Biosecurity risk management

18 JUNE 2019

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In accordance with section 38E of the *Public Finance and Audit Act 1983*, I present a report titled **'Biosecurity risk management'.**

Margaret Crawford
Auditor-General
18 June 2019

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OF NEW SOUTH WALES

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Biosecurity risk management

Section one

Biosecurity risk management

Executive summary

Biosecurity is the protection of the economy, environment, and community from the negative impacts of pests, diseases, weeds, and contaminants.

National and State governments have defined roles and responsibilities for biosecurity in Australia, reflecting the allocation of powers in the Australian Constitution. The Australian Government has direct responsibility for biosecurity (quarantine) at the international border, and works jointly with the states and territories to set the legislative framework and policy direction for managing biosecurity nationally. It also works with state and territory governments to ensure there is a national approach to biosecurity. State governments manage their biosecurity activities within the national framework.

The Department of Primary Industries (DPI), within the Department of Industry, is the lead agency for biosecurity in NSW. This audit was conducted with the Department of Industry as the auditee. On 2 April 2019 the NSW Government announced it will abolish the Department of Industry. From 1 July 2019 the Department of Planning, Industry and Environment, will have responsibility for biosecurity activities described in this report.

The NSW Biosecurity Strategy 2013–2021 (the Strategy) articulates the NSW Government's responsibilities for biosecurity within the national legislative framework. Achieving the outcomes of the strategy relies on DPI fulfilling two key responsibilities. Firstly, undertaking direct actions, such as implementing strong regulatory compliance and licensing activities, and managing biosecurity emergency responses. Secondly, leading the response to biosecurity risks by fostering effective collaboration with stakeholders across government, industry, and the wider community.

In NSW, 11 regional Local Land Services (LLS) are the key partners for DPI in meeting its biosecurity responsibilities. Each LLS develops and implements strategies to manage invasive pests and diseases within their regions. They also investigate new reports of pests or diseases in their regions and staff local emergency control centres when an emergency response is triggered.

Local Control Authorities (LCAs) also have a role in biosecurity management. LCAs include local councils and a small number of specialist regional agencies. Their role focuses on strategies to manage weeds within their local areas.

This audit assessed the effectiveness and economy of DPI's biosecurity emergency response and prevention activities. It looks at DPI's emergency response practice and its compliance program as a key prevention activity for which DPI has primary responsibility. DPI sets policy and procedural compliance standards for management of biosecurity risks in NSW and also conducts an annual program of property inspections and investigations that ensure that its compliance policies and procedures are being applied effectively.

Conclusion

DPI has not built formal partnerships with state agencies to share data and information on biosecurity and as a result does not have a comprehensive picture of biosecurity compliance activities. There are also gaps in its emergency response practice in risk assessment and cost benefit analysis. This limits DPI's ability to effectively prioritise and allocate resources and address emerging areas of risk.

DPI also cannot demonstrate that its biosecurity compliance and emergency response activities are economical because it does not collect response specific financial data.

DPI does not have a complete picture of biosecurity compliance activities

DPI conducts regular biosecurity compliance activities and reviews its program annually. Its annual review is based on limited data and consultation with stakeholders. DPI does not collect and analyse data from the compliance activities conducted by its key partners. As a result, it has an incomplete picture of key or emerging biosecurity risk areas. This means that DPI may not be focussing its compliance activities on areas of highest risk.

DPI does not consistently analyse data and lessons learnt to improve biosecurity emergency response practices

DPI cannot demonstrate how it applies lessons learnt from biosecurity emergency responses or simulation exercises to improve practices. There are gaps in assessment of risk and after-action review for individual responses and simulation exercises. DPI has not applied lessons learnt and new good practices into all of its emergency responses. This means that it may be repeating poor or ineffective practices.

DPI has not built formal partnerships with state agencies to address biosecurity risks

DPI has strong formal agreements with its national partners however it does not have formal agreements in place with state partners, for example, through memoranda of understanding. Such agreements are needed to set clear agency roles in responding to biosecurity outbreaks in NSW. DPI currently relies on informal relationships with state partner agencies to achieve its biosecurity emergency response outcomes. Its reliance on these informal arrangements increases the risk that resources may not be available where and when needed. It also means that key state partners are less likely to plan for and allocate resources to address biosecurity responsibilities in their operational and strategic plans.

DPI's biosecurity activities focus on risks to the economy but do not directly address emerging risks to the environment and community amenity

DPI does not have compliance policies that address emerging environmental risks such as outbreaks of red imported fire ants or yellow crazy ants. Nor has DPI developed compliance policies for industries such as tourism and construction, both of which DPI has identified as areas of emerging risk for the environment and community activities. There are also gaps in its emergency response practice that limit its ability to identify and set priorities to respond to pests and diseases that impact on the environment and community activities.

DPI cannot demonstrate that its biosecurity emergency response and compliance activities are economical due to a lack of financial data

DPI should match the scale of the budget it sets for emergency response and compliance activities to the risk of the biosecurity threat to industry and others. However, DPI does not analyse the data that would help it assess whether it sets appropriate budgets. For example, it does not set budgets for all emergency responses and does not collect and analyse all data on actual costs, including from its partner agencies. This limits its ability to improve budget forecasting and to demonstrate that biosecurity emergency response and compliance activities are economical.

1. Key findings

DPI reports on its own biosecurity compliance activities but does not have a comprehensive picture of emerging risks

DPI collects and reports data on its biosecurity compliance activities but there are gaps in practice that limit its ability to apply lessons learnt to improve compliance outcomes. DPI reports on its compliance activities including:

- setting annual targets for the number of compliance and audit activities conducted
- conducting annual reviews of its compliance and audit program
- identifying targeted audit areas.

DPI does not have a comprehensive picture of all biosecurity compliance activities undertaken in NSW. It does not collect or report data on the audits and investigations conducted by Local Land Services (LLS) and Local Control Authorities (LCA). This means that DPI may not be identifying emerging risks so that it can better target its compliance program.

DPI does not consistently use available information to improve the effectiveness of its biosecurity emergency responses

DPI does not use data related to its biosecurity emergency responses to measure and monitor their effectiveness. For example, DPI does not analyse each response to determine the effectiveness of its detection systems.

DPI does not analyse and report on the number and types of pests and diseases that it detects and the action that it took in response. This analysis is needed to identify emerging risks in specific areas, and to support the development of more strategic approaches to early detection, including setting priorities for compliance activities.

DPI's biosecurity emergency response practice meets most criteria expected but there are gaps which could impact the prioritisation and proportionality of required responses

DPI does not consistently analyse or report on lessons learnt from all biosecurity emergency response actions or individual emergency responses to improve its practices and ability to respond. Applying the lessons learnt from past practice supports agencies to develop the capacity of existing systems to meet changing conditions. The complex nature of biosecurity threats means DPI faces challenges in ensuring that its response practices are flexible and effective to respond where and when outbreaks occur.

We reviewed eight emergency responses that DPI has led between 2014 and 2018. Four of these were in response to national threats and four were state-based responses. Our audit found that DPI met most practice criteria for these responses. There were key gaps in practice that limit effectiveness of its responses including:

- DPI did not use its risk assessment tool in three of these responses
- DPI completed only one cost benefit analysis to identify the potential impact on the economy, community or environment and therefore the scale of the response required
- DPI did not consistently engage its state agency partners in after-action reviews to identify where practices could be more effective.

DPI has not formally defined the roles and responsibilities of key state partners to promote effective participation in biosecurity emergency responses

Our audit of eight individual biosecurity emergency responses led by DPI identified that:

- there is no formal agreement between key state partner agencies about roles and responsibilities
- during emergency responses DPI did not consistently communicate changes to action plans and its expectations of the partners involved
- after-action reviews did not always occur, nor did they include input from participating agencies.

Formal agreements with all key state agency partners would help to clarify their roles and responsibilities, allowing them to:

- ensure that their organisational planning and management includes considers their biosecurity responsibilities
- ensure staff are trained and aware of their biosecurity responsibilities
- ensure that resources are allocated to meet their biosecurity responsibilities.

DPI's compliance activities focus on risks to the economy but do not directly address emerging risks to the environment and community amenity

DPI's compliance activities focus on the highest risk activities impacting market access for trade. It has not developed compliance policies that address emerging environmental risks such as potential incursions of red imported fire ants or yellow crazy ants. Nor has DPI developed compliance policy for industries such as tourism and construction, both of which are areas of emerging risk to the environment and community activities. This is a narrower focus than the wider goals for biosecurity outlined in the Biosecurity Act, the Strategy and the 2012 Inter Governmental Agreement on Biosecurity (IGAB). DPI needs to address this gap to fully meet its biosecurity obligations under the IGAB.

DPI collects information on its own costs but does not have comprehensive information on whole of government costs for its biosecurity emergency response and compliance activities

DPI monitors costs of its biosecurity activities, but it cannot identify all the costs of aggregate or individual biosecurity activities. This limits its ability to ensure the cost of each response is commensurate with the risk. DPI does not set budgets and monitor actual costs against budgets for individual responses. DPI does not routinely extract data on the cost of its emergency response and compliance activities to monitor the cost of individual emergency responses. The lack of data also limits DPI's ability to improve budget forecasting for these activities.

2. Recommendations

This audit was conducted with the Department of Industry as the auditee. On 2 April 2019 the NSW Government announced it will abolish the Department of Industry and replace it with the Department of Planning, Industry and Environment, effective from 1 July 2019. Accordingly, the recommendations below are directed to the Department of Planning, Industry and Environment.

By December 2019, to ensure that the Department of Planning, Industry and Environment can demonstrate that its biosecurity compliance and emergency response activities are effective and economical, it should:

1. implement formal agreements with partner agencies that it relies on to deliver effective biosecurity compliance activities and emergency responses

2. analyse and report cost, resource and activity data at a project level, incorporating data from partner agencies

3. apply the full suite of its emergency response practices, particularly cost benefit analyses and after-action reviews

4. establish a data collection and reporting system that enables data sharing with LLSs and LCAs that allows them to better target their biosecurity compliance activities

5. publish annual data on performance targets and outcomes for its biosecurity compliance and emergency response activities.

By December 2019, to ensure that the Department of Planning, Industry and Environment meets its obligations to protect the environment, it should:

6. revise its compliance procedures and emergency response practices to address risks to the environment and the community in consultation with partner agencies.

1. Introduction

Background

Biosecurity is the protection of the economy, environment, and community from the negative impacts of pests, diseases, weeds, and contaminants.

National and State governments have defined roles and responsibilities for biosecurity in Australia, reflecting the allocation of powers in the Australian Constitution. The Australian Government has direct responsibility for biosecurity (quarantine) at the international border, and works jointly with the states and territories to set the legislative framework and policy direction for management of biosecurity nationally.

State governments manage their biosecurity activities and state-level biosecurity risks within the national framework. A series of national intergovernmental agreements, legal agreements, and standards for performance describe the state government responsibilities for managing their biosecurity responsibilities.

The NSW Biosecurity Strategy 2013–2021 (the Strategy) articulates the NSW Government's responsibilities for biosecurity within the Australian national legislative framework. Achieving the outcomes of the strategy relies on direct actions by DPI and effective collaboration with its stakeholders across government, industry, and the wider community. The strategy includes four goals:

NSW Biosecurity Strategy Goals 2013–2021

- Biosecurity is a shared responsibility.
- Biosecurity contributes to sustainable economic growth.
- Biosecurity protects the environment and the community.
- Biosecurity is underpinned by a responsive and consistent legislative framework.

Source: Image from NSW Department of Primary Industries website, used with permission from NSW Department of Primary Industries.

There are more than twenty targeted plans which deal with specific issues that underpin the NSW Biosecurity strategy, such as:

- NSW Animal Biosecurity and Welfare Strategic Plan (2015–2018)
- NSW Animal Welfare Action Plan (2018–2021)
- NSW DPI and Local Land Services Emergency Management Strategic Plan 2015–2016
- NSW Invasive Species Plan (2018–2021)
- NSW Biosecurity (Animal and Plant) Emergency Management (EMPLAN) Sub Plan.

Exhibit 1 shows the roles and responsibilities for biosecurity of government, industry, and other stakeholders. In this model, DPI is responsible for NSW regulatory functions, which includes compliance, enforcement and management of emergency responses.

Exhibit 1: Biosecurity roles and responsibilities
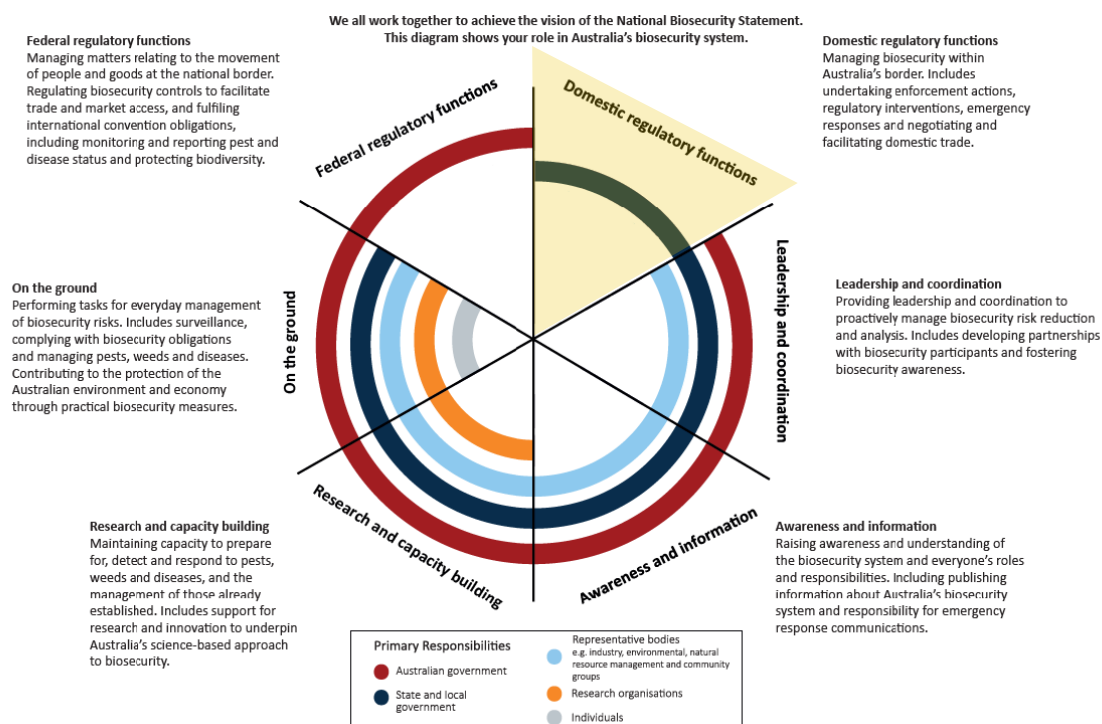
Source: Australian Government Department of Agriculture and Water Resources.

National responsibilities

The national framework for biosecurity aims to ensure that state and national governments meet their national biosecurity obligations. These obligations are formalised in the 2012 Inter-Governmental Agreement on Biosecurity (IGAB) signed by the Australian Government and all state and territory governments (except Tasmania). The IGAB defines relevant policies and cost sharing arrangements, as well as setting priorities and reviewing biosecurity systems. The priorities set in the IGAB have short-term and long-term cost implications and provide practice standards for biosecurity activities such as emergency response, surveillance, and diagnostic services.

There are three national agreements under the IGAB that describe the responsibilities of government and industry in a national emergency response. These agreements are:

- National Environmental Biosecurity Response Agreement (NEBRA)
- Emergency Animal Diseases Response Agreement (EADRA)
- Emergency Plan Pest Response Deed (EPPRD).

NSW, along with other states and territories, the Australian Government and where appropriate peak industry bodies are signatories to all of these agreements. Each agreement lists the pests and diseases that all signatories agree will have a significant impact on primary industry, the wider economy, environment, or communities. They also describe the cost sharing arrangements of all signatories for an emergency response. An outbreak of any of the diseases or pests listed or defined in these agreements will trigger a national emergency response if all parties agree.

DPI has obligations under these three agreements to lead the national emergency response if the pest or disease is detected in NSW. Management of that emergency response must meet national practice standards.

The December 2014 outbreak of red imported fire ants in Botany triggered a national emergency response. As shown in Exhibit 2 an outbreak of red imported fire ants has significant impacts for the community and the environment. DPI managed this emergency response according to the practice standards in the NEBRA. DPI staff have led and or participated in four national responses since 2014.

Exhibit 2: Red imported fire ant

DPI reports that the red imported fire ant is an aggressive and invasive species and has the potential to threaten every aspect of our lives. Red imported fire ants aggressively prey on vertebrates, invertebrates and plants, and can do extensive damage to whole ecosystems.

When a nest is disturbed, they attack in their thousands with a vicious swarm response. They inflict multiple painful bites to humans and animals which can cause infections, allergic reactions, and even death. Red imported fire ant nests have been detected around several ports and airports in Australia, and they are still present in Brisbane despite $340 million already spent on eradication.

DPI successfully eradicated the December 2014 outbreak of red imported fire ants in Port Botany,

Source: Image from NSW Department of Primary Industries website, used with permission from NSW Department of Primary Industries.

The number and frequency of national emergency responses have a direct financial impact on NSW agencies and industry. NSW is a signatory to all three deeds and agreements committing NSW to a proportional contribution to the cost of national emergency responses. NSW contributed around $47.8 million between 2007 and 2018 to national emergency responses under these agreements.

State responsibilities

DPI and Local Land Services (LLS) have primary responsibility for biosecurity in NSW under the *Biosecurity Act 2015* (the Act) and Biosecurity Regulation (2017).

DPI is responsible for strategic planning and management of biosecurity in NSW. It also delivers some direct services such as compliance audits and investigations. DPI maintains relationships with national advisory bodies including Plant Health Australia and Animal Health Australia. DPI also participates in national practice reviews and simulation exercises such as operation Border Bridge conducted in 2018 designed to develop staff skills and capabilities in biosecurity.

DPI describes LLS as the 'eyes' in surveillance and 'feet on the ground' for biosecurity emergency responses. The 11 regional LLSs operate under the *Local Land Services Act 2013*. Each regional LLS has an independent board that includes members appointed by the Minister and representatives elected by regional stakeholders. In 2017–18, LLS received $39.4 million in rates revenue. A significant proportion of this revenue was spent on biosecurity activities. Their key roles in biosecurity include:

- educating farmers and producers within their regions
- developing and implementing strategies to manage established pests and diseases, for example regional weed management plans and feral pest plans
- staffing local biosecurity emergency response control centres.

Local Control Authorities (LCAs) also have a role in biosecurity management. LCAs include local councils and a small number of specialist regional agencies. Their role focuses on strategies to manage weeds within their local areas.

About the audit

This audit assessed the effectiveness and economy of DPI's biosecurity prevention and emergency response systems. In making this assessment we asked:

- Does DPI measure, monitor and report on the effectiveness of its prevention activities and does it apply lessons learnt to improve practices?
- Does DPI measure, monitor and report on the economy of its prevention activities and does it apply lessons learnt to improve use of its resources?
- Does DPI measure, monitor and report on the effectiveness of its emergency response activities and does it apply lessons learnt to improve practices?
- Does DPI measure, monitor and report on the economy of its emergency response activities and does it apply lessons learnt to improve use of resources?

DPI undertakes a range of prevention activities including: public education, promoting voluntary compliance systems, participating in research partnerships, professional training and compliance audits and investigations. The audit focused on DPI's compliance program because DPI has direct responsibility for these as the regulator for these activities.

We selected eight biosecurity emergency responses in the period between 2014 and 2018 for detailed analysis to assess the effectiveness and economy of DPI's emergency response practice. See Appendix two for details of the eight case studies reviewed for this report. The audit was assisted by technical experts in biosecurity management and economic assessment. See Appendix three for further details about the audit.

DPI is part of the Department of Industry. This audit was conducted with the Department of Industry as the auditee. On 2 April 2019 the NSW Government announced it will abolish the Department of Industry and replace it with the Department of Planning, Industry and Environment. From 1 July 2019, the Department of Planning, Industry and Environment is the lead agency for biosecurity in NSW.

2. Biosecurity emergency responses

2.1 Overview

DPI is the lead agency for managing biosecurity emergency responses in NSW in accordance with the Act and Regulation. DPI identifies and responds to diseases effecting animals, aquatic plant life, invasive plants causing damage to the environment and biodiversity, human health, and social amenity. Biosecurity emergency responses are categorised as:

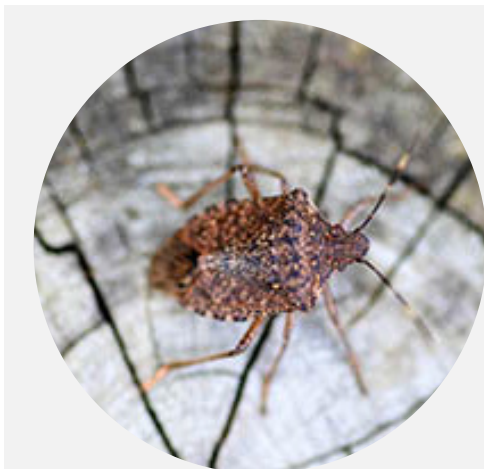## National biosecurity emergency responses

The Australian Government Department of Agriculture and Water Resources is responsible for managing Australia's quarantine services. The Department's border biosecurity controls aim to minimise the risk of exotic pests and diseases entering Australia in accordance with Australia's 'accepted level of protection'. If a pest or disease enters the country, the Department is responsible for its eradication at the national border. If the pest or disease crosses the border and is then detected within a state or territory, a national biosecurity emergency response may be triggered, though it remains the primary responsibility of that state to respond.

National emergency responses are initiated under national arrangements outlined in the Inter-Governmental Agreement on Biosecurity (IGAB). National responses support the state in which the outbreak occurs but the state is the primary agency responsible for managing the response. They seek to eradicate or contain a newly arrived pest or disease. National responses must comply with the requirements of one of three national agreements:

- National Environmental Response Agreement (NEBRA)
- Emergency Animal Diseases Response Agreement (EADRA)
- Emergency Plant Pest Response Deed (EPPRD).

An example of an emergency response initiated under the IGAB and conducted under the EPPRD occurred in November 2017 when a Brown Marmorated Stink Bug (BMSB) was detected in a warehouse in Western Sydney. It is a national priority to eradicate these exotic bugs if detected. Exhibit 3 outlines the potential impact that BMSB could cause. These responses must comply with national practice standards. The costs of these responses are shared with other states and territories and peak industry bodies who are signatories to the EPPRD.

Exhibit 3: Brown marmorated stink bug

DPI led the 2017 biosecurity emergency response to the brown marmorated stink bug (BMSB) detected in a warehouse in Western Sydney. The Greater Sydney LLS resourced the local control centre that was established as part of this response.

DPI reports that BMSB is an exotic pest that could cause major damage to agricultural crops, nursery stock and ornamental plants if it established in Australia. It is also a nuisance because it seeks shelter in large numbers in buildings and equipment during the winter months. It has a foul-smelling odour when disturbed.

In May 2019, the response to BMSB was continuing.

Source: Image from NSW Department of Primary Industries website, used with permission from NSW Department of Primary Industries.

State-based biosecurity emergency responses

State-based biosecurity emergency responses are initiated by DPI and seek to eradicate or contain pests and diseases that are:

- not eligible for a national response under one of the three national agreements
- not eradicable nationally
- already present in some part of Australia but not NSW
- an unusual occurrence of an established disease requiring an urgent response.

The 2018 salmonella enteritidis response is an example of a state-based biosecurity emergency response. DPI sets practice standards for these responses and NSW Government agencies meet the costs.

2.2 Biosecurity emergency response management

Since 2014, DPI has led and participated in four national and 25 state-based biosecurity emergency responses. We selected eight of these responses for detailed assessment to determine how well DPI applies its emergency response practices. The responses selected include:

- a cross section of responses that impacted on the economy, environment or community
- four national and four state-based responses
- a mix of animal and plant pest/pest responses.

Exhibit 4 shows the time lines for the eight biosecurity emergency responses we selected for detailed review.

Exhibit 4: Timelines for selected biosecurity emergency responses 2013 to 2019
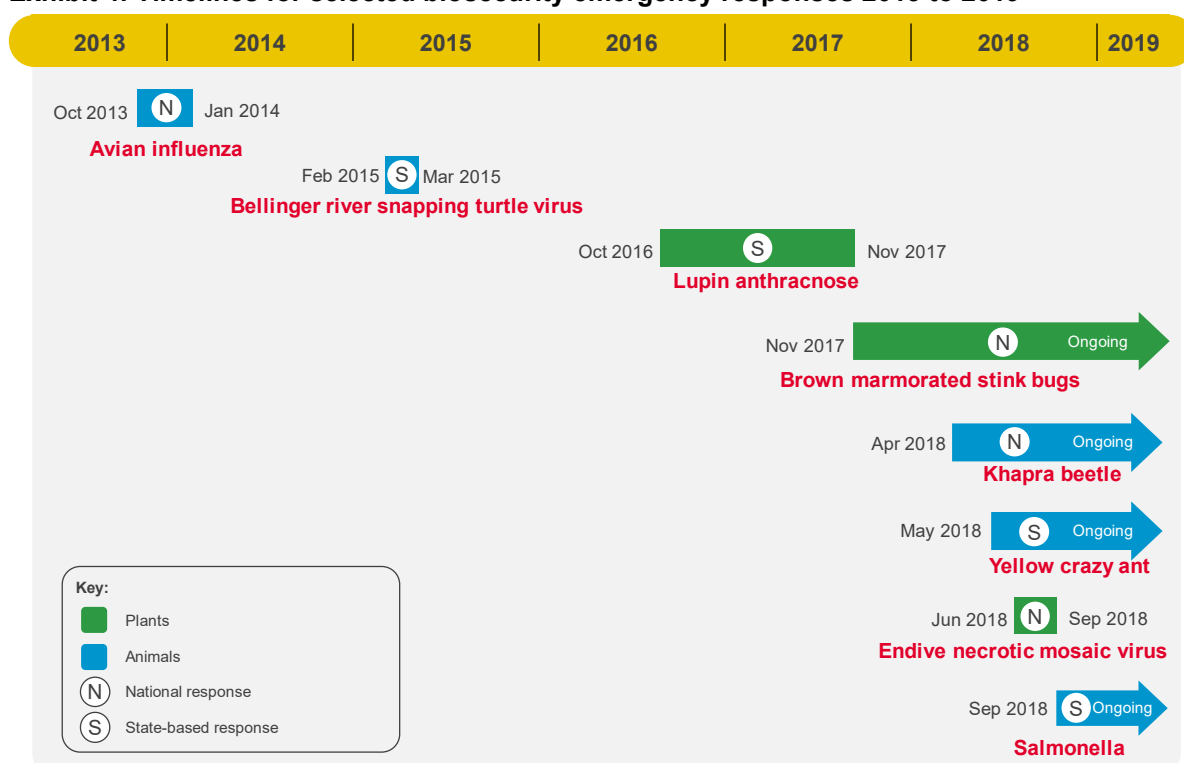
Source: Audit Office research 2019.

The key phases for management of a biosecurity emergency response are: Notification, Investigation and alert, Diagnosis, Decision on feasibility to eradicate, Operational and the Stand down phase.

Exhibit 5: Key phases in biosecurity emergency response practice

1. Notification	2. Investigation and alert	3. Diagnosis	4. Decision on technically feasible to eradicate	5. Operational	6. Stand-down

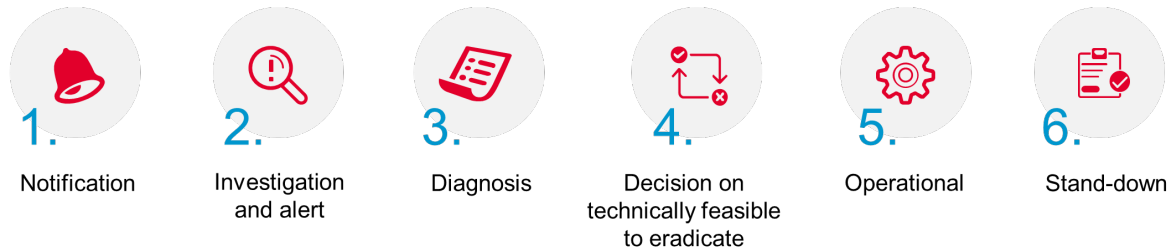### DPIs practice meets most criteria expected for management of a biosecurity emergency response

We assessed DPI's biosecurity emergency response practice based on a set of criteria drawn from national practice manuals including the Biosecurity Incident Management System (BIMS) and Emergency Plant Pest Response Plan (PLANTPLAN) and the Australian Veterinary Emergency Plan (AUSVETPLAN). The recommended approaches in these specialist plans are largely consistent. DPI confirmed that these criteria were a reasonable basis to assess its biosecurity emergency response practice. Our detailed assessment of eight of these, summarised in Exhibit 6, found that DPI met most practice criteria for these responses.

Exhibit 6: Assessment of emergency response practices in eight selected case studies

Criteria	State			National				
	Snapping turtle - ranavirus infection	Lupin anthracnose	Salmonella enteritidis	Yellow crazy ant	Avian influenza	Brown marmorated stink bug	Endive necrotic mosaic virus	Khapra beetle
Notification								
Origination of report of incident	●	●	●	●	●	●	●	●
Investigation and alert								
Determine the extent of the incident	■	●	●	●	●	●	●	●
Emergency containment measures	●	●	●	●	●	●	▲	●
Communication and public notification	●	■	●	●	●	●	●	▲
Risk assessment	■	●	■	▲	▲	●	▲	▲
Diagnosis								
Diagnosis Test 1	●	●	●	●	●	●	●	●

Criteria	State	National						
	Snapping turtle - ranavirus infection	Lupin anthracnose	Salmonella enteritidis	Yellow crazy ant	Avian influenza	Brown marmorated stink bug	Endive necrotic mosaic virus	Khapra beetle
Decision on feasibility to eradicate								
Technically feasible to erradicate	N/A	●	●	●	●	●	●	●
Cost beneficial to eradicate or contain	▲	●	▲	▲	▲	■	N/A	▲
Operational phase								
Incident action plan developed	■	●	●	■	■	●	N/A	■
Situation reports	●	●	●	●	●	●	●	●
Proof of freedom or Transition to management	N/A	■	Continuing	Continuing	●	Continuing	■	Continuing
Stand down phase								
After action review	●	■	Continuing	Continuing	●	▲	▲	▲

Key:

Symbol	Description
●	Completed the requirements described in biosecurity emergency response manuals for this criteria.
■	Completed most requirements set out in biosecurity emergency response manuals for this criteria.
▲	Not undertaken.
N/A	Not applicable.
Continuing	Response is ongoing.

DPI can strengthen its biosecurity emergency response practices by addressing gaps and inconsistencies in its practice

Up until December 2018, DPI relied on several specialist emergency response manuals such as the 2012 BIMS manual and the AUSVETPLAN to guide its emergency response practice. We found variation in application of practices and gaps which impact on its effectiveness. To some extent these inconsistencies and gaps reflected the use of different emergency response manuals. DPI did not consistently apply risk assessments or conduct cost benefit analyses to inform its decision to initiate an emergency response or determine the appropriate scale of individual responses. DPI also did not consistently complete after action reviews that engaged the partner agencies involved.

These gaps highlight differences in practices based on whether the response is a national or state-based one. National responses must meet the requirements of the relevant national agreement including the NEBRA, EADRA or the EPPRD. Risk assessments and cost benefit analysis are complete for some pests and diseases that trigger a national response such as the Australian Bureau of Agriculture and Resource Economics and Science (ABARES) cost benefit analysis for RIFA. These assessments inform an initial decision by the relevant national consultative committee on emergency plant or animal pests and diseases to trigger a biosecurity emergency response. They also inform decisions made in later phases of a response including what the likely impacts might be of not responding to an outbreak for the economy, community, or the environment. No supporting risk assessment or cost benefit analysis was available to inform decisions made during the response for three of the four national responses reviewed.

DPI determines its practice requirements for state-based biosecurity emergency responses. During the audit, DPI developed a Draft Emergency Response and Recovery Manual. The manual references relevant national practice guidelines such as the BIMS and the Australian Emergency Plant Pest Response Plan. It also references a set of standard reporting templates that teams should use for all biosecurity emergency responses. DPI's draft manual is heavily based on the national 2012 BIMS manual. Introduction of the manual should result in more consistent application of practices and address the gaps identified.

The shared roles of DPI and LLS in biosecurity emergency responses is unique to NSW. DPI's draft manual does not reflect this context. It also does not include new good practice techniques developed such as the use of efficiency audits to improve outcomes in the operational phase of biosecurity emergency responses. DPI advises that the manual will be finalised in June 2019.

Based on the findings from the audit, the manual should:

- include new practices such as completing efficiency audits to reflect emerging views on good practice
- review existing templates to identify overlaps and redundancies
- provide clear guidance on mandatory and optional actions based on the level of emergency, for example whether the response includes an independent or internal after-action review
- identify performance criteria and targets for each practice stage
- include procedures that are specific to wildlife disease emergency responses
- identify the roles in local control centres that are most likely to be undertaken by LLS staff.

DPI did not consistently use an appropriate cost benefit analysis to identify the most effective biosecurity emergency response option

DPI's risk assessment framework informs decisions about the scope and scale of individual biosecurity emergency responses. DPI applied its risk assessment framework in three emergency responses including for salmonella enteritidis in 2018, lupin anthracnose in 2017 and the brown marmorated stink bug in 2017.

DPI's risk assessment framework guides its decision to trigger an emergency response. This framework requires consideration of two key factors:

- is it technically feasible to contain or eradicate the pest or disease?
- is it economical to contain or eradicate the pest or disease based on a cost benefit analysis (CBA)?

In all eight emergency responses we reviewed, DPI considered whether it was technically feasible to contain or eradicate the pest or disease. However, DPI only completed a CBA for one response - lupin anthracnose.

DPI did not complete CBAs for three state-based responses we reviewed. This means DPI cannot demonstrate that it took the best course of action for these responses as it did not consider alternative response options and the associated cost and impacts to the economy, environment, or community.

CBAs enable comparison of potential options and outcomes and identify which is the most cost effective. A CBA is a systematic, quantitative evaluation of the impacts of a proposal, accounting for all the effects on the economy and the community, not just the immediate or direct effects, financial effects or effects on one group, in monetary terms. The goal of a CBA is to provide the decision maker with as much information about a proposal as is relevant in informing their decision.

Estimating the benefits of controlling an incursion is straightforward when the main threat is to an agricultural commodity: the loss of production value expected from the incursion or any loss of market access for that commodity if DPI does not act. The only information needed is the expected value of the output, the decline in value as a result of the untreated incursion, and the value of the next-best alternative use of resources. Values of output of agricultural commodities are readily available from industry bodies such as the ABARES, as well as estimates of the decline in production from a biosecurity outbreak. Data on the value of exports of a commodity (that would be at risk) are also available.

DPI completed a CBA for the state-based lupin anthracnose biosecurity emergency response. This is a rigorous analysis that uses several data sources. The assessment compared five options, and the expected likelihood of successful eradication. In this response, DPI decided on option five.

The lupin anthracnose response demonstrates that DPI can prepare a sound CBA to support its emergency response decisions.

Exhibit 7: Cost benefit analysis options for the lupin anthracnose biosecurity emergency response

0% 1	95% 2	3 50%	95% 4	85% 5
Eradication program is unsuccessful, but control and mitigation options allow continuation of the albus lupin industry (Base case).	Destroy all crops on infested property with DPI contribution, no albus lupin grown for two years.	Allow all crops to be harvested and sold but not for seed, no albus lupin crops for following two years.	Destroy all crops on each infected property at growers' expense, enforce no albus lupin grown for two years in the affected area and a one kilometre exclusion zone	Destroy only the badly affected parts of the crops on infected properties, allow the remainder to be harvested and sent for processing

% = Expected likelihood of successful eradication.

Exhibit 8: Lupin anthracnose

DPI reports that lupin anthracnose is a fungal disease of lupin plants, causing the stems to twist and break and dead patches to appear on the leaves and pods. Lupin anthracnose may lead to complete crop losses in susceptible varieties.

In October 2016, DPI detected lupin anthracnose for the first time in commercial crops in the eastern Riverina region of NSW. Natural hosts of lupin anthracnose are not established in NSW. The infected crops were relatively isolated and successful eradication of the disease was considered possible.

Our assessment of this response identified that effectiveness during the operational phase of the response was hampered by a lack of clarity on roles and responsibilities between DPI and LLS.

An eradication program is now in place. DPI has also created the lupin anthracnose biosecurity zone within which special conditions apply to the growing of ornamental and commercial lupins.

Source: Image from NSW Department of Primary Industries website, used with permission from NSW Department of Primary Industries.

DPI did not complete CBAs for the remaining three state-based responses we reviewed. This means DPI cannot demonstrate that it took the best course of action for these responses as it did not consider alternative response options and the associated cost impacts to the economy, environment, or community.
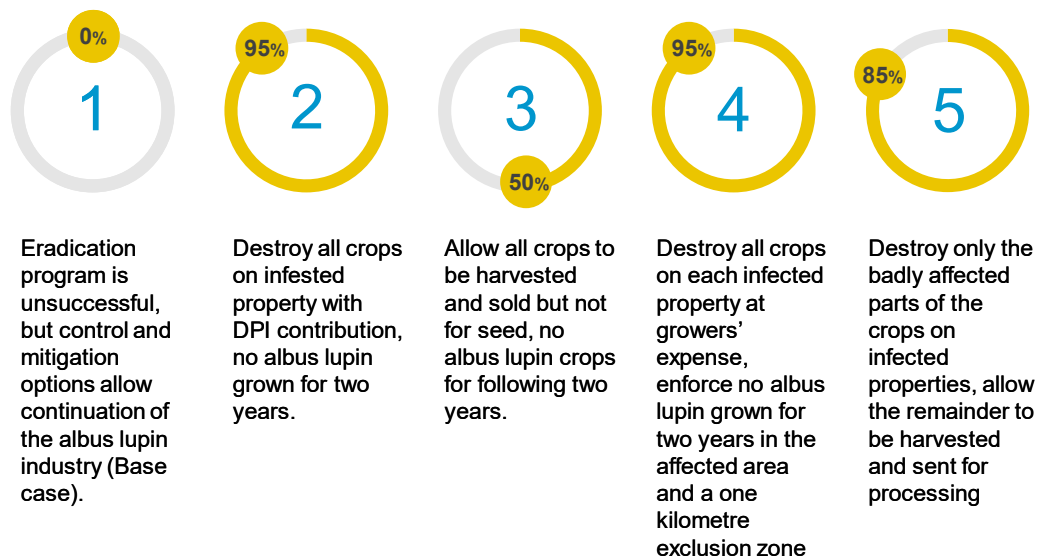
Valuing the environmental benefits and impacts of outbreaks is more difficult than for primary production. First, environmental impacts of an outbreak can be multi-faceted. For example, a yellow crazy ant outbreak can impact native flora, native fauna and potentially be a nuisance to humans engaging in recreation. Second, environmental impacts are not regularly assigned a monetary value. Most people would agree that saving a national park for recreational use or preventing a native species from becoming extinct is a valid use of money, but there are limited ways of valuing this. Thirdly, where the impact of an outbreak affects the environment rather than agriculture, it takes longer before a negative effect is recognised. DPI needs to explore options to address the gap in its CBA practice.

Existing models that can assess the value of options for an emergency response for the environment and community, as well as the economy, include:

- **Non-market-based valuation - revealed preferences method**. These look at how people value a non-marketed good by looking at how it influences the value of some other good. Preferences are revealed through consumer choice.
- **Non-market-based valuation - stated preferences method**. These ask people to state what they would be willing to trade for a certain outcome or bundle of outcomes.
- **Benefit transfer method**. These use values from surveys of comparable environmental costs or benefits.

Biosecurity emergency responses must balance the need for immediate action with sound assessment of the associated risks. This means that containment measures, communication and diagnosis are timely, as occurred in DPI's management of the 2018 salmonella enteritidis response. However, our assessment highlights a gap in DPI's practice that may impact on the effectiveness of its emergency responses. By not using an appropriate CBA model that assesses the value of impacts to the environment and community, DPI may not be applying an appropriate emergency response to these outbreaks. This gap mirrors the gap in compliance practice identified later in this report.

A CBA also enables DPI to demonstrate the cost to the economy, community and environment that would have occurred if an emergency response had not been triggered.

DPI has not defined the roles and responsibilities of key state partners to promote effective participation in biosecurity emergency responses

DPI has not developed agreements with its state partners that clearly define roles and responsibilities in biosecurity emergency responses. Up until December 2018, DPI did not have an agreement with LLS, which plays a critical role in biosecurity emergency responses, or with agencies such as the Office of Environment and Heritage (OEH) which have a key role working with DPI to respond to pests and diseases that impact on the environment.

DPI's role in state emergency and rescue management means that it has established relationships with key agencies that can provide assistance in a biosecurity emergency response such as the NSW Police and Rural Fires Services. The *State Emergency and Rescue Management Act 1989* defines agency roles and responsibilities in the event of a state emergency. DPI is a participating agency in state emergency responses such as fires, floods, and storms and is the lead agency for biosecurity state emergency responses under the *State Emergency and Rescue Management Act 1989*. In the event of a significant biosecurity outbreak, DPI takes the lead role for managing the response. The last state emergency biosecurity response led by DPI under this Act was the equine influenza outbreak in 2007.

The 29 biosecurity emergency responses led by DPI between 2014 and 2018 were not conducted under the *State Emergency and Rescue Management Act 1989*. In these biosecurity emergency responses DPI relied on informal relationships with partner agencies to achieve its biosecurity emergency response outcomes. DPI's response to notification of yellow crazy ants in May 2018 is an example of how quickly it can mobilise these networks. DPI established a local control centre shortly after notification, calling on resources from local and interstate agencies including sniffer dogs from Queensland, the NSW Police Force, Rural Fire Service, LLSs and local councils in the region. More than eight agencies provided resources and support in the following six months.

DPI's reliance on informal networks increases the risk that resources may not be available when needed. This risk may be heightened by staff turnover in key agencies, such as the OEH, and how they manage competing priorities for resources within these agencies.

The LLS and OEH noted that formal partnership agreements should improve their ability to work with DPI on emergency responses. Formal agreements will clarify their roles and allow them to:

- include their biosecurity responsibilities in organisation planning
- ensure staff can access appropriate training and education
- allocate appropriate resources to meet their biosecurity responsibilities.

In December 2018, DPI finalised a Memorandum of Understanding (MOU) with the LLS Board on behalf of the 11 regional LLSs in NSW. This formal agreement will support cooperation in biosecurity emergency response management between LLS and DPI. DPI should develop a set of shared performance indicators that enable DPI and LLS to monitor and report on their biosecurity emergency response activities as part of this agreement. This should include the work completed by LLS to investigate reported potential outbreaks of pests and diseases.

DPI does not consistently apply lessons learnt from after-action reviews or biosecurity emergency response exercises and may be repeating poor or ineffective practices

Applying the lessons learnt from past practice supports agencies to develop the capacity of existing systems to meet changing conditions. The complex nature of biosecurity outbreaks means that DPI's response practices need to be agile to respond appropriately where and when the outbreak occurs. DPI policy requires emergency response managers to complete after-action reviews to identify any lessons that can improve future responses.

The audit expected to see analysis and reporting of lessons learnt from emergency biosecurity responses, resulting in improvements in practices over time. The audit found that DPI does not consistently conduct comprehensive after-action reviews and did not involve all key agency partners in after-action reviews in the four national responses that we reviewed.

After-action reviews are a key source of information to improve the effectiveness of response practice. DPI also did not undertake comprehensive after-action reviews for the two completed state-based responses that we reviewed. DPI completed a limited after-action review for the lupin anthracnose's response and the National Parks and Wildlife Service(NPWS) led completion of the after-action review for the Bellinger river snapping turtle virus response. Exhibit 9 summarises the response.

A team of specialists from the OEH, including NPWS and Regional Operations Group and Heritage Division, the Environmental Protection Authority, DPI, NSW Health, and the Bellingen Shire Council supported the Bellinger river snapping turtle virus response. The NPWS after-action review identified the need for policy and procedures that are specific to wildlife disease responses. The review recommends creation of an animal response working group to develop written policies and procedures that clarify agencies responsibilities that are specific to wildlife disease emergency responses. In responses involving several partners, such as the Bellinger river snapping turtle virus outbreak response, an after-action review is also a key tool to share learning and exchange information. This is a missed opportunity for DPI to use the findings from these reviews to improve practice and demonstrate its commitment to the concept of shared responsibility as well as a gap in practice.

DPI acknowledges that formally reporting on learnings from biosecurity emergency responses is an area where it can improve practice and has advised that it is working with other emergency management services to develop a good practice approach to after-action reviews.

DPI conducts regular biosecurity emergency response simulation exercises with partner agencies. These build relationships and interagency response capabilities. DPI has conducted 16 of these in the past five years. These exercises are also an opportunity to discuss strategies and actions that will improve the effectiveness of emergency response capability. However, DPI acknowledges that it has not formally analysed feedback from these simulations to initiate changes in practice.

Exhibit 9: Bellinger river snapping turtle virus outbreak

DPI reports that the Bellinger River Snapping Turtle (BRST) is endemic to a 70 kilometre stretch of the Bellinger River in northern NSW. In 2007, the population of the BRST was estimated at 1,500 to 4,500. In February 2015, an increasing number of turtles were discovered to be dead or emaciated in a small section of the river.

Between February and March 2015, 343 turtles were confirmed to have died as a result of a common event. Veterinary assessments indicated that affected turtles:

- had suffered blindness

- succumbed to internal organ failure, most commonly of the spleen, liver and kidney

- presented with acute, sudden and inflammatory lesions, commonly associated with an infectious and parasitic agent.

The after-action review on this response identified the need for policy and procedures that are specific to wildlife disease responses. The review recommends creation of an animal response working group to develop written policies and procedures that clarify agencies responsibilities that are specific to wildlife disease emergency responses.

Source: Image from NSW Department of Primary Industries website, used with permission from NSW Department of Primary Industries.

There are gaps in DPI's biosecurity emergency response policy framework for state-based incursions compared to national responses

The audit expected to find that DPI had an emergency response policy and procedure framework that reflected the experience gained from its participation in national biosecurity emergency responses. We identified the following gaps:

DPI does not conduct efficiency audits during biosecurity emergency responses

Efficiency audits are formal review points during the operational phase of a biosecurity emergency response to assess the efficiency of the response and review the plan. Efficiency audits are a recent addition to national biosecurity emergency practice. DPI contracted an efficiency review expert for its salmonella response. However, DPI's draft Emergency Response and Recovery Manual does not include advice on conducting efficiency audits as part of its emergency response practices.

DPI does not have a policy on compensation for producers associated with the impacts of a biosecurity emergency response

Emergency responses can have significant financial impacts for producers. The national agreements (such as the EPPRD and the EADRA) define cost sharing and eligibility for compensation arrangements that result from a biosecurity emergency response for all signatories. Interviews with industry representatives and peak bodies that administer the national agreements agree that they provide a level of certainly for participating signatories and encourage people to report a suspected pest or disease on their property. Early reporting has an impact on the likely success and cost of a biosecurity emergency response.

The Act includes compensation provisions in accordance with emergency orders and allows for ex gracia payments. DPI determines compensation to producers on a case by case basis for each state-based biosecurity emergency response. The 2017 lupin anthracnose response resulted in the partial loss of a crop to eradicate the fungus at the contaminated site. At the time of writing, DPI had not determined if the producer will receive compensation for the crop loss.

The experience at national level suggests that the potential financial impact on producers may be a factor in their willingness to report a suspected outbreak. This may have been a factor in the salmonella enteritidis biosecurity emergency response that commenced in October 2018. DPI responded quickly to remove contaminated waste and destroy stock at the infected property. The producer however did not notify DPI that they operated two further properties in the investigation and alert phase of the response. The incident action plan did not include assessment and action at these sites until the operational phase of the response when DPI became aware of the additional properties. The salmonella enteritidis virus was confirmed at both properties. This has delayed completion of the response and also may have impacts on the cost of the response.

DPI could improve the effectiveness of its emergency responses by better analysis of the data it collects to monitor trends and identify emerging issues

Between 2014 and 2018, DPI initiated 29 biosecurity emergency responses. DPI does not use data from its emergency responses to measure and monitor trends in the effectiveness of its biosecurity emergency responses.

Our review of eight emergency responses found two examples where the first assessment conducted in the investigation and alert phase of responses identified that the pest or disease had been present for some time. These were salmonella enteritidis in 2018 and yellow crazy ants also in 2018. In the yellow crazy ant response, DPI found that it was probable that the ants had been present for several months. In the salmonella enteritidis response, DPI also noted that the disease had probably been present for several months prior to detection. Both emergency responses have yet to be completed. Exhibit 10 below summarises the yellow crazy ant response to date.

Exhibit 10: Yellow crazy ants

DPI reports that yellow crazy ants are highly invasive and can build super colonies and devastate local flora and fauna and impact on agricultural production and the horticultural industry. Yellow crazy ants, although not a direct threat to humans, are a serious environmental pest which pose a risk to our economy, environment and communities.

A local student reported the possible presence of yellow crazy ants in Lismore in May 2018. The initial investigation of the site suggested that the ants had been present for some time. DPI and LLS continue to lead the response to yellow crazy ants in the Lismore region.

Source: Image from NSW Department of Primary Industries website, used with permission from NSW Department of Primary Industries.

Existing national practice manuals and DPI's draft manual states that the decision to initiate a biosecurity emergency response is determined based on whether:

- it is technically feasible to contain or eradicate the pest or disease
- it is economical to contain or eradicate the pest or disease based on a cost benefit analysis.

Whether a pest or disease is identified early enough for it to be feasible and economic to contain or eradicate depends on the effectiveness of detection systems.

DPI reports that it collects data on the number of confirmed new pests and diseases present in NSW that did not trigger an emergency response and reports these to the Australian Government Department of Agriculture and Water Resources.

However, DPI does not analyse this data to determine:

- if earlier detection would have resulted in an emergency response
- whether they are pests and diseases that harm the economy, environment or community
- what the impact may be on the economy, environment or community because of the new pest or disease.

This analysis would assist DPI to identify emerging biosecurity risks in specific areas and support development of more strategic approaches to prevention including setting priorities for biosecurity surveillance and compliance activities.

2.3 Economy of biosecurity emergency response activities

DPI does not analyse its financial data to enable it to demonstrate that its biosecurity emergency response activities are economical

DPI does not monitor and report on the cost of an individual biosecurity emergency response. Our assessment of eight responses reviewed found that:

- DPI does not consistently set a projected budget for individual responses
- costs are not collected from the commencement of all responses
- where projected budgets are set these are well above the actual expenditure reported.

DPI does not have an accurate picture of its costs for individual responses. DPI does not capture or report on the resources committed by its partners to biosecurity emergency response activities. OEH and LLS are key contributors to biosecurity emergency response management activities. We identified a further five state entities that contributed resources to one or more of the eight responses we reviewed, including:

- NSW Health
- Fisheries NSW
- NSW Police Force
- Environmental Protection Authority
- Rural Fire Service.

These agencies do not collect or report their costs or resource commitments applied during participation in biosecurity emergency responses. This means there is not a full picture of the costs and resources allocated for biosecurity emergency response activities led by DPI. As a result, NSW may not be claiming the full costs incurred by agencies involved in national responses as agreed under the NEBRA, EADRA and the EPPRD.

In addition, DPI had not (up to the end of 2018) entered into formal agreements with LLS, or other key partners such as OEH. This means that these agencies may not be formally defining the resources they commit to undertaking biosecurity activities within their budgets and corporate and business plans. This exposes a risk for DPI that these agencies may not be able to provide all resources when and where needed.

This means that DPI cannot demonstrate that:

- budgets for biosecurity emergency response activities are set appropriately (by appropriate we mean that the scale of budget matches the risk to industry (and others) of the biosecurity threat)
- costs are captured and reported for the expenditure and resources used for biosecurity emergency responses against budgets.

DPI does not, and cannot, analyse expenditure for biosecurity emergency responses to improve budget forecasting.

3. Compliance activities

3.1 Overview

As the lead agency for administering the legislation governing biosecurity, DPI is responsible for:

- developing biosecurity compliance policies and procedures
- conducting an annual biosecurity compliance program of audits and verification inspections
- investigating suspected biosecurity compliance breaches and initiating prosecutions.

DPI, Local Land Services (LLS), and Local Control Authorities (LCA) are all responsible for regular audits and verification inspections. LLSs primarily work with farmers and producers within their region to assist them develop and implement strategies to manage pests and diseases on their properties. LCAs include local councils and a small number of specialist regional agencies. Their role focuses on strategies to manage weeds within their areas.

DPI also encourages voluntary compliance through education activities that build the capacity of industry to play an active role in complying with the *NSW Biosecurity Act 2015* (the Act) and the Biosecurity Regulation 2017 (the Regulation).

3.2 Biosecurity compliance activities

DPI has biosecurity compliance policies and procedures that focus on protecting primary production and public health and safety

The Act provides the framework for DPI to lead the management of the following biosecurity risks:

- pests, diseases, contaminants and other biosecurity matter that are economically significant for primary production industries
- threats to terrestrial and aquatic environments arising from pests, diseases, contaminants and other biosecurity matter
- public health and safety risks arising from contaminants, non-indigenous animals, bees, weeds and other biosecurity matter known to contribute to human health problems
- pests, diseases, contaminants and other biosecurity matter that may have an adverse effect on community activities and infrastructure.

DPI's biosecurity policies and procedures provide guidance and direction for its compliance activities. Most of these are available on the DPI website for industry and agency partners. These include policies and procedures on:

- tracking of livestock including cattle, sheep, pigs, and goats
- industry responsibilities for reporting pests and diseases
- investigation of diseases and pests such as the Hendra virus and cattle tick.

At the time of our review, DPI was undertaking a review of all policies and procedures. DPI advises that it is due to complete this review in 2019.

DPI's current compliance policies and procedures have a narrower focus than the wider goals for biosecurity as outlined in the Act, the Strategy and the IGAB, which require that biosecurity activities protect the environment and impacts on community activities.

DPI does not have policies that directly address emerging risks to the environment or those that have an adverse impact on community activities and infrastructure

DPIs compliance activities tend to focus on the highest risk activities impacting market access for trade. For example, DPI does not have compliance policies that address emerging environmental risks such as potential incursions of red imported fire ants or yellow crazy ants. Nor has DPI developed compliance policies for industries such as tourism and construction, both of which are areas of emerging risk to community activities. DPI needs to address this gap to fully meet its biosecurity obligations under the IGAB.

The Strategy defines biosecurity as the protection of the economy, environment and community from negative impacts associated with pests, diseases and weeds. This is consistent with the definition of biosecurity in the IGAB. The IGAB also places obligations on DPI to manage biosecurity risks in NSW.

This is a common gap nationally. In 2018, the Australian Government Department of Agriculture and Water Resources appointed a Chief Environmental Biosecurity Officer to implement the recommendations of its 2017 report titled Priorities for Australia's Biosecurity System. The report highlights that incursions of exotic organisms harmful to Australia's environment and social amenity are a regular occurrence, but national environmental pest and disease risks are not systematically identified, prioritised, or planned for.

DPI collects and reports data on its biosecurity compliance activities

DPIs collection and reporting approach does not actively include LLS, LCAs, environmental or community representatives in its annual review of compliance priorities. This means that DPI sets biosecurity compliance targets based on limited data and consultation with its stakeholders. This limited analysis of emerging biosecurity risks means that DPI may not be focusing on key or emerging risk areas.

DPI collects and reports data to its executive including:

- setting annual targets for the number of biosecurity compliance and audit activities it will conduct
- conducting annual reviews of its biosecurity compliance and audit program
- identifying targeted biosecurity audit areas, such as its abandoned orchard and display animal audit programs.

DPI reviews its biosecurity compliance program annually, setting targets for its audits and investigations in its annual compliance operational plan. DPI consults with a small group of industry representatives as part of its review. DPI's compliance operational plan 2018–19 sets targets for audit and investigation numbers and endorses the continuation of existing programs such as the 'abandoned orchard program'. The operational plan is published on the DPI website.

DPI reports on its own biosecurity compliance activities but does not have a comprehensive picture of emerging risks

DPI does not collect data from the biosecurity compliance activities conducted by LLSs and LCAs. LLSs and LCAs conduct these activities in areas of high and emerging biosecurity risks, such as small producers in urban fringe areas. This data would add to DPI's understanding of emerging risks to improve the effectiveness of its biosecurity compliance program. Sharing this data with LLSs and LCAs would also allow them to better target their biosecurity compliance activities.

In December 2018, DPI finalised a Memorandum of Understanding (MOU) with the NSW LLS board on behalf of the 11 regional LLSs. This formal agreement should support improved data collection on compliance activities. DPI should develop a set of shared performance indicators that enable DPI, LLS and LCAs to monitor and report on their biosecurity compliance activities as part of this agreement.

DPI needs to better link its compliance activities to known biosecurity risks

DPI's planned compliance activities do not address all of the risks that it has identified. For example, while DPI has identified emerging biosecurity risks in urban fringe areas, its 2018–19 compliance plan does not include consideration of additional activities that address this area of risk. Nor does it consider biosecurity risks that LLSs and LCAs may identify.

DPIs annual compliance operational plan is intended to ensure that compliance activities focus on the highest risk activities, targeting those businesses and people least likely to comply. Biosecurity management seeks to reduce the negative impacts of harmful pests and diseases while facilitating productive industries and communities. This requires managers to understand the magnitude of the risk posed by a diverse set of biosecurity threats. The NSW legislation echoes the IGAB requirement to prioritise the allocation of resources to the area of greatest return.

Our finding is consistent with a September 2017 review by the Centre of Excellence for Biosecurity Risk Analysis (CEBRA) of DPI's practices, including its prevention and compliance activities. CEBRA is an independent research and advisory organisation supported by the Australian Government Department of Agriculture and Water Resources, the Ministry for Primary Industries of New Zealand, and the University of Melbourne. CEBRA is the recognised expert authority for biosecurity risk management practice in Australia. CEBRA aims to ensure that biosecurity regulatory standards, procedures and tools are underpinned by world-class research and understanding of the issues, risks and response mechanisms.

CEBRA found inconsistencies in DPI's use of existing risk assessment tools and gaps in staff capability to conduct biosecurity risk assessments. The review also identified weaknesses in biosecurity compliance risk assessment practice in its analysis, evaluation, and treatment activities.

In September 2018, DPI engaged CEBRA to address the weaknesses identified in its biosecurity risk assessment practice, including designing new risk assessment tools in areas where they did not exist and training to improve staff capability and consistency in approaches. DPI advised that this project will be completed in June 2019.

3.3 Economy of biosecurity compliance activities

DPI collects information on its own costs but does not have comprehensive information on whole of government costs for its compliance activities

DPI sets budgets but does not monitor expenditure for its biosecurity compliance activities, at a level that identifies all the costs of aggregate or individual compliance program activities. The lack of data limits DPI's ability to apply lessons learnt to improve budget forecasting for these activities.

This means that DPI cannot demonstrate that:

- budgets for all compliance activities are set appropriately (by appropriate we mean that the scale of budget matches the risk to industry (and others) of the biosecurity threat)
- it analyses cost and resource data from its compliance activities to improve budget forecasting and economical use of resources.

The Act requires DPI to prioritise the allocation of resources to the area of greatest return. These reporting limitations mean that DPI has not demonstrated how its compliance activities meet this requirement.

Section two

Appendices

Appendix one – Response from agency

Department of Primary Industries
NSW GOVERNMENT

Office of the Director General

BN19/3876

1 4 JUN 2019

Ms Margaret Crawford
Auditor General of NSW
GPO Box 12
SYDNEY NSW 2001

Dear Ms Crawford

Response to Performance Audit - Biosecurity risk management, Department of Primary Industries

Thank you for the opportunity to respond to the performance audit on biosecurity risk management for the Department of Primary Industries. I also thank your review team for their efforts in compiling the report.

NSW's reputation as a producer of high quality, safe food and fibre relies on our strong biosecurity practices, compliance programs and the timely response to emergency events. In turn, this supports market access negotiations, increases the value of NSW food and fibre, and provides our primary producers with a competitive advantage.

Our biosecurity framework also provides the people of NSW with an abundance of quality food choices, enviable social amenity and a unique and diverse environment. Biosecurity risk management is based on the principle of shared responsibility and relies on an agile, proactive and collaborative approach between commonwealth and state agencies, industry and individuals.

The Department supports the Audit Office recommendations, and notes that in most cases, actions are already underway to address these.

The Department accepts that there opportunities to improve our practices. We appreciate that the Audit Office identified that "*DPI's practice meets most criteria expected for management of a biosecurity emergency response*" and will work to ensure areas for improvement continue to be addressed.

Please find enclosed the Department's response to each recommendation. It is noted that the full implementation of recommendation 4 will be dependent on the success of a business case and is unlikely to be completed by December 2019. Further, the

…/2

timelines for completion of recommendations 1 and 2 may be ambitious given the complexities of negotiations required with stakeholders. It is suggested a more realistic target is June 2020. A target of June 2020 is also suggested for recommendation 5, as it would enable a full year of data collection under the new reporting program due to commence in July 2019.

Yours sincerely

SCOTT HANSEN
DIRECTOR GENERAL

Encl.

NSW Auditor General Performance Audit Recommendations;

By December 2019, to ensure that the Department of Planning, Industry and Environment can demonstrate that its biosecurity compliance and emergency response activities are effective and economical, it should:

1. Implement formal agreements with partner agencies that it relies on to deliver effective biosecurity compliance activities and emergency responses
2. Analyse and report cost, resource and activity data at a project level, incorporating data from partner agencies
3. Apply the full suite of its emergency response practices, particularly cost benefit analyses and after-action reviews
4. Establish a data collection and reporting system that enables data sharing with LLSs and LCAs that allow them to better target their biosecurity compliance activities
5. Publish annual data on performance targets and outcomes for its biosecurity compliance and emergency response activities

By December 2019, to ensure that the Department of Planning, Industry and Environment meet its obligations to protect the environment, it should:

6. Revise its compliance procedures and emergency response practices to address risks to the environment and the community in consultation with partner agencies.

Response to Recommendations

By December 2019, to ensure that the Department of Planning, Industry and Environment can demonstrate that its biosecurity compliance and emergency response activities are effective and economical, it should:

Recommendation	Response	Comment
1. Implement formal agreements with partner agencies that it relies on to deliver effective biosecurity compliance activities and emergency responses	Supported. The complexity of negotiations required with partner agencies mean this would likely be completed by June 2020.	The Department has already taken steps to formalise existing partnerships and agreements and has implemented a review to update and refresh existing agreements. DPI's key partner in emergency management is Local Land Services (LLS). This partnership has been formalised with a Memorandum of Understanding (MoU) and Emergency Management Schedule signed by both agencies. The MoU and Schedule provide a framework which details the capacity and capability expectations for each agency and the baseline requirements against which DPI and LLS will report against. A draft MoU with a limited remit is currently in place with OEH. The process to broaden this MOU is underway and expected to be finalised in June 2020. This has been delayed due to realignment of the cluster and changes within

		existing governance structures.
2. Analyse and report cost, resource and activity data at a project level, incorporating data from partner agencies.	Supported. Negotiations with external agencies increases the complexity of this issue and this recommendation is not likely to be achieved in full until June 2020.	The Department has commenced a review of how cost, resource and activity data is currently captured. DPI has been working with the Department of Industry - Corporate Service Partners to implement a system that will allow granular data to be monitored and reported. Delivery of this project is due July 2019. This project also looks to capture the data from partner agencies, including LLS, to enable a more comprehensive analysis of the cost, effort and benefits of response activities. There are complexities involved in sourcing data from external agencies and negotiations will be required to align reporting requirements. A realistic timeframe for the full delivery of this recommendation is June 2020.
3. Apply the full suite of its emergency response practices, particularly cost benefit analyses and after-action reviews	Supported.	The Department has developed an Emergency Response and Recovery Manual that brings together existing sectoral based response manuals and arrangement into one guiding document for NSW. The development of this combined response manual is noted in the Audit Report. This Manual and other associated documents will be amended to provide guidance on when a CBA is required. Guidance will also be provided on when and how a CBA should be undertaken. It is noted that many pests and diseases, such as the top 40 national plant pests and diseases, and the top 62 national animal diseases have already been assessed as having a significant economic impact, negating the need for a further CBA. The after-action review process is being refreshed to align with a

		state-wide review of lessons management. This project is due for completion July 2019.
4. Establish a data collection and reporting system that enables data sharing with LLSs and LCAs that allow them to better target their biosecurity compliance activities	Supported The success of this project is dependent on significant investment and amendments to existing Metadata Standards, therefore the December 2019 target is unlikely to be achieved. Current forecast for the initial release is July 2020 with further staged releases to incorporate LCAs in 2021.	The Department has recognised the need for a single consolidated source of information to enhance decision making and is undertaking a major project to deliver an integrated biosecurity case management system (BCM). BCM will support the consistent collection of biosecurity surveillance and regulatory data, along with case management of biosecurity threats and Agriculture and Animal Services Function Area (AASFA) incidents. The BCM project is a large multi-year project that requires significant resourcing to engage with relevant stakeholders and deliver an end to end integrated system for multiple users and reporting. Changes to existing metadata standards and data collection processes will be required to enable a complete history on compliance actions taken by LCAs. Work to resolve this issue is underway. The complexity and impact on users will require the BCM to be staged over multiple releases. Work on the Metadata standards is likely to be a second stage of work for completion June 2021.
5. Publish annual data on performance targets and outcomes for its biosecurity compliance and emergency response activities	Supported. June 2020 is suggested as a preferred target, as it would enable a full year of data collection as part of the new reporting program due to commence in July 2019.	As noted in recommendation 2, the Department has commenced a program to better report, evaluate and monitor emergency response data. This project will be rolled out in July 2019. A report on the performance targets and outcomes would be enhanced by the collection of a full year of data. It is suggested June 2020 would provide a more informed result of performance targets and outcomes for biosecurity compliance and

		emergency response activities.
By December 2019, to ensure that the Department of Planning, Industry and Environment meet its obligations to protect the environment, it should:		
6. Revise its compliance procedures and emergency response practices to address risks to the environment and the community in consultation with partner agencies	Supported.	Biosecurity compliance and emergency response practices are driven through the Biosecurity Strategy and the Biosecurity Act 2015. This framework does not distinguish between threats to the economy, environment or society. The legislation specifically obliges the Department to effectively manage pests, diseases, contaminants and other biosecurity matter that impact; • economically significant primary production, • terrestrial or aquatic environments, • public health and safety • community activities and infrastructure The Department has a team dedicated to protecting NSW from invasive species. There is a strong argument that invasive species have a far greater impact on the environment than economic output from primary production. Plant pests and diseases similarly have a significant impact on the environment. Action taken to eradicate plant pests e.g. exotic strains of guava rust or Phytophthora ramorum has a significant environmental outcome as well as economic benefits. The Department acknowledges that reporting against environmental impacts could be improved, particularly in regard to any cost benefit analysis. The Department will look to incorporate environmental impacts into the reporting framework.

Appendix two – Location of selected biosecurity emergency responses

1	Avian Influenza	5	Kaphra Beetle
2	Bellinger River Snapping Turtle	6	Lupin Anthracnose
3	Brown Marmorated Stink Bugs	7	Salmonella
4	Endive Necrotic Mosaic Virus	8	Yellow Crazy Ant

Appendix three – About the audit

Audit objective

This audit assessed the effectiveness and economy of DPI's biosecurity prevention, focusing on compliance activities, and emergency response practices.

The Department of Primary Industries, within the Department of Industry, is the appropriate administrative authority for the purposes of the *Biosecurity Act 2015* and the *Biosecurity Regulation 2017*.

Audit criteria

We addressed the audit objective with two lines of enquiry and criteria as follows:

How well does DPI undertake its biosecurity prevention activities, focusing on compliance?

- Does DPI measure, monitor and report on the effectiveness of its prevention activities and does it apply lessons learnt to improve practices?
- Does DPI measure, monitor and report on the economy of its prevention activities and does it apply lessons learnt to improve use of its resources?

Is DPI able to respond effectively to emergency biosecurity outbreaks?

- Does DPI measure, monitor and report on the effectiveness of its emergency response activities and does it apply lessons learnt to improve practices?
- Does DPI measure, monitor and report on the economy of its emergency response activities and does it apply lessons learnt to improve use of resources?

Audit scope and focus

The audit acknowledges that DPI undertakes a range of prevention activities including; compliance, education, training, and community awareness campaigns. DPI has sole responsibility for management of compliance activities. The scope of the audit focuses on these activities.

In assessing the audit criteria, we examined whether:

- DPI's biosecurity emergency response management approach reflects accepted standards for biosecurity risk management
- DPI applies good practice risk-based measures in managing biosecurity prevention and emergency response activities
- DPI sets appropriate performance indicators for biosecurity emergency response plans, including:
  - documenting expected outcomes of the biosecurity emergency response plans
  - actively engaging partners in biosecurity emergency response management
  - ensuring that biosecurity emergency response procedures are up to date and readily available to teams
  - analysing data on emergency responses to improve its biosecurity activities
- DPI sets appropriate performance indicators for prevention activities, including:
  - documenting expected outcomes for biosecurity prevention activities
  - actively engaging partners in prevention activities
  - ensuring that prevention procedures are up to date and readily available to teams
  - analysing data to identify any links between biosecurity outbreaks and compliance practises

- DPI applies the lessons learnt from its biosecurity prevention and emergency response activities to improve its effectiveness, including:
    – applying the lessons learnt from post incident biosecurity emergency responses to prevention practices
    – applying the lessons learnt from post incident biosecurity emergency responses to emergency response practices.

We assessed economy by examining whether:

- DPI sets appropriate budgets for biosecurity prevention and emergency response activities, including:
    – setting appropriate budgets for all biosecurity activities (by appropriate we mean that the scale of budget matches the risk to industry (and others) of the biosecurity threat)
    – accurately capturing and reporting the expenditure and resources used against budgets for biosecurity prevention and emergency response activities
- DPI analyses expenditure and resource data from its biosecurity prevention and emergency response activities to improve budget forecasting.

Audit exclusions

The audit did not seek to:

- identify existing biosecurity workforce capability and capacity gaps or adequacy of training provided by DPI. This was the focus of an internal audit of Local Land Services (LLS) and DPI recently completed by the Natural Resource Commission (NRC)
- identify whether the biosecurity emergency response objective outlined in individual response plans were appropriate
- question the merits of government policy objectives.

Audit approach

Our procedures included:

1. Interviewing key staff of the Department of Primary Industries' Biosecurity and Food Safety Division, particularly those involved in:
    a) developing and reporting on performance measures
    b) review of policies and procedures for biosecurity prevention and compliance activities
    c) application of biosecurity risk assessment frameworks
    d) application of biosecurity policy and procedures
    e) implementing biosecurity plans and systems
    f) monitoring and assessing biosecurity practice and compliance with standards.
2. Interviewing government and industry bodies involved in:
    a) review and evaluation of the effectiveness of biosecurity prevention functions
    b) research and technical advisory roles in biosecurity to identify good practice risk assessment systems, approaches, and standards where these exist.
3. Examining:
    a) data collected on biosecurity surveillance and compliance activities
    b) monitoring and reporting on biosecurity emergency response activities
    c) policies and procedures for biosecurity practice adopted by DPI
    d) trend reporting against biosecurity activity KPIs that measure economy
    e) feedback and data contributed from biosecurity partner organisations
    f) biosecurity implementation plans and budgets.

4. Understanding the relevant biosecurity policy and practice regarding:
    a) biosecurity emergency response management processes
    b) biosecurity activity data collected and reported
    c) internal audits and evaluations of DPI's biosecurity activities
    d) risk frameworks for biosecurity pests and diseases
    e) assessment frameworks and good practice models for risk assessment in biosecurity.
5. Engaging experts in biosecurity risk management and economic impact to advise the audit team at key phases of the audit including planning, analysis, findings and reporting.
6. Quality assurance processes within the Audit Office to ensure compliance with professional standards complement the audit approach.

Audit methodology

Our performance audit methodology is designed to satisfy Australian Audit Standard ASAE 3500 Performance Engagements and other professional standards. The standards require the audit team to comply with relevant ethical requirements and plan and perform the audit to obtain reasonable assurance and draw a conclusion on the audit objective. Our processes have also been designed to comply with requirements specified in the *Public Finance and Audit Act 1983* and the *Local Government Act 1993*.

Acknowledgements

We gratefully acknowledge the cooperation and assistance provided by the Department of Primary Industries, as well as those stakeholders who participated in the discussions held during the audit. We wish to thank the staff of the Biosecurity and Food Safety Division who contributed in interviews and provided materials relevant to the audit.

Audit cost

Including staff costs and overheads, the estimated cost of the audit is $387,000.

Appendix four – Performance auditing

What are performance audits?

Performance audits determine whether State or local government entities carry out their activities effectively, and do so economically and efficiently and in compliance with all relevant laws.

The activities examined by a performance audit may include a government program, all or part of an audited entity, or more than one entity. They can also consider particular issues which affect the whole public sector and/or the whole local government sector. They cannot question the merits of government policy objectives.

The Auditor-General's mandate to undertake performance audits is set out in section 38B of the *Public Finance and Audit Act 1983* for State government entities, and in section 421D of the *Local Government Act 1993* for local government entities.

Why do we conduct performance audits?

Performance audits provide independent assurance to the NSW Parliament and the public.

Through their recommendations, performance audits seek to improve the value for money the community receives from government services.

Performance audits are selected at the discretion of the Auditor-General who seeks input from parliamentarians, State and local government entities, other interested stakeholders and Audit Office research.

How are performance audits selected?

When selecting and scoping topics, we aim to choose topics that reflect the interests of parliament in holding the government to account. Performance audits are selected at the discretion of the Auditor-General based on our own research, suggestions from the public, and consultation with parliamentarians, agency heads and key government stakeholders. Our three year performance audit program is published on the website and is reviewed annually to ensure it continues to address significant issues of interest to parliament, aligns with government priorities, and reflects contemporary thinking on public sector management. Our program is sufficiently flexible to allow us to respond readily to any emerging issues.

What happens during the phases of a performance audit?

Performance audits have three key phases: planning, fieldwork and report writing.

During the planning phase, the audit team develops an understanding of the audit topic and responsible entities and defines the objective and scope of the audit.

The planning phase also identifies the audit criteria. These are standards of performance against which the audited entity, program or activities are assessed. Criteria may be based on relevant legislation, internal policies and procedures, industry standards, best practice, government targets, benchmarks or published guidelines.

At the completion of fieldwork, the audit team meets with management representatives to discuss all significant matters arising out of the audit. Following this, a draft performance audit report is prepared.

The audit team then meets with management representatives to check that facts presented in the draft report are accurate and to seek input in developing practical recommendations on areas of improvement.

A final report is then provided to the head of the audited entity who is invited to formally respond to the report. The report presented to the NSW Parliament includes any response from the head of the audited entity. The relevant minister and the Treasurer are also provided with a copy of the final report. In performance audits that involve multiple entities, there may be responses from more than one audited entity or from a nominated coordinating entity.

Who checks to see if recommendations have been implemented?

After the report is presented to the NSW Parliament, it is usual for the entity's audit committee to monitor progress with the implementation of recommendations.

In addition, it is the practice of Parliament's Public Accounts Committee to conduct reviews or hold inquiries into matters raised in performance audit reports. The reviews and inquiries are usually held 12 months after the report received by the NSW Parliament. These reports are available on the NSW Parliament website.

Who audits the auditors?

Our performance audits are subject to internal and external quality reviews against relevant Australian and international standards.

The Public Accounts Committee appoints an independent reviewer to report on compliance with auditing practices and standards every four years. The reviewer's report is presented to the NSW Parliament and available on its website.

Periodic peer reviews by other Audit Offices test our activities against relevant standards and better practice.

Each audit is subject to internal review prior to its release.

Who pays for performance audits?

No fee is charged for performance audits. Our performance audit services are funded by the NSW Parliament.

Further information and copies of reports

For further information, including copies of performance audit reports and a list of audits currently in-progress, please see our website www.audit.nsw.gov.au or contact us on 9275 7100.

OUR VISION

Our insights inform and challenge government to improve outcomes for citizens.

OUR PURPOSE

To help parliament hold government accountable for its use of public resources.

OUR VALUES

Purpose – we have an impact, are accountable, and work as a team.

People – we trust and respect others and have a balanced approach to work.

Professionalism – we are recognised for our independence and integrity and the value we deliver.

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