



# National Animal Biosecurity Research, Development and Extension Strategy

# CONTENTS

<b>Executive summary</b> .....	<b>1</b>
<b>Acronyms</b> .....	<b>3</b>
<b>Acknowledgements</b> .....	<b>3</b>
<b>Introduction and background</b> .....	<b>4</b>
Relevant stakeholder groups, strategies and priorities.....	5
Defining biosecurity.....	7
<b>Problem statement</b> .....	<b>8</b>
<b>Strategy foundations</b> .....	<b>8</b>
Vision .....	8
Goals .....	8
Scope .....	10
<b>Situational analysis</b> .....	<b>11</b>
Internal context.....	11
Immediate context .....	11
Remote context .....	12
SWOT Analysis .....	13
<b>Monitoring and evaluation</b> .....	<b>15</b>
Monitoring and evaluation process overview .....	15
Key deliverables.....	15
<b>Identifying national animal biosecurity RD&amp;E priorities</b> .....	<b>17</b>
<b>Priorities</b> .....	<b>18</b>
<b>Identifying RD&amp;E capabilities for the future</b> .....	<b>20</b>
Inventory of RD&E capabilities.....	20
<b>Governance</b> .....	<b>21</b>
Strategy Implementation Committee.....	21
National Animal Biosecurity RD&E Coordination .....	22
National Animal Biosecurity RD&E Annual Forum.....	23
<b>Communications</b> .....	<b>24</b>
<b>Funding</b> .....	<b>24</b>
<b>Consultation and approvals</b> .....	<b>24</b>
<b>Workplan</b> .....	<b>25</b>
<b>Stakeholder list</b> .....	<b>25</b>

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# EXECUTIVE SUMMARY

Good biosecurity practices are essential to protect Australia's livestock sector, not only for market access reasons (ABARES has forecast the sector to be worth \$31.2 billion for 2017-18), but also to maintain good animal health and welfare and minimise any risks to human health.

Biosecurity research, development and extension (RD&E) play an important role in underpinning productivity, growth, competitiveness and the sustainability of Australia's livestock<sup>1</sup> industries and their access to markets. Those involved in livestock biosecurity RD&E together form a complex and integrated web of research providers and investors. Integral components include the Australian Government, state and territory governments, research and development corporations (RDC), CSIRO, universities and private research providers.

This complex web requires that it be highly organised and connected, particularly in relation to issues affecting multiple sectors, such as biosecurity, hence the need for an overarching strategy.

The National Primary Industries RD&E Framework aims to promote greater collaboration and continuous improvement in the investment spent on primary industries' RD&E resources nationally. The framework is being implemented through 14 sectoral and seven cross-sectoral strategies, with one of the cross-sectoral strategies addressing animal biosecurity. The first version of the *National Animal Biosecurity RD&E Strategy* (the Strategy) was published by Animal Health Australia (AHA), on behalf of its members and stakeholders in June 2014. Although originally intended to

be a five-year strategic plan, changes in the operating environment have led to a review of the Strategy in 2017, resulting in a new five-year strategy (2017-2022) being developed.

Although currently there is no overarching national biosecurity or animal biosecurity strategy, this revised version of the Strategy reflects significant stakeholder consultation, as well as the published RD&E priorities of the National Biosecurity Committee (NBC), the Australian Government's Science and Research Priorities (2015), the Agricultural Competitiveness White Paper (2015), the review of the Intergovernmental Agreement on Biosecurity (IGAB), the strategic plans of the livestock industries, as well as being aligned to the National Animal Welfare RD&E Strategy.

To summarise this, stakeholders have defined the following problem that this Strategy aims to address:

The contribution of primary production to the national economy is very significant, and warrants strenuous efforts to safeguard continued domestic and international market access. To ensure that biosecurity is continuously evolving and improving, biosecurity RD&E needs to increase efficiency and address shortcomings in the prevention, identification, eradication, containment and protection of assets from incursions. It also needs to minimise duplication of effort and resources, improve collaboration and leverage from existing investments. This acknowledges that the process of identifying shortcomings is incomplete until the resources and funding required to adequately address them have also been identified. The best chance of this occurring is if system stakeholders collectively agree to (i) the priorities; (ii) how they will be addressed and; (iii) how best to secure and allocate resources to them.

<sup>1</sup> This Strategy interprets 'livestock' as animals kept/harvested for use or profit including any class of cattle, sheep, goats, pigs, horses (including mules and donkeys), poultry, emus, ostrich, alpaca, deer, camel or buffalo, and farmed/harvested aquatic species (including crocodiles, finfish, molluscs and crustaceans)

In response, this Strategy has been developed with this vision:

**World-leading cross-sectoral biosecurity RD&E through collaboration and efficient use of resources, further improving Australia’s high animal health status, productivity and ongoing market access.**

The long-term end of program goals of the Strategy are:

- national biosecurity RD&E priorities addressed
- efficient use of RD&E resources and capabilities.

Within this context, the short to medium term Strategy goals are:

- greater cooperation, collaboration and co-investment
- greater coordination and reduced duplication
- informed RD&E decisions and investments.

Note: Refer to Figure 1.

To meet these goals, the Strategy aims to deliver outcomes in four Priority Areas;

- National standards
- Technological solutions
- Futureproofing
- Benchmarking investments.

Achieving outcomes in the Priority Areas will be met through RD&E within seven Tactical Priorities, derived from reviews of national and stakeholder biosecurity priorities. These Tactical Priorities are:

- communication
- traceability
- surveillance
- collaboration
- education/training
- pest animal/weed in pasture management
- policy/legislation.

Coordination of RD&E activities so that investment in common principles generates the maximal value across the three related strategies (animal, plant and environment) will also be a key focus.

The Strategy will be managed by AHA on behalf of its members and the broader stakeholder group, who will engage a National Animal Biosecurity RD&E Coordinator to champion the Strategy and manage its operations. The Coordinator will also work with the Strategy Implementation Committee to oversee implementation of the Strategy.

Key deliverables of the Strategy include:

- an annual forum of stakeholders to share information on current and planned biosecurity priorities, identify RD&E issues of common interest for possible collaboration, improve communication between stakeholders and review Strategy progress
- an animal biosecurity ‘information hub’ that will be intimately linked to the animal biosecurity RD&E system (the collective government, industry and research facilities involved with animal biosecurity in Australia) and communicate/provide specific information relating to animal biosecurity RD&E priorities, current and future RD&E duplication and any unrealised opportunities
- an ongoing assessment of animal biosecurity capacity and capability, to enable stakeholders to have a real-time understanding of where there are gaps in animal biosecurity RD&E
- identification of stakeholder groups with common priorities and the resources to explore and facilitate opportunities for collaboration
- linkages to other relevant activities that could deliver further benefits to the animal industries.

# ACRONYMS

<b>ABARES</b>	Australian Bureau of Agricultural and Resource Economics
<b>AGMIN</b>	Agriculture Ministers Forum
<b>AGSOC</b>	Agriculture Senior Officials Committee
<b>AHA</b>	Animal Health Australia
<b>CSIRO</b>	Commonwealth Scientific and Industrial Research Organisation
<b>IGAB</b>	Intergovernmental Agreement on Biosecurity
<b>M&amp;E</b>	Monitoring and evaluation
<b>NBC</b>	National Biosecurity Committee
<b>R&amp;D</b>	Research and development
<b>RD&amp;E</b>	Research, development and extension
<b>RDC</b>	Research and development corporation
<b>R&amp;I</b>	Research and innovation
<b>SWOT</b>	Strengths, weaknesses, opportunities and threats

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- Johann Schroder (Project Manager Animal Health and Biosecurity, Meat & Livestock Australia)
- James Gilkerson (Professor of Veterinary Microbiology and Director of the Centre for Equine Virology, University of Melbourne)
- Marta Hernandez-Jover (Senior Lecturer Veterinary Epidemiology and Public Health, School of Animal and Veterinary Sciences, Charles Sturt University)
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Simon Winter (industry consultant) is acknowledged for his participation in the stakeholder forums and for preparing this document, drawing on the feedback of the writing group and the broader stakeholder group.

AHA staff are also acknowledged for their input into the document development and support of stakeholders.

# INTRODUCTION AND BACKGROUND

Biosecurity RD&E plays an important role in underpinning productivity, growth, competitiveness and the sustainability of Australia's livestock<sup>2</sup> industries and their access to markets. Those involved in livestock biosecurity RD&E together form a complex and integrated web of research providers and investors. Integral components include the Australian Government, state and territory governments, RDCs, CSIRO, universities and private research providers (collectively referred to in this document as 'participants').

This complex web requires that it be highly organised and connected, particularly in relation to issues affecting multiple sectors, such as biosecurity, hence the need for an overarching strategy.

The first version (2014-19) of the Strategy was published by AHA, on behalf of its members and stakeholders, in June 2014. Although originally intended to be a five-year strategic plan, changes in the operating environment have led to a review of the Strategy in 2017. Key activities delivered under the Strategy's business plan included:

- a National Biosecurity Research and Development Capability Audit in 2012 that provided an assessment of current biosecurity R&D capability across the sectors of animal health, plant health, invasive weed species, invasive animal species and invasive marine species. The audit was intended to capture capability not only in the more traditional scientific

disciplines but also in supporting disciplines that apply to biosecurity such as the social sciences.

- a 2014 RD&E snapshot: (an analysis of animal biosecurity RD&E) that provided a 'moment in time' assessment of animal biosecurity RD&E activities in Australia, to build a better understanding of the national biosecurity RD&E portfolio.
- a National Animal Biosecurity Extension Audit in 2014-15 to complement the 2012 Capability Audit, which did not include extension activities, to improve understanding of national capability and capacity.

The Strategy is part of the National Primary Industries RD&E Framework<sup>3</sup>, which was initiated by the predecessor to the Agriculture Ministers Forum (AGMIN). The framework aims to promote greater collaboration and continuous improvement in the investment spent on primary industries RD&E resources nationally.

The framework is being implemented through 14 sectoral and seven cross-sectoral<sup>4</sup> strategies:

- the sectoral strategies relate to beef, cotton, dairy, fisheries and aquaculture, forestry, grains, horticulture, pork, poultry, sheepmeat, sugar, wine, wool, and new and emerging industries.
- cross-sectoral strategies are animal biosecurity, plant biosecurity, animal welfare, biofuels and bioenergy, climate change and variability, food and nutrition, and water use in agriculture.

<sup>2</sup> This Strategy interprets 'livestock' as animals kept/harvested for use or profit including any class of cattle, sheep, goats, pigs, horses (including mules and donkeys), poultry, emus, ostrich, alpaca, deer, camel or buffalo, and farmed/harvested aquatic species (including crocodiles, finfish, molluscs and crustaceans)

<sup>3</sup> National Primary Industries Research, Development and Extension Framework <https://www.npirdef.org/>

<sup>4</sup> For the purposes of this Strategy, 'cross-sectoral' is defined as where there are two or more stakeholders with a shared priority, investment or interest in an RD&E issue.

## Relevant stakeholder groups, strategies and priorities

**Table 1 Stakeholders relevant to, and targets of, this Strategy**

Stakeholders	Relevance to the Strategy
<b>Research providers</b>	The Strategy will identify gaps in knowledge and research, providing information to research providers on where to direct their research efforts
<b>Research funders</b>	The Strategy will identify biosecurity priorities that will provide direction for funding bodies on where investments will have the greatest national benefits
<b>Recipients of research deliverables</b>	The outcomes of the Strategy deliverables will better inform on the best-practice efforts required by government, industry and the public to ensure national biosecurity is maintained or improved

**Table 2 RD&E and other key strategies linked to this Strategy**

Strategy	Links to the Strategy
<b>Plant biosecurity</b>	Livestock industries rely on the plant industry as a source of feed. <a href="http://www.planthealthaustralia.com.au">www.planthealthaustralia.com.au</a>
<b>Fishing and aquaculture</b>	The Strategy is directed towards the livestock industry, which is inclusive of farmed aquatic species. <a href="http://www.frdc.com.au">www.frdc.com.au</a>
<b>National environment and community biosecurity</b>	Some pests and diseases of livestock can impact on other species, humans and the environment and vice versa. <a href="http://www.agriculture.gov.au">www.agriculture.gov.au</a>
<b>Antimicrobial resistance</b>	Antimicrobial resistance is of significant concern to the livestock industry in the treatment and control of disease. <a href="http://www.amr.gov.au">www.amr.gov.au</a>
<b>Animal welfare</b>	Animal biosecurity is strongly linked to animal welfare, whereby pest or disease outbreaks can have negative impacts on the health and wellbeing of livestock. <a href="http://www.awstrategy.net">www.awstrategy.net</a>



Image credit: Alvaro Reyes

There is currently no contemporary overarching national biosecurity or animal biosecurity strategy. Thus, identifying an animal biosecurity RD&E strategy must rely on consultation and building on past national strategies, audits of RD&E capacity and RD&E priorities from other sectors/jurisdictions. There is also a recently endorsed set of national biosecurity RD&E priorities released by the NBC (2017), and recommendations from the review of the IGAB (2017).

The Australian Government's Science and Research Priorities, announced in 2015, were designed to increase investment in areas of immediate and critical importance to Australia and its place in the world. Taking consideration of its Industry Innovation and Competitiveness Agenda, the Australian Government identified nine Priorities, of which the first one is 'Food'.

Rural RD&E priorities were developed through a consultation process that led to the Agricultural Competitiveness White Paper

(2015). These are consistent with the national Science and Research Priorities and are:

- advanced technology: increased funding into RD&E including the development of a highly skilled workforce to provide farmers with better tools and capability.
- biosecurity: to improve understanding and evidence of pest and disease pathways to help direct biosecurity resources to their best uses, minimising biosecurity threats and improving market access<sup>5</sup> for primary producers.
- soil, water and managing natural resources: strengthening the approach to drought by providing farmers with more accurate climate forecasts and providing additional financial assistance through tax cuts, pest and weed management and financial advice.
- adoption of R&D: focusing on flexible delivery of extension services that meet primary producers' needs and recognising the growing role of private service delivery.

<sup>5</sup> Market access is the ability to sell livestock and livestock products domestically and across national and international borders.

Although all are relevant to rural RD&E, biosecurity and adoption of R&D are perhaps most relevant to animal biosecurity RD&E.

In June 2017, the NBC endorsed the Australian Governments' National Biosecurity RD&E priorities, aimed at giving a more unified, strategic and nationally consistent focus to biosecurity research and support improved national biosecurity outcomes<sup>6</sup>. The NBC priorities align with existing jurisdictional strategies and with current and proposed biosecurity RD&E activities.

Biosecurity to prevent exotics entering Australia is also high on the list of priorities for the livestock industries. Livestock industries have identified biosecurity (pre-border and post-border) as a top priority within their relative strategic planning processes and sustainability frameworks. These strategic plans identify RD&E as a primary driver of improving biosecurity through new technologies, greater collaboration to reduce duplication, and innovative approaches.

A report on the review of the IGAB (2017) noted that there is no lead agency for coordination and priority setting of national biosecurity RD&E in Australia. New national biosecurity research and innovation (R&I) priorities and new cross-sectoral biosecurity R&I mechanisms are needed to improve targeting of investment and enhance national research efforts.

## Defining biosecurity

The IGAB defines biosecurity as the management of risks to the economy, the environment and the community from pests and diseases entering, emerging, establishing or spreading.

Stakeholders in the Strategy have agreed to the use of this definition for consistency with further explanation provided in the scope of the Strategy.



Image credit: Unsplash

<sup>6</sup> [www.agriculture.gov.au/biosecurity/partnerships/nbc](http://www.agriculture.gov.au/biosecurity/partnerships/nbc)

# PROBLEM STATEMENT

The contribution of primary production to the national economy is very significant, and warrants strenuous efforts to safeguard continued domestic and international market access. To ensure that biosecurity is continuously evolving and improving, biosecurity RD&E needs to increase efficiency and address shortcomings in the prevention, identification, eradication, containment and protection of assets from incursions. It also needs to minimise duplication of effort and

resources, improve collaboration and leverage from existing investments. This acknowledges that the process of identifying shortcomings is incomplete until the resources and funding required to adequately address them have also been identified. The best chance of this occurring is if system stakeholders collectively agree to (i) the priorities; (ii) how they will be addressed and; (iii) how best to secure and allocate resources to them.

# STRATEGY FOUNDATIONS

## Vision

The vision for this five-year strategy (2017-2022) is:

*World-leading, cross-sectoral biosecurity RD&E through collaboration and efficient use of resources, further improving Australia's high animal health status, productivity and ongoing market access.*

## Goals

The Strategy contributes to the following broader goals for Australia's livestock industries:

- Resilient and sustainable Australian livestock industries.
- Public and wildlife health are protected (from pests and diseases with livestock hosts).
- Market access is improved.
- Increased farm and supply chain profitability.

The long-term end-of-program goals are:

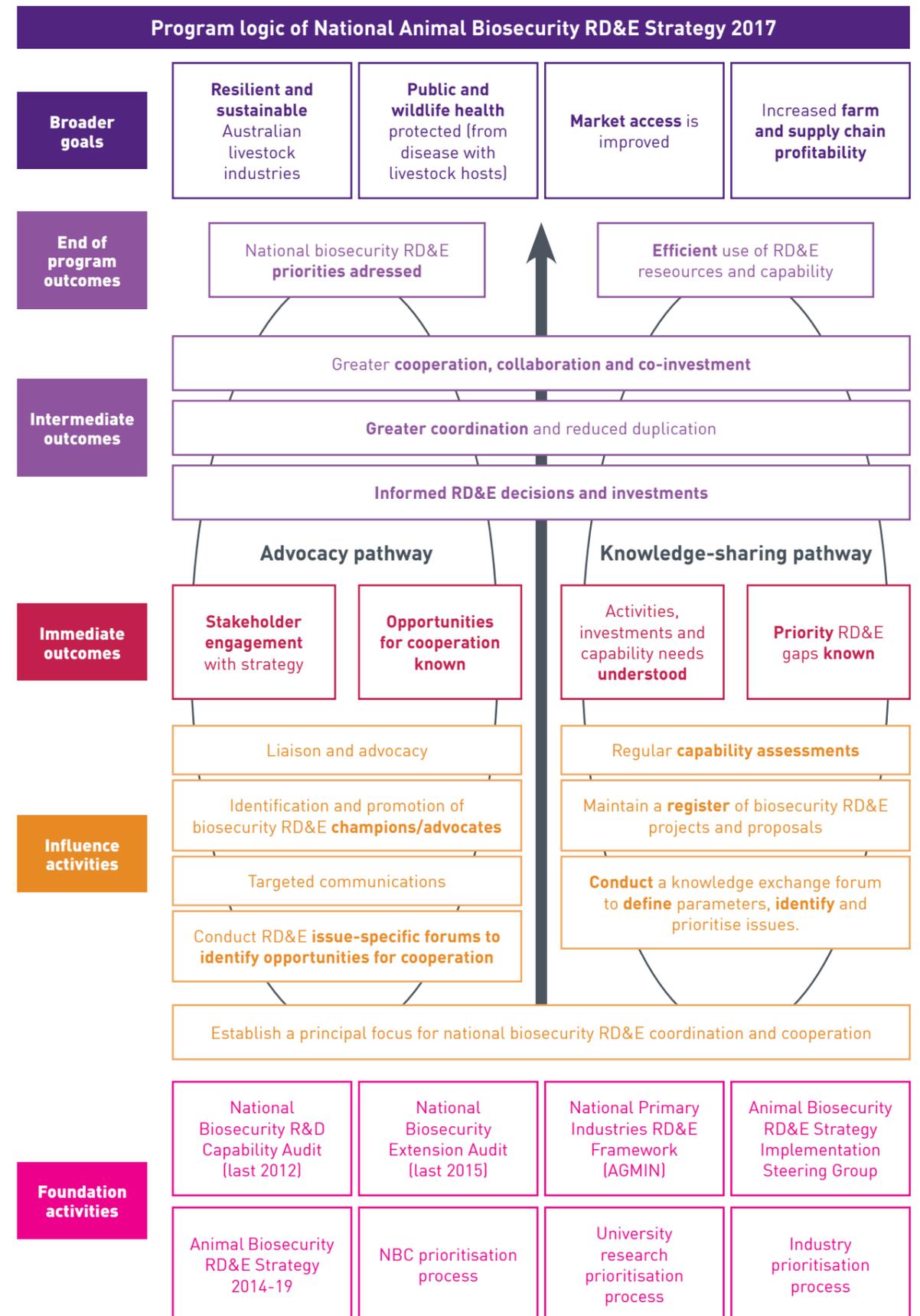
- national biosecurity RD&E priorities addressed
- efficient use of RD&E resources and capabilities.

Within this context, the short to medium-term goals are:

- greater cooperation, collaboration and co-investment
- greater coordination and reduced duplication
- informed RD&E decisions and investments.

Figure 1, on the following page, presents a summary of the end-of-program pathways through a program logic of the Strategy.

Figure 1 Strategy program logic



The program logic model enables stakeholders to:

- identify a shared vision regarding the purpose of the Strategy
- gain a clear understanding of the foundational and operational activities that need to take place for the Strategy to succeed
- identify clear end-of-program outcomes
- identify robust monitoring and evaluation (M&E) principles that will guide continual improvement across all areas of the Strategy
- assist with project reporting to ensure transparency for all invested stakeholders.

In the development of the program logic the following principles/assumptions were made:

- There is shared ownership and engagement by all stakeholders with a common goal for improved animal biosecurity RD&E.
- There is integration and recognition of other AGSOC RD&E strategies and other national initiatives and reforms.
- Increased knowledge will improve coordination.
- Greater coordination and cooperation increases efficiency.
- Priorities addressed to level of resources available.

## Scope

The Scope of the Strategy includes:

- endemic, emergency and emerging animal pests and diseases relevant to market access and livestock health
- animal welfare issues relevant to pests and diseases that impact livestock health
- animal health barriers to market access, where market access relates to any of the stakeholder industries having access to supply a market, whether it be domestic or export

**Figure 2 Diagrammatic representation of the 'In-Scope' levels of the Strategy**



- public health in relation to food and fibre as well as zoonoses
- biosecurity at a national, state, regional and enterprise (farm gate) level
- cross-sectoral RD&E, with cross-sectoral defined as where there are two or more stakeholders who have a shared priority/investment/interest in an RD&E issue. The Strategy acknowledges the continued importance of single-sector RD&E, but the focus of the Strategy is on cross-sectoral investments
- a strong focus on extension to increase knowledge transfer to the farmer and reduce adoption time.

The scope of the Strategy does not currently include:

- companion animals (other than where there are effects on public health or market access of livestock)
- wildlife (other than if there are effects on market access or livestock or public health)
- the funding of animal biosecurity RD&E.

# SITUATIONAL ANALYSIS

This section defines the context in which *the Strategy* operates. Three aspects of the operating context are addressed:

1. Internal context – relevant issues for Australia's animal biosecurity RD&E participants.
2. Immediate context – 'here and now' issues relevant to Australia's animal biosecurity RD&E participants.
3. Remote– relevant issues external to Australia's animal biosecurity RD&E participants.

## Internal context

- Shared recognition of the priority status of biosecurity amongst stakeholders in terms of both animal health and welfare and effects on market access (both domestically and internationally).
- Lack of coordination/awareness of RD&E activities across stakeholders, creating potential duplication and waste of resources.
- Lack of formal linkage between RD&E providers and funders.
- Little consideration of total system resources and how to use them most efficiently.
- Declining ability of stakeholders to deliver biosecurity services.
- Declining capability, particularly because of declining human resources, infrastructure and investment at all levels of government.
- Ongoing pressure on livestock industry levies and ability to maintain investment in biosecurity RD&E due to other competing priorities.
- Increasing demands on the already limited resources of industry representative bodies with reduced ability to contribute to policy development and review.
- Lack of cross-sectoral communication on potentially collaborative RD&E.

## Immediate context

- Strong support from stakeholders for a revised Animal Biosecurity RD&E Strategy.
- Concern about lack of recent action in progressing the implementation of the previous strategy.
- Lack of clarity on funding sources and funders' expectations.
- 'Patchy' availability of chemicals (e.g. for treatment of livestock struck by screw-worm fly), diagnostic reagents, and vaccines, in the event of emergency animal disease outbreaks.
- Uncertainty about availability of resources to deliver the Strategy to stakeholder expectations.
- Fragmentation of RD&E effort, both geographically and administratively, eroding national capability in terms of R&D, as well as extension.
- Declining biosecurity RD&E resources, increasing the priority and urgency of greater coordination (this Strategy).
- Lack of understanding of what has been completed and what work is currently happening.
- Lack of an agreed national animal biosecurity RD&E priority list<sup>7</sup>.
- Increasing government support for co-regulation; with non-regulatory tools and policies.
- Lack of market drivers for improving biosecurity, other than through a few comprehensive quality assurance programs.
- Most of the national effort is focused on the 'here and now' with little future focus.

<sup>7</sup> The recent release of national biosecurity RD&E priorities by the NBC is acknowledged, but these do not specifically identify livestock biosecurity RD&E priorities.

## Remote context

- Little RD&E dealing with the impacts of climate change, including altering the range, habitat and spread of pests and diseases and the effect of severe weather events.
- Little RD&E on the potential impact(s) of international politics resulting in the international movement of biosecurity risk materials.
- Little RD&E on preparing for biosecurity effects resulting from natural catastrophes or bioterrorism.
- Strong recognition of the contribution of primary production to Australia's economy and the contribution of RD&E to the competitiveness of primary production.
- Growing recognition of the relationship between animal health and animal welfare, and a greater focus on animal health and welfare by society and sustainability e.g. antimicrobials.
- A greater focus by society on the sustainability of agriculture, particularly in relation to food production.
- Intermittent additional sources of funds available for RD&E.
- Globalisation increasing the movement of people and products increasing the risk of pests and diseases entering Australia.
- Changing land use, population spread and shifting demographics expanding the interface between urban and rural areas and the natural environment. This includes the biosecurity challenges associated with increasing peri-urban smallholdings with livestock.
- Changing farming practices, including intensification and changing rural land ownership profiles.

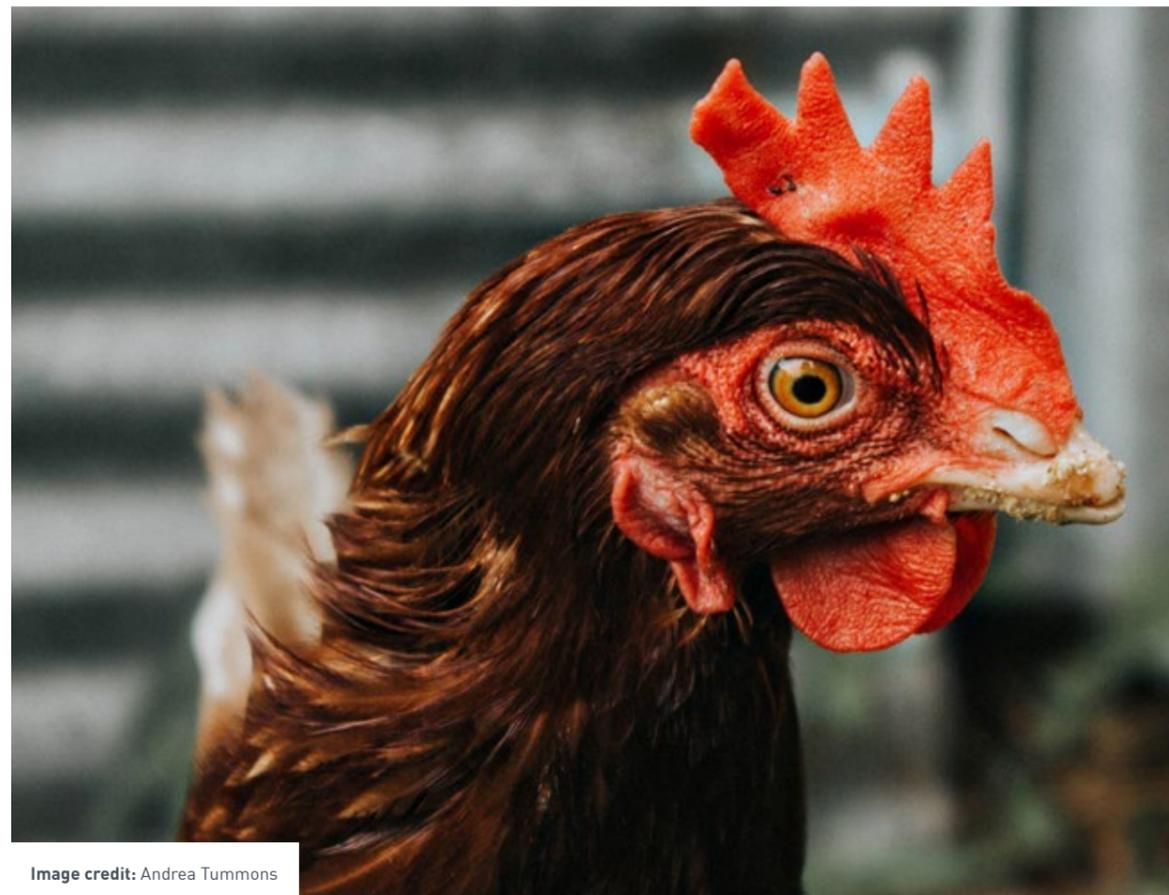


Image credit: Andrea Tummons

## SWOT Analysis

**Table 3 SWOT analysis of the national animal biosecurity RD&E system**

Strengths	Weaknesses
Good communication between stakeholders	The coordination of livestock biosecurity RD&E is still largely undefined and lacks structure
Efficient and effective use of resources (reduced duplication)	The actual commitments required from parties are still to be defined
Livestock biosecurity stakeholders demonstrating a professional approach	The value proposition of the Strategy is still unclear
Cost-effective coordination and partnership arrangements	Lack of formal linkages between the Strategy and RD&E funding
Shared recognition of the priority status of biosecurity amongst stakeholders	Lack of coordination of RD&E activities across stakeholders
Established sector partnerships providing potential for collaborative investments	Lack of coherent national system for setting review and supporting RD&E priorities
Depth of past and current R&D technical information and resources	Little consideration of total system resources
Already has good 'buy in' from the essential stakeholders (universities and veterinarians)	Lack of clarity on funding sources and funders' expectations
Ability to strategically align with government national priorities	Information and knowledge gaps
A history of government and industry stakeholders working collaboratively	Diversity of stakeholders makes coordination of expertise and resources difficult
An historically extensive network of 'on-the-ground' animal biosecurity workers/facilitators	Conflicting research policy encourages and rewards competition between research providers within the sector and across sectors

Cont'd

Opportunities	Threats
Create a robust forum to consider and address priorities and improve communications between stakeholders	Lack of commitment to <i>the Strategy</i> from one or more parties
Provide resources necessary to deliver a relatively complex but highly useful service to the sector	Lack of agreement between parties on priorities
To deliver more from less through increased coordination and reduced duplication	Immediate, single sector benefits overriding strategic cross-sectoral opportunities
Create a collaborative model that links investment decisions with animal biosecurity RD&E priorities	Lack of recognition that some priorities may be long term threats but require short term or immediate investment to prepare (e.g. climate change, bioterrorism, politics)
Increase support from stakeholders for <i>the Strategy</i>	Declining government investment in maintenance of physical and human resource capability
Measure and maintain the required technical and operational capability	'Patchy' availability of chemicals, diagnostic reagents, and vaccines
Develop flexible and responsive arrangements for accessing and maintaining key expertise	Changing climate altering the range, habitat and spread of pests and diseases
Engage peak industry councils and state farming organisations to influence RDCs biosecurity investment	The effects of severe weather events on animal biosecurity
Increase a collaborative approach to shared value delivery of animal biosecurity RD&E	Ongoing reductions in both capacity and financial resources from industry and government

# MONITORING AND EVALUATION

## Monitoring and evaluation process overview

The M&E process for the Strategy implementation will be based on two components.

### 1. Program logic

Developing the program logic enables the identification of robust M&E to guide continual improvement across all areas of the Strategy. Development of the program logic has, so far, identified some measures of performance for the Strategy (see Table 4).

The Strategy Implementation Committee will work with the Strategy Coordinator to further assess the program logic to extract more measurables for the Strategy, as part of developing the Strategy workplan.

### 2. Situational analysis

The Strategy Implementation Committee and Strategy Coordinator will review the situational and SWOT analyses. Implementation of *this Strategy* should reflect mitigation of weaknesses and threats and the exploitation of strengths and opportunities of the SWOT. A series of measurables will be produced to assess this.

The Strategy Implementation Committee will further consider the development of the M&E process for the Strategy and deliver a final M&E plan for inclusion in the Strategy workplan.

## Key deliverables

The key deliverables from *this Strategy* will include:

- an annual forum of stakeholders to share information on current and planned biosecurity priorities, identify RD&E issues of common interest for possible collaboration, improve communication between stakeholders and review Strategy progress
- an animal biosecurity 'information hub' that will be intimately linked to the animal biosecurity RD&E system (the collective government, industry and research facilities involved with animal biosecurity in Australia) and communicate/provide specific information relating to animal biosecurity RD&E priorities, current and future RD&E duplication and any unrealised opportunities
- an ongoing assessment of animal biosecurity capacity and capability, to enable stakeholders to have a real-time understanding of where there are gaps in animal biosecurity RD&E
- identification of stakeholder groups with common priorities and the resources to explore and facilitate opportunities for collaboration
- linkages to other relevant activities that could deliver further benefits to the animal industries.

**Table 4 Initial critical success factors and performance indicators for the Strategy**

Critical success factor	Performance indicators
<b>Demonstrated leadership through the Implementation Committee and via the implementation process</b>	<ul style="list-style-type: none"> <li>Achieved stated goals and outcomes and contributed to improvements</li> <li>RD&amp;E outputs meet industry and government agreed needs</li> <li>Agreement to RD&amp;E priorities</li> </ul>
<b>Harnessing and leveraging of knowledge, skills and resources within and across all sectors</b>	<ul style="list-style-type: none"> <li>The number of collaborative arrangements established</li> <li>The number of shared, cross-industry investments in animal biosecurity RD&amp;E</li> <li>The number of gaps in capability and infrastructure identified, ranked by priority and reduced</li> </ul>
<b>Increased producer awareness of livestock biosecurity RD&amp;E</b>	<ul style="list-style-type: none"> <li>The level of awareness of livestock biosecurity RD&amp;E shown by livestock producers increases over time.</li> </ul>
<b>Reduction in duplication in RD&amp;E effort</b>	<ul style="list-style-type: none"> <li>The number of collaborative arrangements established</li> <li>The number of shared, cross-industry investments in animal biosecurity RD&amp;E</li> </ul>
<b>Greater collaborative approach across all funders and deliverers</b>	<ul style="list-style-type: none"> <li>The number of collaborative opportunities identified</li> <li>The number of collaborative arrangements/consortiums established</li> <li>The number of shared, cross-industry investments in animal biosecurity RD&amp;E</li> </ul>

# IDENTIFYING NATIONAL ANIMAL BIOSECURITY RD&E PRIORITIES

Setting the initial national animal biosecurity RD&E priority framework within the Strategy was achieved via two mechanisms as follows:

## 1. Consideration of existing national priorities

There are existing RD&E priorities that are either broad (such as the National Science and Rural RD&E Priorities) or specific to biosecurity (such as the recently published NBC government biosecurity RD&E priorities, presented below).

- Data and intelligence (monitor and track exotic pests and diseases and potential entry pathways to prevent them from entering and establishing in Australia) – Prevention.
- Surveillance and diagnostics (understand and quantify the impact of pests and diseases) – Preparedness.
- Treatment and recovery (demonstrate the absence of pests and diseases) – Eradication.
- Risk and decision tools (improved decision-making tools and risk analysis) – Containment.
- General surveillance (manage the pests and diseases that are already in Australia) – Management.
- Communication, community attitudes and awareness (socioeconomic drivers of adopting best practice and developing a biosecurity ‘culture’ within industry and the community) – Engagement.

## 2. Existing stakeholder-defined priorities

The Strategy Coordinator reviewed the strategic plans of all Strategy stakeholders (industry and Government) to identify any biosecurity RD&E priorities that have already been defined through their planning processes.

The full range of priority lists was collated by the Strategy Coordinator and takes into account areas where duplication may occur and the potential for collaboration is high, as well as gaps in biosecurity RD&E Priority Areas. The four strategic Priority Areas which overarch the seven Tactical Priorities, frame the RD&E activities that the Implementation Committee will be responsible for realising. The examination of the strategies of Government, industry and other national priorities mentioned above will be continuously monitored for opportunities to engage in collaboration to reduce duplication and increase efficiency of RD&E.

The Strategy Coordinator will support the Implementation Committee and stakeholder organisations to conceptualise RD&E priority activities. The resulting list of priority activities will be presented to the collective stakeholder group for consideration and agreement as to which are sectoral (i.e. only supported by one sector) and which are cross-sectoral (i.e. other sectors express an interest in an issue). This will be achieved through the Annual Stakeholder Forum. The aim of the Strategy framework is to scope and plan RD&E outputs within Tactical Priorities that will drive outcomes in Priority Areas.

# PRIORITIES

The Strategy aims to deliver outcomes in four Priority Areas that will be achieved through RD&E within seven Tactical Priorities (Figure 3). The four Priority Areas are;

- the development and implementation of national standards
- investigation of technological solutions
- future-proofing Australian livestock biosecurity
- benchmarking biosecurity investments (private and public).

Each of these Priority Areas will be viewed through the Tactical Priorities, which have been derived from AHA's and other reviews of the ad hoc investment made by industry/jurisdictions in biosecurity over the past decade. The livestock biosecurity Tactical Priorities identified are: communication,

traceability, surveillance, collaboration, education/training, pest animal/weed in pasture management, and policy/legislation. Coordinated RD&E activities reaching forward through the Tactical Priorities will generate outcomes in the Priority Areas. For example;

- researching gaps (R) in surveillance (Tactical Priority) could be utilised to inform development of national standards (Priority Area) for surveillance, or,
- development of automation (D) within traceability (Tactical Priority) could lead to new technology outcomes (Priority Area) that strengthen Australia's national system, or,
- the extension (E) of targeted information on training and education (Tactical Priority) could contribute to futureproofing biosecurity (Priority Area)

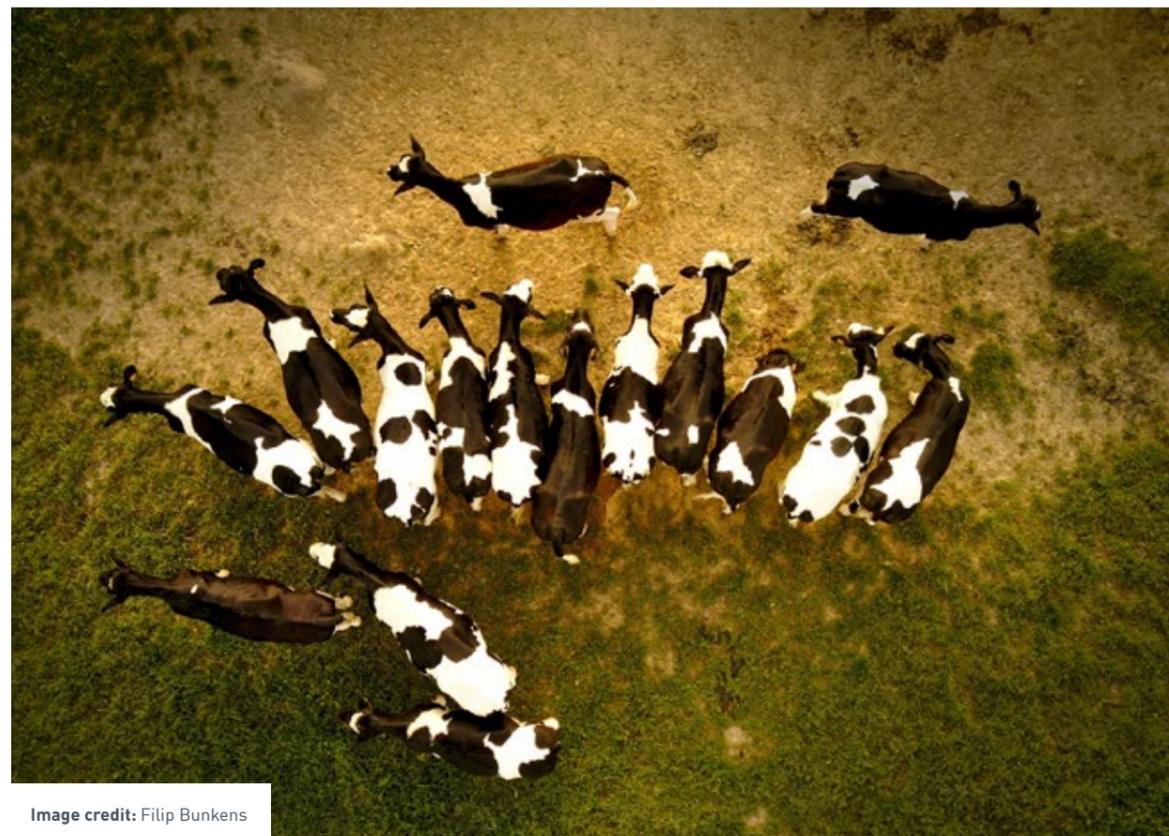
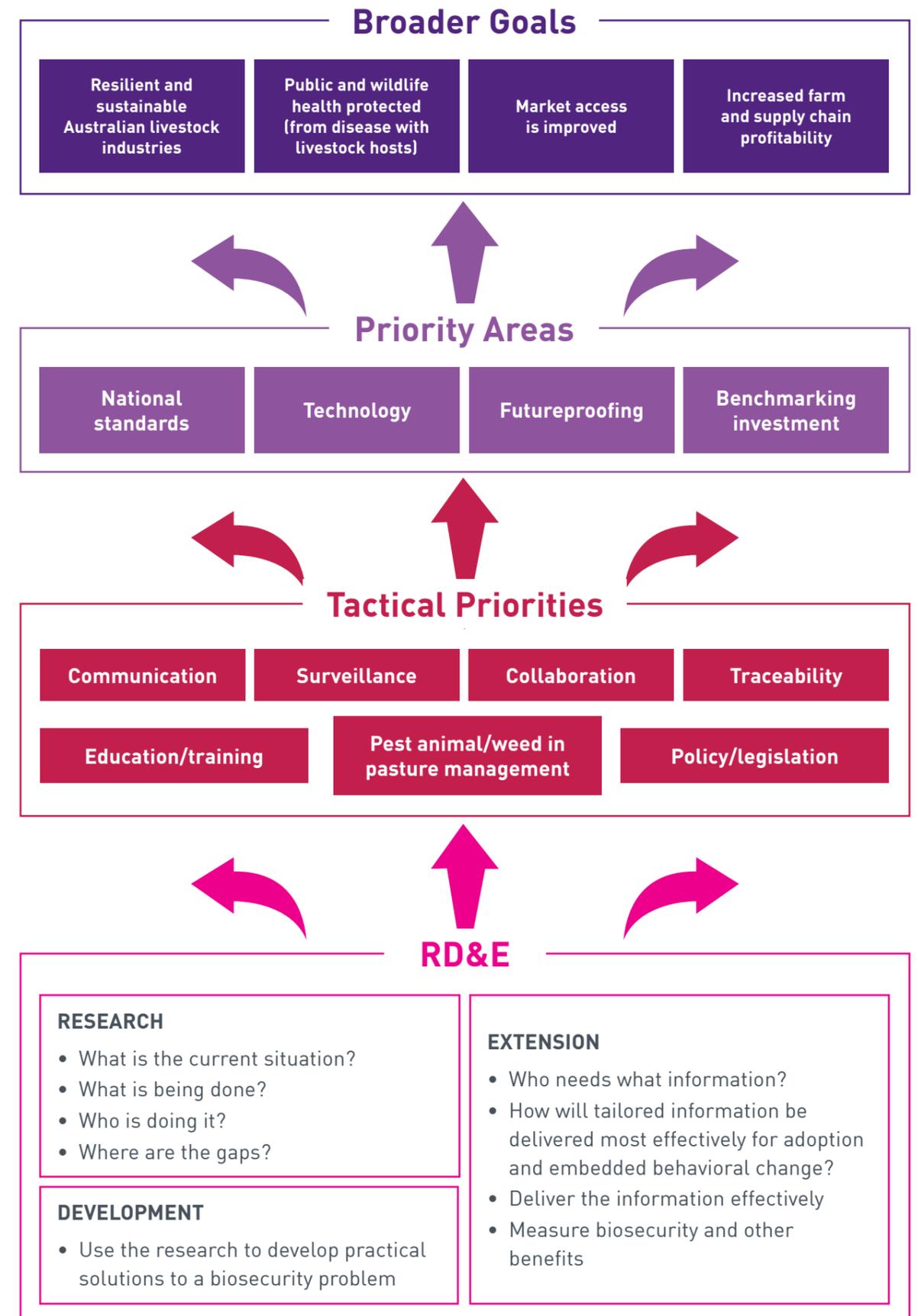


Image credit: Filip Bunkens

Figure 3 Strategy priorities



# IDENTIFYING RD&E CAPABILITIES FOR THE FUTURE

Having sufficient capabilities to deliver current and future livestock biosecurity requirements is essential to the ongoing maintenance of the livestock biosecurity system. A key role of the Strategy will be to undertake a gap analysis of current capabilities. Any identified gaps between the required and existing capability will be communicated and mechanisms to address these gaps in capability will be developed with stakeholders.

## Inventory of RD&E capabilities

As an initial input into the identification of RD&E priorities and capability gaps, the *National Biosecurity R&D Capability Audit*<sup>8</sup> was undertaken in 2012 to assess the research and development (not extension) capability of the biosecurity system. The audit showed capability was scattered between multiple organisations, demonstrating the importance of coordination of RD&E activities and collaboration between RD&E providers.

Gaps in capability and external investment for the national priorities were identified and included:

- understanding the sociological factors associated with the adoption of risk mitigation measures by stakeholders
- developing the knowledge base and protocols for managing the invasion risks posed by one sector for others, e.g. a biosecurity incursion in one species infecting another species

- understanding risk factors that drive emergence of new pests and diseases
- understanding the environmental, economic, and social impacts of pests and diseases and of management activities to control them
- cost-effectively demonstrating the absence of significant pests and diseases.

Regular updates of capability could assist in maintaining awareness of capability gaps. There should be a coordinated extension and adoption effort, taking advantage of and leveraging the resources within the various RD&E funders and providers. There is also some opportunity to work with the plant sector on RD&E capacity.



<sup>8</sup> [www.animalhealthaustralia.com.au/wp-content/uploads/2015/09/national-research-development-capability-audit.pdf](http://www.animalhealthaustralia.com.au/wp-content/uploads/2015/09/national-research-development-capability-audit.pdf)

# GOVERNANCE

## Strategy Implementation Committee

Implementation of the Strategy will be overseen by a Strategy Implementation Committee. Core members of the Committee will ensure funding parties have representation and include:

- one representative from the NBC
- one state and territory departmental representative (from the sponsor Government)
- minimum of two representatives from the RDCs (one being Agrifutures Australia due to its responsibilities with regards to cross-sectoral RD&E)
- minimum of one university representative
- one AHA representative
- one CSIRO representative
- a chairperson will be appointed by AHA
- AHA will provide the secretariat function.

The Terms of Reference for the Strategy Implementation Committee are to:

- deliver high level Strategy communication:
  - consult with the organisation/s they represent
  - provide representation to high-level decision-making biosecurity bodies
  - provide a vehicle for consultation, coordination and communication between animal biosecurity stakeholders and other relevant strategies
  - coordinate communicate and promote the Strategy, its outputs and progress to animal biosecurity stakeholders, policy makers and the public

- report to the AGSOC R&I Committee and NBC and strategy stakeholders as required
- regularly liaise with their own stakeholder group in relation to the Strategy.
- drive Strategy outcomes:
  - provide strategic overview and direction for the implementation of the Strategy
  - develop a five-year work plan including project proposals that will implement the plan
  - determine biosecurity priorities and allocate resources to fund them, including priorities for extension and its integration with research and development
  - identify opportunities and activities across industries/sectors
  - monitor progress with implementation of the Strategy and guide a mid-term and end-of-strategy review
  - identify and address capability gaps to deliver these priorities.
- participate in fora and other working groups:
  - support AHA to initiate and convene an annual national animal biosecurity RD&E forum
  - form sub-committees or working groups as appropriate, which may include participants external to the Strategy Implementation Committee.

The Strategy Implementation Committee would meet on a regular basis as determined by the Chair on the advice of the Coordinator with at least two face-to-face meetings each year. Members will fund their own costs of attending meetings.



## National Animal Biosecurity RD&E Coordination

It is envisaged that this role will require two complementary skill sets: a full-time (for at least the first 12 months) Senior Strategy Coordinator responsible for:

- assisting the Strategy Implementation Committee to develop and implement the strategic directions and annual work plan
- providing technical support to the Strategy Implementation Committee
- ensuring linkages to other strategies are maintained
- providing a coordination point between RDCs, governments, research providers and other relevant stakeholders
- working with stakeholders to identify and set priorities for biosecurity RD&E
- maintaining an awareness of all major animal biosecurity activities occurring across Australia's animal biosecurity network
- identifying and reporting to the Strategy Implementation Committee any RD&E and knowledge gaps and opportunities that could be addressed through the Strategy
- identifying capability (both institutional and research) in animal biosecurity that can

deliver or assist in the achievement of animal biosecurity RD&E

- maintaining a record of animal biosecurity RD&E capacity
- developing and populating an animal biosecurity information hub.

The other position, National Animal Biosecurity RD&E Administrative Officer, will be a part-time position, providing administrative and clerical support to the Strategy Implementation Committee. Their role will be responsible for:

- providing administrative support to the Strategy Implementation Committee and the activities of the Strategy
- coordinating communication with all stakeholders
- maintaining a register of Animal Biosecurity RD&E in Australia
- ensuring the reporting requirements of the Strategy are met
- monitoring the relevant activities of other strategies
- assessing the performance of the activities of *this Strategy*
- coordinating forums and events.

The coordinator and administrative roles will be fully costed per a budget approved by funding members.

## National Animal Biosecurity RD&E Annual Forum

It is essential that the Strategy maintains ongoing engagement with the broader stakeholder group and gains feedback and guidance from this group. From a governance perspective, the Strategy Implementation Committee will utilise the National Animal Biosecurity RD&E Annual Forum as a major means of engaging with stakeholders

Coordinated by AHA, the forum will also be the key mechanism for setting the national animal biosecurity RD&E priorities. The purpose of the forum is to:

- improve communication, delivery, implementation and promotion of RD&E outcomes

- identify opportunities for improving collaboration and partnership between RD&E providers
- determine and set priorities for RD&E activities for future investment and collaboration
- update information on capability and infrastructure and identify gaps in these resources that are needed to deliver these RD&E priorities
- improve the understanding across RD&E providers of commercial and practical biosecurity challenges facing the livestock industries.

It is envisaged that the forum could be engaged for a range of reasons and could lead to other activities such as technical workshops.



Image credit: Shutterstock

# COMMUNICATIONS

Communications will be the responsibility of the National Animal Biosecurity RD&E Coordinator, whose first job will be to produce and implement a detailed communications plan outlining how stakeholders will be engaged with the Strategy. It is expected that this plan will include (at least):

- an annual National Animal Biosecurity RD&E Forum (as outlined previously) and investigation of issues specific forums
- an online 'portal' that will provide access to a broad range of digital material
- a periodical that will be digitally circulated to stakeholders.



Image credit: iStock

# FUNDING

There will be a shared funding model for the further implementation of *the Strategy*, drawing on the existing model and engagement with the AGSOC R&I Committee, as occurred with the first iteration of *the Strategy*. This funding will cover the costs of the coordinator roles, Chair, venue and meeting costs for annual Strategy Implementation Committee meetings, working

group costs and annual forum. It has previously been agreed that all stakeholders would fund their costs of attending meetings. The funding model will be developed in consultation with stakeholders and be articulated in the work plan developed by the National Animal Biosecurity RD&E Coordinator.

# CONSULTATION AND APPROVALS

*This Strategy* was developed in consultation with the writing group and RD&E organisations represented at Strategy fora in June and September 2017. Following this, *the Strategy* was endorsed by the AGSOC R&I Committee in August 2018.

Subsequent revisions over the life of *the Strategy* will require endorsement from funding members and from the AGSOC R&I Committee.

# WORKPLAN

A five-year workplan will be developed to support *the Strategy* and will be approved by the Strategy Implementation Committee.

# STAKEHOLDER LIST

Stakeholder organisations invited to the first Forum are as follows:

Stakeholder organisation	website
Agriculture Victoria	<a href="http://www.agriculture.vic.gov.au">www.agriculture.vic.gov.au</a>
Animal Health Australia	<a href="http://www.animalhealthaustralia.com.au">www.animalhealthaustralia.com.au</a>
Australian Alpaca Association	<a href="http://www.alpaca.asn.au">www.alpaca.asn.au</a>
Australian Centre for International Agricultural Research	<a href="http://www.aciar.gov.au">www.aciar.gov.au</a>
Australian Chicken Meat Federation	<a href="http://www.chicken.org.au">www.chicken.org.au</a>
Australian Dairy Farmers	<a href="http://www.australiandairyfarmers.com.au">www.australiandairyfarmers.com.au</a>
Australian Duck Meat Association	
Australian Eggs	<a href="http://www.australianeggs.org.au">www.australianeggs.org.au</a>
Australian Horse Industry Council	<a href="http://www.horsecouncil.org.au">www.horsecouncil.org.au</a>
Australian Lot Feeders' Association	<a href="http://www.feedlots.com.au">www.feedlots.com.au</a>
Australian Meat Industry Council	<a href="http://www.amic.org.au">www.amic.org.au</a>
Australian Meat Processors Corporation	<a href="http://www.ampc.com.au">www.ampc.com.au</a>
Australian Pork Limited	<a href="http://www.australianpork.com.au">www.australianpork.com.au</a>
Australian Veterinary Association	<a href="http://www.ava.com.au">www.ava.com.au</a>
Australian Wool Innovation	<a href="http://www.wool.com">www.wool.com</a>
Cattle Council of Australia	<a href="http://www.cattlecouncil.com.au">www.cattlecouncil.com.au</a>
Centre of Excellence for Biosecurity Risk Analysis	<a href="http://www.cebra.unimelb.edu.au">www.cebra.unimelb.edu.au</a>

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Centuris	<a href="http://www.centuris.com.au">www.centuris.com.au</a>
Charles Sturt University	<a href="http://www.csu.edu.au">www.csu.edu.au</a>
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	<a href="http://www.csiro.au">www.csiro.au</a>
Council of the Rural Research and Development Corporations	<a href="http://www.ruralrdc.com.au">www.ruralrdc.com.au</a>
Council of Veterinary Deans of Australia and New Zealand	
CSIRO Australian Animal Health Laboratory (AAHL)	<a href="http://www.csiro.au/en/Research/Facilities/AAHL">www.csiro.au/en/Research/Facilities/AAHL</a>
Dairy Australia (RDC)	<a href="http://www.dairyaustralia.com.au">www.dairyaustralia.com.au</a>
Department of Agriculture	<a href="http://www.agriculture.gov.au">www.agriculture.gov.au</a>
Department of Primary Industries and Regional Development Western Australia	<a href="http://www.agric.wa.gov.au">www.agric.wa.gov.au</a>
Department of Primary Industries and Regions South Australia	<a href="http://www.pir.sa.gov.au">www.pir.sa.gov.au</a>
Environment Australia	<a href="http://www.environment.gov.au">www.environment.gov.au</a>
Fisheries Research and Development Corporation	<a href="http://www.frdc.com.au">www.frdc.com.au</a>
Geelong Centre for Emerging Infectious Diseases	<a href="http://www.gceid.com">www.gceid.com</a>
Harness Racing Australia	<a href="http://www.harness.org.au">www.harness.org.au</a>
Horticulture Innovation Australia Limited	<a href="http://www.horticulture.com.au">www.horticulture.com.au</a>
James Cook University	<a href="http://www.jcu.edu.au">www.jcu.edu.au</a>
LiveCorp	<a href="http://www.livecorp.com.au">www.livecorp.com.au</a>
Meat & Livestock Australia (RDC)	<a href="http://www.mla.com.au">www.mla.com.au</a>
New South Wales Department of Primary Industries	<a href="http://www.dpi.nsw.gov.au">www.dpi.nsw.gov.au</a>
Northern Territory Department of Primary Industries and Resources	<a href="http://www.dpir.nt.gov.au">www.dpir.nt.gov.au</a>
Pearl Producers of Australia	<a href="http://www.pearlproducersaustralia.com">www.pearlproducersaustralia.com</a>
Pepes Ducks Ltd	<a href="http://www.pepesducks.com.au">www.pepesducks.com.au</a>

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Plant Health Australia	<a href="http://www.planthealthaustralia.com.au">www.planthealthaustralia.com.au</a>
Queensland Department of Agriculture and Fisheries	<a href="http://www.daf.qld.gov.au">www.daf.qld.gov.au</a>
Rural Industries Research and Development Corporation trading as Agrifutures Australia	<a href="http://www.agrifutures.com.au">www.agrifutures.com.au</a>
Sheep Producers Australia	<a href="http://www.sheepproducers.com.au">www.sheepproducers.com.au</a>
Tasmanian Department of Primary Industries, Parks, Water and Environment	<a href="http://www.dpipwe.tas.gov.au">www.dpipwe.tas.gov.au</a>
The iThree institute, University of Technology Sydney	<a href="http://www.uts.edu.au/research-andteaching/our-research/ithreeinstitute">www.uts.edu.au/research-andteaching/our-research/ithreeinstitute</a>
University of Adelaide	<a href="http://www.adelaide.edu.au">www.adelaide.edu.au</a>
University of Melbourne	<a href="http://www.unimelb.edu.au">www.unimelb.edu.au</a>
University of New England	<a href="http://www.une.edu.au">www.une.edu.au</a>
University of Queensland	<a href="http://www.uq.edu.au">www.uq.edu.au</a>
University of Sydney	<a href="http://www.sydney.edu.au">www.sydney.edu.au</a>
University of Tasmania	<a href="http://www.utas.edu.au">www.utas.edu.au</a>
University of Western Sydney	<a href="http://www.westernsydney.edu.au">www.westernsydney.edu.au</a>
Victorian Farmers Federation Livestock Group	<a href="http://www.vff.org.au/livestock">www.vff.org.au/livestock</a>
Wildlife Health Australia	<a href="http://www.wildlifehealthaustralia.com.au">www.wildlifehealthaustralia.com.au</a>
Wool Producers Australia	<a href="http://www.woolproducers.com.au">www.woolproducers.com.au</a>

#### Others recommended by stakeholders for consideration for future engagement

National Farmers' Federation

State farming organisations

Department of Health

Centre for Invasive Species Solutions

Invasive Species Council

National Resource Management regions

