 Queensland Biosecurity Strategy. The Strategy is seen as a platform for development of a new approach which embeds the concept of a general biosecurity obligation, established under the *Biosecurity Act 2014*. Some other comments are provided below, which reflect discussions with BQMAC.

- The strategy should be a brief document.
- The strategy should frame good biosecurity as an economic driver, not a cost to the community.
- The strategy should reflect Government's move from being a provider to an enabler.
- The strategy should give appropriate weight to agriculture, environment, amenity and human health and the interrelationships between them.
- The strategy should recognise Queensland's unique climatic and geographic conditions.
- Where possible the strategy should set expectations for business and provide a clear pathway for transition to a new biosecurity system.
- An unmanaged transition is problematic - a high level strategy document is required, as well as a road map for transition.

- A tag or slogan to achieve industry and public buy in and understanding of the benefits biosecurity is supported as a way of improving the profile of biosecurity in Queensland, for example New Zealand’s “100 per cent pure” slogan. The slogan should encapsulate a positive framing of biosecurity.
- The Strategy should link to the Queensland Food and Fibre Policy.
- Innovation should be championed.
- The document should be written in a way that is not bureaucratic.
- There should be a strategy and an action plan with a list of actions and outcomes – something measurable to determine whether or not the strategy was successful.

The Panel also identified a number of shortcomings and missed opportunities that could be addressed through a better strategic and project planning framework.

Within DAF it appeared that there is little proactive planning, resourcing and evaluation of proactive initiatives to achieve biosecurity outcomes between Biosecurity Queensland and other divisions of the department. Similarly, the Panel did not see evidence that Biosecurity Queensland resources are being actively applied to projects or initiatives that may be driven by other parts of the department. While there is a strong commitment from other divisions to providing personnel to support response needs, concerns were raised that the process for co-opting staff can be ad hoc and could achieve better results if other divisions were to be made accountable for identifying and deploying required resources in a more planned and targeted way. This would also minimise impacts on business continuity.

Concerns were also raised about the lack of coordination between public sector agencies, creating gaps and missed opportunities. The Panel identified examples of initiatives led by other agencies which could easily have been designed to achieve biosecurity outcomes, without a significant increase in resources.

Proactive measurement and reporting on progress with implementation of the previous strategy also appeared limited.

PARTNERSHIP

As outlined in Chapter 2, a number of strong themes also emerged from the consultation around:

- Lack of clarity of roles and responsibilities
- The need for accountability and transparency of investments and actions delivered under the strategy
- The importance of a clear statement of purpose and shared objectives
- The importance of evaluation and feedback
- The need to be engaging hearts as well as minds.

A particular feature of successful partnership arrangements is appropriate governance arrangements, as described in Chapter 4. This was highlighted throughout the consultation process. Comments were made that "shared responsibility" means different things to different people and needs to be made concrete through commitment to real initiatives that can exemplify a new way of operating.

Views expressed in submissions included:

“You cannot share responsibility if you are given no input into decision making processes around risk.”

Growcom

“To meaningfully involve the community and to create genuine partnerships, early involvement in processes and decision-making coupled with improved transparency is essential.”

Invasive Species Council and Queensland Conservation Council

“While Biosecurity Queensland does currently coordinate with other DAF business units, the roles appear to be established on an ad hoc basis. As a result, there is inconsistency in whether and how Biosecurity Queensland engages with other business groups across a range of activities”

DAF Staff Member

FUNDING

The Panel considered best practice examples of industry initiatives adding value to the biosecurity system using the mechanism of an industry biosecurity fund. The case study on the South Australian Enhanced Abattoir Surveillance scheme details one such example. The Panel identified considerable enthusiasm amongst industry stakeholders for a State level biosecurity fund, provided “those who pay have a say” and any such funding arrangement provides an enhancement to the effectiveness of the biosecurity system and not just a way of cost shifting from government to industry.

The Panel also noted that an example of such an arrangement has already commenced at a regional level with the Weed and Pest Animal Co-investment approach described in Chapter 4.

There are a variety of potential models for industry contributions – a successful option is likely to:

- Provide benefits to industry as a collective, and to individual contributors
- Empower industry to self-determine biosecurity priorities and mitigate the risks to their industry not covered by existing arrangements
- Enable industry to raise funds to implement desired programs or value add to existing programs
- Assist industry to self-fund the response to pests and diseases, or other industry priorities, for example active surveillance to support a particular market access situation – consistent with general shifts in biosecurity funding
- Agree pre-existing arrangements in place for endemic disease responses;
- Provide Queensland specific funding (as opposed to existing national schemes) and focus on Queensland industry issues
- Have low administrative costs

- Act as a low cost form of ‘insurance’ to contributors, in the event that a particular property might become affected by pests or diseases contributions from across industry can be used to assist the individual contributor
- Allow those who make a business decision not to contribute to the fund to ‘opt-out’.

In addition, the mechanism needs to accommodate the different needs and circumstances of Queensland industry organisations. It may be for example, that arrangements for smaller industries are more effectively and efficiently collected at a national level.³⁷

APPLICABILITY OF A BIOSECURITY LEVY TO QUEENSLAND INDUSTRIES

By way of example, Queensland’s cattle industry is one of Queensland’s most significant industries. In the 2011/12 financial year, Queensland producers engaged in 4.54 million cattle transactions. 2011 also saw 4.73 million NLIS tags sold, offering a significantly higher levy base than both Western Australia and South Australia. Based on a very modest levy, Queensland fund could expect to raise \$2 million per annum (assumes a \$0.50c levy and owners of 0.5 million cattle opting out – although the experience in SA is that very few opt out.)

Such a fund may provide a range of benefits to cattle producers that could include:

- Testing and compensation for important endemic diseases (BJD, EBL)
- Training (biosecurity, welfare, nutrition and health)
- Enhanced pest and disease surveillance
- Targeted R&D for Queensland specific industry biosecurity issues.

Any such scheme is likely to have administration and compliance challenges, but with political and industry support is likely to provide a very tangible opportunity for genuine shared responsibility for biosecurity. One of the reviewers has witnessed first-hand the system in SA and very high levels of industry ownership were evident.

³⁷ This presumes that the administrative cost of the system may exceed the funds raised, rendering the fund mechanism unviable.

MODEL FOR FUTURE QUEENSLAND BIOSECURITY SYSTEM

To provide the government and the community with a tool to communicate the future orientation of the Queensland Biosecurity System, the Panel developed Figure 3. This diagram outlines the successive characteristics of the future system, and identifies potential partners for Biosecurity Queensland at each level. Potential partners are indicative only, and many may have roles to play at multiple levels.

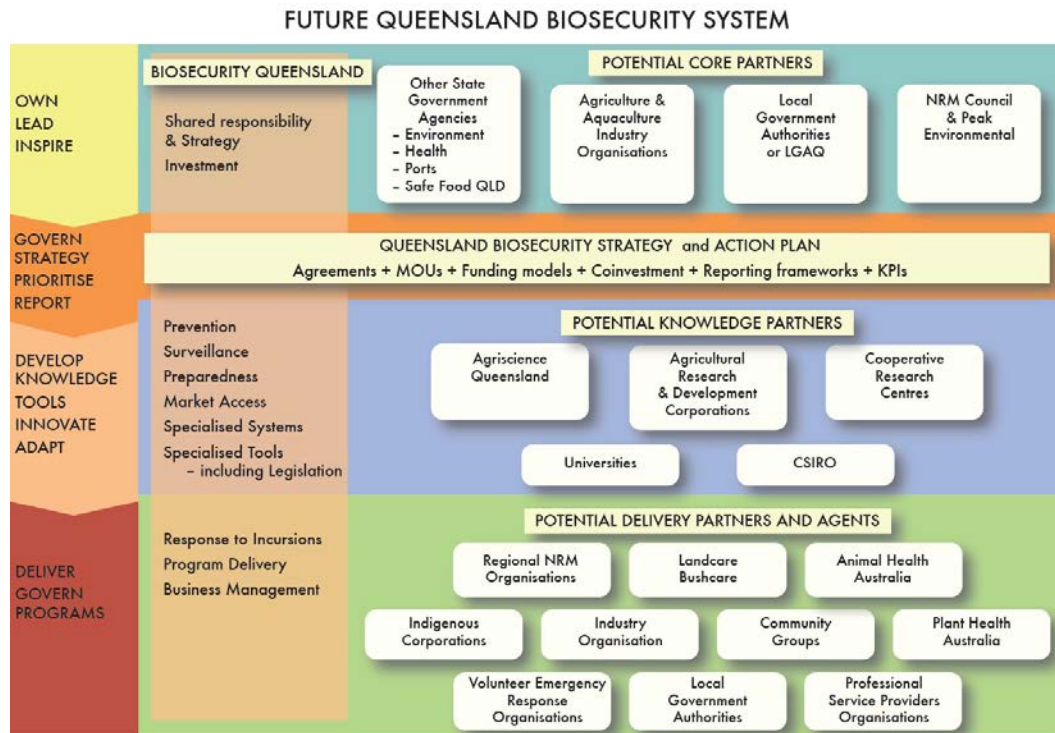


Figure 3: Model of the Future Queensland Biosecurity System

CONCLUSIONS

The Panel's view is that there are four complementary tools to deliver an effective future Queensland Biosecurity System.

Biosecurity Strategy and Action Plan

A biosecurity strategy and action plan co-authored by the potential core partners identified in Figure 3 is essential to creating a cooperative environment for shared responsibility and a true partnership for achieving biosecurity outcomes. Developing the action plan with partners presents an opportunity to better represent the priorities of the collective biosecurity system and will form the first step in government's transition as a system enabler. By participating in the development of the action plan, partners are able to exercise more influence over the policy process and to shape a plan, which gives industry and the community the best chance to manage future biosecurity challenges. A strategy and action plan will also drive commitment and accountability.

The plan would identify purpose, objectives, targets, performance indicators, resource commitments and who in the system is responsible for delivery.

Formal Governance Framework

An action plan is a start, but a formal arrangement is required within the Queensland Biosecurity System to facilitate a partnership approach. Formalising a governance framework provides an opportunity to embed shared responsibility into the future design. It also gives partners real and tangible capacity to lead the system and to be accountable for their leadership. Importantly it provides an enduring structure to preserve the institutional memory of the biosecurity system.

A number of advisory groups have been established for biosecurity purposes. These groups could form important building blocks of a governance framework for the system, although their purpose would need to be re-examined in light of the arrangements developed for the system as a whole.

The governance framework would identify roles and responsibilities, leadership and decision-making arrangements.

Industry Funds

As was identified in Chapter 4, the contributions of system participants are an essential prerequisite to shared governance. The Queensland Biosecurity System would benefit from mechanisms to raise and hold industry funds to facilitate co-investment in action plan initiatives. These will enable industry to more effectively influence the priorities of the biosecurity system, create a more equal partnership and might include better leveraging of national institutions and levy collection mechanisms.

The Panel was advised that there has been some investigation of the concept of a biosecurity fund in the context of the current bovine Johne's disease program and that there are some legal and practical considerations to be resolved. Nonetheless, the Panel's view is that other jurisdictions have been able to develop effective mechanisms and that the opportunity needs to be pursued.

Allocation Framework

Funding arrangements within the department also need to be configured to support a shared responsibility and shared decision-making model. Implementation of a resource allocation decision tool and commissioning function will be required to support an effective shared investment decision-making framework. In practice, this will involve transition to a model for the proper allocation of resources to projects rather than operating units and the flexible redeployment of people to high priority projects.

This will require a project based resource allocation framework within Biosecurity Queensland.

RECOMMENDATIONS

1. *Build the framework for the future Queensland Biosecurity System*

- 1.1. Develop a revised biosecurity strategy and action plan and statement of shared responsibility signed off by key stakeholders within and outside government – this should clearly establish key performance indicators (KPIs), timeframes, resource commitments and responsibility for delivery.
- 1.2. Work with BQMAC to develop recommendations on options for governance arrangements, which embed shared decision-making and clearly articulate responsibilities and obligations.
- 1.3. Further explore potential approaches for an industry biosecurity fund or funds.
- 1.4. Implement a project based resource allocation framework for biosecurity activities.

CURRENT ROLES AND RESPONSIBILITIES OF BIOSECURITY QUEENSLAND

Scope: 1 (a) *Appropriate roles and responsibilities of Biosecurity Queensland*
1 (b) *Quantify the role of Biosecurity Queensland*
Deliverable: *The report is to state the roles and responsibilities of Biosecurity Queensland*

CURRENT ROLES AND RESPONSIBILITY OF BIOSECURITY QUEENSLAND

Biosecurity Queensland aims to mitigate the risks and impacts of pests and diseases of animals and plants, and weeds. This supports government's objective of managing biosecurity risks to the economy, the environment, social amenity and human health. This service area also upholds standards for animal welfare and agricultural chemical use.

To undertake this work, Biosecurity Queensland is divided into six programs:

- Animal Biosecurity and Welfare
- Plant biosecurity and Product Integrity
- Invasive Plants and Animals
- Strategy and Legislation
- Biosecurity Queensland Control Centre
- Biosecurity Service Coordination.

The following analysis is based on information provided to the Panel and represents a "snapshot".

On May 29 2015, Biosecurity Queensland had 494 staff (not including all contractors) of whom 329 were categorised as Agricultural Technicians, Agricultural Scientists, Noxious Weeds and Pest Inspectors or Veterinarians. Of this figure, 74 per cent were permanent and 24 per cent temporary.

In 2014/15 Biosecurity Queensland received an initial consolidated revenue budget allocation of \$49,146,000. (This was supplemented during the financial year following detection of Panama Disease Tropical Race 4.)

Of this:

- \$18,641,160 was allocated to general policy and operational activities
- \$7,126,284 was allocated to science
- \$18,912,564 was allocated to special programs with time limited funding
- \$4,465,392 was allocated to "non biosecurity" activities, including those identified below.

While Biosecurity Queensland is notionally the government service division responsible for the Government commitment to the Queensland Biosecurity System, it is important to note that Biosecurity Queensland has responsibility for many areas of activity which are not core to achieving biosecurity outcomes. These include:

- *Animal Care and Protection Act 2001*, which promotes the responsible care and use of animals. It places a legal duty of care on people in charge of animals to meet those animals' needs in an appropriate way;
- *Animal Management (Cats and Dogs) Act 2008*, which sets out the framework for effective cat and dog management in Queensland;
- *Agricultural Chemicals Distribution Control Act 1966* and *Chemical Usage (Agricultural and Veterinary) Control Act 1998*, which set out rules for the use of agricultural and veterinary chemicals in Queensland. These Acts are currently under national review;
- *Brands Act 1915*, which regulates the branding of livestock in Queensland.
- *Exhibited Animals Act 2015*, which is designed to meet community expectations for management of animal welfare, biosecurity and safety risks associated with exhibited animals while streamlining and simplifying the licensing of exhibitors;
- *Veterinary Surgeons Act 1936*, which regulates the veterinary profession;
- The hemp licensing scheme which regulates commercial growing of hemp;
- Production of tick fever vaccine, an important animal health service for the cattle industry, which currently resides in government due to market failure.

There are also some more minor areas of activity that have marginal biosecurity relevance, for example dip testing and spray drift investigations.

Inclusion of these areas of activity within Biosecurity Queensland appears to be a consequence of a perceived alignment with Biosecurity Queensland's predominantly scientific and regulatory skills base and culture.

Conversely, there are many activities, which are currently undertaken within the Department of Agriculture and Fisheries but outside Biosecurity Queensland that achieve biosecurity outcomes. These include:

- surveillance, particularly diagnostic testing, for horticulture and broad acre cropping
- regional coordination, including administrative support
- policy and legislative support
- Customer Service Centre (call centre).

The estimated consolidated revenue contribution for these activities in 2014/15 was \$1.3m. In addition, more than \$500,000 of staff time was contributed by staff from Agriculture and Agri-Science Queensland in 2014/15 to the current response to Panama Disease, Tropical

Race 4. These figures are likely to be a significant underestimate as available data does not include corporate support, or other areas, such as communications.

PANEL OBSERVATIONS AND FEEDBACK

The Panel considered the current role of Biosecurity Queensland as the agency with principal responsibility for the Queensland Biosecurity System. The Panel's observations are that:

- Biosecurity Queensland is primarily focused on regulatory administration, operations and program delivery.
- The current policy role is primarily focused on technical and operational policy development and review, with a heavy emphasis on national policy imperatives. Special projects are established to review legislation as required.
- The current planning approach is predominantly operational, with others outside Biosecurity Queensland being approached to provide resources or technical assistance.
- Biosecurity Queensland's relationship with partners in the biosecurity system is predominantly built on communication and engagement on their specific program responsibilities, or consultation to seek input on policy or legislative matters.
- The current role and responsibility of Biosecurity Queensland within the Department of Agriculture and Fisheries is not fully aligned to delivery of biosecurity outcomes, as a consequence of having responsibility for non-biosecurity functions and not having responsibility for some biosecurity functions undertaken elsewhere in the department. The non-biosecurity functions are not high priority in terms of the "core" needs of a Queensland Biosecurity System.
- The current role and responsibilities appear to be the result of incremental change built on previous operational responsibilities of historical functional units.
- The Biosecurity Leadership Team's stated intention to move Biosecurity Queensland towards becoming a leader and enabler is the right direction but has not been implemented yet.
- There needs to be clear agreement and understanding regarding Biosecurity Queensland's leadership/enabler roles and operational responsibilities and accepted protocols for meeting customer service expectations without losing focus on priority activities.

"Roles, responsibilities and obligations may have been defined and understood by state and federal agencies, but everybody else is in the dark."

Community Member

"The prime responsibility of the Queensland Department of Agriculture and Fisheries needs to be the prevention, suppression and eradication of pests and diseases"

Queensland Farmers' Federation

FUTURE ROLES AND RESPONSIBILITIES OF BIOSECURITY QUEENSLAND

To meet the needs of the future, the roles and responsibilities of Biosecurity Queensland should be defined in the context of the characteristics of a best practice future Queensland Biosecurity System and the directions outlined earlier in this report and set by the *Biosecurity Act 2014*.

- Lead the Queensland Government's contribution to the Queensland Biosecurity System.
- Partner with other organisations within and outside Government to plan, prioritise and deliver biosecurity outcomes.
- Build common understanding of the objectives of the Queensland Biosecurity System.
- Build trust and confidence in the integrity of the System and its capacity to deliver.
- Work with partners to develop governance and accountability arrangements, which are transparent, deliver decision-making processes underpinned by evidence and provide confidence that resources are being used wisely.
- Plan for future challenges and opportunities, identify roadblocks and harness innovation to solve problems.
- Build common understanding of the business, human and environmental value which the Queensland Biosecurity System seeks to protect, and the impact of threats and mitigation strategies.
- Deliver quality services through internal and external arrangements, with choice of delivery model based on considerations of value and risk.
- Establish a community and customer service culture.

In summary, in the future model, Biosecurity Queensland will become a leader and enabler for the Queensland Biosecurity System, with a range of policy levers to realise biosecurity outcomes. Biosecurity Queensland's current positioning primarily as a regulatory agency is not consistent with future needs or with the thrust of the *Biosecurity Act 2014*.

The organisational structure and allocation of responsibilities within Biosecurity Queensland needs to evolve to keep pace with fundamental shifts, such as the commencement of the new legislation, which resets the approach to managing biosecurity; and the vastly increased technical and policy breadth, which the organisation needs to span.

SNAPSHOT: TOWARDS A CUSTOMER FOCUSED CULTURE

While many people the Panel consulted as part of this review praised the service provided by Biosecurity Queensland, consultation also revealed some concerns. These related primarily to timeliness of service delivery, inappropriate regulatory tools, not accommodating the customers' business needs (for example, timing of activities) and poor communication style.

'Many of the services provided to plant industries by Biosecurity Queensland are 'fee for service' and as a paying consumer, industry is entitled to have these services provided in a timely and skilful manner based on community expectations for service delivery.'

Nursery and Garden Industry Queensland

A truly customer focused approach will need to be part of the future culture of Biosecurity Queensland. This will require attention to:

- Understanding the needs and perspectives of the people who come into contact with the organisation
- Redesigning the regulatory and non-regulatory tools used to achieve biosecurity outcomes
- Developing staff customer service skills and culture
- Looking at how services and activities can be redesigned to integrate with others across the department and across Government (for example, by building biosecurity objectives into programs designed for other purposes)
- Rewards and incentives to encourage excellence, as well as an active approach to identifying and addressing concerns
- Setting performance measures that set expectations and allow success to be tracked.

ROLES AND RESPONSIBILITIES DEFINED

In the context of the future System, Biosecurity Queensland should be responsible for the following functions:

SHARED RESPONSIBILITY AND STRATEGY

- Developing strategy and delivery plans to support the Queensland Biosecurity System
- Developing and delivering an innovation strategy
- Partnerships and formal governance arrangements to support the System
- Strategic engagement with the national biosecurity system and influencing national priorities
- Workforce skills needs analysis and workforce planning

INVESTMENT

- Risk analysis and evaluation
- Prioritisation and resource allocation
- Commissioning internal and external services, programs and advice, including setting standards for contract management and performance evaluation

PREVENTION AND SURVEILLANCE

- Identifying and evaluating biosecurity threats to agricultural systems, the environment and human amenity
- Designing prevention and surveillance programs
- Data gathering and analysis
- Scenario modelling
- Establishing diagnostic needs

PREPAREDNESS AND RESPONSE

- Developing response plans
- Establishing competency and training standards and needs for response personnel
- Leading response to incursions

PROGRAM DELIVERY

- Establishing project planning, management and evaluation standards and protocols
- Delivering priority biosecurity programs where appropriate for government, particularly prevention, surveillance and preparedness
- Managing and overseeing programs delivered wholly or partly by third parties
- Delivering reform and business improvement programs
- Essential regulatory compliance programs
- Investigation and enforcement (prosecutions)
- Evaluating and prioritising existing biosecurity threats to agricultural systems, the environment and human amenity
- Brokering partnerships for design, funding and delivery for high priority pests and diseases, including R&D

MARKET ACCESS

- Establishing market access protocols
- Supporting industry development initiatives

SPECIALISED SYSTEMS AND TOOLS

- Establishing system standards, for example for information, tracing and property registration
- Administering and reviewing the *Biosecurity Act 2014*, subordinate legislation and policies
- Developing assurance and certification schemes as alternatives to legislation
- Developing legislative compliance programs
- Developing and applying graduated regulatory sanctions

BUSINESS MANAGEMENT

- Managing a diagnostic laboratory service

The research and development functions currently, or potentially, undertaken by Biosecurity Queensland should be reviewed to determine whether synergies arising from housing the function within Biosecurity Queensland will enhance the delivery of biosecurity outcomes enough to warrant the additional cost and effort involved in managing an additional function well.

However, a number of activities currently conducted by Biosecurity Queensland are not consistent with its efforts to improve biosecurity outcomes as part of the biosecurity system. The Panel suggest that non-core activities may include:

- Administering legislation without a clear biosecurity purpose (e.g. *Animal Management (Cats and Dogs) Act 2008*)
- Managing the tick fever vaccine centre
- Brands registration
- Industrial hemp licencing.

CONCLUSIONS

“We need to be more than regulatory officers.”

DAF Staff Member

Biosecurity Queensland will need to continue to administer the legislative framework for Biosecurity. However, this should not be the sole “reason for being” of the organisation.

Service Review

In the short term, if the agency considers it desirable to continue to manage functions identified as outside core biosecurity within Biosecurity Queensland, they should be managed separately from core biosecurity functions to maintain clarity of focus on core biosecurity outcomes.

In the longer term, each function should be reviewed to determine its primary objective, whether it should be continued and which organisation is best placed to undertake it. For example, it was suggested to the Panel that local government may be better placed to undertake dog and cat management functions. Appropriate resourcing arrangements would need to be considered, to minimise the impacts on other priorities of both organisations.

RECOMMENDATION

2. Refocus Biosecurity Queensland

- 2.1. Transition non-biosecurity responsibilities to management in a separate organisational unit.

CHAPTER 6. CAPABILITIES OF BIOSECURITY QUEENSLAND

<i>Scope:</i>	<i>Assess Queensland's baseline Biosecurity capability to meet its current objectives and future challenges including: 2 (a) Leadership, strategy, policy and service delivery 2 (b) ICT systems and infrastructure 3 Benchmark the capability Queensland requires to achieve world's best practice given its state-wide service delivery requirements</i>
<i>Deliverable:</i>	<i>The report is to identify the gaps, priorities and timelines for investment</i>

OVERVIEW

The current objectives and future challenges faced by the Queensland Biosecurity System and Biosecurity Queensland are detailed in Chapter 5 and Chapter 3 respectively.

The Panel used two tools to define the capability which Biosecurity Queensland will need to contribute to the future best practice Queensland Biosecurity System. Both tools were designed to align to the characteristics of a future system, as detailed in Chapter 5, and to test organisation capability to deliver on Biosecurity Queensland's current and future roles, rather than to test individual capabilities and competencies.

In addition to applying the two capability tools, the Panel drew on its review of departmental documentation (such as staff surveys, reports from the department's human resources system, workforce plans), meetings with staff and interested people from outside the department to identify key capability gaps.

CONTEXT

Biosecurity Queensland operates within a complex system - as a division within the Department of Agriculture and Fisheries, an agency within the Queensland Government, a jurisdiction within a national system, and with extensive partnerships with organisations and groups outside government.

In keeping with other parts of the Department of Agriculture and Fisheries, ongoing pressure on consolidated revenue resources has resulted in a decline in the budget allocated to Biosecurity Queensland over the years since its establishment. In fact, the Panel was made aware that core staff numbers have been declining gradually since the early 1990s. More recently, targets set in 2012 saw a more significant reduction and the Panel was presented with information indicating a loss of 26 per cent of staff. This decrease was unevenly spread, with retention of 90 per cent of frontline positions.

Because of the variability in special projects funded on a time limited basis, seasonal variability of temporary employment and other fund sources available to employ staff it is difficult to draw quantitative conclusions about the decline in capacity over time. Similarly, the Panel was not able to quantify the impact on biosecurity capacity and capability of staff losses in other areas of the department. However, there has undoubtedly been a significant decline and the Panel received many comments about the departure of individuals with specialist expertise and loss of staff in regional areas.

Comments from external stakeholders raised concerns about delays in providing services or progressing initiatives, presumed to be a result of loss of staff. A view expressed by many stakeholders was that technical capability in the plant biosecurity area is inadequate and that the plant biosecurity area is under resourced relative to other areas. The Panel was advised that this concern is longstanding and predates recent reduction in staff numbers.

Staff comments included concerns about coping with increased workloads, difficulty in prioritising and that the current organisational structure will not assist the transition of the organisation to the new legislative model.

Because Biosecurity Queensland is embedded in the Department of Agriculture and Fisheries and the national system, the Panel needed to consider capability needs within the broader context of skills, supporting systems and physical facilities available within the department (and its partner universities), broader government and the national system. The Panel noted the work, which has been done in recent years at a national level to catalogue specialist skills and services required for biosecurity, on the basis that no single jurisdiction can or should maintain the breadth of expertise needed to cater for all biosecurity threats.

ESTABLISHING CAPABILITY AND CAPABILITY GAPS

Gaps were identified through formal tools to assess general organisational capability and specific biosecurity capability, augmented by comments received through internal and external consultation processes. The focus of the processes used was to identify capability gaps in the context of future needs, although capacity to deal with current needs was also considered. The process and capability assessments are discussed below.

Importantly, capability was assessed at an organisational, not an individual, level. In other words, the tools asked questions about what the organisation should be capable of doing in the context of its specific role as a biosecurity agency in a national system, and its general role as an effective government agency. Individual capabilities and competencies were not assessed. This process allowed the Panel to draw broad conclusions, which will need to be verified using tools such as skills audits.

The Panel also noted the review undertaken by Sapere in 2012, which assessed the skills needed to meet the biosecurity challenges of the future. In their review, Sapere noted that Biosecurity Queensland needed to develop skills in engagement (to build support and shared governance), partnership (to work with others to achieve biosecurity outcomes) and managing complexity and uncertainty (to adapt to future challenges).³⁸

There was significant consistency in issues identified through different processes, and with the earlier review, providing confidence in the conclusions contained within the report.

³⁸ Sapere (2012) *Biosecurity Queensland Workforce Refresh*, a report to the Department of Employment, Economic Development and Innovation, Brisbane.

AUSTRALIAN PUBLIC SERVICE (APS) BASED ORGANISATIONAL CAPABILITY FRAMEWORK

The first tool was based on the organisational capability framework developed by the Australian Public Service Commission.

A copy of the framework is included in Appendix 4.

The APS based framework was applied via a survey of members of the Biosecurity Queensland leadership team, comprising all staff at senior officer level or in the senior executive service level.

Questions eliciting the most positive responses from survey participants (that is, where capability was seen as strong) were those relating to setting direction, motivation of people and collaboration.

Those eliciting the most negative responses (that is, where the biggest capability gaps were perceived) were those relating to:

- Performance management (rewarding good performance and tackling poor performance) and alignment of performance objectives to the strategic priorities of the organisation
- Succession planning
- Outcome focused strategy - describing success and evolving the strategy to meet changing circumstances
- High quality, timely and well-understood performance information supported by analytical capability to allow the organisation to track and manage performance risk across the delivery system.

NEBRA BASED CAPABILITY FRAMEWORK

The capability assessment for specific capabilities was developed for this review by combining the National Environmental Biosecurity Response Agreement (NEBRA) Normal Commitments capability framework with the FMD capability framework used during 2014, plus adding some additional elements. The assessment approach was simplified as much as possible. The assessment tool generally deals with the “what” the system should be delivering or achieving in biosecurity and not so much the “how” this should be achieved. It is organised according to the biosecurity spectrum of prevention, surveillance, preparedness, response, recovery and ongoing management, plus supporting systems. The framework is consistent with the National Emergency Management Capability Assessment Tool (NEM-CAT), a concurrent project lead in Queensland by the Public Service Business Agency.

A copy of the framework is attached as Appendix 5.

The NEBRA based framework was applied in a workshop group assessment format. The assessment tool describes 35 broad outcomes necessary to manage biosecurity within 8 key performance areas. Each outcome has a number of associated descriptors to assist in assessing performance. Five workshop groups representing the three main biosecurity programs, management and service delivery were asked to assess current and desired performance on a scale of 1 to 4, as well as provide comments on performance as appropriate.

The capability and capacity assessment conducted through the workshop was one element of the overall Biosecurity Capability Review. It primarily provided a base-line assessment of DAF's current capability and was a broader assessment than of just Biosecurity Queensland.

Significant capability gaps were identified through the workshop process in each of the following areas (a detailed summary can be found in Appendix 6):

- Strategic planning and policy assessment
- System support and oversight
- Communications and engagement
- Prevention
- Surveillance and diagnostics
- Preparedness for response
- Response capacity
- Recovery
- Ongoing management.

While a range of issues were identified, these were generally consistent with the issues raised by stakeholders and discussed throughout this report. The most important issue was response capacity, both the impact of frequent responses on ongoing business, as well as how to effectively resource a very large response. A suggested strategy to address this important issue is discussed later in the report.

In addition, workshop participants participated in a warm-up exercise where the question was asked - if you could invest an additional \$500,000 per annum where would you put it? The following responses should not be regarded as a comprehensive list of investment priorities but they give a good indication of the views of managers within Biosecurity Queensland (note – a constraint was that there was to be no investment in additional staff).

- Local government system investment, for example training to build capability and capacity
- Social media intelligence - tap into existing networks
- Update / refresh technology for improvement in productivity
- Surveillance incentives, for example paying for samples
- Align investment with specific industry priorities, targeted at system capability, for example consultants and facilitators
- Contractors to build improvements in systems, for example plant health certification
- Quality systems for laboratories
- R&D – influence the grants system
- Aid in Torres Strait and Pacific Islands to reduce biosecurity risk
- Open data system (that can be used by external stakeholders)
- Targeted surveillance and intelligence
- Professional development
- Media campaigns

FOCUS QUESTIONS SURVEY

The consultation processes used by the Panel are documented in Chapter 2 of this report. In answering focus questions, many submitters commented on organisational capability, either in a positive way, or by pointing out capability gaps.

“Preparedness is a significant gap; additional resources could be directed to improve on-farm biosecurity and incursion prevention, as well as Biosecurity Queensland’s preparedness for emergency responses.”

DAF Staff Member

“More and more limited to essential capability and less in many areas including R&D and economic analysis which could improve biosecurity processes and effectiveness over time.”

Community Member

“Leaders are too busy ‘doing’ to have time to demonstrate leadership and operate in a strategic environment where relationships can be built and proactivity is the focus.”

DAF Staff Member

“We are starting to take risk analysis and evaluation more seriously, but we still have a long way to go. Lots of things are done on anecdotal evidence or ‘feelings’ rather than hard data that the effort put into a practice or situation is worth the effort.”

DAF Staff Member

“The boundaries between management of plant, animal and invasive biosecurity risks are artificial and hampering effective delivery. It hampers the sharing of expertise and experience.”

DAF Staff Member

“There are significant opportunities for parties within government agencies, universities and industry groups to build system capacity.”

DAF Staff Member

STAKEHOLDER DISCUSSIONS AND PANEL OBSERVATIONS

The Panel also conducted detailed discussions with key stakeholders around various aspects of Queensland’s biosecurity system.

Some areas of concern identified in relation to capability were:

Response

- Overall lack of capacity and declining capability
- “Surge capacity” for response (generic emergency roles) and technical capability
- Managing temporary work forces and rapid training for responses

- Excessive impact of responses on the ability to maintain other priority biosecurity activities

Prioritisation and risk

- Risk pathways for new environmental threats - birds, marine pests, ants
- Insufficiently pro-active approach to environmental biosecurity
- Intelligence, epidemiology, analysis and strategy development
- Biosecurity risk and risk management strategies, including the determination of risk, consequence measures and scenario modelling.
- Marine and aquatic biosecurity
- Investment decision making practice – too much reliance on historical approaches and not enough rigour and evidence
- Difficulty reconciling long term, strategic objectives with immediate issues driven Priorities, particularly where this is viewed as conflict between bureaucratic and political objectives.
- Neither internal budget allocation processes, nor national cost sharing arrangements support good decision making.

Surveillance and reporting

- Lack of capacity in diagnostic plant pathology, entomology, taxonomy biosecurity in forests,
- Lack of attention to prevention and surveillance, particularly early detection

Innovation

- Influencing ongoing R&D investment to leverage investment through the Invasive Animals and Plant Biosecurity Cooperative Research Centres.
- Not effectively leveraging know how in other parts of the department or industry to better utilise supply chains to drive behavioural change
- Lack of explicit and strategic focus on innovation and opportunities

Program delivery

- Limited use of management information
- Uneven project management capability – particularly in an ambiguous and unpredictable environment – a need for more adaptive management approaches, staged implementation, and formal project wind up
- Planning, prioritisation and delivery – a tendency to take on more than they can deliver, not allowing for inevitable (albeit unpredictable) events, limited resource planning outside a response context

Systems

- Not enough customer focus
- Slow to respond to customer requests
- Quality management systems are variable at best.

There is significant consistency in issues identified through each of the above processes; this provides confidence in the conclusions contained within this report.

OVERVIEW OF CAPABILITY GAPS

The outputs of the processes described in the preceding section have been synthesised and analysed to produce an assessment of capability gaps. A detailed analysis is included in Appendix 6.

ORGANISATION CAPABILITY

In the Panel's judgement, primarily based on the Australian Public Service Organisational Capability framework, key areas for improvement in organisational capability are:

- Setting leadership direction in the context of the Queensland Biosecurity System
- Succession planning (formal)
- Performance management
- Individual work plan alignment to strategic priorities
- Strategic planning, review, monitoring and evaluation
- Clarity of benefits articulation
- Prioritisation and trade-offs
- Working effectively within a political system
- Evidence and analysis to inform strategy
- Evaluation and measurement of outcomes
- Understanding of cost-effectiveness
- Rigour in risk analysis
- Building common ownership
- Developing innovation strategy, including culture, people capacity, enabling systems and evaluative feedback loops
- Building innovation partnerships
- Prioritisation and trade-offs
- Decision making in risk and uncertainty
- Financial risk management and cost driver analysis
- Establishing roles and responsibilities of delivery agents and partners
- Management of effectiveness of delivery agents
- Performance information and analytical capability.

The Panel suggests that the following approaches, if implemented, will collectively address key organisational capability areas:

- Leadership development as part of a formal workforce development plan.
- Build on the findings of this report and the existing Biosecurity Queensland and Department of Agriculture and Fisheries workforce development plan to undertake a skills audit and develop a formal succession plan.
- Invest in development of a revamped Biosecurity strategy and action plan with KPIs including cascading priorities down to the level of individual work plans.
- Invest in initiatives to improve risk analysis, investment decision making, resource allocation and business and financial risk management.

- Invest in an initiative to develop and implement an innovation strategy.
- Establish an internal investment, resource allocation and evaluation framework and commissioning function.
- Develop skills in management of third party delivery and other areas of relative weakness as part of the workforce development plan.
- Undertake a project to develop appropriate management reports, which better inform performance management as well as investment decision making.

BIOSECURITY SPECIFIC CAPABILITY

The key areas for improvement, as well as suggested remedies identified through this process are:

- Strategic policy development, risk based decision-making and stakeholder engagement. Better risk analysis will help ensure that biosecurity investment is directed into the areas of highest impact. Better strategic policy development processes, combined with better stakeholder engagement, are required to steer a course to make the desired changes, particularly in areas requiring divestment. These improvements should be made through some strategic staff appointments, as well as adjustments to internal processes.
- Better stakeholder engagement will be part of the broader evolution of a culture of shared responsibility within the Queensland Biosecurity System. However, in the short term there needs to be a greater emphasis on consistent stakeholder engagement processes across the organisation. A first step would be development of a communications and engagement plan, with a senior staff member assigned the responsibility to ensure it happens. Part of the plan needs to be a focus on internal communications so that engagement is embedded as a way of operating across the organisation and that all staff have access to consistent messaging.
- To better inform risk based decision making, there needs to be better processes for gathering, and particularly analysing, intelligence information. There is significant data within existing systems, but a lot of data that could be gathered relatively easily is not collected in any useable form. Further, there is no organised process for analysing data. Epidemiological skills within the Queensland Biosecurity System have also degraded, with virtually no high-level epidemiological analysis skills within Biosecurity Queensland. Establishment of a small but dedicated group to perform this function is required. A broader “virtual epidemiology / intelligence network” could support this. The latter would require coordination of appropriately skilled people across a range of organisations, particularly the university sector.
- To ensure better program implementation and system learning within Biosecurity Queensland, a more integrated system of strategic planning, operational planning, financial management, reporting and evaluation is required. This should be led by senior management, but may require some specialist support.
- There is a general recognition that there needs to be greater relative investment in prevention and surveillance (particularly early detection). While this will be guided by risk based decision making processes and pathway analysis, areas that require added attention currently include:
 - Greater emphasis on the importance of on-farm biosecurity practices, including ensuring that DAF staff “practice what they preach” when visiting farms;

- Better community and industry awareness of biosecurity, with an emphasis on the absolute imperative for early reporting;
- Increased focus on Queensland's northern border;
- Implementation of a marine biosecurity initiative;
- Improvements to the network of people who can conduct field investigations, for example private vets and horticultural consultants;
- Better coordination and data management for plant pest and disease diagnostics.
- There needs to be greater flexibility, but at the same time more consistency, in the approach to conducting responses. Greater flexibility should apply to the approach to small, medium and large responses, as well as the actual control strategies that are applied. Greater consistency should apply across responses of a similar size or nature. The suggested approach to achieving this consistency is establishment of a biosecurity response unit that has the responsibility to ensure training and systems are in place, as well as to manage response unit where possible or at least oversee the management of responses.
- A function of the biosecurity response unit should be to ensure that adequately trained and sufficient human resources are available for responses. A multi-pronged approach is required that includes an adequately resourced internal training program, ensuring people gain experience in real responses, engagement of external organisations that can supply personnel and “just in time” training processes.
- Market access protocols based on quality assurance principles could be more widely applied across biosecurity. However, resources to develop such systems are limited and some strategic investment in this area may be required.

CONCLUSIONS

Earlier chapters identified that the Queensland Biosecurity System lacks:

- A strategy and plan to encourage shared ownership and commitment to delivery
- Appropriate governance arrangements
- Appropriate funding arrangements.

The Panel concluded that these capability gaps in the System, reflect, in part, weaknesses in Biosecurity Queensland's capability to support the necessary changes.

The processes used by the Panel to assess capability identified many other opportunities for improvement as documented in this chapter. Few organisations are able to demonstrate high capability across all areas of performance so it is not surprising that weaknesses were identified in an organisation which has experienced significant change in resourcing levels at the same time as the need to respond to unexpected events in recent years.

“The cumulative effect of underinvestment in biosecurity over recent years, has been an erosion in our capacity to combat biosecurity threats in Queensland.”

Queensland Farmers' Federation

In summary, the Panel considered that the following weaknesses in capability are the most significant and the highest priority for improvement:

General organisational capability

- Investment prioritisation and evaluation
- Shared decision making and resource allocation
- Engagement and partnership building
- Resource planning, project management and third party delivery
- Innovation.

Specialist biosecurity capability

- Prevention
- Early detection (surveillance and reporting)
- Response consistency and flexibility
- Surge capacity for response - operational and specialist expertise
- Supporting information and other specialist systems.

Developing solutions to organisational capability gaps is rarely a linear process. Further, the Panel's terms of reference also asked for consideration of sustainable funding models and opportunities to enhance the system through leveraging. Following chapters make recommendations which, in many cases, are designed to meet multiple objectives drawn from the terms of reference including addressing the capability gaps identified above.

CHAPTER 7. FILLING CAPABILITY GAPS – REPRIORITISATION, ALTERNATIVE BUSINESS MODELS AND REORGANISATION

Deliverable: 2 Address opportunities for strategic shifts of existing capability/resources away from low risk or low return on investment activities

OVERVIEW

In considering the question of where targeted investment is required in Biosecurity Queensland's own capability and capacity to restore responses to world's best practice, and bearing in mind resource constraints, the Panel assessed a range of approaches, which could be taken by Biosecurity Queensland to increase capability and capacity within existing resources.

It is important to note that these approaches are contingent on making the investments recommended in Chapter 6; otherwise the Panel has established that the organisation does not have the capacity to implement them. The approaches fall into three broad categories:

- Reprioritisation, including ceasing some activities
- New business models, including undertaking some activities in new, more efficient ways and targeted cost recovery, particularly focusing on making the activity more efficient, or where there is a clear private good
- Reorganisation, organisational development and process improvements.

RECOMMENDATION SUMMARY

3. Review and reprioritise investment in biosecurity programs

- 3.1. Establish an investment function in Biosecurity Queensland with responsibility for:
 - a) Leading a systematic review of Biosecurity Queensland's investments;
 - b) Building risk and information analysis capability and improving investment decision making practice;
 - c) Developing and implementing an internal investment framework to drive explicit, risk based, consideration of resource allocation (commissioning function).
- 3.2. Undertake a systematic review of Biosecurity Queensland investments, using the principles outlined in this report, with a view to redirecting resources from lower risk/return to higher risk/return areas. This will need to be a multiyear project undertaken in the context of the new legislative environment - using steering processes (governance) with stakeholder representation.
- 3.3. Biosecurity Queensland, together with key stakeholders, should develop a strategy to transition government out of significant investment in managing established pests and diseases where there are clearly identifiable beneficiaries, toward prevention and surveillance activities.

4. Develop a Queensland biosecurity surveillance strategy

- 4.1. Develop a coherent surveillance strategy guided by risk management principles, pathway analysis, consequence measures and cost effectiveness.

5. Create incentives to report disease

- 5.1. Implement a multi-pronged approach to improving pest and disease reporting, primarily focused on education & awareness, creating incentives to report and removing disincentives, improving recording, analysis and intelligence systems and encouraging investment in reporting and feedback systems.

6. Dismantle red tape to improve flexibility for agricultural businesses

- 6.1. Undertake a systematic review of activities where a less regulatory and costly approach could be developed under the new legislative framework. Build in appropriate contribution (risk creator) mechanisms where the systematic review agrees there is a need for ongoing intervention.

7. Implement new approaches to build better support systems

- 7.1. Implement a full cost recovery policy for the tick fever centre and the veterinary surgeon's board with the resulting savings reinvested to support an enhanced passive surveillance system.
- 7.2. Review the current approach to the Property Identification Code register to implement a new system, which delivers enhanced benefits and a sustainable funding model.
- 7.3. Implement a new commercial, in-house business model for diagnostic services across Biosecurity Queensland and Agri-Science Queensland with a subsidy policy designed to meet surveillance outcomes.

2. Refocus Biosecurity Queensland

- 2.2. Develop an organisational design, which drives attention to the core functional areas identified and positions the organisation to transition to a system leader and enabler role.
- 2.3. Undertake a skills audit and develop a training and development plan with particular emphasis on:
 - a) Project management;
 - b) Use of business intelligence systems to inform business and risk management;
 - c) Financial management;
 - d) Engagement and partnership development.

8. Continue Investment in Flexible Specialist Systems

- 8.1. Lock in ongoing investment in the Biosecurity Information Management System (BIMS) and build in sufficient flexibility to the system and business processes to accommodate future opportunities such as greater participation by industry and the community in surveillance.

MOVING OUT OF LOW RISK AND LOW RETURN ACTIVITIES

The priorities for delivery of biosecurity services in Queensland have changed dramatically in recent decades. In the early days of biosecurity services, the priority was to control or eradicate endemic pests and diseases that threatened productivity. Now the emphasis is on significant or exotic pests and diseases that threaten trade, the environment or our way of life. This reflects the global biosecurity environment in which we now operate.

There is now general agreement that activities focussed on prevention and early detection of new incursions often have a much higher rate of return than those that focus on controlling established infestations. Allocating resources to prevent an incursion or to detect one early, often result in considerable savings in management and eradication or containment costs later.

“Prevention and preparedness are low priority and probably unachievable with current resources without a significant loss of service delivery.”

DAF Staff Member

However, it must also be recognised that those existing infestations present an immediate problem for many members of the public or landowners who are directly affected by them. Hence, there are often differing views between government and stakeholders regarding where scarce government funds should be best directed.

The focus is often on the immediate problem. Another dimension to this issue is who should be responsible for action, as well as who should pay. At the risk of making a simplistic over-generalisation, it is more in the interests of the affected stakeholder to invest in ongoing management of established pests than it is for government. Conversely, it makes more sense for government to invest in prevention and early detection.

There are examples where continued investment by government in ongoing management is justified. Generally, this occurs where there is a positive return on investment for society and direct beneficiaries are not directly identifiable. This is mainly in the area of environmental pests. In these cases there are significant public good aspects to having government involved, and without government the private market would undoubtedly underinvest in these activities.

CASE STUDY: CATTLE TICK MANAGEMENT IN QUEENSLAND

Cattle ticks are an endemic, economic pest of cattle. They can have significant impacts on cattle live-weight and milk production. They have also been linked to sickness and death in cattle. To assist producers to control or eradicate infestations and to facilitate the movement of stock from restricted properties, Biosecurity Queensland provides services to infected and at risk properties in the Queensland cattle tick free and control zones.

Biosecurity Queensland provides monitoring and surveillance for legislative compliance and provides a cattle tick inspection service to facilitate livestock movements between zones, principally through approved persons. Biosecurity Queensland provides training, monitoring and audit of these service providers. Other services provided include:

- An acaricide subsidy to impacted producers in the free and control zone
- Advice to producers on effective tick control, dips, acaricide management and acaricide resistance and facilitates the movement of stock under exemptions or less stringent forms of inspection and treatment where appropriate.

In the 2014-15 financial year \$895,000 was spent on the resourcing cattle tick management in Queensland. Approximately 12.5 FTEs are involved in delivering these services.

The Panel has observed that there are a number of areas where the level of investment by government in ongoing management of established pests and diseases is likely to be inappropriate. The most significant of these are cattle tick control and eradication and wild dog management. Heavy investment in these areas may be better invested in prevention and surveillance activities, with responsibility being transferred to industry where there is a will to continue. This position was supported by some industry groups.

“NGIQ would recommend Biosecurity Queensland – Plant Health move out of the areas where they currently have regulatory responsibility for crop specific endemic pests and diseases that are no longer under official eradication. As per most industries once a pest or disease is established and classified as endemic the transition to management eventually falls to the producer allowing the agency to focus on new or emerging threats.”

Nursery and Garden Industry Queensland

“Whilst we appreciate the allocation of \$12 million in the recent Queensland budget to the Panama TR4 response, a smaller quantum of investment at the prevention and preparedness end of the spectrum would have reduced the likelihood of this event and could prevent future expensive incursions.”

Growcom

The Panel proposes two key strategies to realise opportunities to move existing capability/resources away from low risk or low return activities.

The first strategy is the development of the new biosecurity strategy and action plan, under the leadership of core partners across government, industry and others who share biosecurity objectives. This approach should result in agreement on high priority activities and automatically divert resources away from those, which are lower priority.

The second strategy is the systematic review of investments using an appropriate information base and methodology. A portfolio approach to investment decision making is outlined in Chapter 4 of the report. Systematic application of the recommended prioritisation approaches should result in recalibration of investment over time to a more optimal level.

A key impediment to such a review is that the organisation currently lacks both the information systems, review and decision making discipline to underpin the systematic approach that is required. Attributes required were identified in Chapter 5 and are repeated here:

- The budget for biosecurity expenditure needs to be more readily available and clear, and more closely aligned with strategic priorities, once known. The performance and evaluation of budget expenditures should also be carefully monitored.
- Expenditures should be routinely subject to evaluation and review, to inform resource allocation and ensure cost-effectiveness.

- Biosecurity Queensland needs enhanced capacity in data capture and accessing, translating and implementing existing and on-going research on biosecurity and in particular how biosecurity resources should be allocated across threats and biosecurity measures.
- Where possible, Biosecurity Queensland should direct resources to biosecurity threats and activities with the highest rates of return. This will generally imply a larger emphasis on prevention and surveillance and this, in turn, will require enhanced capability in this part of the organisation.
- Even if quantitative measures are not available, or are only available for limited threats and biosecurity activities, Biosecurity Queensland needs to develop the culture and engagement skills required to enable funds to be directed to where returns are highest. This will entail a careful examination of low return activities to determine if they are truly needed or can be phased out over time.

It is important to recognise that the question of whether a threat is low risk and whether intervention generates low returns is separate from the question of who should pay. In the shared responsibility model of the future, all interested parties should have access to information and evidence to inform decisions about their respective investment.

An example is the current wild dog program, which was identified by some staff as an area warranting consideration as "low risk/low return". Anecdotally, it could be argued that the current investment does deliver returns, but that there is a misalignment between funder and beneficiary - that is, the tax payer is funding more than its fair share of the cost of the program.

“Wild dog control should not be a high priority for public investment. The program is primarily for the commercial benefit of sheep farmers and is likely to have detrimental impacts where it undermines the role of dingoes in suppressing meso-predators (feral foxes and cats)... Farmers should be encouraged to invest in guard dogs rather than the government investing public funds in fences and control.”

Invasive Species Council and Queensland Conversation Council

A further complexity is that the decision to provide enhanced funding emerged from the drought support policy arena, rather than biosecurity policy, although the two are linked. This highlights the value of a more integrated and holistic approach to biosecurity coordination.

CASE STUDY: WILD DOGS MANAGEMENT IN QUEENSLAND

Wild dogs are present in all areas of Queensland and have a significant impact on livestock, native species and can threaten human and domestic animal safety. In the sheep growing areas of central and south western Queensland their impact is compounded for farmers suffering the effects of drought.

Biosecurity Queensland officers provide leadership, technical advice, 1080 bait provision (to control the dogs), research and assist in co-ordination for wild dog management in Queensland. The department manages the 2500km Wild Dog Barrier Fence which is overseen by the Wild Dog Barrier Fence Panel, which includes representation from local governments. DAF's 2014-2015 budget for wild

dog management is around \$3 million, which includes \$2.2 million to maintain the Wild Dog Barrier Fence, research, policy and coordination.

Many landholders in central and south western regions of Queensland have erected dog proof fencing at single and multi-property scales (cluster fencing) to protect their livestock from wild dog predation and to mitigate the impact of kangaroos competing for pasture.

\$3.5 million in Australian Government support to drought affected areas has been allocated to the management of wild dogs, feral pigs and deer. A second tranche of funding totalling \$2.1 million is in the process of being allocated. Further discussions are being progressed for \$10 million in new funding, which will focus on fencing. The Queensland Government announced an additional \$5 million available for the management of wild dogs and feral cats. A subsidy is also available for 1080 bait.

Further, \$3.8 million in funding is available through the Department of Natural Resources and Mines for organised groups of landholders to construct cluster fences. To access this money, landholders need to form a group entity and contribute at least dollar for dollar to fence construction.

Biosecurity Queensland's current structure and legacy funding arrangements automatically preferentially resource some areas over others – which may be why forests, marine, and terrestrial environment are the poor cousins. There may be legitimate reasons to maintain the current relative commitments, however this would be enhanced by formal analysis and a portfolio allocation process.

An example of an area which should be reviewed by applying investment principles is the West Indian Drywood Termite (WIDT) Program. The greatest cost component of this program is associated with the treating of individual infested dwellings. Property owners bear none of this cost. The justification for this approach is that individual house owners won't be able to afford the cost and hence the program will fail. Past economic analyses have demonstrated that the ongoing benefit of the program outweighs the cost by a large margin over a 30-40 year time horizon. However, current investment prioritisation processes do not help decisions about whether this is the highest priority investment for an organisation and a system with many competing priorities. A further consideration is that a decision made now to reduce investment may well be an irreversible decision. That is, once the prevalence and/or distribution of WIDT exceeds a certain amount, effective control may never be possible, thus committing future generations to huge, ongoing control costs.

A further consideration is whether it would be more appropriate to establish a "standalone" compensation fund rather than assigning an annual budget to an activity of this kind, should it be determined that it should continue.

CASE STUDY: MANAGEMENT OF WEST INDIAN DRYWOOD TERMITE

West Indian Drywood termite is a serious pest of wood products associated with structures and affects most softwoods, hardwoods and can also affect timber composites (plywood and particle boards). The WIDT was discovered in Maryborough in 1966, with a control program beginning in 1973 which continues today.

Under the WIDT program, the government pays for fumigation treatment of the affected buildings and other infested timber items, compensation for business loss, and the costs of alternative accommodation during treatment. The payment of these costs is obligated under the *Diseases in Timber Act 1975*.

The government has borne the cost of the program for about 42 years with no cost recovery from building owners. The government's investment had been justified on the basis that a relatively small annual investment avoids significantly larger future costs resulting from the uncontrolled spread of WIDT.

In 2014-15, the WIDT program cost \$1.069 million for fumigation treatments. The total for potential compensation claims is not known at this stage, with an estimated \$109,100 in claims received to early 2015. The WIDT program generally costs between \$300,000 to \$500,000 annually for fumigation treatment and program maintenance. The 2014/15 expenses significantly exceeded this amount due to the high number of commercial buildings that needed to be fumigated.

Biosecurity Queensland normally funds the WIDT program out of core resources. However, in exceptional years when Biosecurity Queensland is unable to fund operational program costs and approved compensation claims, an application is made for a special Treasury allocation.

In the absence of an evidence-based analysis, the Panel identified some areas, for further examination in terms of efficiency or return on investment. These were:

- The Panama disease tropical race 4 response - the Panel queries whether there are lower cost options to the current intensive surveillance program that would have the same or similar risk profile.
- Cattle tick control and eradication - the Panel queries whether lower cost options are available to manage animal health and productivity risks associated with cattle tick infestation and market access risks, recognising that any solution needs to take account of significant investments made by private business under the existing policy.
- Surveillance - the Panel was provided with the 2014/15 Biosecurity Queensland budget figures which indicate an amount of \$8,139,667 allocated to surveillance from consolidated revenue, with offsetting revenue from other sources of \$636,679. These figures do not account for much of the resources for plant biosecurity surveillance, particularly diagnostics, which reside outside of Biosecurity Queensland. This forms a significant proportion of the organisation's budget and is at odds with feedback and the Panel's observations that the organisation lacks a coherent surveillance strategy and is underinvesting in prevention and surveillance relative to response. Further, there appears to be little analysis and value-added from the data and information generated by the surveillance system. There is an opportunity to undertake a review of the surveillance area, applying investment principles, to inform optimal investment across the surveillance portfolio.

CASE STUDY: PANAMA DISEASE TROPICAL RACE 4

The presence of the soil-borne fungus *Fusarium oxysporum* f. sp. *cubense*, the causative agent of Panama disease tropical race 4 (Panama TR4), on a Tully banana farm was detected on 3 March 2015. Further test results on samples taken from the infested Tully banana farm have confirmed an additional detection of Panama disease tropical race 4 on the property.

Despite just the one detection to date in Tully, it is possible the disease is widely spread in far north Queensland and it could be expected that further infected properties in Tully will be found.

Panama TR4 is considered the greatest threat to banana production worldwide due to its capacity to survive for decades in the soil; it is able to spread in soil, water and banana plant material and affects a wide range of banana varieties. It took just five years from the first detection of Panama TR4 in the Northern Territory in 1997 until their commercial banana industry was effectively destroyed. Banana plants infected with Panama TR4 rarely fruit, and when they do, the fruit are not marketable. The disease eventually results in plant death.

The threat from Panama TR4 to far north Queensland and the state's economy more broadly is enormous. The banana industry is the largest horticultural industry by value and area in Queensland, with a GVP for 2014–15 forecast to be \$538 million. The industry in Queensland represents 52 per cent of the GVP of fruit and 8 per cent GVP of total agricultural production. Queensland currently produces more than 90 per cent of Australia's banana crop.

The detection of Panama TR4 triggered consideration of a coordinated national response under the Emergency Plant Pest Response Deed (EPPRD). However, as the disease is considered technically unfeasible to eradicate, a nationally cost-shared response is not possible.

In the 2014-15 financial year, \$5.493 million was spent on the response, including DAF's in-kind contribution to support the response. Approximately 80 staff are involved in the response program, drawn from across DAF, other Queensland Government departments, other jurisdictions including the Australian, New South Wales, South Australia, Western Australia, and Australian Capital Territory governments.

The Queensland Government has committed \$9.8 million in the 2015-16 financial year to implement the response, with approximately \$1 million of this funding to be allocated to additional research and development priorities.

The current surveillance program utilises response staff to patrol and examine suspicious banana trees on-farm. An alternative may be to educate growers in identifying suspect plants, with program staff responding to collect samples from identified plants.

The Panel's view is that there are opportunities to reprioritise investment but that there is no "low hanging fruit". Apart from the challenge of establishing an appropriate information and evidence base, moving away from policy precedent, particularly where this has informed individual investment decisions, will require care and time.

“There is no significant resource that has not already been exploited. Biosecurity Queensland has been under significant resource constraint for at least five years.”

DAF Staff Member

“There is no fat left on a skeleton.”

FNQROC

The Panel recommends a systematic review of investment across Biosecurity Queensland, starting with those areas (such as surveillance) where there is currently the largest investment and, consequently, the greatest potential for reprioritisation or improvements in efficiency. It will be important to success that this process is carried out under the auspices of the new governance arrangements recommended to be implemented for the Queensland Biosecurity System.

CONCLUSIONS

Towards an Investment Function

An effective investment function within Biosecurity Queensland will be critical to the success of the Queensland Biosecurity System. The Panel’s characterisation of an investment function comprises analysis and decision making as well as commissioning high performance delivery. In this respect, it is similar to the commissioning function in organisations such as Queensland Health.

Risk analysis and evaluation

Understanding risk is at the core of a biosecurity organisation's capability. Making resource allocation decisions in this environment must be informed by an appreciation of risk in its broadest sense - including the risks of action as well as inaction, and risks in the organisational environment as well as biosecurity risks. Once established, a capability in risk analysis and evaluation can be applied to solving other problems within biosecurity, such as the design of compliance programs. Additional expert advice can also be commissioned with the benefit of a strong understanding of the discipline.

Prioritisation and resource allocation.

Decisions on prioritisation and resource allocation are necessarily complex in the biosecurity environment. A sound economic framework (such as a portfolio allocation approach) is necessary to develop information to underpin decisions. Appropriate tools are required, such as a baseline set of questions (for example, a decision tree) or modelling processes. While an internal capability is required, it is likely that additional expert advice will be needed to supplement internal analysis.

The complexity of the operating environment also requires decisions to take into account other factors. For example, they need to be made in the context of the strategic direction of the government of the day, with an understanding of views of relevant parties and the impact of different alternatives. While these factors can be elucidated through shared decision making processes, a level of capability in strategic analysis and decision making and a high level of judgement is required.

Commissioning

To support the needs of the future a new budgeting and funding model will be required. Funds allocated to Biosecurity Queensland will need to be pooled within the commissioning function and allocated to programs or projects, or to the provision of services. It is likely that some of these programs or services will be wholly delivered by people within Biosecurity Queensland or the department, some will be delivered in collaboration with others and some will be wholly outsourced. In each case, it will be necessary for the commissioning function to set standards and frameworks for performance management, appropriate to the circumstances.

The commissioning function may also need to operate as a Program Management Office to raise the level of program management skills and the quality of internally delivered programs.

RECOMMENDATIONS

3. Review and reprioritise investment in biosecurity programs

- 3.1. Establish an investment function in Biosecurity Queensland with responsibility for:
 - a) Leading a systematic review of Biosecurity Queensland's investments;
 - b) Building risk and information analysis capability and improving investment decision making practice;
 - c) Developing and implementing an internal investment framework to drive explicit, risk based, consideration of resource allocation (commissioning function).
- 3.2. Undertake a systematic review of Biosecurity Queensland investments, using the principles outlined in this report, with a view to redirecting resources from lower risk/return to higher risk/return areas. This will need to be a multiyear project undertaken in the context of the new legislative environment - using steering processes (governance) with stakeholder representation.
- 3.3. Biosecurity Queensland, together with key stakeholders, should develop a strategy to transition government out of significant investment in managing established pests and diseases where there are clearly identifiable beneficiaries, toward prevention and surveillance activities.

SNAPSHOT: SURVEILLANCE AND EARLY DETECTION

Within the biosecurity arena, surveillance is conducted for one or more reasons:

- Early detection of a new incursion of an invasive species. An important biosecurity principle is that the earlier an incident can be detected, the more readily it can be dealt with. This means either a much more cost effective response, or alternatively, if not

detected early, that eradication is not possible.

- Detection of new diseases or significant changes in the pattern of existing diseases. In recent decades the majority of newly discovered infectious diseases of humans have had an animal origin. Examples include BSE, SARS, Ebola virus, Hendra virus and Australian Bat Lyssavirus. This has raised the profile and importance of animal disease surveillance and led to the development of the One Health concept.
- To support trade in agricultural produce and to justify trade restrictions. Under the World Trade Organisation's Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), technical barriers to trade, for example enhanced quarantine controls, must be scientifically justifiable. Further, jurisdictions and industries are increasingly being required to demonstrate claims of pest and disease status for exported agricultural produce.
- To measure the progress of pest and disease eradication or control programs, including demonstration of freedom at the conclusion of a program.
- For informing policy decision-makers and prioritising actions in relation to biosecurity programs generally. This cannot occur without a good knowledge of the overall distribution and prevalence of invasive species within the jurisdiction.

The type of surveillance conducted depends on the context. For example, in the absence of an invasive species, surveillance primarily aims for early detection of an incursion, although there may also be trade reasons for ongoing demonstration of pest or disease absence. In the presence of an invasive species, surveillance is conducted to support biosecurity risk assessment, decision making and trade.

Surveillance is most frequently a continuous activity, and generally implies that some action will be taken following detection. Surveillance may be passive, such as recording of routine diagnostic tests or reporting of potentially invasive weed species by members of the public; or active, for example structured surveys, testing or trapping programs. The cost of surveillance varies considerably depending on context, methods used to collect and analyse data, and the prevalence of the target. It is generally higher when the target is at low prevalence. Hence, surveillance programs must always seek an appropriate balance between levels of investment and sensitivity of detection, and there is an ongoing challenge to develop more cost effective methodologies.

In the majority of cases, active surveillance is used to gather data for purposes such as supporting control / eradication programs or to support trade. An example of the former is structured, remote sensing for fire ant nests. An example of the latter is the national transmissible spongiform encephalopathy (TSE) surveillance program, which has an element of early detection, but is primarily aimed at demonstrating Australia's ongoing TSE freedom for trade purposes.

“Crowd sourcing of surveillance for plant pests and diseases and weeds is a real opportunity, but it needs to be evaluated carefully because it could take up a lot of resource for not much benefit.”

DAF Staff Member

Early detection generally requires an effective 'passive' (or general) surveillance system to be in place. There are also some examples where early detection needs to be enhanced

through targeted, active surveillance programs. An example is the current fruit fly trapping program around high risk ports. This aims to detect introduced, exotic fruit flies before they become broadly established.

OBSERVATIONS ON QUEENSLAND'S CURRENT SURVEILLANCE SYSTEM

There is evidence that the general surveillance system in Queensland (and probably nationally) is degrading. For example, there is a concern in all states over a general reduction in the number of diagnostic submissions processed through the veterinary laboratory system. Data supplied by the Queensland Veterinary Diagnostic Laboratory indicates a reduction in diagnostic submissions for cattle from 3822 processed in 1999-2000 to 1320 during 2014, roughly one third.

Unfortunately, similar data is not available from the plant biosecurity area, but there were certainly concerns raised during consultation.

There is also little data on which to assess the efficiency of surveillance in the invasive species area. However, there are examples that indicate cause for concern. For example, the major fire ant infestation in Brisbane had probably been present for 10 years before it was identified. This infestation remains the subject of a major response, while a number of other fire ant infestations that were detected much earlier have been eradicated.

Early detection of new pest and disease incursions is a fundamental priority for the biosecurity system. As discussed elsewhere, return on investment is generally much greater early in the invasion curve. Notwithstanding specific cases mentioned earlier where active surveillance is required to enhance early detection (again justified on a return on investment basis), the primary mechanism for early detection is passive or general surveillance.

Considering the normal purposes of active surveillance, recent experience is that these programs tend to be either partly or fully funded through stakeholder contributions. This principle is supported. However, implementation at the State level in Queensland (i.e. active surveillance for Queensland specific risks or priorities) is hampered by the lack of stakeholder funding mechanisms, such as an industry biosecurity levy. This issue is discussed further elsewhere in this report.

PRINCIPLES FOR A FUTURE SURVEILLANCE SYSTEM

The following suggested principles for Queensland's future surveillance system have built on those developed by Hugh Millar and Associates who developed a FMD Surveillance Strategy for Queensland during 2014, but broadened to apply across all invasive species.³⁹

Focus on risk

Surveillance should be enhanced in higher risk areas based on pathways for entry and spread. This requires good intelligence data and risk based, epidemiological analysis. The Panel notes that currently Queensland has limited capability in this area.

³⁹ Hugh Millar, Rob Rahaley and Martyn Jeggo (2014) *Protecting our Future: Queensland's Foot and Mouth Disease Surveillance Strategy*, a report to the Queensland Department of Agriculture, Fisheries and Forestry, Brisbane.

Early detection

There should be a key focus on the absolute importance of early detection. This could include measures that will:

- Energise the general surveillance pathway to enhance pest and disease investigation.
- Increase awareness and education of agricultural industry personnel and the general community.

Engage the private sector

- Ensure that the diagnostic laboratory network is performing effectively.
- Create and implement user-friendly systems for surveillance information capture, analysis and feedback.

Innovation

- Ensure that Queensland capitalises on new and emerging technologies where they can add value.
- Ensure sophisticated information management systems that encourage participation by industry and the public.
- Introduce data mining to enhance the surveillance system.

Strong partnerships

- Develop a government-industry partnership, through mechanisms such as a surveillance management group, that enables shared decision making and priority setting processes.

Clarity of roles and responsibilities

- Introduce shared funding by beneficiaries and risk creators, including a mechanism for Queensland agricultural industries to raise funds to support enhanced disease surveillance programs from which they will directly benefit.
- Ensure active engagement of private sector professionals within the surveillance system.
- Maximise all opportunities to leverage national program funding.
- Actively influence the planning for a National General Surveillance Program to best position Queensland to benefit from any new program and its associated national funding.

ENHANCING EARLY DETECTION

The remainder of this section focuses on the current general surveillance system and areas for improvement. An effective general surveillance system is dependent on a specific pathway or interdependent series of steps.

Awareness and recognition

The first step in detecting a new pest / disease outbreak is that someone (for example, farmers or members of the public) need to be aware of pest and disease issues, as well as recognise that something is different. Hence, there is an ongoing need for education and awareness across a broad range of biosecurity stakeholders and using a variety of tools.

This issue is picked up in various places in this report.

Reporting

As well as pest / disease recognition, people then need to know that they should report, as well as actually report. This requires awareness, knowledge and motivation or an incentive to report. It is also noted that for many diseases, notifiable provisions are included in legislation.

For exotic pests and diseases, the primary reason for establishing national compensation arrangements was to create an incentive for early reporting. These provisions ensure that those who report early receive adequate compensation for animals, plants or property destroyed. Similar provisions are embodied within both the Emergency Animal Disease Response Agreement (EADRA) and the Emergency Plant Pest Response Deed (EPPRD) and are also reflected in state legislation. In fact for some diseases (foot and mouth disease being the best example), those who report infection early are arguably better off than the remainder of the industry (they receive full compensation for having their animals destroyed, whereas others are left to care for animals that have little value while markets are closed).

Despite this, a particular issue raised by industry during consultation is the perception that farmers who report disease are worse off for doing this. Two recent examples have reinforced this perception:

- The 2015 response to Panama disease in bananas in North Queensland. This is a difficult disease to control, hence infected farms have limited options. Further, one farm was significantly affected by a “false positive” test result and finalisation of marketing protocols for the original infected property was protracted.
- The 2012-13 Bovine Johne’s disease response. During this response many properties in Queensland were quarantined, creating significant impediments to marketing their livestock. This was exacerbated by the application of rules developed for more intensive farming regions, such as strict quarantine provisions, combined with a lack of understanding of how this disease behaves in extensive grazing properties. Further, owing to the nature of this disease, infected properties had very limited options regarding how to get out of quarantine.

In both these cases compensation and owner reimbursement has been an issue, as they were not national cost shared responses and Queensland does not have a compensation scheme in place. However, it should be noted that irrespective of the existence of a compensation system, in most cases, such a system cannot compensate farmers for all the losses consequential to disease control actions. This issue is discussed further elsewhere in this report.

Each industry also has its own idiosyncrasies in terms of how the system works. For example intensive livestock industries like pig and poultry as well as some horticultural industries like tomatoes have good internal biosecurity and surveillance practices. However, there tends to be limited sharing of data with government or their industry, which could jeopardise early reporting of significant new outbreaks. Others like the sugar industry are well organised, with good reporting systems in place through their industry organisation.

Improving performance in this area will not be easy, as negative perceptions can persist for

some time. A multi-pronged approach is probably required that could include:

- Ongoing education and awareness around the absolute imperative to report early, particularly within the context of the overall impact on industry.
- Creating incentives to report, for example prizes and recognition.
- Industry engagement and leadership (fostering a culture of shared responsibility).
- Removing disincentives to report, for example:
 - Readily available information on who to report to. This could include Smart Phone Apps;
 - Schemes to improve access to professional – see below;
 - Clarification of compensation arrangements, particularly for diseases where there is no national cost sharing arrangement. Establishment of a state-based fund using an industry levy is one tool that may be used to resolve this issue. This is discussed in more detail elsewhere;
 - Processes for making timely, risk based decisions around issues such as marketing of farm products. In both the above cases it could be argued that more timely decisions on marketing pathways would have reduced the impact on affected farms;
 - A case management approach to individual affected farms, together with fostering a culture of good customer service.
- Passive reporting systems, for example abattoir surveillance, analysis of data collected for other purposes.
- Exploration of insurance schemes for consequential losses.
- Ongoing awareness raising with the general public, as well as establishment of community networks and groups such as “weed spotters”. This is particularly important for invasive plant species and pests & diseases of horticultural plants that are grown in home gardens.

Investigation

Closely associated with the reporting step is investigation of the case. For many pest and disease issues, professional, on-farm investigation is required as part of the process. For others, just sending in a sample, or even sending a photo may suffice, at least initially. If appropriate professionals or mechanisms for submission are not available and at a reasonable price, then the farmer may not even report the suspect case. This is largely why Queensland has implemented an animal and plant diagnostic system exempt from charge – to provide an incentive for early reporting and investigation of unusual disease occurrences

In animal biosecurity, coverage of the state by operatives who can fully investigate suspect emergency animal diseases is patchy and it is understood that similar issues exist within the plant biosecurity area, although good data is less readily available. Initiatives that could improve performance of the system are discussed elsewhere, but in summary include:

- Better engagement of professionals that work within industries, for example veterinarians and agronomists. This could include formal agreements or contracts to conduct significant investigations when government staff are not available. This issue is discussed further elsewhere in the report.
- Incentive schemes, for example subsidisation of testing or transport of samples.
- On-line processes to enable submission of photographs of suspect pests or conditions.
- Easily understood processes for submission of samples.

Diagnosis

In some cases a professional can make a diagnosis in the field. However, once an initial investigation is conducted, in most cases specimens need to be submitted to a laboratory for diagnosis or confirmation of a presumptive diagnosis. Submitters and regulators need to have confidence in the diagnosis that is made.

There are significant differences in the diagnostic systems between the various discipline areas within biosecurity. These are discussed elsewhere in this report, including recommendations for improvement.

Recording and analysis

Full value is not made of the data generated by the current general surveillance system. As mentioned earlier, much data, particularly in plant biosecurity and invasive species is not recorded at all. Even within animal biosecurity where there is good recording of laboratory generated data, there is little recording of field data from either the private or public sector. Analysis of the available data to create information of use to the biosecurity system is also not a feature of the current system. There are three primary areas of improvement required:

- Laboratory recording systems across all laboratories, including the ability to aggregate data.
- Systems to capture field data. The current BIMS program provides an opportunity to make significant progress in this area. The current focus of this project is on internal processes. However, later expansion to include applications for use by external providers is strongly supported.
- A capability (including people) to analyse data generated by the surveillance system. This is essential for risk based decision making around surveillance (and other) priorities. This could either be an internal resource (for example epidemiologists), or a virtual network of people working in the field.

Feedback

Reporting and feedback to stakeholders of information generated through the surveillance system is the final loop in the chain and helps support the entire system. Good reporting will demonstrate the value of the system, maintain awareness and support good decision making within an environment of shared responsibility.

There are a number of good examples around Australia and internationally of this kind of reporting. Investment in this area is also considered important for Queensland and should be done in an integrated way across all areas of biosecurity.

Border surveillance

One further area worthy of discussion is border surveillance.

Surveillance at Australia's border for pests, diseases and things that may carry them is primarily a Commonwealth responsibility. However, in some areas there is collaboration with State operatives. The best example of this is the Northern Australia Quarantine Strategy (NAQS), which provides an early warning system for exotic pest, weed and disease detections across northern Australia and to help address unique biosecurity risks facing the

region. This system is risk pathway based, integrated across the various biosecurity disciplines and includes a high level of community engagement.

However, during consultation it became apparent that the level of collaboration between Biosecurity Queensland and NAQS is variable and that some attention should be paid to this area.

It is also noted that there are no State Government biosecurity staff north of Coen and that, given the inherent biosecurity risks presented by that area, consideration should be given to appropriate coverage arrangements.

The area of border surveillance that is least developed is marine biosecurity where vessels entering ports, particularly overseas vessels represent a serious risk of introducing pests to our marine ecosystems. This will be discussed elsewhere, but requires significant attention.

RECOMMENDATIONS

4. Develop a Queensland biosecurity surveillance strategy

- 4.1. Develop a coherent surveillance strategy guided by risk management principles, pathway analysis, consequence measures and cost effectiveness.

SNAPSHOT: INCREASING REPORTING BY MITIGATING INDUSTRY IMPACT

Two related issues associated with biosecurity responses were identified during consultation that impact significantly on industry, with flow on effects for the overall biosecurity system, that is impact mitigation. While a range of mitigation measures can be included in response arrangements to reduce the impacts on industry and affected parties, these will only be partially effective. This section explores a further three possible mitigation measures, including a possible insurance solution. The two issues are:

Lack of certainty regarding compensation arrangements.

Generally speaking, compensation arrangements for direct losses arising from a biosecurity response are only available when there are national cost sharing arrangements in place. Further, there may be no compensation available for destruction of infected / infested plants or animals.

“Growers will not report biosecurity incursions as they are terrified of being quarantined and losing their livelihood. There HAS to be compensation for growers who are quarantined so that growers understand they will be supported to report incursions.”

Australian Melon Association

Consequential losses

Irrespective of compensation arrangements, there are no statutory or cost sharing deed arrangements to compensate owners for losses consequential to a response, for example loss of income while marketing of products from a property is disrupted. In some cases, ex gratia payments have been made on a case by case basis, but this is by no means certain. Further, for some outbreaks, FMD being the most obvious example, the consequential losses apply to virtually an entire industry irrespective of whether an individual farm becomes infected. These losses arise from industry wide loss of access to export markets, which could continue for an extended period.

These two issues are of significant concern for industry in terms of overall industry and enterprise viability. However, for the biosecurity system, we have seen two recent incidents (Panama disease in bananas and Bovine Johne's disease in cattle), which have led to an undermining of confidence in response arrangements and perceived disincentives for producers to report disease. This has been reinforced during the consultation process - representatives of both industries suggested that many farmers are now disinclined to report disease; a result of anecdotal accounts of the problems and losses experienced by affected producers. This issue is a weakness of Queensland's biosecurity system, as early reporting and early detection is critical to efficient and effective biosecurity management. It should be noted that all other Australian states and territories grapple with this issue. Three complementary mitigation measures are discussed below.

RESPONSE STRATEGY AND RESPONSIVENESS

The response strategy chosen for a particular pest or disease, as well as the speed of the response directly affect the degree of consequential loss suffered by producers. There is often more than one strategy that will meet a particular biosecurity response outcome. Often the chosen strategy must strike a balance between disease control outcomes, cost of control measure and the impact on affected industries or farms. However, sometimes a cleverly designed strategy will meet all imperatives. A classic example of this was seen during the equine influenza eradication response of 2007 when in parts of NSW it was decided that the control measure being applied elsewhere, i.e. strict movement controls, was unworkable and created too much industry disruption. This led to the creation of the "Purple Zone" where movements were permitted freely within the area, but strictly controlled at the borders. This strategy was developed through innovative thinking and was highly successful.

This sort of thinking needs to be embedded in response arrangements. Tactics that can encourage these approaches include the "Team B" concept. 'Team B' means having a group of people (or groups of people to work on multiple problems) who have no operational role in the response so that they have time to observe what is going on, analyse the data and think about alternative strategies. It is essential that this team is off-line, reports at a high level, has credibility, has diversity of membership and has time to think.

Also important for impact mitigation is the responsiveness or timeliness of the response and response decisions. This includes areas such as timeliness of advice to industry and individuals, strategy development and on-farm protocols. The latter is particularly important in the way it affects farm viability. The Panel observed or heard of situations where response staff developed risk assessments to a very high standard, but the process took an extended period of time, with farms receiving no income during this process. The opinion of the Panel is that the process could have been divided into stages, with earlier decisions made around

some components that could have enabled early commencement of market access.

Response managers need to focus on the critical decisions that need to be made, when they should be made and the standard of evidence required to make a decision. During responses, decision makers will never have all of the information they desire, so a balance needs to be struck between responsiveness and making the most correct decision. This is acceptable provided there is appropriate documentation of decisions. It is often better to make a timely decision with incomplete information than leaving the decision until a later time, leading to unnecessary industry impacts.

BIOSECURITY FUND

During consultation, the concept of a biosecurity fund was a popular theme. Industry contributions to biosecurity are discussed in more detail in Chapter 4. An industry-contributed biosecurity fund would provide a platform for achieving shared responsibility for biosecurity risks and give industry greater control of how biosecurity resources are directed. It also has the potential to function as a safety net for producers affected by biosecurity emergencies where compensation is otherwise difficult to acquire or facilitate.

The establishment of industry collection mechanisms into a biosecurity fund would provide the certainty Queensland producers need to make the right decisions about their biosecurity arrangements, including addressing potential disincentives to report suspicious pests and diseases. It would provide assurance for compensation arising from direct losses, within the scope of an industry-led arrangement. It also has the potential to provide industry a mechanism to directly manage the uncertainty around consequential losses stemming from a biosecurity event. Taken together, the Panel believes the establishment of an industry biosecurity fund would go a significant way to addressing some of the gaps in the current Queensland Biosecurity System.

INSURANCE

Irrespective of compensation arrangements and responsiveness of response managers, there will normally be consequential losses that are not covered. These are minimal in many incidents, but can be devastating in others. As indicated earlier the worst-case scenario is foot-and-mouth disease where the majority of the beef industry could have little or no income for extended periods (for example 1-2 years).

Insurance has the potential to better manage the financial risk associated with production and other losses arising from biosecurity risks. The Panel acknowledges there are a number of challenges in developing an insurance market for biosecurity events. The scale of the potential market, potential extent of damages and cost of premiums all complicate market growth. However insurance products may address the fiscal uncertainty that may form a disincentive to report suspicious pests and diseases.

Preliminary discussions have been held with insurance brokers who indicated that an insurance package could be developed to cover some biosecurity-related situations – essentially income protection insurance. Some products are currently commercially available, although uptake is still in its early stages. During consultation, some industry groups indicated interest in the concept, but also indicated that government support may be required to establish such a scheme.

The Panel noted with interest the \$29.9 million set aside in the recent Agricultural Competitiveness White Paper for farm insurance advice and assessment grants. The intention appears to provide assistance to farmers in selecting an insurance product, and to encourage their uptake.

Although detailed consideration of insurance mechanisms is beyond the scope of this review, the Panel sees great potential in the development of an insurance market to help producers better manage the financial impact of risks, including biosecurity risks. This view is supported by a 2012 research paper by ABARES exploring options for insuring Australian agriculture. The report concluded that government may have a role in 'providing additional data or assisting in the development of new index-based insurance tools'.⁴⁰

RECOMMENDATIONS

5. *Create incentives to report disease*

- 5.1. Implement a multi-pronged approach to improving pest and disease reporting, primarily focused on education and awareness, creating incentives to report and removing disincentives, improving recording, analysis and intelligence systems and encouraging investment in reporting and feedback systems.

ALTERNATIVE BUSINESS MODELS FOR SOME ACTIVITIES

The Panel examined the business approach taken by Biosecurity Queensland for some activities, relative to those used in other jurisdictions. The Panel's view is that there are opportunities to reduce costs, increase effectiveness and supplement funds available for biosecurity outcomes in a number of areas.

There are opportunities to use the new legislation to develop approaches, which do away with the need to regulate, or significantly reduce the regulatory burden on business (for example, moving from plant certifications and inspections to market access protocols based on quality assurance principles). However, changes of this magnitude require an up-front investment to develop the necessary protocols and negotiate market agreements.

In some cases, alternative business models may provide either an opportunity to reduce costs of operation, or supplement revenue from non-government sources by moving to a fundamentally different model, or both (for example, by moving to a commercial model for diagnostic laboratory services, property identification code registration).

There are opportunities to implement full cost recovery for services which are purely for private benefit, or where cost recovery will bring improvements in efficiency, for example the operation of the tick fever centre, and the property identification code registration system. Such arrangements can incorporate explicit subsidies if a public benefit is considered to

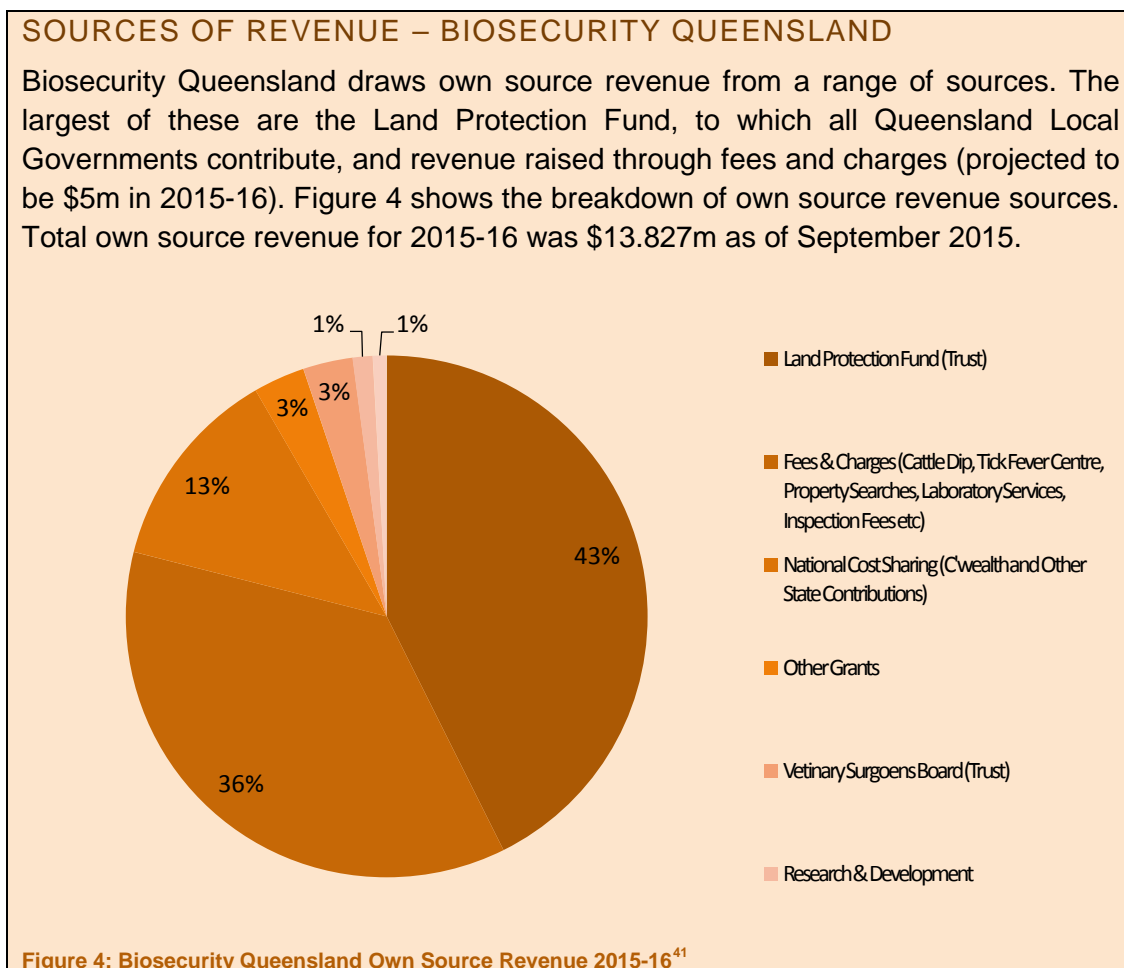
⁴⁰ Marco Hatt, Edwina Heyhoe and Linden Whittle (2012) *Options for Insuring Australian Agriculture*, ABARES, Canberra, 30.

exist, for example to encourage submission of samples to laboratories as part of a surveillance program.

“Industry is wary of a government failing to invest at appropriate levels in an agency that holds a fee for service and market access negotiating monopoly while expecting industry to contribute it’s ‘fair share’”

Nursery and Garden Industry Queensland

Figures provided by Biosecurity Queensland indicated that approximately 20 per cent of budgeted expenditure for the 14/15 financial year would come from "own source revenue" - that is, sources other than the annual consolidated revenue appropriation to the department. These other sources include fees for services (certification and accreditation) and specific grants (for example, to undertake sampling for the Transmissible Spongiform Encephalopathy Program, which provides proof that Australia does not have "mad cow disease" for trade purposes).



Total costs of providing particular services were not readily available, however indicative information suggests:

⁴¹ Note that this figure includes national cost-shared funding. However, this only includes funding that had been endorsed as of September 2015 – only for fire ants at Yarwun, and the national electric ant eradication program .

- Operating costs of the Tick Fever Centre were budgeted as \$3,330,500 for 2014-15, offset by revenue. However, the department subsidises the centre via corporate support and depreciation where revenue does not meet total annual expenditure.
- The operating costs of maintaining the animal health laboratory were budgeted as \$4,840,340 for 2014-15 (not including corporate support and depreciation) and was offset by \$922,355 in revenue, due to increased contractual arrangements during the year.
- The \$513,176 operating cost of running the veterinary surgeons board in 2014-15 (to cover board operations) was offset by \$463,110 in revenue from registration fees. Overhead costs (corporate support) were subsidised by the department. Similarly, at this point in time, the department also fully subsidised accommodation costs.
- Animal Health certification for export and interstate movement costs were budgeted at \$164,111 and there is no offsetting revenue.
- The administration of brands has been estimated at were budgeted at \$475,234.⁴²
- Administration of the Property Identification Code register costs \$716,157, offset by \$46,531 in fees for property searches.
- Testing of private cattle dips by the Chemical Residue Laboratory was estimated to cost \$48,505 in 2014-15 and there is no offsetting revenue.

COMMENTS ON COST RECOVERY

Cost recovery refers to any form of charge imposed on private sector entities for the provision of direct biosecurity services by government. The extent to which biosecurity activities are cost recovered can influence the amount of resources (including funding and skilled personnel) available for biosecurity, and the efficiency with which those resources are used. The rationale for a cost recovery scheme is outlined below, followed by a brief discussion of the factors that need to be considered in making cost recovery decisions, including decisions on alternatives to cost recovery.

REASONS FOR COST RECOVERY

There are equity and efficiency rationales for cost recovery. The two main equity rationales are: (1) the “beneficiary pays principle”, which is that those who benefit from the service should pay for it; and (2) the “risk creator pays principle” that those who create the risk that is mitigated by a specific government activity should pay for that activity. A principle efficiency rationale stems from the fact that individuals respond to price signals. A fee may ensure that the service actually gets resourced properly, thus providing a better service and the correct scale.

EFFICIENCY RATIONALES

One of the main efficiency rationales for cost recovery is that by requiring industry to pay for publicly provided biosecurity services, it increases industry’s incentive to invest in biosecurity

⁴² This assumes half the cost of a processing unit, the cost of the brands software system, and 0.5 FTE of an animal biosecurity inspector.

activities for which they have a cost or effectiveness advantage. This can, over time, lead to some biosecurity activities shifting from government to industry provision. If industry can develop or apply more cost-effective methods in providing those services, efficiency gains would be achieved.

Further efficiency gains could potentially be achieved if cost recovery frees up public funds for addressing market failures that would not adequately be addressed if left to the private sector. For example, if Biosecurity Queensland withdraws from funding activities to maintain a pest free area to protect Queensland fruit producers, those activities may be undertaken by industry if it is cost effective for them to do so. In contrast, fruit producers are unlikely to invest in activities to prevent or slow the spread of tropical environmental weeds that may not affect their industry for decades. If those weeds could cause large environmental losses in the meantime, programs to slow their spread could potentially provide large net benefits. This was demonstrated in the recent evaluation of the Four Tropical Weed Eradication Program.⁴³ Further support for reallocating public biosecurity resources from the provision of industry public goods to pure public goods is provided by recently developed empirical methods for estimating what would have happened without government intervention to control biological invasions. In a recent South African case study, it was estimated that without government-funded control of specific invasive tree species, the species would have spread on undeveloped public land but not on agricultural land.⁴⁴ It was concluded that the public containment program would probably have been more effective had it focused on public land and areas of native habitat instead of private land. This demonstrates one of the potential efficiency gains from requiring “industry public good” benefits of biosecurity programs to be funded by affected industries through either cost recovery programs or the transfer of private land biosecurity responsibilities to industry.

TYPES OF COST RECOVERY PROGRAMS AT NATIONAL AND STATE LEVELS

At the national level, cost recovery examples include cost recovery mechanisms for post border responses under the Emergency Plant Pest Response Deed (EPPRD) and Emergency Animal Disease Response Agreement (EADRA). Other cost recovery mechanisms exist for maintaining preparedness to respond rapidly to plant pest and animal disease incursions through the PHA and AHA programs and projects. Cost recovery for research and development occurs through the payment of levies to various rural development corporations (RDCs). State level cost recovery is relatively ad hoc compared with the national level programs and arrangements.

ALTERNATIVES TO COST RECOVERY

Requiring industry to bear an increased share of relevant biosecurity costs through cost recovery is not the only mechanism for increasing industry incentives to make efficiency-

⁴³ Ahmed Hafi, Daniel Spring, Luke Croft, Tom Kompas and Kristopher Morey, (2014), Cost-effectiveness of biosecurity response options to red imported fire ants in South East Queensland, ABARES, Department of Agriculture, Canberra.

⁴⁴ Mathew McConnachie, Brian van Wilgen, David Richardson, Paul Ferraro and Aurelia Forsyth (2015) “Estimating the effect of plantations on pine invasions in protected areas: a case study from South Africa” *Journal of Applied Ecology*, 52:1, 110-118.

enhancing biosecurity investments. It is also not the only mechanism for freeing up public funds for investing in projects with more substantial market failures and associated larger net benefits. A recent example is the transfer of management responsibilities for maintaining the Greater Sunraysia Pest Free Area in Victoria from Biosecurity Victoria to industry.

There are potential advantages in transferring responsibilities from government to industry rather than introducing cost recovery arrangements whilst retaining the current assignment of management responsibilities between government and industry. These advantages include:

- Reduced administrative costs of collecting fees and levies, and enforcing compliance.
 - These costs could potentially become substantial if numerous activities became cost recovered.
 - Although fee collection costs and compliance costs would still exist when responsibilities are transferred from government to industry, these costs may be reduced. One potential reason for this is that the industry body responsible for these activities is likely to have a narrower focus than that of a public biosecurity agency, and may thereby achieve cost savings arising from economies of specialisation.
- An improved alignment of incentives between industry and government/the broader community when industry not only bears the costs of biosecurity programs but also manages those programs, rather than splitting cost bearing and management between industry and government:
 - Under any assignment of management responsibilities and cost sharing between industry and government, incentives exist for managing biosecurity risks.
 - Incentives can conflict when roles and responsibilities for biosecurity are shared between government and industry.
 - These incentive conflicts can result in efficiency losses when industry and government do not have access to the same information. There are many relevant sources of information asymmetry. For example, industry often has greater information than government about its actions in controlling pests or reporting the discovery of pests. Government may have greater information than industry on its administrative costs and the scope to reduce those costs.
 - Whenever an information asymmetry exists, and when government and industry have conflicting incentives, opportunistic behaviour can occur which results in efficiency losses. Examples include:
 - Industry may not report pests if it believes it will not be fully compensated for losses arising when it complies with government imposed responses to pest detections.
 - Industry may be overcharged for the biosecurity services provided by government if those services are not efficiently provided. This concern can potentially be addressed by reassigning management responsibilities from government to industry to provide industry with greater control over the costs of the program. Alternatively, if no reassignment of responsibilities occurs, concerns about overcharging or excessive provision of biosecurity services can potentially be addressed by combining cost sharing arrangements with provisions to increase the accountability and transparency of cost-recovered activities. These

provisions can strengthen incentives to improve the efficiency of service provision, both in terms of the activities undertaken as part of the service provision and their scale.

PRACTICAL IMPLEMENTATION OF COST RECOVERY PROGRAMS

The first steps in identifying efficiency-enhancing opportunities for changed cost sharing arrangements would include initial assessments of:

- Current costs and charges within Biosecurity Queensland to determine the current extent of cost recovery for different activities.
- The role of government in undertaking those activities. This would consider, among other factors, the beneficiaries of those activities and the extent to which those benefits could potentially be captured by the private sector without government involvement. Consideration would also be given to the activities that give rise to the need for government intervention, and whether those activities are undertaken by a narrow industry group or the broader community. This assessment is referred to by NSW DPI as a “market failure test”.⁴⁵
- This initial assessment of current cost recovery arrangements and the market failure test would form the basis of a second stage of analysis to inform decisions on whether, for each activity, the proportion of costs that are recovered should be changed, or whether responsibilities for implementing the activity should be transferred to industry. In some circumstances, it may be most efficient for the activity to cease rather than be transferred to industry.

SNAPSHOT: PROPERTY REGISTRATION AND BRANDS

The National Livestock Identification System (NLIS) and its precursor livestock tracing systems (for example tail tags) have played an integral role in underpinning biosecurity programs in Australia, particularly in the cattle industry. A key part of this system and its success has been the allocation of Property Identification Codes (PICs) to livestock enterprises, as well as PIC-statuses and device-based statuses to properties and individual animals (respectively). These statuses generally relate to diseases or chemical residues.

The PIC is allocated to one or more land parcels that in aggregate form an agricultural enterprise under one ownership. Land parcel information is supplied by the state’s land administration agencies. Owners can have more than one PIC. However, theoretically each PIC should represent a separate epidemiological unit.

The use of these PIC and device-based statuses has grown substantially over the years and are now extensively relied upon to support real-time commercial decisions, provide buyer confidence in the integrity of livestock products, as well as traceability requirements for access to overseas markets for the animal and livestock industries. Allocation of a PIC is now mandatory for all livestock species, although not all industries use associated animal tracing devices attached to animals.

⁴⁵ Harley Smith and Stewart Webster (2010) “A new biosecurity investment decision framework to promote more efficient biosecurity policy” *Australian Agricultural and Resource Economics Society 2010 Conference*, February 2010.

To date there is no mandated traceability scheme for the plant industries linked to a PIC. However, the PIC database has been used to help manage plant industry biosecurity issues on an ad hoc basis.

Another key distinguishing feature of the current national arrangement is that there is a devolved PIC system administered and delivered by states and territories within national guidelines, but variations can and do occur from state to state. On the other hand, NLIS is mainly delivered through national industry arrangements (although in partnership with the states, and the underpinning legislation is still state/territory based), and with the individual animal identifiers themselves managed by the states and territories.

Funding arrangements are likewise different, with NLIS funding secured through user charges imposed on industry, while the PIC system is dependent on either fees charged for property registration or other forms of state revenue (this also varies from state to state).

As a consequence, the administration of property registration is subject to considerable funding pressure within some state and territory administrations owing to a tightening fiscal environment. This is certainly the case in Queensland, with the data in the current PIC registration system slowly degrading owing to inadequate resourcing. In some states there is an annual fee attached to registration and registration renewal, consistent with beneficiary pay principles.

There have been a number of attempts in the past in Queensland to introduce an annual or triennial property registration fee so that the system could be properly resourced (approximately \$50-100 per property per annum).

ISSUES FOR CONSIDERATION:

Funding maintenance of the current PIC register

- Consider who should fund maintenance of the PIC register – economic principles
- Introduction of a property registration fee. The Panel was advised the government has not made a final decision on new fees under the *Biosecurity Act 2014*. However, a consultation regulatory impact statement canvassed options for a registration fee. Further, that public comment has generally not been supportive.

Reducing cost and increasing functionality of the PIC system

- Using new technology, with an emphasis on automation and user updating, there may be significant opportunities to reduce the cost of registering properties. The current system is very labour intensive, mainly utilising regional agriculture department staff.
- Technology enhancements could also create a system that is integrated with other elements of the biosecurity system, thus promoting a more holistic approach to biosecurity. Linked elements could include on-farm biosecurity information, surveillance data relating to individual properties as well as district and regional summary data and pest and disease identification support.
- Consideration of whether or not there needs or should be a traceability system for the plant industries based around the PIC system (see separate paper) must occur.

Delivery options

- What is the most cost effective and efficient delivery approach?
- Whether the existing PIC system should be administered nationally is also under some consideration currently, although progress on this is likely to be slow. Preliminary discussions with some jurisdictions would suggest that there is no universal agreement that a national and expanded scope for PICs is required at this time. However, from a national industry perspective it appears that a national approach “makes sense” and ideally this should cover more commodities and industries.
- Given the uncertainty around development of a national system, there remains the question of which organisation is best placed to deliver the system at the state level. Options include: the system remaining with DAF, local government and industry organisations. There are advantages and disadvantages associated with each of these options. Probably more important is the need to resolve the cost recovery issue, as proper resourcing of the system should ensure its effectiveness, irrespective of the administering authority. It would be very difficult to transfer administration to another organisation without a user charging system in place.

BRANDS REGISTRATION

Livestock brands registration is a service that has been in place in Queensland since 1872. The system is fundamentally different to the property registration system in that individual brands are linked to ownership, rather than parcels of land. Branding systems apply to cattle, horses, sheep, goats and pigs, although application of a brand is only mandatory for cattle and pigs. Branding of an animal denotes ownership and registration of brands is mandatory to avoid duplication, that is, more than one person using the same brand. Significant issues include:

- Although branding of cattle remains mandatory, there are some sections of industry that would prefer a non-mandatory system so that hide damage can be minimised. However, industry tends to be divided on this issue.
- Industry has generally been supportive of maintaining a brands registration system.
- The Queensland Police Service are opposed to making branding non-mandatory as they consider brands to be a key tool in investigating and prosecuting stock stealing offences.
- Despite the industry investment in NLIS, this method of identification is not considered permanent enough to denote ownership.
- Although brands have been a useful tracing tool in the past, particularly during the tuberculosis eradication program, this has been largely replaced by NLIS. Hence, there is little biosecurity imperative to maintain the brands system.
- Given that the brands system is now retained almost entirely for the purposes of livestock ownership, it is essentially a “private good”. However, user charges do not cover the cost of maintaining the system. User charges only apply to new registrations or changes to registration. There is no fee for maintaining registration for extended periods of time.
- Given industry’s desire to maintain a brands registration system, it is argued that this should occur through an equitable user charging system. This would most likely require introduction of a periodic re-registration process and could be integrated with the property registration system for efficiency reasons.

SNAPSHOT: DIAGNOSIS AND DIAGNOSTIC LABORATORY SERVICES

In some cases a professional can make a diagnosis in the field. However, once an initial investigation is conducted, in most cases specimens need to be submitted to a laboratory for diagnosis or confirmation of a presumptive diagnosis.

Access to accurate and timely diagnosis of an agricultural pest or disease, or identification of an environmental pest or weed is fundamental to an effective biosecurity system and everybody needs to be confident in the diagnosis that is made.

MODELS FOR DIAGNOSTIC SERVICES

Australian jurisdictions differ in their approach to diagnostic services, varying from an outsourced model (for example, South Australia), an in house, commercial model (for example, this model is used in NSW) to an in-house non-commercial model (as is used in Queensland).

It is important to distinguish between the business model being used and the cost of the service to submitters. In other words, it is possible to offer a fully or partly subsidised service in any of the models.

The general features of the three models are described briefly below:

1. Outsourced model

- Government has a standing arrangement with a private sector or other (for example, a university or hospital) laboratory service.
- Diagnostic capacity required (which tests can be provided) is agreed.
- Government pays for, or subsidises, the cost of tests. This can be negotiated on a bulk or test by test basis.
- Government can require that the provider meets certain quality standards (e.g. National Association of Testing Authorities (NATA) accreditation) and maintains information systems that meet biosecurity needs.
- Government negotiates "surge capacity" arrangements to accommodate emergency response scenarios.

2. In house, commercial model

- Government owns or leases facilities and equipment, employs staff and undertakes testing.
- Government determines which tests it will maintain.
- Full costs of operation and individual test costs are known. Policies establish when full or partial subsidies may be provided for some tests, either by discounting at point of submission or directly subsidising submitters. There is proactive marketing of the service at commercial rates. There may be "value adding" services attached to test results and also charged on a commercial basis.
- Service standards are established and staff priorities are driven by service needs (which includes meeting internal organisation priorities, such as diagnosis of a potential exotic disease). Self-directed work is accommodated (for example, new test development) by government subsidising operations (for example, funding a portion of salary costs).

- Test revenue and any direct subsidies fund cost of operation, including equipment and facility maintenance and upgrade, quality system accreditation, training, and new test development.
- Government is responsible for implementing quality and information systems.
- Government is responsible for meeting surge capacity.

3. In house, non-commercial model

- Government owns or leases facilities and equipment, employs staff and undertakes testing.
- Government determines which tests it will maintain.
- Full costs of operation and individual test costs are not well established. Some tests are charged at commercial rate - this may or may not reflect true cost.
- Service standards may or may not be established. Staff priorities may be driven by service needs, or staff may have a primary role undertaking research or surveillance and undertake testing as a subsidiary activity.
- Government is responsible for implementing quality and information systems.
- Government is responsible for meeting surge capacity.

There are many factors to consider in resolving the best model for a jurisdiction and the optimal pathway to implementation. These include history, existing infrastructure and staff capacity and opportunities for synergistic uses of both staff and infrastructure (for example, the same piece of equipment can be used for both commercial testing and research purposes). The two basic factors to consider are economic (what will the model cost to operate) and risk (what risk does the model present to delivering biosecurity outcomes, and how could these risks be mitigated).

It is also worth noting that most jurisdictions run mixed models - for example, all rely on outsourcing to a greater or lesser extent.

Cursory comments on each of the models are set out below:

Outsourced model

- Economies of scale and private sector operating environment may result in a cheaper service.
- Requires excellent negotiation and contract management skills to achieve better financial outcomes.
- May be more difficult to integrate into biosecurity information systems.
- Presents risks that management may be unfamiliar with in a public sector environment, for example, commercial decision to close a laboratory or bankruptcy risking disruption to services.
- Expenditure and value received most transparent of the models, including the level of government subsidy of “free” or subsidised diagnostic testing.
- Specialist laboratory management expertise, facilities, equipment and quality systems not required within the government agency.
- There is generally no associated R&D role, particularly development of new diagnostics tests, resulting in a reliance on technology transfer from other institutions.
- There may be limited capability to conduct detailed or complex investigations into new or

emerging diseases.

- Government does not need to cater for surge capacity.

In house, commercial model

- Requires specialist laboratory management expertise, facilities, equipment and quality systems to be resourced within the government agency.
- Optimises use of specialised facilities, equipment and staff.
- Maintains the ability to provide 'free' testing to encourage passive surveillance and submission of samples that the government wants in order to achieve biosecurity outcomes.
- Establishes a service culture and a market for commercial services that generates a revenue stream to support activities.
- If the government funding component is placed under pressure then the laboratory may be driven too much by pressure to increase commercial earnings, thus defeating the purpose of having a government laboratory.
- Government needs to prepare for and meet needs for surge capacity, but higher base throughput helps with preparation and training.
- Can create conflict between commercial and other priorities if not carefully managed.
- Increased transparency of costs, expenditure and value for money.
- Direct subsidies can be used to retain capacity and capability to conduct detailed or complex investigations into new or emerging diseases, R&D and balance excessive focus on commercial earnings

In house, non-commercial model

- Less dependent on specialist laboratory management expertise.
- Avoids conflict between commercial and other priorities.
- More difficult to fund equipment and system upgrades and maintenance.
- Encourages submission of samples, but risks "quantity at the expense of quality" in terms of surveillance outcomes.
- Discourages understanding of costs and value.
- Encourages self-directed investigation.
- Capacity and capability to conduct detailed or complex investigations into new or emerging diseases is generally maintained.
- More freedom to conduct R&D, but can be ad hoc.

CURRENT QUEENSLAND ARRANGEMENTS

There are significant differences in the diagnostic systems between the various discipline areas within biosecurity:

Animal Biosecurity

In animal biosecurity there is a dedicated, NATA accredited, diagnostic laboratory at Coopers Plains operated by DAF (two other similar labs in Toowoomba and Townsville were closed in recent years). This laboratory is part of a national network that includes other state

based labs, as well as the Australian Animal Health Laboratory (AAHL) in Geelong. There are also private labs that conduct diagnostic work, although previous analyses have indicated limited value to the surveillance system (as a generalisation, private labs tend to concentrate on high throughput health testing).

Chemical Residues

The chemical residues lab at Coopers Plains is co-located with the animal biosecurity laboratory. In the past it had a very high throughput following the organochloride residue crisis in the 80s and 90s and worked on an almost entirely commercial basis. However, when this crisis abated and throughput declined, a more mixed funding model was adopted. It is currently the only government chemical residues laboratory in Australia.

Plant Biosecurity

Diagnostics in the plant biosecurity area works under a much more distributed and less formal system. The range of susceptible plant species and pests of these species means that it is not possible to assemble all the required technical disciplines within one laboratory. Also, historically there has not been the funding base to support purpose built diagnostic facilities. Biosecurity Queensland operates a single, small plant biosecurity diagnostic laboratory in Brisbane, but it has a relatively narrow range of technical capability, largely determined by staff availability rather than strategic need. The full range of plant biosecurity diagnostic capability relies on a distributed network of specialists in other Queensland laboratories, as well as people located interstate and internationally. Further, most of these people are research scientists and do not have plant biosecurity diagnostics as their primary purpose. Finally, there is little, if any formal quality assurance within the system, noting that formal NATA accreditation occurs at the individual test level and this may not be possible given the huge range of possible plant pests, compared with a narrower range of animal diseases of concern.

It is difficult to assess the overall effectiveness of the system for plant biosecurity as there is no central data repository or statistics on system performance.

There are issues for consideration to improve the plant biosecurity diagnostic system centre around system organisation and quality systems.

While the current distributed system is probably the only practical approach, more could be done to ensure an integrated approach. This could include a small resource to facilitate integration and better communications, and financial support or a system of payment for eligible diagnostic samples and better data management. It is noted that DAF has invested heavily in a state of the art laboratory information management system, but this has only been taken up by the animal biosecurity laboratory. While full NATA (or similar) accreditation is probably not realistic for the plant labs, implementation of a modern laboratory information system, together with some basic quality procedures would be a good start. This would enable much better data and intelligence to be generated out of the surveillance system, as well as support quality processes.

Invasive Plants and Animals

The surveillance system for invasive plants and animals is in many ways similar to the plant

biosecurity system. However, the Queensland Herbarium provides an excellent service for plant identification. For species such as invasive insects, there is a much more distributed system and often samples need to be sent overseas for identification.

It would appear that the primary area for improvement is the importance of early reporting, rather than diagnostics.

PANEL OBSERVATIONS

The Panel made a number of observations about the predominantly non-commercial arrangements that exist in Queensland:

- There is not a single diagnostic laboratory (or laboratory network) servicing biosecurity needs. The Panel was informed that there is a NATA accredited non-commercial animal diagnostic laboratory, a commercial plant diagnostic service and a non-commercial plant diagnostic service. This would appear to be inefficient, inconsistent and confusing to existing and potential clients.
- Progress has been made to develop effective quality and information management systems, but these have not been rolled out to all parts of the service.
- Arrangements whereby some diagnostic services are being provided by staff encompassed within joint venture partnerships with universities (for example, QAAFI) present some risks but also some opportunities for future access to diagnostic expertise.
- Given the relatively small quantum of revenue being received (at least in the animal diagnostic laboratory) it is likely that some opportunity exists to better utilise staff and facilities to deliver a commercial service that would provide a revenue source to offset costs, improve facilities and equipment and fund projects to develop better diagnostic techniques.
- The Panel was made aware of concerns about the quality and timeliness of services provided.

A further important consideration is that the Queensland Laboratory Diagnostic Service operates in the context of a national framework, one of whose objectives is "the efficient development and use of diagnostic capability and infrastructure to minimise duplication of effort across jurisdictions"

The National Biosecurity Committee has an existing *National Surveillance and Diagnostic Framework*.⁴⁶ This framework articulates 11 policy principles for a national surveillance and diagnostic system. *Annex A* identifies pathways to realise these goals.

Under the framework it is accepted that no jurisdiction can or should maintain diagnostic laboratory capability sufficient to meet all biosecurity needs. It is clear, therefore, that a starting point needs to be consideration of which diagnostic tests need to be available in Queensland and which can be accessed through other national facilities.

ISSUES RAISED IN CONSULTATION

The review received a variety of comments about diagnostic services. These included:

⁴⁶ National Biosecurity Committee (2014) *National Surveillance and Diagnostic Framework*, NBC, Canberra.

- Concern about the decision to close the Townsville animal diagnostic laboratory
- Concern about the substantial cost of transporting samples to the Brisbane animal diagnostic laboratory for free testing
- Concern about arrangements for afterhours submission
- Concern about access to expertise
- Concern about a "false positive" test for Panama Tropical Race 4 resulting in quarantine
- Concern about ongoing access to diagnostic capacity for the wide variety of tests required
- Opportunities identified to tap into capability in the Queensland Museum and Universities.

“Laboratory capacity and capability needs to be reassessed and whether stronger co-operative linkages and capacity and capability management through a national framework could provide a stronger testing and analysis service for Biosecurity functions across the nation.”

Queensland Dairy Organisation

“The decision to close the regional government laboratories in Townsville, Rockhampton and Toowoomba without a strategy to provide cost effective real time efficiency in transport to the central laboratory in Brisbane has had a major effect on coverage of biosecurity events in Queensland.”

Australian Veterinary Association Queensland

“The decommissioning of the Oonoonba Veterinary Laboratory in Townsville has resulted in current defences being distant, inadequate, lacking capacity and with dwindling producer rapport. Bovine Johne’s Disease in the northern cattle industry and the recent Panama TR4 bacteria outbreak on a Tully banana farm illustrate current inadequacies in disease detection, diagnosis and management in the north.”

James Cook University

It is the Panel's view that these concerns indicate that there is room for improvement in the current arrangements. On the particular issue of the Townsville animal diagnostic laboratory, the Panel was not presented with a compelling case for Biosecurity Queensland to open an additional laboratory in North Queensland. However, a diagnostic capability in the north would appear to be worthwhile. As an alternative, an outsourced arrangement with the veterinary laboratory at James Cook University (JCU) could be considered as part of a revised diagnostic laboratory strategy.

RECOMMENDATIONS

6. *Dismantle red tape to improve flexibility for agricultural businesses*

- 6.1. Undertake a systematic review of activities where a less regulatory and costly approach could be developed under the new legislative framework. Build in appropriate contribution (risk creator) mechanisms where the systematic review

agrees there is a need for ongoing intervention.

7. Implement new approaches to build better support systems

- 7.1. Implement a full cost recovery policy for the tick fever centre and the veterinary surgeon's board with the resulting savings reinvested to support an enhanced passive surveillance system.
- 7.2. Review the current approach to the Property Identification Code register to implement a new system, which delivers enhanced benefits and a sustainable funding model.
- 7.3. Implement a new commercial, in-house business model for diagnostic services across Biosecurity Queensland and Agri-Science Queensland with a subsidy policy designed to meet surveillance outcomes.

INTERNAL REORGANISATION, ORGANISATIONAL DEVELOPMENT AND PROCESS IMPROVEMENT

The Panel gave consideration to both the capability and capacity of Biosecurity Queensland. The Panel formed the view that Biosecurity Queensland does not have the capacity to implement the changes required to meet the needs of the future and address current needs. The Panel believes targeted investment is required to build both capacity and capability to allow the organisation to focus on implementing the reprioritisation and new business model approaches identified in the report.

There are a number of areas where the Panel believes apparent capability gaps are a result of strained capacity, and that the organisation does have the inherent capability (or would be better placed to acquire or develop it) once capacity has been increased through the initiatives identified in the next section. These have largely been identified in preceding sections and are summarised below:

- The need for a coherent surveillance strategy guided by risk based decision making processes and pathway analysis
- The opportunity to take advantage of the new legislation to develop less regulatory and costly approaches and market access protocols based on quality assurance principles;
- The opportunity to improve traceability for plant products
- The need for improved strategic and operational planning, performance management and alignment of individual work plans
- The need to address skills gaps, training needs and succession planning through an enhanced workforce development plan
- The need to provide appropriate leadership to transition to the future Queensland Biosecurity System and deliver an organisational structure, that aligns to the demands of the new biosecurity legislation.

Significant investment is also needed in information systems and the Panel's view is that the current Biosecurity Information Management System project is appropriate and adequately resourced to be a platform for the future. It will be important that the system will be able to be

adapted to address future opportunities, such as greater participation by industry and community in surveillance.

SNAPSHOT: AGRICULTURAL PRODUCT TRACEABILITY

Tracing of animals, plants and their products is a key function in most animal or plant disease emergency responses. Good traceability is also important in managing issues such as food safety incidents.

However, there are vast differences in the traceability standards and systems that are in place across the agricultural industries.

LIVESTOCK INDUSTRIES

For livestock, traceability has been driven by a combination of the historical needs of endemic disease control programs, market forces and traceability priorities during disease emergencies. In particular, development of sophisticated systems in the livestock industries have been driven by the need to maintain market access in the face of chemical residue incidents and the potential for very rapid spread of livestock diseases through livestock movements. The latter was demonstrated graphically during high profile overseas outbreaks, such as FMD in the UK. These new systems built on processes developed during the brucellosis and tuberculosis eradication campaign.

As noted elsewhere in this report, the livestock traceability system is underpinned by mandatory property registration. Linked to this property identifier system are identifiers that move with individual animals, thus enabling animal tracing.

In Australia, it is unlikely that the first detection of FMD or any other exotic livestock disease will be on the property where the outbreak commenced and so tracing of livestock movements is essential for effective containment. Hence, tracing systems need to be in place prior to an outbreak occurring. This is being done under the National Livestock Identification System (NLIS) and national standards have been set for the timeliness of livestock tracing. The cattle industry is achieving the targets set by the standards through heavy investment in a universal, electronic tracking system, including RFID cattle tags. Although not electronic, the pig industry has measures in place that generally meet the standards. However, tests of the system have demonstrated that the sheep industry falls short of meeting these targets. Owing to concerns about costs, the sheep industry at the national level has only committed to a system that uses paper based records and visually readable ear tags, even though electronic systems are available.

PLANT BASED INDUSTRIES

Generally speaking, there have not been the same drivers for development of traceability systems within the plant based industries, as there have been for livestock. Plants do not move or are moved to the extent that livestock are, and they tend to not move as fast. Also, commodities tend to move towards end user markets, rather than to other agricultural enterprises. Hence, there is no mandatory property registration system, or dedicated processes to trace product. To an extent some product can be traced through normal market

based documentation, but this is not reliable.

There are good examples where enhanced traceability would assist in responding to biosecurity incidents:

- Food safety incidents that can be linked to fruit or vegetables. Raw vegetables and fruit can be contaminated from the soil they are grown in or by people handling them before they reach market.
- Seed and propagating material. These materials can be an important way of inadvertently spreading infected plant material. If disease is detected it can be critical to trace where seed has been distributed, particularly if sold through retailers.
- Sale of infected plants. Plants can be distributed far and wide through commercial outlets and if infected with a new disease, can be almost impossible to trace currently.
- Sale and dispersal of invasive plants. A real life example of this was when it was discovered some years ago that Mexican feather grass, a serious invasive weed, was being distributed through retail nursery outlets in Queensland. Tracing proved extremely difficult and not all plants were found.

“QFF would also acknowledge that many industries may already have their own advanced farm registration systems, for example the Australian Pork Ltd has PorkPass, and as such the QFF would urge government to cooperate with industry to avoid duplication of data”

Queensland Farmers’ Federation

“A number of commercial agricultural industries already have existing Government based registration/licencing systems, such as Queensland Safe Food licencing which is already a cost to farmers. As such the QDO urges the Queensland Government to use these existing registration/licencing systems to avoid duplication and additional costs to farmers.”

Queensland Dairy Organisation

A range of possible measures could be designed to improved traceability within the plant industries. As a first step, a basic traceability system could include the following:

- Mandatory property or enterprise registration (this would bring other advantages, such as rapid location of at risk enterprises during responses and enhanced communications on biosecurity issues).
- Attachment of property identification codes to plants, plant products or packaging.
- Recording of sales or movements of plants or plant products, including the destination.

Any decision to implement such systems is a decision that needs to be made within an environment of shared responsibility between government and industry, should be risk based, and should be compatible with systems being developed for food safety programs and industry driven systems.

RECOMMENDATIONS

2. *Refocus Biosecurity Queensland*

- 2.1. Develop an organisational design, which drives attention to the core functional areas identified and positions the organisation to transition to a system leader and enabler

role.

2.2. Undertake a skills audit and develop a training and development plan with particular emphasis on:

- a) Project management;
- b) Use of business intelligence systems to inform business and risk management;
- c) Financial management;
- d) Engagement and partnership development.

8. Continue Investment in Flexible Specialist Systems

8.1. Lock in ongoing investment in the Biosecurity Information Management System (BIMS) and build in sufficient flexibility to the system and business processes to accommodate future opportunities such as greater participation by industry and the community in surveillance.

CHAPTER 8. FILLING CAPABILITY GAPS – ADDITIONAL TARGETED INVESTMENT IN BIOSECURITY QUEENSLAND

Deliverable: 4 Identify where targeted investment in Biosecurity Queensland's own capability and capacity is required to restore responses to disease and pest outbreaks to world's best practice.

OVERVIEW

There remain some areas where additional investment in Biosecurity Queensland's capability and capacity is required to meet the immediate need to be "response ready" and for the strategic needs of the future. The detailed skills audit recommended should be used to test the availability of individual skills and capabilities and whether staff development or recruitment is required to address capability gaps at an individual level. Nonetheless, it is the Panel's view that the capacity is lacking and that the areas identified below require additional resourcing, irrespective of whether key roles can be filled from within the organisation.

Given the escalating frequency of responses, the Panel also recommends establishment of a standalone response function led by a dedicated leader of response, to be tasked with building partnerships and community capability and with skills sets in these areas. As noted in the report, there needs to be greater flexibility, but at the same time more consistency, in the approach to planning, evaluating and conducting responses. Greater flexibility should apply to the approach to small, medium and large responses, as well as the actual control strategies that are applied. Greater consistency should apply across responses of a similar size or nature. The suggested approach to achieving this consistency is establishment of a biosecurity response unit (under the leadership of the specialist leader of response) that has the responsibility to ensure training and systems are in place, as well as to manage responses.

A function of the biosecurity response unit should be to ensure that adequately trained and sufficient human resources are available for responses. A multi-pronged approach is required that includes an adequately resourced internal training program, ensuring people gain experience in real responses, engagement of external organisations that can supply personnel and "just in time" training processes.

In keeping with Biosecurity Queensland's transition to a leader and enabler of the Queensland Biosecurity System, the Panel's view is that the additional investment should focus on people with the leadership skills to develop capability in the areas of risk and consequence analysis and investment prioritisation and innovation - both at a technical level and in business processes.

Given the nature of the challenges facing the system, it is clear that innovation will be required to develop and deliver solutions, which deal with the increasing number and complexity of biosecurity threats, with fewer resources, by capitalising on a networked world. A particular opportunity will be improving the business and delivery through emerging digital technologies.

The Panel has also identified capacity and future capability gaps in technical expertise, which needs to be filled through a variety of approaches, acknowledging the increased

breadth of specialist knowledge, which will need to be accessed. Proposed approaches include:

- Appointing technical specialists, that is individuals with high level technical expertise, extensive knowledge of industry and/or the environment in a particular region or commodity, and also significant strengths in building relationships. The Panel's view is that this gap should be filled by an active program of staff development and recruitment, with a focus on locating these specialists in regional areas.
- Establishing virtual networks in collaboration with other jurisdictions to access expertise, such as epidemiological and economic skills.
- Establishing a graduate recruitment program informed by national assessments of needs and gaps and building on linkages with tertiary institutions developed through relevant cooperative research centres and other research alliances.

A particular area of capacity and capability concern is marine biosecurity – there are currently very few resources being applied to a high risk area with potential for significant impacts on industries and iconic environmental assets such as the Great Barrier Reef.

The Panel is recommending investment in core leadership and partnership building capability to undertake the following tasks:

- Education and awareness of the impacts of marine pests to the environment, infrastructure and implications for trade including tourism.
- Build relationships with port and shipping industries.
- Improve collaborations with other agencies such as harbours and marine, Maritime Safety Queensland.
- Identification of high risk pathways with industry and implementation of mechanisms aimed at preventing introduction along with surveillance for early detection of potentially highly invasive species.
- Commissioning research or on site trials with regards to appropriate surveillance/monitoring methods likely to successfully detect marine pests at an early stage as a means of prevention. The Panel was advised that research to develop eDNA probes for multiple species is underway in South Australia, however requirements for spatial and temporal application of these tests to provide effective coverage is yet to be determined. The Panel was also made aware of remote monitoring (robotic) technology being developed at CSIRO.

The Panel is also concerned about capability in engagement and development of partnerships, however believes that these capabilities need to be built in to role descriptions at all levels rather than being housed under a dedicated leader. Capability in these areas will need to be built through a combination of targeted training and development of existing staff and attention to these capabilities as part of the recruitment process. In addition, specialist resources may need to be contracted for particular tasks, as they were during the development of the *Biosecurity Act 2014*.

Development of a communications and engagement plan with accountability for delivery assigned to all senior managers is proposed as a way of embedding a more customer, community and partner focused culture in the organisation.

North Queensland has unique characteristics, which demand special attention. The Panel's view is that a biosecurity leader based in North Queensland is required to develop and drive a suite of initiatives to address the unique needs of the region. There should be a particular focus on delivering biosecurity risk mitigation and control strategies, which enable agriculture and aquaculture sector growth.

RECOMMENDATION SUMMARY

2. Refocus Biosecurity Queensland

2.4. Create leadership positions at appropriate levels in incident preparedness and response risk and decision-making; innovation and business improvement; marine and aquatic biosecurity and northern Queensland biosecurity strategy.

9. Establish a preparedness and response unit

9.1. Establish a response unit tasked with responsibility for building relationships within Government and a community biosecurity reserve, ongoing training (including exercises), as well as revisiting response protocols to establish a set of tailored templates, suited to responses of varying degrees of urgency, size and scope.

- a) Undertake a desk top exercise specifically designed to test whole of government response capability.
- b) Clearly define the circumstances under which departmental resources should be redirected to response, bearing in mind broader business continuity needs, as well as opportunities for personal development.

10. Establish a biosecurity network

10.1. Build a biosecurity network – explore opportunities to utilise other response agencies e.g. SES volunteers with a “rapid deployment training package” and to work with other volunteer and community organisations, as well as agreements with private sector organisations.

- a) Specifically explore opportunities to leverage relationships developed in the enhanced surveillance approach (for example, indigenous rangers, private veterinary practitioners) to increase the capacity of the biosecurity network.

11. Establish an innovation function and develop an innovation strategy

11.1. Establish a biosecurity innovation function and develop an innovation strategy – with priority consideration of opportunities such as for data capture and analysis in collaboration with the community, business, other jurisdictions and agencies; the potential for breakthrough technologies and achieve internal operating efficiencies to lower costs of prevention, surveillance, response.

- a) As a component of the innovation strategy, and in collaboration with Agri-Science Queensland, identify priorities for research and development, including in the area of building more resilient farming systems.

12. Build expert and regional capability

12.1. Develop position specifications and recruit 5 technical specialists to be located in the regional locations in north and central Queensland as part of a work force development plan, which builds capacity in this area.

12.2. Expand capability by building access to expert networks including through:

- a) A fellows program which retains access to retiree expertise and provides mentoring for less experienced staff;
 - b) A virtual network for epidemiologists and other experts.
- 12.3. Develop a succession plan which incorporates a graduate program targeting biosecurity expertise gaps in the context of national capacity.
 - 12.4. Create a leadership position and specific marine biosecurity function.
 - 12.5. Include engagement and partnership development in the recommended training and workforce development plan, assign responsibility for driving a change in culture to all leaders and establish access to specialist skills.
 - 12.6. Develop a biosecurity initiative for northern Australia incorporating a focus on delivering biosecurity risk mitigation strategies, which support agriculture sector growth, protect the environment and mitigate risks to human health.

PRIORITY LEADERSHIP

The Panel believes Biosecurity Queensland needs to reflect the importance of emergency preparedness and response, risk and decision-making, innovation and business improvement, marine and aquatic biosecurity, and biosecurity in Northern Queensland, by appointing leaders at appropriate levels. The importance of each of these functions is established throughout this chapter, and the Panel is of the view that recognition is best supported by action.

The Panel refers to leadership both as discipline leadership (role specific) and executive leadership (accountability for action). While the appointment of specific leaders is a matter for Biosecurity Queensland, the Panel believes that each area identified should form part of the core accountability of the Biosecurity Queensland executive.

RECOMMENDATIONS

2. *Refocus Biosecurity Queensland*

- 2.4. Create leadership positions at appropriate levels in incident preparedness and response risk and decision-making; innovation and business improvement; marine and aquatic biosecurity and northern Queensland biosecurity strategy.

IMPROVING BIOSECURITY RESPONSES

BACKGROUND

During consultation three key issues were identified in relation to improving biosecurity response management:

Improve Queensland's overall capacity and capability to manage responses, particularly very large responses.

Biosecurity Queensland currently doesn't have the capacity to deal with large responses. In fact, no response agency can expect to have the resources to deal with a very large response. Further, Biosecurity Queensland does not have adequate systems in place to

rapidly engage the types of personnel required. This represents a significant risk. While Biosecurity Queensland has successfully managed many lower level responses, this can create an illusion of experience. When a very large event occurs, emergency response agencies have been known to get caught out and struggle to cope.

Reduce the impact that responses have on other, planned biosecurity business.

The current response arrangements in Queensland don't provide sufficient resources and clarity to address other high priority, non-response activities, which will ultimately better manage biosecurity risk. The sheer number of responses means that senior managers and many operational staff spend considerable proportions of their time off-line performing response functions. During these times, there is generally no back filling of their normal roles, hence other high priority work can become delayed or is not done.

Improve flexibility, consistency and proportionality in management of responses

During consultation staff observed that they often “re-invent the wheel” during new responses. At the same time, often too rigid an approach has been adopted for some aspects of the response. Given the wide range of size and scope of potential biosecurity incidents, the current arrangements are not flexible enough to deliver optimal responses for each situation.

“The initial response is rapid but often tends to get bogged down in detail and a lot of re-inventing the wheel when it comes to Standard Operating Procedures etc.”

DAF Staff Member

Two new initiatives are suggested to address these issues: a biosecurity response unit and a biosecurity network.

BIOSECURITY RESPONSE UNIT

Currently there is no organisational entity within Biosecurity Queensland tasked with the ongoing responsibility to maintain its response capability. There is a current time-bound project aimed at improving FMD preparedness and there will be flow-on benefits for other responses. However, this project is scheduled to cease after its three-year funding period and there is also no inherent role in managing actual responses.

Response management within Biosecurity Queensland generally follows accepted principles according to the national Biosecurity Incident Management System, which embodies well-recognised emergency management principles using Australasian Inter-service Incident Management System (AIIMS) principles (i.e. management by objectives, functional management, span of control). An ‘all hazards’ approach is taken, with generic structures adopted for a range of emergency responses (for example plant pests, animal diseases, marine pests, weeds and chemical residues).

Under the Biosecurity Incident Management System, responses are classified on a one to five scale as follows:

- A **level one** incident is a localised response, being managed by local resources with little or no external support. Facilities for managing the response are small scale.

- A **level two** incident is a local or regional response, being managed primarily at the local level, with some support being coordinated by the state. A dedicated Local Control Centre and perhaps small scale State Coordination Centre may be required to manage the response.
- A **level three** incident is a state wide response, being managed primarily at a state/territory level. This may include the establishment of one or more Local Control Centres and a fully operational State Coordination Centre. Some resource support may be provided from outside the responsible agency or state.
- A **level four** incident is where one or more jurisdictions are involved in managing the response to a biosecurity incident. One or more of the involved jurisdictions' resources or established arrangements are insufficient for the response and the National Coordination Centre is required to coordinate nationally available support to the affected jurisdiction/s.
- A **level five** incident is where one or more jurisdictions are involved in managing the response to a biosecurity incident. The national resources are insufficient for the response and the National Coordination Centre is required to coordinate international support to affected jurisdiction/s.

The majority of responses in Queensland have been either level one or two.

Despite the above arrangements being well accepted, as noted earlier more flexibility is required within a more consistent overall response framework.

While the identified issues cannot be avoided entirely, an organisational model is suggested that should ensure greater levels of overall preparedness, greater consistency in processes and at the same time should take to pressure off the organisation, particularly for level one and two responses.

We suggest establishment of a Biosecurity Response Unit (BRU) that has the following functions:

- Identification, establishment, training and maintenance of response teams and staff
- The establishment and maintenance of supporting systems, policies, resources and networks
- Forward planning and the development of response plans
- Continuous improvement of Queensland's biosecurity response capability, including identifying novel approaches to improve effectiveness and reduce costs
- Direct management of level one and two responses (with response policy direction from program leaders)
- Providing key management positions and guiding overall management of level three and above responses.

The BRU would consist of a team of response specialists, led by a senior officer, with the ability to co-opt other staff or employ temporary staff on an as needed basis. They will also be encouraged to utilise people from the Biosecurity Network (see below). The size and detailed functions of the BRU are critical and will require careful consideration. Similar concepts have been tried previously in Queensland and Victoria, with different problems arising as follows:

- In Queensland a small emergency response unit was formed shortly after Biosecurity

Queensland was established. Its function was to improve preparedness, but to have no direct role in responses. While a great deal of valuable preparedness work was done, the lack of a direct response role was seen to significantly limit its value to the organisation.

- The opposite happened in Victoria where members of their emergency response unit spent virtually all of their time managing responses and had little time to work on improving preparedness.

Hence, it is seen that the proposed BRU should have both functions, that is improving preparedness and managing responses.

Regarding the latter, it is recognised that there will still be a need for other people within DAF to become involved in responses and that program leaders will also need to set overall response policy and strategy. However, particularly for the smaller responses, the unit should be able to take considerable pressure off the organisation, particularly if people from the Biosecurity Reserve (see below) are utilised.

The Panel considers that the following design aspects will be important:

- The BRU should not be too small, with at least ten permanent staff members and at least two staff members reserved for ongoing preparedness work.
- This staff complement should be supplemented by virtual members of the BRU, that is, other permanent government staff who have a higher level of training and expertise with the ability to easily move in and out of the BRU as the need arises.
- Establishment of the Biosecurity Network (see below), with a particular emphasis on trained people who can be quickly brought into a response.
- Access to external contractors for some preparedness work such as training.
- Timely transition to management of longer-term responses using dedicated staff appointed for the purpose.

An important consideration in the staffing strategy for the BRU is that people who are good at preparedness activities, such as capacity building, relationship building, developing innovative solutions and managing contracts may not be good response managers and vice versa. Hence, an appropriate balance of skills will be required.

“We should as often as possible be looking for and learning from the success of others; engaging, adapting and applying successful operations to other situations.”

DAF Staff Member

The Panel suggests that placements and secondments would be a useful mechanism to diffuse the knowledge of the unit, and to keep it at the cutting edge of response practice. This would involve staff placements within the unit, as well as seconding staff from other government departments and industry to broaden the knowledge base of the unit. The Panel noted concerns raised about the practice (at least within the current Panama response) of short term rotations of staff in and out of the response and considers that longer term arrangements would be preferable, consistent with the concept of an expanded “virtual” BRU.

The suggested title of “Biosecurity Response Unit” is deliberate and reflects the fact that not all responses are emergencies.

It should be noted that a model that more readily utilises external, personnel on contract may have implications for cost sharing. Under national cost sharing arrangements, response agencies are expected to maintain a certain (poorly defined) level of “normal commitments”. Use of government employees during a response reduces the overall commitment for cost sharing partners, as salaries of existing government employees cannot be claimed under cost sharing arrangements. Essentially the new model moves from “normal commitments” being in house to a mix of in house and contract, or more accurately changes the mix of in house and contract personnel, with greater emphasis on the latter. While this approach may be challenged by some cost sharing partners, particularly for smaller responses, it is also noted that similar models already exist in some jurisdictions for functions like laboratory diagnostics. Further, all state agencies are facing similar challenges so this initiative may lead or encourage change in this area.

BIOSECURITY NETWORK

A large biosecurity response will exceed the internal response capacity of any biosecurity agency no matter how well it is resourced. A medium to large sized response could require thousands of personnel. The most obvious example is an FMD outbreak, but there are many other examples, including recent history such as the papaya fruit fly and equine influenza responses.

These responses require both technical and non-technical personnel. Technical specialists are the most difficult area, but there are also many roles that require people to work to a high standard that can be enhanced through prior awareness and/or training. As an example, modelling by the Australian Government has suggested that at least 300 – 500 veterinarians would be required during a medium sized FMD outbreak. DAF currently has less than 40 veterinarians within the organisation. Sufficient veterinarians exist in private practices, universities and other agencies, but most would require additional training to be effective in many emergency response roles. Further, it cannot be assumed that they will be readily available to respond, given their normal work commitments.

The key to an effective response will be the ability to quickly access, engage, induct and train the people required. However, the response organisation also requires sufficient people to be able to lead and manage the early stages of a response, as well as guide the longer-term response when large numbers of external people are brought on-board.

“For large response, groups like the SES would be ideally placed to contribute people for some activities.”

DAF Staff Member

As well as the quantum of staff that an organisation may have available in-house, there is also the issue of the availability of people with appropriate skills. Owing to recent retirements and lack of replacement, DAF and in particular Biosecurity Queensland, now has limited internal response capacity for a large response. That is, there is now only a relatively small core group of staff that are sufficiently experienced to lead a biosecurity response.

While DAF is encouraged to address this through strategies to improve staff retention, as well as strategic staff appointments, this marginal internal capacity is likely to remain the case for the foreseeable future. It should also be noted that interstate and national agencies

are unlikely to be able to supply specialist staff for some responses owing to their own response requirements. International personnel through existing arrangements will be one important source of response personnel.

This lack of response capacity is a major risk for effective management of a large biosecurity response and needs to be addressed through better availability of suitably qualified or trained external personnel. A model is suggested that identifies suitable groups or employers of potential personnel, and engages these organisations to participate in a network of potential responders.

National Biosecurity Capability Network (NZ)

A working model currently exists in New Zealand. This initiative commenced five years ago owing to a realisation that their biosecurity response agency would not have the staff to mount a large response.

The National Biosecurity Capability Network (NBCN) is a joint initiative between the Ministry for Primary Industries (MPI) and AsureQuality. The NBCN is essentially New Zealand's response team in a biosecurity outbreak. Many different types of organisations from all over New Zealand are encouraged to join the NBCN. In the event of a biosecurity outbreak these organisations pool their skills and resources to provide an appropriate response capacity.

There is one full time person in AsureQuality to manage the program, plus additional staff become involved as needed. Currently there are around 120 organisations signed up to formal agreements or contracts, representing potentially 57,000 people. Examples of organisations who are involved include veterinary practices, infrastructure/engineering/project management companies, divers (for aquatic work), local governments, and labour hire companies. The NBCN was most recently used during a Queensland Fruit Fly response earlier in 2015.

The actual arrangement varies from company to company. For most there is no retainer involved, but an agreement to participate. The main incentive for companies is that they get work during a response. Some, but not all people receive ongoing training. The remainder receive regular contact and updates, e.g. a regular newsletter.

Suggested Model for Queensland

A model similar to the NBCN, adapted to local conditions is suggested for Queensland. This would require ongoing and active management to maintain awareness, enthusiasm and to ensure that the formal arrangements remain current.

A multi-pronged approach is required that could include (but is not limited to):

- Engagement with organisations like universities and other state government agencies
- arrangements for more effective utilisation of other emergency response personnel across government
- Training of private sector professionals such as agronomists and private veterinarians, as well as professionals employed within industry. Note that this component could be linked to the initiative on expanding the surveillance / early detection capability discussed elsewhere.
- A volunteering program within government agencies

- A reinvigorated industry liaison officer (ILO) training program
- mapping of all control centre roles, matching these with known individuals, identifying gaps and then targeting individuals from the above processes for advanced training
- Engagement with specific individuals who already have experience or very specialised skills
- Development of off the shelf, just in time training packages for those not receiving ongoing training
- A register of appropriately qualified people and/or organisations that may be available to respond
- Utilisation of people from the reserve during lower level responses to gain experience and to take the pressure off DAF staff
- A register of appropriately qualified people to deliver and/or develop training materials.
- Regular engagement with people and organisations to maintain interest. There are substantial opportunities to take advantage of social media and emerging technologies to retain interest.

Note that this recommendation is consistent with recommendations contained in the 2011 Matthews report and some useful guidance can be found within that report.⁴⁷

Such a network of people would be a very powerful tool in Queensland's overall response preparedness. The key to its effectiveness would be ongoing engagement of people and organisations to maintain awareness, interest, skills (where appropriate) and up-to-date contact lists. Standing involvement of the network in surveillance or other activities would facilitate ongoing engagement.

Added advantages of a network approach over direct employment of more staff are:

- Flexibility to cater for surges in demand and for different skills
- Increased reach into the community, exponentially increasing the number of people with an understanding and commitment to the objectives of the Queensland Biosecurity System.

New Zealand experience would suggest that this project would require at least a full time person to implement as well as operating funds for ongoing engagement, newsletters and training workshops. A level of funding during a response would likely be required to satisfy the "normal commitments" test under cost sharing arrangements. It is important that this option is not seen as a low cost alternative – rather it is recommended as a more cost effective and flexible approach to meeting the demands of diverse responses compared to maintaining a large standing response capability.

RECOMMENDATIONS

⁴⁷ Ken Matthews (2011) *A Review of Australia's Preparedness for the Threat of Foot-and-Mouth Disease*, a report to the Department of Agriculture, Fisheries and Forestry, Canberra.

9. Establish a preparedness and response unit

9.1. Establish a response unit tasked with responsibility for building relationships within Government and a community biosecurity reserve, ongoing training (including exercises), as well as revisiting response protocols to establish a set of tailored templates, suited to responses of varying degrees of urgency, size and scope.

- a) Undertake a desk top exercise specifically designed to test whole of Government response capability.
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10. Establish a biosecurity network

10.1. Build a biosecurity network – explore opportunities to utilise other response agencies e.g. SES volunteers with a “rapid deployment training package” and to work with other volunteer and community organisations, as well as agreements with private sector organisations.

- a) Specifically explore opportunities to leverage relationships developed in the enhanced surveillance approach (for example, indigenous rangers, private veterinary practitioners) to increase the capacity of the biosecurity network.

THE IMPORTANCE OF INNOVATION TO BIOSECURITY OUTCOMES

The value of innovation in achieving productivity gains is well established, particularly in Australian agriculture where it has underpinned ongoing productivity growth. Innovation is a core organisational capability identified in the Australian Public Service Organisational Capability framework and a key capability area for the Queensland Public Service.

In the context of this review the Panel proposes to define innovation as *the development and application of solutions to problems which constrain the success of the Queensland Biosecurity System.*

The core challenges facing the Queensland Biosecurity System are articulated at the beginning of this report. To recap, they are:

- Potential threats from pests and diseases to agricultural industries, the environment and human health are increasing.
- There is increasing pressure on resources, particularly on government investment in all jurisdictions and an increasingly competitive business environment.
- The knowledge base required to solve future problems is increasingly diverse and complex and requires a strong network of relationships to access it.

It is clear that future success cannot be achieved by incremental improvements to the current system. Innovation will be required to develop and deliver solutions that deal with the increasing number and complexity of biosecurity threats, with fewer resources, by capitalising on a networked world.

It is critical to recognise that innovation is not solely the province of government, nor is it "cost shifting". All partners in the Queensland Biosecurity System need to be engaged in innovation.

It is not the role of the Panel to develop the innovation strategy for Biosecurity Queensland. However, the Panel has identified some specific problems in the course of this review that are provided as discussion starters:

- How to achieve better surveillance outcomes at lower cost to all
- How to provide rapid, on site, disease diagnosis, pest or weed identification
- How to capitalise on extensive, disparate information sources to gain intelligence about biosecurity threats
- How to develop effective working arrangements with community groups and the private sector for mutual benefit as part of a biosecurity reserve
- How to use market signals to drive on farm biosecurity outcomes
- How to automate project reports to meet project management needs

TOWARDS AN INNOVATION STRATEGY

In formulating its recommendation to invest in innovation leadership and development of an innovation strategy, the Panel noted that there are a variety of approaches to organisational innovation and that the approach taken by Biosecurity Queensland should be considered in the context of the Department of Agriculture and Fisheries' innovation strategy and its broader organisational design.

The approach should also recognise the Queensland Government's innovation strategy, the Advance Queensland initiative.

The following questions could be used to guide the development of the recommended innovation strategy:

How will problems be identified?

Problem identification is critical, and needs to be done in the context of the Biosecurity Strategic Plan and Action Plan. In other words, the process should start with identifying key constraints to delivering outcomes which require an innovative solution.

Do information systems support problem identification?

Understanding which problems are creating the biggest barrier to success requires an adequate information base - this area may need to be addressed as part of an innovation strategy.

How will problems be prioritised?

Consider how much value, solving that problem will add, and the pathway to implementation of a solution.

Who are critical partners in problem solving and implementation?

Potential partners depend on the nature of the problem (for example, a crowd sourced solution might be appropriate to consider to develop a solution to using community

intelligence to identify exotic weeds, a university partnership to develop a biocontrol agent). Those who will be involved in implementing the solution should also be involved at an early stage. Ideally, all partners should be involved in defining the problem.

How well does the prevailing culture support innovation?

The strategy may need to include steps to build a culture which is open to innovation and tolerant of failure. Questions such as whether to establish a separate innovation group or embed responsibility across the organisation need to be considered in the broader cultural context.

What are the incentive and reward systems in the organisation?

Processes for allocation of resources, staff recognition schemes, secondment opportunities and other initiatives can act to promote or discourage innovation and may need to be considered.

Are staff given the flexibility and permission to explore opportunities for innovation?

Innovative organisations, particularly those involved in R&D, generally allow staff time to explore new, unplanned areas of endeavour.

What governance arrangements are needed to support delivery of the innovation strategy or projects within it?

Those with a stake in the problem or implementation of the solution may need to be represented on strategy or project steering groups.

How will opportunities for using new technologies, networks or changing relationships between Government and the community be identified and shared?

Options include innovation champions tasked with building key relationships, communities of practice or self-directed approaches.

How will innovation projects be funded?

Dedicated funding for innovation is essential. Project funding can be used to create an environment conducive to problem solving - for example competitive processes where projects involving end user collaboration are more likely to be funded.

How will the success of the innovation investment be measured?

This needs to be determined at the beginning, not at the end, and there needs to be an effective feedback loop to inform future strategies.

RECOMMENDATIONS

11. Establish an innovation function and develop an innovation strategy

- 11.1. Establish a biosecurity innovation function and develop an innovation strategy – with priority consideration of opportunities such as for data capture and analysis in collaboration with the community, business, other jurisdictions and agencies; the potential for breakthrough technologies and achieve internal operating efficiencies to lower costs of prevention, surveillance, response.

- a) As a component of the innovation strategy, and in collaboration with Agri-Science Queensland, identify priorities for research and development, including in the area of building more resilient farming systems.

REGIONS IN FOCUS

To deliver the biosecurity functions of the future, Biosecurity Queensland will need professional expertise to contribute to:

- Identifying and evaluating biosecurity threats to agricultural systems, the environment and human amenity
- Maintaining regional networks and intelligence
- Designing prevention and surveillance programs
- Data gathering and analysis
- Scenario modelling
- Establishing diagnostic needs
- Specialist diagnostic services
- Developing response plans
- Planning and prioritisation during response to incursions
- Establishing market access protocols.

The Panel received a number of comments about the loss of specialist expertise and that existing staff with expertise are "pulled in all directions" if they are asked to contribute simultaneously to the functions identified above. Further, for many technical specialist areas, the Biosecurity Queensland managers have little control over ongoing capability, as the relevant people are employed within industry development and R&D areas of the department. These areas are also under significant resource constraints, often subject to the availability of R&D funds or priorities.

This "thin-ness" has a number of impacts in addition to the obvious strain it places on individual staff. There is a high risk of failure to deliver an effective response if that individual retires, resigns or is otherwise unavailable, and there is no back up; and delays to multiple projects can result. The Panel was advised of a number of situations where the latter appeared to have happened.

The Panel also notes that the spread of staff is uneven around the State - total Biosecurity Queensland staff numbers show 66 per cent in the South East region (including Brisbane CBD), 13 per cent in the South region, 5 per cent in the Central regional and 15 per cent in the North region. The Panel was presented with a compelling case by one retiring staff member for the value of locating people with significant technical expertise in regional locations, where they are able to build practical knowledge of the local industry, community and geographic environment as well as state wide and national technical expertise.

The Panel's view, supported by the above analysis, is that there is a capability gap in "technical specialists" and that this should be filled by an active program of staff development and recruitment, with a focus on locating these specialists in regional areas.

Characteristics of "technical specialists" would include:

- Professional or high level technical qualifications in a particular field (for example, entomology, crop pathology, cattle medicine, environmental weeds)
- Strong understanding of the particular industry, commodity and/or environment to which their specialty relates
- Higher level field diagnostic skills
- High level policy and analytical skills to contribute to development of effective modelling, plans and programs
- Strong relationship and communication skills to access other technical experts and contribute to increase in the overall community and industry understanding of biosecurity issues.

These individuals would have a key role in building networks, which would enable the organisation to leverage research outputs and expertise in universities and other research institutions.

The extensive knowledge of such individuals cannot be built quickly. For this reason, the Panel recommends complementary strategies, such as a fellows program, to retain access to retired expert staff.

The Panel's view is that there is potential to develop the capability of existing staff, through targeted formal and "on the job" training, but that there will need to be recruitment of additional resources.

Priority areas of technical specialty identified informally included pathology, epidemiology, ecology, plant bacteriology and virology, entomology, botany, malacology and nematology.

RECOMMENDATIONS

12. Build expert and regional capability

- 12.1. Develop position specifications and recruit 5 technical specialists, to be located in the regional locations in north and central Queensland as part of a work force development plan, which builds capacity in this area.

EXPERT CAPABILITY

One of the core future challenges identified by the Panel at the outset is that the increasing challenge of biosecurity threats and potential mitigation strategies and the need to find solutions to resourcing and other problems, will require the capacity to leverage an increasingly diverse and geographically spread network of experts. Work is ongoing under the auspices of the Agricultural Ministers' Forum Animal Health Australia, Plant Health Australia and the two biosecurity cooperative research centres to catalogue existing expertise and identify priorities for recruitment and development of appropriate expertise on a national basis. The Panel supports these initiatives and recommends two targeted strategies to leverage ongoing activity in this area.

Virtual network for epidemiologists and other experts

Biosecurity Queensland and other State agencies have a declining complement of qualified epidemiologists, particularly people with higher-level analytical skills. Epidemiology is a core skill in designing biosecurity strategies across all programs. While employment of additional epidemiologist within Biosecurity Queensland is supported (see elsewhere), within the current environment it may be unrealistic to expect that the organisation will be self-sufficient in this area. Significant epidemiology skills reside in the university and to a limited extent, in the private sector.

The current Victorian CVO has moved recently from Scotland where there was a virtual epidemiology centre operating under government sponsorship. This centre was funded in peace time to do relevant epidemiology studies, and was then able to do valuable analyses during emergencies. For example, this centre did some very valuable risk mapping early in the 2002 FMD outbreak. It operated for about \$120k per year. To be effective, the concept requires a significant community of practice, hence it may not be effective within a single jurisdiction. However, there is an opportunity to establish such a system at the national level through collaboration between the states and territories.

The same model could be developed for other areas of specialist expertise.

A graduate program targeting capability gaps

As noted above, national processes are currently underway to identify key areas of expertise required by the biosecurity system and emerging gaps. The Panel recommends that, as part of its workforce development program, a graduate recruitment program is established using linkages with tertiary institutions built through cooperative research centres and the national biosecurity research, development and extension strategy.

RECOMMENDATIONS

12. Build expert and regional capability

- 1.2. Expand capability by building access to expert networks including through:
 - a) A fellows program which retains access to retiree expertise and provides mentoring for less experienced staff;
 - b) A virtual network for epidemiologists and other experts.
- 1.3. Develop a succession plan which incorporates a graduate program targeting biosecurity expertise gaps in the context of national capacity.

MARINE BIOSECURITY

Biosecurity Queensland has a leading role for marine pest management in Queensland. However, a number of other agencies share an interest in marine pests and their impacts. Certain marine pest issues currently fall under various pieces of legislation administered by other departments. Biosecurity Queensland currently acts in a coordination role to bring those agencies with an involvement together on relevant issues.

Marine pests can travel vast distances attached to boats and fishing gear as biofouling or in internal seawater systems such as bilge and ballast water or inside pipes resulting in high potential for translocation.

Queensland faces unique challenges in this area due to a large coastline, many large ports and it is generally the first port of call for international shipping vessels on the east coast of Australia. These factors create a large potential for introduction of exotic marine pests. Introduced marine pests have the potential to significantly impact environmental assets, such as the Great Barrier Reef, and marine industries, including the aquaculture industry.

Marine pests have the ability to change the balance of the local ecosystem through direct predation on or competition with native species for food and shelter, and introduction of diseases. They also pose a risk to the heritage listed Great Barrier Reef Marine Park and other ecologically significant marine systems. Marine pests can also impact on public amenity.

Marine pests have the potential to close down important shipping ports and restrict movement of vessels with significant impact on trade, potential to restrict commercial fishing activities, damage to vessels and marine infrastructure for example, clogging inlet and outlet pipes and weighing down navigation buoys creating safety hazards, increased costs for inspections and cleaning of vessels and marine infrastructure. Introduced diseases can impact on commercially valuable wild and aquaculture fisheries resources.

Getting rid of marine pests once they have established is extremely difficult if not impossible so prevention is the key strategy. This is reflected in the National System for the Prevention and Management of Marine Pest Incursions (the National System) being implemented by Commonwealth and state and territory governments.

The National System aims to prevent new marine pest species arriving, guide responses when a new pest is discovered and minimise the spread and impact of pests that are already established in Australia.

Capability and capacity gaps

The Panel has a number of concerns about the current capability in Marine Biosecurity:

- Lack of "ownership" of the problem at a whole of government level and lack of clarity of roles, responsibilities and accountability across government.

A number of other government agencies have an interest in marine pest issues and are currently engaged to varying degrees. These include the Departments of Environment Protection and Heritage, National Parks, Sport and Racing, the Great Barrier Reef Marine Park Authority, Department of Transport and Main Roads and Maritime Safety Queensland. In common with other issues involving multiple agencies, lack of a framework for formal commitment and explicit accountability to address the issue appears to be delivering suboptimal outcomes. The Panel did not identify a clear appreciation of the risk and need for action across government.

- Inadequate capacity to undertake monitoring and response.

Monitoring is considered an essential component of any effective marine pest management system. However, multiple ports and a large coastline combined with limited resources means there is no capacity for coordinated, ongoing monitoring by government at a state level.

Under the National System, A National Monitoring Network of 18 sites around Australia has been established. Monitoring at these sites is expected to occur every two years. Five of these sites are in Queensland. However, the Panel was advised that monitoring under the national system requirements does not occur. Regular monitoring only occurs at two sites due to previous detections of Asian Green Mussel and is specific to monitoring for invasive mussel species. Monitoring at these locations is undertaken by the port and/or outsourced to university researchers.

- Absence of an agreed approach to targeting "risk creation" and preventive measures.

Marine pest biosecurity cannot be seen as solely a government responsibility. An effective framework, including legislation, incentives and obligations, is required to encourage risk creators (for example, the shipping industry) to undertake actions which will mitigate risks. Greater clarity is also required around the role and involvement of port authorities who potentially may have a better capacity to undertake monitoring, and drive appropriate behaviour through user charges or permitting functions.

- A risk that an opportunity will be lost to introduce a single, effective, national approach, rather than the complexity of independent jurisdictional systems.

Given the relatively immature national arrangements for marine biosecurity there would seem to be an opportunity to take a more national approach rather than relying on each jurisdiction to implement its own scheme. For example, there may be options at a national level to explore a single mechanism for "risk creator pays" contributions. The Australian Maritime Safety Authority already has a levy framework in place which, in part, funds the operating costs of the national plan for Maritime Emergency Response Arrangements. It may be possible to leverage this arrangement.

The Panel noted that Biosecurity Queensland is undertaking a number of activities to manage marine biosecurity risks, including:

- Participating in a review of national marine pest biosecurity which is currently underway with a view to improving marine pest biosecurity in an effective and cost efficient manner.
- Maintaining a working relationship with the national Marine Pest Sectoral Committee to identify and develop a cost sharing or cost recovery funding model for marine pest monitoring.
- Commencing the *Biosecurity Act 2014* in early 2016 to provide stronger legislative support for dealing with marine pests in Queensland waters. This will also put more onus on the risk creators to manage risks associated with marine pests.
- Implementing the new Biosecurity Information Management System to improve management of biosecurity risks and emergency responses including introduced marine pests.

Other models

Consultation suggested that the Western Australian approach to marine biosecurity was seen as the best nationally.

The Western Australian Government provided a special \$4.8m per annum allocation to establish a marine biosecurity system, recognising marine biosecurity risks, comprising:

- A vessel watch scheme
- Development of an electronic risk assessment tool which industry is able to use as a self-assessment tool
- Standards, policies and procedures
- An accreditation scheme for private sector biosecurity inspectors
- Partnership building and community awareness.

The Panel understands these tools could be made available to Queensland for adaptation to the local environment.

Future trends- review of National Marine Pest Biosecurity

The review of national marine pest biosecurity is almost complete with a report including recommendations for future directions for national marine pest biosecurity due to be submitted to the federal Minister for the Environment for consideration. It is likely that the recommendations from the review will lead to some changes in marine pest biosecurity regulation with the potential for more responsibilities being placed on jurisdictions.

The passing of the new *Australian Biosecurity Act 2015* is also likely to impose additional responsibilities on jurisdictions once it comes into force in 2016. For example, under the new Act, ballast water will be managed under an Australian-wide ballast water and management regime, providing a comprehensive system for ballast water management that covers both international and domestic vessels, ensuring that Australia can give effect to the Ballast Water Convention. Currently ballast water for domestic vessels is not regulated.

It is evident that additional resources will be required for marine pest management into the future. It would be preferable to share any investment into future marine pest management with industry as they are considered primary risk creators for marine pest introduction and would also be major beneficiaries of preventing marine pests from establishing in Queensland.

The way forward

The Panel believes there is a significant opportunity to establish a marine biosecurity system which avoids the issues associated with legacy jurisdiction based terrestrial biosecurity arrangements. For this to happen, it is essential that the Commonwealth Government remains a strong partner in terms of both investment and exploration of opportunities such as leveraging the activities of the Australian Maritime Safety Authority.

There is also an opportunity to take a "clean sheet" approach to building an appropriate partnership model across government and with relevant industry bodies and private sector firms to ramp up the effort to tackle marine biosecurity risks. The Panel's recommendations to develop a biosecurity strategy and action plan, and establish appropriate governance arrangements should be implemented in a way that explicitly supports action in this area.

Additional investment is also required to build leadership and technical capability in this area - given the varied expertise required to solve problems, a continuation of the current model of contracting out specialist tasks would be appropriate rather than building substantial in house expertise. The Panel is recommending a relatively modest investment in core leadership and partnership building capability to undertake the following tasks:

- Education and awareness of the impacts of marine pests to the environment, infrastructure and implications for trade including tourism.
- Build relationships with port and shipping industries.
- Improve collaborations with other agencies such as harbours and marine, Maritime Safety Queensland.
- Identification of high risk pathways with industry and implementation of mechanisms aimed at preventing introduction along with surveillance for early detection of potentially highly invasive species.
- Commissioning research or "on site" trials with regards to appropriate surveillance/monitoring methods likely to successfully detect marine pests at an early stage as a means of prevention. The Panel was advised that research to develop eDNA probes for multiple species is underway in South Australia, however requirements for spatial and temporal application of these tests to provide effective coverage is yet to be determined. The Panel was also made aware of remote monitoring (robotic) technology being developed at CSIRO.

RECOMMENDATIONS

12. Build expert and regional capability

- 12.4. Create a leadership position and specific marine biosecurity function.

ENGAGEMENT – A STRATEGIC CAPABILITY GAP

A further gap identified was in the areas of communications, stakeholder engagement and partnership development. While these areas are often talked about as if they require a single capability set, in reality the functions are quite different. In the context of biosecurity and of this review, a rough definition is as follows:

Communication involves disseminating information through a variety of channels and techniques including web pages, social media, advertising, print and electronic media and in person. It can also involve eliciting and responding to feedback and comments. An example is Animal Health Australia's 'spotted anything unusual' campaign.

Engagement implies a two way process, which is led by the organisation but where there is an intention to modify the direction to be taken (for example, of a policy or operational approach) based on the input from the other parties. Engagement may extend to open participatory processes that involve joint problem solving or co-development of proposals. A characteristic of engagement is that control and authority always remain with the

organisation doing the engagement. An example is the process used by Biosecurity Queensland in the development of the new biosecurity legislation.

Partnerships are generally a more formal arrangement involving establishing mutually beneficial objectives, making commitments and delivering agreed outcomes. Partnerships, by definition, involve sharing of control and authority, and may evolve from engagement processes. An example is Plant Health Australia.

The Panel's view is that capabilities in all three areas are essential.

Communication functions are currently delivered via a centralised unit within the department and the Panel did not identify a lack of capability in this area. It did not specifically examine whether there was adequate capacity.

The Panel has more concern about capability in engagement and development of partnerships and believes that these capabilities need to be built in to role descriptions at all levels rather than being housed under a dedicated leader. Capability in these areas will need to be built through a combination of targeted training and development of existing staff and attention to these capabilities as part of the recruitment process. In addition, specialist resources may need to be contracted for particular tasks, as they were during the review of the Biosecurity Act.

Development of a communications and engagement plan with accountability for delivery assigned to all senior managers is proposed as a way of embedding a more customer, community and partner focused culture in the organisation.

“A lot of engagement with these stakeholders occurs on a day to day basis by Biosecurity Queensland inspectors and extension officers. Understanding of how they interrelate and to what level however, from a communications perspective is missing”

DAF Staff Member

“Conduct forums and work with farmers for the best outcome all round.”

Horticulture Producer

RECOMMENDATIONS

12. Build expert and regional capability

- 12.5. Include engagement and partnership development in the recommended training and workforce development plan, assign responsibility for driving a change in culture to all leaders and establish access to specialist skills.

THE CHALLENGE OF NORTH QUEENSLAND

North Queensland has unique characteristics that demand special attention:

- Particularly complex and numerous land tenure and institutional arrangements requiring special attention to develop coordination mechanisms and build relationships.
- Generally sparse population inland and north of Cairns requiring development of different models for managing biosecurity risks.
- Proximity to Asia providing a route for entry of biosecurity threats.
- Tropical climate that is favourable to many pests and diseases, as well as a variety of industries, especially horticulture.
- A focus on pursuing development opportunities through additional investment, particularly in the primary industries, potentially increasing the risk of incursions, but also the opportunity to build in biosecurity management at an early stage.
- Key institutions that could potentially play an expanded role in the biosecurity system, such as James Cook University.
- Opportunities to further develop export markets in Asia.
- Australian Government commitments through the White Papers for Agriculture and Northern Australia to increased investment in surveillance, the Northern Australia Quarantine Strategy and indigenous land and sea rangers. This investment could be leveraged to increase the impact of the Queensland Government's investments in biosecurity.

The Panel's view is that a biosecurity leader based in North Queensland is required to develop and drive a suite of initiatives to address the unique needs of the region. There should be a particular focus on delivering biosecurity risk mitigation strategies which drive agriculture and aquaculture sector growth.

RECOMMENDATIONS

12. Build expert and regional capability

- 12.6. Develop a biosecurity initiative for northern Australia incorporating a focus on delivering biosecurity risk mitigation strategies, which support agriculture sector growth, protect the environment and mitigate risks to human health.

CHAPTER 9. IMPROVING THE EFFECTIVENESS OF THE QUEENSLAND BIOSECURITY SYSTEM THROUGH LEVERAGING

Deliverable: 3 Identify where incremental investment could leverage capacity and capability from entities, which share Queensland's Biosecurity priorities to achieve world's best practice.

OVERVIEW

A future Queensland Biosecurity System requires a partnership between Biosecurity Queensland and others to deliver project and system outcomes. The advantage of a partnership approach is that both partners are able to leverage their contributions to achieving shared goals. The availability of incremental investment offers the opportunity to encourage partnerships – in the long run, this will build the capability of the system as a whole.

Organisations that share Queensland's biosecurity priorities include other Queensland state and local government agencies, other jurisdictional government agencies, peak bodies representing primary industries, environment and conservation and communities, primary producers and landholders, supply chain participants, service providers, the research community and members of the broad Queensland community.

Key themes from the consultation process were:

- There is capacity across the Department of Agriculture and Fisheries, the rest of government, tertiary institutions, community, other entities (for example, regional natural resource management bodies and Local Government Authorities) and the national system, which is not being fully utilised for prevention/strategic priorities and response activities.
- There are numerous examples of industry specific and generic programs to improve on farm biosecurity practices and community engagement in early detection. However, there does not seem to be a coordinated approach with explicit key performance indicators or incentives.
- There is an opportunity to better pull government levers to meet biosecurity objectives, for example, through the planning system, logistics/infrastructure, recovery arrangements, and operating agreements/licences.
- There is an emerging realisation that individual jurisdictions cannot all “do it all” – questions include should some things be delivered nationally on behalf of individual jurisdictions? Should there be more sharing of capacity along the lines of the national Research, Development & Extension framework established under the Agriculture Ministers' Forum? For example, should other jurisdictions simply contract Biosecurity Queensland to deal with any ant incursions?
- Opportunities to improve biosecurity capacity and capability through networking of specialists across organisations will require active management.

The Panel concluded that there are many opportunities to leverage whole of government, industry, other organisations and/or community action to achieve biosecurity outcomes through the Queensland Biosecurity System. The development of a new biosecurity strategy

and action plan, and the new governance and funding arrangements recommended in this report will establish the shared biosecurity priorities and identify the partnering opportunities to assist realisation of these opportunities.

The Panel identified a small number of specific opportunities, which it recommends pursuing as a priority under the new action plan. These opportunities will require some targeted investment from both the Queensland Government and partner entities, but will generate leveraging opportunities for both.

RECOMMENDATION SUMMARY

4. Develop a Queensland biosecurity surveillance strategy

4.2. Build leveraging strategies into the Queensland biosecurity strategy including better engagement of private professionals and service providers to agricultural industries, supply chain data, Commonwealth Government, other jurisdictional investment and indigenous ranger programs.

- a) Engage the environment and natural resources portfolios to work with environmental non-government organisations and community groups to develop options for community driven passive surveillance, building on ‘citizen science’ models.

13. Joint investment in a coordinated on farm Biosecurity campaign

13.1. Design and deliver a coordinated project to set targets and drive measurable uptake of on farm biosecurity under the umbrella of shared governance arrangements and in collaboration with other organisations such as Animal and Plant Health Australia.

12. Build expert and regional capability

12.7. Design and deliver a pilot project with a subset of volunteer Local Government Authorities and natural resource management groups to explore opportunities to better coordinate and leverage investment at a regional level, including taking on a broader biosecurity focus and improving surveillance outcomes.

SHARED BIOSECURITY PRIORITIES

The Queensland Biosecurity System is an intersection of a diverse range of interests – government, agricultural, economic, environmental, research. Different groups represent each interest, and there is strong alignment of objectives and priorities in many cases.

“A combined effort is needed by both government and industry to effectively combat both plant and animal biosecurity threats.”

Queensland Farmers’ Federation

This section explores actors in the biosecurity system who share Biosecurity Queensland’s goal to mitigate impacts of animal and plant pests and diseases and invasive pests on the economy, the environment, human health and the community.

GOVERNMENT

Although Biosecurity Queensland is the government agency with lead responsibility for Queensland's biosecurity system, a range of other government agencies are delivering programs or developing policies with complementary and congruent objectives. Within Queensland, these include the Departments of Health, Environment and Heritage Protection, Natural Resources and Mines, as well as local governments and government owned corporations.

State and Australian government biosecurity agencies also share a national responsibility for Australia's biosecurity system, in recognition that benefits from good biosecurity flow nationally.

PEAK BODIES

Queensland's primary industries are significant contributors to the economy and to the state as a whole. They are represented by a series of peak industry bodies who have an interest in achieving better biosecurity outcomes for their members, who stand to benefit from the management of threats and realisation of opportunities. Similarly, a range of peak bodies represent other community interests. Groups including LGAQ, Regional NRM Groups Collective, Queensland Conservation Council and the Invasive Species Council advocate on biosecurity issues.

"BQ does not know who the growers are but industry does. There is an existing relationship with peak industry bodies and growers. Use it."

Australian Melon Association

PRIMARY PRODUCERS

Queensland's primary producers contribute to regional economies and provide clean, green and locally grown produce. Primary producers have an interest in managing the business risks posed by biosecurity threats taking pro-active preventative action and being better prepared. Put simply, better biosecurity should improve the profitability of any enterprise.

SUPPLY CHAIN PARTICIPANTS

Primary production is part of a wider supply chain that sees the movement of food products from paddock to plate. Supply chain participants span transporters, processors and retailers. Biosecurity is a risk to sustainable supply, cost and quality of produce, so they have an interest in good biosecurity outcomes.

SERVICE PROVIDERS

A range of private operators provide services to primary producers. These include veterinarians, agronomists and utility providers. They are likely to have an interest in

customer satisfaction and maintaining an ongoing business relationship. Shared priorities may exist around increasing uptake of on-farm biosecurity plans for example.

RESEARCH COMMUNITY

Research and development underpins productivity gains in all industries and is essential to keep ahead of the plethora of pests and diseases that threaten Queensland. Although substantial research on biosecurity risks and ways of managing them continues to be conducted, much of this is not communicated to government or producers. Researchers have an interest in better engaging with the owners of biosecurity risks (for example, landholders or infrastructure owners) to improve problem definition, likelihood of adoption of research outcomes and access to research funding.

QUEENSLAND COMMUNITY

Queenslanders are the ultimate beneficiaries of a good biosecurity system. Although biosecurity underpins much that we all take for granted, many Queenslanders are unaware of biosecurity. However, as evidenced earlier in this report, the Queensland community does value biosecurity, and there are many circumstances (such as Landcare and Bushcare groups) where priorities are aligned.

PANEL OBSERVATIONS AND FEEDBACK

The Panel canvassed leveraging opportunities extensively during discussions with internal and external partners. Key themes that emerged were:

- There is capacity across the Department of Agriculture and Fisheries, the rest of government, tertiary institutions, community, other entities (for example, regional natural resource management bodies and local government authorities) and the national system, which is not being fully utilised for prevention/strategic priorities and response activities.
- There are numerous examples of industry specific and generic programs to improve on farm biosecurity practices and community engagement in early detection. However, there does not seem to be a coordinated approach with explicit key performance indicators or incentives.
- There is an opportunity to better pull government levers to meet biosecurity objectives, for example, through the planning system, logistics/infrastructure, recovery arrangements, and operating agreements/licences.
- There is an emerging realisation that individual jurisdictions cannot all “do it all” – questions include should some things be delivered nationally on behalf of individual jurisdictions? Should there be more sharing of capacity along the lines of the national Research, Development & Extension framework established under the Agriculture Ministers’ Forum? For example, should other jurisdictions simply contract Biosecurity Queensland to deal with any ant incursions?
- Opportunities to improve biosecurity capacity and capability through networking of specialists across organisations will require active management.

LEVERAGING OPPORTUNITIES

The Panel concluded that there are many opportunities to leverage whole of government, industry, other organisations and/or community action to achieve biosecurity outcomes through the Queensland Biosecurity System. The development of a new biosecurity strategy and action plan, and the new governance and funding arrangements recommended in this report will establish the shared biosecurity priorities and identify the partnering opportunities to assist realisation of these opportunities.

The Panel identified a small number of specific opportunities, which it recommends pursuing as a priority under the new action plan. These opportunities will require some targeted investment from both the Queensland Government and partner entities, but will generate leveraging opportunities for both.

SURVEILLANCE

A review of surveillance investment and development of a coherent surveillance strategy has already been recommended. There is an opportunity to leverage information currently being collected by service providers (for example, agronomists, horticultural advisors, veterinarians), as well as on farm and at other points in the supply chain. There is also an opportunity to target additional information through these routes. This approach would complement the development of a biosecurity reserve (as recommended elsewhere in the report) by establishing relationships, that could be drawn upon in the event of an incursion requiring a response.

The Panel also noted the development of a national surveillance strategy under the auspices of the National Biosecurity Committee and the importance of alignment with other jurisdictional investments to leverage maximum value for Queensland and Australia. In particular, given the particular risks of threats from the north, it is critical that there is ongoing Australian Government investment in the Northern Australia Quarantine Strategy and marine biosecurity and that this is planned and delivered cooperatively.

A particular opportunity is to leverage the existing indigenous ranger network in Far North Queensland and the proposed additional investment referenced in the Commonwealth Government's White Paper on Developing Northern Australia.

The Panel is also of the view that there could be more effective leveraging of 'citizen science' in relation to biosecurity threats to the environment.

The Panel recommends that the new surveillance strategy includes targeted investment in leveraging information from other sources in this way. Tools could include formal memoranda with organisations (as used in New Zealand) or a grants program for initiatives designed to meet established criteria and which include co-investment.

RECOMMENDATIONS

4. *Develop a Queensland biosecurity surveillance strategy*

4.2. Build leveraging strategies into the Queensland Biosecurity Strategy including better engagement of private professionals and service providers to agricultural industries, supply chain data, Commonwealth Government, other jurisdictional investment and indigenous ranger programs.

- a) Engage the environment and natural resources portfolios to work with environmental non-government organisations and community groups to develop options for community driven passive surveillance, building on 'citizen science' models.

BIOSECURITY NETWORK

The concept of a biosecurity network is outlined in the previous chapter. It is the Panel's view that many organisations have arrangements in place to train staff and volunteers in skills that are highly relevant to biosecurity response and that these skills and training could be leveraged more effectively. A further explanation of the concept of a biosecurity network was explored in the discussion for improving biosecurity responses in Chapter 7.

ON FARM BIOSECURITY

Appropriate investment in prevention is critical. In the agricultural biosecurity sphere, good on farm biosecurity systems are an important component of managing biosecurity risk. The same applies to aquaculture and plantation forestry. Effective on farm biosecurity increases profits by enabling effective management of pest and disease impacts on productivity and reducing costs of mitigation strategies. It also helps prevent new incursions happening in the first place and in the event of an incursion, it reduces risk of spread and the need for onerous regulatory controls. The Panel was provided with information about many excellent initiatives to improve on farm biosecurity, developed under the auspices of AHA and PHA, and industry research and development corporations. Examples include the Livestock Biosecurity Network and Grains Research and Development Corporation funded crop protection officers.

“Biosecurity Queensland – Plant Health have been strong supporters of the industry developed on farm biosecurity program (BioSecure HACCP) for nursery production. The support from Biosecurity Queensland has allowed industry to drive the program to national recognition as a market access instrument for meeting intrastate and interstate quarantine entry protocols for nursery stock.”

Nursery and Garden Industry Queensland

Importantly, there is a broader role for government in enabling the uptake of on farm biosecurity programs. During consultation, it was suggested that commercial incentives may drive uptake. For example, practices would likely rapidly improve in response to supermarket

chains only purchasing from properties which have good (or recognised) biosecurity practices in place.

“Industry needs to do better with on farm biosecurity”

Australian Banana Growers’ Council

The Panel was provided with information about many excellent initiatives to improve on farm biosecurity, developed under the auspices of Animal and Plant Health Australia, peak industry bodies and industry research and development corporations. Examples include the Livestock Biosecurity Network and Grains Research and Development Corporation funded crop protection officers.

LIVESTOCK BIOSECURITY NETWORK

The Livestock Biosecurity Network (LBN) is an independent industry initiative established in 2013 by the Cattle Council of Australia, Sheepmeat Council of Australia and Wool Producers Australia. The initiative has a \$5 million funding base over a three-year pilot period by industry levies held in trust.

The LBN has a relatively small number of officers working in all states and territories, with a focus on building networks of public/private partnerships to assist with the delivery of information about biosecurity risks. The network is also designed to support jurisdictions by enhancing regional industry capability in the event of an Emergency Animal Disease (EAD) outbreak from exotic or endemic diseases.

This initiative is a good example of possible future approaches that support the concept of shared responsibility. Given the very small number of staff employed by the LBN (1 or 2 in each State), there is a danger that there will be limited overall impact. However, the LBN does present an opportunity for governments seeking to further invest in on-farm biosecurity awareness and adoption within an environment of shared responsibility. Rather than employ government staff for this purpose, a more innovative approach may be to invest in expanding the capacity of the LBN. For example, another two industry funded people in Queensland may have more industry credibility and make a larger impact than a similar number employed by DAF.

The Panel also identified a number of programs which are currently being delivered to farmers and which could be readily modified to include material to address on farm biosecurity. For example, the Queensland Government is heavily investing in “Best Management Programs” (BMP) to minimise agricultural impacts on the Great Barrier Reef. BMPs give producers and landholders advice and detail practices in a digestible format. The Panel suggest that inclusion of biosecurity considerations would be a simple, low cost, high impact mechanism to achieve better biosecurity outcomes. Biosecurity Queensland is currently involved with the Great Barrier Reef Water Science Taskforce, although input to current BMP development could be strengthened.

“I think we need to invest in on farm biosecurity but we need to do it effectively”

DAF Staff Member

With a relatively modest investment (for example, a program leader or coordinator, and development of some additional materials) and the establishment and agreement to “stretch” goals for uptake of on farm biosecurity systems, the Panel believes significant gains could be made.

The Panel also noted that recent events, particularly Panama Tropical Race 4 affecting the banana industry, have heightened interest in the value of on farm biosecurity.

RECOMMENDATIONS

13. Joint investment in a coordinated on farm Biosecurity campaign

- 13.1. Design and deliver a coordinated project to set targets and drive measurable uptake of on farm biosecurity under the umbrella of shared governance arrangements and in collaboration with other organisations such as Animal and Plant Health Australia.

REGIONAL NETWORKS

As detailed above, at a regional level, there are a number of organisations engaged in delivering biosecurity outcomes to meet shared objectives.

These include Local Government Authorities, Regional Organisations of Councils, Regional Natural Resource Management groups, LandCare groups, government land management agencies, including the Department of Transport and Main Roads and Department of Environment and Heritage Protection.

“The resources and willingness of Local Governments, industry groups and NRM groups are generally underutilised within the State Government electing... to carry much of the burden of a response on its own”

DAF Staff Member

In Far North Queensland, this is compounded by region specific bodies, such as the Wet Tropics Management Authority and indigenous land management councils.

These bodies collectively make a very significant investment in managing threats from invasive plants and animals but the Panel received feedback from many quarters querying the impact of this investment. Concerns centred on both “investment in the wrong things” and “lack of coordination”.

“The LGAQ is keen for Biosecurity Queensland to support and facilitate the development of local government compliance plans with the roll out of the new Act.”

Local Government Association of Queensland

The Panel identified two opportunities to leverage existing investment.

The first is to improve coordination of regional investment processes by gaining agreement to align regional investment priorities and include a broader consideration of biosecurity within these priorities. This would require development of an agreed approach to bring together the biosecurity plans developed by Local Government Authorities, the regional natural resource management plans developed by regional natural resource management organisations and relevant regional plans developed by state agencies, including Transport and Main Roads and Environment and Heritage Protection. The Panel was provided with some examples of good coordination, which could be built on – including the regional co-investment model for pest animal control, and coordination of council investment through a regional NRM plan. There is undoubtedly an opportunity to more effectively:

- leverage investment from all regional bodies
- expand the reach of Biosecurity Queensland into private and public landholders
- potentially provide a vehicle to set and achieve broader biosecurity outcomes at a regional level.

Secondly, NRM organisations advised the Panel that they have extensive information resources, which are currently not being shared or utilised effectively for biosecurity outcomes. The Panel believes this opportunity should be further explored in the development of the biosecurity surveillance strategy recommended above.

RECOMMENDATIONS

12. Build expert and regional capability

- 12.7. Design and deliver a pilot project with a subset of volunteer Local Government Authorities and natural resource management groups to explore opportunities to better coordinate and leverage investment at a regional level, including taking on a broader biosecurity focus and improving surveillance outcomes.

PARTNERSHIP WITH PRIVATE PROFESSIONALS

As noted elsewhere in this report an important priority is to improve the effectiveness of the passive surveillance system, which is required for early detection of new pest and disease outbreaks. Early detection minimises spread, maximises the likelihood of control and early recovery, reduces the duration of response activities and minimises losses, costs and impacts.

Coverage of the state by operatives who can fully investigate suspect incursions is patchy. However, there has been a sustained increase in expenditure on animal and cropping advisory services. For example, the average expenditure in the beef industry on veterinary services has increased 55 per cent between 2004 and 2014. Similarly, the average

expenditure in the cropping sector on advisory services increased 60 per cent between 2004 and 2014.⁴⁸ This market is anticipated to continue to grow.

“Commercial agronomists or consultants could also be used more for the collective of evidence of absence data. However, to achieve this there needs to be something in it for them, or it needs to become a request from the grower who is contracting them.”

DAF Staff Member

While this issue applies to both plant and animal biosecurity, the issue raised most commonly during consultation was the availability of veterinarians to conduct investigations. Data and examples of systems to address this issue are also more readily available for this sector. Hence, the availability and engagement of veterinarians is used as a case study, but it is suggested that the solutions may be applied more broadly.

DAF has a limited network of field veterinarians, with very few in western centres (see Figure 5). The total number of field vets (11) does not compare favourably with states like Victoria, which has around 30. There are also some gaps in the distribution of para-veterinary staff (biosecurity inspectors), as well as, reportedly, a declining level of investigation skills within this group. Further, we were advised during consultation that many of the current DAF field veterinarians have very limited time for disease investigation work owing to other project commitments.

While systems are in place to investigate any suspicion of an emergency animal disease in any part of the state through internal DAF staff travel arrangements, there is no substitute for local veterinarians conducting routine disease investigations on an ongoing basis to maintain a robust passive surveillance system. Importantly, relationships with local vets have important influence on the overall level of disease reporting.

It is also noted that the private veterinary sector is currently not fully engaged with the surveillance system in Queensland. For example, Queensland has the poorest uptake by private veterinarians of the National Significant Diseases Investigation Program. Figure 5 shows the distribution of veterinary practices in Queensland. While their distribution is not ideal – rural practices have also struggled in recent years – they still represent an opportunity to improve the overall coverage.

The veterinary profession has also indicated that it is very supportive of measures to improve involvement in the surveillance system. Hence, there is currently a real opportunity to better engage the private veterinary sector. From experience elsewhere, the model suggested involves contracting individual private practices to perform specified work. While enhanced surveillance may be the initial focus, having veterinarians on contract also means that they can be used for other biosecurity work on an as-needed basis. Examples could include training for roles within emergency responses, biosecurity education & awareness and other disease control work.

This initiative would form part of a broader suite of measures to improve prevention and surveillance, particularly enhanced education and awareness.

⁴⁸ ABARES (2015) *AgSurf Database*, Trend analysis of average farm expenditure.

An excellent model on which to base such an initiative is in place in South Australia under their Enhanced Disease Surveillance Program. Under this program, individual veterinary practices are contracted to government, primarily to conduct two types of disease investigation. While the specifics would need to be modified to suit arrangements in place in Queensland, the two types of investigation covered under the SA program are:

Level 1 investigation

- The program meets the cost of all the relevant tests conducted at the Laboratory for eligible cases (up to an agreed limit); the Livestock Owner pays for the veterinary fees and any travel.⁴⁹
- Eligible cases are those in which multiple animals are affected with a differential diagnosis that includes an infectious aetiology.
- The Veterinary Surgeon should contact a government veterinarian prior to any samples being received at the Laboratory and a submission form must be completed.
- Laboratory staff may conduct additional testing of samples at their discretion.

Level 2 investigation

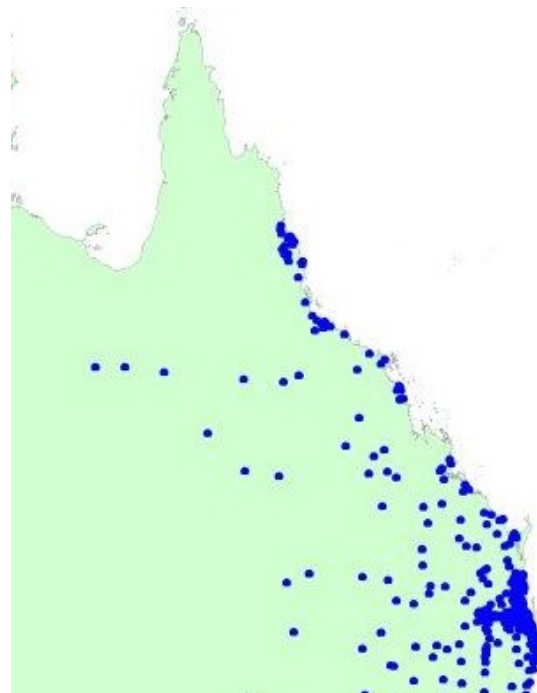
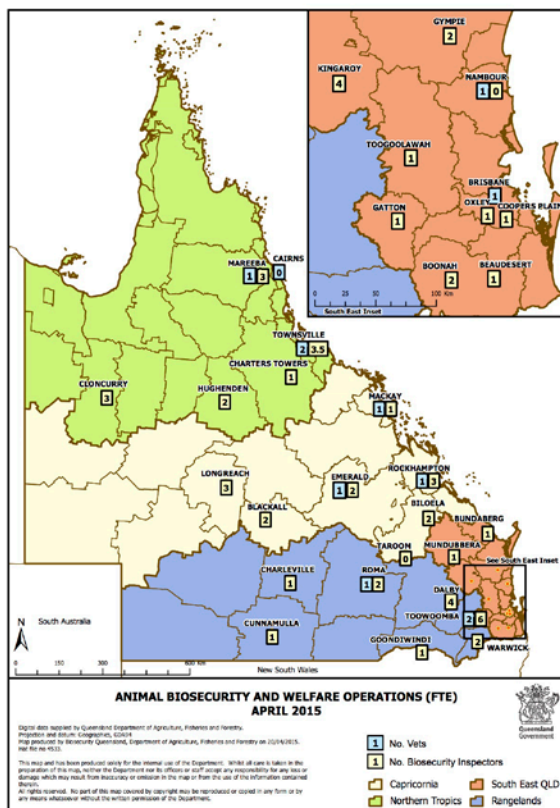
- The program meets the cost of all relevant Laboratory tests and all veterinary fees charged by the Veterinary Surgeon (including professional fees (at a specified hourly rate), medication necessary for examination and/or euthanasia and consumables, but excluding therapeutic agents), including travel for eligible cases.
- Approval for a Level Two investigation must be received, prior to the investigation, from a government Veterinary Surgeon.
- Eligible cases are those of particular concern: such as suspicion of exotic animal diseases, unusual, atypical clinical problems with or without a high morbidity and/or high mortality, a high economic impact, or an unexpected response to treatment.
- Cases may include a follow-up visit to an unresolved investigation.
- A thorough investigation must be conducted, including collection of a full range of samples and a submission form must be completed.

Implementation of such an initiative will require resources additional to those currently allocated (or internal reallocation of resources). A worthwhile program would certainly expand the veterinary capacity and geographic coverage within Biosecurity Queensland at a fraction of the cost of employing multiple additional veterinarians. Organisation of such a program would be a very rewarding project for an existing government field veterinarian.

There are a range of professional agronomists and others who supply private services to the plant based industries and are on farm on a regular basis. During consultation we were advised that many of these people would be very willing to play a greater role within the

⁴⁹ Note that laboratory costs are already free of charge for most disease investigations in Queensland. However, this issue is discussed further elsewhere in this report. Linking free diagnostics tests to more specific surveillance requirements may be a worthwhile initiative. The cost of transporting diagnostic samples large distances was also a significant issue raised during consultation that could be considered. A full or partial subsidy of professional fees may also be an option, particularly where there are no government veterinarians within a reasonable distance.

surveillance system. Although further analysis is required, a system similar to that described above for veterinarians should be explored for this sector.



Distribution of Animal Biosecurity Veterinarians and Inspectors

Distribution of private veterinary practices in Queensland and Northern NSW

Figure 5: Select Comparison of Government and Private Capacity in Animal Biosecurity

LEVERAGING OPPORTUNITIES ACROSS GOVERNMENT

The Panel identifies a number of government initiatives, which could provide leverage points, including two recent Australian Government White Papers and several Queensland Government initiatives, including Advance Queensland. There is an existing level of coordination of biosecurity activities across government, for example, there is a coordinating committee for pest and weed control by land management agencies, and the Panel noted that existing coordination arrangements between Biosecurity Queensland and Queensland Health appear to work well.

“There is a common perception in other agencies that Biosecurity Queensland needs to overcome an inward facing, disaster focused, cultural response to biosecurity risks, and that Queensland’s whole-of-government biosecurity response is hampered by a view that only Biosecurity Queensland should and can respond to biosecurity risks.”

DAF Staff Member

There is an existing level of coordination of biosecurity activities across government, for example there is a coordinating committee for pest and weed control by land management

agencies, and the Panel noted that existing coordination arrangements between Biosecurity Queensland and Queensland Health appear to work well.

However, the Panel identified three areas of opportunity to better leverage existing Queensland Government investment. In addition, opportunities to tap more effectively into emergency and disaster response capability are discussed earlier in the report.

Integrated service delivery in regional areas

Department of Agriculture and Fisheries staff occupy 44 locations across Queensland in addition to the Brisbane CBD. Approximately 85 per cent of Biosecurity Queensland staff are located outside the Brisbane CBD, although only 34 per cent are located outside the south east region. Other agencies, such as the Department of Natural Resources and Mines, also have a strong regional footprint and there would appear to be a significant opportunity, particularly outside the southeast region, to develop a landholder focused customer service approach across DAF and across government.

Options include:

- Co-location and single "shop fronts" (the Panel understands this is being trialled in Charleville and Emerald).
- Close collaboration with the customer service centre.
- Agreements between divisions and/or agencies to "warm referrals" (where the primary contact officer organises for the right person to deal with an inquiry outside their area of expertise).
- Cross authorisation for regulatory functions.
- Creation of a single integrated "front line service".

All these options would increase the reach of Biosecurity Queensland and the breadth of understanding of good biosecurity practice.

The Panel suggests that these options may achieve significant improvements to both the effectiveness and efficiency of the biosecurity system.

Incorporating biosecurity objectives where they align with the objectives of programs designed for other purposes

A range of programs delivered across government could be modified with relatively little effort to address biosecurity objectives.

For example, the Hort360 program is a step by step, facilitated risk assessment process designed to give horticulture growers a "360 degree view" of their farm business operations, identifying potential risks, capitalising on opportunities and highlighting unnecessary farm expenses. It focuses on environmental outcomes (such as soil management to prevent erosion and impacts on sensitive catchments and marine environments) in a whole farm context, as well as issues such as industrial relations and workplace health and safety. The program is the result of a collaboration between Growcom and the Queensland Department of Environment and Heritage Protection. Based on initial information, development of a biosecurity module to do this program would seem to be a relatively low cost option to improve on farm biosecurity.

“Both plant and animal industries need to develop appropriate biosecurity management systems which can be implemented by all producers” This could be a requirement of any animal or plant cost sharing deed with Animal Health Australia or Plant Health Australia”

Queensland Farmers’ Federation

Implementation of the Panel's recommended approach to development and governance of a strategy and action plan should facilitate identification of opportunities such as this.

Utilising other government policy levers to achieve biosecurity outcomes

There are a variety of potential policy levers across Government that could achieve biosecurity outcomes more efficiently and effectively than through direct intervention by Biosecurity Queensland. Examples include:

- Using the planning system to drive appropriate location of intensive agricultural production enterprises to minimise risk of spread of pests and diseases
- Using lease conditions for port infrastructure to set expectations for the management of marine biosecurity risks
- Imposing conditions on major development applications to manage biosecurity risks, for example from relocation of heavy equipment.

As above, the development and appropriate governance of a strategy and action plan should assist in identifying these opportunities.

CHAPTER 10. FUNDING ARRANGEMENTS

Scope: 1 (c) Outline the decision making and investment criteria that trigger cost sharing and/or a move to different levels of intervention - eradication, containment, management etc.
Deliverable: 5 The specific issue of Biosecurity Queensland's base funding and funding for responses

OVERVIEW

Given the centrality of biosecurity responses to the wellbeing of the Queensland and Australian biosecurity systems, the Panel was asked to give particular attention to cost-sharing arrangements and funding for responses. This involved a review of Queensland's current obligations under the national system, and some of the challenges of current arrangements.

The Panel noted the history of decision-making processes to secure funding for responses and the potential operational risks associated with funding uncertainty. With this in mind, they commissioned Synergies Economic Consulting to review challenges and alternative approaches at a State level and recommend options to establish a more certain funding environment.

RECOMMENDATION SUMMARY

14. Fine tune funding for responses

- 14.1. The Panel recommends that the annual allocation to the Exotic Pest and Disease fund is increased to \$1.5m and its governance revised to restrict its application to new incursions and provide for enhanced oversight. The fund should be reviewed after three years to review the appropriateness of the allocation.
- 14.2. The Panel recommends that development of the investment and commissioning function for responses and the biosecurity response unit build in:
 - a) Clearly differentiated and articulated response phases, with clear purposes;
 - b) Enhanced capacity for review and evaluation, particularly of responses and response strategies;
 - c) Improved performance management information for DAF and central agencies.

COST SHARING ARRANGEMENTS AND TRIGGERS

In Chapter 4 the report outlines economic principles for how investments should be prioritised. In this section we describe how decisions are made under current cost sharing arrangements and highlight the similarities and differences.

MANAGING RESPONSES UNDER A NATIONAL BIOSECURITY SYSTEM

Queensland operates within a strong national biosecurity system that provides a national framework to manage the governance, funding and response to exotic pest and disease incursions, as well as policy guidance and frameworks for all aspects of biosecurity, including the management of established pests and diseases.

Queensland is a signatory to three national cost-sharing agreements with the Commonwealth, state and territory governments, and plant and animal industries. These

agreements recognise that a biosecurity risk in one state has the potential to impact strongly on the economy and environment elsewhere in Australia.

The agreements, which provide nationally consistent arrangements for eradicating nationally-significant animal, plant and environmental pest and disease incursions, are:

- **Emergency Animal Disease Response Agreement (EADRA)** – a contractual arrangement that brings together the Australian, state and territory governments and livestock industry groups to collectively and significantly increase Australia’s capacity to prepare for, and respond to, emergency animal disease (EAD) incursions⁵⁰.
- **Emergency Plant Pest Response Deed (EPPRD)** - a formal, legally binding agreement between PHA, the Australian, state and territory governments and plant industry signatories, covering the management and funding of responses to Emergency Plant Pest Incidents⁵¹.
- **National Environmental Biosecurity Response Agreement (NEBRA)** – NEBRA is an agreement between Australian, state and territory governments, however contributions may be sought from private beneficiaries. It establishes emergency response and cost sharing arrangements for nationally significant biosecurity incidents, including marine and freshwater incidents, that have high environmental and/or social amenity impacts, where a national response is for the public good⁵².

Simply put, these agreements are activated when a National Management Group agrees that it is in the national interest, and it is technically feasible and cost beneficial to eradicate an exotic or emergency pest or disease. Under these agreements, governments and affected industries share the decision-making of the response, and share the costs based on public versus private benefits, until such time that an eradication response is finalised or no longer considered feasible.

Each agreement defines all aspects of managing the particular animal, plant or environmental response, including which pests or diseases are eligible to be covered by the agreement, roles and responsibilities, activation and decision-making processes, management of phases of responses, technical feasibility, benefit: cost and risk assessment criteria, governance arrangements, and cost sharing of eligible expenses which may include owner reimbursement costs.

Decisions are made by consensus, except cost sharing decisions which must be unanimous.

Under these agreements, other responsibilities are also placed on signatories to the deeds, including a requirement to maintain normal commitments, provide trained and accredited personnel to work on a response and to implement risk mitigation strategies.

There are three broad phases for managing responses – Incident Definition, Emergency Response and Proof of Freedom.

There are formal reporting and governance requirements that must be met, and any decision to commence a nationally funded response will be made by a National Management Group

⁵⁰ Animal Health Australia website, EAD Response Agreement

⁵¹ Plant Health Australia, Fact Sheet - The Emergency Plant Pest Response Deed, 1

⁵² Guide to the National Environmental Biosecurity Response Agreement, Oct 2014, 1

(involving jurisdictions and affected industries). For responses that fall outside the formal national agreements, the Agriculture Ministers' Forum (AGMIN) is the final decision-maker.

As part of normal commitments, all states, territories and industries are responsible for mounting an initial response to biosecurity incidents or incursions that occur within their jurisdiction, including reporting the incident within 24 hours. This includes funding the initial response under the Incident Definition Phase until a response plan, including eradication strategy, funding and review triggers, is agreed by the National Management Group or AGMIN.

Normal commitments are defined in a number of nationally agreed documents⁵³ and generally mean baseline obligations and costs that would normally be met by a jurisdiction as part of their normal commitments as a biosecurity agency or industry. The agreements define 'eligible costs' that can be cost shared – generally, these are costs over and above normal commitments.

Cost sharing of responses continues until such time that the National Management Group agrees that an eradication response is finalised or is no longer considered feasible. There are well defined criteria within each agreement to determine the decision-making to declare a response finalised and/or to determine whether it remains in the national interest, technically feasible and cost beneficial to eradicate a pest or disease.

If the National Management Group determines it is no longer in the national interest or technically feasible or cost beneficial to eradicate a pest or disease, NMG may consider what other action needs to be taken, or whether it meets the criteria for a nationally funded transition to management program.

Generally, the lead jurisdiction is primarily responsible for considering what action (if any) needs to be taken to manage the ongoing impacts of the pest or disease.

At a national level, there are a number of agreed policies and frameworks that guide industry and jurisdictions for the management of issues outside an eradication response for example, National Framework for the Management of Established Pests and Diseases; National Transition Program Policy Framework. Other policies and frameworks are also under development by the national systems (e.g., long term containment policy, new deed for weeds of production, alternative funding models and national investment principles).

RECENT QUEENSLAND EXPERIENCES WITH THE NATIONAL SYSTEM

The number of biosecurity incidents and incursions in Queensland is increasing, with Biosecurity Queensland typically dealing with more incursions than any other state or territory. Given its proximity to Papua New Guinea, South East Asia and the Pacific, and the diverse environment and climatic conditions that favour the establishment of exotic pests and diseases, Queensland can continue to expect even more biosecurity incursions.

⁵³ For example, see Plant Health Australia Guideline - Normal Commitments for Parties to the Emergency Plant Pest Response Deed; and NEBRA, 9.

This is evident in the number of biosecurity incidents and responses that Queensland has dealt with since 2012 (71 new incidents or responses, and met obligations under the national system for 112 new incidents or responses in other jurisdictions).

Queensland sometimes responds to incursions of pests and diseases that do not meet the criteria for a national response under EADRA, EPPRD nor NEBRA. The strength of the national biosecurity system means that these types of responses can be managed under arrangements that are broadly consistent with the formal national agreements, because they meet national interest, technical feasibility and cost beneficial criteria.

However, because there is no pre-existing agreement about how exotic incursions that do not meet the eligibility criteria under existing agreements should be managed, they can be more complex and difficult to negotiate. AGMIN is the final decision-maker for non-deed responses.

CASE STUDY: RED WITCHWEED

The current Queensland response to Red Witchweed is an example of the complexity that can be present in managing a new incursion.

Red Witchweed is a parasitic weed that impacts on production and trade. It is not an animal disease, and is not a Plant Pest under the EPPRD and didn't meet the intent of NEBRA. So any national response falls outside the existing deeds.

Biosecurity Queensland confirmed the pest in July 2013. The incident response was managed and funded by Queensland until affected government and industry parties agreed in June 2015 to commence a non-deed national eradication response from 2015-2025, cost shared by government and industry parties on a 50:50 basis. As at the time of writing this report, a final decision had not been confirmed by the Agriculture Ministers' Forum and individual Industry Boards, even though operations have commenced. The Queensland Government is underwriting the program until a final decision is made.

During the initial 'incident definition phase' between 2013-2015, there was ongoing lack of agreement about governance, affected parties, funding arrangements, categorisation, impacts of the pest and nature of the response. Queensland, as lead jurisdiction, managed the financial risks of initiating a response whilst working with affected parties to resolve the issues before a national decision could be made. Some government parties have agreed to cost share with Queensland for the \$2.5M cost of managing the response between 2013-2015.

The national Red Witchweed response is the first non-deed response cost shared by affected government and industry parties, and the first weed response funded jointly by government and industry. While this is a significant national achievement, Queensland (government and industry) managed the risks for two years until a decision was made to eradicate the pest.

Currently, Queensland is managing the following national cost shared programs on behalf of Australia:

- Four Tropical Weeds in North Queensland and New South Wales – commenced 2002, managed outside existing national agreements
- Electric Ants in North Queensland - commenced 2006, managed outside existing national agreements
- Red Imported Fire Ants in South East Queensland - commenced in 2001, managed outside existing national agreements
- Red Imported Fire Ants in Central Queensland - initial incursion eradicated in 2010 and managed outside existing national agreements; new NEBRA incursion response commenced 2013
- Exotic Fruit Fly in Torres Strait – a cost shared long term containment strategy operating since 1996; and
- Red Witchweed in Central Queensland – commenced 2015, managed outside existing national agreements.

Queensland also provides its share of funding to national responses being managed by other states and territories: Red Imported Fire Ants (New South Wales), Banana Freckle (Northern Territory), Avian Influenza (New South Wales), and Giant Pine Scale (Victoria and South Australia).

2014-15 in brief

During 2014-15, Queensland has faced several challenges in its management of responses under the national framework. Some examples include:

- The National Management Group (NMG) did not agree to fund the response to Cucumber green mottle mosaic virus in North Queensland as it was unable to reach consensus on whether it was technically feasible to eradicate. Queensland has funded the entire response and is implementing a state-funded eradication program.
- The response to Panama disease tropical race 4 was determined by NMG to be not eradicable and Queensland and industry has continued to mount a significant response to manage the pest.
- The long-term response to Red Imported Fire Ants in South East Queensland has been particularly difficult to manage. Western Australia withdrew funding support for the fire ant program, which required Queensland to undertake extensive negotiations with other jurisdictions to continue to fund the program. National funding approval for 2014-15 was agreed in February 2015 and funding approval for 2015-16 is expected to be considered by national cost shared partners in March 2016 (after the outcomes of the independent review are known). The Queensland Government continues to provide additional funding to underwrite this response until negotiations secure national funding approval.
- After two years of managing and funding the response to Red witchweed, agreement was finally reached to commence a national eradication response from 2015 to 2025. This response will be managed outside existing national agreements. Some jurisdictions have agreed to reimburse Queensland for the \$2.5 million cost of managing the response between 2013-2015.

Challenges of long term eradication programs

At the national level, Queensland has found it increasingly difficult to secure ongoing funding for long-term eradication programs that are managed either inside or outside of existing national agreements. It is taking longer for national committees to make funding decisions, which is considered to be at least partly due to the generally tight fiscal environment within which these decisions are being made. The Panel was provided with the following examples:

- Four Tropical Weeds - in 2013 an independent review recommended an increase in funding to meet the eradication challenges of the six weed species. NMG agreed in February 2015 to recommend to the Agriculture Ministers' Forum (AGMIN) to increase funding. A final decision was not made by AGMIN before the start of the 2015/16 financial year, which has required the Queensland Government to fund operations and extend the temporary employment contracts of staff until a national decision is made.
- Red Imported Fire Ants in South East Queensland – a recurring challenge for the fire ant program is its lack of nationally agreed funding and future certainty. Managing the program in this environment is particularly difficult. There have been 14 (one in progress) independent, scientific, and operational reviews and financial and efficiency audits of the fire ant program since 2001. The delayed national funding decisions for 2014/15 and 2015/16 have been identified earlier in this report. It is noted that national funding decisions for the fire ant program have frequently not been made before the start of the financial year, requiring the Queensland Government to fund operations and extend the temporary employment contracts of staff until a national decision is made. For a program with an \$18M annual budget, this exposes Queensland to significant financial and operational risks.
- Electric Ants – a final national decision on funding for 2015/16 was also not made by the start of the financial year, which has required the Queensland Government to fund operations and extend the temporary employment contracts of staff until a national decision is made.

National cost share funding arrangements constituted approximately 28 per cent of Biosecurity Queensland's annual budget in 2014-15.⁵⁴ Managing an uncertain funding base on an annual basis to deliver nationally agreed eradication programs can be challenging; in addition to negotiating the management and funding of these programs, it can be difficult to retain critical capabilities and capacity that have been developed to deliver on nationally agreed outcomes.

Most staff working on national cost shared eradication programs are employed on temporary employment contracts for the period of nationally agreed funding. When national funding is not agreed before the commencement of a new financial year, it falls to the Queensland Government to fund the continuation of operational activities and management of biosecurity risks in the national interest, until national cost shared partners agree to a continuation of the program and funding for the next period of time. From the examples identified above, it is apparent that the financial and operational risks borne by the Queensland Government can be significant, as can the pressures this places on retaining key capabilities in an uncertain funding environment and when there is no certainty of employment.

⁵⁴ The majority of this was funding for the National Red Imported Fire Ant Program in South East Queensland - \$18M.

If national funding ceased for any current cost shared program within Queensland, under current arrangements there would be an immediate requirement to consider whether to fund a program to manage the ongoing impacts of the pests, or transition to an ongoing management, or to cease operations. As detailed below, the Panel considers more proactive consideration of “with and without cost sharing” scenarios would be beneficial.

Currently, Queensland has no established investment criteria to guide decision making on mounting a state based response or around shifting from an eradication program, to a control and management program, then to a transition to management program and then to a management program. Further, Biosecurity Queensland has no criteria to determine the level of investment, if any, in its existing state funded eradication, control and containment, or management programs.

As recommended earlier in the report, a better approach to investment option evaluation and prioritisation is required, and should be applied at relevant trigger or review points in the implementation of a response. These review points should be clearly defined in response plans and business cases for funding. The Panel does not consider that there is utility in trying to predetermine investment criteria to shift from one type of response to another given any such consideration is entirely context specific.

FUNDING FOR BIOSECURITY RESPONSES

The Panel noted the history of decision making processes to secure funding for responses and the potential operational risks associated with funding uncertainty. Synergies Economic Consulting were contracted to provide advice on options to establish a more certain funding environment. The conclusions of the Synergies report were as follow:

PROBLEM STATEMENT

The first task was framed in terms of a problem statement which identified a number of perceived problems with the current funding arrangements, specifically:

- It is well established that an early and properly resourced response is the most cost effective approach to take to an incursion. In fact, eradication may be severely jeopardised if prompt and decisive action is not taken. Uncertainty over funding discourages the right amount of investment at the most appropriate time.
- The need to prepare detailed business cases and negotiate with multiple jurisdictions is a significant impost at a time when resources could be more effectively deployed dealing with the incursion. In some cases, the time taken to reach agreement on whether or not a threat is eradicable is inordinate (up to 9 months or longer).
- Retaining staff when funding is uncertain is also an issue caused by lack of certainty of funding.
- At a State level, the requirement to put a business case to the Cabinet Budget Review Committee similarly creates delays and may lead to suboptimal decisions.
- On the other hand, if cost sharing or Treasury supplementation is agreed, there may be no on-going incentive to pursue the most cost effective approach to response, raising concerns that responses are "gold plated".
- There is no incentive for other parties with an interest (industry bodies, environmental NGOs) to contribute or act to reduce the risk.

- Whilst large responses are often what we refer to, the financial risk is also evident when several smaller responses occur within the one financial year. If establishing a threshold, consider one threshold for the total of all responses in one year, rather than setting a threshold per response.

Uncertainty

From the information presented, any uncertainty regarding funding, concerns the longer-term program to eradicate or contain a biosecurity event. The uncertainty is around the outcome of NCS negotiations and the annual funding of on-going responses. In practice, and based on the information available to us, the current funding model does not create significant funding uncertainties. The data over the past 15 years shows an increasing annual cost of just over \$0.5m with a significant degree of volatility in annual total expenditure. This expenditure environment has constituted a robust test of the existing funding model, through which it appears to have performed adequately.

Reporting impact on resources

The requirement to provide clear, transparent and appropriately costed business cases must be core business for Biosecurity Queensland. With national cost sharing, and a disproportionate amount of responses originating in Queensland, professional and robust business cases are a major tool for minimising funding risk.

Similarly for non-NCS responses, each response has an opportunity cost and robust business case which assists the Minister and DG of DAF to decide the most appropriate response and enables them to take to CBRC a case for reallocating resources away from other areas of government to Biosecurity Queensland.

Underpinning the capacity will be management information systems and evaluation capability. From consultation, a culture of review and evaluation is absent from Biosecurity Queensland.

Incentives for cost effectiveness

The incentives for cost effectiveness are not strong. They could be improved by defining a two part process for responses; an initial response and the main response. The initial response is the phase in which data is collected, the problem fully defined, and the problem eradicated or a longer term plan developed. The main response is the execution of the plan developed in the initial response, with appropriate review and amendment throughout the life of the plan.

Retaining staff

The retention of staff is a symptom of the poor information flows between Biosecurity Queensland and Treasury. It seems that the major issue is definitional, in that there is no breakdown of a response into the initial response and an on-going program.

At the time of an outbreak there will typically be insufficient information on which to base long-term response strategies and the appropriate level of resources to employ. One objective of the initial response should be to collect data for the development of longer term strategy.

At the completion of the initial response (say after 6 months) the response could be funded over a longer-period than one year (if the response is expected to take several years). This will provide more certainty for contractors and reduce turnover. We do not have information on the cost of this higher staff turnover caused by annual funding but we would expect reducing turnover will result in a lower cost response.

There will need to be annual performance reporting and evaluations to ensure the response is the most appropriate.

Incentives for cost effectiveness

The incentives for cost effectiveness are not strong. They could be improved by defining a two part process for responses; an initial response and the main response. The initial response is the phase in which data is collected, the problem fully defined, and the problem eradicated or a longer term plan developed. The main response is the execution of the plan developed in the initial response, with appropriate review and amendment throughout the life of the plan.

Incentives for industry contributions

Industry benefits from responses and on this basis there is a case for a mechanism to facilitate voluntary contributions from industry. This will be considered further in the next section of the report on funding models.

OTHER FUNDING MODELS

From review of other funding models and the problem statement there are broadly four options to reform the funding arrangements:

- Dedicated funding for bio-security responses
- Fine tune the existing model
- A shared funding model with beneficiaries of bio-security responses
- Transferring responsibility to the Commonwealth

When assessed against the independent review panel's criteria for a funding model the best option is to transfer responsibility to the Commonwealth. As a matter of practice, transfer of responsibilities between the Commonwealth and the states is not easy to achieve. In many ways, this option is probably the best long-term option but it may take many years to achieve. In this regard, it is probably best considered as the long term goal for managing Australian biosecurity funding more effectively.

For the immediate future we have assessed that fine-tuning the existing model would meet most of the criteria. The following changes to the existing model would improve its impact on certainty and accountability:

- Rolling-over underspends to subsequent years
- Governance changes including:
 - distinguish between the immediate response phase and the main response for funding purposes;
 - enhance internal capacity on review and evaluation in BQ;

- improve performance management information within DAF and with central agencies.

In addition, if the main response phase becomes part of BQ's core business activities, the efficiency costs associated with staff training and high turnover could be largely avoided.

This model would meet most of the criteria compared to the current model, except it does not provide for a contribution from industry. A voluntary contribution from industry is justified as industry is a beneficiary of biosecurity incidence responses. However, the incentives for industry to contribute are weak. If a model for industry contribution is pursued the model used in the national cost sharing agreement offers a good model because it clearly defines the specific circumstances and proportion of funding to be contributed by industry.

A copy of the report is at Appendix 7.

PANEL OBSERVATIONS

The standard nomenclature for describing responses is outlined in the previous section. Briefly, responses can be divided into the "incident definition" and "response" phase.

The incident definition phase is characterised by the need for rapid action (particularly in the case of animal diseases) and, typically, a high level of uncertainty over the dimensions of the incursion (e.g. how far and where it has spread). The focus of activity in this phase is gathering information to provide greater certainty at the same time as taking immediate steps to contain the incursion.

Ideally, during the incident definition phase sufficient information is gathered to model the potential progress of the pest or disease outbreak under various control scenarios; assess the technical likelihood of containment or eradication; to develop, cost and evaluate response options; and identify a preferred approach to response. Once a decision is made on an approach to a response, the response phase is initiated. National plans such as AUSVETPLAN and PLANTPLAN aim to speed up this process as much as possible through pre-agreed response strategies.

In practice, the boundaries between incident definition and response often overlap, particularly because the progress of the outbreak is often unpredictable despite the response, and information collected during the response may (and should) influence the response plan. Consequently, a response plan usually includes triggers or review points designed to prompt a re-evaluation of the appropriateness of the response plan.

As noted in the section on the biosecurity response unit, there is a wide range of response types, varying in scale, geographical coverage, impact, complexity, urgency and timeframe.

BASE FUNDING FOR BIOSECURITY QUEENSLAND

The creation of a standalone biosecurity response unit with dedicated staff, access to a network of internal and external resources, and an appropriate operating budget should establish a baseline for response funding for Biosecurity Queensland.

A source of funding for initial response is also required so that there is no resourcing impediment to timely action in the event of detection of an incursion. Base funding for Biosecurity Queensland should be sufficient to accommodate immediate action for a reasonably predictable level of annual new incursions based on historical trends.

The Panel notes that Biosecurity Queensland administers the Exotic Pest and Disease fund, with an annual allocation of \$0.784m. Given average annual expenditure on new outbreaks of around \$1.5m over the past 5 years (\$2m over the past three years), and the upward trend in response expenditure it is reasonable to increase the allocation to this fund.

The Panel also considers it inappropriate to fund long term programs from this fund. Currently, much of this fund is used to deliver the West Indian Drywood Termite program, which has an average annual expenditure of between \$300,000 and \$500,000. Long term programs should either be accommodated as part of normal business (if they are small) or be the subject of agreed long term funding through CBRC, noting that many such programs relate to biosecurity threats beyond the primary industries portfolio.

The Panel recommends a modest increase to the allocation to the Exotic Pest and Disease Fund to \$1.5m and restricting its use to new outbreaks. Although the Panel notes the potential opportunity cost of underspent funds, based on the past three years of data this risk is minimal. However, the Panel also recommends seeking Treasury agreement to a standing arrangement whereby funds not expended are “deferred” or rolled over to deal with year on year volatility and provide an incentive for efficient management.

In negotiating arrangements with Treasury, revised governance arrangements for the fund should be considered. This might include appointment of an independent chair or external representation. A more transparent process for decision-making, combined with an increased focus on tailored and proportionate response approaches, should increase confidence that response funds are being used wisely.

It should be noted that an increased allocation to the fund would not represent an increase in funding provided to DAF given funds for new incursions are almost always forthcoming. However, it would be more efficient by reducing the need for repeated requests for additional funding.

FUNDING FOR RESPONSES

The need for funding beyond the base allocation to Biosecurity Queensland will arise in two circumstances. The first is where the demands of initial response (incident definition phase) exceed the baseline budget for response, either because of numbers of small incidents, the size of a single incident, particular characteristics of a response requiring significant additional expenditure, or the incident definition phase becomes protracted. The second is funding for the response phase, which will almost always exceed the baseline budget. The Panel makes the following points:

1. Funding certainty for the incident definition phase is critical - principles and/or a budget strategy need to be developed for how and when requests for funding should be considered by the Department of Agriculture and Fisheries (DAF) and the Cabinet Budget Review Committee (CBRC). A "light and fast" approach is recommended - this

may be facilitated by developing and agreeing a standard template or headings for information required to inform any such decision.

2. It is reasonable that reprioritisation of activities within DAF should be considered before an approach is made to the CBRC. This should be an explicit process, guided by the investment prioritisation principles and process recommended elsewhere in the report. This will enable the impact on other activities to be quantified, and decisions taken to cease lower priority or less urgent activities where appropriate, rather than "trying to do everything". Formal business continuity plans would also be appropriate. (While the Synergies report suggested that such principles already exist, they appear not to be widely understood and the Panel believes it would be helpful to revisit them).
3. The operating model for resourcing of responses draws on staff and other services and assets outside Biosecurity Queensland. Consequently, decisions on whether reprioritisation is feasible or an approach to CBRC will be pursued should be taken by the DAF executive rather than Biosecurity Queensland. In a similar vein, governance oversight of responses which exceed Biosecurity Queensland's base capacity should be provided by the DAF executive rather than Biosecurity Queensland. The Panel understands such an arrangement may already be in place.
4. The quality of business cases for the response phase needs to be improved, particularly the articulation and evaluation of response options. Establishment of an investment and commissioning function should enable access to appropriate skills and establish an "arm's length" process to prepare credible business cases for consideration by DAF decision makers, as well as the CBRC and the National Management Group established under national cost sharing arrangements. The business case should identify the quantum of funding required for the duration of the response, the consequences of not responding and the process to review or vary it - this should enable CBRC to confirm funding for the duration of the response, mitigating operational and financial risks.

IMPACT OF NATIONAL COST SHARING ARRANGEMENTS

As noted in the preceding section, the process for consideration of whether a response will be cost shared or not creates decision-making dilemmas and operational and financial risks for the lead jurisdiction.

Decisions on what is the most appropriate response option may not be the same if taken in the context of state jurisdictional priorities as they would if taken in the national context. The lead jurisdiction is faced with a choice. On the one hand, it can provide greater certainty for the operation by underwriting the response irrespective of cost sharing being agreed, noting that this may reduce the incentive for other jurisdictions to decide quickly or at all. This will reduce operational risk but creates an immediate financial risk or opportunity cost. On the other hand, it can choose to minimise initial investment pending a decision, to avoid the financial or opportunity cost risk of carrying the cost of a large scale response should no agreement to share costs be reached. This creates operational risks, particularly where urgent and or expensive action is required to contain the pest or disease, but manages immediate financial risk. This may be a legitimate choice for a jurisdiction, particularly when the benefits of eradication or control primarily accrue outside its boundaries.

The cost sharing arrangements were designed to manage the latter risk, but recent events suggest that, in some cases, the inherently cumbersome nature of the arrangements ultimately undermines their effectiveness.

In the short term, the Panel suggests that business cases prepared for consideration of response funding explicitly evaluate response options from the state and national perspective - this should facilitate "up front" approval of alternative response plans (if appropriate) for a State only or cost shared scenario. This would help mitigate the operational risk of a hiatus created by the need submit a new business case if cost sharing is not agreed.

In the longer term, national consideration could be given to whether a different model for decision making would be more efficient and appropriate - for example, an independent commission to determine response options and appropriate cost shares.⁵⁵

A further problem is created by the current "eradicability" test - as noted in the preceding section, a pest or disease must be considered "eradicable" before cost sharing will be triggered. The Panel notes current national discussions proposing extension of cost sharing arrangements to "containment" where this is considered to be in the national interest. This approach would be consistent with the investment and risk principles outlined in this report and is supported by the Panel. It is also possible that national cost sharing arrangements which apply from commencement of the response phase may incentivise short termism.

COMMONWEALTH RESPONSIBILITY FOR BIOSECURITY?

The Synergies report recommends a long term strategy of handing over responsibility for biosecurity to the Commonwealth, which their report notes is best placed to assume responsibility for biosecurity.

The Panel notes that there would be undoubted efficiencies in utilising Commonwealth Government powers to apply industry levies, rather than using state based mechanisms. Approaches to the Commonwealth to utilise this approach have so far not been successful. Nonetheless, the existence of Animal Health Australia and Plant Health Australia as organisations which are already partly funded through industry contributions does provide an opportunity to contemplate whether there would be efficiencies from an expanded role for these organisations.

There is logic to expanding the Commonwealth's regulatory border protection role to regulation across the full biosecurity continuum, but any consideration of this would need to weigh up the relative benefits of a nationally consistent approach against the benefits of a more devolved and locally tailored approach, and the trade-offs between state and national interests. Funding arrangements acceptable to all parties would be required.

CONCLUSIONS

The consultant report made three recommendations to fine tune the current funding model for responses. These involved:

⁵⁵ The Beale review in 2008 recommended a similar feature.

- Explicitly distinguishing between the immediate response phase and the main response.
- Enhancing internal capacity for review and evaluation within Biosecurity Queensland.
- Improving performance management information within DAF, and within the central agencies of the Department of Premier and Cabinet and Queensland Treasury.

The Panel agrees with the three recommendations made in the Synergies report, whose overall intent is to improve the quality of information provided to decision makers and hence the quality and timeliness of decisions. They are consistent with the broader findings of the Panel, and the Panel's recommendations elsewhere.

RECOMMENDATIONS

14. Fine tune funding for responses

14.1. The panel recommends that the annual allocation to the Exotic Pest and Disease fund is increased to \$1.5m and its governance revised to restrict its application to new incursions and provide for enhanced oversight. The fund should be reviewed after three years to review the appropriateness of the allocation.

14.2. The Panel recommends that development of the investment and commissioning function for responses and the biosecurity response unit build in:

- a) Clearly differentiated and articulated response phases, with clear purposes;
- b) Enhanced capacity for review and evaluation, particularly of responses and response strategies;
- c) Improved performance management information for DAF and central agencies.

CHAPTER 11. IMPLEMENTATION

Deliverable: Detail a five-year plan with specific recommendations for actions, including costings and options and KPIs to address gaps in Biosecurity capability

The Panel's recommendations form an integrated set designed to build both the capability of the Queensland Biosecurity System and Biosecurity Queensland.

In considering priorities and timelines for investment, the Panel has taken into account that current capacity of Biosecurity Queensland is strained to the extent that there is both a risk of failure to respond adequately to a further incursion, and an absolute impediment to implementing the transformational change to the organisation which is required to meet the needs of the future.

The priority is therefore to invest in those recommendations which will immediately boost capacity to address the immediate risk of an incursion, as well as building the capability to transition to the future model.

Similarly, to build the capability of the Queensland Biosecurity System, there must first be investment the development of the biosecurity strategy, action plan and governance arrangements, to facilitate funding of concrete projects which build the partnerships and trust needed to transition to the future model.

Two parallel processes will be required to drive the necessary change over the next five years. These are illustrated schematically in Table 5 – implementing recommendations overview.

Table 5: Implementing Recommendations Overview

BUILD CAPABILITY OF THE QUEENSLAND BIOSECURITY SYSTEM	BUILD CAPABILITY OF BIOSECURITY QUEENSLAND TRANSFORMATION PLAN
STRATEGY AND ACTION PLAN	
Build the framework for the future Queensland Biosecurity System	Refocus Biosecurity Queensland, including leadership in emergency preparedness and response, risk and decision-making, innovation and business improvement, marine and aquatic biosecurity, and Northern Queensland.
Dismantle red tape and improve flexibility for agricultural businesses	Establish a biosecurity innovation function and develop an innovation strategy
Implement new approaches to build better supporting systems	Continue investment in flexible specialist systems
Review and reprioritise investment in biosecurity programs - systematic review	Review and reprioritise investment in Biosecurity programs - establish an investment function and leadership
Deliver a coordinated "improving biosecurity on farm" initiative	
Deliver a marine biosecurity initiative	
Build expert and regional capability - coordination and leveraging	Build expert and regional capability - technical and leadership
Develop a Queensland Biosecurity surveillance strategy	
Create incentives to report disease	
Establish a biosecurity network	Establish a new preparedness and response unit

IMMEDIATE INVESTMENT

As an immediate priority, the Panel recommends investment in the development of the biosecurity strategy and action plan and associated governance arrangements. Concurrently, there should be investment in the establishment of the new biosecurity response unit and biosecurity network, as well as the recommended skills audit and organisational redesign. An additional investment of at least \$3m in the first year will be required, and will require supplementation in the event of incursions exceeding baseline response capacity. Ongoing funding of this order will be required to maintain the capacity of the response unit.

Completion of the initial steps will enable a more accurate assessment of the quantum of further investment required to implement the action plan and transformation plan to deliver the remaining recommendations. Dollar symbols in the tables in the sections below indicate the relative size and weight of the different initiatives.

Separately, the Panel has recommended the allocation to the Exotic Pest and Disease fund is increased from the current \$0.784m to \$1.5m and its governance reviewed. This will require an additional investment of \$0.716m, over and above the minimum of \$3m initial investment detailed above. As noted above, an increased allocation to the fund is unlikely to represent an increase in funding provided to DAF given funds for new incursions are almost always provided through the Mid-Year Fiscal and Economic Review process.

BIOSECURITY STRATEGY AND ACTION PLAN

BUILDING THE CAPABILITY OF THE QUEENSLAND BIOSECURITY SYSTEM

A new biosecurity strategy and action plan is required to set the priorities, KPIs and assign responsibilities for biosecurity activities.

The action plan should be the vehicle for setting the priorities for Biosecurity Queensland as well as for partner organisations and should embody the changes required to implement the new Queensland Biosecurity Act, which is due to commence in July 2016.

A number of industry submissions flagged the need for a transition plan – transitional activities should also be accommodated in the Action Plan, along with the “outcome oriented” recommendations in this report.

“Biosecurity, or quarantine, has been the sole domain of state government for more than 100 years therefore the paradigm shift to a ‘shared responsibility’ is significant and the impact upon industry cannot be underestimated. NGIQ considers the degree of change in industry thinking, positioning, knowledge and participation is greater than that imposed by the water reforms initiated in the early 1990’s and will take considerable effort and time to re-align producers to the new paradigm.”

Nursery and Garden Industry Queensland

Table 6 proposes a tentative prioritisation and schedule for implementation of the Panel’s recommendations in the context of the Action Plan. However, the new Strategy and Action Plan will need to be developed in partnership, and will need to accommodate a far broader range of activities, which will undoubtedly require adjustment of the prioritisation and

scheduling of the recommendations. Time frames, milestones and KPIs will need to be developed as each project is properly scoped and planned out.

Table 6: Building the System - 5 Year Action Plan

Recommendation	Year 1	Year 2	Year 3	Year 4	Year 5
Build the framework for the future Queensland Biosecurity System \$\$	<ul style="list-style-type: none"> • Confirm core partners • Negotiate roles, responsibilities and contributions • Agree objectives • Develop new biosecurity strategy and action plan • Develop and select options for industry fund(s) 	<ul style="list-style-type: none"> • Formalise governance arrangements • Publish strategy and action plan • Commence implementation of fund option • Report on progress to Cabinet 	<ul style="list-style-type: none"> • Governance in place • Monitor progress and tune action plan • Fund in place • Report on progress to public and Cabinet 	<ul style="list-style-type: none"> • Monitor progress and tune action plan • Fund in place • Report on progress to public and Cabinet 	<ul style="list-style-type: none"> • Review progress over 5 years • Develop proposals for the future • Fund in place • Report on progress to public and Cabinet
Dismantle red tape and improve flexibility for agricultural businesses \$	<ul style="list-style-type: none"> • Develop project for systematic review of regulatory schemes: <ul style="list-style-type: none"> - using commencement of new Act - to decrease costs and increase flexibility for industry - to decrease costs to Government - assign costs to "risk creators" - including transition plan 	<ul style="list-style-type: none"> • Project implementation 	<ul style="list-style-type: none"> • Project completion and evaluation 		
Implement new approaches to build better supporting systems \$\$	<ul style="list-style-type: none"> • Review PIC register in context of national systems • Determine diagnostic needs • Evaluate options and implement preferred option for commercial, in house diagnostic service 	<ul style="list-style-type: none"> • Implement new approach to PIC registration • Develop and approach to engagement of private vets for surveillance 	<ul style="list-style-type: none"> • Implement private vets surveillance scheme • Implement full cost recovery for veterinary surgeons board. • Explore engagement of service providers in the plant industries for surveillance 	<ul style="list-style-type: none"> • Implement plant biosecurity service providers scheme for surveillance 	<ul style="list-style-type: none"> • Review surveillance initiatives
Review and reprioritise investment in biosecurity programs - systematic review* *costed in transformation plan	<ul style="list-style-type: none"> • Develop project for systematic review of investments • Agree objectives • Agree sequencing and information needs 	<ul style="list-style-type: none"> • Project implementation 	<ul style="list-style-type: none"> • Project implementation 	<ul style="list-style-type: none"> • Project completion and evaluation 	
Deliver a coordinated "improving biosecurity on farm" initiative \$\$	<ul style="list-style-type: none"> • Identify project partners and related initiatives • Develop project and agree targets and time frames. 	<ul style="list-style-type: none"> • Project implementation 	<ul style="list-style-type: none"> • Project implementation 	<ul style="list-style-type: none"> • Project implementation 	<ul style="list-style-type: none"> • Review and evaluation

Recommendation	Year 1	Year 2	Year 3	Year 4	Year 5
Build expert and regional capability - coordination and leveraging \$	<ul style="list-style-type: none"> • Build biosecurity objectives into planning for the Northern CRC • Build linkages to commonwealth department of agriculture to leverage biosecurity investment in northern Australia and agriculture white papers • Develop and commence implementation for project for regional organisations leveraging and coordination pilot 	<ul style="list-style-type: none"> • Implement leveraging and coordination pilot 	<ul style="list-style-type: none"> • Implement leveraging and coordination pilot 	<ul style="list-style-type: none"> • Review leveraging and coordination pilot 	
Develop a Queensland Biosecurity surveillance strategy \$	<ul style="list-style-type: none"> • Establish surveillance priorities 	<ul style="list-style-type: none"> • Review and reallocate current surveillance investment to meet priorities 			
Create incentives to report disease \$		<ul style="list-style-type: none"> • Explore in the context of industry fund and dismantle red tape initiatives 			
Establish a Biosecurity network \$\$	<ul style="list-style-type: none"> • Identify potential partners • Identify employment / engagement mechanisms 	<ul style="list-style-type: none"> • Desktop exercise to test whole of government capacity • Formally engage reserve partners • Develop "just in time" training packages 	<ul style="list-style-type: none"> • Deliver training 	<ul style="list-style-type: none"> • Desktop exercise with reserve partners 	

FUNDING ARRANGEMENTS

Funding for implementation of the Action Plan should largely be drawn from reprioritisation of the existing core Biosecurity Queensland budget, excluding “infrastructure” costs such as management, systems and corporate support. As noted above, some initial funding will be required to implement the framework and will be required to develop, maintain and activate the biosecurity network.

This funding should be quarantined in a separate account, and any savings or additional revenue generated as a result of Action Plan initiatives should be returned to this account to be reinvested in other initiatives. This will provide a source of revenue to implement initiatives requiring new funding.

The establishment of one or more industry biosecurity funds or other mechanisms for contributions from industry or other parties will facilitate joint funding of Action Plan projects. Funds could also potentially be matched on a project basis by contributions from other government agencies with shared objectives

It would be expected that priority for new funding would be given to projects where there are significant contributions from other parties.

It is important to note that the flexibility of reprioritisation will be constrained by the fact that an estimated 75 per cent of the core Biosecurity Queensland budget is assigned to employee expenditure.⁵⁶ Nonetheless, the process of prioritisation, leveraging contributions from other sources and coming up with new and more effective ways of delivering outcomes will still deliver a more balanced and higher impact portfolio of biosecurity activities and will build the capability of the system for the future.

LEADERSHIP AND GOVERNANCE

Leadership and governance arrangements for delivery of the Action Plan will be needed at two levels.

An appropriately skilled and qualified committee or board should oversee development and delivery of the Action Plan, should make prioritisation decisions and ensure that appropriate accountability and reporting mechanisms are in place. While the agreed core parties should be represented on the board or committee, it should be a skillsbased, rather than a representative entity. It should be chaired independently by an appointee of the Minister.

The Biosecurity Queensland Ministerial Advisory Council should be engaged in developing and recommending the detail of the governance arrangements and should operate as the interim governing committee, albeit with the capacity to make recommendations rather than decisions, consistent with its role in advising the Minister for Agriculture and Fisheries.

This will enable development of the new Biosecurity Strategy and Action Plan and other initial steps to be undertaken.

In addition, there will need to be governance arrangements at the individual project level involving project level partners to ensure joint ownership and accountability for delivery of project outcomes.

These mechanisms will together achieve the coordination and leveraging across the Queensland system, which the review has found to be lacking.

BIOSECURITY QUEENSLAND TRANSFORMATION PLAN

BUILDING THE CAPABILITY OF BIOSECURITY QUEENSLAND

Targeted investment in building the capability of Biosecurity Queensland will be required if the organisation is to meet immediate demands as well as transform itself into the leading and enabling role required for the future.

A Biosecurity Queensland transformation plan will be required to sequence and manage the roll out of these investments in parallel with the Biosecurity Strategy and Action Plan.

Table 7 sets out a high level schedule as the basis for a transformation plan.

⁵⁶ Budgetary analysis shows that 78per cent of the Animal Biosecurity core budget, 91per cent of the Plant Biosecurity core budget, and 81per cent Invasive Plants and Animals core budget, are committed to staffing costs.

Table 7: Building Biosecurity Queensland Capability - 5 Year Transformation Plan

Recommendation	Year 1	Year 2	Year 3	Year 4	Year 5
Refocus Biosecurity Queensland \$\$	<ul style="list-style-type: none"> • Appoint strategic change manager, commence engagement with staff and fine tune transformation plan using project management methodology • Identify non-biosecurity functions (for example, animal welfare) and transition into a separate organisational unit. • Commence strategic engagement with internal and external partners to explore options for management of non-biosecurity functions. 	<ul style="list-style-type: none"> • Change management and staff engagement • Commence transition out of non-biosecurity functions 	<ul style="list-style-type: none"> • Change management and staff engagement • Continue transition out of non-biosecurity functions 	<ul style="list-style-type: none"> • Change management and staff engagement • Continue transition out of non-biosecurity functions 	<ul style="list-style-type: none"> • Change management and staff engagement • Complete transition out of non-biosecurity functions
	<ul style="list-style-type: none"> • Develop a new organisational design for Biosecurity Queensland • Appoint leaders and establish function in emergency preparedness and response*, risk and decision-making*, innovation and business improvement*, marine and aquatic biosecurity*, and Northern Queensland*. *costed elsewhere	<ul style="list-style-type: none"> • Implement new organisational design 			
	<ul style="list-style-type: none"> • Undertake a skills audit. 	<ul style="list-style-type: none"> • Prepare a training and development plan • Prepare a succession plan 	<ul style="list-style-type: none"> • Implement training and development plan • Implement succession plan • Implement a graduate program • Develop and implement expert virtual networks • Develop and implement a fellows program for retiring staff 	<ul style="list-style-type: none"> • Implement training and development plan • Implement succession plan • Run graduate program • Run virtual networks • Run fellows program 	<ul style="list-style-type: none"> • Review and evaluate capability using NEBRA and APS frameworks • Run virtual networks • Run fellows program
Establish a biosecurity innovation function and develop an innovation strategy \$\$	<ul style="list-style-type: none"> • Consider preferred model for the innovation function as part of the organisation redesign • Appoint innovation leader 	<ul style="list-style-type: none"> • Develop formal innovation strategy 	<ul style="list-style-type: none"> • Implement strategy initiatives 	<ul style="list-style-type: none"> • Implement strategy initiatives 	<ul style="list-style-type: none"> • Implement strategy initiatives
Continue investment in flexible specialist systems \$	<ul style="list-style-type: none"> • Review proposed functionality of BIMS in the context of a distributed surveillance system 	<ul style="list-style-type: none"> • Continue to implement BIMS 	<ul style="list-style-type: none"> • Continue to implement BIMS 	<ul style="list-style-type: none"> • Expand functionality to operationalize for external partners 	

Recommendation	Year 1	Year 2	Year 3	Year 4	Year 5
Review and reprioritise investment in Biosecurity programs - establish an investment function and leadership \$\$	<ul style="list-style-type: none"> • Appoint investment (risk and decision making) leader • Identify capability gaps in risk and information analysis at fine grain • Incorporate staff skills development/recruitment plan into training and development plan • Commence building relationships with key partners in investment decision making 	<ul style="list-style-type: none"> • Implement development / recruitment plan • Establish internal investment framework (commissioning function) • Implement new budget allocation processes to prioritise investment for actions identified in the Biosecurity strategy and action plan. • Support systematic review of investments 	<ul style="list-style-type: none"> • Support systematic review of investments under the biosecurity action plan • Implement commissioning function 	<ul style="list-style-type: none"> • Support systematic review of investments under the biosecurity action plan • Implement commissioning function 	<ul style="list-style-type: none"> • Implement commissioning function
Build expert and regional capability - technical and leadership \$\$\$	<ul style="list-style-type: none"> • Appoint leader for NQ • Develop northern biosecurity action plan 	<ul style="list-style-type: none"> • Implement northern action plan • Appoint "regional technical specialists" 	<ul style="list-style-type: none"> • Implement northern action plan • Regional technical specialists 	<ul style="list-style-type: none"> • Implement northern action plan • Regional technical specialists 	<ul style="list-style-type: none"> • Implement northern action plan • Regional technical specialists
Establish a new preparedness and response unit \$\$\$\$	<ul style="list-style-type: none"> • Appoint leader for preparedness and response • Establish preparedness and response unit • Develop staff training plan and agree delivery approach • Commence training delivery 	<ul style="list-style-type: none"> • Commence review of response protocols • Continue training • Commence establishment of biosecurity network (see action plan) 	<ul style="list-style-type: none"> • Continue review of response protocols • Continue training • Continue building biosecurity network 	<ul style="list-style-type: none"> • Conduct major series of exercises (subject to concurrent responses) • Continue training • Continue building biosecurity network 	<ul style="list-style-type: none"> • Review preparedness • Continue training • Continue building biosecurity network
Establish marine biosecurity function \$\$	<ul style="list-style-type: none"> • Appoint leader and establish marine biosecurity function • Pathway and risk analysis • Establish project with key partners and appropriate governance arrangements • Evaluate suitability of Western Australian tools 	<ul style="list-style-type: none"> • Implement enhanced approach to marine biosecurity 	<ul style="list-style-type: none"> • Implement enhanced approach to marine biosecurity 	<ul style="list-style-type: none"> • Implement enhanced approach to marine biosecurity 	<ul style="list-style-type: none"> • Implement enhanced approach to marine biosecurity

FUNDING ARRANGEMENTS

The Panel has identified that there does need to be investment in capability and believes this should be provided as an ongoing supplement to the current budget. It will be important for this investment to be made as a sign of good faith and to encourage co-investment in the strategy and action plan. There should be an assessment of progress after 4 years to establish the need for ongoing funding, with the expectation that implementation of the Panel's recommendations should have realised opportunities for the organisation to operate more effectively within fiscal constraints.

LEADERSHIP AND GOVERNANCE

The transformation plan will need to operate under an effective project management framework with a dedicated project director and should report to the DAF Executive Board or a subcommittee of its members.

REPORTING OF PROGRESS

Progress with delivery of both plans should be reported to Cabinet and publicly.

CHAPTER 12. OTHER COMMENTS

The Panel was presented with a broad terms of reference for an important and complex piece of work with a relatively confined time frame. Inevitably, there were some matters which we had to determine as being “out of scope” in order to focus on the most pressing and core biosecurity areas.

There were also other matters raised which were clearly outside the scope of the Terms of Reference, but which the Panel feels are relevant and warrant some comment.

In this chapter we provide comments on some of these matters.

BUSINESS MODELS FOR BIOSECURITY QUEENSLAND

The Panel's review and approach to this report has assumed a continuation of current arrangements whereby Biosecurity Queensland operates as a division of the Department of Agriculture and Fisheries.

The Terms of Reference for the review did not require consideration of business models for Biosecurity Queensland. However, a number of submissions recommended that Biosecurity Queensland be set up as an independent statutory authority for a variety of reasons. Consideration of alternative business models is also a logical extension of a shift to a system focus, rather than a regulatory focus.

An examination of the appropriateness of different organisational models within government is beyond the scope of this review, and has been addressed in other reviews, such as those by Simone Webbe and Patrick Weller⁵⁷ and John Uhrig.⁵⁸

The Panel provides comments below on some aspects of this issue.

SECURITY OF FUNDING

A number of stakeholder groups expressed concern that Biosecurity Queensland's position as a division of the Department of Agriculture and Fisheries makes it vulnerable to reductions in Government allocations imposed in an indiscriminating or (worse) disproportionate way. Establishing Biosecurity Queensland as a statutory authority was suggested as a way of increasing accountability and protecting Biosecurity Queensland from this risk.

"Establishing Biosecurity Queensland as a separate statutory authority would provide recognition of its importance as a whole of government responsibility. Having Biosecurity Queensland's appropriation publicly accounted for in the State Budget could highlight underinvestment."

⁵⁷ Simone Webbe and Patrick Weller (2009) *Brokering Balance: A Public Interest Map for Queensland Government Bodies*, An independent review of Queensland Government Boards, Committees and Statutory Authorities, Brisbane.

⁵⁸ John Uhrig (2003) *Review of the Corporate Governance of Statutory Authorities and Office Holders*, Report to the Australian Government, Canberra.

Queensland Farmers' Federation

The Panel's view is that establishing Biosecurity Queensland as a separate statutory authority is neither necessary nor the only way to achieve these outcomes. It might also operate to further reduce the capacity of Biosecurity Queensland to enable the system as a whole to deliver biosecurity outcomes.

The creation of a statutory authority does not in itself create financial security. It also may create additional costs, to meet requirements for separate governance arrangements and annual reports for example, which could erode funding available for biosecurity.

Greater financial security may be provided by establishing a sustainable funding source - for example, through delivery of commercial services, imposition of a levy or a full cost recovery regime. Arrangements such as these may work more efficiently and transparently in an organisation at arm's length from a government department, such as a statutory authority.

In the context of biosecurity, Animal Health Australia and Plant Health Australia and the primary industries research and development corporations are examples of autonomous organisations which are funded by a mix of industry and Government contributions.

In terms of accountability, the Panel's view is that it is extremely important in the context of a more effective Queensland Biosecurity System that there is visibility and accountability for expenditure on biosecurity by Government, industry and other contributors. The development of a biosecurity action plan with appropriate governance and oversight should provide a mechanism to achieve this.

The report contains a number of recommendations to achieve a more sustainable funding approach for specific functions and the Panel's view is that an immediate move to a statutory authority model would be premature, if its prime purpose is to achieve greater financial security and improved accountability.

Nonetheless, the concept could be "kept on the table" and revisited as the system matures.

BALANCING ATTENTION TO BIOSECURITY ACROSS AGRICULTURE, THE ENVIRONMENT AND HUMAN HEALTH AND AMENITY

The Panel received a number of submissions and comments which raised issues about lack of balance in investment - particularly between plant and animal biosecurity and between agriculture and the environment. In addition, the Queensland Conservation Council and Invasive Species Council has called for Biosecurity Queensland to be established as a separate authority reporting to both the Minister for Agriculture and the Minister for the Environment.

"The most pressing need is for a better balance between plant and animal biosecurity investment. Although plant biosecurity threats are too often neglected in favour of animal biosecurity threats, the balance needs to be redressed through a larger quantum of funding, rather than a rebalancing of existing funds"

Queensland Farmers' Federation

“We strongly recommend that the Queensland government recognise that biosecurity is just as important for the environment as for agriculture – and that environmental biosecurity is more reliant on government coordination and funding – by removing biosecurity from the agricultural department and placing it within a natural resources department or making it a joint environmental-agricultural unit.”

Invasive Species Council and Queensland Conservation Council

The Panel recognises the need to address the issue of a balanced investment portfolio, but does not believe that the creation of a separate statutory authority is the only or best way to address this need. In earlier analysis (see Chapter 5), the Panel recognised the capacity challenges within Biosecurity Queensland. This was particularly noticeable within the plant biosecurity team, although resources across the agency remain stretched.

A key recommendation in this report is that decisions on resource allocation should be properly made based on risk and value, and this approach will inevitably and appropriately see fluctuation over time in the relative expenditure in different areas. The Panel believes that a proper portfolio based allocation approach will address perceived resourcing challenges in the plant biosecurity sphere.

The Panel does, however, have some concerns about the process for balancing investment in the environmental area. There does not appear to be sufficient high level engagement with the environment portfolio in relation to prioritisation of biosecurity threats in the context of other threats to biodiversity.

The Panel's view is that the Biosecurity Strategy and Action Plan and related governance arrangements should clearly spell out the role and responsibility of the environment portfolio in prioritisation and funding of environmental biosecurity initiatives.

Both documents should be signed off by Cabinet to give effect to a system based approach.

QUALITY OF DECISIONS

The Panel heard many concerns about perceived flaws in decision making - these included:

- Slow decision making - comments from industry stakeholders that decisions should be made quickly, without waiting for certainty, and from environmental stakeholders that an overly cautious approach to risk assessment delays decision making.
- Unbalanced and inappropriate allocation of resources to different programs - for example, both not enough funding being provided to deal with wild dogs and too much funding being provided to deal with wild dogs.
- "Politicisation" of the decision making process, that is influential lobby groups holding too much sway in resource allocation and program design decisions.

The report makes a number of recommendations to improve the quality of decision making and address issues raised in the first two points above. These recommendations would be relevant irrespective of the Biosecurity Queensland operating model.

The last two points merit some further discussion.

Objective decision making requires consideration of a broad range of factors. Often an individual, community or industry organisation sees a biosecurity threat from only one perspective - for example, there may be community concern about an uncontrolled weed infestation in a nature reserve reducing visual and recreational amenity and impacting on biodiversity values. Such concerns are entirely legitimate.

It is easy to see that decisions arising from consideration of local priorities or sectional interests, may differ from those which would be taken at arm's length as a result of an objective consideration. A theme of this report is that engaging interested parties in joint decision making provides a way of considering legitimate group or community perspectives along with information from objective analysis, and that this should improve the quality and acceptability of decisions.

Establishment of body at arm's length from government is promoted by some as a way of distancing decision making from the political process. The Australian Fisheries Management Authority, for example, operates on this basis.

However, the Panel notes that a similar outcome can be achieved by the establishment of an "arm's length" decision making or priority setting process and is not reliant on altering the business model of Biosecurity Queensland.

DELIVERY EFFICIENCY AND APPROPRIATENESS

Another question which has arisen in the context of the review is the extent to which Biosecurity Queensland should deliver functions itself, or should deliver through another entity. This is a different question from who should fund the service delivery function, and assumes that there will be some services which the Government should fund, but which would be more effectively or more efficiently delivered by another entity.

The Panel noted that there may be opportunities to explore centralised service delivery of some functions through both Animal Health Australia and Plant Health Australia, where this will create efficiencies or synergies with other programs - for example developing and maintaining underpinning systems or training materials. A logical evolution of this approach would see resources (and funding) transferred to AHA and PHA to run all industry programs – that would enable Biosecurity Queensland to focus on technical, regulatory and response services.

An example of devolved service delivery is the NSW Local Land Services model. Local Land Services has been established as an entity with responsibility for biosecurity (amongst other things) with funding from landholders (through special rates) and an allocation from the NSW Government. Governance arrangements ensure that ratepayers are directly represented on 11 regional governing boards, alongside members selected on the basis of skills (all of whom must be resident in that region), and appointed by the Minister. Regional biosecurity capability is delivered through this co-funded and landholder governed entity.

The Panel considered potential leveraging opportunities through regional bodies including local councils and natural resource management organisations and these are covered in Chapter 9.

The opportunity also exists to devolve delivery of regional services to such regional bodies. However, the Panel believes it would be premature to consider such a model until the Queensland Biosecurity System is better developed and the initiatives recommended in the report have been implemented.

Other models for devolved service delivery exist - for example FishServe in New Zealand. The following is a summary from the FishServe website:

FishServe is the trading name of a privately owned company called Commercial Fisheries Services (CFS). CFS is a wholly owned subsidiary of Seafood New Zealand (SNZ). FishServe provides administrative services to the New Zealand commercial fishing industry to support the 1996 Fisheries Act.

FishServe offers the following contracted & devolved services:

Allocation of new species into the Quota Management System

Collection of Revenue on behalf of the Crown

Fishing Permit issue

Management of Permit and Vessel Registers

Management of Annual Catch Entitlement & Quota Share Registers

Processing of Fishing Returns

Registration of Annual Catch Entitlement Transfers

Registration of Caveats & Mortgages over Quota Shares

Registration of Quota Share Transfers

Vessel Registrations

Contracted services are services that FishServe has a contract with the Ministry for Primary Industries to deliver. The Crown maintains responsibility for these services, but does not need to deliver the services themselves.

Devolved services are services that the Crown has determined it does not need to be responsible for. The Minister has the authority to approve an approved service delivery organisation (ASDO) to deliver these services. FishServe has been appointed as the ASDO and is accountable for these services.

While none of these models are being recommended for immediate consideration, the Panel considers that models which involve joint industry and government investment in an incorporated entity are effective at achieving shared responsibility for biosecurity outcomes. Relevant models should be considered as the Queensland Biosecurity System matures, and in the context of further exploring the concept of an industry fund.

BIOSECURITY AND THE FOOD SAFETY SYSTEM

Safe Food Production Queensland (SFPQ) is a statutory body, established under the Food Production (Safety) Act 2000. SFPQ reports to the Minister of Agriculture and Fisheries and regulates the primary production and processing of meat, eggs, dairy and seafood in Queensland in relation to food safety matters.

Food safety outcomes are achieved through food safety schemes, accreditation, auditing, and monitoring of production. SFPQ operations do not include food preparation establishments, which are the responsibility of Queensland Health.

The division of responsibility between SFPQ and Biosecurity Queensland is less clear, but the Panel was advised that any grey areas are generally resolved in a collaborative manner. The primary area where Biosecurity Queensland becomes involved is where there is an infectious disease process involved on farm that affects food safety and where on farm controls are required. While SFPQ may have the regulatory powers required to enforce on farm controls, they may not have the technical capability to advise on the appropriate approach. Often these cases are handled by SFPQ and Biosecurity Queensland staff together.

The Panel did not specifically review the interface between Biosecurity Queensland and SFPQ but notes that there may well be opportunities for leveraging and better coordination - particularly in relation to programs designed to address food safety on farm (which may be able to be adapted to encompass on farm biosecurity) and traceability.

FOREST BIOSECURITY

The Myrtle Rust outbreak of 2010 highlighted the importance of having systems in place to manage risks associated with pests and diseases of forests, both commercial and native. Currently in Queensland, forest biosecurity is organised as follows:

Biosecurity Queensland is responsible for biosecurity policy, representation in national committees and managing biosecurity responses. However, there are no dedicated resources devoted to forestry biosecurity.

There are technical specialists in forest health within Agri-Science Queensland, including scientists and entomologists. These officers will provide the necessary technical support for strategy design and operations during a response.

There a small number of staff within a DAF Forest Policy group who would be able to provide general advice and information on the forestry industry.

All forest plantations in Queensland are now run by commercial organisations on (generally) 100 year leases. These organisations are responsible for pest and disease surveillance within plantations.

There is no organised surveillance within native forests, with a reliance on public reporting.

Control of vertebrate pests and weeds across tenures is the responsibility of the forest lessees, or the State Government in the case of native forests on Crown land. The latter is a

common area of complaint from adjoining landholders when it is perceived that control measures are inadequate.

Biosecurity Queensland conducts some hazard site surveillance in the vicinity of major ports under contract with the Commonwealth.

AGRICULTURAL AND VETERINARY CHEMICALS

The Commonwealth through the Australian Pesticides and Veterinary Medicines Authority (APVMA) regulates agricultural and veterinary chemicals in collaboration with the states and territories. The APVMA approves chemicals for supply, sets conditions for their import, manufacture, supply and use and enforces compliance up to the point of retail sale.

The states and territories control the use of chemicals after they are sold according to the conditions for their use set by the APVMA. The APVMA also ensures the chemicals that are sold meet appropriate standards. This national system is currently under review, as it is perceived to have not kept pace with change within the industry.

Biosecurity Queensland has two technical policy officers working in this area, a chemical residues laboratory for conducting residue analyses, as well as field staff who have part of their role allocated to investigating chemical residue incidents. These officers also investigate issues like chemical spray drift complaints. There has been a long history of chemical residue incidents that need to be effectively managed, the latest being rodenticides in piggeries.

Given the regulatory reform agenda it is apparent that Biosecurity Queensland has limited capacity in this area and relies heavily on a very narrow skills base.

Given the current reform agenda, the focus of the review and time constraints, the Panel did not review capability in this area. However, this is clearly an important area from a market access and food safety perspective. The absence of recommendations in relation to this area should not be taken as an assessment that there is adequate capability.

APPENDICES

APPENDIX 1 - TERMS OF REFERENCE

The review will be led by a Panel comprising an independent chair and two members with extensive strategic government decision making experience and understanding of emergency responses.

A reference committee, comprising the Chief Biosecurity Officer, DAF Deputy Director-General Corporate, Assistant Under-Treasurer, Budget Portfolio Division, Executive Director, Economic Policy, Department of the Premier and Cabinet and chair of Biosecurity Queensland Ministerial Advisory Council will provide advice to the Panel on biosecurity co-investment policy levers, sustainable funding models including their costs, benefits and risks and guidance on short, medium and long term implementation priorities.

The Panel will be supported by a review secretariat within the Department of Agriculture and Fisheries.

Scope of the Review

In delivering recommendations for the long-term plan, the review will:

1. assess Queensland biosecurity responsibilities
 - a. what are the appropriate roles and responsibilities of Biosecurity Queensland
 - b. quantify the role of Biosecurity Queensland
 - c. outline the decision making and investment criteria that trigger cost sharing and/or a move to different levels of intervention – e.g. eradication, containment, management
2. assess Queensland's baseline biosecurity capability to meet its current objectives and future challenges including
 - a. leadership, strategy, policy and service delivery
 - b. ICT systems and infrastructure
3. benchmark the capability Queensland requires to achieve world's best practice given its statewide service delivery requirements
4. identify examples of best practice in interstate and external agencies which could be used to benchmark Biosecurity Queensland's capabilities.

Deliverables

The final report is to be completed by September 2015 for the Government to consider. The report is to state the roles and responsibilities of Biosecurity Queensland and detail a five year plan with specific recommendations for actions, including costings and options, and key performance indicators to address gaps in biosecurity capability and address:

1. the gaps, priorities and timelines for investment
2. opportunities for strategic shifts of existing capability/resources away from low risk or low return on investment activities
3. where incremental investment could leverage capacity and capability from entities that share Queensland's biosecurity priorities to achieve world best practice

4. where targeted investment in Biosecurity Queensland's own capability and capacity is required to restore responses to disease and pest outbreaks to world's best practice and
5. the specific issue of Biosecurity Queensland's base funding and funding for responses.

Consultation

The review will consult with relevant stakeholders including:

- industry stakeholders including BQMAC members
- other entities which share capability in managing biosecurity responses in Queensland
- Federal Department of Agriculture and other state and territory biosecurity agencies
- Biosecurity Queensland leadership team and the DAF Board of Management
- relevant Queensland agencies with an interest in emergency response recovery
- other persons identified by the Steering Committee

APPENDIX 2 – CONSULTATION LIST

Response to Online Survey or Written Submission

- Austinville Landcare
- Artis Group
- Australia Zoo
- Australian Melon Association
- Australian Veterinary Association
- Bundaberg Fruit and Vegetable Growers
- Burnett Mary Regional Group
- Burpengary Equestrian Centre
- Celia Dodd
- City of Gold Coast
- Corporate Communication
- Cotton Australia
- Dr John Barnwell
- Dr John Glazebrook
- Dr Peter Reid
- Elizabeth Kulpa
- Emily Baxter
- Fiona Strachan
- Growcom
- James Cook University
- Janelle wise
- Joanne Coulter
- Jon Fearnley
- Kathryn Webb
- LGAQ
- Nursery and Garden Industry Queensland
- Oxley Creek Catchment Association
- Peter Lynch
- Peter Milne
- Powerlink
- Queensland Beekeepers' Association
- Queensland Conservation Council and Invasive Species Council
- Queensland Council of Bird Societies Inc
- Queensland Dairyfarmers' Organisation
- Queensland Farmers' Federation
- Queensland Horse Council Inc.
- Ross Pomroy
- Sandra Baxendell
- SEQ Catchments Ltd
- Toft Endurance
- Tony Ross
- Torres Strait Regional Authority

- Travis Sydes - FNQROC
- Tropical Vet Services

16 respondents declined to provide identifying information. Additionally, 42 staff provided anonymous feedback to the Panel. Other respondents did not provide feedback on the Panel's focus questions.

Meetings with Panel

Peak Bodies:

- AgForce
- Australian Banana Growers Council
- Australian Melon Association
- Australian Veterinary Association
- Growcom
- Invasive Species Council
- Local Government Association of Queensland
- Nursery and Garden Industry Queensland
- Queensland Conservation Council
- Queensland Farmers' Federation
- Sugar Research Australia
- RSPCA
- Zoo and Aquarium Association

Community:

- Djunbunji Land and Sea Rangers
- NQ Dry Tropics
- NRM Groups' Collective
- Port of Townsville

Government:

Queensland

- Reference Group (DAF, DPC, Treasury)
- Queensland Health
- Queensland Police (Disaster Management Coordinator)
- Queensland Public Service Commission
- Cassowary Coast Regional Council
- Queensland Chief Scientist

Commonwealth

- APVMA
- Department of Environment (Cwth)
- Department of Agriculture (Cwth)
- Animal Health Australia
- Plant Health Australia

States

- Biosecurity NSW
- Biosecurity VIC
- Biosecurity SA
- Department of Agriculture WA
- Department of Fisheries WA
- NSW Local Land Services

Overseas

- Biosecurity NZ

Research:

- Invasive Animals CRC
- Plant Biosecurity CRC
- Bushfires and Natural Hazards CRC
- James Cook University
- CSIRO

APPENDIX 3 – SUMMARIES OF INTERNAL AND EXTERNAL CONSULTATION

SUMMARY OF EXTERNAL SUBMISSIONS

The Panel sought feedback from industry stakeholders and the community on the Queensland Biosecurity Capability Review. The DAF website invited external stakeholders to lodge submissions by mail or email, or participate in an online survey. The consultation period started on 7 July 2015 and closed on the 31 July 2015.

Major Themes

The range of responses provided the Panel with wide insight into the community's perceptions of Queensland's current biosecurity system. Generally feedback for the system was constructive, with many respondents noting opportunities for improvement.

<p>Strengths</p> <p>Community engagement and communication was commonly viewed as strength in the current system.</p> <p>Biosecurity Queensland staff experience and dedication were also highlighted as a strength in the current system.</p>	<p>Weaknesses</p> <p>Many respondents expressed concern at current levels of resourcing within the biosecurity system. Low staff numbers in Biosecurity Queensland were frequently identified within the responses as undermining the effectiveness of the current and future biosecurity system. Poor diagnostic capabilities in regional areas were also noted as a major element needing improvement in the current biosecurity system.</p> <p>Many respondents believe that the current system does not effectively facilitate and reinforce active identification and reporting of biosecurity threats.</p>
<p>Opportunities</p> <p>Educating the community and industry groups to better help facilitate and reinforce active identification and reporting (on-farm biosecurity) was the most commonly noted opportunity for improved biosecurity in Queensland.</p>	<p>Threats</p> <p>The ageing workforce in Biosecurity Queensland, with the incursion of new pests and diseases, was thought to undermine the effectiveness of the future biosecurity system.</p>

Respondent Profiles

A total of 198 external respondents submitted feedback to the review. However of these, only 60 provided direct feedback on the open ended questions. Seven other submissions did not follow the questions and instead outlined their specific feedback on the system. Respondents were classified into 9 different categories, with a wide array of views contributing to the report. Figure 6 shows respondent categories and submission frequency.

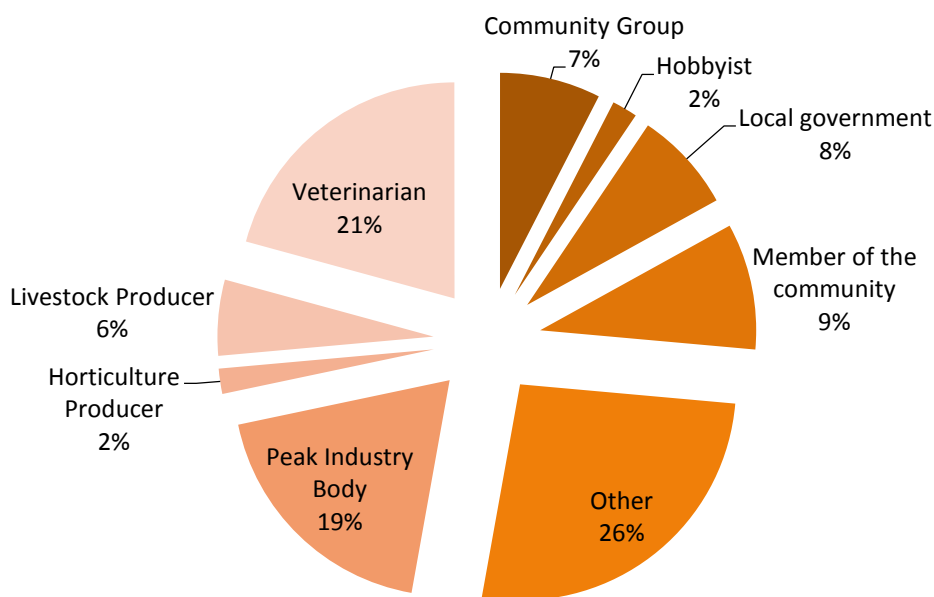


Figure 6: Community Feedback by Submitter Interest

Written submissions

There were 7 written submissions which did not follow the questions outlined in the online survey. Major theme of the written submissions was the inadequate biosecurity capability in North Queensland to manage exotic pests and diseases. Table 8 outlines the common issues raised by the written submissions.

Table 8: Major issues identified in the written submissions

Name or name of group	Major issues
Elizabeth Kupla (Veterinarian)	<ul style="list-style-type: none"> • Closure of laboratories • Lack of staff
Tony Ross (Veterinarian)	<ul style="list-style-type: none"> • Lack of staff • Inadequate biosecurity capability (Animal and Aquatic) in North Queensland
James Cook University	<ul style="list-style-type: none"> • Closure of laboratories • Need for a laboratory in North Queensland • Inadequate biosecurity capability in North Queensland
Queensland Farmers' Federation (QFF) (Peak industry body)	<ul style="list-style-type: none"> • Lack of staff • QFF supports general biosecurity obligations (on-farm biosecurity) • Inadequate biosecurity capability in North Queensland • Coordination between industry and Biosecurity Queensland is imperative
Bundaberg Fruit and Vegetable Growers (Peak industry body)	<ul style="list-style-type: none"> • Plant biosecurity's need for more funding • Lack of regional Biosecurity Queensland staff
Cotton Australia	<ul style="list-style-type: none"> • Inadequate biosecurity capability in North Queensland

(Peak industry body)	<ul style="list-style-type: none"> • Need for greater education, targeted awareness and communication
Queensland Dairyfarmers' Organisation (Peak industry body)	<ul style="list-style-type: none"> • Lack of capability in Biosecurity Queensland including lack of staff • Need for a national Biosecurity system • Importance of Tick management and Bovine Johne's Disease
Queensland Conservation Council and Invasive Species Council (Peak community bodies)	<ul style="list-style-type: none"> • Environment is in greater need of public investment than agricultural biosecurity • An agricultural agency may not be best placed to make judgements on environmental risks • Biosecurity should focus on prevention over ongoing management • Government should better leverage existing community expertise and resources

Online Survey

The online survey was the main form of community feedback. The online survey consisted of 20 questions and allowed for questions to be skipped. The 1st and 2nd questions were basic respondent details – name and primary interest. The remainder were open ended questions about biosecurity in Queensland.

As the questions were open ended and the responses appear in a qualitative format, the responses were collated and codified based on overarching themes to produce quantitative data. The collated responses to the 18 questions about biosecurity in Queensland are outlined below.

Question 3: *What elements of biosecurity risk management in Queensland do you think are currently working well? What is not? (Responses: 50)*

This question received the highest number of responses and a great variety of answers. There were considerably more answers detailing what is currently not working well as opposed to what is currently working well.

The overarching theme of community engagement was seen as the most common element which is working well. Furthermore, education and Biosecurity Queensland staff dedication and expertise were also highlighted in the responses as positives of biosecurity risk management in Queensland.

Government capacity, including lack of staffing, services and funding, was identified in the responses as the most common element which currently needs more improvement. This was highlighted by all respondent categories. Laboratory availability and access was also frequently identified as an element which currently needs more improvement. The need for greater laboratory availability and access was primarily highlighted by those who were identified as veterinarians, but also identified by peak industry bodies and producers.

Due to the great variety of answers as to what is currently not working well, themes in responses are summarised below.

Working Well	Not working well
<u>Veterinarians (11)</u> <ul style="list-style-type: none"> • Media announcements • Dedicated staff 	<u>Veterinarians (11)</u> <ul style="list-style-type: none"> • Public health at horse events (Hendra) • Removing and discarding equipment after use • Laboratory availability and access x3

<ul style="list-style-type: none"> • Bovine Johne's Disease Program <p><u>Peak (8)</u></p> <ul style="list-style-type: none"> • Communication with department x2 • Pest and disease biosecurity response • Dedicated staff in Biosecurity Queensland • Hendra outbreak control <p><u>Community group (4)</u></p> <ul style="list-style-type: none"> • Commercial interest in biosecurity risks • Campaign against fire ants • Fact sheets <p><u>Livestock producer (3)</u></p> <ul style="list-style-type: none"> • Biosecurity Queensland engagement with horse industry <p><u>Horticulture producer (1)</u></p> <ul style="list-style-type: none"> • Grower education and awareness <p><u>Local government (4)</u></p> <ul style="list-style-type: none"> • Local and regional partnerships <p><u>Other(13)</u></p> <ul style="list-style-type: none"> • Communications x2 • FMD preparedness program x2 • Experienced staff in Biosecurity Queensland • Biosecurity Act 2014 • Fruit fly management 	<ul style="list-style-type: none"> • Lack of staff • Bovine Johne's Disease program • Staff availability • Veterinarian availability • Quality of service <p><u>Peak (8)</u></p> <ul style="list-style-type: none"> • Communication between apiary officers and commercial beekeepers • Staff availability x3 • Unclear policy • More public education that is not web based • Slow response times for notifications • Plant biosecurity x2 • Location and number of at risk commercial animal species (and feral species) • Reduction in laboratories • Aviary bird keepers/hobbyists grouping in the <i>Biosecurity Act 2014</i> <p><u>Community group (4)</u></p> <ul style="list-style-type: none"> • Cane toads, environmental weed spread, fox and cat management <p><u>Livestock producer (3)</u></p> <ul style="list-style-type: none"> • Laboratory availability <p><u>Local government (4)</u></p> <ul style="list-style-type: none"> • Research and extension • Reliance of web-based and online resources and the need for more educational resources • Fire ants control program funding in gold coast • Funding <p><u>Hobbyist (1)</u></p> <ul style="list-style-type: none"> • Public health at horse events (Hendra) <p><u>Community (5)</u></p> <ul style="list-style-type: none"> • Guidelines • Pest fish management • Funding • Communication between Biosecurity Queensland and the commonwealth departments • Livestock transport policy • Tick management policy • Hendra policy <p><u>Other (13)</u></p> <ul style="list-style-type: none"> • Fire ants (expensive) • Hendra policy • Lack of staffing • Bovine Johne's disease (expensive) • Import restrictions x2
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Question 4: *Bearing in mind the review Panel's task to develop a five year plan, do you see any new challenges and opportunities for the Queensland Biosecurity system in five years time? (Responses: 50)*

This question also received the highest number of responses and a great variety of answers. Due to the great variety in answer, the answers are summarised below.

Similarly to Question 3, government capacity including lack of staffing, services and funding, was identified in the responses as the most common challenge to the Queensland Biosecurity system. In particular, the respondents highlighted the ageing workforce of Biosecurity Queensland and noted that there will be challenges involved in filling the roles of the experienced and highly skilled Biosecurity Queensland staff members near retirement. Another common identified challenge for Queensland Biosecurity was the introduction and incursion of new pests and diseases.

“There is a widespread practice in many jurisdictions to continue cutting funding and consequentially skilled staff in this area creating a serious risk of becoming unable to deal with incursions in a timely way.”

Common opportunities for the future include new technology and improved diagnostic capabilities, coordination between all forms of government, industry co-investment and cooperation, and staffing capacity and training.

Challenges	Opportunities
<ul style="list-style-type: none"> • Pest incursion and new diseases x5 • Existing pests and diseases • Government funding and capacity x7 • Future species variability x2 • Climate change x2 • Reintroduction of Hendra x2 • Ageing experienced specialists and retention of skills x6 • Old IT systems • Communication to general public • Too much red tape • North Queensland biosecurity 	<ul style="list-style-type: none"> • Apprenticeships and traineeships • Enhance on farm biosecurity • Staff and staff training x4 • Industry co-investment and cooperation x2 • Modelling trends of new incursions • National harmonisation of chemical use legislation • New diagnostic capabilities x2 • Reduction in red tape • Changes in technology x2 • Social Media • Vaccination • Roll out of Biosecurity Act and Exhibited Animals Act • Coordination between local, state and federal governments x3

Question 5: *Is there appropriate attention given to all elements of the biosecurity spectrum of prevention, preparedness, emergency response, recovery and ongoing management? (Responses: 48)*

Responses were mixed. Half of the respondents believe there is appropriate attention, whilst half believe more needs to be done. The underlying messages received were:

- Prevention is better than a cure; however the current environment is more reactive than proactive.
- Those who believe more needs to be done highlight the lack of resources as the major cause such as staffing and funding.

Question 6: *To what extent are the roles of key participants in the system defined for each of the elements of the biosecurity spectrum (prevention, preparedness, emergency response, recovery and ongoing management)? (Responses: 37)*

Question 6 received 37 responses, however many respondents (10) were unable to comment suggesting there is a gap in knowledge in this area. The major response (7) was that there was inadequate definition of roles for each of the biosecurity spectrum. With only 4 responses stating the roles are clearly defined.

No responses were received for the group identifying themselves as horticulture producers.

Question 7: *What are the capabilities that Queensland Biosecurity system should have in the future? (Responses: 36)*

There were two major responses for this question. The first major response was the need for enhanced communication and community engagement between Biosecurity Queensland and stakeholders. Electronic-communication, such as emails and website updates, was frequently mentioned as being beneficial to help educate the community on all aspects of biosecurity.

The second major response was the need for better diagnostic capabilities to respond to emergencies. Suggestions include better laboratory diagnostic capabilities and opening hours and improved veterinary input.

It is important to note that Question 3 responses highlighted both overarching themes of 'communication and community engagement' and 'diagnostic capabilities'. However, communication and community engagement was noted as current working well, whilst diagnostic capabilities were noted as not currently working well.

No responses were received for groups identifying themselves as hobbyists and horticulture producers.

Question 8: *Are there any gaps in the current system that need filling? Specifically, do you see gaps in the capability of Biosecurity Queensland as an organisation? (Responses: 40)*

Similarly to the aforementioned responses, staffing was highlighted as a major gap in the current system by 30 per cent of respondents. This includes the lack of front line staff members and staff with appropriate training and experience. The lack of staff in Biosecurity Queensland is associated with the other common responses to the question such as the need for better extension and community engagement highlighted by 4 responses, more veterinarians that specialise in equine health highlighted by 3 responses and the lack of funding highlighted by 3 responses.

Question 9: *To what extent are there clearly defined roles, responsibilities and obligations between the organisation Biosecurity Queensland, Commonwealth, State and local*

government agencies, industry groups, natural resource management groups, individual landholders, businesses and the broader community? (Responses: 31)

The majority of respondents (77 per cent) believe that roles, responsibilities and obligations are not clearly defined and that improvement is necessary especially for local government, industry groups, natural resource management groups, individual landholders, businesses and the broader community.

“Roles, responsibilities, and obligations may have been defined and understood by State and Federal agencies but everybody else is in the dark”.

No responses were received for groups identifying themselves as hobbyists and horticulture producers.

Question 10: *On what basis should the responsibility of different parties in Queensland’s biosecurity system be determined? (for example, capacity, ability to mitigate risk at lowest cost, legal and moral obligations, expectations, creation of risk, beneficiary of risk management). (Responses: 30)*

This question received a variety of answers. The most common answer, highlighted by 4 responses, was that there should be more cooperation between government and industry to determine the responsibility of different parties in Queensland’s biosecurity system.

Other common responses to determine the responsibility of different parties include:

- The responsibility should be a mix of all the listed examples.
- On legal and moral obligations.
- Through the most effective action, e.g. through a cost benefit analysis.

No responses were received for groups identifying themselves as hobbyists and members of the public.

Question 11: *To what extent (and how) should affected parties be involved in decision making processes for biosecurity risks? (Responses: 30)*

The major response (40 per cent) believe that extensive consultation is necessary to determine who are the affected parties and to what extent they should be involved in the decision making process. The responses however, offered a range of suggestions as to who should be involved.

Representatives, such as peak industry bodies and natural resource management groups, were highlighted as appropriate parties that should be involved in decision making processes. Another common response was that anyone affected deserves an opportunity to have a say. Conversely, other responses believe that the final decision or the majority of say should be given to the experts.

The suggested forms of how affected parties could be involved were only answered by 2 respondents. The suggestions were through meetings and online mechanisms, such as surveys.

No responses were received for the group identifying themselves as hobbyists.

Question 12: *Where is a sharing of responsibility for risk management working well?*
(Responses: 26)

Question 6 received 26 responses, however many respondents (30 per cent) felt unable to comment, 2 respondents answered 'nowhere' and 2 other respondents highlighted that the sharing of responsibility needs improvement. The aforementioned suggests the majority of respondents believe that there are no strong areas where the sharing of responsibility for risk management is working well.

Examples of where a sharing of responsibility for risk management is working well include:

- The community and representative groups such as industry bodies
- Industry developed on-farm biosecurity programs
- Biosecurity Queensland's educational workshops to stakeholders

No responses were received for groups identifying themselves as hobbyists, members of the public and horticulture producers.

Question 13: *Are there opportunities for other parties to contribute to the Queensland Biosecurity System to expand its capacity? How could these opportunities be facilitated?*
(Responses: 26)

The majority of respondents (66.66 per cent) indicated there are opportunities for other parties to contribute to the Queensland Biosecurity System to expand its capacity. However, there was a mixed response on how the opportunities can be facilitated. Some of the responses on how capacity could be expanded include:

- Through NRM groups, SES groups and peak industry bodies
- Via volunteer work in the government
- By local government initiatives
- Through veterinarians
- Coordination with other states and other government agencies
- With additional funding

Only 1 respondent believed that there are no opportunities for other parties to contribute as the Queensland Biosecurity System should be a function of government and therefore cannot be contracted out. The additional 7 responses gave no suggestion on of how other parties can contribute to the Queensland Biosecurity System.

No responses were received for groups identifying themselves as hobbyists and horticulture producers.

Question 14: *Do you see any specific opportunities for improved biosecurity in Queensland (for example government working closely with particular industry groups or producers using technology in a specific way)? (Responses: 25)*

Education was seen as the most common opportunity for improved biosecurity in Queensland. The government working closer with private veterinarians was also another common response. Other opportunities identified include:

- Adoption and creation of field based technology
- Employment of more professionals (veterinarians, scientists, agronomists)
- New IT system

No responses were received for groups identifying themselves as hobbyists and horticulture producers.

Question 15: *What do you think are specific examples of best biosecurity practice? (consider both specific industries and jurisdictions). (Responses: 20)*

Intensive industries biosecurity practices (e.g. aquaculture, poultry and piggeries) were the most common example of best biosecurity practice. Compulsory Hendra vaccination at horse events in high risk areas was a hypothetical example given by 2 (veterinarian) responses of what could be an example of best biosecurity practices. Other specific examples include:

- An animal health rapid response team (hypothetical)
- On-farm biosecurity planning and procedures
- Prevention measures and programs
- Where there are communication and working relationships developed between officers and stakeholders

No responses were received for groups identifying themselves as local government, hobbyists, member of the public and horticulture producers.

Question 16: *Does the current system effectively facilitate and reinforce active identification and reporting of biosecurity threats? If not, how could it be improved? (Responses: 26)*

The majority of respondents (73 per cent) believe the current system does not effectively facilitate and reinforce active identification and reporting of biosecurity threats. Only 4 respondents believed it is effective, whilst 2 respondents provided no answer.

The most common issue for the identification and reporting of biosecurity threats was the reluctance and fear of reporting. Reporting was attributed to being an inconvenience which could lead to significant monetary losses if restrictions were to apply. A suggested method to combat the reluctance and fear of reporting is to adequately compensate those impacted to promote reporting.

The most suggested method for improvement was through greater education and communication. Education to all stakeholders was suggested to increase awareness in biosecurity matters, whilst on-going and enhanced communication with the community was suggested to help facilitate the ease of identification and reporting. Another common suggested method of improvement is to increase laboratory numbers and their availability to help with identifying biosecurity threats.

No responses were received for groups identifying themselves as hobbyists and horticulture producers.

Question 17: *If you were able to redirect resources within the Queensland Biosecurity System, what are the low priorities you would move out of and why? (Responses: 27)*

This question raised a variety of answers. The most common redirection of resources was seen in eradication programs such as fire ants, wild dogs and cats. The eradication programs were attributed to being too expensive and failing at their objectives. Other suggested redirections of resources include:

- Removing top bureaucrats.
- Moving from regulation to a more personal responsibility (e.g. on-farm biosecurity).
- Education at public events, because targeted presentations are more effective.

No responses were received for groups identifying themselves as hobbyists and horticulture producers.

Question 18: *Do you see any opportunities for more cost effective practices now and in the future? (for example using new or emerging technology). Who would facilitate these opportunities and how? (Responses: 23)*

The most common response for cost effective practices was the use of mobile devices and digital technology. Better and more rapid diagnostic capabilities and modern IT system for record keeping were also common responses. Only 4 respondents listed who would facilitate, with 2 suggesting Biosecurity Queensland and the other 2 suggesting veterinarians.

No responses were received for groups identifying themselves as hobbyists and horticulture producers.

Question 19: *Is there more that could be done 'on farm' to deliver a world's best practice system (for example, surveillance, on -farm biosecurity)? What would it take for that to happen? (Responses: 27)*

The majority of respondents (77 per cent) believe that more could be done 'on farm' to deliver a world's best practice system, with the most common suggestion being education as a means for this to happen. Other suggestions include greater communication with industry and digital technology to aid on farm practices.

Respondents who had no opinion on the question account for 20.83 per cent or 5 responses, whilst only 1 respondent believed no more could be done.

No responses were received for groups identifying themselves as local government and hobbyists.

Question 20: *How could community and industry groups be better equipped to contribute to biosecurity? (Responses: 27)*

Education was again seen as the most common method (40 per cent) that could help community and industry groups contribute to biosecurity. Digital communication, including social media, emails and websites, were also suggested as methods that could help community and industry groups.

“The information and education program should start in schools but not be limited to that. Social media can be a powerful tool as well as feet on the ground. It will need to be able to sell the benefits to the community and the environment and be more than a five year plan as community behaviour will take some time to change.”

No responses were received for groups identifying themselves as hobbyists and horticulture producers.

SUMMARY OF INTERNAL SUBMISSIONS

Major Themes

The range of responses provided the Panel with wide insight into DAF's perceptions of Queensland's current biosecurity system. Generally feedback for the system was negative, with many respondents focusing on highlighting weaknesses.

Strengths

There is a broad consensus that Biosecurity Queensland is well serviced by dedicated and highly skilled staff.

Emergency responses were viewed as working well in the current biosecurity system.

Weaknesses

Many respondents believe that the current system does not effectively facilitate and reinforce active identification and reporting of biosecurity threats.

The current biosecurity system was noted as being reactive rather than proactive.

The most common gaps identified in Biosecurity Queensland are staff-related. Staff numbers, especially during an emergency response, was noted as a major problem for Biosecurity Queensland. On-ground staff, on-going training for staff and staff succession planning was also seen as a gap in Biosecurity Queensland.

Opportunities

Greater emphasis on more effective stakeholder engagement was highlighted as a major opportunity to educate stakeholders on on-farm biosecurity.

New legislation, including the *Biosecurity Act 2014*, was viewed as an opportunity for Biosecurity Queensland to learn new ways of operating.

Threats

The greatest perceived threat was the lack of Government capacity and capability due to the lack of resources.

Consultation process

DAF staff were invited to express their views on the Queensland Biosecurity System through an anonymous online survey. The survey was open from 7 May 2015 and closed on the 31 July 2015 and was available online. The survey was anonymous to facilitate forthcoming responses.

A total of 42 staff completed the survey. We appreciate the effort staff went through to complete the survey.

The online survey consisted of 20 open ended questions about biosecurity in Queensland and allowed for questions to be skipped. As the questions were open ended and the responses appear in a qualitative format, the responses were collated and codified based on overriding themes to produce quantitative data. The collated responses to the 20 questions about biosecurity in Queensland are outlined below.

Question 1: *To what extent are there clearly defined roles, responsibilities and obligations between Biosecurity Queensland, Commonwealth, State and local government agencies,*

industry groups, natural resource management groups, individual landholders, businesses and the broad community? (Responses: 41)

No responses stated that there are clearly defined roles, responsibilities and obligations, with most responses suggesting improvements could be made. The most common response, raised by 9 respondents, was that roles, responsibilities and obligations are clearly defined at the State and Commonwealth level, however elsewhere there needs to be greater clarification. Furthermore, another common response highlighted by 3 respondents, was that roles, responsibilities and obligations are clearly defined in legislation, however problems arise in the application.

“...for those who work in government expectations are pretty clear, to external groups much less so.”

“Beyond the formal biosecurity system (government and key industry members) biosecurity responsibility is still unclear.”

Emergency responses was highlighted twice as an example in which there are clearly defined, roles, responsibilities and obligations between stakeholders.

Question 2: *On what basis should the responsibility of different parties in Queensland’s biosecurity system be determined? (for example, capacity, ability to mitigate risk at lowest cost, legal and moral obligations, expectations, creation of risk, beneficiary of risk management). (Responses: 38)*

Question 2 received a great diversity of answers. The most common response, accounting for 28 per cent of responses, thought that creation of risk should be the key driver in portioning responsibility. The second most common response was that there needs to be shared responsibility for different parties in Queensland’s biosecurity system.

Question 3: *To what extent (and how) should affected parties be involved in decision making processes for biosecurity risks? (Responses: 38)*

All responses agreed that all affected parties should be involved in the decision making process to some extent, mainly as buy-in from affected parties was considered an important factor. However, it was noted multiple times that different stakeholders may have competing views over particular issues. Therefore, decisions should be based on science, evidence and experts, with government acting in the best interest of the public.

“Stakeholders need to be involved, but the decision making about technical components must be left to the people with an understanding of the wider consequences.”

Some common suggestions on how affected parties could be involved include:

- Through extensive consultation with Biosecurity Queensland, such as stakeholder capacity reviews and policy consultation;
- Through mutually agreed guidelines/framework; and

- By training and educating stakeholders on how to identify and mitigate biosecurity risks.

Question 4: *Where is a sharing of responsibility for risk management working well?*
(Responses: 33)

Staff gave a range of examples for areas where they considered shared responsibility was working well. These include:

- Bovine Johne's Disease outbreak in 2012
- Panama tropical race 4 response x2
- Hendra virus x2
- Livestock Biosecurity Network
- Grains Farm Biosecurity Program
- Torres Strait fruit fly management
- Competition Horse Owner Treatment Scheme program for tick control

The aforementioned examples of where sharing of responsibility for risk management is working well, were attributed to effective communication between all stakeholders.

Some responses however, note cases of where the sharing of responsibility is not working well including Red Imported Fire Ants, Red Witchweed and Asian Honey Bee programs.

Question 5: *Are there opportunities for other parties to contribute to the Queensland Biosecurity System to expand its capacity? How could these opportunities be facilitated?*
(Responses: 32)

The majority of responses, accounting for 78 per cent, believed that there are opportunities for other parties to contribute to the Queensland Biosecurity System. However, there were a large range of answers as to how could these opportunities be facilitated. Common suggestions (and how) include:

- DAF business units other than Biosecurity Queensland can contribute to policy development, industry extension activities and stakeholder engagement. This can be done through formalised roles and channels which would help facilitate contribution.
- Other government agencies can contribute by providing basic education regarding response roles, responsibilities and capabilities.
- Universities can conduct research projects. This can be achieved through funding—both industry and government.
- Landcare groups and other volunteer groups could assist with surveillance and maintenance programs.
- Surveys can be undertaken to identify skill availabilities.
- Biosecurity Queensland can enhance local and Commonwealth government contributions by effective communication.
- With respect to marine pest, ports and the shipping industry can contribute.
- On farm biosecurity planning can help expand the biosecurity system's capacity.

Question 6: What elements of biosecurity risk management in Queensland do you think are currently working well? What is not? (Responses: 26)

Question 6 had considerably more responses detailing what is currently not working well as opposed to what is currently working well. Emergency responses were the most common element identified as working well. Emergency responses were attributed to being well resourced, with active and enthusiastic staff. Stakeholder engagement and education was the most common element identified as not working well, even though it was considered working well in weeds and pest animals. This includes not effectively communicating risks, business groups operating in isolation and little on-going engagement.

“ There is little understanding of disease risks and why restrictions may be in place”

Other common elements identified as not working well include incursion management, risk management and the customer database. The variety of responses are summarised below.

Working Well	Not working well
<ul style="list-style-type: none"> • Emergency responsesx3 • Established pest management • Stakeholder engagement in weeds and pest animals 	<ul style="list-style-type: none"> • IT systems and document management systems x2 • Customer database x3 • Staff turnover in emergency responses • Biosecurity Queensland capacity (funding and staff) • Incursion management x3 • Risk management x3 • Consultation and policy development • Research and development • Environmental biosecurity • Staff legal knowledge • Stakeholder engagement and education x5 • Managing established threats • Invasive pests and animals

Question 7: Bearing in mind the review Panel’s task to develop a five year place, do you see any new challenges and opportunities for the Queensland Biosecurity system in five years time? (Responses: 30)

Question 7 had considerably more responses detailing the current challenges as opposed to highlighting opportunities for the Queensland Biosecurity system. The most common challenge highlighted was the lack of Government capacity and capabilities due to the lack of resources.

“Ensuring capacity within Biosecurity Queensland to maintain essential business-as-usual activities concurrently with one or more emergency response.”

The *Biosecurity Act 2014* and new legislation was the most commonly identified opportunity, even though implementing was considered a challenge.

“The Biosecurity Act provides opportunity for consistency and transparency across Biosecurity Queensland and to learn new ways of operating.”

“The introduction of new legislation provides a significant opportunity for groups to 'reboot' and establish some greater rigour around the way that we interact with stakeholders and delineate roles and responsibilities.”

The key response themes are summarised below.

Challenges	Opportunities
<ul style="list-style-type: none"> • Government capacity and capability (due to lack of resources) x7 • Maintaining stakeholder's confidence x2 • Stakeholder engagement x2 • Growth in international trade x2 • Ageing working in Biosecurity Queensland x2 • Pest incursion x2 • Changing risk profiles and pathways • Changes in Commonwealth framework for pest management • Climate change • Development of Northern Queensland • Funding • Zoonotic diseases • Reduced profits from Agricultural producers • On-ground staffing • Red tape 	<ul style="list-style-type: none"> • Biosecurity Act 2014 and new legislation x4 • Changes in technology x3 • On-farm biosecurity x2 • Stakeholder engagement and education x2 • Local and Commonwealth involvement • Marketing biosecurity and agriculture

Question 8: *Is there appropriate attention given to all elements of the biosecurity spectrum of prevention, preparedness, emergency response, recovery and ongoing management? (Responses: 29)*

An overwhelming majority of respondents (93 per cent) believed that there is not appropriate attention given to all elements of the biosecurity spectrum. The most commonly identified elements which need improvement was prevention and preparedness, highlighted by 17 responses. The current biosecurity system was noted as being reactive rather than proactive, with staff suggesting funding a major contributing factor.

“Attention is skewed to emergency response and ongoing management – this is understandable given it is easier to justify expense to a threat that is occurring now and the impacts can be seen.”

“Prevention and preparedness are low priority and probably unachievable with current resources without a significant loss of service delivery.”

“In recent years due mainly to staffing and general downsizing across Government, Biosecurity Queensland has been a very reactive organisation- busy being reactive, with no resources to be proactive.”

Education and engagement with stakeholders, with focus on on-farm biosecurity, was commonly considered as a method for improving prevention and preparedness.

Question 9: *Is Biosecurity Queensland's current structure, culture, skills mix and business model effective for meeting current and future biosecurity challenges? Do you have alternative suggestions? (Responses: 32)*

There was broad consensus that Biosecurity Queensland is well serviced by dedicated and highly skilled staff. However, all responses indicated the need for improvement within Biosecurity Queensland, with the majority of responses questioning a number of factors within Biosecurity Queensland's structure, culture, skills mix and business model. The lack of staff in Biosecurity Queensland was a common overarching theme highlighted as challenging by the responses. The lack of staff was attributed to the lack of ability to maintain capacity for business-as-usual activities whilst directing resources to emergency response. The lack of training staff was a major common issue highlighted by the responses. Responses also highlight the ageing working of Biosecurity Queensland as an emerging problem. Another criticism was the emphasis on technical knowledge in Biosecurity Queensland, resulting in deficiencies in policy development, consultation and extension.

Possible solutions to improve Biosecurity Queensland's current structure, culture, skills mix and business model include:

- Facilitating more cross-program work and communication.
- Stronger focus on stakeholder engagement and education, such as 'regional champions' and industry liaisons to develop biosecurity awareness, preparedness and response capacity to improve on-ground capacity.
- Cadet/graduate scheme to attract new employees.
- A dedicated Emergency Response Team, reducing competing demands on staff, allowing business-as-usual activities.
- More staff training to build capacity and capability across Biosecurity Queensland and DAF.

Question 10: *To what extent are the roles of key participants in the system defined for each of the elements of the biosecurity spectrum (prevention, preparedness, emergency response, recovery and ongoing management)? (Responses: 25)*

The majority of responses (60 per cent) believe roles of key participants in the system are not clearly defined and need improvement. Only 3 responses believed that the roles of key participants are well defined, although these responses noted there are difficulties in practice. 7 responses stated a 'nil' answer suggesting there is a gap in knowledge in this area.

Question 11: *What are the capabilities that the Queensland Biosecurity System should have in the future? (Responses: 26)*

A large variety of answers were given for Question 11. The most common response was that there is a need for more effective stakeholder engagement, highlighted by 10 responses. Another common response, highlighted by 6 responses, was the need for greater capacity in

regards to emergency responses with many respondents suggesting an emergency response team. Other common suggestions include:

- Better inter-agency cooperation
- A share responsibility approach including on-farm biosecurity x2
- Robust policy and legislative framework
- Technical information, research and diagnosis
- Greater compliance and enforcement capacity x2
- Greater education and training for staff and stakeholders x3
- A highly engaged and motivated workforce
- Preparedness programs
- A deployable headquarters
- Defined risk management programs
- Greater surveillance capabilities

Question 12: *Are there any gaps in the current system that need filling? Specifically, do you see gaps in the capability of Biosecurity Queensland as an organisation? (Responses: 29)*

The most common gaps identified in Biosecurity Queensland are staff-related. Staff numbers, especially during an emergency response, was noted as a major problem for Biosecurity Queensland. On-ground staff, on-going training for staff and staff succession planning was also seen as a gap in Biosecurity Queensland.

Another common gap identified in Biosecurity Queensland is stakeholder engagement. 8 responses highlighted that more needs to be done to improve stakeholder engagement. Preparedness programs or a prevention oriented approach was also seen as lacking in Biosecurity Queensland.

Question 13: *Do you see any specific opportunities for improved biosecurity in Queensland (for example government working closely with particular industry groups or producers using technology in a specific way)? (Responses: 28)*

Examples given for improved biosecurity in Queensland include opportunities for:

- Greater on-farm biosecurity (requiring increased stakeholder engagement).
- Increase engagement with agronomist, consultants and vets for surveillance.
- Better coordination with local and Commonwealth Governments (AQIS).
- Better information systems (BIMS).
- Increased stakeholder engagement— in particular greater industry involvement.
- Indigenous involvement in biosecurity.
- The use of apps and digital technology.
- An automated property registration detail system.
- Enhanced enforcement capabilities (e.g. penalty infringement notice system).

Question 14: *What do you think are specific examples of best biosecurity practice? (Consider both specific industries and jurisdictions). (Responses: 20)*

The most common example of best biosecurity practice were the intensive animal industries—in particular the pigs and poultry industries. Other examples include:

- Come Clean Go Clean initiative by the cotton industry
- Withcott Seedlings operations
- Best practices currently being introduced to the banana industry in relation to Panama
- Sugar Research Australia research and development
- Victoria’s pre-incursion plans
- Queensland management of feral deer
- Movement records for traceability
- Red witchweed response
- Four Tropical Weeds Eradication Program

Question 15: *Does the current system effectively facilitate and reinforce active identification and reporting of biosecurity threats? If not, how could it be improved? (Responses: 26)*

The majority of responses (65 per cent) believe the current system does not effectively facilitate and reinforce active identification and reporting of biosecurity threats, with only 23 per cent believing otherwise and the remainder being unsure.

The most common reason as to why the current system does not effectively facilitate and reinforce active identification and reporting is the reluctance and fear of reporting. By reporting a biosecurity threat, there could potentially be significant monetary losses and other disruptions to business if restrictions were to apply. Potential significant monetary losses and disruption to business act as a disincentive for reporting. Furthermore, responses noted the uncertainty of reimbursement or compensation, due to unclear provisions in the Emergency Plant Pest Response Deed and Emergency Animal Disease Response Agreement. Amendments to the deed and agreement, to ensure reimbursement or compensation to affected parties, were suggested methods to improve self-reporting.

“The lack of assistance, reimbursement or compensation packages for producers who are severely affected by a disease notification may act as a disincentive to report”.

“Uncertainty around issues of compensation, disruption and loss of business and risk to market access are impediments to the active reporting of biosecurity threats”.

The lack of assistance, including the lack of on-ground Biosecurity Queensland staff, was also a common reason as to why the current system does not effectively facilitate and reinforce active identification and reporting.

Suggested methods for improvement include:

- Apps and other digital technology to help facilitate reporting x2
- Education to promote what constitutes a biosecurity threat x4

- Greater engagement with agronomists and other specialists x2
- Greater diagnostic capabilities (laboratories in regional areas)
- Increased media coverage x2

Question 16: *If you were able to redirect resources within the Queensland Biosecurity system, what are the low priorities you would move out of and why? (Responses: 27)*

Examples identified as low priority include:

- Ongoing weed management, as it has high costs x3
- Branding and paper records of animal movements, as more effective mechanisms exist to facilitate traceability x2
- Feral animal fences, as it is mainly has private benefit x2
- Wild dog bait, as it is mainly has private benefit x3
- Cattle tick dips x4
- Interstate certification, as private businesses could achieve better service delivery outcomes
- Fruit fly trapping, as it can be outsourced
- Activities which have a low return on investment including clearing facilities and management of brands

Question 17: *Do you see any opportunities for more cost effective practices now and in the future? (for example using new or emerging technologies). Who would facilitate these opportunities, and how? (Responses: 24)*

Staff saw a range of opportunities in development of the future of Queensland's biosecurity system. Examples given of opportunities for more cost effective practices now and in the future include:

- Improved information systems and practices x3
- Digital technology including apps x3
- Giving officers the opportunity to live in regional townships to reduce travel costs, productivity losses and reduce impacts to health and family
- Aerial surveillance x2
- Project teams that are short term
- More cross-business unit teams

Question 18: *How well coordinated do you feel the department's approach to biosecurity is, given many staff outside Biosecurity Queensland contribute to biosecurity outcomes? (do you have any comments on good practice or suggestions for improvement?) (Responses: 25)*

Only two responses highlighted that coordination was satisfactory and offered no suggested methods for improvement. The majority of responses, as seen in Figure 7, noted that there is

room for improvement. Coordination within the department during emergency responses was highlighted multiple times as being satisfactory. However, outside of emergency responses, coordination was attributed to depending on personal relationships between individuals. A suggested method for improvement is formal agreements among DAF's business units involved in biosecurity issues, as business plans fail to reflect work that goes across boundaries between agriculture, fisheries, forestry and biosecurity.

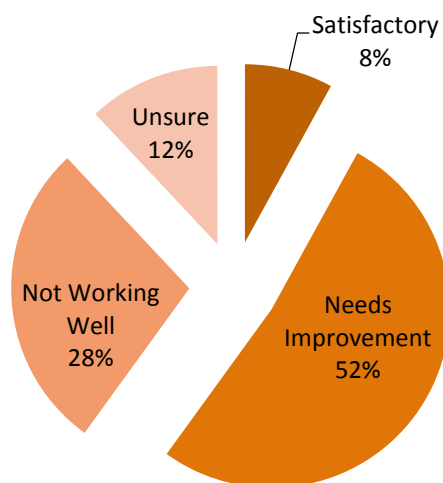


Figure 7: Staff views on coordination within DAF to achieve biosecurity outcomes

Question 19: *Is there more that could be done ‘on-farm’ to deliver a world’s best practice system (for example surveillance, on-farm biosecurity). What would it take for that to happen? (Responses: 26)*

The majority of responses (85 per cent) believe that more could be done on-farm, with only 2 responses stating otherwise and 2 responses with a ‘nil’ answer.

The most common suggestion to help achieve a world’s best practice system was through education and training of stakeholders. Digital technology, such as apps, was noted as a method to help education and training. Furthermore, risk assessments for individual businesses to help identify individual risks and some basic control measures were also suggested to improve education and training.

Greater stakeholder communication and engagement was also a common suggestion to help achieve a world’s best practice system. Suggestions on how to improve communication and engagement were through more on-ground support from Biosecurity Queensland and more research into social sciences to determine how to effectively communicate and engage.

Question 20: *How could community and industry groups be better equipped to contribute to biosecurity? (Responses: 25)*

The majority of responses believe that through education, community and industry groups will be better equipped to contribute to biosecurity. Responses emphasised that community and industry groups need an understanding of personal responsibility and need to build ownership within the industry. Digital technology was noted as potential tools which would help education. Greater communication and engagement was also commonly identified as a method to better equip community and industry groups.

Other suggestions include:

- Digital technology, such as apps, to help improve identification and reporting.
- An offering of innovation funding to engage community and industry groups to them in creating solutions

APPENDIX 4 – ORGANISATIONAL CAPABILITY ASSESSMENT TOOL

Biosecurity Leadership Team members were invited to complete a survey based on a set of questions developed by the Australian Public Service Commission. The questions were designed to evaluate generic organisational capability answers were provided as they relate specifically to Biosecurity Queensland.

Each question was scored on a four point scale and qualitative feedback to supported answers. There were 46 questions in total.

Assessment ratings

Strong

- Outstanding approach for future delivery in line with the model of capability
- Clear approach to monitoring and sustaining future capability with supporting evidence and metrics
- Evidence of learning and benchmarking against peers and other comparators

Well placed

- Capability gaps are identified and defined
- Is already making improvements in capability for current and future delivery, and is well placed to do so
- Is expected to improve further in the short term through practical actions that are planned or already underway

Development area

- Has weaknesses in capability for current and future delivery and/or has not identified all weaknesses and has no clear mechanism for doing so
- More action is required to close current capability gaps and deliver improvement over the medium term

Serious concerns

- Significant weaknesses in capability for current and future delivery that require urgent action
- Not well placed to address weaknesses in the short or medium term and needs additional action and support to secure effective delivery

Setting Direction

- Is there a clear, compelling and coherent vision for the future of the organisation? Is this communicated to the whole organisation on a regular basis?
- Does the leadership work effectively in a culture of teamwork, including working across internal boundaries, seeking out internal expertise, skills and experience?
- Does the leadership take tough decisions, see these through and show commitment to continuous improvement of delivery outcomes?

- Does the leadership lead and manage change effectively, addressing and overcoming resistance when it occurs?
- Does the leadership build broader community understanding of the objectives of the Queensland Biosecurity System and trust in the decision making processes and capacity of all parties to contribute to system outcomes?

Can you provide further information on your choices above? Do you have any other comments to make with regards to Setting Direction?

Motivating People

- Does the leadership create and sustain a unifying culture and set of values and behaviours which promote energy, enthusiasm and pride in the organisation and its vision?
- Are the leadership visible, outward-looking role models communicating effectively and inspiring the respect, trust, loyalty and confidence of staff and stakeholders?
- Does the leadership display integrity, confidence and self-awareness in its engagement with staff and stakeholders, actively encouraging, listening to and acting on feedback?
- Does the leadership display a desire for achieving ambitious results for customers, focusing on impact and outcomes, celebrating achievement and challenging the organisation to improve?

Can you provide further information on your choices above? Do you have any other comments to make with regards to Motivating People?

Developing People

- Are there people with the right skills and leadership across the organisation to deliver your vision and strategy? Does the organisation demonstrate commitment to diversity and equality?
- Is individuals' performance managed transparently and consistently, rewarding good performance and tackling poor performance? Are individuals' performance objectives aligned with the strategic priorities of the organisation?
- Does the organisation identify and nurture leadership and management talent in individuals and teams to get the best from everyone?
- How do you plan effectively for succession in key positions?
- How do you plan to fill key capability gaps in the organisation and in the delivery system?

Can you provide further information on your choices above? Do you have any other comments to make with regards to Developing People?

Outcome-Focused Strategy

7. Rate Biosecurity Queensland on *Outcome-Focused Strategy*

- Does the organisation have a clear, coherent and achievable strategy with a single, overarching set of challenging outcomes, aims, objectives and measures of success?
- Is the strategy clear about what success looks like and focused on improving the overall quality of life for customers and
- benefiting the nation?

- Is the strategy kept up to date, seizing opportunities when circumstances change?
- Does the organisation work with political leadership to develop strategy and ensure appropriate trade-offs between priority outcomes?

Can you provide further information on your choices above? Do you have any other comments to make with regards to Outcome-Focused Strategy?

Evidence-Based Choices

- Are policies and programs customer focused and developed with customer involvement and insight from the earliest stages?
- Does the organisation understand and respond to customers' needs and opinions? Specifically, does the organisation have, and build in to its decision making, an understanding of the impact of both biosecurity threats and management options to farm and other businesses?
- Does the organisation ensure that vision and strategy are informed by sound use of timely evidence and analysis?
- Does the organisation identify future trends, plan for them and choose among the range of options available?
- Does the organisation evaluate and measure outcomes and ensure that lessons learned are fed back through the strategy process?
- Does the organisation apply rigour in risk analysis and management and scientific integrity to inform decision making?
- Is consideration of the cost effectiveness of measures to address biosecurity threats (for all affected parties) built into prioritisation choices?

Can you provide further information on your choices above? Do you have any other comments to make with regards to Evidence-Based Choices?

Collaborate and Build Common Purpose

- Does the organisation work with others in government and beyond to develop strategy and policy collectively to address
- cross-cutting issues?
- Does the organisation involve partners and stakeholders from the earliest stages of policy development and learn from their experience?
- Does the organisation ensure the agency's strategies and policies are consistent with those of other agencies?
- Does the organisation develop and generate common ownership of the strategy with political leadership, delivery partners and citizens?

Can you provide further information on your choices above? Do you have any other comments to make with regards to Collaborating and Building Common Purpose?

Innovative Delivery

- Does the organisation have the structures, people capacity and enabling systems required to support appropriate innovation and manage it effectively?

- Does the leadership empower and incentivise the organisation and its partners to innovate and learn from each other, and the front line, to improve delivery?
- Is innovation explicitly linked to core business, underpinned by a coherent innovation strategy and an effective approach towards risk management?
- Does the organisation evaluate the success and added value of innovation, using the results to make resource prioritisation decisions and inform future innovation?
- Does the organisation build and utilise relationships and partnerships to develop innovative solutions to its own business challenges as well as challenges to the management of biosecurity threats?
- Does the organisation scan the environment to spot trends and opportunities to improve effectiveness and efficiency?

Can you provide further information on your choices above? Do you have any other comments to make with regards to Innovative Delivery?

Plan, Resource and Prioritise

- Do business planning processes effectively prioritise and sequence deliverables to focus on delivery of strategic
- outcomes? Are tough decisions made on trade-offs between priority outcomes when appropriate?
- Are delivery plans robust, consistent and aligned with the strategy? Taken together will they effectively deliver all of the
- strategic outcomes?
- Is effective control of the organisation's resources maintained?
- Do delivery plans include key drivers of cost, with financial implications clearly considered and suitable levels of financial flexibility within the organisation?
- Are delivery plans and programs effectively managed and regularly reviewed?

Can you provide further information on your choices above? Do you have any other comments to make with regards to Planning, Resourcing and Prioritisation?

Shared Commitment and Sound Delivery Models

- Does the organisation have clear and well understood delivery models which will deliver the agency's strategic outcomes across boundaries?
- Does the organisation identify and agree roles, responsibilities and accountabilities for delivery within those models including with third parties? Are they well understood and supported by appropriate rewards, incentives and governance arrangements?
- Does the organisation engage, align and enthuse partners in other agencies and across the delivery model to work together to deliver? Is there shared commitment among them to remove obstacles to effective joint working?
- Does the organisation ensure the effectiveness of delivery agents?

Can you provide further information on your choices above? Do you have any other comments to make with regards to Shared Commitment and Sound Delivery Models?

Managing Performance

- Is the organisation delivering against performance targets to ensure achievement of outcomes set out in the strategy and business plans?
- Does the organisation drive performance and strive for excellence across the organisation and delivery system in pursuit of strategic outcomes?
- Does the organisation have high-quality, timely and well understood performance information, supported by analytical capability, which allows the organisation to track and manage performance and risk across the delivery system?
- Does the organisation take action when not meeting (or not on target to meet) all of its key delivery objectives?

Can you provide further information on your choices above? Do you have any other comments

APPENDIX 5 – SPECIFIC CAPABILITY ASSESSMENT TOOL

Biosecurity Capacity and Capability Framework

Biosecurity Capacity & Capability Assessment Tool.									
Queensland	Developed by Ron Glanville, Biosecurity Advisory Service, June 2015								
Capacity / Capability Element	Outcome Sought	Indicators	1 = improvised	2 = developing	3 = evolving	4 - optimised	Current Score	Target Score	Recommended treatments
Key Performance Area - Strategic planning and policy development - Plan and Policies to manage Biosecurity Risks									
Policy Development	Biosecurity Policy is harmonised and strategic in its approach to emerging and ongoing issues.		A systematic approach to development and review of policy does not exist.	The approach to development and review of policy is somewhat reactionary and ad hoc.	A systematic approach to development and review of policy is applied across the organisation.	A strategic approach to development and review of policy follows best practice guidelines, is documented and is applied across the organisation.			
		Government priorities and style are analysed and incorporated into strategic direction for all programs							

		Timely (regular) Cabinet Submissions are developed to maintain political commitment to biosecurity generally and difficult issues specifically							
		Effectiveness of participation in national processes (eg policy forums).							
		Effectiveness of translation of policy to meet national, state, local and industry priorities.							
		Broad range of policy instruments and options are considered							
		Relevant, accurate, reliable and timely advice is available to support conclusions and recommendations							
		Policies in place through the use of evidence and risk based policy development processes.							
		Policy papers and advice are developed and rigorously and critically assessed to address emerging problems							
		Policy consistency, agreement and support.							
		Systematic approach to new policy development follows best practice							

		Systematic approach to review of existing policy.							
		Effective stakeholder engagement in policy development.							
		Innovation in policy development.							
Policy Implementation and Program Design	Biosecurity policy and Programs are effectively designed, rigorously monitored, reviewed and implemented effectively.		Minimal frameworks present for the design of programs and program and policy implementation	Some aspects of program design and program and policy implementation reflect good practice frameworks.	Adoption of best practice program design and program and policy implementation frameworks is prioritised	A holistic approach to program design and program and policy implementation is applied rigorously with a focus on outcomes and accountability			
		Business and program plans are aligned to Biosecurity Strategy.							
		Implementation plans are established for new policy and projects							
		Business case for new initiatives detailing milestones and timeframes, resource requirements, management and costing are prepared							
		Regular, disciplined reporting on KPIs is maintained with specified dates and decision gates for next round of							

		investment							
		Systems (including data) and capacity are in place to implement new and amended legislation, including new policies, procedures and informative material for stakeholders							
		Delegations, procedure manuals and accountabilities are established							
		Strategies are in place to convey advice that may be politically difficult							
Strategic Planning	Planning arrangements deliver co-ordinated, strategic and timely decision-making.		Strategic planning is not part of the organisational culture, there is no structured process for identifying risks and business planning is ad hoc.	Strategic planning and risk analysis is conducted in an ad hoc way, and business planning products are not used by staff generally.	Strategic planning and risk analysis is conducted across the organisation, and business planning products are used variably by staff.	Strategic and operational plans are based on sound risk assessment are publically available and guide the organisation's activity.			
		Strategic Plan in place and supported by business plans. Plans consistent with national plans.							
		"Line of sight" for operational staff.							

		Risk analysis process and principles applied and activity focussed on highest risk.							
		Contingency plans in place for specific threats.							
		Documentation of decisions at all levels							
		Reporting conducted at all levels							
Shared responsibility	Stakeholders contribute effectively to policy and planning to manage biosecurity risk in a conducive and supportive environment		Stakeholder involvement relies primarily on personal relationships. Environment of legitimacy and support not acknowledged	Lists of important stakeholders are maintained and consulted on important biosecurity issues. Management of environment of legitimacy and support is largely passive.	There are active processes to maintain relationships with important stakeholders and they are actively engaged in policy and planning. Management of environment of legitimacy and support is largely reactive.	There is a genuine shared responsibility culture evident for policy development and planning. Active and ongoing efforts directed to optimising the environment of legitimacy and support			
		Government, industry and community work together in managing biosecurity risk.							
		Genuine sharing of decision making.							
		Roles and responsibilities clearly understood.							

		Effective governance and advisory arrangements.							
		Intelligence on relevant stakeholders is maintained, including stakeholder mapping.							
		Senior staff maintain effective relationships with key industry leaders and other stakeholders.							
		Level of formal and informal interaction with stakeholders.							
		Degree of involvement of industry & other stakeholders in policy and strategy development.							
		An effective working relationship is in place between DAF, QDMA and other departments.							
		Effective working relationships are maintained with national stakeholders.							
Intelligence	Systems and processes support gathering and analysis of intelligence on an ongoing basis.		Biosecurity programs rely on ad hoc provision of intelligence.	Plans and processes include roles/functions (such as epidemiologists) that should provide analysis of intelligence data.	Plans and systems include functions that have gathering and analysis of intelligence data as a key role.	There are highly developed intelligence systems & processes that are used during policy & program development and have been tested			

		Information systems assist with intelligence gathering and analysis.							
System Insight and System Learning	Biosecurity Queensland is attuned to feedback and self-improves through analysis and observation		Informal and undocumented channels for collecting feedback and evaluating impact.	Some formal channels for collecting feedback and evaluating impact, mostly undocumented or anecdotal.	Formal process for collecting feedback and evaluating impact implemented but not yet embedded in culture.	Formal processes for collecting, analysing feedback and evaluating impact embedded in culture.			
		The environment is scanned to identify emerging trends, issues, risks and developments							
		Systems are in place to identify and adopt best practice emergency response and public administration from other Queensland, Interstate and International Agencies							
		Systems are in place to review and evaluate program and project impact and value for money							
		Stakeholder feedback on program effectiveness is commissioned at periodic intervals							
		Networks and systems are in place to learn from central agencies and other agencies to							

		develop whole-of-government approaches to cross-cutting problems							
		Proactive, internally generated options for continuous improvement of all organisational programs examined and implemented.							
		External reviews of performance on specific responses is sought and implemented.							
Key Performance Area - Systems Support and Oversight									
Governance	Biosecurity in Queensland is appropriately led and managed.		Systems and/or processes to support sound and accountable governance arrangements are ad hoc.	Systems and/or processes to support sound and accountable governance arrangements have been developed and generally in place.	Systems and/or processes to support sound and accountable governance arrangements have been developed and are practiced routinely.	There is a modern, continuous improvement approach to governance and management arrangements .			
		Effectiveness of management structure and processes.							
		Effectiveness of leadership. 360 degree feedback in place.							

		Effectiveness of internal planning, budgeting and risk management processes.							
		Effective financial management.							
		Appropriate human resource management processes.							
		Results of staff surveys and organisational culture assessments.							
		Regular, disciplined reporting on KPIs for accountability and responsibility							
		Degree of innovation evident in the organisation.							
Resources and funding	Biosecurity in Queensland is adequately resourced to manage high priority threats and ongoing commitments		Resourcing is not matched to biosecurity risk assessment and ongoing commitments	Resource requirements are known but matching revenue to actual need is ad hoc.	There is active assessment of biosecurity resourcing needs using a mix of revenue sources.	Resources are adequate, with a mix of revenue sources based on appropriate stakeholder contributions.			
		Planning and budgeting processes recognise biosecurity risk assessments, with resource allocation based on risk assessment and return on investment..							
		Appropriate base staffing levels for the biosecurity							

		agency							
		Adequate operating funds - proportionate to value created or risk mitigated or benefits.							
		Return on investment is maximised.							
		Appropriate mix of funding between base and external sources.							
		Beneficiary and risk creator assessments conducted.							
		Appropriate cost recovery arrangements in place.							
		Mechanisms in place for industry to contribute to funding arrangements.							
Information systems	Information management systems enhance the effectiveness of biosecurity operations and responses.		Some information systems to support biosecurity operations have been developed.	Information systems to support most biosecurity operations and responses have been developed.	Integrated, user friendly and efficient systems are in place for all biosecurity operations.	A full set of information systems to support biosecurity operations and responses have been developed and have been evaluated in a real or simulated responses.			
		Personnel are in place for technical support of information systems.							

		Systems utilise modern electronic data capture processed (e.g. PDAs).							
		Systems are integrated.							
		Systems support automatic update of public information.							
		Systems support surveillance and early detection.							
Emergency response		A biosecurity information management system (BIMS) is in place that can manage day to day as well as emergency response needs.							
		The system has adequate capability to record, manage and report relevant biosecurity events at the enterprise level(e.g. visits, tests, treatments, destructions, status changes etc.).							
		Sufficient staff are competent in operating the system.							
		The system is intuitive and user friendly.							
		The system is utilised for routine operations.							
		The system readily produces data sets required for national processes.							
Property Registration		A system is in place for registration of agricultural							

		enterprises.							
		The system is adequately maintained, particularly processes for updating registrations.							
		The system has the ability to easily extract data and intelligence.							
Laboratory information		A LIMS is in place for recording, tracking and reporting of diagnostic accessions and results.							
		LIMS is able to link/interface with field electronic devices with the potential for preregistration of laboratory submission at the point of collection							
		LIMS has bidirectional communication with the national laboratory network							
		There is a system in place for surveillance information capture, management and analysis, which supports early detection.							
Compliance & permits		A compliance management system is in place.							
		There is a system for managing movement permits under conditions of high demand.							

Mapping	Systems are in place to rapidly produce relevant maps.								
Tracing	Systems are in place to easily manage livestock tracing information.								
	Tracing systems are integrated with the NLIS database or mirror database.								
Web	A modern, web information system is in place that allows timely provision of information to the public.								
	IT systems are in place to assist in monitoring social media and providing information to the public through these channels.								
	There is a process in place for internal information purposes.								
Document management	Document management systems are in place to permanently record, track and retrieve relevant response documents.								
	Key response documents are readily available to staff.								
	There is a QA process in place for document management.								

		Role based email accounts can be established immediately on commencement of a response.							
		Incident logs are implemented and used.							
HR, finance and Logistics		Information systems are in place to manage the HR, financial and logistical information pertaining to a large response (resource management system).							
		Systems are able to track eligible and non-eligible costs for cost sharing.							
		Systems are able to track financial commitments as well as accommodate forecasting of expenditure.							
Legislation & regulation	Appropriate legislation is in place to support and facilitate biosecurity strategy implementation.		Basic pest and disease control legislation is in place.	A range of biosecurity provisions are contained within various legislative instruments.	Biosecurity legislation is in line with national agreements and includes all appropriate provisions within an integrated framework.	Biosecurity legislation is integrated across all areas, recognises modern principles, including shared responsibility and has been evaluated for effectiveness.			
		Legislation is in place and consistent with national agreements.							

		Legislation provides flexible tools to enable rapid proportional responses to new and emerging threats across the full biosecurity spectrum.							
		Individuals have appropriate obligations to minimise all risks within their control. There are frameworks for co-regulation where appropriate. Major industries actively self-manage biosecurity risks. Biosecurity is seen as a shared responsibility.							
		Authorised Officers all have structured and on-going training and have a very good understanding of the legislation. Timely legal advice is available if required							
		Active, well-resourced compliance monitoring and enforcement. Compliance planning and capability is reviewed frequently.							
		Legislative systems allow a timely response, particularly declaration of stock standstill, declaration of areas and destruction orders.							

		Procedural fairness / natural justice processes have been pre-agreed.							
		Compensation arrangements are clear.							
Tracing	High risk biosecurity matter can be traced within nationally agreed timeframes.		Tracing of high risk matter depends industry/marketing documentation and physical identifiers.	Special purpose identification and tracing systems are in place for some high risk matter.	Special purpose identification and tracing systems are in place for high risk matter.	Automated identification and tracing systems are in place for all high risk matter.			
		All susceptible livestock stock can be traced within nationally agreed timeframes.							
		Plant industry produce can be effectively traced.							
		A compliance monitoring system is in place.							
Key Performance Area - Communications and Engagement.									
Engagement	Key stakeholders are engaged and consulted on key biosecurity issues and decisions.		Stakeholder relationship management relies primarily on personal relationships.	Lists of important stakeholders are maintained and there is active provision of information.	There are active processes to maintain relationships with important stakeholders, including consulting on	There are active stakeholder engagement practices in place incorporating a partnership approach that have been			

					major biosecurity policy and decisions.	tested during exercises or responses.			
		A register of affected stakeholder groups and relevant representatives is maintained.							
		A comprehensive public stakeholder engagement system has been developed and rigorously applied							
		Intelligence on relevant stakeholders is maintained, including stakeholder mapping.							
		Process are in place for urgent notices to be sent to key parties such as industry leaders and veterinarians and other industry professionals.							
		There are effective direct engagement processes in place for major stakeholders, including industry liaison officers.							
		Key stakeholders are meaningfully engaged in planning and strategy development at both strategic and operational levels.							

		A "client service" culture is encouraged within the organisation.							
		There is a culture of "Shared Responsibility" across government, industry and the community.							
		Engagement with stakeholder-managed (e.g. community based) biosecurity systems.							
Communications	Biosecurity is supported by best practice communications and all stakeholders have access to or are provided with essential information.		Communications to support biosecurity is ad hoc.	Communications plans exist and cover the key communications areas.	There are comprehensive communications plans for biosecurity and they are applied across all priority areas.	Advanced communications plans support all areas of biosecurity and their effectiveness has been evaluated.			
		There is an ongoing communications and awareness program for priority biosecurity risks and initiatives; covering prevention, reporting, preparedness and response.							
		Biosecurity information on the web is appropriate and up to date.							
		A wide range of media (including social media) is used in a planned way to most effectively reach target audiences.							

		Sufficient skilled and experienced communications staff are available to support biosecurity communications.							
	Emergency responses are supported by best practice communications		Communications for the management of responses is ad hoc.	Communications plans and systems cover the key communications areas.	There are comprehensive communications plans to support responses.	Advanced communications plans support responses and their effectiveness has been evaluated.			
		Specific emergency response communication policy and protocols that integrate with other state and national policies and protocols exist and are reviewed regularly (for example Biosecurity Incident Public Information Manual).							
		Response communications plans are in place.							
		Participation in the National Biosecurity Communications Network.							
		Systems are in place to provide up to date and timely response reports to affected stakeholders.							
		An appropriately skilled call centre is available,							

		with the ability to ramp up quickly.							
		Social media is monitored and information provided as appropriate.							
		Several trained or experienced media spokespersons are in place.							
Internal communications	All staff have access to and knowledge of essential biosecurity policy and plans and feel engaged.		Staff communications rely on formal structural reporting relationships.	Staff receive information from direct supervisors and formal briefings.	Staff communications plans utilise a variety of channels to keep staff informed and to receive feedback.	Advanced staff communications plans have been evaluated and include a genuine two-way flow of information.			
		Systems are in place to ensure all staff have access to appropriate and up to date information (including during responses) through a variety of channels.							
		Effective internal communications processes are in place (including written and verbal briefings).							
		Staff have genuine opportunities to contribute to policy, plans and strategies.							

		Staff have access to consistent messaging for use when talking to clients.							
Key Performance Area - Outcomes Focused Services									
Prevention - systems & processes to prevent new incursions or expansion of priority threats (prevention is better than cure).									
Prevention	New incursions (or significant expansions) of biosecurity threats are prevented.		Biosecurity risk prevention is primarily based on legislative provisions. Education or enforcement is ad hoc.	Policy and legislation is in place, based on national standards and there is periodic, ad hoc education & enforcement.	Policy and legislation focussed on risk prevention is in place, based on thorough risk assessment and there are regular education & enforcement activities. Shared responsibility concept is promoted, including on-farm biosecurity.	Biosecurity risk prevention is a shared responsibility across all stakeholders, with an appropriate balance of mitigation strategies.			
		Qld has a good understanding of risk pathways and the highest priority biosecurity threats have							

		been assessed for appropriate mitigation strategies.							
		Education, awareness and compliance activities based on risk assessment (for example peri-urban communities).							
		Qld participates in national processes (e.g. policy forums) to ensure effective border protection measures and nationally consistent post border protection activities.							
		Particular attention is paid to the State's northern borders and cooperation with Commonwealth Dept. of Agriculture border compliance (and NAQS).							
		Legislation is in place to support key preventative measures and is consistent with national definitions.							
		Level of monitoring and enforcement (including prosecutions) of legislative requirements.							
		Land owners owners have a high level of understanding of biosecurity and of legislative requirements.							

		Level of adoption of on-farm biosecurity practices.							
		Level of community awareness of biosecurity.							
Surveillance and Diagnostics									
Planning and Intelligence	Surveillance targets the highest risks.		No surveillance priorities are documented.	Unit plans within sectors describe surveillance activities that may not address all high risk pests and diseases.	Surveillance activities are well documented in business plans that address the priority risks as determined according to risk management standards.	Surveillance activities are well documented in risk based business plans that are integrated with national surveillance strategies and business plans for each sector.			
		Old has a good understanding of risk pathways and there is a good understanding of highest priority biosecurity threats.							
		Structured planning process for identifying risks.							
		Surveillance plans with clearly defined objectives addressing trade, economic, environment and community risks.							

		Biosecurity threat intelligence through capturing, collecting, storage, analysis and sharing of data.							
		Targeted surveillance (passive or active) based on the prevalence / distribution of the pest or disease and the best available knowledge or techniques.							
Diagnostics	There is appropriate diagnostic capacity and capability for routine activities, as well as during emergencies.		Ad hoc arrangements are in place for taxonomy and laboratory diagnostics.	Laboratory diagnostics occurs in a variety of laboratories with varying standards of quality assurance.	Laboratory diagnostics generally occurs in laboratories with QA systems in place and with specified turnaround times.	Laboratory diagnostics for notifiable pests and diseases occur in accredited laboratories within specified and audited turnaround times for each sector. Taxonomists for all pests and disease agents are identified and accessible			
		Processes are in place to dispatch diagnostic teams in a timely manner (including the private sector).							

		The ability to make a rapid laboratory diagnosis using modern diagnostic techniques and quality assured processes.							
		High quality expertise available, both specialist and generalist.							
		There are effective working relationships within the national laboratory networks.							
		Test validity through quality assured tests.							
		Research and development in diagnostic methodology.							
		Surge capacity in the event of an emergency.							
		There is sufficient equipment and laboratory facilities available to handle high sample throughput.							
		Lab QA systems support high sample throughput.							
Passive (general) surveillance.	Early reporting and detection of incursions and suspect cases.		Systems for detection of new incursions are ad hoc.	A passive (general) surveillance system is in place but there is no specific targeting of priority threats.	A passive surveillance system is in place and general awareness of reporting of unusual pests and diseases is promoted.	An integrated system for detection of new incursions is in place with active involvement of industry and the private			

						sector.			
		Programs exists aimed at improving the likelihood of detection in areas of higher-risk / consequence; which may also include:							
		* engagement of the private sector for surveillance							
		* enhanced communication & education							
		* incentives to report							
		* monitoring of social media							
		* on-line reporting systems							
		* other technology to support reporting (e.g. smartphone apps)							
		* support for industry biosecurity programs							
		Level of awareness within the farming community regarding the need for early reporting and suspect signs.							
		Number of investigations / rule-outs per year.							

		Annual geographic distribution of passive surveillance accessions for susceptible species.							
		Skilled personnel (government/private) are available to conduct field investigation and diagnosis in any part of the state.							
		There is an ongoing program aimed at recognition and awareness.							
		Guidelines are readily available for professional conducting investigations, including appropriate sample collection and handling, as well as biosecurity.							
		An exotic pest / disease hot-line is in place.							
		There is coverage of the whole state by government or private professionals capable of conducting an initial investigation.							
Active surveillance	Establishment of pest / disease status for priority threats, and/or enhanced early detection.		Active surveillance systems are ad hoc.	Active surveillance is in place only where there is a specific externally funded program..	Active surveillance priorities have established through risk assessment, but implementati	An integrated system for active surveillance is in place, based on risk assessment and with active			

					on is patchy.	involvement of industry and the private sector.			
		Risk assessments to establish active surveillance priorities have been conducted.							
		Targeted surveillance systems for priority threats based on best available knowledge and techniques.							
		Funding is available through a range of sources.							
Preparedness - systems & processes to ensure that the Jurisdiction is prepared to respond to a new biosecurity incursion.									
Policy Development	Effective policies are in place to enable a timely and efficient response to an outbreak.		Policy for the management of a response partly exists and is documented in high level agreements.	Policy for the management of a response exists and is documented in high level agreements.	National policy for the management of a response is supported by State specific policies and has been disseminated and understood by those that need to implement and/or follow	State specific response policies have been evaluated in real or simulated responses.			

					it.				
		Nationally harmonised policies are in place.							
		Effective internal policy development processes, including use of risk assessment and participation in national processes.							
		Documented jurisdictional policies and strategies are in place, that complement national policies and are reviewed appropriately, for example:							
		There is effective stakeholder involvement in policy development.							
		Innovation in policy development.							

Management and Planning	Processes and systems are in place to enable effective management of an emergency response.		Emergency plans and processes that support preparedness for a response have been partly developed.	Emergency plans and processes that support preparedness for a response have been developed.	Emergency plans and processes that support preparedness for a response have been developed and are understood by some of those that need to use them in a response.	Emergency plans have been evaluated in a real or simulated response.			
		There are qualified people identified to lead preparedness activities for biosecurity emergencies, with a documented preparedness project plan.							
		Management structures are documented and in-line with national and state emergency management processes (AIIMS - management by objectives).							
		Biosecurity Emergency Operations Manual is up to date.							
		Management plans are tested /exercised periodically.							
		There is recognition that plans need to be flexible so that they can be							

		adapted to cater for unforeseen circumstances.							
		Policy, SOPs and operations manuals are in place for essential functions & processes.							
		Processes are in place to manage the response from a whole of agency perspective.							
		Whole of government processes are in place and all parties understand their responsibilities.							
		Plans include processes for recognising and dealing with novelty and adapting plans to unforeseen circumstances (e.g. Team "B" concept).							
Training	The jurisdiction has access to people trained and ready to respond to any biosecurity incident.		Some training plans exist and training is conducted at a low level.	Training plans exist and basic training is conducted for core staff.	Training plans exist and core training is conducted for essential staff, with limited exercising or actual responses.	Training program is established and has been reviewed and refined to reflect ongoing requirements.			
		There is an ongoing, funded emergency response training program.							

		Training incorporates relevant aspects of Jurisdictional Disaster Management training.							
		Records are maintained of personnel qualifications, experience and who has received training.							
		Number of staff who have received formal training in emergency responses across a range of competencies.							
		Number of staff experienced in emergency responses.							
		Conduct of regular emergency response exercises.							
		Number of actual emergency responses managed.							
		Number of staff competent in regulatory processes under the relevant legislation.							
	The combat agency has access to external people with appropriate skills to respond to a large scale outbreak.		Some training plans exist and training is conducted at a low level.	Training plans exist and limited training is conducted.	Training occurs for some identified groups and prioritised training packages are available for use during a response.	A comprehensive training program is in place for external personnel and has been reviewed and refined to reflect			

						required improvements.			
		Number of external personnel who have received emergency response training.							
		"Just in Time" training packages available for staff coming into new roles within a large response.							
		Key, external technical / professional personnel are engaged in training and awareness activities on an ongoing basis, particularly veterinarians.							
		Emergency response training occurs for key personnel from support agencies							
Logistics and HR management	Prompt availability of physical resources in the event of a biosecurity emergency response.		Physical resource capability and capacity requirements for managing a response have generally been identified.	Physical resource capability and capacity requirements for managing a response have been identified.	Physical resource capability and capacity requirements for managing a response have been identified and some planning for deployment conducted	Physical resource capability and capacity has been evaluated in a real or simulated response.			

					(e.g. major SCC and LCC potential sites).				
		Locations have been identified to accommodate a large SCC and LCC, with ability to fit-out quickly							
		Effective linkages are in place with the broader emergency management system for logistical support.							
		Stores of essential equipment to be used early in a response are available (disinfection equipment and PPE).							
	Prompt availability of human resources in the event of a biosecurity emergency response.		Human resource capability and capacity requirements for managing a response have been identified.	Human resource capability and capacity requirements for managing a response have been identified and major groups (including external resources) engaged.	Human resources have been identified and can be used in a response, if required. Some engagement details e.g., contracting are in place.	Human resource capability and capacity has been evaluated in a real or simulated response.			

	National arrangements are in place for accessing interstate and international professional staff.								
	A workforce plan is in place that recognises a biosecurity emergency response requirements								
	There is a future skills plan in place within the response agency for dealing with significant responses.								
	A logistics strategy is in place, with an emphasis on rapid employment/deployment of large numbers of staff.								
	There are sufficient trained non-technical staff, particularly in HR and logistics .								
	State emergency arrangements are in place to access non-technical staff.								
	There are ongoing programs to engage private professionals in government programs and/or processes.								
	Pre-existing contracts are in place to employ appropriate professionals.								
	Degree of ongoing engagement with key								

		external resources.							
		Contracting and employment arrangements are in place for engaging large numbers of personnel.							
		A register is maintained for suitably qualified or experienced retired staff and other potential skilled personnel.							
		Level of awareness and commitment from agencies across the public service regarding response requirements and potential roles.							
Research & Development	The jurisdiction has access to up to date technology and tools for managing priority threats.		Preparedness relies on ad hoc external scientific advice.	The scientific basis for preparedness relies on national or external processes.	There is an active effort to remain up to date on latest scientific developments.	Scientific literature is actively monitored and risk assessments conducted to guide investment in applied R&D.			
		R&D based on jurisdictional priorities in consultation with stakeholders and aligned with national R&D strategies.							
		Strong interagency links and collaboration.							

		The extent that diagnostic labs conduct applied R&D to maintain & enhance skills, as well as incorporate new technology.							
		Conduct of applied research into relevant issues, for example destruction and disposal.							
		There is ongoing scanning of relevant literature so that new technology developed elsewhere can be incorporated into plans.							
Business continuity	Essential government services are maintained during a biosecurity emergency response.		There is awareness that some essential functions must be maintained by response agencies during a response.	Essential functions that must be maintained by response agencies during a response have been identified.	Plans have been developed to maintain essential functions by response agencies during a response.	Plans to maintain essential functions during a response include detailed HR arrangements have been evaluated in real or simulated responses.			
		A risk assessment has been conducted regarding services that must be maintained during large responses and reviewed periodically.							
		Resources required to maintain essential							

		services have been identified.							
		Plans are in place to maintain essential services during a response.							
		Processes allow other ongoing business to be maintained as much as possible.							
Funding arrangements	Funding arrangements will not impede a biosecurity emergency response.		Response funding relies solely on national agreements.	Central agencies have a general awareness but funding arrangements are ad hoc.	Arrangements for the State funding component required for responses have been negotiated with central agencies.	State funding arrangements & processes have been evaluated in real or simulated responses and operate effectively.			
		Funding arrangements for responses are clear in terms of both national and State processes.							
		An effective working relationship is in place between the combat agency and central agencies.							
		State agencies are aware of their responsibilities under the "Normal Commitments" funding model, particularly which costs are eligible for cost sharing.							

Response Capacity - resources are available to respond to a Biosecurity emergency.										
Overall Response Capacity	Sufficient human resources are available or can be obtained to sustain a biosecurity emergency response in the <u>short term</u> .		Functions / roles required for managing a response are known.	Functions / roles required for managing a response are known and possible sources of personnel identified.	Human resource capability and capacity requirements for managing a response have been identified and plans developed for engagement.	Human resource capability and capacity has been evaluated in a real or simulated response.				
		Short term (first week) - staff to fill all key SCC and LCC positions, plus a significant number of field teams.								
		There is an "early response team" established to lead the early response to a biosecurity emergency.								
		There are sufficient, experienced staff available to fill leadership roles.								
		Sufficient trained staff are available to fill technical and field roles.								
		There is sufficient staff redundancy to support fatigue management.								

		Ability to quickly gear up non-technical functions, particularly HR and logistics							
		Availability of non-departmental staff with appropriate skills.							
	Sufficient human resources are available or can be obtained to sustain a <u>longer term</u> biosecurity emergency response.		Functions / roles and general quantum of staff required for managing an extended FMD response are known.	Functions / roles and quantum required for managing an FMD response are known and possible sources of personnel identified.	Human resource capability and capacity requirements for managing a response have been identified and plans developed for engaging required numbers of personnel.	Human resource capability and capacity has been evaluated in a real or simulated response.			
		Long term (1 week - 6 months) - based on worst case scenario, for example:							
		<ul style="list-style-type: none"> • 50 – 100 Infected/infested premises. • Large scale destruction and disposal or other operations likely to require additional logistical support. • Peak of 1-2,000 control centre and field staff excluding staffing requirements for laboratory, security, and recovery. 							

		• 300 – 500 technical specialists/professionals required.							
Laboratory resources and capacity	Sufficient resources are available or can be obtained to sustain laboratory operations during a response.		Functions / roles and general quantum of staff required for managing an extended response are known.	Functions / roles and quantum required for managing a response are known and possible sources of personnel identified.	Human resource capability and capacity requirements for managing a response have been identified and plans developed for engaging required numbers of personnel.	Human resource capability and capacity has been evaluated in a real or simulated response.			
		Appropriate and sufficient equipment and facilities are in place to meet surveillance response requirements (surge capacity).							
		Surge capacity includes partnering with other laboratories.							
		Sufficient trained staff can be made available to sustain an extended response.							

		There is sufficient staff redundancy to support fatigue management.							
		Availability of external labs							
Recovery - systems & process to minimise the impact of an outbreak on business and the community, as well as to assist recovery from a response.									
Recovery	Response systems for emergency responses support industry and community recovery.		There is high level awareness of the need to manage industry and community recovery.	Response plans acknowledge the need for recovery support, including the agencies to be involved.	All relevant agencies have specific plans for how they will support industry and community recovery.	Recovery plans have been evaluated in a real or simulated response.			
		Technical response plans & strategies take into account industry viability and recovery issues.							
		Response plans aim to support a return to trade as soon as possible.							
		There is a whole of government approach to community and industry recovery preparedness & response.							
		Response recovery agencies are engaged in preparedness planning as well as during the response.							

		Response recovery agencies have plans developed for assisting industry and the community during a response, including the following areas:							
		* financial assistance							
		* psychological and social counselling							
		* business advice							
		* economic and social community rebuilding							
		Recovery plans incorporate principles contained within the Australian Government document, "National Principles for Disaster Recovery": 1. Understanding the context 2. Recognising complexity 3. Using community-led approaches 4. Ensuring coordination of all activities 5. Employing effective communication 6. Acknowledging and building capacity							
		Communications processes support industry and community recovery with appropriate information.							

		Combat agency policies and processes support the (preferential) employment of industry personnel within the response.							
Ongoing Management - management of priority endemic biosecurity threats.									
Management of endemic or established pests and diseases.	Protection of the economy, environment or community from priority endemic or established pests and diseases.		Investment is not matched to risk assessment and stakeholder responsibility.	Relative risks are known but resourcing and implementation of programs is relatively ad hoc.	Risk assessments are conducted and resourcing generally matches stakeholder responsibility.	There is a genuine shared responsibility approach to management of established pests and diseases based on risk assessment, as well as beneficiary and risk creator assessments.			
		Policy objectives, investment priorities and management responsibilities are based on assessment of risk.							
		Environmental values are adequately considered.							
		Stakeholders share responsibility for managing established pests and diseases.							

		Stakeholders coordinate their operational initiatives for maximum benefit.							
		Effective prioritisation and planning underpins management of established pests and diseases.							
		Innovative measures supported by high quality science improves the management of established pests and diseases.							
Research and Development	Queensland has access to up to effective tools, technology and solutions for managing established pests and diseases.		Management relies on ad hoc external scientific advice.	The scientific basis for management relies on national or external processes.	There is an active effort to remain up to date on latest scientific developments.	Scientific literature is actively monitored and risk assessments conducted to guide investment in applied R&D.			
		R&D based on jurisdictional priorities in consultation with stakeholders and aligned with national R&D strategies.							
		Strong interagency links and collaboration.							
		There is ongoing scanning of relevant literature so that new technology developed elsewhere can be							

		incorporated into plans.							
		The extent that applied R&D is conducted for priority threats.							
Market Access	Queensland agricultural produce has access to national and international markets		Management of market access is primarily reactive to market requirements.	The scientific basis for market access protocols relies on national or external processes.	There is active engagement with all stakeholders in development of sound market access protocols.	Sound protocols are in place with a high level of industry management through quality systems.			
		Market access protocols are based on sound science and market requirements.							
		Cost effective systems are in place to facilitate market access while minimising the risk of pest and disease spread.							
		Industry based processes to manage market access requirements.							
Long term eradication programs	Long term eradication programs are effectively managed.		Eradication programs are managed on an ad hoc basis.	Eradication programs generally meet national requirements and are appropriately managed.	Eradication programs are appropriately managed and there is a high level of stakeholder ownership of	Best practice management systems are in place and funding is secure.			

					eradication programs.				
		Programs have clear aims, objectives and strategies.							
		Programs are based on sound science, with reasonable probability of meeting eradication goals.							
		Level of innovation.							
		Appropriate funding and resources to meet the program's objectives.							
		Level of stakeholder engagement and ownership.							

APPENDIX 6 - BIOSECURITY QUEENSLAND – CAPABILITY ASSESSMENT

ORGANISATION CAPABILITY

Organisation Capability – Direction Setting

Setting a clear, compelling and coherent vision and following this through by promoting teamwork, taking tough decisions and managing change will be required for Biosecurity Queensland to be an effective leader and enabler of the Queensland Biosecurity System. In addition, Biosecurity Queensland will need to be well equipped to engage in joint leadership with others to lead and inspire action across the Queensland Biosecurity System.

The Panel's believes that Biosecurity Queensland does have adequate capability in this area in its current context, but needs to develop further capability to lead in a collaborative environment where it's role is as much about enabling as delivering.

Key capability improvement opportunity:

- Setting leadership direction in the context of the Queensland Biosecurity System

Process to address:

- Leadership development as part of a formal workforce development plan.

Organisation Capability – Motivating and Developing People

Throughout the review it was clear to the Panel that staff have a high level of motivation, which appears to be based on their belief in the importance of achieving biosecurity outcomes, pride in their professionalism and skills in contributing to those outcomes and enthusiasm for the development of knowledge intrinsic to the work of subject matter experts.

As Biosecurity Queensland moves to a more enabling, less regulatory role there will be a particular need to develop people in the context of a fundamentally different working culture and context. The dependence of the Queensland Biosecurity System on ready access to specialist skills and knowledge, often in combination with strong general leadership and management skills, will require thorough and effective succession planning.

The Biosecurity Leadership team has shown a great deal of commitment to listening to staff feedback and addressing workforce issues, and is to be commended on its Biosecurity 2020 initiative.

Nonetheless, the Panel has identified key capability gaps in the areas of alignment of individual work plans to strategic priorities, effective performance management (rewarding good performance and tackling poor performance) and formal succession planning.

The Panel also received comments that the Biosecurity Queensland workforce of the future needs a broad range of skills and that recruitment and organisational reshaping approaches in the past have tended to focus more on operational, technical and specialist skills. The Panel's view is that Biosecurity Queensland needs to focus equally on specialist skills and the general skills required to meet the needs of the future.

Key capability improvement opportunity:

- Succession planning (formal)
- Performance management
- Individual work plan alignment to strategic priorities

Process to address:

- Build on this findings of this report and the existing Biosecurity Queensland and Department of Agriculture Fisheries workforce development plan to undertake a skills audit and develop a formal succession plan.
- Invest in development of a revamped Biosecurity strategy and action plan with KPIs including cascading priorities down to the level of individual workplans.

Organisation Capability – Outcome Focused Strategy

Biosecurity Queensland's strategy has been set by the Queensland Biosecurity Strategy 2009-14. While this is an excellent document which articulates a vision and direction for biosecurity in Queensland, the Panel questioned how effectively it has been cascaded down through annual business planning processes, including resource allocation, establishment of appropriate key performance indicators, regular review and reporting. For example, a report on achievements against the strategy appeared not to have been prepared until requested by the Panel.

While annual business plans are developed for Biosecurity Queensland and each program area, it is the Panel's observation that these appear to function more as descriptive documents which capture key activities rather than tools to drive achievement of outcomes.

Biosecurity Queensland's role in protecting agriculture, environment and human health and amenity from biosecurity threats requires a clear and simple articulation of the potential impact of those threats and the relative benefits (and/or costs) of a variety of mitigation strategies.

The Panel's view is that Biosecurity Queensland needs to do more to articulate "what success looks like" and to engage the broader System in considering objective information to inform decisions on prioritisation and trade offs between outcomes.

The Panel received many comments about the difficulty of reconciling organisational priorities with political priorities. Working effectively within a political system is a key area of capability for an organisation whose core business is risk assessment and prioritisation and with a wide variety of stakeholders with high expectation of government action.

The Panel's view is that the organisation requires more sophisticated skills in working with the political process as well as a significantly increased capability in developing simple and clear information and analysis on which to base prioritisation decisions. "Standing in the shoes" of those who make decisions to understand their information needs and work with central agencies in a genuine partnership to align the organisations priorities to the priorities of the Government as a whole.

As expressed by one survey respondent: "we need to be better at establishing priorities which work for elected government and bureaucracy and customers/community"

Key capability improvement opportunity:

- Strategic planning, review, monitoring and evaluation
- Clarity of benefits articulation
- Prioritisation and trade offs
- Working effectively within a political system

Process to address:

- Invest in strategic and action planning process (see above)
- Invest in initiatives to improve risk analysis, investment decision making, resource allocation and business and financial risk management focus.

Organisation Capability – Evidence Based Choices

Biosecurity Queensland is confronted with a huge number of potential threats and has well developed conceptual frameworks for establishing risks and consequences and developing mitigation strategies, in keeping with national approaches established under the auspices of the National Biosecurity Committee, Animal Health Australia and Plant Health Australia.

In the future, threats will continue to multiply and resource availability will continue to be constrained, as Biosecurity Queensland moves further towards a model of shared decision making. This will increase the importance of strong capability in evidence based decision making.

However the Panel identified key capability challenges in this area.

- Risk analysis processes do not appear to have the rigour and breadth required for an organisation with this mandate - for example, there does not appear to be an overt process to consider risks from a variety of perspectives, or to evaluate a variety of mitigation options.
- Weighting of different risk considerations appears to be driven more by the knowledge base or technical expertise of the individuals undertaking the analysis, than a quantitative assessment of different risk dimensions. The Panel considers this may be one reason for criticism by external funding partners that Biosecurity Queensland develops "gold plated" responses.
- There appears to be a general climate of "over perfecting" analyses. The Panel speculated that this may, in part, be a consequence of the number of external reviews to which Biosecurity Queensland has been subject, and understandable concern about being found wanting on some detail.
- Some risk assessments also appear to be conducted to an unnecessarily high standard meaning that, while excellent, they can fail the timeliness test.
- The organisation appears to lack a framework to effectively navigate decision making in conflicted environments - for example, to take into account both the public interest and sectoral interests. Currently this relies primarily on the skill and experience of senior managers.
- There is little clarity in information systems about resource allocation and effectiveness of resource use across the portfolio of activities. There is also little collection of

information around actual effort. For example staff time is allocated against projects at the start of the year, but not reviewed or adjusted according to actual activity.

- Decision making processes do not account for “portfolio investment” rules or the “social” dimension – hence decisions (on level of Government intervention or resource allocation) are seen as inconsistent because they do not follow key economic principles.
- Decisions to invest more or adequately in high impact areas such as prevention, local surveillance for early detection, or strategic system improvement are derailed by the diversion of resources to the management of ongoing pests and diseases and the inevitability of multiple responses to new incursions and threats. Rather than developing tools and frameworks to plan for this uncertain environment, the organisation appears to plan only for known and predictable activities.
- There is a disconnect between national program prioritisation and State government resource allocation.
- Investment decisions for routine activities are largely based on historical funding allocations, with recent funding cuts allocated on a pro-rata basis, rather than based on risk.
- Neither internal budget allocation processes, nor national cost sharing arrangements support good decision making.
- There appears to be no overt process to prioritise funding to address threats to biodiversity – environmental Biosecurity threats are prioritised relative to other Biosecurity threats but not against other priorities for spending from the environment portfolio. In fact the environment portfolio would appear to have minimal input apart from a seat on the Invasive Plants and Animals Committee.

The Panel also noted the importance of ongoing access to expert advice, for example on the likely speed of spread of a particular pest or disease in a given situation. It is essential that the organisation maintains the capacity to access this advice but it needs to be complemented by expertise in risk and evidence based decision making.

Key capability improvement opportunity:

- Evidence and analysis to inform strategy
- Evaluation and measurement of outcomes
- Understanding of cost-effectiveness
- Rigour in risk analysis

Process to address:

- Invest in an initiative to build capability in this area (see above)

Organisation Capability – Collaborating and Building Common Purpose

For an organisation which will need to operate in the future Queensland Biosecurity System, the need for strong capability in this area is self evident.

While the organisation’s leadership team rated itself highly against this capability, the Panel’s observations and feedback from within and outside Government suggest that there is room for improvement in some areas.

The Panel's assessment is that there is a strong collaborative approach, particularly within the national system, within some parts of Government (for example, public health) and there are a number of excellent examples within specific program areas, such as the regional pest and weed co-investment approach.

However, these efforts will need to be enhanced and extended, particularly to industry and other potential partners, to generate the common ownership of the future biosecurity strategy with political leadership, delivery partners and citizens.

There is realisation within the organisation that this is required "We need to work harder to build common ownership. This does not exist, even within DAF. It is seen as Biosecurity Queensland's problem"

The Panel also notes that this is a particularly challenging area to address for an organisation with a strong regulatory and operational history and culture.

Key capability improvement opportunity:

- Building common ownership

Process to address:

- Develop a shared biosecurity strategy and action plan (see above)

Organisation Capability – Innovative Delivery

The need for a strong capability in innovation is spelt out in a separate section of this report.

Survey results indicate recognition that this is an area in need of significant development, however the Panel noted that there have been efforts to encourage and reward innovation within both Biosecurity Queensland and the broader department.

Much has been written about the challenge of creating a culture of innovation in the public sector. Typically, public sector environments exhibit low tolerance for failure, high levels of risk aversion and overcomplicated and onerous internal procedures and approval processes, all of which discourage innovation.⁵⁹ The Panel was advised that the large number of reviews and external investigations into the organisation have contributed to a risk averse and overly procedural approach in some areas. On the other hand, the broader department has strong links to both the research sector and industry and this presents an opportunity to better tap into existing knowledge to work through the many organisational and technical challenges of the future.

Key capability improvement opportunity:

- Developing innovation strategy, including culture, people capacity, enabling systems and evaluative feedback loops
- Building innovation partnerships

Process to address:

⁵⁹ Australian Attorney General's Department (2010) *Empowering Change: Fostering Innovation in the Australian Public Service*, Australian Public Service Commission, Canberra, 29-47/

- Invest in an initiative to develop and implement an innovation strategy

Organisation Capability – Planning, Resourcing and Prioritisation

Business planning, resourcing and prioritisation will need to operate across organisational boundaries to deliver an effective future Queensland Biosecurity System. These processes will also need to account for and/or manage uncertainty of resourcing, which currently impedes achievement of deliverables and effective planning.

Panel observations and staff feedback indicate that:

- Strategic planning is mostly a compliance exercise and does not articulate well to operational planning (which is much better done)
- Resource conflict and prioritisation is a significant issue for staff
- There is a capability gap in decision making in risk and uncertainty
- Project management capability is not sophisticated enough for prioritisation and sequencing of complex initiatives
- There is limited understanding of key cost drivers, or financial risk management.

Key capability improvement opportunity:

- Prioritisation and trade-offs
- Decision making in risk and uncertainty
- Financial risk management and cost driver analysis

Process to address:

- Invest in initiatives to improve risk analysis, investment decision making, resource allocation and business and financial risk management focus.

Organisation Capability – Shared Commitment and Sound Delivery Models

Capability gaps in building joint ownership and commitment have been addressed elsewhere in this section. The Panel's observations and survey feedback point to weaknesses in establishing shared objectives and management of third party delivery contracts. There will be an increasing need in the future for a suite of delivery models and the organisation will need to be adept at selecting the most appropriate model, managing and evaluating delivery.

Key capability improvement opportunity:

- Establishing roles and responsibilities of delivery agents and partners
- Management of effectiveness of delivery agents

Process to address:

- Establish an internal investment framework and commissioning function
- Develop skills in management of third party delivery as part of the workforce development plan.

Organisation Capability – Managing Performance

The success of Biosecurity Queensland relies substantially on information availability and analytical capability in both specialist and corporate systems. The Panel and survey feedback assessed current capability as low in both areas, with "high quality, timely and well-understood performance information supported by analytical capability to allow the organisation to track and manage performance risk across the delivery system" identified as one of the areas of greatest concern in survey results.

The Biosecurity Information Management System project will largely address specialist information needs and is discussed elsewhere in this report.

In terms of performance information, the Panel's view is that capability needs to be addressed:

- at a system level (to generate appropriate management reports without substantial manual manipulation) and
- at a cultural and skills level (to place priority on analysing performance data and monitoring performance)
- through alignment of internal business processes and incentives

The Panel was advised that steps are already underway to improve skills in this area.

Key capability improvement opportunity:

- Performance information and analytical capability

Process to address:

- Develop an internal investment, resource allocation and evaluation framework (see above)
- Further develop skills as part of the organisation's workforce development plan
- Undertake a project to develop appropriate management reports which better inform performance management as well as investment decision making.

SPECIFIC CAPABILITY

Specific Capability – Strategic Planning and Policy Development

- The standard of policy development is variable across Biosecurity.
- Risk based decisions tend to be intuitive/experience based.
- There is a need to invest in risk analysis and strategic policy skills.
- Program implementation and plans are good for new initiatives, but not for routine work. Poor line of sight between plans and reporting.
- There needs to be better documentation of decisions and reporting.
- There is variable engagement of stakeholders across industries. Need better identification of stakeholders and to engage more broadly.
- There is no organised system for gathering and analysing biosecurity intelligence. BIMS should improve data analysis, but there will still be a need to utilize data from other sources, as well as the human capacity to undertake analyses.

- System learning is ad hoc. A system of regular stakeholder feedback; compliance audits; embed a program of evaluation; clear targets and KPIs is required. Program evaluation expertise is needed.

Specific Capability – System Support and Oversight

- Governance deficiencies were seen mainly in planning, financial management, HR processes, reporting and innovation.
- Overall capacity is seen as a major issue. Resourcing is not matched to risk. It is difficult to measure optimum resource levels. Resource constraints should drive innovation.
- A better approach to resourcing responses is required.
- Information systems currently very poor, but should be addressed by BIMS. Need to ensure ongoing support.
- Biosecurity Bill has provided the fundamentals and road map for an excellent system. Implementation will be a challenge owing to the quantum of work.
- Tracing systems good in the animal area, but more work required in Plant Biosecurity. Requires commercial drivers.

Specific Capability – Communications and Engagement

- Engagement is variable within biosecurity.
- The culture of shared responsibility requires more work.
- There needs to be better engagement coordination across DAF, as well as development of a stakeholder framework. Tends to be done by the communications group, yet should be a specialist function.
- Need to make sure stakeholders not represented by major lobby groups are engaged.
- Communications is excellent in some areas, particularly handling the media, but is variable.
- Need a communications plan with industry.
- Communications needs to transition from a focus on awareness to behaviour change.
- Internally, there needs to be better communication with DAF groups outside of Biosecurity Queensland.
- Internal communications generally requires stronger processes and adoption of processes.
- Main area for improvement is provision of timely information to staff, including consistent messages for talking to clients.

Specific Capability – Prevention

- There is an investment priority for prevention over other areas.
- Intensive industries better than extensive.
- More work generally required in this area - poor in risk pathways, communications, northern border, community awareness.
- Require incentives for people to implement on-farm biosecurity - simplify practices & provide case studies.
- DAF staff should take the lead in terms of own practices when going on-farm.

Specific Capability – Surveillance and Diagnostics

- Need better risk identification, intelligence and planning, as well as better capacity to share and analyse surveillance data.
- Require better communication of targets & wider input to development of target lists.
- Some variability across different areas, for example weeds much better than invasive animals and insects. Very poor for marine pests.
- Plant biosecurity diagnostics is very complex. Having tests done in a variety of accredited and non-accredited labs is the only realistic approach. Lends itself to improvised teams across agencies and institutions. This needs to be better coordinated.
- Poor field capacity to conduct field investigations in animal biosecurity – need to better utilize veterinary practices.
- External providers could also be better utilised in other areas.
- Passive surveillance could be linked to on-farm biosecurity and development of new technology like Apps to submit images.
- Active surveillance adequate only where external funds / programs are in place. Could be utilised more for early detection if funds were available.

Specific Capability – Preparedness

- Policy development, planning and management generally seen to be good, although there is reduced capability in invasive plants & animals.
- Approach to responses needs to be more flexible.
- There is a tendency to reinvent the wheel with each response – need an emergency management unit to ensure consistency and to cater for lost capacity.
- While DAF has many good, experienced staff, DAF needs to re-instate a well-resourced training program that recognises requirements across all programs.
- Better surge capacity required, particularly in animal biosecurity for big events.
- There is poor access to externally trained people or processes to quickly engage people and implement just in time training.
- More work needs to be done on business continuity planning during emergency responses.

Specific Capability – Response Capacity

- Response fatigue sets in early during most responses and better system of engaging staff across the organization is required.
- Note – while the group did not recognise availability of people during a big response, e.g. FMD, as a big issue, this could be a blindspot.
- Need better systems to access external people during large responses.

Specific Capability – Recovery

- This area needs further assessment, as there was little time for detailed discussion.
- Scores did not reflect a major problem, which is probably the case for all but major responses.

Specific Capability – Ongoing Management

- Investment in management of established pests and diseases needs to match risk assessment. Particularly poor in animal biosecurity (too much investment in cattle ticks).

- Strategic planning needs to better influence R&D priorities.
- Good systems are in place for market access and long term eradication programs. However, development of industry systems for market access is slow.



Funding Model Review

A Report for the Independent Panel reviewing Queensland's Biosecurity Capability

September 2015

Synergies Economic Consulting Pty Ltd
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INTRODUCTION

On 27 March 2015, the Minister for Agriculture and Fisheries announced a review into Queensland's Biosecurity Capability. The review is led by an independent panel chaired by Ms Renata Brooks. The other members of the panel include Dr Ron Glanville and Professor Tom Kompas.

The specific issue of Biosecurity Queensland's base funding and funding for responses is a key deliverable in the terms of reference for the review. The independent panel conducting the review has identified funding for biosecurity responses as a key challenge facing Queensland's Biosecurity System.

The panel has engaged Synergies Economic Consulting (Synergies) to provide advice on funding models for biosecurity responses to inform their report to government.

The purpose of the consultancy is to provide the panel with a report which:

- confirms the nature of the problem and design criteria through consultation with key individuals in BQ, DAF and Treasury, and re articulate the problem if necessary
- describes, reviews and evaluates approaches in place in Queensland and other jurisdictions which offer a potential solution to the problem - for example Trust funds, insurance schemes
- advise whether any of these approaches would be suitable to solve the problem and, if so, how each could be configured to meet the criteria above.

In preparing this report we have undertaken consultation with Biosecurity Queensland, The Department of Agriculture and Fisheries and Queensland Treasury.

The structure of the report is as follows:

- section 2 assesses the nature of the funding problem and redefines the problem in light of information obtained through consultation
- section 3 examines the desired characteristics of a funding model for biosecurity responses and assesses models that have been proposed
- section 4 concludes with the key findings and recommendations.

DEFINING THE PROBLEM

In this chapter we provide a brief outline of the current funding arrangements, some historical data on biosecurity funding outcomes and then evaluate the problem as defined by the Review Panel.

FUNDING BIOSECURITY RESPONSES

BUDGET PROCESS

BQ develops bottom up budgets on a zero based process which requires forecasts of expenditure required to deliver projects set out in an annual business plan. According to BQ, the funding allocation is usually significantly less than that derived from a zero based budgeting approach.

An annual budget is allocated to Biosecurity Queensland (BQ) as a proportion of the appropriation to the Department of Agriculture and Fisheries.

The “top down” budget is based primarily on a five-year rolling budget with adjustments for specific projects and savings targets. The allocation from the consolidated fund is supplemented by "own source" income such as fees & charges and external grants. BQ is also able to bid for funding from a centrally held fund for special projects, such as the current upgrade to information systems.

Any excess appropriated funds⁶⁰ at year end cannot be rolled forward without Treasury agreement through a deferrals process. Generally deferrals are only approved where funds have been provided for projects that are incomplete.

FUNDING FOR RESPONSES

Detection of an incursion of a priority pest, disease or weed (as defined through various risk-based processes) requires BQ to respond by taking immediate steps to scope the extent of the incursion, contain spread and gather intelligence to establish whether there is reasonable prospect of eradication or containment. This initial response may require significant expenditure. For example, the initial response to Red Witch Weed in 2013/14 and 2014/15 cost \$3.106M all of which was borne by the Queensland Government pending the finalisation of the NCS arrangements.

DAF's annual budget includes \$3M for Queensland's share of national cost sharing responses and activities. This allocation was approved by CBRC several years ago to provide a “contingency”.

BQ's annual budget includes an Exotic Disease and Pest Fund (EDPF) (currently \$0.784M but has been as high as \$1.2M) to fund activities, which are not funded by National Cost Sharing Agreements. For example, the annual cost of the West Indian dry wood termite program, a program that has been in place since the 1970s, has been funded from the

⁶⁰ However, any unspent own source revenue administered under on-going contractual arrangements can be accrued into future years.

EDPF. The annual cost has ranged from \$250,000 to \$500,000. In 2014-15, the West Indian dry wood termite program absorbed all of the EDPF. When there is insufficient funds in the EDPF, funding for new responses is sourced by reallocating funds (either labour resources or funding) from other activities within BQ or DAF. BQ note that this approach is effective for responses of less than \$1 million.

It is open to BQ through DAF to seek additional budget funding for responses. As a rule, there does not appear to be any standard or agreed approach to determining a dollar value or percentage at which point the Department's capacity to fund a response is exceeded hence an approach to Treasury is required.

In the past, Treasury have not committed to a particular upper threshold which triggers a request for additional funding. Their view has been that biosecurity responses are just one part of the much larger DAF portfolio and it depends on the Department's overall budgetary position at any time as to whether additional funding via the CBRC is necessary.

There is also no standing arrangement to supplement funding where expenditure required for a response exceeds the Department's capacity to redirect resources. A submission to the Cabinet Budget Review Committee is required setting out arguments for the approach being taken and the funding required. Each response is considered on a case-by-case basis as requests for funding of emergency responses need to be prioritised across Queensland Government against other CBRC requests for funding⁶¹.

Some, but not all responses are subject to National Cost Sharing Arrangements (NCS). When approved, these arrangements guarantee reimbursement of a substantial proportion of costs (other than an agreed Queensland share) subject to agreement by the representative National Management Group that the disease, pest or weed is eradicable. Should this be agreed, reimbursement of initial (pre-decision) costs may also be required. These cost shared responses are either conducted under one of three separate cost sharing Deeds (one for animal diseases, one for plant pests and another for environmental pests), or if out of scope of the three Deeds, a separate arrangement may be negotiated and agreed by the national Agriculture Ministers' Forum (for example the current Red Imported Fire Ant program).

Queensland may also be required to contribute to the cost of a biosecurity response in another State under the same arrangement.

If it is decided that the disease, pest or weed is not eradicable, there is generally⁶² no national sharing of costs, and the jurisdiction must bear all initial costs of the response and decide whether to proceed with the response, and what form that response should take.

National cost sharing agreements for pests, diseases and (potentially) weeds of agriculture require a contribution from the impacted industry⁶³ in proportions set out in the National Cost Sharing Agreements.

⁶¹ Funding required for response activities that cannot be met within DAF's budget allocation are requested during budget processes such as the Mid-Year Fiscal and Economic Update as an urgent and unavoidable funding request or as part of the next financial year's funding request.

⁶² However, it is possible to have a nationally funded transition to a management program.

The process of making a case for cost sharing to the National Management Group, and the on-going monitoring of expenditure to satisfy cost sharing parties that the response is cost effective, is resource intensive. The negotiation process can take some time to be finalised and often the agreement does not occur prior to the end of the financial year which then requires DAF to fund the full expenses at that point.

With regard to NCS responses in recent years, Treasury have “noted” that DAF is incurring expenses whilst awaiting cost sharing negotiations and in some years, Treasury has underwritten the cost of responses until a decision on cost sharing has been finalised. Treasury also provided supplementary funding to DAF to fund the initial response costs that are not part of NCS arrangement or incurred prior to the acceptance of a response plan e.g. Red Witch Weed and Fire Ant detection Yarwun.

It should be noted that when a response is triggered, DAF has a clear process around collecting costs. Even though it is acknowledged that not all responses will be nationally cost shared, the department runs the financial reporting of responses according the principles set out in the national cost sharing agreements. DAF establishes specific cost collectors for each response and charges expenses to these cost collectors only if they meet the principles of National Cost Sharing (NCS, i.e. only expenses which are additional and would not have been incurred by DAF under normal commitments are charged to these cost collectors). Any existing resources that are redirected within DAF to responses are not charged to these cost collectors and are reported separately as in-kind costs (as they do not meet NCS principles and relate to staff whom DAF has already been provided appropriation for)⁶⁴.

⁶³ This is the case where a specific industry or industries can be identified. For example, there is no industry component included in several of the NCS agreements currently being negotiated.

⁶⁴ However if these resources are back-filled to undertake normal commitments, those costs are applicable for NCS.

PROBLEM STATEMENT

The Review Panel provided Synergies with the problem statement in Box 1.

Box 1 **Problem statement**

The existing arrangements result in a number of undesirable outcomes:

It is well established that an early and properly resourced response is the most cost effective approach to take to an incursion. In fact, eradication may be severely jeopardised if prompt and decisive action is not taken. Uncertainty over funding discourages the right amount of investment at the most appropriate time.

The need to prepare detailed business cases and negotiate with multiple jurisdictions is a significant impost at a time when resources could be more effectively deployed dealing with the incursion. In some cases, the time taken to reach agreement on whether or not a threat is eradicable is inordinate (up to 9 months or longer).

Retaining staff when funding is uncertain is also an issue caused by lack of certainty of funding.

At a State level, the requirement to put a business case to the Cabinet Budget Review Committee similarly creates delays and may lead to suboptimal decisions.

On the other hand, if cost sharing or Treasury supplementation is agreed, there may be no on-going incentive to pursue the most cost effective approach to response, raising concerns that responses are "gold plated".

There is no incentive for other parties with an interest (industry bodies, environmental NGOs) to contribute or act to reduce the risk.

Whilst large responses are often what we refer to, the financial risk is also evident when several smaller responses occur within the one financial year. If establishing a threshold, consider one threshold for the total of all responses in one year, rather than setting a threshold per response.

Source: Department of Agriculture and Fisheries (2015), Request for Quotation

The key dimensions of the problem are that:

- uncertainty in the funding process leads to under-resourcing responses
- business cases (Response plans and funding requests) slow down the process and the annual nature of the funding arrangements makes it resource intensive
- dedicated funding reduces incentives to tailor efficient responses
- no incentive for industry and other stakeholders to minimise risk of [outbreaks]
- the budget impact of multiple responses is not accounted for in the current funding arrangements.

REVIEW OF PROBLEM STATEMENT

UNCERTAINTY OVER FUNDING DISCOURAGES THE RIGHT AMOUNT OF INVESTMENT AT THE MOST APPROPRIATE TIME.

The issue here appears to be different for immediate short-term responses to a threat and the medium to longer-term management of infestations that cannot be eradicated.

The significance of the issue at the departmental level largely depends on the number and magnitude of the responses in a given time period. Internally developed informal guidelines have been employed to determine whether DAF funds a response internally or seeks external (Treasury) funding. Where the overall requirement is outside the capacity of the Department to fund the response(s) internally, usually, an approach is made to Treasury/CBRC to meet the shortfall. This request is often made well after the response has commenced..

The situation with respect to the impact on the Department's budgetary position differs every year depending on the mix of responses and the overall state of its budget, that is:

- large and high public profile responses e.g. Panama disease, are usually funded, while small⁶⁵ events are usually funded by reallocating internal resources. It was put to us that responses which require total expenditure of around \$1m create uncertainty in funding because they are difficult to fund through internal reallocation;
- the budgetary and resourcing position of other programs within the Department.; and
- the state of negotiations with funding partners for NCS responses, both deed and non-deed responses, which may leave the state carrying the costs of the response until an agreement is reached.

Short-term/immediate response

The immediate response is based on standard operating procedures and the preparation of a short-term response plan. Technical requirements to respond to the detection dictate the nature and extent of the Department's activities once a response is initiated. A response plan sets out the resource requirements and activities that need to be undertaken. While funding considerations, both internal and external, are considered in shaping the response plan, the uncertainties associated with the nature and scale of a threat means that technical considerations largely dominate the process. DAF advised there is no delay or under-resourcing of the initial response to an identified threat.

While the scale and timing of the response may be impacted by the lack of existing resources within BQ, this is more to do with the level of funding and not a function of funding arrangement itself. Where additional funding is required submissions to CBRC are required and to date these requests have always been approved.

Medium to Longer term financing

The issue appears to be different depending on the nature of the threat i.e. where the threat is considered eradicable and falls within one of the three NCS arrangements) or if not eradicable and it becomes a Queensland funded response.

With regard to the funding of on-going responses, for example fire ants, the potential for reduced commitment by other jurisdictions and/or changes in priorities at the state level can result in the need for additional Queensland funding in order to maintain the "appropriate" level of resourcing for the response. Where these additional resources cannot be met by DAF additional funding requests will need to be made. From the information available to us, it does not appear that BQ or DAF have halted or discontinued many responses due to funding uncertainty (Yellow Crazy Ants is an exception). Nevertheless, BQ has wound back various programs from time to time and we would expect that any decision to halt or wind back a program would give due consideration to the impact of such a decision on the affected industry

Response under NCS arrangements

⁶⁵ The actual size of individual responses varies depending on the overall budgetary position of the Department at the time of the response(s).

The first issue with this type of funding pertains to the time it takes to determine whether a new response falls under the NCS arrangements or not. For a new response, it can take up to 2 years or even longer to come to a final determination on whether a response qualifies for this type of funding⁶⁶. During this time the issues are:

- Resourcing requirements associated with meeting information requests and attending national discussions to determine; whether it is eradicable; the most appropriate response; whether Industry funding is available; whether all other states are prepared to contribute⁶⁷ (e.g. WA has refused to contribute to a number of recent responses); etc. Often the expertise required to compile information responses resides in the BQ personnel involved in the day to day management and coordination of the actual response. However, from Treasury's perspective BQ has been consistently unable to provide the appropriate management reports and evaluations necessary to support continued investment in a current course of action.
- Despite the uncertainty associated with funding during this period, the response continues as required under the response plan and costs are incurred. Until the response has been confirmed as an NCS response, DAF has to meet all on-going expenditure. This is funded out of the \$784,000 BQ internal funding budget allocation or the redeployment of funds from other DAF programs, if available. If these other DAF resources are not available, an approach to Treasury is made. While these requests are nearly always met, the uncertainty associated with the timing and quantum of the funding could potentially have a negative impact on the effectiveness of the response. A detailed evaluation of past responses would need to be undertaken to assess the extent of any such impacts. That said, if any negative impacts are known, then the information required by Treasury to support a funding application, which it states is often lacking in BQ funding proposals, should be readily available.
- The annual nature of the funding arrangements also adds considerably to the resourcing requirements (out of 6 NCS responses current being undertaken, only two had been given funding approval at the time this report was written (September).

Non-NCS responses

Where funds cannot be sourced from other internal DAF sources and other funding has been exhausted (namely BQ own fund of \$784,000 then funding submissions are made to Treasury on an annual basis. For on-going non-NCS responses, the main issue raised is the necessity to make annual funding submissions to Treasury. This requires valuable resources to prepare submissions and a degree of uncertainty. While there is some scope for carrying over unspent funds it is not sufficient to offset the annual funding arrangements. Also, deferral often results in Treasury requiring adjustments to the budget appropriations for other DAF programs. This of course involves an implicit re-prioritising of the programs involved.

Assessment

⁶⁶ Red Witch Weed is an example. The response commenced in July 2013 and at time of writing this report (September 2015) no final NCS decision has been made. Nevertheless, Queensland is incurring significant costs in anticipation that funding will be agreed.

⁶⁷ This is especially the case for non-deed responses which are outside the NCS arrangements but can be negotiated with other States and with affected industries.

From the information presented to us, any uncertainty regarding funding concerns the longer-term program to eradicate or contain a biosecurity event. The uncertainty is around the outcome of NCS negotiations and the funding of on-going responses.

The current funding approach is based on a model where Ministers and their Director-General are expected to meet the known and probable service demand from the budget allocation. The first source of funding for a response is expected to be the existing resources of the Department. This has in-built incentives and governance processes to ensure responses are appropriate and efficient. Also, this process puts more onus on the department to determine priorities and make the most appropriate allocations to programs.

Every program within government has an opportunity cost and biosecurity responses are no exception. Additional funding from outside the Department will also result in an opportunity cost elsewhere in government.

There is no doubt the model does have the disadvantage of greater uncertainty but against this uncertainty it also brings a greater degree of accountability.

In practice, and based on the information available to us, the current funding model does create some degree of uncertainty particularly over the final source of funding. This uncertainty is inherent in the current Federal-State funding arrangements. Also, some of this uncertainty seems to stem from the preparation of response plans/business cases, which is discussed in the next section.

THE NEED TO PREPARE DETAILED BUSINESS CASES AND TO NEGOTIATE WITH MULTIPLE JURISDICTIONS IS A SIGNIFICANT IMPOST

This also appears to be an issue where industry or other stakeholder funding is being sought. Such funding may apply in the case of NCS funding where a unanimous decision by members of the National Management Group is required and this can require considerable negotiation and information provision. It would appear that where there is a requirement to seek funding on a more regular basis, say annually, (and this is not always the case for NCS and non-NCS responses) then it can be the main cause of delays and funding uncertainty. The processes that BQ and DAF have to go through to secure funding for both national and non-NCS purposes are said to require considerable resources and is often hampered by lack of continuity in staffing, particularly at the funding institutions (more so than at DAF or BQ) and the almost unavoidable delays and tensions that result from the dual responsibilities of those involved in not only the actual management of responses but also drafting the response plans and funding applications.

On the other hand, Treasury and DAF recognise that the reporting is an important part of the accountability process and to ensure the response remains the most effective approach. Both Treasury and DAF expressed concern about the information that is provided.

From Treasuries perspective, funding submissions and business cases often contain insufficient information regarding:

- a timeframe or end date for eradication (i.e. is there a chance at eradicating this risk? Or are we focussed on containment only? If we could eradicate, how far off doing so are we?)

- what has been achieved to date (e.g. if a threat has been around for a while, what has been achieved so far? Has it been successful? How does what is proposed fit in with what has been achieved so far?)
- different possible strategies and their implications (i.e. what would be the cost and other implications of aiming for full eradication? What would be the cost and implications of aiming for containment only?)

Of course, in some cases this information may be ultimately available on request, but is generally not articulated clearly upfront as part of the +request for funding.

It was put to us that the response to new outbreaks is characterised by a ‘hell for leather’ mind set where money and resources are moved out of core programs, usually with little or no analysis of the implications of doing so. Once the initial response has been implemented there does not appear to be any rigorous assessment of the potential medium to long-term costs of eradication or control and the potential for achieving specified outcomes. Planning the longer term element of a response and, in particular, putting a time limit on the emergency response element of a response was considered to be a deficiency.

A common theme in many of our interviews was that BQ needs to improve their costing methodologies to maintain or improve their credibility in the National Cost Sharing environment and at CBRC/Treasury. The view was put that Queensland has a reputation among other agencies of ‘gold plating’ our response plans and this has led to difficulties trying to negotiate on-going funding of both deed and non-deed programs such as Fire Ants. There was a view put to us that there are not strong incentive to bring responses back to a ‘normal’ level once the initial response period is over.

With respect to business cases, the point was commonly made that there is little attempt to quantify what is being foregone and what activities were not done during a response. It was put to us that the review process needs to be improved and more financial expertise should be assigned to the response team in the early stages of a response.

To date BQ’s management information systems have not been adequate but this hopefully is being improved with the introduction of BIMS which is supposed to improve the management of responses.

Assessment

This view is particular to BQ. The requirement to provide clear, transparent and appropriately costed business cases must be core business for BQ. With national cost sharing, and a disproportionate amount of responses originating in Queensland, professional and robust business cases are a major tool for minimising funding risk.

Similarly for non-NCS responses, each response has an opportunity cost and robust business case assists the Minister and DG of DAF decide the most appropriate response and enables them to take to CBRC a case for reallocating resources away from other areas of government to BQ.

Underpinning the capacity will be management information systems and evaluation capability. From our consultation, a culture of review and evaluation is absent from BQ.

RETAINING STAFF

As a large proportion of the field staff for a response are contractors on fixed term contracts, the delays in getting funding approvals, particularly for NCS deed and non-deed responses, makes staff retention and development difficult. Because funding is often (but not always) restricted to annual appropriations it is not possible to employ staff on a longer term basis. Hence, there may be an efficiency loss associated with this in terms of knowledge retention, staff commitment and development of expertise.

Assessment

The retention of staff is a symptom of the poor information flows between BQ and Treasury. It seems that the major issue is definitional, in that there is no breakdown of a response into the initial response and an on-going program.

At the time of an outbreak there will typically be insufficient information on which to base long-term response strategies and the appropriate level of resources to employ. One objective of the initial response should be to collect data for the development of longer term strategy.

At the completion of the initial response (say after 6 months) the response could be funded over a longer-period than one year (if the response is expected to take several years). This will provide more certainty for contractors and reduce turnover. We do not have information on the cost of this higher staff turnover caused by annual funding but we would expect reducing turnover will result in a lower cost response.

In addition to the provision of more detailed and robust response plans/business cases at the initiation of a response, annual performance reporting and evaluations need to be considered as part of a well-structured governance regime to ensure that the response is not only the most appropriate at the beginning but remains the appropriate course of action over time.

LACK OF INCENTIVE WITHIN BQ TO ACHIEVE COST EFFECTIVENESS

The current funding model does provide some discipline on BQ because it requires BQ and DAF to reprioritise, at least in the short to medium term, where additional funding is required. However, as we have stated previously, the assessment of the impacts of any re-prioritisation need to more fully articulated by DAF.

The NCS funding model has fairly weak incentives because of the lag between the response and the finalisation of cost sharing.

However, by its very nature there will be intense public attention on some responses and this can weaken incentives for cost effectiveness unless carefully managed.

Assessment

The incentives for cost effectiveness are not strong. They could be improved by defining a two part process for responses; an initial response and the main response. The initial response is the phase in which data is collected, the problem fully defined, and the problem eradicated or a longer term plan developed. The main response is the execution of the plan

developed in the initial response, with appropriate review and amendment throughout the life of the plan. At present there appears to be a tendency for responses to continue as emergency responses even after they have become on-going programs with little or no expectation of eminent resolution. A framework that involves a more explicit statement of milestones and objectives may improve overall control of a response and aid long-term resource use within DAF.

LACK OF INCENTIVE FOR VOLUNTARY CONTRIBUTIONS FROM OTHER STAKEHOLDERS

Voluntary contribution models are not a feature of non-NCS funding arrangements.

Assessment

Industry can both benefit from responses and increase the risk of biosecurity incidents depending on the nature of the incident. In either case there is some rationale for a mechanism to facilitate contributions from industry to encourage appropriate behaviour and risk sharing. This will be considered further in the next section of the Report on funding models.

FUNDING MODELS

In the previous chapter we discussed the current funding arrangements.

In summary, the current model is based on an accountability model which rests with the Minister and DG of DAF to make appropriate resourcing decisions within their allocated annual budget. Where a response exceeds the ability of the Department to reallocate resources and funding to a response, additional funding is sought from CBRC. For responses that qualify for NCS (deed and non-deed) funding also comes from the Commonwealth, other States and Territories and industry.

Table 9 Analysis of actual Expenses for emergency response and eradication programs (Qld's contribution only) (\$)

Year	Total Actual expenses	New outbreaks	Existing outbreaks	NCS Agreement	Internally (non NCS) funded
2001-02	6,169,819	0	6,169,819	5,724,214	445,605
2002-03	3,961,853	182,171	3,779,692	3,543,020	418,833
2003-04	3,964,684	0	3,964,684	3,851,174	113,510
2004-05	4,982,862	1,785,935	3,196,927	3,751,098	1,231,764
2005-06	3,323,627	95,771	3,227,856	2,962,717	360,910
2006-07	9,237,841	228,788	9,009,053	2,379,697	6,858,144
2007-08	7,115,981	3,587,634	3,528,347	5,932,594	1,183,387
2008-09	5,120,625	302,886	4,817,739	2,847,831	2,272,794
2009-10	4,343,662	2,248	4,341,414	1,544,094	2,799,568
2010-11	10,332,424	1,233,714	9,098,710	9,128,093	1,204,331
2011-12	11,322,310	47,465	11,274,845	8,592,491	2,729,819
2012-13	6,344,364	559,215	5,785,149	5,083,344	1,261,019
2013-14	9,362,715	2,231,409	7,131,307	6,204,494	3,158,222
2014-15	13,321,721	3,329,441	9,992,280	7,294,742	6,026,979

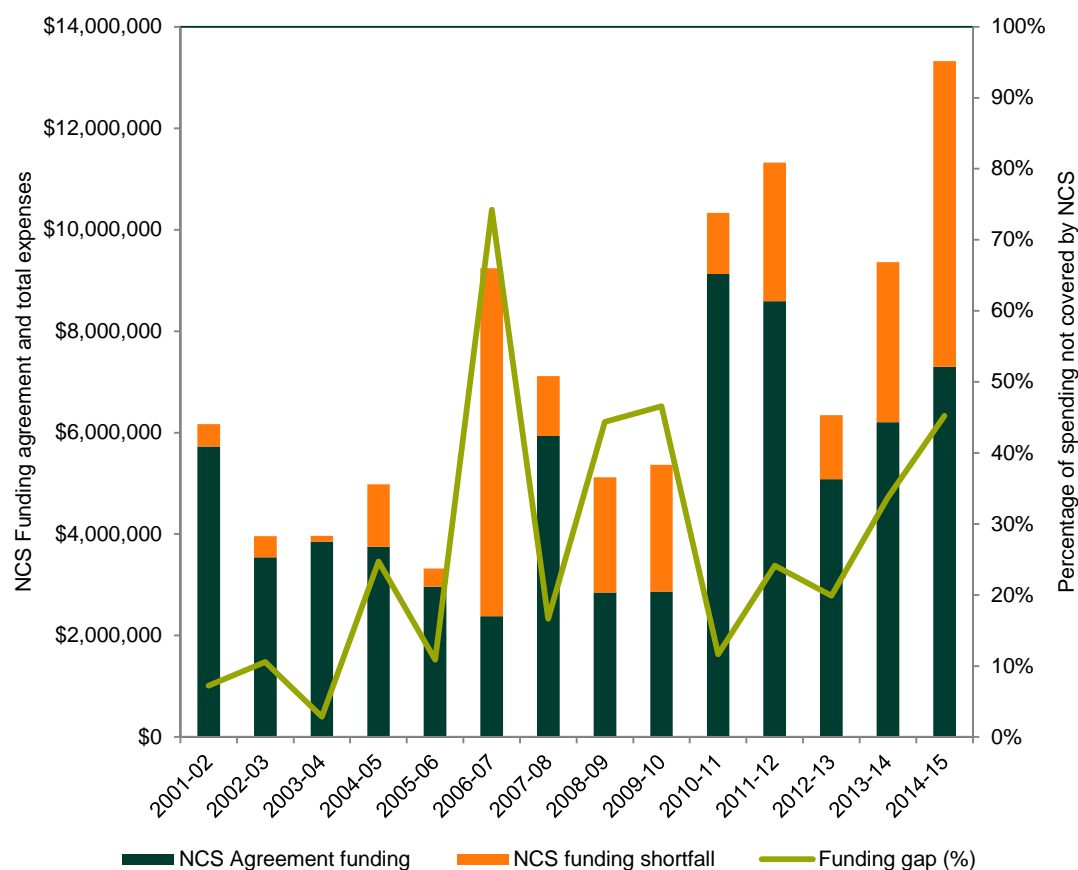
Source: DAF

The non-NCS Agreement funding requirement varies from year to year, from a low of \$113,510 in 2003-04 to a high of \$6,858,144 in 2006-07. In percentage terms, required non-NCS funding has ranged from 3% of total actual expenses to 74%.

The average annual percentage change in Total Expenditure is 18%, indicating an overall upward trend in expenditure. The trend suggests an average annual expenditure growth of \$527,000 per year.

To measure volatility of expenditure we calculated the standard deviation of total expenditure. The standard deviation is \$2,969,358 around a mean of \$7,137,630, with expenditure ranging between \$3,323,627 and \$13,321,721 over the 14 years. This suggests reasonably high volatility of expenditure between years.

Figure 8 **Outbreak response funding, Qld contribution only, 2001-02 to 2014-15**



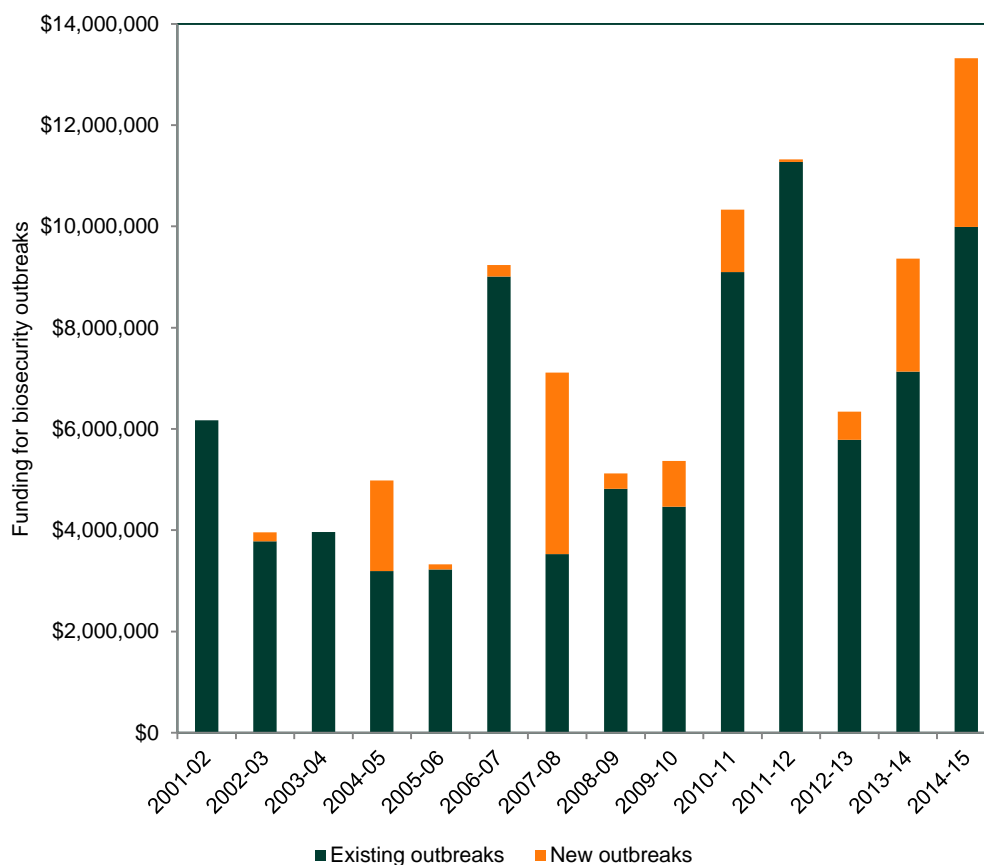
The average 'funding gap' over 2001-02 to 2005-06 was \$514,124 per year, increasing significantly to an annual average of \$3.2m during 2006-07 to 2009-10 and falling back to \$2.9m from 2010-2011 to 2014-15.

Overall, it appears that Biosecurity Queensland, DAF, and the state government are exposed to potential shocks in funding resulting from the need to resource emergency responses to biosecurity outbreaks.

While there is no evidence that resources have not been made available to responses, there is some evidence to suggest that resourcing for biosecurity responses may have been less than that initially requested by DAF.

Funding for new outbreaks is generally small, but can in some instances represent a significant proportion of total expenses:

Figure 9 **Total expenses by outbreak type, 2001-02 to 2014-15**



Currently, there are no industry contributions towards the funding of non-NCS responses. As the principal beneficiaries of many emergency biosecurity responses, there are circumstances where an industry contribution would be reasonable.⁶⁸ In addition, this increases the risk that businesses will underinvest in biosecurity mitigation. In the existing funding model, the ultimate financial risk of contributions rests with the State.

The current funding model has some disadvantages mainly around the uncertainty of funding beyond the initial response. The disadvantages were assessed in the previous section of this report.

⁶⁸ Note that some responses have an explicit environmental focus. In these scenarios, the public benefit may result in government meeting the total cost. Further, NEBRA, the environmental biosecurity response deed does not provide for industry contribution mechanisms.

OTHER MODELS

There are a range of variations that could be made to the existing funding model including increasing the current allocation of funding of bio-security responses, allowing underspends in a year to roll-over to fund expenditure in subsequent years, introducing a shared funding model based on the beneficiary pays principle and establishing a separate funding pool for bio-security responses. Also, the view was put to us that both the national disaster response funding model and the Victorian model for funding biosecurity responses may offer an improvement on the current funding model.

INCREASING BASE FUNDING FOR BIOSECURITY RESPONSES

This is not strictly an alternate funding model. It is based on the premise that the frequency and cost of bio-security responses have increased above the existing allocated funding. We include the model in our options for completeness. The Panel is more informed to assess if this option has merit. Our analysis of total expenditure suggests an upward trend in total expenditure on biosecurity responses for the period 2001-02 to 2010-11.

ROLL-OVER OF UNDERSPENDS INTO THE SUBSEQUENT YEARS FUNDING BASE

This change recognises that annual resources required for bio-security responses varies considerably from year to year but the average level of expenditure of some period, for example the forward-estimates period, is more predictable. Our analysis shows a high degree of variability of annual total expenditure around average annual expenditure over the period 2001-02 to 2010-11. However, the data indicates that this result may be affected by an outlier event in 2006-07.

SHARED FUNDING MODEL WITH DIRECT BENEFICIARIES OF BIO-SECURITY RESPONSE

The costs of a bio-security response are shared with direct beneficiaries according to their share of the benefits. There are constitutional legal issues which affect the design of these schemes as well as the cost of identifying and persuading beneficiaries to make voluntary contributions. These issues are discussed below in the assessment of options.

A SEPARATE FUND FOR BIO-SECURITY RESPONSES

A separate fund is established from which BQ can draw funds for bio-security responses. It practice is removes the most unpredictable component of BQs budget into a separate fund. Queensland Treasury does not support these types of funds because of the opportunity costs of underspent funds.

NATURAL DISASTER RELIEF FUNDING

The National Disaster Relief Funding have recently been reviewed by the Productivity Commission (PC). It found that the current funding arrangements were not efficient. The PC recommended untied grants for community recovery payments. This approach could remove impediments to early action.

The commission also found that it would be beneficial to have clear guidelines in the funding model which outlined when additional funding assistance would be provided. While funding consistency is important, flexibility is also required given the difficulty in accurately predicting the possible damage from disasters.

With regard to governance, the PC recommended more effective conditionality on the provision of funding to encourage appropriate risk management:

The Commission favours moving away from the current approach of prescriptive input-based conditionality combined with project-based audit towards 'earned autonomy' and performance and process-based accountability mechanisms that embed good risk management.⁶⁹

The PC recommends the following effective mechanisms to identify and prioritise mitigation spending:

- project proposals that are supported by robust and transparent evaluations
- considering alternative or complementary mitigation options
- using private funding sources where it is feasible and efficient to do so (including charging beneficiaries)
- transparent ex-post evaluations of mitigation projects.

Under the Commission's funding model, states would also receive less *contingent* assistance from the Australian Government for recovery costs, but increased *certain* assistance for mitigation each year.

There appear to be similarities in the problems with NDRA funding and the NCS funding arrangements. The elements of the proposed model are based upon greater funding flexibility and certainty, which is an issue faced by Queensland with NCS funding. It may present an alternative to the current model for the NCS (deed and non-deed) agreements but it is not a model Queensland can unilaterally implement.

VICTORIAN FUNDING MODEL

In 2008 the Department of Primary Industries (DPI) Victoria commissioned a report into mechanisms for funding biosecurity measures.⁷⁰ The report discussed efficient cost recovery, but noted that it could not be considered in isolation from other considerations such as allocative efficiency and equity.

The report proposed two options, the first of which was a state level approach that would draw on industry to recover costs for a range of biosecurity activities, including post incursion management and R&D activity. The report did identify that a market failure for biosecurity services existed, as evidenced by a difference between the private and social costs and benefits of biosecurity hazard prevention.

⁶⁹ Productivity Commission (2015) NDRF Review, p167

⁷⁰ Frontier Economics (2008) Mechanisms for Funding Biosecurity Measures, accessed at <http://www.energyandresources.vic.gov.au/about-us/publications/economics-and-policy-research/2008-publications/mechanisms-for-funding-biosecurity-measures>

Limited information is available on how the report recommendations have been implemented. The Victorian Biosecurity Implementation Plan 2010 to 2013 included goal to 'identify suitable funding sources, including cost sharing where appropriate, to support biosecurity activity' in order to share responsibility for biosecurity amongst all stakeholders.

Specific industry co-funding measures have been proposed for the funding of fruit fly management, animal disease surveillance, and marine pest management.⁷¹

OPTIONS

From our review of other funding models and the problem statement there are broadly four options to reform the funding arrangements:

- A dedicated fund to fund bio-security responses
- Fine tune the existing model through:
 - Roll-forward of response underspends
 - Revised governance requirements
- A shared funding model with beneficiaries of bio-security responses
 - Ex post fund with government and industry contributing to the response
 - Ex ante contribution scheme like the national scheme. (Commonwealth model); and
- Transferring responsibility to the Commonwealth

Each of these options will be assessed according to the criteria specified by the independent review panel

Box 2 **Funding model criteria**

A solution to these problems ideally would meet the following criteria:

Limit the exposure of BQ, the Department and the State to annual "shocks" associated with resourcing responses

Provide certainty to remove impediments to action of the right kind and the right time

Provide incentives for the most cost effective approach to be taken

Encourage (or at least not discourage) appropriate contributions/cost sharing by other jurisdictions and other parties

Establish principles for financial risk sharing between BQ, DAF, and the State

Meet best practice principles for governance and financial risk management

Data source: Department of Agriculture and Fisheries (2015). Request for Quote

A DEDICATED FUND FOR BIO-SECURITY RESPONSES

⁷¹ Department of Primary Industries, Victoria (2010) Biosecurity Implementation Plan 2010 to 2013

A fund could be established specifically and exclusively for bio-security responses. A dedicated fund provides greater funding certainty, although only if the allocation to the fund is sufficient to meet the expected expenditure on responses. The major disadvantage of a separate and dedicated fund is that if underspent the resources cannot be reallocated either within DAF or across government. In principle, a dedicated fund weakens the incentives for designing cost effective responses. A dedicated fund would therefore require a high degree of accountability to ensure allocated funds are used efficiently.

The model might achieve greater certainty but this is likely to come at a high opportunity because of the restraints on reallocating unused funds to other purposes.

FINE TUNE EXISTING MODEL

We have suggested some changes to the existing model that would improve its impact on certainty and accountability:

- Rolling-over underspends to subsequent years
- Governance changes including:
 - distinguish between the immediate response phase and the main response
 - enhance internal capacity on review and evaluation in BQ
 - improve performance management information within DAF and with central agencies

This model would meet most of the criteria compared to the current model, except it does not provide for a contribution from industry. In addition, if the main response phase becomes part of BQ's core business activities, the efficiency costs associated with staff training and high turnover could be largely avoided.

A SHARED FUNDING MODEL WITH BENEFICIARIES OF BIO-SECURITY RESPONSES

Ex ante contribution scheme

An ex ante contribution scheme is similar to an insurance model where contributions are set at a level that covers the cost of expected damage. These types of arrangements are used for compulsory insurance arrangements like third party insurance and workers' compensation.

This model is difficult to implement in a pure form because of difficulties in making actuarial assessments of damage to underpin the contributions of scheme members.

The voluntary nature of the contribution also makes it highly likely that producers can opt out without any ramifications. Remedial action will take place on all affected properties regardless of whether the property owner has contributed. The incentive to contribute to the fund are further blunted by the diverse nature of biosecurity threats. Finally there is considerable variation in the cost of responses so it will be difficult to establish what an appropriate level of cover to hold to cover responses.

With voluntary contributions the risk that the State will meet most of the costs is still present.

The governance processes could also be quite complex given the number of industries potentially contributing to the fund.

For industries affected by biosecurity incidents the incentive for a cost effective response are blunted by the cost contribution of industries not affected by the incident.

The model is potentially effective for biosecurity threats likely to affect a broad range of industries.

In summary, the model is unlikely to meet the criteria articulated by the independent review panel.

Ex post fund contribution scheme

An ex post model overcomes some of the disadvantages of an ex ante model because the industries affected and the potential cost of responding are addressed.

However, because the scheme must be voluntary,⁷² the likelihood of free-riding, still exists.

The current model used for contribution under the NCS provides a model for state based arrangements. It provides clear rules on the extent to which government and industry will share the cost of responding to biosecurity incidents.

An ex post model addresses some of the funding model criteria. However, the voluntary nature of contributions (due to constitutional restraints on the States levying excises) will not remove funding uncertainty for the State. Further, the collection of funds from industry will take time and therefore the State will have to fund the immediate response.

Finally, both the ex post and ex ante models are unlikely to provide powerful financial incentives for producers to minimise biosecurity threats. The voluntary contribution is likely to be small compared to the cost of responses.

More traditional methods of regulation and penalties will have a stronger deterrent affect if appropriately set.

COMMONWEALTH RESPONSIBILITY

A final option suggested by Treasury is that the States hand all responsibility to the Commonwealth. There are some major advantages with this approach:

- The Commonwealth has the policy tool to impose a compulsory levy on industry removing the problems associated with voluntary contributions

⁷² Section 90 gives the Commonwealth the exclusive power to impose 'duties of customs and of excise'. The definition of 'customs and excise' is therefore a constitutional issue. Generally, a customs duty is a tax imposed on goods entering a jurisdiction. An excise is a type of sales tax on goods. These definitions have been interpreted broadly by the High Court such that any charge levied by the States that is not a direct charge for a good or service has been ruled to be an excise and hence unconstitutional. A general levy on an industry to fund biosecurity activities would almost certainly contravene Section 90 so the only way it could introduce such a levy would be to make it voluntary.

- Although outbreaks can be regionalised, their impacts are often transmitted nationally where they impact on industry supply
- It removes the haggling and game playing associated with intergovernmental agreements which should reduce the transaction costs of biosecurity incidents.

As a matter of practice, transfer of responsibilities between the Commonwealth and the States is not easy to achieve. In many ways, this option is probably the best long-term option but it may take many years to achieve. In this regard, it is probably best considered as the long term goal for managing Australian biosecurity funding more effectively.

CONCLUSIONS

Synergies was asked to investigate the current funding model and examine other funding models to identify if a better funding model exists.

PROBLEM STATEMENT

The first task was framed in terms of a problem statement which identified a number of perceived problems with the current funding arrangements, specifically:

- It is well established that an early and properly resourced response is the most cost effective approach to take to an incursion. In fact, eradication may be severely jeopardised if prompt and decisive action is not taken. Uncertainty over funding discourages the right amount of investment at the most appropriate time.
- The need to prepare detailed business cases and negotiate with multiple jurisdictions is a significant impost at a time when resources could be more effectively deployed dealing with the incursion. In some cases, the time taken to reach agreement on whether or not a threat is eradicable is inordinate (up to 9 months or longer).
- Retaining staff when funding is uncertain is also an issue caused by lack of certainty of funding.
- At a State level, the requirement to put a business case to the Cabinet Budget Review Committee similarly creates delays and may lead to suboptimal decisions.
- On the other hand, if cost sharing or Treasury supplementation is agreed, there may be no on-going incentive to pursue the most cost effective approach to response, raising concerns that responses are "gold plated".
- There is no incentive for other parties with an interest (industry bodies, environmental NGOs) to contribute or act to reduce the risk.
- Whilst large responses are often what we refer to, the financial risk is also evident when several smaller responses occur within the one financial year. If establishing a threshold, consider one threshold for the total of all responses in one year, rather than setting a threshold per response.

Our assessment is that:

Uncertainty

From the information presented to us any uncertainty regarding funding concerns the longer-term program to eradicate or contain a biosecurity event. The uncertainty is around the outcome of NCS negotiations and the annual funding of on-going responses. In practice, and based on the information available to us, the current funding model does not create significant funding uncertainties. The data over the past 15 years shows an increasing annual cost of just over \$0.5m with a significant degree of volatility in annual total expenditure. This expenditure environment has constituted a robust test of the existing funding model, through which it appears to have performed adequately.

Reporting impact on resources

The requirement to provide clear, transparent and appropriately costed business cases must be core business for BQ. With national cost sharing, and a disproportionate amount of

responses originating in Queensland, professional and robust business cases are a major tool for minimising funding risk.

Similarly for non-NCS responses, each response has an opportunity cost and robust business case assists the Minister and DG of DAF decide the most appropriate response and enables them to take to CBRC a case for reallocating resources away from other areas of government to BQ.

Underpinning the capacity will be management information systems and evaluation capability. From our consultation, a culture of review and evaluation is absent from BQ.

Incentives for cost effectiveness

The incentives for cost effectiveness are not strong. They could be improved by defining a two part process for responses; an initial response and the main response. The initial response is the phase in which data is collected, the problem fully defined, and the problem eradicated or a longer term plan developed. The main response is the execution of the plan developed in the initial response, with appropriate review and amendment throughout the life of the plan.

Retaining staff

The retention of staff is a symptom of the poor information flows between BQ and Treasury. It seems that the major issue is definitional, in that there is no breakdown of a response into the initial response and an on-going program.

At the time of an outbreak there will typically be insufficient information on which to base long-term response strategies and the appropriate level of resources to employ. One objective of the initial response should be to collect data for the development of longer term strategy.

At the completion of the initial response (say after 6 months) the response could be funded over a longer-period than one year (if the response is expected to take several years). This will provide more certainty for contractors and reduce turnover. We do not have information on the cost of this higher staff turnover caused by annual funding but we would expect reducing turnover will result in a lower cost response.

There will need to be annual performance reporting and evaluations to ensure the response is the most appropriate.

Incentives for cost effectiveness

The incentives for cost effectiveness are not strong. They could be improved by defining a two part process for responses; an initial response and the main response. The initial response is the phase in which data is collected, the problem fully defined, and the problem eradicated or a longer term plan developed. The main response is the execution of the plan developed in the initial response, with appropriate review and amendment throughout the life of the plan.

Incentives for industry contributions

Industry benefits from responses and on this basis there is a case for a mechanism to facilitate voluntary contributions from industry. This will be considered further in the next section of the Report on funding models.

OTHER FUNDING MODELS

From our review of other funding models and the problem statement there are broadly four options to reform the funding arrangements:

- Dedicated funding for bio-security responses
- Fine tune the existing model
- A shared funding model with beneficiaries of bio-security responses
- Transferring responsibility to the Commonwealth

When assessed against the independent review panel's criteria for a funding model the best option is to transfer responsibility to the Commonwealth. As a matter of practice, transfer of responsibilities between the Commonwealth and the States is not easy to achieve. In many ways, this option is probably the best long-term option but it may take many years to achieve. In this regard, it probably best considered as the long term goal for managing Australian biosecurity funding more effectively.

For the immediate future we have assessed that fine-tuning the existing model would meet most of the criteria. The following changes to the existing model would improve its impact on certainty and accountability:

- Rolling-over underspends to subsequent years
- Governance changes including:
 - distinguish between the immediate response phase and the main response for funding purposes
 - enhance internal capacity on review and evaluation in BQ
 - improve performance management information within DAF and with central agencies.

In addition, if the main response phase becomes part of BQ's core business activities, the efficiency costs associated with staff training and high turnover could be largely avoided.

This model would meet most of the criteria compared to the current model, except it does not provide for a contribution from industry. A voluntary contribution from industry is justified as industry is a beneficiary of biosecurity incidence responses. However, the incentives for industry to contribute are weak. If a model for industry contribution is pursued the model used in the national cost sharing agreement offers a good model because it clearly defines the specific circumstances and proportion of funding to be contributed by industry.

LITERATURE REVIEW – OTHER FUNDING MODELS

In this attachment we present the findings of a desk-top review of publicly available information on biosecurity funding arrangements. A comprehensive review was beyond the scope of this project.

PRODUCTIVITY COMMISSION NDRF REVIEW

The Productivity Commission Review into Natural Disaster Relief Funding (NDRF) found the current funding arrangements were not efficient, equitable or sustainable and recommended a new funding approach. The new approach focused on:

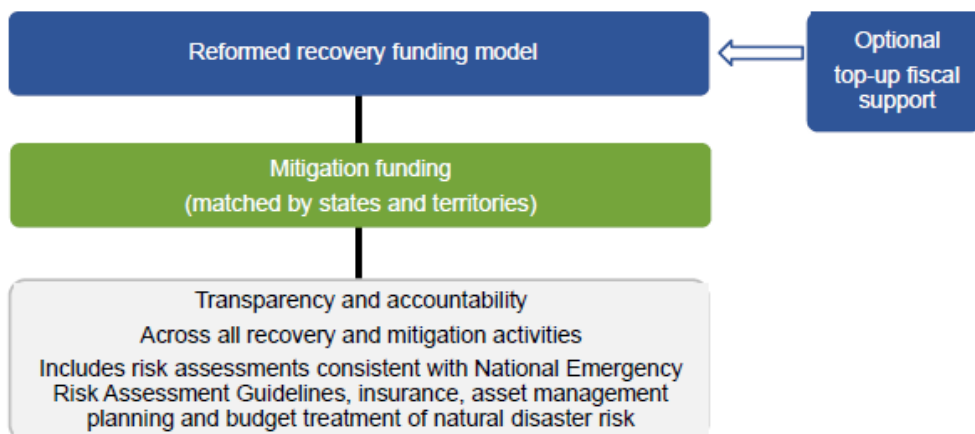
Reduced Australian Government post-disaster support to states to provide sharper incentives to invest in mitigation and insurance

Increasing Australian Government support for mitigation

More transparent and neutral budget treatment of natural disaster risks

Accountability frameworks that give states more earned autonomy.

Figure 10 **The Commission’s recommended funding structure**



Data source: Productivity Commission 2015

The reformed NDRF model contains the following key elements:

Table 10 **The Commission’s national disaster funding model**

Key elements	
Marginal cost share	50% of above-threshold costs
Thresholds	Small disaster criterion = \$2m, indexed over time Expenditure threshold = 0.45% of total state revenue
Provision of funding	Payments based on assessed damages and benchmark prices for ‘essential public assets’ funding Reimbursements transitioned to an untied grant based on assessed recovery costs for ‘community recovery’ funding
Funding coverage	Essential public assets and community recovery
‘Top-up’ fiscal support	Actuarially fair premium charged if stated elect lower small disaster criterion or threshold, or higher cost-sharing rate
Governance	State governments have full autonomy on funding allocation
Accountability	Performance reports based on good governance and effective risk management

Source:

Factors relevant to Biosecurity Queensland

The Commission found that a reimbursement funding structure had the potential to lead to poorer outcomes:

The reimbursement model tends to drive the behaviour of local and state governments. This can potentially lead to excessive expenditure on activities that are eligible for reimbursement, and inadequate expenditure on other activities that have greater benefits to the community but are not eligible for reimbursement.⁷³

The PC instead recommended untied grants for community recovery payments. This approach could remove impediments to early action by making the ability of BQ to recover costs more certain.

⁷³ Productivity Commission (2015) NDRF Review, p132

The commission also found that it would be beneficial to have clear guidelines in the funding model which outlined when additional funding assistance would be provided. This could help to limit the exposure of BQ, the Department and the State to annual "shocks" associated with resourcing responses. While funding consistency is important, flexibility is also required given the difficulty in accurately predicting the possible damage from disasters.

With regard to governance, the PC recommended more effective conditionality on the provision of funding to encourage appropriate risk management:

The Commission favours moving away from the current approach of prescriptive input-based conditionality combined with project-based audit towards 'earned autonomy' and performance and process-based accountability mechanisms that embed good risk management.⁷⁴

The PC recommends the following effective mechanisms to identify and prioritise mitigation spending:

- project proposals that are supported by robust and transparent evaluations
- considering alternative or complementary mitigation options
- using private funding sources where it is feasible and efficient to do so (including charging beneficiaries)
- transparent ex-post evaluations of mitigation projects.

Under the Commission's funding model, states would also receive less *contingent* assistance from the Australian Government for recovery costs, but increased *certain* assistance for mitigation each year. This is another measure designed to provide a more stable and certain revenue stream for disaster management.

APHIS PLANT HEALTH EMERGENCY RESPONSE (USA)

Several potential funding options are available for emergency events in the US under the Plant Health Emergency Response plan, including the following:

- *Congressional supplemental funds*: Congressional supplemental funds are in addition to regular appropriated funding and address unanticipated national circumstances such as avian influenza. APHIS is invited by USDA to submit a proposal for the funds. These funds have restricted use and are available for a limited time.
- *APHIS contingency funds*: APHIS contingency funds consist of no-year money that is appropriated through Congress annually. This money reverts back to APHIS if not used.
- *Commodity Credit Corporation funding*: Authority is delegated to the Secretary of Agriculture to declare an agricultural emergency. A request is made based on a compilation of operational and individual program needs. The process takes from two to six months, and the funding is no-year, meaning that it can be carried over and will remain in the program.
- *Reprogramming*: Reprogramming refers to funding already available within APHIS programs. This funding is from existing allocations, not new money.

⁷⁴

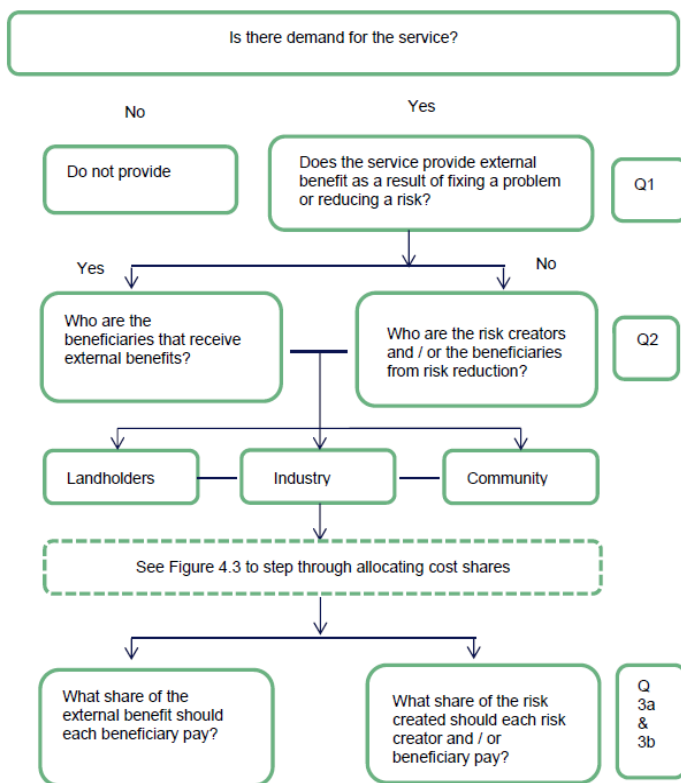
- *State funding*: these vary from state to state
- *Farm Bill Section 10007*: The Farm Bill Section 10007, National Clean Plant Network and the Plant Pest and Disease Management and Disaster Prevention Program, authorizes the Secretary to provide funding to enhance mitigation capabilities, for an appropriate short-term course of action to quickly mitigate a new detection of a pest of potential regulatory significance and to utilize PPQ's initial response protocols for the overarching goals of containment, control, or eradication at the onset of a plant health emergency.⁷⁵

NSW DRAFT COST RECOVERY FRAMEWORK

IPART has worked on a funding framework for the funding of local land service (LLS) boards, which provide biosecurity, plant and animal pest control, and an extensive range of other services to landholders and industry.

The following cost recovery framework was developed to determine whether, and how much, beneficiaries and risk creators should contribute to the funding of LLS board services:

Figure 11 IPART's draft decision tree for Cost Recovery Framework



Data source: IPART

The key objectives of cost recovery are to:

Improve the efficiency of decisions on what services are provided; to whom they are provided; by whom they are provided; and how they are provided.

Improve equity by ensuring those who benefit from the provision of the service or create the need for service bear the cost.

However, IPART noted that situations will arise where the broader community should fund services because:

- of government policy
- the beneficiaries or risk creators are too dispersed
- it is not cost effective to impose service fees.

PLANT BIOSECURITY STRATEGY FOR GREAT BRITAIN

Great Britain's Plant Biosecurity Strategy provides limited details on funding arrangements but notes a need for greater industry contributions. The UK is attempting to develop, with industry, a regime for the sharing of both costs and responsibility for plant health.

*We must maintain the principle that those who benefit from plant biosecurity activity should where appropriate be responsible for that activity, and bear the cost of it.*⁷⁶

NZ FOREST BIOSECURITY WORKSHOP BRIEFING NOTE

New Zealand's biosecurity management scheme has a greater focus on biosecurity surveillance, designed to promote early detection of biohazard risks.

High risk site surveillance (HRSS) includes the surveillance of ports and other potential points of entry for exotic diseases. In NZ, HRSS is funded by the Ministry for Primary Industries and is nationally co-ordinated, unlike the Australian system where surveillance is conducted by state-based agencies. The NZ system also raises funds through the NZ Forest Grower Levy Funded Work Programme, half of which is used for mitigation R&D and other industry projects.

The authors of the briefing note concluded that the NZ system provided a greater chance of early detection of forest pests than the Australian system.⁷⁷

⁷⁶ DEFRA (2014) Protecting Plant Health: A plant biosecurity strategy for Great Britain

⁷⁷ Angus Carnegie & Ian Last (2015) NZ Forest Biosecurity Workshop Briefing Note

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