



SOUTHERN NSW  
**Innovation Hub**

SUSTAINABLE AGRICULTURE,  
LANDSCAPES AND COMMUNITIES

# BIOSECURITY PREPAREDNESS IN SOUTHERN NSW

An investment framework to enhance regional community and supply chain participation in biosecurity awareness and preparedness.



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The Southern NSW Innovation Hub and the authors of this document thank the many people we engaged and consulted with and who so generously contributed their time, knowledge and expertise in providing information, opinion and data for this framework document. Thank you.

## Disclaimer

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**September 2023**



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## EXECUTIVE SUMMARY

Australian agriculture enjoys a worldwide reputation for delivering high quality produce that is “clean and green”. Freedom from many of the pests and diseases that are common elsewhere is a key component to maintaining this reputation along with ensuring the productivity of our agricultural systems. As a result, Australia employs some of the strictest biosecurity regulations anywhere in the world. Our biosecurity approach is co-operative across all levels of government, agricultural industries, communities and individuals. The Australian Biosecurity continuum includes:

<p>1.</p>  <p><b>Prepare and Prevent</b> – managing future events and threats through prediction, early detection, planning and incursion prevention.</p>	<p>2.</p>  <p><b>Eradication</b> – early response to manage events commensurate to the risk they pose and management options available.</p>
<p>3.</p>  <p><b>Containment</b> – efficient responses utilising management options available to minimise the adverse impact of an event.</p>	<p>4.</p>  <p><b>Asset Protection</b> – development and implementation of ongoing options for effective management of pest and diseases if established.</p>

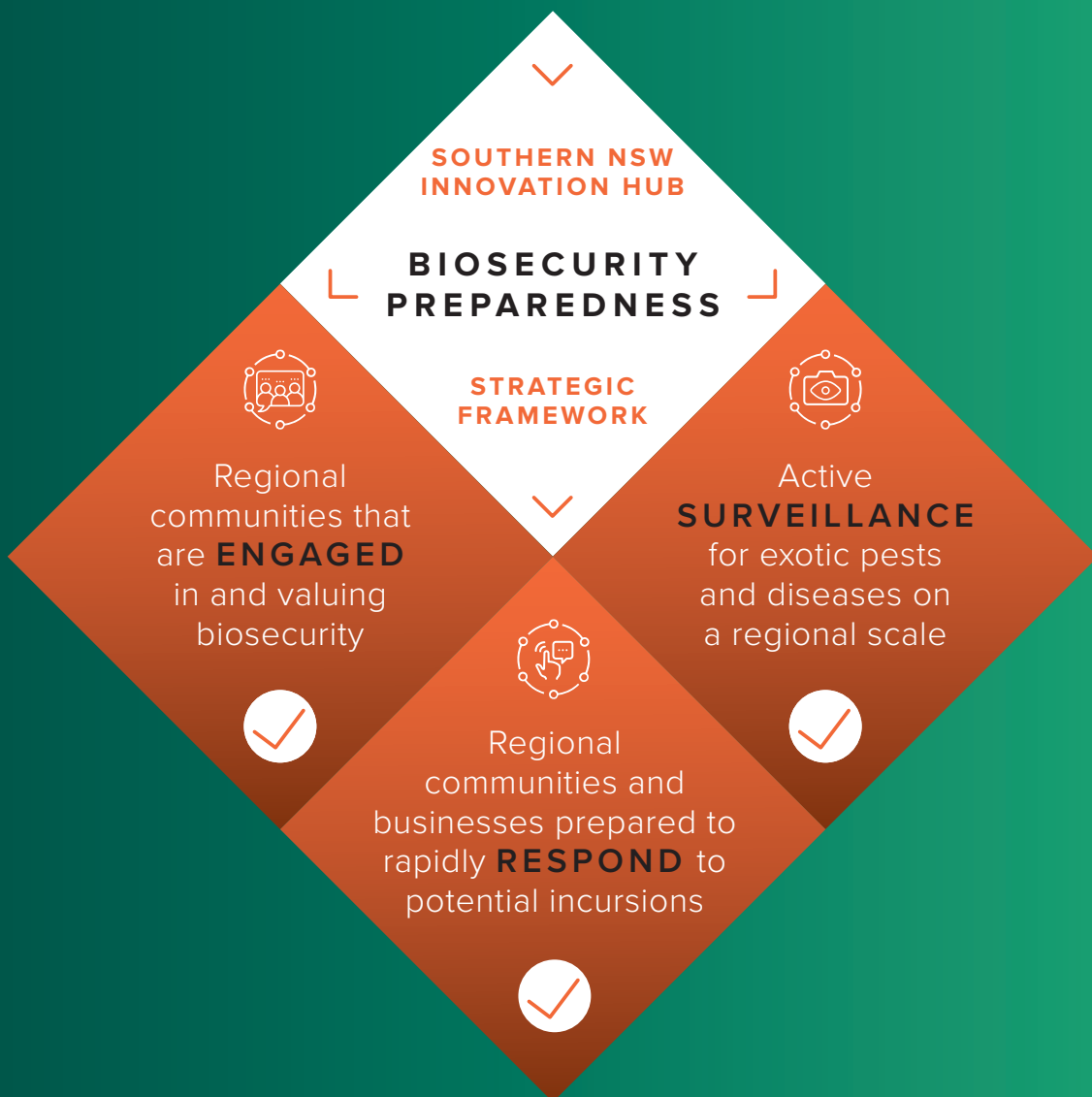
Biosecurity has also long been recognised as a key component of maintaining market access through demonstrated freedom from priority pests and diseases (e.g. foot and mouth disease, karnal bunt, etc.) and maintaining market access for international and domestic trade. However, the capacity and capability to maintain a high level of biosecurity control is becoming increasingly difficult to deliver. Successive reviews have identified gaps emerging in the current system that are unlikely to be addressed by increased investment alone. There is a need for an approach to biosecurity that embraces the skills and capacity of industry and regional communities, together with government, to deliver a modern biosecurity system that is agile enough to cope with rapidly changing threats and risk levels.

The Southern New South Wales Drought Resilience Adoption and Innovation Hub has undertaken an extensive review process focused on the first phase of the Biosecurity System (Prepare and Prevent) to identify the gaps in farmer, community and supply chain biosecurity preparedness. The work focuses on opportunities to promote government, industry and community collaboration to improve local and regional biosecurity preparedness. It is not a review of the quarantine, eradication and containment functions already covered by federal, state and territory agencies however its findings would significantly add value to and support these existing systems.

There is great potential for Australia’s biosecurity system to be genuinely supported by our regional communities and their active participation in checking for priority exotic pests and diseases and being prepared to rapidly respond in the event of an incursion.

The Southern NSW Innovation Hub has developed a **strategic framework** for increased preparedness through targeted regional participation in the extension and adoption of activities across sectors nationally. It provides a structure and approach to understand the value drivers for different members of rural, regional and agricultural value chains, government agencies and communities as a basis for collaboration to improve local preparedness for, and response to, biosecurity events.

Implementing this framework will deliver:



The need for increased engagement of regional communities to be more actively and transparently involved in biosecurity has been recognised through several reviews of biosecurity in Australia but remains a gap.

This regional participation model will recognise and use local knowledge to develop and implement strategies that will ensure Australia maintains a robust biosecurity

framework to support its agricultural industries and exports along with the communities and environments that rely on them.

The Southern NSW Innovation Hub proposes to coordinate investment and activities to deliver a regional biosecurity engagement and adoption program in Southern NSW for application nationally.

We invite industry partners along with federal, state, territory and local government to participate in the initiative to:

**Commit investment to the program of work that will see communities and supply chains actively engaged and participating in local biosecurity preparedness.**

**Establish a steering committee to oversee:**

- Mapping a national 5 + 5 year, cross-sectoral investment and implementation plan
- Designing the first 5 year program of on ground work
- Developing the detailed investment and expenditure budget
- Progress and impact monitoring over time.

The proposed program includes **3 investment themes** and activities and an anticipated investment of \$700,000 per region over 5 years.

**REGIONAL PARTICIPATION**



- Regional ag-industry asset profiling in the context of regional social, environmental economic contributions and business continuity
- Community mapping of local assets of importance – environmental, social and economic
- Regional planning to protect identified and agreed economic, social and environmental assets from negative impacts of pest and disease incursions

- Conduct simulations of incursions of locally important biosecurity threats to test and improve preparedness and response effectiveness
- Training of local supply chain and community players e.g. agronomists, farmers, truck drivers, police, local government environment officers, in identification, reporting and early containment
- Scenario planning with local players to identify further training, tools and process needs

- Preparedness frameworks adopted and early detection systems implemented where available (e.g. water testing at public truck washdown bays)
- Commissioning of scanning activities at critical times (e.g. crop walks and sample collections)
- Creation of a skilled and regularly trained volunteer response unit

Costs are based on the pilot conducted with the NSW wine industry including profiling an incursion simulation for the Orange wine region. This could change depending on the level of active local strategies implemented in theme 3.

We anticipate that the first phase would be prioritised on economic significance of the region, however, the steering committee would determine which regions and when they are activated in the implementation and investment plan.

# INTRODUCTION

## Australia's isolation provides a unique natural environment and agricultural production systems that are not subject to many of the pests and diseases present elsewhere in the world.

These natural advantages are protected by strict biosecurity controls that assist in preventing damage to the environment, production losses, and avoiding additional management costs. Biosecurity has also long been recognised as a key component of maintaining market access through demonstrated freedom from priority pests and diseases (e.g. foot and mouth disease, karnal bunt, etc.) and maintaining market access for international and domestic trade.

The total value of maintaining pest and disease freedom is difficult to quantify but the Centre of Excellence for Biosecurity Risk Analysis (CEBRA) has estimated the average net present value of Australia's biosecurity system to be A\$314 billion<sup>1</sup>. Recent estimates of the annual cost of pest animals (\$170 million) and weeds (\$1.8B) to the New South Wales (NSW) economy associated with lost agricultural production and management costs are likewise significant. In addition, pests and weeds impact more than 70% of the threatened species and endangered ecological communities in NSW<sup>2</sup>. Biosecurity is having a significant impact on individual regional businesses and communities as governments, financial institutions and insurance companies adopt market policies based on environmental, social and governance (ESG) credentials. These factors are reflected in the most recent iteration of the Australian Agricultural Sustainability Framework (AASF<sup>3</sup>). The AASF has been developed by the National Farmers' Federation (NFF) and the Australian Farm Institute (AFI) as part of the Federal Government's Agriculture Biodiversity Stewardship Package<sup>4</sup>. It draws together information about Australian agricultural sustainability under a cohesive set of 17 recognised principles and criteria, one of which relates specifically to "Biosecurity threats are assessed, mitigated and effectively managed in systems of continuous improvement".

The strict biosecurity protocols and procedures in Australia operate across all levels of government (federal, state, territory and local) in collaboration with industry and the public. The system focuses first on preventing the incursion of exotic pests and diseases through the implementation of stringent monitoring and inspection activities pre-entry and at the border overseen by the Federal Government. In the event that an incursion does occur, there are established protocols and procedures across government and industry to rapidly respond with a preference being for eradication. If eradication is not feasible, activities focus on containment (e.g. *Phylloxera* in vines) or transition to management (e.g. Russian Wheat Aphid in the grains industry).

The coordination of activities, responsibilities and functions across federal, state, territory and local governments is outlined in the Intergovernmental Agreement on Biosecurity (IGAB<sup>5</sup>). This agreement also establishes and authorises the National Biosecurity Committee (the Committee) to provide the strategic management and oversight of the national biosecurity system and intergovernmental relationships.

The interaction between government, industries and communities is guided by a long-established principle of "shared responsibility". Shared responsibility recognises that biosecurity outcomes benefit a range of industries as well as the wider public as a whole. Governments contribute to the cost of biosecurity measures in proportion to the public good accruing from them and other system participants, such as industry and businesses, contribute in proportion to the risks created and/or benefits gained. Provisions for potential cost sharing between governments and industry for the response to different pest and disease incursions are set out in the Emergency Animal Disease Response Agreement (administered by Animal Health Australia - AHA), the Emergency Plant Pest Response Deed (administered by Plant Health Australia - PHA), and the National Environmental Biosecurity Response Agreement (NEBRA) overseen by the Commonwealth Department of Agriculture, Fisheries and Forestry (DAFF).

<sup>1</sup> CEBRA\_Value\_Docs\_KeyResultSummary\_v0.6\_Endorsed.pdf (unimelb.edu.au)

<sup>2</sup> NSW State of the Environment 2021 (apo.org.au)

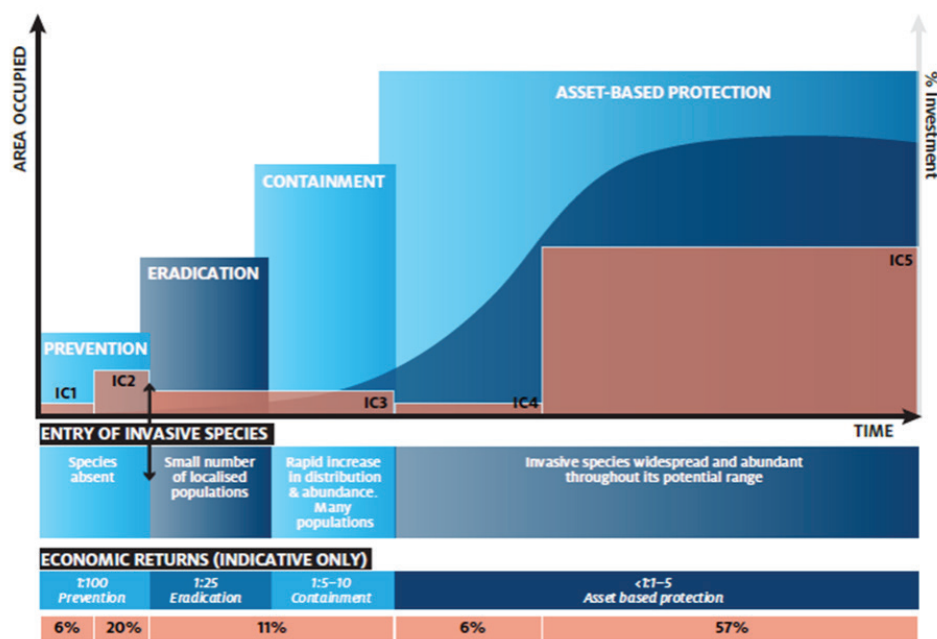
<sup>3</sup> AASF-development-report\_AFL\_JUNE-2022\_FINAL.pdf (farminstitute.org.au)

<sup>4</sup> Agriculture Biodiversity Stewardship - DCCEEW

<sup>5</sup> Intergovernmental Agreement on Biosecurity (federation.gov.au)

Government and industry investment in biosecurity is split across five investment categories (ICs):

<p>1. </p>	<p>2. </p>	<p>3. </p>	<p>4. </p>
<p><b>Prepare and Prevent</b></p> <ul style="list-style-type: none"> <li>• <b>IC1</b> – Prevention of exotic/emergency pests and diseases (pre-border and border).</li> <li>• <b>IC2</b> – Preparedness for exotic or emergency pests and diseases, including early detection (surveillance).</li> </ul>	<p><b>Eradication</b></p> <ul style="list-style-type: none"> <li>• <b>IC3</b> – National eradication/containment programs (cost-shared national programs).</li> </ul>	<p><b>Containment</b></p> <ul style="list-style-type: none"> <li>• <b>IC3</b> – National eradication/containment programs (cost-shared national programs).</li> </ul>	<p><b>Asset Protection</b></p> <ul style="list-style-type: none"> <li>• <b>IC4</b> – Management of established pests and diseases of national significance</li> <li>• <b>IC5</b> – Management of other established pests and diseases.</li> </ul>



Source: 2015–16 national stocktake of biosecurity investment.

**Figure 1:** Phases of biosecurity, investment, and potential return (Craik et al., 2017)

The risk of an exotic pest or disease incursion continues to increase, largely as a consequence of the greater movement of goods and people, intensification of agricultural production and an increasingly variable climate. This places increasing pressure on a biosecurity system that successive reviews have identified as being under-resourced and lacking the agility to deal with emerging threats. Furthermore, what investment is available is predominately directed toward more costly eradication (IC3) programs or the containment (IC3) and management (IC4&5) of established pests and diseases despite the clear economic benefits of preventing entry of exotic pests and diseases, early detection and being better prepared (IC1&2) when incursions do occur (Figure 1).

A recent review of biosecurity (Craik et al., 2017) highlights the declining contribution of public investment such that while overall investment in biosecurity increased from \$804M in 2013–14 to \$998M in 2015–16 (an increase of around 24%), most funding came from industry (57% compared to 32% in 2013-14). The increased reliance on industry levies to fund biosecurity may be consistent with the principles of shared responsibility (although there does

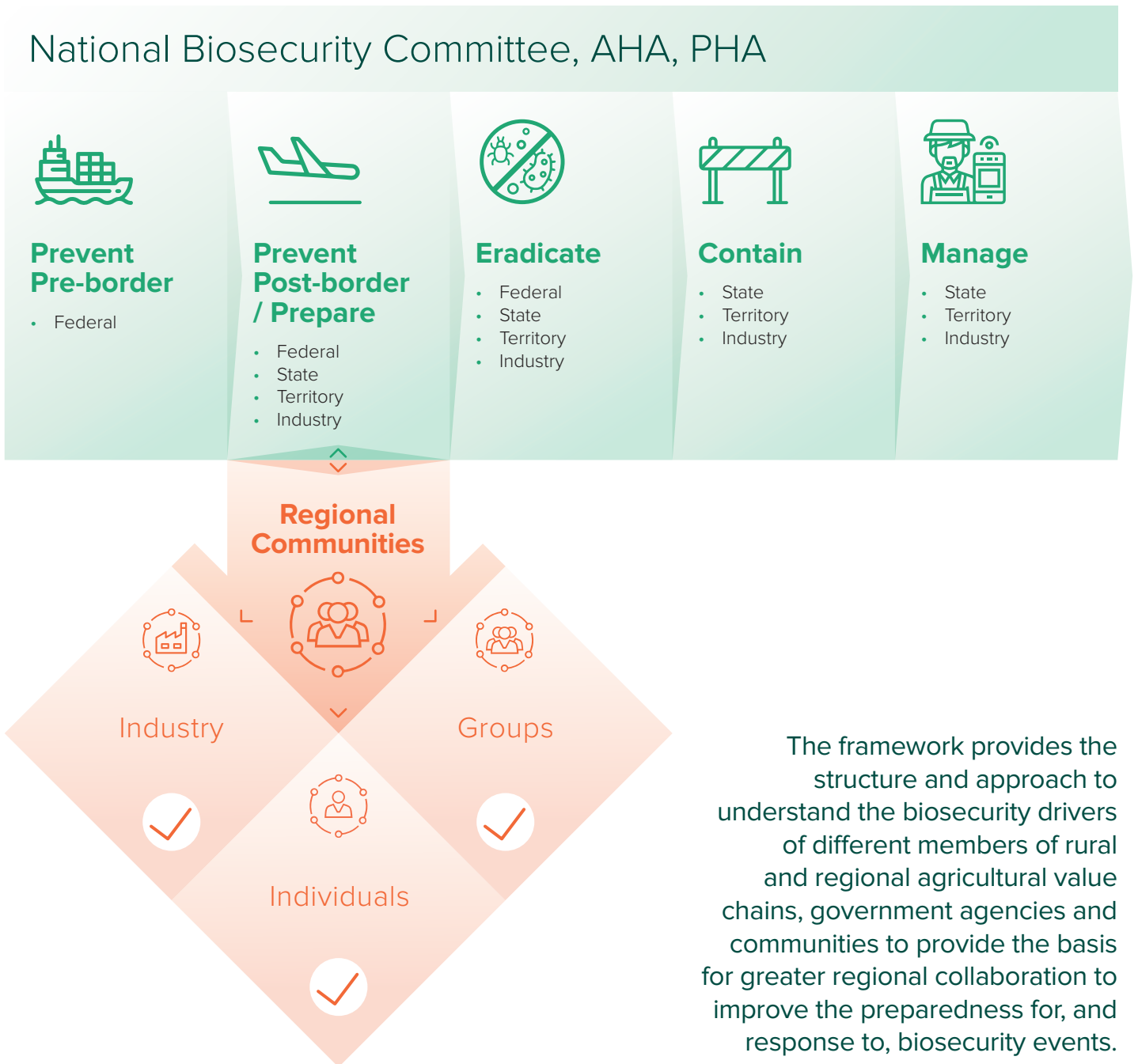
not appear to be a large base of supporting evidence) but results in commodity-specific investment in biosecurity activities. This has generated a biosecurity system where governments impose operational activities through regulation and industries influence decision-making and investment on a commodity-specific basis. The system has been quite effective in administering highly regulated eradication and containment activities. However, it results in a hierarchical approach that is siloed across commodities and provides little opportunity for engagement of regional communities despite multiple reviews and reports highlighting the increasingly important role they play in delivering biosecurity outcomes. In particular, the lack of focus on regional community engagement to enhance prevention and preparedness highlights a missed opportunity to invest early in the biosecurity process where economic returns to industry and society are greatest. These issues have been recognised in the National Biosecurity Strategy (2022-2032<sup>6</sup>) that actively promotes the need to foster a greater understanding and valuing of biosecurity, as well as engagement and behaviour change across government, industry, communities and individuals to enhance prevention, preparedness, surveillance and reporting.

<sup>6</sup> National Biosecurity Strategy – Consultation Draft

## The Framework

There is clearly a need to invest in increasing regional community involvement in biosecurity prevention and preparedness while maintaining the current effectiveness of eradication and containment activities overseen by industry and government and largely funded on a commodity specific basis. This framework identifies opportunities to enhance biosecurity at a regional scale by promoting government,

industry, and community collaboration on a regional basis to enhance biosecurity prevention and preparedness. It is not intended to duplicate or replace quarantine, eradication and containment functions that are already covered by the current system but to be complementary to them by harnessing the reach and expertise that resides within regional communities (Figure 2).



The framework provides the structure and approach to understand the biosecurity drivers of different members of rural and regional agricultural value chains, government agencies and communities to provide the basis for greater regional collaboration to improve the preparedness for, and response to, biosecurity events.

**Figure 2:** The current biosecurity process and potential contribution of regional communities to deliver additional value to biosecurity prevention and preparedness



## The Central Tablelands – Orange

This framework is being developed and is supported by the Southern NSW Innovation Hub and focuses on the Central Tablelands of New South Wales (NSW). The focus of this framework will be on the rural and regional community of Orange, located in the heart of the Central Tablelands of NSW chiefly because of the scale, diversity and productivity of the region. It is anticipated that this regional approach and framework can be implemented in other regions across Australia.

The Central Tablelands region is located in central NSW and covers an area of approximately 31,365 sq km. Broadly located in the Upper Lachlan, Lachlan Slopes, Upper Macquarie and Mid Macquarie sub catchments, this region has a more-or-less uniform year-round rainfall distribution and an average annual rainfall of more than 600 mm. Rainfall varies from 619 mm at Wellington to 867 mm at Orange and up to 1000 mm at higher altitudes.

The Central Tablelands enjoys a relatively cool climate. Water is supplied by the Macquarie, Cudgegong, Belubula and

Lachlan rivers, including upper tributaries. There are good road transport networks with the Golden and Mitchell Highways providing main access in and out of the Central Tablelands. Orange Regional Airport provides daily passenger connections to Sydney and direct services to Brisbane and Melbourne.<sup>7</sup>

The region is home to over 156,000 people including an Indigenous population of 7,012 (4.5% of the population). Approximately 7% or 10,920 people of the region's population are employed in agriculture, fisheries and forestry. The region also comprises 3% of the Murray-Darling Basin.<sup>8</sup>

The Central Tablelands has some of the most highly productive land in NSW, suited to a wide variety of horticultural, livestock (both extensive and intensive), broadacre cropping and wine production. Beef production is the main livestock industry by gross value of production (GVP) with wool, sheep meat production and forestry contributing significantly to the regional economy.

### Agricultural industries – Central Tablelands 2020-21

COMMODITY	GROSS VALUE \$AUD	PROPORTION OF NSW TOTAL (%)	REGIONAL INDUSTRY RANK
<b>Total primary industries</b>	934,412,249	5%	8
<b>Cattle and calves</b>	198,405,023	7%	9
<b>Sheep and lambs</b>	118,879,950	9%	6
<b>Forestry</b>	106,584,268	23%	2
<b>Wheat</b>	82,726,419	2%	6
<b>Wool</b>	81,297,244	10%	6
<b>Hay</b>	77,504,292	15%	4
<b>Eggs</b>	49,840,555	13%	4
<b>Canola</b>	35,998,449	4%	5
<b>Apples</b>	33,828,215	37%	2
<b>Milk</b>	19,525,617	3%	7

**Source:** [www.dpi.nsw.gov.au/about-us/publications/pdi/2022/regional-output](http://www.dpi.nsw.gov.au/about-us/publications/pdi/2022/regional-output)

### Orange Region

Orange is 254 km west of Sydney at an altitude of 862 metres. The regional population is 61,486 and the city of Orange has a population of 41,920, making the city a significant regional centre.<sup>9</sup>

Performance and Data Insights and Agriculture Industry Snapshots, developed by NSW DPI, provide an overview of the large range of agricultural industries operating across the Central Tablelands.<sup>10, 11</sup>

- **Broadacre cropping** is often part of a mixed farming operation with sheep and/or cattle. Wheat is the main crop grown with a GVP in 2020-21 of \$37.2M across the Cabonne (Orange) and Cowra council areas, although for the entire Central Tablelands the GVP was just under \$83M. Canola is also a significant broadacre crop with production valued at \$36M in 2020-21. Oats and barley are also grown.

<sup>7</sup> <https://www.orange.nsw.gov.au/orange-regional-airport/> - accessed 9 June 2023

<sup>8</sup> <https://www.lis.nsw.gov.au/regions/central-tablelands/region-profile> - accessed 8 June 2023

<sup>9</sup> Source: ABS (2022). Australian Bureau of Statistics (ABS)

<sup>10</sup> <https://www.dpi.nsw.gov.au/about-us/publications/pdi>

<sup>11</sup> [https://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/0006/1275378/Central-Tablelands-Snapshot.pdf](https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0006/1275378/Central-Tablelands-Snapshot.pdf) - accessed 8 June 2023

- **Grain and oilseed production** provides the basis for other agricultural and secondary industries, a significant amount is used locally for animal production, including in local beef feedlots. The Central Tablelands is an important hay producing area, valued at over \$77M in 2020-21. Lucerne hay is the largest contributor followed by cereal hay production and the remainder being a mixture of other crops and pastures.
- **Extensive livestock** production is focused on beef and sheep (meat and wool). There are a small number of beef feedlots in the region. Regional Livestock Exchanges (RLX) manage the saleyards at Carcoar. These facilities service the Central Tablelands and are the third largest in NSW with prime lamb, sheep and cattle sales occurring weekly. It is anticipated that these weekly sheep and lamb sales will build to 700,000 head per year and prime and store cattle sales are expected to build to 160,000 head per year.<sup>12</sup>
- Fine **wool production** is based in the hilly country north of Orange with pockets in the far south of the Central Tablelands and the far western ranges. Medium wool is grown throughout the Tablelands area. The increase in the number of lifestyle blocks is a challenge for industry, restricting management and expansion. In addition, the increase in the number of residents in these areas has resulted in land conflict issues and higher land prices reflecting residential use values.
- The Central Tablelands is also a **horticultural** region producing various orchard crops. Apple production was valued at \$33.8M in 2020-21 accounting for 38% of the state's production by value and was 19% higher than the value of apple production in 2019-20. Cherries in the Central Tablelands accounted for 44% of the state crop, worth \$13.2M in 2019-20 an increase of 39% over the previous year.
- **Vegetable** growing is an important industry around Orange and elsewhere on the Tablelands where there is high quality alluvial land and reliable water supply, particularly for irrigation. The major commodities grown include lettuce, sweet corn and potatoes. Additional advantages to growing vegetable crops in the Central Tablelands include access to local processing facilities, access to the Sydney market, good road and rail networks and in the future the proximity to the Western Sydney Airport, due to open in 2026.
- **Forestry** is the third largest primary industry by value in the Central Tablelands with estimated output valued at \$113.6M in 2020-21. Consequently, the Central Tablelands was the second largest contributor to the state's forestry output by value, with production consisting of pulpwood and sawlogs from softwood plantations.
- **Dairy** is not a major agricultural industry for the Orange region. In 2015-16 there were 13 dairy farms with an additional 14 farms in the neighbouring Cowra region of the Central Tablelands. There is no regionally based milk processing in the Central Tablelands, however cheese companies in Orange source raw milk from local producers.
- **Viticulture, wine** and processing are important despite not being a major industry in terms of the value of production alone. The local economy benefits through cellar door sales, cafes and restaurants and the tourism trade particularly around Orange. The area under vine is over 1,100 hectares (ha) with an additional 300 ha in the surrounding Central Ranges Zone.<sup>13</sup> The Orange Wine Region is regarded as one of Australia's top wine regions with more than 60 vineyards planted and 40 cellar doors. The main varieties grown are Shiraz, Chardonnay, Sauvignon Blanc and Cabernet Sauvignon.<sup>14</sup>
- **Egg production** in the Central Tablelands increased year-on-year in value terms to \$50M, an increase of 130%, with the Central Tablelands ranked fourth in egg production in value terms in the state.<sup>15</sup>

<sup>12</sup> <https://www.rlx.com.au/sites/ctlx-central-tablelands-livestock-exchange/> - accessed 8 June 2023

<sup>13</sup> <https://www.wineaustralia.com/market-insights/regions-and-varieties/new-south-wales-wines/orange> - accessed 9 June 2023

<sup>14</sup> <https://www.orange360.com.au/Wineries/History> - accessed 8 June 2023

<sup>15</sup> <https://www.dpi.nsw.gov.au/about-us/publications/pdi/2021/regional-output> - accessed 9 June 2023

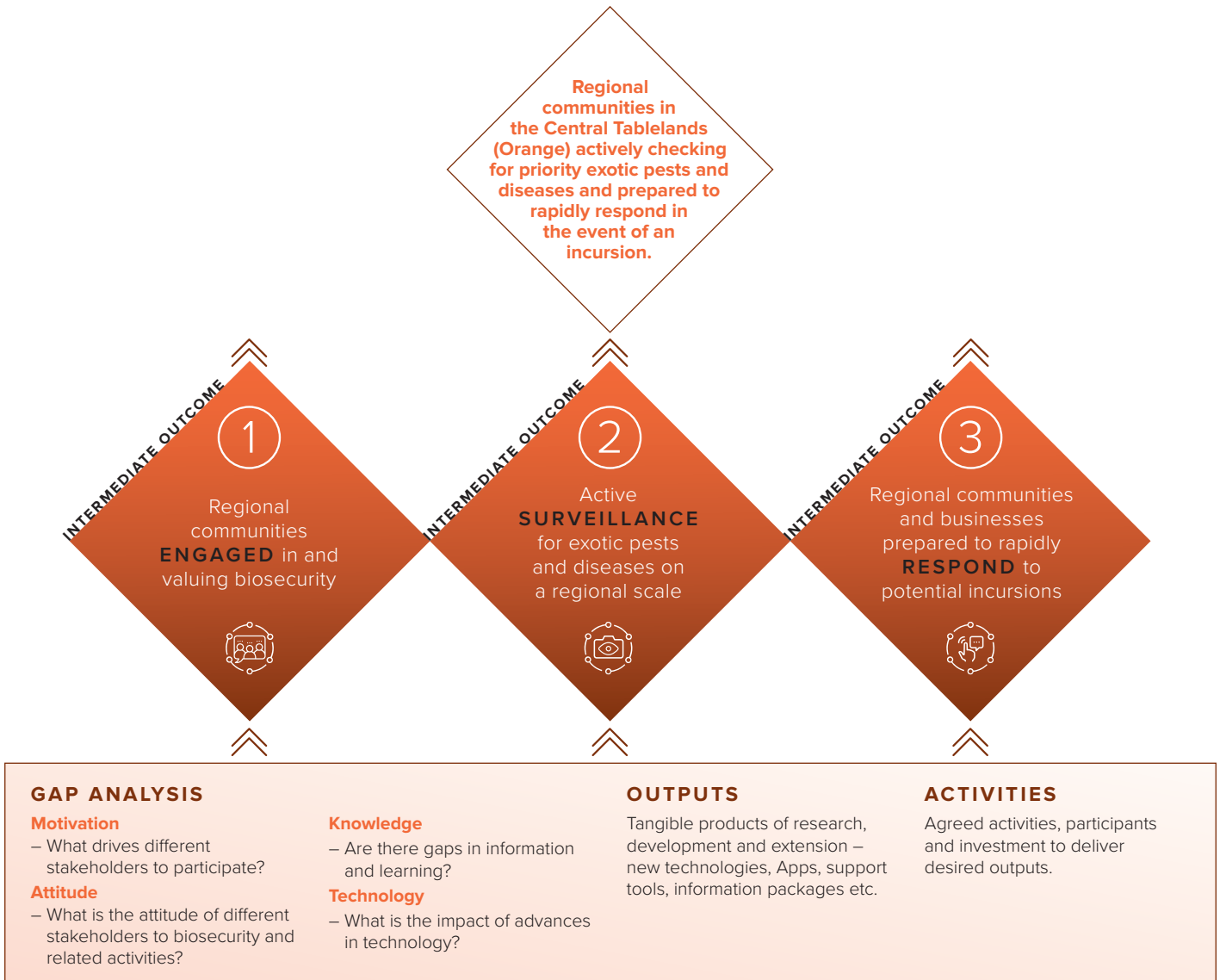
## Program Logic for Regional Biosecurity Preparedness and Response

The framework utilises a Program Logic approach that first identifies the desired outcome, splits this into focused intermediate outcomes then identifies gaps in current approaches. These gaps are then the focus of investment to deliver defined outputs that support the delivery of the stated outcomes.

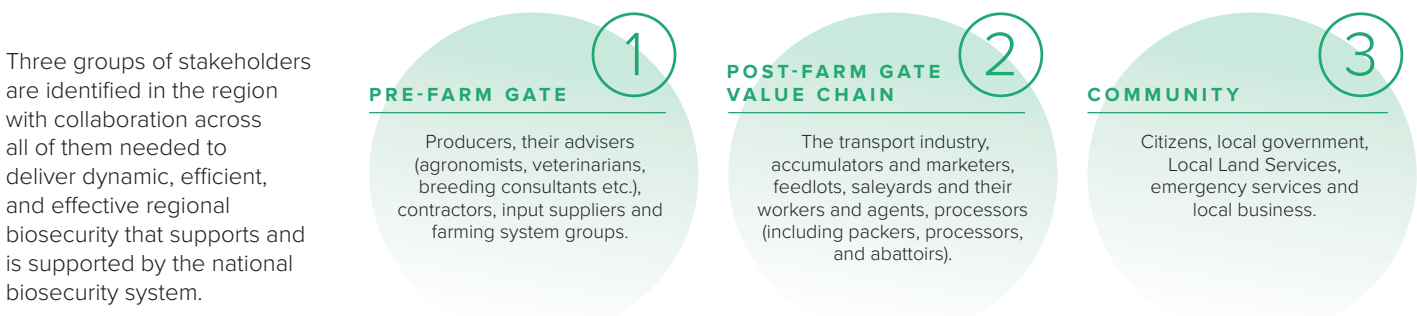
Numerous reports on implementing greater engagement with regional communities have been completed as a result of previous review recommendations. The reports are of a high standard with accompanying guidelines and case studies but have only been minimally implemented. The proposed

framework uses these reports and the findings elsewhere in the literature to develop the Program Logic approach. The Program Logic approach is especially suited to delivering biosecurity outcomes where participation of stakeholders is a critical aspect of investment design.

The framework is designed to allow participants to engage in gap analysis and to identify a mixture of outputs and activities most relevant to their region, community, and circumstances. The ultimate outcome is to support the biosecurity system through:



**Figure 3:** Program Logic for regional biosecurity preparedness and response



Each intermediate outcome is now described in more detail followed by some questions to be considered in implementing the framework.



## REGIONAL COMMUNITIES ENGAGED IN AND VALUING BIOSECURITY



### Engaging Communities

Biosecurity in Australia has historically focused heavily on a regulatory system implemented by government. This has unsurprisingly resulted in many stakeholders believing that government is solely responsible for the delivery of biosecurity, a belief that is reinforced by the perception that government agencies are unwilling to cede any control of activities across the biosecurity system.

Engaging industry and communities under the principles of shared responsibility requires development of a complementary approach that places a participatory model needed for community engagement alongside the top-down regulation and enforcement activities required to rapidly respond to an outbreak. Such co-owned decision-making is contingent on a joint understanding of roles and responsibilities. Currently even a simple joint understanding of what biosecurity is, together with a common definition of shared responsibility, is yet to be agreed broadly across community and industry.

Community engagement is further complicated by the complexity of biosecurity processes and procedures needed to respond to incursions. Plans describing required activities, roles and responsibilities of industry and government entities in response to an incursion are hosted by Plant Health Australia (PLANTPLAN), Animal Health Australia (AUSVETPLAN), The Department of Agriculture, Forestry and Fisheries (AQUAPLAN) and Wildlife Health Australia. The plans outline procedural tools and operational documents containing detailed and highly technical information and processes with the extensive use of acronyms to describe committees, processes, activities and reports. They are effective response plans but were not developed as communication tools or for broad engagement with the public, yet they are heavily referenced on communication platforms to describe the operation of the biosecurity system. Another important consideration is these communication tools take no account of the fact that English is not the first language for many of the targeted audiences.

AHA and PHA have attempted to provide a clearer outline of the processes and decision-making paths but these documents, too, rely extensively on the use of terminology and acronyms that are difficult for a producer, consultant, or community member to understand without at least some background knowledge of the system itself. The lack of an easily accessible, plain English definition of biosecurity and description of the biosecurity system leads to a lack of understanding of the decisions made and how, where and when to contribute. This in turn then promotes confusion regarding the principles of shared responsibility and a distrust of government that undermines community engagement. Gaps in engaging community on biosecurity are outlined below, together with proposed outputs and supporting activities.

# SOUTHERN NSW INNOVATION HUB, NSW DPI, NSW WINE & ONSIDE

## – TRACK AND TRACE INITIATIVE

In a partnership between Southern NSW Innovation Hub, NSW DPI, NSW Wine and Onside, 90 winegrowers have helped pilot the use of track and trace technology in the wine industry.

Owned by Onside, this technology was tested for its effectiveness as a solution to improve biosecurity management across four NSW wine regions. Tracking the movement on and off properties by people, machinery, equipment and plant material, the data captured by the Onside app was fed into live dashboards allowing simulated real-time tracing of disease spread. The movement data is underpinned by algorithms that can identify key properties within the network to prioritise for surveillance and response, which provides significant resource efficiencies when it comes to preparedness, prevention and response activities.



The 90 growers involved in the pilot were setup with the on-farm technology through an initial workshop in each winegrowing region. In less than eight months, Onside's technology had collected more than 1,850 people movements on and off their vineyards. More than 680 of these movements connected vineyards within the pilot, showing how interconnected the wine industry in NSW is and how easily a pest or disease would spread through these regions. The pilot also used technology to collect movements of grape bins through the use of GPS tracking units. All of this movement data was then used in a live simulation exercise in Orange led by NSW DPI to demonstrate how much time could be saved in a biosecurity response using Onside's technology.

Pilot participants were able to see for themselves the many environmental, social and financial impacts of a biosecurity incursion – including the effects it would have on their livelihoods, their industry and the local economy. Participants reported that the technology has changed their view on biosecurity management with overall greater participation and integration into their day-to-day businesses through increased awareness of biosecurity practices and improved biosecurity preparedness on-farm. They also reported the likelihood of continuing to use this type of technology into the future. This offers a highly efficient tool when it comes to biosecurity preparedness and response activities and, when used as a network, was shown to greatly increase community participation – a real gamechanger in biosecurity management.

A key to the success of this community participation in movement data collection was in the technology providing additional operational value to producers and the people visiting their properties. As well as tracking movements, the Onside app allows producers to manage day-to-day operational 'pain points' like WHS management, record keeping for compliance schemes, task management and contractor management. This is more beneficial than a biosecurity-specific app (e.g. COVID app) which creates engagement only when a biosecurity incursion has occurred, at which point it is too late.

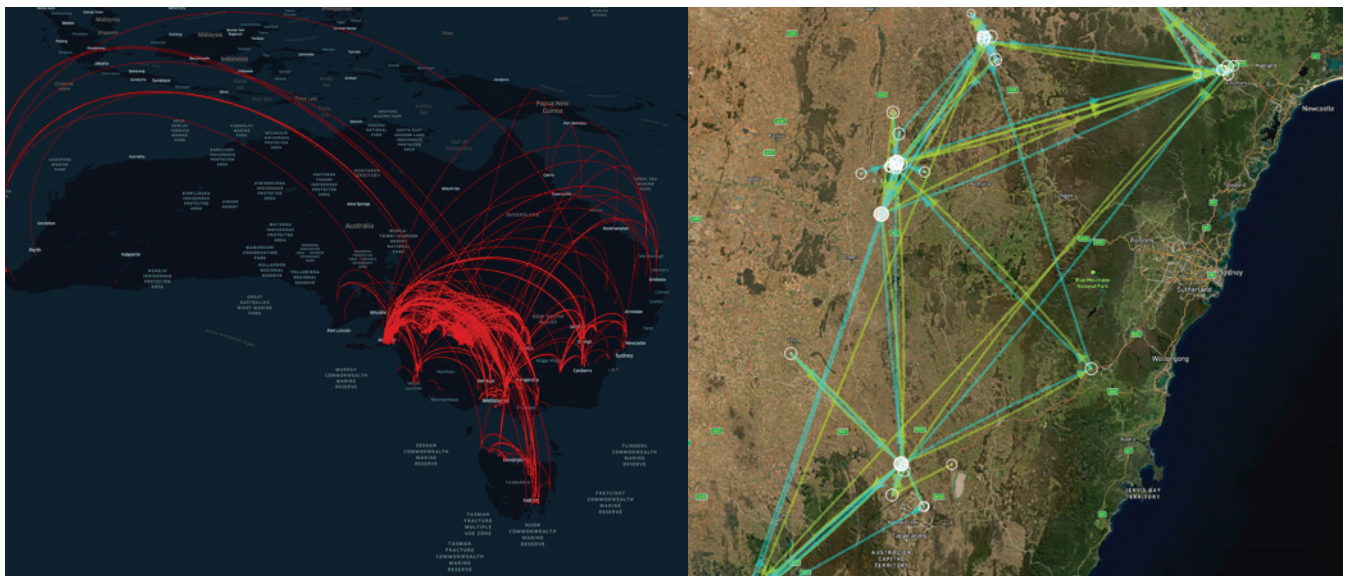
**Solutions that have daily operational value for producers enable rich data collection that then comes into its own during times of crisis like a biosecurity incursion.**

Pests and diseases like Foot and Mouth Disease and Xylella are not contained by state borders and for technology solutions to be successful they need to be applied nationally and across sectors. Onside's technology does this and can be readily applied in both perennial and annual production systems including across intensive and extensive livestock systems and broadacre farming. Developed in New Zealand, it has had broad application in the wine and kiwifruit sectors there, and Onside is also working with AusVEG and Hort Innovation to use the technology to support the vegetable industry here in Australia.



Widespread application of this type of technology offers a real solution to achieving increased community participation in biosecurity management and if scaled up nationally, could underpin our national biosecurity management.

### Tracing images



Connecting movements between rural properties collected through the Onside app across many sectors and states (left) and Onside Intelligence real-time tracing dashboard displaying movement data collected by 90 NSW producers across four regions for the Track and Trace initiative.

**Source:** Onside

GAP ANALYSIS	REQUIRED OUTPUTS	ACTIVITIES
<p><b>Motivation</b> Regional communities have not been empowered and don't have a clear understanding of their role or how to enact it and therefore generally lack the motivation to engage in biosecurity activities outside of those with direct relevance to themselves.</p>	<p>Review of current approaches to community engagement and their effectiveness in generating awareness and behavioural change.</p> <p>Development of a participatory pilot that builds on a values-based, people centric engagement model developed by Southern NSW Innovation Hub. Currently underway for Orange and the Central Tablelands.</p>	<p>Numerous assessments of community engagement in a range of activities (not just biosecurity) exist and provide the basis for determining behavioural insights and effectiveness of engagement approaches.</p> <p>Much of the theoretical work to develop participatory approaches has been completed previously (e.g. Guidelines for General Surveillance Programs,<sup>16</sup> Southern NSW Innovation Hub Engagement Model).</p> <p>Guidelines for participatory programs can be tailored to the engagement of communities (e.g. Orange) but require a dedicated coordinator with support from a broader team.</p>
<p><b>Attitude</b> The regulatory approach to biosecurity has delivered a disciplinary/punitive system that does not empower communities and engenders an attitude that government is solely accountable. As a result, the broader community does not proactively engage in biosecurity activities.</p>	<p>A common, plain English definition of biosecurity and the principle of shared responsibility, what it means and why communities should care.</p> <p>Identification of biosecurity decision-making that can be devolved to communities to increase their empowerment and engagement.</p>	<p>Drafting of plain English definitions by specialist writers taking advice from experts with context of what it means to the community.</p> <p>Use of social science expertise to assist in understanding the drivers of uptake of knowledge and practice change in communities.</p> <p>Review of biosecurity decision-making that can be devolved to communities (e.g. prioritisation of pests and diseases at a regional level).</p>
<p><b>Knowledge</b> There is no common knowledge of the information, tools and systems available to community.</p> <p>Multiple descriptions of how the biosecurity system operates are available but they are not tailored to a community audience and can verge on being incomprehensible.</p>	<p>A common, plain English definition of biosecurity and the principle of shared responsibility, what it means and why communities should care.</p> <p>A simple, brief, plain English description of how the biosecurity system operates in Australia that outlines important decision-making actions and the roles and responsibilities of the main stakeholders.</p>	<p>Drafting of plain English definitions by specialist writers taking advice from experts with context of what it means to the community.</p> <p>Drafting of plain English description of the key decision-making processes in biosecurity, who is involved and how communities are and can be engaged. Descriptions to be developed by specialist writers taking advice from experts.</p>
<p><b>Technology</b> Communication makes extensive use of numerous websites/social media across multiple agencies. The general effectiveness of the approach is debatable and is further confused by a lack of common approach to design, content and definition.</p>	<p>A common approach to communication across agencies designed with user defined needs addressed and links to common documentation, definitions and tools.</p>	<p>There is no requirement for a single website for biosecurity but there is a need to determine where common material is located, its fit for purpose and ensure links to it are consistent, current and intelligible across different platforms.</p>

<sup>16</sup> Guidelines for General Surveillance Programs: Insights and considerations from systems thinking and nine case studies (plantsurveillancenetwork.net.au)

## Communities Valuing Biosecurity

As the risk of an exotic pest or disease incursion increases, even vastly increased investment in surveillance and analysis will be insufficient to develop biosecurity preparation and response plans for every pest and disease that may enter Australia.

Clearly, there is a need to prioritise which pests and diseases to focus on, with those decisions requiring the input from the industries and communities that are providing significant investment of resources. Whilst the work undertaken by the respective animal and plant committees is valuable in highlighting pests and diseases of high priority from a national perspective, there remains the need for further prioritisation with regional relevance. Priorities differ across industries nationally and regionally (e.g. Panama disease is a national priority plant pest that can devastate banana production but is unlikely to be a priority in NSW's Central Tablelands).

Historically, prioritisation of plant pests has involved interaction of government experts with peak bodies to elicit input and has been complicated by economic considerations of the potential impact of prioritisation on underlying cost sharing arrangements. Collaboration with peak industry bodies will continue to be an important engagement tool for prioritisation but it should not be the sole input beyond government. Prioritisation of target pests and diseases that lacks input from regional producers, consultants, value chain participants and others fails to make use of a valuable source of "on the ground" information. More importantly, it forgoes the opportunity to empower the communities most at risk of an incursion and whose engagement is an essential feature of biosecurity system success. This adds to the distrust in a system already viewed as bureaucratic, overly focused on regulation and punitive in nature. It also contributes to the widely held belief that government does not understand regional issues and conversely that industry and regional communities do not understand the complexities of world trade and economic risk.

The potential impacts of an exotic incursion at the national level have been described by numerous authors. DAFF maintains limited risk analyses as a part of general biosecurity measures,<sup>17</sup> CEBRA has undertaken some pest and disease specific analysis with respect to foot-and-mouth disease and Varroa mite<sup>18</sup> and some information on the relative potential for incursion is available in a range of contingency plans hosted by AHA<sup>19</sup> and PHA.<sup>20</sup> However the calculated costs tend to be so large that they are not readily comprehensible by individual stakeholders.

At the regional level, the potential impact of an incursion is more readily identified and related to being principally associated with:

- the probability of an incursion occurring
- the severity of impact on directly affected businesses such as direct production losses in both yield and quality that can impact prices
- additional expenditure on control measures
- loss of markets, particularly export markets associated with price premiums, and
- the impact on the wider regional economy.

There is a significant opportunity to work with industries and communities (through participatory groups) in a pilot across Orange to identify which priority pests and diseases are most important to the region and should be prioritised. Where information is available, understanding of the potential impact of an incursion on whole regional communities has been demonstrated to support the development and implementation of effective community-based biosecurity programs such as the Goulburn Murray Valley Fruit Fly Project in northern Victoria.<sup>21</sup> Currently, most projects are focused on a single threat (e.g. fruit fly), they highlight the fact that broader community programs can be established as long as the implications of a biosecurity incursion are understood at the regional level and the communities involved are empowered to act. The lack of easily accessible information on potential incursion probabilities and impact makes it difficult for individuals to perceive the threat posed and undertake appropriate actions and behaviours. In the absence of information, the focus of biosecurity on prevention of a future event (that may not occur) becomes a low priority for investment of time and money.

### THE GOULBURN MURRAY VALLEY (GMV) FRUIT FLY PROJECT

The Goulburn Murray Valley (GMV) Fruit Fly Project is a community led, area-wide management initiative that covers 16,354 sq km across the GMV.

The project was established in 2017 with support from the Victorian Fruit Fly Grants program. The project is a participatory approach to area-wide management that involves community, industry and government to provide education and workshops, monitoring and research. It is empowered to make decisions about the activities that best achieve area-wide freedom in the



GMV region and is overseen by a representative governance group. The project has been successful in reducing Queensland fruit fly in the GMV by 60% and, in 2019, was the recipient of the Prime Super Agricultural Innovation Award as well as the overall winner of the Victorian Regional Achiever of the Year Award.

<https://fruitflycontrol.com.au/> - used with permission

<sup>17</sup> Biosecurity risk analysis - DAFF (agriculture.gov.au)

<sup>18</sup> DAFF 2022, Submission to the Rural and Regional Affairs and Transport References Committee: Adequacy of Australia's biosecurity measures and response preparedness, in particular with respect to foot-and-mouth disease and Varroa mite, Department of Agriculture, Fisheries and Forestry, Canberra, August CC BY 4.0.

<sup>19</sup> Informing EAD Responses - AUSVETPLAN - Animal Health Australia

<sup>20</sup> Grains - Plant Health Australia

<sup>21</sup> Home - Fruit Fly Control



GAP ANALYSIS	REQUIRED OUTPUTS	ACTIVITIES
<p><b>Motivation</b> The lack of a regional focus on the potential impact of an exotic pest or disease incursion makes it difficult for individuals to perceive the threat posed and undertake appropriate actions and behaviours.</p>	<p>Estimates of the impact of priority pests and diseases developed at a regional scale based on probability of incursion and severity of impact on individual businesses and whole of community values (triple bottom line approach).</p>	<p>Collaborate with ABARES and CEBRA to undertake a regional assessment of impact of priority pests and diseases that is more likely to resonate with regional communities and support biosecurity activities.</p>
<p><b>Attitude</b> The expert, top-down approach to prioritising exotic pests and diseases lacks regional focus and alienates regional communities that form an important part of surveillance and preparedness. As a result, the broader community does not engage.</p>	<p>Identification of prioritisation processes that can be devolved to communities to increase empowerment and engagement in a participatory approach to biosecurity.</p>	<p>Review of prioritisation decision-making that can be devolved to regional communities through a participatory approach.</p>
<p><b>Knowledge</b> Estimates of the potential impact of exotic pests and diseases, where available, are made at a national level and lack regional context and prioritisation.</p>	<p>Estimates of the impact of priority pests and diseases developed at a regional scale based on probability of incursion and severity of impact on individual businesses and whole of community values (triple bottom line approach).</p>	<p>Priority pests and diseases reviewed for relevance in Orange and regional impact assessments generated based on triple bottom line analysis.</p>
<p><b>Technology</b> Numerous websites and online tools across multiple agencies with no common approach to asset mapping and community engagement.</p> <p>Lack of diagnostic resources (apps etc.).</p>	<p>Tools designed for regional asset mapping and community involvement in prioritisation of local risks and opportunities.</p> <p>Common diagnostic resources available for pests and disease identification designed to meet user defined needs.</p>	<p>Asset mapping and diagnostic tools developed and/or collated. There is no requirement for a single website for biosecurity but there is a need to determine where relevant material and tools are located, their fit for purpose and ensure links are consistent across different websites and other communication platforms.</p>

## QUESTIONS

1. *What is your understanding of biosecurity and shared responsibility? Is there a need for a common definition?*
2. *What would drive you or your organisation to prioritise proactive biosecurity activities?*
3. *How do you value biosecurity and your role in preparing for it? Is there sufficient information on a regional basis on:*
  - a. *Potential cost of managing a disease or pest outbreak?*
  - b. *Potential impact on access to markets?*
  - c. *Impact on local businesses and amenities?*
4. *How could relationships between government at all levels, industries and the local community be strengthened to address biosecurity issues at your regional/local level? Is a participatory approach with empowerment of regional communities appropriate and would it encourage your organisation to be more involved in biosecurity matters?*





## ACTIVE SURVEILLANCE FOR EXOTIC PESTS AND DISEASES ON A REGIONAL SCALE

### Active pest and disease surveillance is an integral part of both biosecurity and production agriculture.

There are two types of surveillance:

- General surveillance, where information on pests or diseases of concern in an area is gathered from various sources that can include government agencies, research institutions, producers, consultants, and the general public.
- Specific surveillance where information (including presence/absence data) on pests or diseases of concern in an area is obtained by internationally recognised national organisations over a defined period. This underpins claims to area freedom to support trade.

Both types of surveillance are important parts of the biosecurity system. However, the relatively high costs of specific surveillance have seen an emphasis on jointly funded activities between government and industry (often via a Research and Development Corporation) as well as a focus on the development of supporting technologies. Given the cost of developing new technologies, current commercial efforts are focused on pests and diseases of industries of high value where control of endemic pests and diseases is an imperative for production (e.g. fruit fly in the horticulture industries). There are, however, several technology platforms being developed and deployed in Australia with relevance to general and specific surveillance for exotic pests and diseases at the national and regional levels. Some use specific hormone lures to attract pests (e.g. RapidAIM and Trapview) while others are based on random air sampling (e.g. BioScout or Agrisamplers used on iMapPest sentinels). These tools are necessarily tailored to the respective pest or disease and consequently their development and deployment in pre-emptive surveillance requires agreement on which pests and diseases to prioritise and target.

There are further opportunities to integrate tracking technologies with broad applicability across farms and the supply chain especially those being deployed as part of wider traceability operations (e.g. provenance tracing). The Southern NSW Innovation Hub<sup>22</sup> is collaborating with the NSW wine industry and NSW DPI in a Track and Trace project<sup>23</sup> to test QR code tracing technology and its effectiveness in engaging

industry to track infrastructure and personnel to provide data on the potential movement of pests and diseases (see Southern NSW Innovation Hub, NSW DPI, NSW Wine and Onside – Track & Trace initiative – pages 13-14). While the biosecurity implications of this technology are obvious, its wider application to demonstrate provenance and meet consumer demand for traceability also adds value to everyday farming operations. The project has developed the requisite technologies and feedback from growers indicates that not only has it increased their awareness of biosecurity and willingness to integrate biosecurity into everyday business activities, it has also supported the exploration for use in other tracking activities.

While technology developments will certainly make a significant contribution to both general and specific surveillance, they are not likely to completely replace the need for human interaction (e.g. some require regular collection of samples while others can only be deployed at a limited scale). There are clear opportunities to more closely integrate current production activities, including monitoring for endemic species with a general surveillance approach that includes technology platforms for detection of potential exotic incursions as part of a regional community-based biosecurity program. However, there are significant barriers to individuals taking part in general surveillance and reporting potential exotic pests and diseases that range from:

- the cost of participation
- not wanting to be identified as the first farm or business in a region to report an exotic pest or disease
- in the case of advisers, not wishing to upset a commercial relationship that underpins the business
- the potential costs involved in containment and eradication
- over-confidence of individuals that they can manage by themselves, and
- lack of responsiveness by government or recognition of their contribution.

None of these barriers are likely to be resolved by a top-down, regulation driven approach. It would be far preferable to implement general surveillance and reporting measures that complement current producer, adviser and community activities and encourage the pro-active reporting of potential incursions because there is a motivation to do so rather than a legal requirement to comply.

<sup>22</sup> PowerPoint Presentation (csu.edu.au)

<sup>23</sup> Report (elfsightcdn.com)

The socialisation of general surveillance and reporting could also overcome some of the perceived barriers to community and individual involvement. For example, socialised surveillance for COVID-19 is routinely practiced through wastewater testing.<sup>24</sup> A similar approach could be utilised by testing samples from truck washdown facilities, biosecurity areas on-farm and in downstream processing facilities for high priority exotic pests and diseases such that detection is regionally specific (e.g. limited to a postcode) but individual businesses are not identified.

The importance of integrating regional capacity and capability into general surveillance has been a recurring theme of most recent reviews of the biosecurity system.<sup>25,26</sup> The potential benefits are well described (see Kruger et al., 2020<sup>27</sup> Appendix 1 and references therein) and include:

- reducing the cost of data collection
- increasing the probability of detecting target pests and diseases
- contributing to the evidence for area-wide pest freedom to support market access (e.g. fruit fly)
- extending the area where surveillance is undertaken

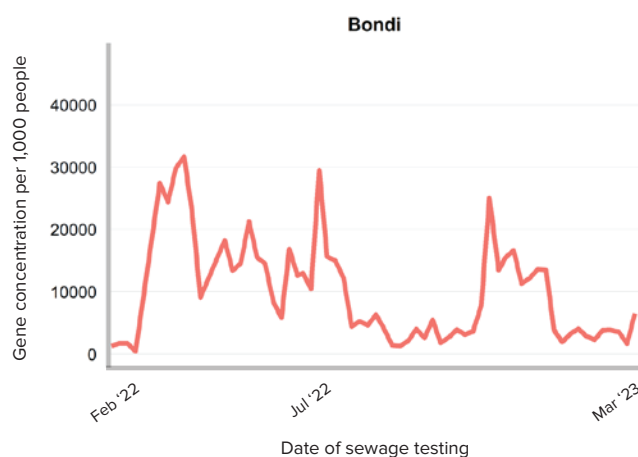
- providing surveillance over an extended period
- developing trusted relationships between community and government necessary to deal with control of endemic species and response to a potential incursion
- developing regional and local ownership of biosecurity issues, and
- increasing community understanding of key pests and diseases.

Yet the implementation of regionally led general surveillance appears to be challenging. The lack of progress has resulted in an extensive suite of work under the “Making General Surveillance Work”<sup>28</sup> that highlights numerous federal, state and territory government initiatives but also the significant level of fragmentation between programs. Guidelines for general surveillance have subsequently been developed, tested with representative stakeholders<sup>29</sup> and refined to include checklists for staff, funders and investors, and policy makers.<sup>30</sup> They provide the framework for the development of participatory surveillance programs that can be utilised on a regional basis but also extended nationally.

## COVID-19 SEWAGE SURVEILLANCE PROGRAM

The NSW COVID-19 Sewage Surveillance Program routinely tests for fragments of the virus that causes COVID-19 in waste treatment facilities and provides an example of what we can learn from different and successful approaches.

At its peak, the program operated across the state covering 90% of the population to provide an early warning of potential outbreaks. Testing now occurs at facilities across Sydney and Newcastle as part of a more general surveillance program with weekly results available from the NSW Respiratory Surveillance Report (NSW Respiratory Surveillance Report - week ending 11 March 2023). Trend data clearly demonstrates the increased detection of virus in sewerage during outbreaks in April and July of 2022.



### GAP ANALYSIS

#### Motivation

The lack of a regional focus on the potential impact of an exotic pest or disease incursion makes it difficult for individuals to perceive the threat posed and undertake appropriate actions and behaviours.

### REQUIRED OUTPUTS

Estimates of the impact of priority pests and diseases developed at a regional scale based on probability of incursion and severity of impact on individual businesses and whole of community values (triple bottom line approach).

### ACTIVITIES

Collaborate with ABARES and CEBRA to undertake a regional assessment of impact that is more likely to resonate with regional communities and support biosecurity activities.

Participatory approaches developed with producers, advisers, contractors, farming system groups, processors, and the wider community to deliver general surveillance for priority pests and diseases.

Identify willing participants in regional communities and provide training in the identification and reporting of pests and diseases that are of significance to their region.

<sup>24</sup> COVID-19 Sewage Surveillance Program - COVID-19 (Coronavirus) (nsw.gov.au)

<sup>25</sup> Beale-Report-2008.pdf (invasives.org.au)

<sup>26</sup> Priorities for Australia's biosecurity system – An independent review of the capacity of the national biosecurity system and its underpinning Intergovernmental Agreement (agriculture.gov.au)

<sup>27</sup> Kruger, H, El Hassan, M, Stenekes, N, Kancans, R, 2020, Understanding general surveillance for biosecurity as a system, ABARES [Research report 2013], Canberra, June, CC BY 4.0.

<sup>28</sup> Making general surveillance work - DAFF (agriculture.gov.au)

<sup>29</sup> BiosecNatActPlanSummary\_v1.0.0.pdf (agriculture.gov.au)

<sup>30</sup> Guidelines for General Surveillance Programs - DAFF (agriculture.gov.au)

	<b>GAP ANALYSIS</b>	<b>REQUIRED OUTPUTS</b>	<b>ACTIVITIES</b>
<b>Attitude</b>	The expert, top-down approach to prioritising exotic pests and diseases lacks regional focus and alienates regional communities that form an important part of surveillance. As a result, the broader community does not engage.	Identification of prioritisation processes that can be devolved to communities to increase empowerment and engagement in a participatory approach to general surveillance.	Review of prioritisation decision-making that can be devolved to regional communities through a participatory approach.
	The desire not to be the first to report a pest or disease in a region remains strong due to the associated commercial and potential social impacts. Producers and supply chain participants also have competing priorities for their time and biosecurity does not necessarily feature strongly.	Socialised methodologies for general surveillance that are not reliant on individual identification.  Trusted relationships established between experts, government, and regional community members to support an increase in general surveillance and reporting.	Develop methods and processes for participants to collect samples as part of their everyday activities and provide regional location details that allow tracking in the event of an incursion but de-identifies individuals.  Developing trusted relationships requires a presence in the region and responsiveness to reports. There is also the need to overcome the stigma of biosecurity as a highly regulated, punitive system that seeks to apportion blame.
<b>Knowledge</b>	Identification guides for priority pests and diseases are available from DAFF, AHA and PHA and elsewhere but can be dated and/or difficult to find and understand.	Consistent identification guides for priority exotic pests and diseases available from multiple sites and on a range of platforms (web, app, paper etc).	Develop identification guides with relevant photos and information that have a consistent format.
	Processes for socialised general surveillance have been established across multiple initiatives but are not consistent nor tailored to the priorities of different industries or regions.	A robust and consistent sampling methodology established that makes general surveillance for non-experts easy and de-identifies samples but maintains regional tracking.	Sampling methodologies developed for the priority pests and diseases in a region that fit easily with the everyday activities of participants while providing a robust socialised surveillance platform.
<b>Technology</b>	Molecular and other diagnostics have been developed for a range of pests and diseases that are of commercial importance but are not necessarily aligned with regional priorities.	Diagnostics available for exotic pests and diseases of regional importance that can be routinely and rapidly applied to samples sent for analysis.	Collaboration with current investments to develop diagnostics to ensure they address the priorities of their regional community.

## QUESTIONS

1. *Are you aware of the priority animal and plant pests and diseases that are relevant to your region? Would regional prioritisation of pests and diseases assist you in making decisions regarding active surveillance and reporting? On what basis would you prioritise potential threats, e.g. financial impact on your business and/or the wider community, ability to eradicate or manage, impact on market access, other?*
2. *Is there sufficient information available to assist in identifying a potential exotic pest or disease and is it easily accessed?*
3. *Would you or your organisation be comfortable reporting a potential new exotic pest or disease? If not why, for example;*
  - a. *not wanting to be identified as the first farm or business in a region to report an exotic pest or disease*
  - b. *loss of income, loss of ongoing business*
  - c. *confidence you can manage it*
  - d. *not wanting to involve the government, and*
  - e. *requirement to report anything out of the usual takes too much time away from other parts of the business.*
4. *Would you see value, and would you partake in anonymous, socialised surveillance approaches (similar to wastewater testing for COVID-19) for pests and diseases? Such an approach could be utilised by testing water samples from truck washdown facilities, biosecurity areas on farms, processing areas in abattoirs and factories, with all data being de-identified.*
5. *How important is it to integrate biosecurity technologies and activities with other farm business initiatives such as sustainability or provenance tracking?*





## REGIONAL COMMUNITIES AND BUSINESSES PREPARED TO RAPIDLY RESPOND TO POTENTIAL INCURSIONS

### Regional Biosecurity Plans for Preparedness and Response

When a biosecurity incident does occur in Australia arrangements are in place across government and industry to commence a rapid, nationally coordinated response.

However, when it comes to pre-emptively preparing for a biosecurity threat, the course of action is far less clear. Early engagement with regional communities and individuals would prepare them for a more agile approach, reduce the uncertainty and stress associated with not knowing what actions may be required and would engender a more trusting relationship that in turn supports a proactive biosecurity system. Community engagement is currently compromised by a lack of understanding of what biosecurity is (and what it isn't), who is responsible for what and the copious number of

reports, plans, strategies, helplines and contact details that adds to confusion and a disinclination to be involved. As a consequence, there is a tendency to assume that someone else is responsible and no one takes ownership of pre-incursion community readiness.

Opportunities exist to engage more closely with diverse stakeholder groups at regional and local levels to be better prepared to respond to an exotic pest or disease outbreak. This could initially focus on developing and implementing pre-emptive biosecurity plans tailored to regional priorities and matched to local needs that support prevention and preparedness activities.



The pre-emptive development of farm biosecurity plans is already supported through numerous initiatives such as Agriculture Victoria's Biosecurity Management Plan,<sup>31,32</sup> AHA and PHA's joint initiative Farm Biosecurity Action Planner,<sup>33</sup> and in numerous industry specific communications (e.g. the latest GRDC GroundCover supplement on biosecurity<sup>34</sup>). Most would be appropriate as a structure to develop regional biosecurity plans that embrace community and a range of industries.

<sup>31</sup> Farm biosecurity planning and templates | Emergency animal diseases | Animal diseases | Biosecurity | Agriculture Victoria

<sup>32</sup> Industry, community and government perspectives | Strengthening Victoria's Biosecurity System Program | Protecting Victoria | Biosecurity | Agriculture Victoria

<sup>33</sup> Farm-Biosecurity-Action-Planner-2019.pdf (farmbiosecurity.com.au)

<sup>34</sup> supp-160-biosecurity-sep-oct-2022.pdf (grdc.com.au)

GAP ANALYSIS	REQUIRED OUTPUTS	ACTIVITIES
<p><b>Motivation</b> The top-down approach to biosecurity regulation, together with differing understandings of biosecurity, the multitude of reports, plans, procedures, and lack of information on relevant priority pests and diseases inadvertently prevents community engagement.</p>	<p>Estimates of the impact of priority pests and diseases developed at a regional scale based on probability of incursion and severity of impact on individual businesses and whole of community values (triple bottom line approach).</p>	<p>Collaborate with ABARES and CEBRA to undertake a regional assessment of impact that is more likely to resonate with regional communities and support biosecurity activities.</p>
<p>Community has no options. There is top-down information flow but no opportunity to engage, question or understand what biosecurity actions mean to them, their business and their community (e.g. emergency permits, containment requirements etc.)</p>	<p>A common, plain English definition of biosecurity and the principle of shared responsibility, what it means and why we should care.</p> <p>A simple, plain English description of how the biosecurity system operates in Australia that outlines important decision-making actions, the roles and responsibilities of the main stakeholders, and the opportunities for community input.</p>	<p>Drafting of plain English definitions with context of what it means to the community by specialist writers taking advice from experts.</p> <p>Drafting of plain English description of the key decision-making processes in biosecurity, who is involved and how community is and can be engaged. Descriptions to be developed by specialist writers taking advice from experts.</p>
<p><b>Attitude</b> The expert, top-down approach to biosecurity activities and responses alienates regional communities. As a result, the broader community does not engage – “not my problem, the government looks after biosecurity”.</p>	<p>Identification of processes that can be devolved to communities to increase empowerment and engagement in a participatory approach to general surveillance.</p>	<p>Review of prioritisation decision-making that can be devolved to regional communities through a participatory approach.</p>
<p>Trusted relationships established between experts, government, and regional community members to support an increase in preparedness.</p>	<p>Developing trusted relationships requires a presence in the region and responsiveness to reports and questions. There is also the need to overcome the punitive stigma of biosecurity as a highly regulated activity that seeks to apportion blame.</p>	<p>Developing trusted relationships requires a presence in the region and responsiveness to reports and questions. There is also the need to overcome the punitive stigma of biosecurity as a highly regulated activity that seeks to apportion blame.</p>
<p><b>Knowledge</b> Current biosecurity plans are industry or farm based. They form a good basis for the development of regional plans but are not a substitute for them.</p>	<p>Current plans and detailed technical information used to assist communities in developing regional biosecurity plans targeting priority pests and diseases and relevant industries and environments.</p>	<p>Plain English regional biosecurity plans co-developed with community, based on the principles of farm biosecurity plans.</p>
<p>Current plans and information abound in detail but with a range of usefulness and relevance, and often without a clear target audience.</p>	<p>Information, driven by participatory groups on what THEY want, easily identified and accessed.</p>	<p>Regional biosecurity dashboard (pre-emptive) designed by and for local communities (refer plain English summary) providing current and relevant information on biosecurity situation and potential threats, risk profile, area freedom, etc. and actions required under a regional biosecurity plan.</p>
<p><b>Technology</b> Currently, a vast amount of information on biosecurity plans is available from varying sources and with varying degrees of usefulness.</p>	<p>Information, driven by participatory groups on what THEY want, easily identified and accessed.</p>	<p>Regional biosecurity dashboard (pre-emptive) designed by and for local communities (refer plain English summary) providing current and relevant information on biosecurity situation and potential threats, risk profile, area freedom, etc. and actions required under a regional biosecurity plan.</p>

## Pre-emptive Agreement on Domestic Trade

The current approach to biosecurity management is understandably highly risk averse with the immediate response to an incursion or potential incursion being to cease or severely restrict domestic trade. This type of approach is exemplified by individual state reactions to COVID-19 where border closures were routinely put in place as governments responded to the emergency on the run and consequently enacted decisions that adversely impacted border communities and businesses.<sup>35</sup> The Intergovernmental Agreement on Biosecurity specifically limits the application of “interstate biosecurity measures only to the level necessary to mitigate risks to the economy, environment, and the community. Such measures will be the least trade restrictive possible, based on science, applied only to the extent necessary to achieve Australia’s appropriate level of protection and harmonised where possible”. Yet similar provisions to the closure of state borders have most recently been enforced to prevent the transport of beehives into Victoria from NSW in response to the current Varroa mite incursion.<sup>36</sup> Some early restrictions imposed at the start of the

incursion have subsequently been wound back, but the costs in terms of pollination in orchards and other crops is likely to be significant. Without pre-emptive agreement on appropriate containment measures for priority pests and diseases (on a regional and national basis), extensive border closures are likely to remain the response of choice to any incursion.

An important observation is that the committees making containment, eradication, and transition to management decisions (including border closures) have a great deal of technical expertise and commodity input but lack the input of regional industry and communities that are most likely impacted. In addition, the considerations of these committees are often treated as confidential and consequently, there is little data or communication on whether current conservative actions are socially or economically warranted. Consequently, there is a general sense of helplessness in regional communities, the undermining of trust between government, industry, and community, and an unwillingness to engage proactively in biosecurity.

	GAP ANALYSIS	REQUIRED OUTPUTS	ACTIVITIES
<b>Motivation</b>	The lack of a regional focus on the potential impact of an exotic pest or disease incursion makes it difficult for individuals and communities to perceive the potential threat.	Estimates of the impact of priority pests and diseases developed at a regional scale based on probability of incursion and severity of impact on individual businesses and whole of community values (triple bottom line approach).	Collaborate with ABARES and CEBRA to undertake a regional assessment of impact that is more likely to resonate with regional communities and support biosecurity activities.
<b>Attitude</b>	The expert, top-down approach to management of incursions, including border closures, does not seek to enable trade, disempowers regional communities and undermines the development of trusted relationships.	Pre-emptive agreements on likely domestic trade restrictions for priority pests and diseases developed and implemented on a regional basis.	Review of the risks of movement of regionally prioritised pests and diseases to national and regional economies and environments. Agreed draft domestic trade restrictions developed for high priority pests and diseases.
		Trusted relationships established between experts, government, and regional community members to support a greater understanding of the potential need for trade restrictions and a greater level of compliance.	Developing trusted relationships requires a presence in the region and responsiveness to reports. There is also the need to overcome the punitive stigma of biosecurity as a highly regulated activity that seeks to apportion blame.
<b>Knowledge</b>	Estimates of the risk and potential impact of exotic pests and diseases, where available, are made at a national level and lack regional context and prioritisation.	Estimates of the impact of priority pests and diseases developed at a regional scale based on probability of incursion and severity of impact on individual businesses and whole of community values (triple bottom line approach).	Priority pests and diseases reviewed for relevance in Southern NSW and regional impact assessments generated based on triple bottom line analysis.
<b>Technology</b>	Not Applicable		

<sup>35</sup> 6350438b7df8c77439846e97\_FAULT-LINES-1.pdf (website-files.com)

<sup>36</sup> Varroa mite – current situation | Varroa mite of honey bees | Priority pest insects and mites | Pest insects and mites | Biosecurity | Agriculture Victoria

## Training for Biosecurity

Training programs underpin both capability and capacity of regional biosecurity approaches. Training courses in biosecurity are available from multiple sources targeting different participants in the system. Both AHA<sup>37</sup> and PHA<sup>38</sup> offer on-line training targeted at producers, advisers, and other participants in the value chain. In the case of AHA, some of the courses are accredited (e.g. the Accreditation Program for Australian Veterinarians Registration). PHA also offers some face-to-face training courses for members that cover Biosecurity Awareness Workshop, Decision-making Committees, and Industry Liaison.<sup>39</sup> However, courses are not necessarily tailored to different regional communities (with differing biosecurity priorities) or

individual groups within communities. Even coordinated efforts such as Farm Biosecurity Program<sup>40</sup> (a joint initiative of AHA and PHA) tends toward a collection of fact sheets and manuals aligned with a diffusion extension model in preference to a more integrated approach.

The development of a regional participatory approach to biosecurity provides an opportunity to understand the training needs of stakeholders and coordinate training courses, workshops etc. to maximise effectiveness while minimising costs. The materials developed by PHA and AHA are excellent and a collaboration with them to explore regional training should be explored.

	<b>GAP ANALYSIS</b>	<b>REQUIRED OUTPUTS</b>	<b>ACTIVITIES</b>
<b>Motivation</b>	<p>Biosecurity is currently just another activity to be completed along with normal operations, WH&amp;S etc. There is no easily digestible, regionally relevant information available to encourage communities to prioritise biosecurity above any other business activity.</p> <p>At best biosecurity is a module to be completed as part of a broader QA scheme.</p>	<p>Estimates of the impact of priority pests and diseases developed at a regional scale based on probability of incursion and severity of impact on individual businesses and whole of community values (triple bottom line approach).</p> <p>Biosecurity becomes part of how “we do business”, integral to farming, business and community operations.</p>	<p>Collaborate with ABARES and CEBRA to undertake a regional assessment of impact that is more likely to resonate with regional communities and support biosecurity activities.</p> <p>Support, training (with accreditation) to businesses, communities, and government agencies on biosecurity preparedness, and impacts on local community.</p>
<b>Attitude</b>	<p>The expert, top-down approach to prioritising exotic pests and diseases lacks regional focus and alienates regional communities that form an important part of surveillance. As a result, the broader community does not engage.</p>	<p>Identification of prioritisation processes that can be devolved to communities to increase empowerment and engagement in a participatory approach to general surveillance.</p>	<p>Review of prioritisation decision-making that can be devolved to regional communities through a participatory approach.</p>
<b>Knowledge</b>	<p>There are multiple training programs available – often online and sometimes with accreditation. It is difficult to determine which is right for which industry and which region.</p>	<p>Regionally tailored biosecurity training developed that addresses priority pests and diseases.</p>	<p>Working with AHA and PHA to develop regionally tailored training programs based on their current training modules.</p> <p>Training programs that focus on entire community, including local councils, LLS and not solely on producers.</p>
<b>Technology</b>	<p>Most training programs are available online, with some limited face-to-face workshops. Options to tailor web-based training to different regions and industries would enhance the online experience.</p>	<p>Regionally adjustable online training modules developed.</p>	<p>Collaboration with AHA and PHA to develop online content that can be tailored to different regions and industries.</p>

<sup>37</sup> Online training courses - Animal Health Australia

<sup>38</sup> Biosecurity Online Training - Plant Health Australia

<sup>39</sup> Training - Plant Health Australia

<sup>40</sup> About the Farm Biosecurity Program - Farm Biosecurity



## QUESTIONS

1. *Would you be interested in having a greater input into what and how your community and your business manages and responds to biosecurity threats? How might this be achieved?*
2. *Is there a need to better understand domestic trade restrictions in response to an actual or potential incursion (e.g. current restrictions on the movement of beehives) and would pre-emptive planning and communication of the potential response at regional level help communities be better prepared? Should there be more clarity in pre-emptive domestic trade agreements to provide more certainty to regional communities?*
3. *Would you or your organisation undertake regional biosecurity training? Should training be regionally tailored and is there value in accreditation and if so by whom?*



ALIGNMENT  
WITH NATIONAL  
BIOSECURITY  
STRATEGY  
PRIORITIES  
AND ACTIVITIES

SOUTHERN NSW  
INNOVATION HUB

BIOSECURITY  
PREPAREDNESS



Regional communities that are **ENGAGED** in and valuing biosecurity



STRATEGIC  
FRAMEWORK



Active **SURVEILLANCE** for exotic pests and diseases on a regional scale



Regional communities and businesses prepared to rapidly **RESPOND** to potential incursions



**ALIGNMENT WITH NATIONAL BIOSECURITY STRATEGY PRIORITIES AND ACTIVITIES**

**OUTPUT**

**Development of a participatory pilot for Orange that builds on a values-based, people centric engagement model developed by Southern NSW Innovation Hub**

**RELATED INTERMEDIATE OUTCOME**

Regional communities engaged in and valuing biosecurity



- Engaging Communities



**RELATED INTERMEDIATE OUTCOME**

Active surveillance for exotic pests and diseases on a regional scale



**NATIONAL BIOSECURITY PRIORITIES AND ACTIVITIES**

Build on and develop national awareness and education programs to deepen the understanding of Australia's biosecurity and encourage community and industry stewardship in the system.

Social and behavioural research, leveraging community and other networks and exploring new channels of engagement.

Determine opportunities to embed biosecurity as a consideration into all levels of government, community, industry and other stakeholders' broader decision-making, risk and business continuity planning.

Collaborate with a diverse range of biosecurity stakeholders to review and refine roles and responsibilities, providing flexibility to adapt as the system evolves.

Build upon and expand existing cooperative and partnership arrangements to leverage the expertise and capability of biosecurity stakeholders.

Advance regionally based planning activities to better align effort, integrate biosecurity practices and facilitate greater education and awareness opportunities.

Enhance our national surveillance and early detection arrangements to ensure they are robust given the changing threat environment, drawing on the expertise and capabilities of biosecurity stakeholders.

Enhance the accessibility and use of surveillance and interception data to support effective and seamless decision-making by all stakeholders.

Increase the use of citizen science, Indigenous knowledge and on the ground insights as valued sources of expertise, data and information.

ALIGNMENT WITH NATIONAL BIOSECURITY STRATEGY PRIORITIES AND ACTIVITIES

OUTPUT

A common, plain English definition of biosecurity and the principle of shared responsibility, what it means and why we should care and continue to care.

RELATED INTERMEDIATE OUTCOME



Regional communities engaged in and valuing biosecurity

- Engaging Communities



RELATED INTERMEDIATE OUTCOME

Regional communities and businesses prepared to rapidly respond to potential incursions



- Regional Biosecurity Plans for Preparedness and Response



NATIONAL BIOSECURITY PRIORITIES AND ACTIVITIES



Build on and develop national awareness and education programs to deepen the understanding of Australia's biosecurity and encourage community and industry stewardship in the system.



Advance regionally based planning activities to better align effort, integrate biosecurity practices and facilitate greater education and awareness opportunities.



Increase the use of citizen science, Indigenous knowledge and on the ground insights as valued sources of expertise, data and information.

**ALIGNMENT WITH NATIONAL BIOSECURITY STRATEGY PRIORITIES AND ACTIVITIES**

**OUTPUT**

**A simple, brief, plain English description of how the biosecurity system operates in Australia that outlines important decision-making actions and the roles and responsibilities of the main stakeholders.**

**RELATED INTERMEDIATE OUTCOME**



Regional communities engaged in and valuing biosecurity

- Engaging Communities



**RELATED INTERMEDIATE OUTCOME**

Regional communities and businesses prepared to rapidly respond to potential incursions



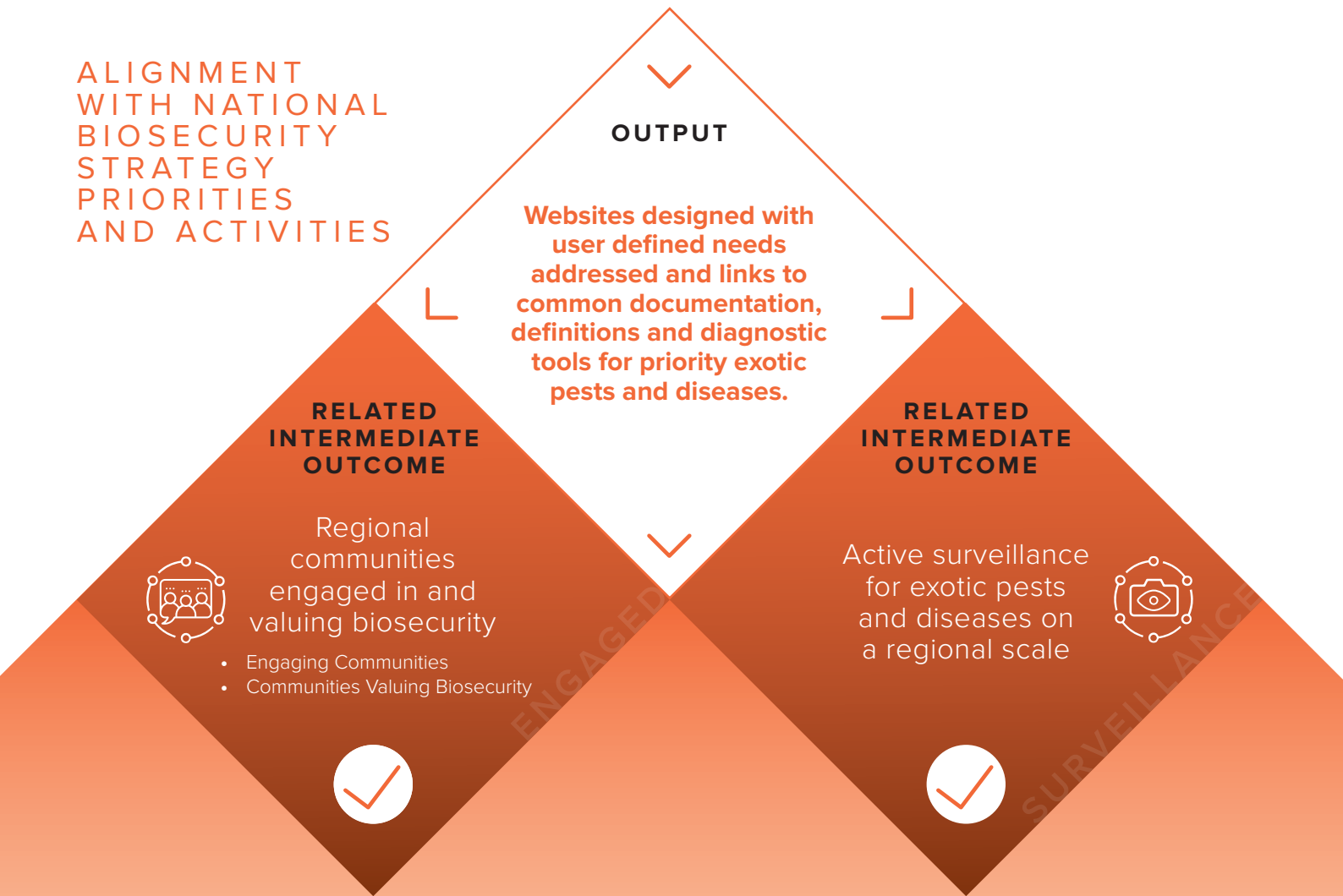
- Regional Biosecurity Plans for Preparedness and Response



**NATIONAL BIOSECURITY PRIORITIES AND ACTIVITIES**

- Build on and develop national awareness and education programs to deepen the understanding of Australia's biosecurity and encourage community and industry stewardship in the system.
- Review governance arrangements to ensure that they include relevant stakeholders in the design, development and implementation of national policies, programs and regulatory arrangements.
- Identify and implement opportunities for greater industry and community involvement in decision-making bodies.
- Advance regionally based planning activities to better align effort, integrate biosecurity practices and facilitate greater education and awareness opportunities.
- Increase the use of citizen science, Indigenous knowledge and on the ground insights as valued sources of expertise, data and information.

**ALIGNMENT WITH NATIONAL BIOSECURITY STRATEGY PRIORITIES AND ACTIVITIES**



**NATIONAL BIOSECURITY PRIORITIES AND ACTIVITIES**



Build on and develop national awareness and education programs to deepen the understanding of Australia's biosecurity and encourage community and industry stewardship in the system.



Enhance our national surveillance and early detection arrangements to ensure they are robust given the changing threat environment, drawing on the expertise and capabilities of biosecurity stakeholders.

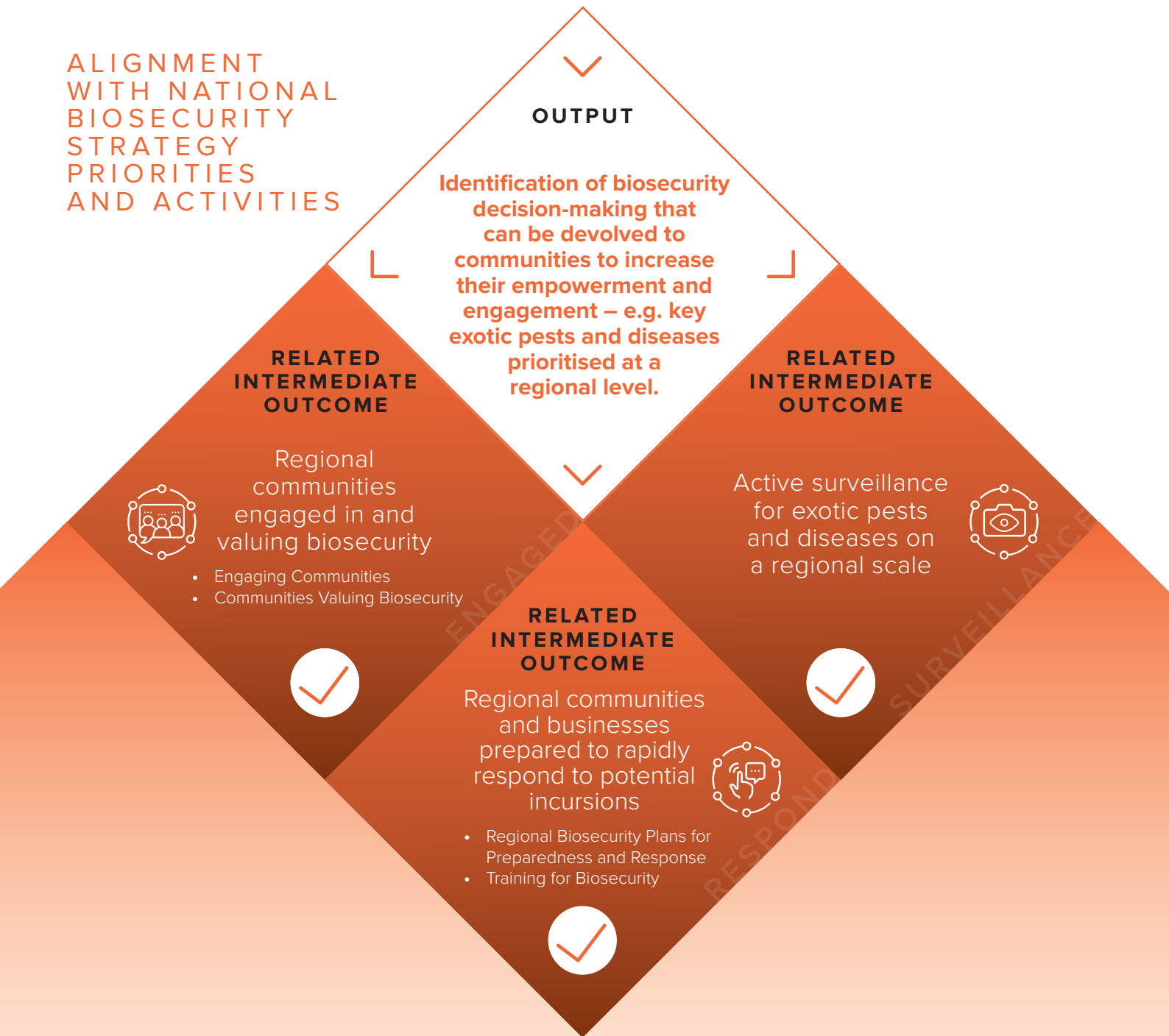


Enhance the accessibility and use of surveillance and interception data to support effective and seamless decision-making by all stakeholders.



Increase the use of citizen science, Indigenous knowledge and on the ground insights as valued sources of expertise, data and information.

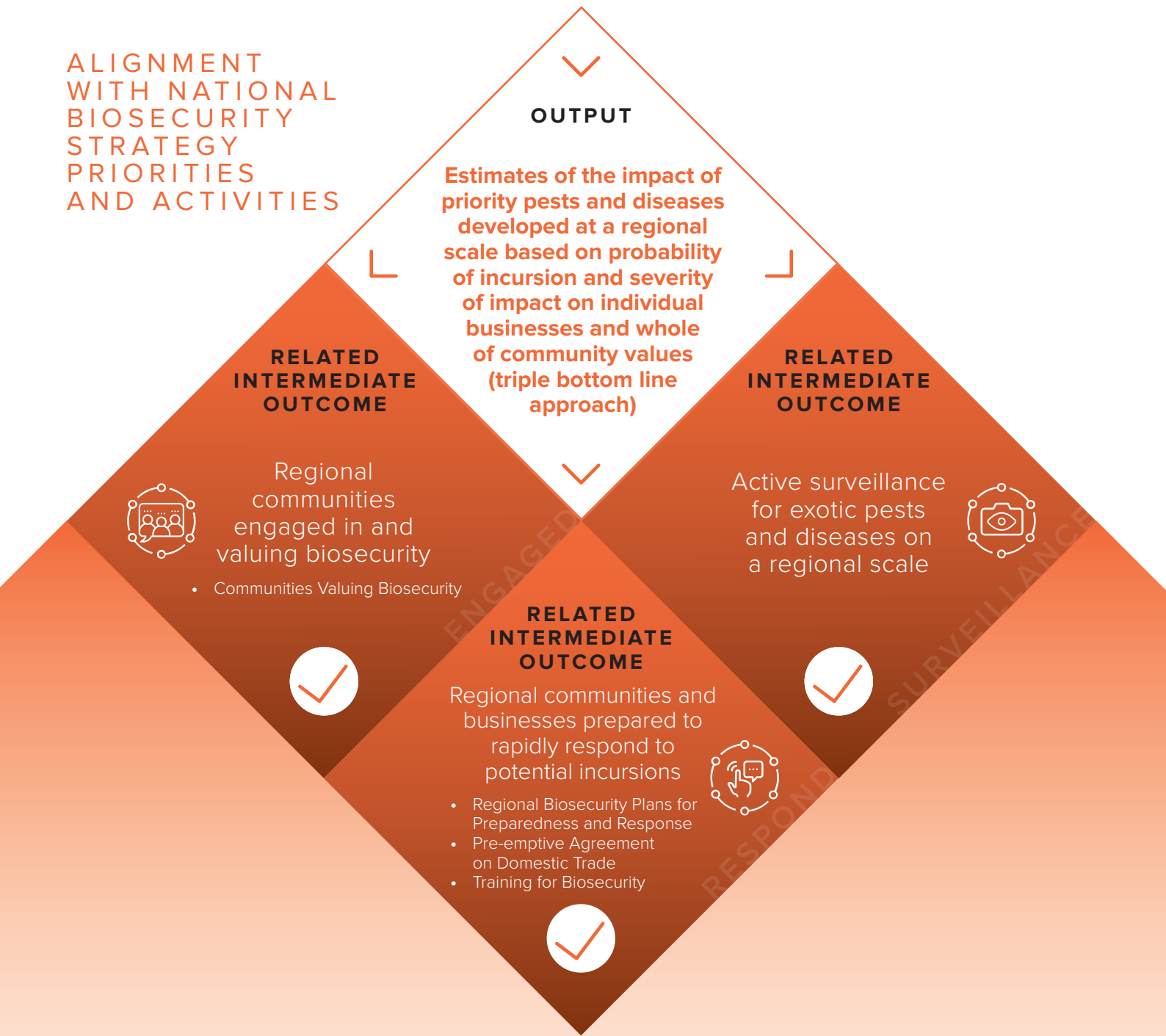
**ALIGNMENT WITH NATIONAL BIOSECURITY STRATEGY PRIORITIES AND ACTIVITIES**



**NATIONAL BIOSECURITY PRIORITIES AND ACTIVITIES**

- Build on and develop national awareness and education programs to deepen the understanding of Australia’s biosecurity and encourage community and industry stewardship in the system.
- Social and behavioural research, leveraging community and other networks and exploring new channels of engagement.
- Determine opportunities to embed biosecurity as a consideration into all levels of government, community, industry and other stakeholders’ broader decision-making, risk and business continuity planning.
- Collaborate with a diverse range of biosecurity stakeholders to review and refine roles and responsibilities, providing flexibility to adapt as the system evolves.
- Review governance arrangements to ensure that they include relevant stakeholders in the design, development and implementation of national policies, programs and regulatory arrangements.
- Build upon and expand existing cooperative and partnership arrangements to leverage the expertise and capability of biosecurity stakeholders.
- Advance regionally based planning activities to better align effort, integrate biosecurity practices and facilitate greater education and awareness opportunities.
- Enhance our national surveillance and early detection arrangements to ensure they are robust given the changing threat environment, drawing on the expertise and capabilities of biosecurity stakeholders.
- Enhance the accessibility and use of surveillance and interception data to support effective and seamless decision-making by all stakeholders.
- Increase the use of citizen science, Indigenous knowledge and on the ground insights as valued sources of expertise, data and information.

**ALIGNMENT WITH NATIONAL BIOSECURITY STRATEGY PRIORITIES AND ACTIVITIES**



**NATIONAL BIOSECURITY PRIORITIES AND ACTIVITIES**

Social and behavioural research, leveraging community and other networks and exploring new channels of engagement.

Determine opportunities to embed biosecurity as a consideration into all levels of government, community, industry and other stakeholders' broader decision-making, risk and business continuity planning.

Continually review and update risk information, including through regular strategic threat assessments, to inform priorities and share this with stakeholders.

Enhance our national surveillance and early detection arrangements to ensure they are robust given the changing threat environment, drawing on the expertise and capabilities of biosecurity stakeholders.

Enhance the accessibility and use of surveillance and interception data to support effective and seamless decision-making by all stakeholders.

Increase the use of citizen science, Indigenous knowledge and on the ground insights as valued sources of expertise, data and information.



# CONCLUSION

There is an opportunity, if not a pressing urgency, to develop more robust and agile approaches to biosecurity awareness and preparedness that utilise the skills and knowledge in regional communities. A great deal of work has already been undertaken to describe the essential elements of a participatory approach to biosecurity that could be quickly and efficiently implemented on a regional scale. This framework highlights some of the pre-requisites and gaps that, if addressed, would support the development of highly effective regional biosecurity programs.

It is apparent that some required outputs contribute to more than one outcome while other activities such as the development of socialised surveillance approaches could be incorporated into a national approach or developed as a stand-alone supporting project. Common outputs identified in this framework are well aligned with numerous priorities described in the National Biosecurity Strategy 2022-2032 (see pages 26-32) and are critical to support greater community and supply chain participation in biosecurity awareness and preparedness. Importantly, the approach would target investment toward activities known to generate a greater economic return (IC1&IC2) and has the potential to reduce expenditure on more costly eradication, containment and management options.

This framework does not attempt to describe HOW to implement these activities, rather the consultation seeks feedback on how to contribute to regional programs that support a more cost-effective, efficient and inclusive biosecurity system built on the principles of trust and shared responsibility.

## GET INVOLVED

We want to hear from investors eager to see Australia's national biosecurity system with regional communities and supply chains actively engaged and participating in local biosecurity preparedness.

[southernNSWhub@csu.edu.au](mailto:southernNSWhub@csu.edu.au)

<https://research.csu.edu.au/engage-with-us/research-impact/southern-nsw-drought-resilience-hub>

### For more information

contact Southern NSW Innovation Hub Director, Cindy Cassidy, on 0438 566 768.



SOUTHERN NSW  
**Innovation Hub**

SUSTAINABLE AGRICULTURE,  
LANDSCAPES AND COMMUNITIES