Victoria's Biosecurity Strategy

2023

VICTORIA
State Government

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Acknowledgement of Country

We acknowledge Victoria's Aboriginal people and their ongoing strength in practicing the world's oldest living culture. We acknowledge the Traditional Owners of the lands and waters throughout Victoria and pay our respect to their Elders past and present.

Traditional Owners and Aboriginal people have managed the lands, waters and natural resources in Victoria for tens of thousands of years and continue to express their ongoing connection to their Country and culture.

We acknowledge their traditional land and water management practices as being a holistic part of Aboriginal culture, and that these practices were forcibly removed through colonisation, laws, policies and practices that forced dispossession in Victoria. This part of our history has had long-lasting, far-reaching and intergenerational impacts on Aboriginal Victorians. Despite this, Aboriginal people remain resilient and their ongoing contributions to Victorian life continue to enrich our society.

We also acknowledge that Aboriginal self-determination is a human right enshrined in the United Nations Declaration on the Rights of Indigenous Peoples. We seek to create respectful partnerships and to develop policies and programs that respect Aboriginal self-determination and align with Treaty aspirations.

The State of Victoria is committed to ensuring we are accountable for our contribution to supporting self-determination, equity and equality within the biosecurity system. It is the inherent human right of Aboriginal Victorians to determine how they want to contribute to the biosecurity system and practice their connection and care for country.

Photo by Martin Burnett

Contents

1 Executive summary 2

2 A strategy crafted with key stakeholders 7

3 Biosecurity is the collective effort to prevent and manage harms caused by pests and diseases 9

4 Biosecurity risks are putting significant pressure on the system 20

5 Working together is the key to reducing biosecurity risks 30

6 Bringing the Strategy to life 43

A Appendix A: Strategy development process 45

B Appendix B: Stakeholders involved in Strategy development 47

C Appendix C: References 50

1

Executive summary

Victoria's biosecurity system protects what we value most from serious harm

Biosecurity is defined as the *collective effort* to prevent and manage the harms caused by plant and animal pests and diseases, and the impact they have on what we value most: our farms and parks, our pets and gardens, our native plants and animals, the cultural integrity of the landscape, the safety of our food, and the success of our industries.[1]

Biosecurity is complex: the biosecurity risks are broad; the collective effort required to manage these risks is extensive; and the individual roles that each of us can play are many and varied.

To better understand biosecurity risks, and the effort involved in managing them, it helps to describe the key elements of Victoria's biosecurity system.

Victoria works within a comprehensive national system for preventing and managing biosecurity risks, with Australia's border control the first line of defence. Despite vigilant border control, pests and diseases can make it through. The next line of defence – Victoria's biosecurity system – consists of:

- **Prevention and mitigation:** risk reduction lies at the heart of this work, with a focus on activities that decrease the likelihood and the potential adverse consequences of pest and disease incursions.
- **Preparedness and response:** in the event of a pest or disease incursion, Victoria depends on its preparedness arrangements to ensure it can rapidly mobilise and deploy resources to effectively respond to the threat.
- **Management and control:** once it is no longer feasible to eradicate an established pest or disease, options may include 'containment' to protect valuable areas or assets or reducing the impact through adapting management practices.

This biosecurity system plays a crucial role in protecting Victoria's $17.5 billion agriculture sector, but this is just one of the many values at risk. In fact, Victoria's biosecurity system plays an important role in protecting our economy, natural environment, human health, cultural heritage and much more.

System failure here can have catastrophic results:

- The establishment in Indonesia in 2022 of foot-and-mouth disease – a highly contagious disease that affects livestock – has increased the risk of an outbreak in Australia to 11.6% over the next five years. The substantial closure of export markets associated with an outbreak would have a devastating impact on our livestock industries – up to $80 billion over a ten-year period – with enormous flow-on effects.

Photo by Martin Burnett

- Red imported fire ants are a highly aggressive and invasive ant species. An uncontrolled outbreak in Victoria would be catastrophic to flora and fauna, causing severe population declines in birds, mammals, reptiles and plant life. It would also dramatically impact daily life – restricting use of backyards, parks, playgrounds, beaches and sports fields.
- Australia's top plant threat is *Xylella fastidiosa* – one of the most destructive plant threats globally. Estimates of the long-term impacts on the Australian wine sector alone include losses of up to $7.9 billion. Currently, there are no effective treatments for affected plants. Therefore, a realistic response would involve destruction of all plants within an eradication zone, with major environmental impacts.

Biosecurity risks are intensifying, putting significant pressure on the system

To date, parts of the system have stood up well in the face of intensifying threats. For example, there is a broad consensus that Victoria has performed well in responding to high-priority threats to Victorian agriculture, including varroa mite and avian influenza.

But biosecurity risks are intensifying. This means that despite our effectiveness to date in keeping key pests and diseases at bay, inevitably there will be more breaches and outbreaks. In fact, nearly 100 biosecurity incursions have occurred in Victoria between 2015 and 2023.

It is now less a matter of 'if' and more a matter of 'when' Victoria will be challenged by the next significant threat.

Key trends are driving increased biosecurity risk in Victoria. These include:

- **Climate change** – warming temperatures and extreme weather events are enabling the spread of pests and diseases into new areas, while biodiversity loss associated with these environmental changes is weakening the environment's natural defence mechanisms against invasive species.
- **Increasing trade and travel** – the movement of goods to, from and around Victoria is rising dramatically due to increasing trade and online shopping, while international visitors to Victoria have doubled over the last decade, heightening the risk of entry and spread of pests and diseases.
- **Changing land use** – rapidly expanding peri-urban areas and consolidation and corporatisation of the agricultural sector is changing the nature of biosecurity risks and how they can be managed.

These trends are putting significant pressure on the system. The cumulative burden of managing incursions is growing significantly, in the form of both multi-year eradication programs and the ongoing management costs once a pest or disease is established. At present, invasive species are estimated to cost Australia around $24.5 billion a year.

In the face of these pressures, a broad consensus is emerging across industry, community and government stakeholders on the need for greater action. In particular, stakeholders call out the importance of dealing with complacency and variable uptake of good risk mitigation practices; achieving more progress in reducing the environmental impacts of pests and diseases; and collaborating more effectively on the big biosecurity challenges which operate at such a scale that any progress requires collective action.

Working together is the key to reducing biosecurity risks

Only by working together, can we achieve a stronger and more resilient biosecurity system for Victoria. In short, we need a system-wide approach to preventing and managing harms caused by pests and diseases.

What working together looks like will be different for different parts of the system. For each part, this Strategy outlines the key goals and the priority actions, summarised in Figure 1. They have been shaped by extensive rounds of engagement with industry, community and government stakeholders, and signal how we plan to work together, and where to focus efforts and resources to reduce biosecurity risks.

Photo by Mikaela Egan

Figure 1 | Summary of strategic goals and priority actions *(continued over page)*

STRATEGIC GOAL #1: PARTNERSHIPS

Strengthen ways of working together to protect what we value most

Finding better ways to decide together, set priorities together and work together to deliver better biosecurity outcomes.

- Strengthen the foundations for collaborative decision-making on sector priorities.
- Confirm new partnership arrangements that clarify roles and responsibilities.
- Work with Traditional Owners to understand and support biosecurity practice on Country.

Priority actions

1	Establish collaborative governance arrangements and priority setting principles to deliver this Strategy.
2	Support community and industry to lead priority local or industry biosecurity issues.
3	Support Traditional Owner involvement in decision-making on biosecurity issues relevant to them.

STRATEGIC GOAL #2: PREVENTION

Make biosecurity everyone's business

Mobilising coordinated and sustained action and behavioural change across the system based on a much better understanding of the key biosecurity risks and responsibilities.

- Dramatically increase awareness of, and action to mitigate, biosecurity risks.
- Improve the use of incentives and disincentives to encourage compliance with good practice.
- Enable wider participation in our systems for surveillance and early detection.

Priority actions

4	Improve stakeholder and community engagement to increase awareness, drive behavioural change and manage key biosecurity risks.
5	Strengthen the network of industry and community biosecurity champions and involve them in policy and program design.
6	Improve the compliance and enforcement toolkit to incentivise good biosecurity practices and discourage non-compliant behaviours.
7	Support people to better manage biosecurity risks; for example, through accreditation programs, agreements, business and risk management planning, expert advice, standards, and guidance.
8	Support initiatives that enhance community and industry engagement in reporting pest and diseases to both build awareness and improve early detection of biosecurity threats.
9	Improve the uptake of traceability systems across industries to enable fast response and maintain market access.

Figure 1 | Summary of strategic goals and priority actions *(continued from previous page)*

STRATEGIC GOAL #3: RESPONSE

Broaden the base for preparedness and response

Building stronger partnerships ahead of emergencies, including with people and organisations that could be better engaged, for cohesive, coordinated action at the time of the emergency, when every minute counts.

- Strengthen industry and community networks for more effective response coordination.
- Improve access to the people, skills and equipment required for faster, more effective response.
- Strengthen the resilience of the system before, during and after the event.

Priority actions

10 Undertake joint planning, training and exercises to help identify opportunities for improving coordinated action and filling existing gaps.

11 Strengthen arrangements for managing biosecurity events, including surge resources, access to specialised skills, and a wider network of organisations to support recovery.

12 Strengthen the capabilities for anticipating new biosecurity risks and potential impacts to improve preparedness and resilience.

STRATEGIC GOAL #4: MANAGEMENT

Reduce the impacts of established weeds and pests though local action

Supporting local collective action, bringing together all participants in order to achieve sustainable, long term, whole-of-landscape changes.

- Enable industry and community-led action to reduce the impact of established weeds and pests.
- Foster much greater Traditional Owner involvement in weed and pest management.
- Promote sustainable models for long-term, whole-of-landscape weed and pest management.

Priority actions

13 Promote and support community-led place-based action on established weeds and pests.

14 Strengthen partnerships between Traditional Owners and private and public land managers to protect key cultural and ecological assets.

15 Engage key participants in landscape-scale planning for high-priority areas.

STRATEGIC GOAL #5: ENABLERS

Strengthen the enablers for system-wide action

Focusing more on the best ways in which government can support the wider system, and all who operate in it, to reduce biosecurity risks and their harmful consequences.

- Build capability and capacity throughout the biosecurity system for collective impact.
- Deliver legislative reform and strengthen regulatory programs to support greater participation, enable collaboration and promote compliance.
- Invest in the systems, science and tools that enhance intelligence gathering, risk analysis and action.

Priority actions

16 Identify and develop strategies for addressing the key skill and capability gaps in the wider biosecurity system.

17 Identify sustainable funding models for priority biosecurity threats across the landscape, from exotic to established diseases, weeds and pests.

18 Monitor the ongoing performance of the biosecurity system to identify vulnerabilities and opportunities for improvement to inform better decisions.

19 Improve legislation to support the management of biosecurity across the system, clarify roles and responsibilities, and improve regulation and compliance.

20 Invest in support systems, science and tools, including improving access to data and information, to better manage biosecurity risks and enhance research partnerships.

2

A strategy crafted with key stakeholders

As biosecurity risks intensify, preventing and managing these harms depend crucially on everyone with a stake in the biosecurity system playing their role. This includes farmers, agriculture industries, public and private land managers, local, regional and urban communities, Traditional Owners, individuals and all levels of government.

In short, preventing and managing biosecurity risks is everyone's business. It requires greater coordinated action and cooperation.

Recognising this, Victoria's Biosecurity Strategy has been crafted through extensive rounds of engagement with industry, community and government stakeholders who all have a key role to play in preventing and managing biosecurity risks (refer to Appendix A: Strategy development process and Appendix B: Stakeholders involved in Strategy development for details).

At each round, the Strategy has been tested and refined with two consultative groups: the Biosecurity Reference Group[2] and the Biosecurity Interagency Committee. Together, these groups represent experts in biosecurity and related fields from community, agriculture industries and government.

Those who participated will see their contributions reflected in this Strategy. Others in the biosecurity system will see where they can make important contributions to our collective vision for reducing biosecurity risk described in Victoria's Biosecurity Statement.

The vision for the future of Victoria's biosecurity system

An extract from Victoria's Biosecurity Statement.

We look toward a future where Victoria's communities are healthy, our farms are prosperous, and our culture and wellbeing are supported by a vibrant and whole natural environment.

A future where everyone in our state understands the threats posed by harmful pests and diseases and acts to protect and enhance their communities and the environment around them.

Where Victoria's food and fibre industries are sending clean and safe produce around the world, setting a standard for safety, productivity and sustainability.

Where all Victorians can align around a vision of what's right for Victoria, and act confidently in support of that vision, informed by evidence and the knowledge of Traditional Owners.

Where we can pass Victoria along, unique and enriched, out of respect for the people who cared for it before us, and for the sake of the people, plants and animals that will live in Victoria in the future.

Photo by Sean Mathews

Voices from Traditional Owners influence the development of the Strategy

Throughout the development of Victoria's Biosecurity Statement and Strategy, Aboriginal communities have generously shared their wisdom and perspectives on biosecurity through interviews, as panellists at roundtables and participants in workshops. These contributions helped shape the Strategy by clarifying the importance of biosecurity for Traditional Owners, opportunities for their involvement in the biosecurity system and necessary changes to enable traditional practices.

The Strategy's goals and actions are designed to foster Traditional Owner participation and partnerships in the system, starting to address their historical under-representation in biosecurity management and decision-making in Victoria.

For Traditional Owners, pest and disease management is part of a holistic approach to healing Country which is underpinned by a deep, personal connection to it. The pest threats that impact cultural values, such as rabbits, are not distinct from those threatening ecological values. Traditional practices, such as the use of fire, are often used to address pest issues, while serving important cultural functions. These practices have been used effectively for over 65,000 years.[3]

A complex view of landscape, as part of a broader spiritual or cultural connection, considers seasons and the timing of activities for deciding what is required to heal or manage Country. This may differ from the risk-based approach used by science and government and may make it easier to manage pest plants and animals. Traditional Owners emphasise the importance of a whole-of-landscape approach with a long-term commitment to pest management for achieving sustainable outcomes.[4]

Photo by T J Garvie

3

Biosecurity is the collective effort to prevent and manage harms caused by pests and diseases

Biosecurity is complex: the impacts of biosecurity risks are broad; the collective effort required to manage these risks is extensive; and the individual roles that each of us can play are many and varied.

This section unpacks what we mean by biosecurity by briefly summarising: the key parts of the biosecurity system; how biosecurity risks impact us; and the catastrophic results if system failure occurs.

Victoria works within a comprehensive national system for preventing and managing risks

Victoria's biosecurity system works within the national system, with Australia's Intergovernmental Agreement on Biosecurity (IGAB) setting the roles and responsibilities for the Australian, state and territory governments. Australia's border control, under the management of the Australian Government, is our first line of defence in limiting the potential for pests and diseases to enter and establish. Pre-border responsibilities include the identification of exotic pests and diseases;[i] management of risks offshore; gaining intelligence and advice; and collaborating with international organisations and trading partners to set global standards.[5]

Border activities involve inspecting and monitoring people, vessels, cargo and mail; managing any interceptions that pose a risk; implementing effective quarantine measures; raising general biosecurity awareness; and setting import requirements.[6] Every week, Australia's Border Force inspects 1.1 million mail items, clears 750,000 air passengers, clears 700 ships and patrols 2.3 million square nautical miles.[7]

i Definition of 'exotic pest and disease': A pest, weed or disease that is not currently known to be present in Australia, or, if present, is subject to a nationally agreed eradication program.

Photo by Paul Burnett

Prevention and mitigation

Despite vigilant border control, pests and diseases can make it through, requiring a focus on risk prevention and mitigation.

Risk reduction lies at the heart of Victoria's prevention and mitigation work. It is designed to: decrease the likelihood of a biosecurity incursion occurring in Victoria; reduce the severity and spread when an incursion does occur; and minimise its adverse consequences and impacts.[8] Key activities include raising awareness and understanding of the key biosecurity risks; promoting and implementing biosecurity practices that mitigate risk; complying with biosecurity obligations; and undertaking surveillance and early detection efforts.[9]

Preventing and mitigating biosecurity risks depends on everyone in the system playing their part – it is about shared responsibility. In particular, government, industry and community each have important roles to play in improving awareness and understanding of key biosecurity risks. Government supports prevention and mitigation by setting entry conditions to prevent biosecurity risks entering the state, conducting surveillance programs for early pest and disease detection, promoting biosecurity best practices, and undertaking compliance and enforcement.[10] Industry also plays key roles in promoting good biosecurity practices, reporting any pest or disease concerns, and complying with traceability requirements that support market access and help identify spread of pests and diseases.[11] The wider community is also involved in programs that contribute to surveillance and early detection efforts,[12] and is responsible for staying informed and following good biosecurity practices to prevent the introduction or spread of potential biosecurity threats, such as declaring high-risk items when entering Victoria from overseas.

Preparedness and response

In the event of a pest or disease incursion, Victoria depends on its arrangements for preparing for and responding to the threat.

Preparing for an incursion typically means developing the necessary arrangements and partnerships across government, industry and community. This is to ensure that, in the event of an outbreak, all the resources and services necessary to respond can be effectively mobilised and deployed. Key preparedness activities include identifying and assessing risks; developing policy and action plans; putting in place arrangements for accessing necessary human and physical resources, systems and processes; and conducting training and exercises.[13] Response activities are triggered with the detection of a biosecurity incursion within Victoria or as part of a national biosecurity incident response (even if the pest or disease is not present in Victoria). Key response activities will typically involve:

- surveillance, initially focused on detection but then on reinstating a disease- or pest-free status to regain markets
- tracing potential movement pathways to identify the spread
- movement controls, such as livestock standstills, quarantine and declaring areas from which high-risk products must not be removed, to contain spread
- other control measures including destruction, disposal, decontamination and monitoring of suspected and infected premises.[14]

Emergency management arrangements in Victoria recognise the importance of effective coordination of effort. Under the State Emergency Management Plan, the Department of Energy, Environment and Climate Action (DEECA) leads response efforts in a biosecurity emergency but crucially relies on the resources of other supporting departments and agencies in managing larger events. Industry-government partnerships are essential with some industries holding strong response capabilities.[15] Biosecurity events also very quickly have national and even international implications.[ii]

ii Under the IGAB, legally binding response agreements e.g., Emergency Animal Disease Response Agreement, Emergency Plant Pest Response Deed, National Environmental Biosecurity Response Agreement, bring together the Australian Government, all state and territory governments and affected industry bodies to undertake joint decision-making and cost sharing of responses to emergency pests and diseases.

Management and control

Once it is no longer feasible to eradicate an established pest or disease[iii], management options turn to protecting what we value most.

There are broadly two options for managing established pests and diseases that are here to stay.[iv] If it is feasible and beneficial, activities may attempt to contain or restrict a pest or disease to a defined area to limit its spread and impact.[16] If the pest or disease has become so widely established that eradication or containment is no longer feasible, attention turns to asset protection. This involves managing the pest or disease to reduce the impacts on livestock, crops, ecosystems, landscapes, specific flora and fauna or cultural assets, such as burial sites or totemic species.[17]

Landholders – both public land managers and private landowners – have important responsibilities for controlling and managing established weeds and animal pests.[18] The far-reaching impacts of many established weeds and pests across multiple land tenures means that collective action is often key to effective management arrangements. Community and industry groups, such as Community Pest Management Groups, Landcare and Traditional Owners, have important roles to play.[19] Traditional Owners, as custodians of the land, care for and heal Country by protecting culturally significant and ecological sites from the impacts of established weeds and animal pests.

iii Definition of 'established pest or disease': A self-sustaining animal or plant pest or disease that occurs in Australia and is not regarded as eradicable. An established pest or disease may be widely distributed across Australia or regionally distributed. A regionally distributed established pest or disease may be the subject of management measures to mitigate further spread.

iv Eradication can be deemed unfeasible for several reasons: a pest or disease has become too widespread, there are inadequate tools to support eradication, or the benefits of eradication are outweighed by the costs.

Photo by Martin Burnett

Strengths of Victoria's biosecurity system

Industry, community and government stakeholders consulted during the Strategy development broadly agree that Victoria performs well in managing the risk that high-priority biosecurity threats pose to Victoria's agricultural industries. As evidence of this many cite the absence of outbreaks of emergency animal diseases such as lumpy skin disease; our traceability systems that support our ability to maintain access to important export markets; and Victoria's ability to respond to outbreaks when they do occur. A recent test of the state's preparedness and response capabilities was an outbreak of avian influenza (see case study on the 2020 avian influenza outbreak).

CASE STUDY

Industry and government joint response is carried out to effectively manage the 2020 avian influenza outbreak.

Avian influenza is a highly contagious viral infection of birds. Some forms of the disease can cause severe symptoms and sudden death in domestic poultry, with a mortality rate of up to 100%.[20] The virus spills over from wild birds, who are considered the natural host for the virus and usually carry it without showing any symptoms, into domestic bird populations.[21] Some virus strains may lead to a human disease.[22]

The Australian and state governments, as well as the national chicken meat and egg industries, have formal arrangements in place for responding to outbreaks that involve avian influenza subtypes of concern. These arrangements include governance and cost sharing and provide disease strategies and operation manuals that outline the agreed-upon control and eradication policies to be undertaken in the event of an outbreak.[23]

In 2020, Victoria experienced the largest ever outbreak of avian influenza in Australia,[24] and its largest biosecurity emergency response in 20 years.[25] Three different strains were concurrently detected at six farms in egg-layer chickens, turkeys and emus.[26] Depopulation, disposal and decontamination of the infected properties were carried out, with over 460,000 birds destroyed. The eradication work ran for nine months with over 340 people involved, including veterinarians, logistics and decontamination specialists, communications professionals and data scientists. It included almost 1,400 surveillance visits and analysis of 21,650 samples at Agriculture Victoria's AgriBio veterinary laboratory facilities.[27] In February 2021, Australia was officially free from high pathogenic avian influenza owing to Victoria's response efforts.[28]

Victoria's biosecurity system protects what we value most

Victoria's biosecurity system protects our economy, natural environment, human health, cultural heritage and much more.

The economy

Victoria's agriculture industry and the economy rely on protection by the biosecurity system.

About 11.4 million hectares (50%) of Victoria's land area is managed by 21,600 agricultural businesses, with a gross value of agricultural production of approximately $17.5 billion.[29] The agriculture industry creates essential jobs for the state's economy, employing around 74,800 people in agriculture.[30] Victoria is Australia's largest food and fibre exporting state: the state contributes 26% to the country's total food and fibre exports[31] with our commodities reaching over 170 export destinations around the globe.[32]

Biosecurity threats cause direct production and financial losses for farms through reduced crop and livestock yield and diminished output quality.[33] Farmers can incur additional costs for control measures to manage current outbreaks and mitigate future risks.[34] The presence of biosecurity threats can also result in loss of market access, increased costs to fulfill protocols, and reduced price premiums,[35] which can create serious flow-on effects to meat processing, retailers, transporters of produce and other associated industries.

The following examples illustrate the impact that pests and diseases can have on our economy. African swine fever, if introduced, would have devastating impacts on pig health and production.[36] A small-scale outbreak of African swine fever in domestic pigs, followed by eradication of the disease could cost Australia $117 million to $263 million over five years.[37] Based on estimates from 2012, a national incursion of the black-striped false mussel could damage Australian ports and critical coastal infrastructure, resulting in market losses ranging from $145 million to $286 million in present value terms over a 30 year period.[38] Established invasive pests in Victoria, such as foxes, rabbits and feral pigs, also cause damage by preying on livestock, destroying crops and pastures, and spreading weeds.[39] This already results in a current annual investment of $200 million by farmers to manage their impacts alone.[40]

The collective actions within the biosecurity system have been assessed as having prevented $94.01 billion in avoided damages across agriculture, water and tourism over a 50-year period.[41]

Photo by Martin Burnett

Photo by Robert Blackburn

The natural environment

Our natural environment is under continual threat from pests and diseases.

Victoria's natural environment is richly diverse, unique and precious. Our state is home to 22.8 million hectares of spectacular natural landscape, showcasing some of the world's most breathtaking biodiversity of more than 6,000 native flora and fauna species.[42] Over 90% of the plants and animals living in Australia's southern waters are not found anywhere else in the world.[43]

Exotic and established weeds, pests and diseases pose a significant threat to our unique ecology. They are recognised as a major driver of the decline in ecosystems and wildlife and are responsible for over 80% of mammal extinctions.[44] In Victoria, many invasive pest animals, such as feral horses, pigs and carp, and weeds, such as gorse, serrated tussock and blackberry, have established themselves in our natural environment[45] and compete with native wildlife and plants for nutrition and land. Negative impacts include soil erosion, altered water flow, displacement of native species, reduction of food supply and suitable habitat for native fauna, and resilience impairment.[46]

The far-reaching nature of established invasive species and their ability to cross boundaries mean management at a property level is often insufficient to contain and control their impacts[47] and requires collective action. However, divergent values and perspectives within communities on some species, such as wild deer and feral horses, often lead to conflicts around the need for management of the species and the approach to it.[48]

Human health

Biosecurity threats can risk human health.

At least 75% of the new human infectious diseases that have emerged since the 1970s have originated from animal diseases, otherwise known as zoonotic diseases.[49] Examples include severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), swine flu and COVID-19. This trend underscores the intricate connection between human and animal health.

For example, Japanese encephalitis virus is a mosquito-borne disease that can cause disease in humans, pigs and horses.[50] It is spread by mosquitoes in a complex cycle that can involve birds, pigs and end hosts like humans, horses and many other animals. In Victoria, the virus was detected in humans for the first time in 2022[51] and led to at least one diagnosed fatality.

Hendra virus (HeV) is another example of a zoonotic disease that sometimes transmits from horses to humans.[52] Out of seven transmissions that have taken place in Australia since 1994, four were fatal cases,[53] making it a dangerous infection for humans. Although a case of HeV for horses or humans has not been detected in Victoria, the virus has been previously found in bats.[54]

CASE STUDY

One Health approach aims to address interdependency of human, animal and plant health.[55]

There is increasing recognition that human, animal and environmental health are deeply interdependent and influence a broad spectrum of values. The One Health approach, developed by the World Health Organization, recognises this interdependency and promotes a multi-sector and multidisciplinary approach to collaboration on governance of these systems.[56]

Specifically, One Health relies on shared and effective governance, joint responsibility and accountability, communication, collaboration, coordination, and capacity to understand and address co-benefits, risks, trade-offs, and opportunities for equitable and holistic solutions.

Examples of One Health-inspired initiatives in Australia include the National Antimicrobial Resistance Strategy[57] and the NSW Biosecurity and Food Safety Strategy 2022-2030.[58]

Photo by Colin Page

Cultural heritage

The biosecurity system is crucial to preserving the important cultural heritage of Traditional Owners.

Aboriginal cultural heritage is referred to by the Victorian Aboriginal Heritage Council as the knowledge and lore, practices and people, objects and places that are valued, culturally meaningful and connected to identity and Country.[59] It shapes identity and is spiritually fundamental to the wellbeing of communities through connectedness across generations.[60] Caring for Country requires the application of laws, knowledge and customs that have been inherited from ancestors and ancestral beings. This ensures the continued health of lands and seas with which Traditional Owners have an attachment or relationship.[61]

Pest plants and animals pose a risk to indigenous flora and fauna.[62] In addition to the ecological significance of the degradation of flora and fauna, indigenous plants and animals hold cultural importance as totems for Aboriginal peoples. Consequently, any harm inflicted upon indigenous plants, animals and their habitats by invasive species directly impacts on the cultural values of Aboriginal peoples.[63]

Biosecurity threats also jeopardise the cultural and spiritual essence of Country.[64] One example is the adverse impact of invasive species, like rabbits and hard-hoofed animals, on culturally significant areas, such as burial sites and mounds. These areas can suffer soil disturbance caused by activities like digging and erosion resulting from the intrusion of invasive species.[65]

Our way of life

Pests and diseases pose a threat to the general way of life and social wellbeing of Victorians.

The biosecurity system plays a crucial role in protecting and preserving vital aspects of our way of life, including living standards, community and social cohesion, security and safety.[66] While it is challenging to precisely quantify the social impacts caused by invasive species, they can have substantial effects on our communities, households and individuals.[67]

Invasive species can significantly impair the visual appeal of our landscapes and the quality of social amenity in our communities. For example, the polyphagous shot hole borer (PSHB) is a beetle that tunnels into trees. Although not present in Victoria PSHB has been detected in Western Australia[68] posing a risk to forests, parks, backyards and nature strips. Overseas, Dutch elm disease has destroyed huge numbers of elm trees in North America, Europe and parts of Asia. In some parts of Europe it is estimated that 60-70% of trees have died.[69]

The UK's foot-and-mouth disease epidemic in 2001 is one of the most severe biosecurity outbreaks ever recorded in a country previously free of the disease. It had devastating impacts not only on animal welfare and the livestock industry but also on community wellbeing.[70] The response to the outbreak involved the slaughter of 6.5 million to 10 million animals with carcasses disposed of through large pyres and mass burials. The public was given advice to avoid the countryside which led to a collapse in tourist numbers and a loss of recreational use of the landscape.[71] The experience during and after the epidemic left the community traumatised and distressed, which was accompanied by feelings of bereavement and the fear of a new disaster.[72]

System failure here can have catastrophic results

Once pests and diseases get a foothold, the impacts can be far-reaching and profound. The following three scenarios provide some glimpses into potential consequences of biosecurity failures based on lived experience in overseas markets and modelling conducted in Australia.

CASE STUDY

A large outbreak of an emergency animal disease, such as foot-and-mouth disease, would be economically and socially devastating for Australia.

Foot-and-mouth disease is an example of an emergency animal disease (EAD).[v] It is a serious and highly contagious disease that can affect all cloven-hoofed animals including cattle, sheep, goats, deer, pigs, and many other species.[73] In Australia, foot-and-mouth disease has not been detected in over 100 years. However, a recent incursion in Indonesia has increased the risk of an outbreak of foot-and-mouth disease in Australia to 11.6% over the next five years.

A detection of an emergency animal disease requires the Victorian Government to take a series of nationally agreed actions to mitigate its spread and impact. In the case of a major foot-and-mouth disease incursion anywhere within Australia, a nationwide livestock standstill and emergency response would occur. The associated trade suspension would result in export markets for all susceptible animals and animal products being closed for at least seven months before Australia could regain its foot-and-mouth disease-free status.[74]

Photo by Colin Page

The substantial closure of export markets would have a devastating impact on the livestock industry, particularly in Victoria, as the majority of our production for many commodities is exported to overseas markets. Government estimates predict the direct impact of a foot-and-mouth disease outbreak in Australia to be $80 billion over a 10-year period.[75] With 60% of beef and 70% of sheep meat produced in Victoria being exported,[76] a requisite suspension of trade and other control actions would represent an immediate economic impact three to four times greater than that caused by the 2019-20 summer bushfires.[77] In addition to the direct economic losses caused, a major outbreak would also result in thousands of job losses and significant negative impacts on animal health and welfare through the necessary destruction of stock.[78]

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v Emergency animal diseases (EADs) have the potential to cause devastating impacts to the livestock industries of Victoria with serious economic and social implications along with affecting animal, human and environmental health. EADs can affect production animals such as cattle, sheep, horses and poultry, companion pets such as dogs and cats and wildlife species such as bats. (Agriculture Victoria, *About emergency animal diseases*, 2023.)

Photo by Martin Burnett

Victoria's Biosecurity Strategy

CASE STUDY

Uncontrolled proliferation of red imported fire ants in Victoria would be catastrophic to flora and fauna causing severe population declines in birds, mammals, reptiles, and plant life.

Red imported fire ants (RIFA) are a highly aggressive and invasive ant species that typically arrive with cargo and leave significant impacts on the economy, environment and social amenity.[79] More than 95% of Australia is climatically suitable for RIFA meaning once they have gotten a foothold in the environment, these ants can inhabit all of Victoria.[80] In Victoria, RIFA have been detected previously in shipments from Brisbane, USA and China, with early intervention on each occasion successfully eradicating the pest.[81]

However, if RIFA are established and cannot be eradicated, they have the potential to surpass the combined economic damage done each year by some of Australia's worst pests such as feral cats, foxes, camels, rabbits and cane toads.[82] Modelling in southeast Queensland alone indicates that RIFA would result in costs of up to $45 billion over 30 years.[83] In terms of agricultural production, they have been linked to a reduction in agricultural output ranging from 10% for cropping land and 20% for livestock to 40% for beef.[84] This highlights the potentially devastating impact that RIFA can have on the economy.

The establishment of RIFA in Victoria would also have serious non-economic costs. From an environmental perspective, RIFA would significantly threaten the integrity of our ecosystems. Impact assessments of RIFA in southeast Queensland predict population declines in about 45% of birds, 38% of mammals, 69% of reptiles and 95% of frogs resulting in the possible extinction of various animal species.[85] RIFA also have consequences for human health and amenity. Their stings are known to cause serious allergic reactions in some people with at least 85 people in the US having died of anaphylactic shock.[86] If not controlled in Australia, RIFA could cause an extra 140,000 medical consultations and 3,000 anaphylactic reactions a year.[87] They could also restrict the use of backyards, parks, playgrounds, beaches, and sports fields[88] – the spaces fundamental for everyday recreational activities of Victorians.

Photo by Chris Hopkins

CASE STUDY

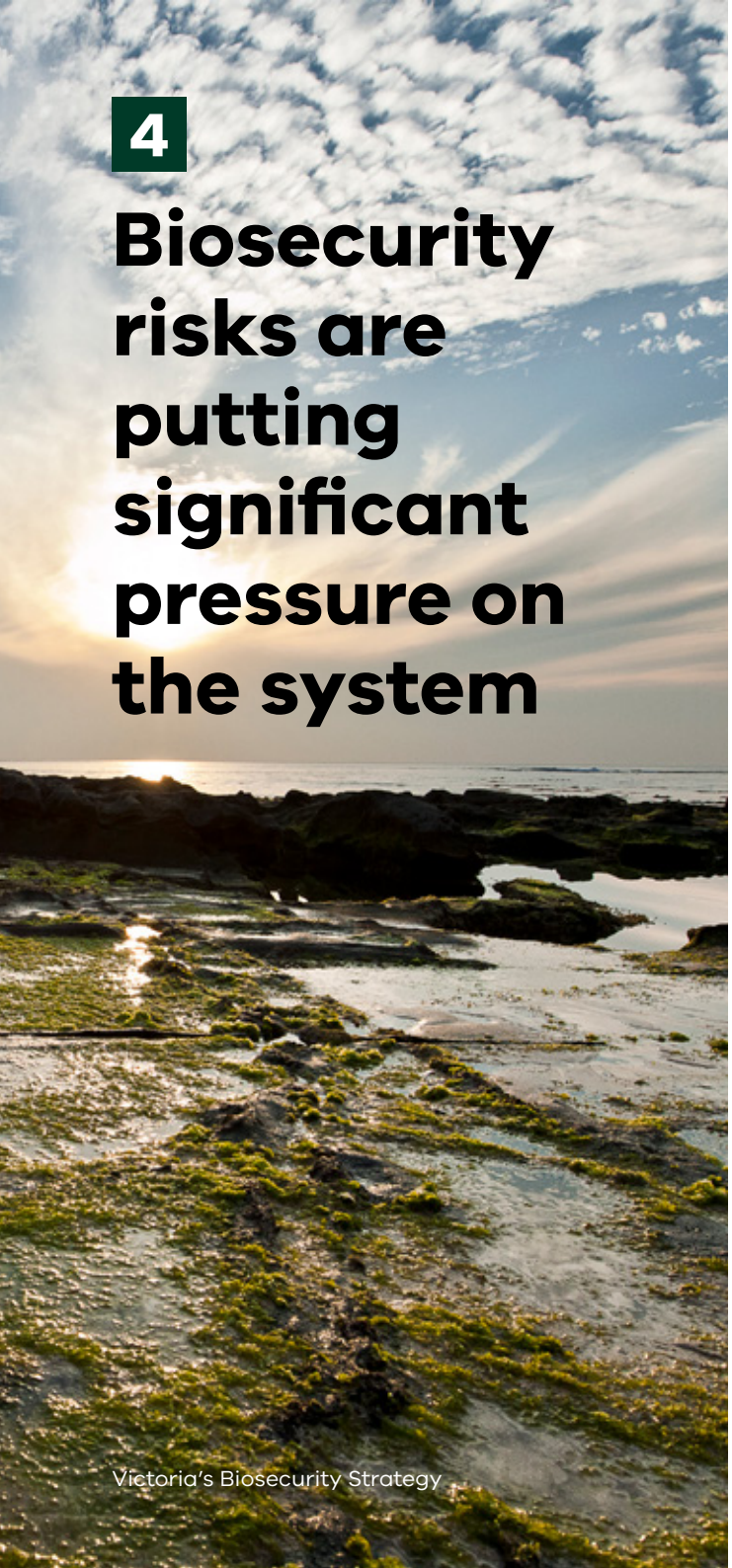
An incursion of *Xylella fastidiosa* would have devastating impacts on the horticulture industry as a result of considerable loss of crops.

Although xylella (*Xylella fastidiosa*) is not present in Australia, it is recognised as Australia's top plant pest threat and is considered one of the most destructive plant pests globally. It is a bacterium which causes the progressive weakening and death of the infected plant by stopping water movement[89] affecting many commercial, ornamental and native plants.[90]

Xylella costs the Californian grape industry US$104 million and the Brazilian citrus industry US$120 million annually.[91] For Australia, the potential impact on the horticulture industry has been estimated to be between AU$1.2 billion and AU$8.9 billion over 50 years.[92] For the Australian wine sector alone, estimated impacts are between AU$2.8 billion and AU$7.9 billion.[93]

There are no chemical treatments available,[94] which means a response to a xylella incursion would require the destruction of all host and non-host plants within an eradication zone. This could result in the potential loss of large amounts of the state's native vegetation and have significant impacts on food supply, domestic trade and exports.[95]

Photo by Greg Elms



4

Biosecurity risks are putting significant pressure on the system

The biosecurity risks facing Victoria are intensifying

Biosecurity risks are intensifying. This means despite our effectiveness to date in keeping key pests and diseases at bay, inevitably there will be more breaches and outbreaks. It becomes less a matter of 'if' and more a matter of 'when' Victoria will be challenged by the next significant pest or disease threat. Climate change impacts, increasing trade and travel and changing land use are among the key trends that are exacerbating biosecurity risks for Victoria.

Climate change

Climate change impacts are increasing the risk of pest and disease incursions through altered environmental conditions, intensifying weather emergencies and a more fragile ecosystem.

Victoria's average annual temperature is expected to increase by up to 2.4 degrees Celsius by 2050,[96] enabling diseases such as phytophthora to establish in environments previously unsuitable for it including Victoria's alpine areas.[97] Higher temperatures and elevated carbon dioxide concentrations in the atmosphere are also reducing weed sensitivity to herbicides.[98] This may give rise to further spread of weeds which already cost Victoria's economy over $900 million each year due to the negative impact on agricultural production and risk of bushfires.[99]

The changes in our climate are also causing more frequent, more intense, longer lasting, and often concurrent climate-related emergencies.[100] The impact of this trend is two-fold. Extreme weather events, such as heavy wind, storms, and floods, can be responsible for spreading pests and diseases directly into new areas.

Myrtle rust spores, which are harmful to plants, were first detected in NSW in 2010 followed by Victoria in 2011. Experts suggest that a combination of wind, rain, human and animal movements had carried the spores across state boundaries.[101] The escalating burden of climate-related emergencies are also placing increasingly more strain on the capacity and capabilities available to our emergency management system. Deployment of Agriculture Victoria staff to biosecurity or natural disaster events has already risen significantly in recent years requiring a three-to-seven-fold increase during peak years.[102] Keeping pace with the increased frequency and severity of climate and biosecurity emergencies will be a significant challenge to Victoria's surge support arrangements.

Photo by Mark Watson

Environmental changes are occurring at such a rate that many of our flora and fauna are unable to adjust to new conditions. Some species are suffering shrinking geographic ranges, reduced population sizes and may even face extinction, leading to changes in ecosystems.[103] Biodiversity loss leads to the weakening of natural defence mechanisms against invasive species. This provides opportunities for already established pests to further proliferate, and 'sleeper pests' – species that exhibit invasive characteristics and become pests in response to environmental changes[104] – and new pest incursions to gain a foothold more easily.[105]

Trade and travel

Increasing levels of trade and travel are heightening the risk of biosecurity incursions into Victoria.

Victoria's level of trade was growing steadily between 2012 and 2017,[106] prior to a COVID-induced slowdown. The number of international visitors doubled from 1.5 million to 3.1 million between 2010 and 2019.[107] Freight volumes are predicted to increase from 360 million tonnes in 2014 to nearly 900 million tonnes in 2051 to service the movement of goods to, from and around Victoria.[108]

Increasing levels of travel and trade are creating new opportunities for biosecurity incursions.[109] Between 2012 and 2017, the annual number of interceptions of biosecurity risk materials at Australian borders rose by almost 50% to 37,014.[110] Eastern Australia has been identified as one of the top five global regions most vulnerable to the establishment of new invasive species originating mainly from Asia and America.[111] Examples of hitchhiker pests that can slip through our borders include the brown marmorated stink bug and flighted spongy moth.[112] Should these pests become established, they would have negative impacts on our environment and horticulture industries.

Shifts in consumer behaviour also provide new pathways for biosecurity threats. The increasing significance of e-commerce platforms and online shopping in our daily lives is resulting in more seeds and animals or animal-related products entering Victoria.[113] Online platforms have also given rise to more illegal wildlife trade – connecting users across multiple legal jurisdictions with an anonymous means of conducting trade and making detection more challenging.[114] As it is not possible to inspect all goods imported into Australia, government relies on information provided with mail and cargo to identify and prioritise high-risk materials for inspection. However, this information is not always accurate and even when it is some items are released without the necessary checks.[115] Our communities, homes, and workplaces across Victoria are therefore increasingly more susceptible to the risks of pest and disease incursions. This highlights the growing responsibility that we all share in being aware of and managing biosecurity risks.

Changing land use

Changing land use is altering the risk profile of the biosecurity system.

Victoria's rapid population growth and changing lifestyle preferences are driving ongoing urbanisation in the state through urban sprawl and the proliferation of peri-urban areas. The narrowing of boundaries between urban, natural and agricultural landscapes results in closer proximity and more frequent interactions between humans, wildlife, environment and agriculture. This trend increases the likelihood of transmission of harmful pests and diseases[116] across regional and metropolitan areas. Methods available to manage invasive species can also be more limited in more populated peri-urban landscapes compared to rural regions, reducing effectiveness of control.[117] Additionally, a large proportion of new peri-urban residents are part-time residents or absentee landholders who may be less invested in developing their biosecurity knowledge or getting involved in community groups such as Landcare.[118]

For several decades Victoria's agriculture industry has been experiencing structural changes: a reduction in the overall number of farm businesses,[119] intensification and consolidation of farms to achieve economies of scale,[120] and heavier reliance on suppliers and flexible forms of labour (for example, casual and contract workers).[121] The concentration of agricultural production on fewer but bigger farms means a single biosecurity breach has the potential to spread rapidly.[122] The increase in non-permanent workers means that important biosecurity knowledge and capabilities may be lost.[123]

However, it should be noted that the changes in the agriculture industry also introduce an opportunity. Larger producers, in collaboration with government and the broader industry value chain, may now have greater resources to make investments in education and training, sustainable processes, coordination, and science and technologies that reduce biosecurity threats.[124]

Photo by Tsvibrav

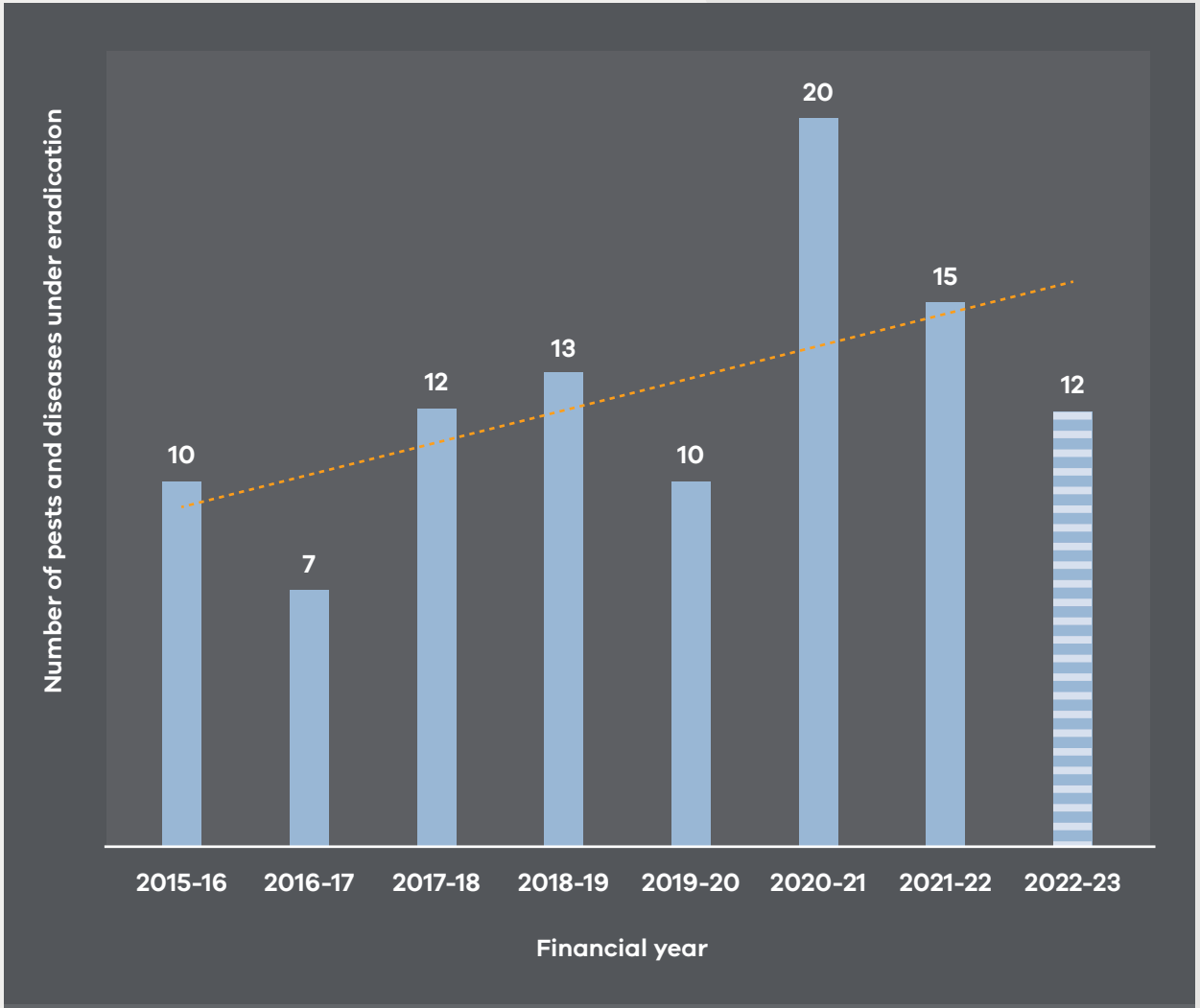
The system is under severe stress from rising biosecurity risks

Growing cumulative burden

Managing existing incursions is consistently requiring more resources.

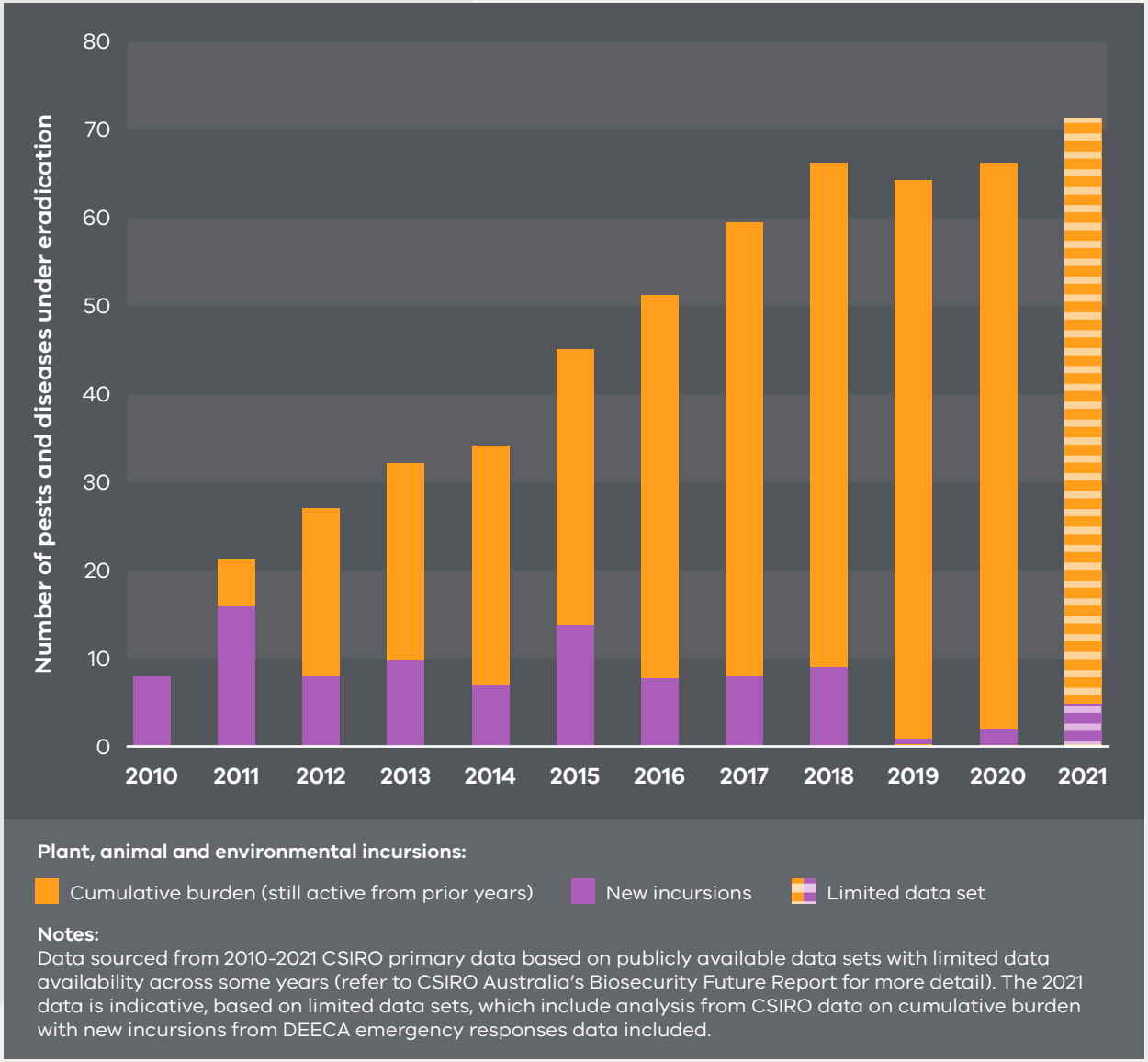
Nearly 100 biosecurity incursions have occurred in Victoria since 2015 (see Figure 2), with a growing trajectory of incursions in recent years. Some of these new incursions presented very serious threats and required large-scale emergency response efforts to achieve complete eradication, such as the 2020 outbreak of avian influenza.

Figure 2 | Biosecurity incursions in Victoria since 2015[125]



Source:
Agriculture Victoria, *Statistics on biosecurity incursions since 2015*, 2023.

Figure 3 | Biosecurity incursions and cumulative burden in Australia since 2010[129]



Notes:
Data sourced from 2010-2021 CSIRO primary data based on publicly available data sets with limited data availability across some years (refer to CSIRO Australia's Biosecurity Future Report for more detail). The 2021 data is indicative, based on limited data sets, which include analysis from CSIRO data on cumulative burden with new incursions from DEECA emergency responses data included.

New incursions often require multi-year eradication programs, which are sometimes unsuccessful despite the attempts made. The costly ongoing management of established species that are yet to be eradicated or are deemed ineradicable is referred to as 'cumulative burden'.[126] Since 2010, there has been substantial growth in the national volume of cumulative burden (see Figure 3), placing significant pressure on the biosecurity system to respond to and manage an ever-expanding array of threats.[127] With the number of established pests on the rise, this burden is expected to continue growing.[128]

Research has estimated that the economic costs of the management, control and impacts of pest plants and animals have increased exponentially over time, up to sixfold each decade since the 1970s.[130] At present, invasive species cost Australia around $24.5 billion a year, while the total costs over the past 60 years have amounted to at least $390 billion.[131] A disproportionate share of the total cost is attributed to recent years, highlighting the consequences that the increasing cumulative burden is having on the biosecurity system.[132]

There is broad consensus on the need for action

In the face of these pressures, a broad consensus is emerging across industry, community and government stakeholders of the need for action. In particular, stakeholders call out the importance of dealing with complacency and variable uptake of good risk mitigation practices; achieving more progress in reducing the environmental impacts of pests and diseases; and collaborating more effectively on the big biosecurity challenges which operate at such a scale that any progress requires collective action.

Complacency and variable uptake of good biosecurity practices

Many stakeholders see the lack of understanding of biosecurity risks as the main issue. This is especially the case for tourists (e.g., campers, fishermen) and the increasing number of suppliers and contractors, from agriculture and other industries, who move in and around farming landscapes, natural reserves and waterways. It also applies to new landowners, especially in peri-urban areas, and consumers purchasing products online. More effective education initiatives targeted at these audiences are required to improve general understanding of biosecurity risks.

The inconsistent adoption of good biosecurity practices to reduce biosecurity threats is another significant challenge for the system. Examples of good biosecurity practices include having well-thought through and actionable biosecurity plans that cover vehicle and machinery hygiene, and the movement of people onto and within properties. While there are pockets of strong performance, stakeholders note an opportunity to increase consistency in practices across the sector – for example, more intensive, export-orientated industries are likely to have higher levels of compliance while smaller, less commercial enterprises are less likely to comply. It is also important that all government departments model good biosecurity practices on public land and when engaging with rural communities on biosecurity matters.

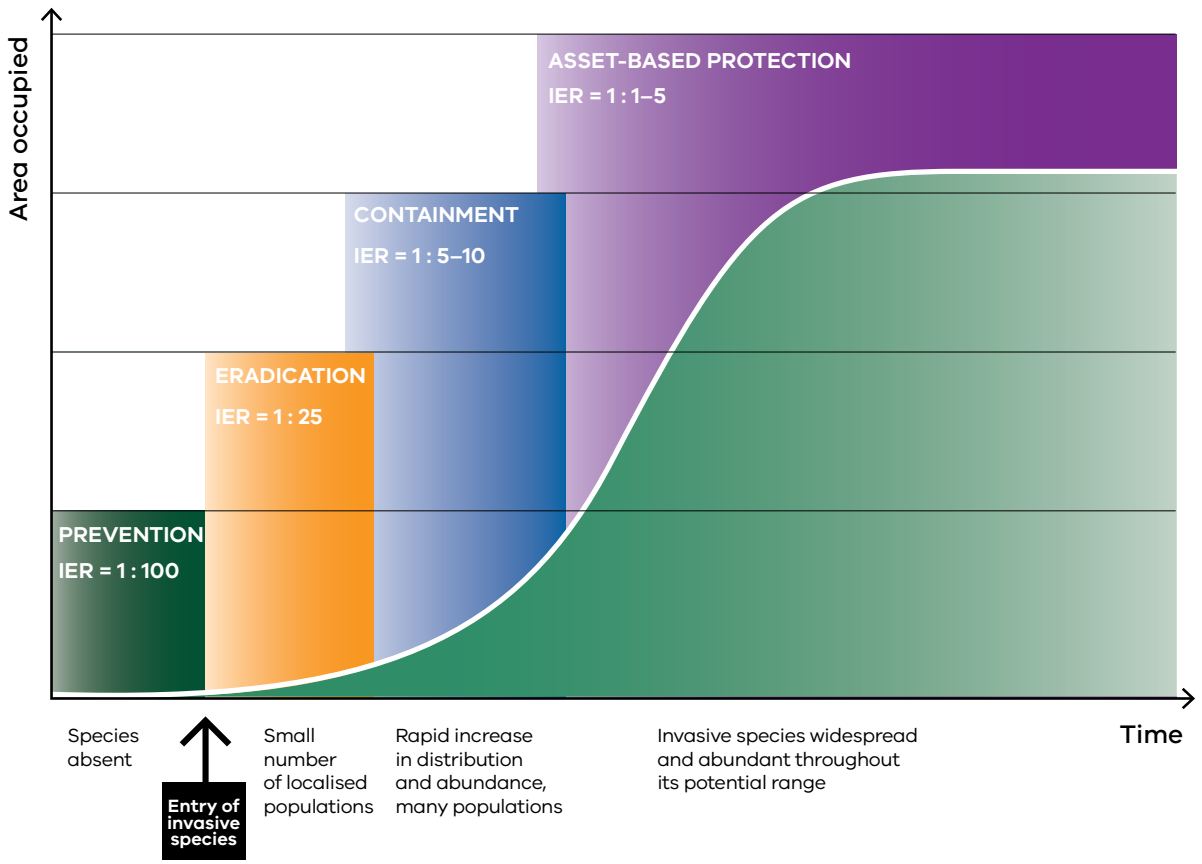
Other stakeholders point out how, despite the intensifying biosecurity risks, other pressures are pushing good biosecurity practices down the list of businesses' and land managers' priorities. For many farmers, these include rising input costs and labour supply challenges. Without sufficient incentives to act, such as from a regulatory system that enables compliance, standards may slip.

Environmental impacts of pests and diseases

Stakeholders also highlighted the need for much greater action on reducing the impacts of established invasive species on the natural environment. Victoria's State of the Environment Biodiversity Update 2021 Report agrees, finding that there has been little progress made on reversing the declining trend in environmental health indicators resulting from established invasive species.[133]

This partly reflects the fact that targeting highly invasive species while populations are still low provides higher economic returns. Therefore, public sector funds are prioritised for earlier phases of the 'invasion curve' – the continuum from prevention through to eradication, containment, and asset-based protection presented in Figure 4. While this makes sense for prioritising limited resources, many established weeds and pests can cause significant environmental harm. A recent study estimated the environmental and management costs of invasive species in Victoria at $3.09 billion.[134]

Figure 4 | Economic returns vary throughout the invasion curve[135]



***Indicative economic returns (IER)** – Within each stage there will be activities that provide higher or lower returns than the indicative figure.

Emerging threats to environmental biosecurity, such as hawkweed (*Pilosella* or *Hieracium* species) which is currently under eradication from Victoria's alpine regions, and northern pacific sea star (*Asterias amurensis*) which caused declines in eagle ray, globefish and eastern shovelnose stingaree populations in Port Phillip Bay following its initial introduction, also cannot be ignored. However, the response to environmental biosecurity threats may be slow. This can be due to often high levels of uncertainty – much less is known about environmental pests and diseases – or the biology and ecology of native plants and animals at risk. Detection and surveillance of the environment in general is also more difficult due to vastly greater areas that are sparsely populated and often difficult to access.

Collaboration on the big biosecurity challenges

Many biosecurity challenges operate at such a scale, both in time and space, that any progress depends on collective action. While there are examples of effective collaboration across the biosecurity system (see the case studies on the Victorian Commercial Ports Marine Surveillance Program, varroa mite response, and the Community Pest Management Groups), collaborative efforts across the system could be strengthened. For example, it is difficult to get traction on reducing the impacts of feral animals or weeds without collaboration at scale between different levels of government, industry and communities and without applying a whole-of-landscape approach, which goes beyond land tenures.

For some, the lack of clarity around respective roles and responsibilities of different stakeholders diminishes the incentives for collaboration across tenures (e.g., when it comes to weed management) and encourages siloed behaviour. In some cases, this is exacerbated by staff turnover and diminished capabilities in some agencies, which works against building the trusted relationships that underpin effective collaboration.

For others, jurisdictional borders work against coordination of effort and effective management of biosecurity risk. The lack of harmonisation of policies and practices across state borders is the source of frustration for industries which work across these boundaries. For example, an independent evaluation showed that sheep identified with Victorian electronic identification tags were 99% traceable back to their properties of residence, compared to 70% traceability for interstate sheep with visual (non-electronic) tags.[136]

CASE STUDY

The Victorian Commercial Ports Marine Surveillance Program is an example of effective collaboration between industry and government which needs to be expanded to other industries.

The Victorian Commercial Ports Marine Surveillance Program is an industry-government partnership in managing marine biosecurity risks between Agriculture Victoria, the commercial ports of Melbourne, Hastings and Portland, BlueScope Steel, ExxonMobil, GrainCorp and the Royal Geelong Yacht Club.[137]

Established in 2021-22 as a pilot program in Australia's busiest containerised port, the Port of Melbourne, the partnership was the first of its kind to be trialled in Victoria.[138] The program aimed at detecting early introductions of marine pests and guiding the establishment of the long-term surveillance program for all of Victoria's high-risk commercial seaports.[139] Our biosecurity system derives multiple benefits from this initiative: early detection of marine pests improves the chances of responding rapidly to reduce the impact on the marine environment and port operations; it also offers valuable information on native marine life within the ports, which are often considered to be highly disturbed environments.[140]

By demonstrating the substantial benefits derived from partnerships, the program makes the case that much more effective collaboration across the biosecurity system is required in order to get traction on big biosecurity challenges.

Photo by Richard Stafford-Bell

CASE STUDY

Developing relationships ahead of time is crucial for an effective emergency response: the State Quarantine Response Team responding to varroa mite.[141]

Horticulture crops are heavily dependent on honey bee pollination, particularly almonds, apples and pears, where the absence of bees can lead to near-total crop failure. In Victoria, 13% of our total gross value of agricultural production is dependent on honey bee pollination. Varroa mite, a parasite affecting European honey bees worldwide, poses a significant threat.

To proactively address this threat, Agriculture Victoria has forged long-standing partnerships with honey bee industry groups. The State Quarantine Response Team (SQRT) initiative, established in 2002, trained private apiarists as in-hive surveillance experts, ready to assist in honey bee emergency responses. This collaborative effort between industry and government proved critical during the detection of varroa at the Port of Melbourne in 2018 and the varroa emergency response in NSW in 2022-23. In both instances, SQRT members joined forces with Agriculture Victoria staff to conduct in-hive surveillance and field observations, enabling the collection of significant in-field data.

The success of the SQRT model in the apiary industry demonstrates its potential for replication in other sectors. By establishing meaningful relationships with industry and community members in advance, a sense of shared responsibility and goodwill was fostered, contributing to the effectiveness of the emergency responses. Conducting timely surveillance and testing would not have been possible without the SQRT framework and these partnerships.

Photo by Melinda Corry

CASE STUDY

The Community Pest Management Groups (CPMGs) represent community-led action on management of established invasive species.

Victoria has four voluntary CPMGs: the Victorian Rabbit Action Network, the Victorian Blackberry Taskforce, the Victorian Serrated Tussock Working Party and the Victorian Gorse Taskforce. The CPMGs are comprised of community members and supported by government agencies involved in pest management, with a strong focus on rural and regional community-based leadership.[142]

The groups provide easy to understand information on best practice weed and rabbit management to increase community expertise and support cross-tenure action. The groups help build connections between communities and government by providing a mechanism for collective action on pest management, delivering practical on-ground training programs for pest management and providing continued support following the completion of training by participants.[143] Notably, the four groups empower communities to take on the challenge of weed and rabbit action which provides a valuable service to Victoria's communities and landscapes.

The four CPMGs participated in a partnership initiative named the 'Weeds and Rabbits Project' between 2016 and 2021, together delivering 223 events and engaging with over 5,000 people across Victoria. This partnership was recently recognised nationally, receiving a 2022 Australian Biosecurity Award in the Community category.[144]

5

Working together is the key to reducing biosecurity risks

With biosecurity risks intensifying, putting the system under more pressure and increasing our exposure to the profound and far-reaching effects of system failure, the stakes are too high not to act. It is not fair or sustainable to put the burden of action on just a few – whether farmers, local community groups or single agencies – when all Victorians are enjoying the economic, environmental, health, social amenity and cultural heritage benefits that come from an effective biosecurity system.

Only by working together can we achieve a stronger and more resilient biosecurity system for Victoria. In short, we need a system-wide approach to preventing and managing the harms caused by pests and diseases and the impact they have on what we value most.

What working together looks like will be different for different parts of the system.

Overall, it is about **partnerships**. For example, strengthening and finding better ways of working together in line with the Biosecurity Statement's aspirations for industry, community and government to decide together, set priorities together and work together to deliver better biosecurity outcomes.

For **prevention**, it is about making biosecurity everybody's business. This means mobilising coordinated and sustained action and behavioural change across the system based on a much better understanding of the key biosecurity risks and responsibilities.

For **response**, it is about broadening the base for preparedness and response. This means building stronger partnerships ahead of emergencies, including with people and organisations that could be better engaged, for cohesive, coordinated action at the time of the emergency, when every minute counts.

For **management**, it is about reducing the impact of established weeds and animal pests on what we value most. This means supporting local collective action, bringing together all the players in order to achieve sustainable, long-term, whole-of-landscape changes.

When focusing on the **enablers**, it is about how government, with its hands on many of the key funding, policy, regulatory and delivery levers, can focus more on the best ways in which it can support the wider system, and all who operate in it, to reduce biosecurity risks and their harmful consequences.

In each of these parts of the biosecurity system we can get inspiration from the many great examples of collaboration and partnership that are already occurring, including those profiled in this Strategy.

Drawing on these inspirational examples and the great contributions from the industry, community and government stakeholders who have participated in the development of this Strategy, this section outlines the key strategic goals and priority actions that signal how we plan to work together and where we plan to focus efforts and resources to reduce biosecurity risks.

Photo by Carmen Zammit

STRATEGIC GOAL #1

PARTNERSHIPS – Strengthen ways of working together to protect what we value most

The vision for Victoria's biosecurity system is far-reaching – spelling out the importance of managing animal and plant pests and diseases to protect the widest range of values: human health, agricultural industries and the wider economy; environmental values (particularly biodiversity); cultural heritage and social amenity. This depends crucially on aligning the many parts of the system with key stakeholders working together to take collective action. This means governance arrangements that: are inclusive and empowering; encourage collaboration, partnerships and collective action; link in effectively with the wide range of related systems; and are built on principles rather than rules.

However, while a principles-based approach makes sense for the wider biosecurity system, there will be many instances where working together effectively requires more clarity and specificity about who is doing what (for example, roles and responsibilities) with what resources. These include planning for an emergency response, coordinating action across borders and across different types of land tenure and determining how to allocate investment in actions that protect multiple values. There is scope to make more provision for a wide range of different types of partnership agreements to help formalise arrangements for these specific instances.

While the responsibility for reducing biosecurity risks falls to all of us, it is important to recognise the ongoing care for Country of Traditional Owners over countless millennia. Despite this, Traditional Owners have been under-represented in biosecurity decision-making, and limited efforts have been made to address this. Realising our aspirations for the biosecurity system requires collaborative governance arrangements that put Traditional Owners at the centre of decision-making on biosecurity threats to Country and an environment that enables the sharing of important traditional knowledge in culturally safe ways. It is important to recognise that building genuine partnerships requires involving Traditional Owners in decision-making early and providing the support they require to participate effectively including resources, time and information.

Strengthen the foundations for collaborative decision-making on sector priorities

Agree on principles and ways of working. Building the foundations for collaborative decision-making begins with confirming the principles and ways of working that will guide collaboration. The Statement has begun this work by outlining a set of values and principles that can help build a shared understanding of how we will work together and make decisions. We can also get inspiration from other sources, such as the core principles for the One Health approach to multi-sector and multidisciplinary collaboration.

Strengthen networks of industry and community leaders. The iterative development of the Statement and Strategy has sought to model a participatory and collaborative approach to governance. Momentum and cohesion have been built through roundtables, workshops and focus groups with a diverse set of people and organisations, and regular check-ins with broad-based reference groups and government interagency committees. This is a good foundation for future collaborative action.

Coordinate related work. The broad scope of the biosecurity system means this Strategy supports outcomes of many other strategies and initiatives designed to protect similar economic, environmental, cultural and social values. Examples of these strategies include the Biodiversity Strategy 2037, the Victorian Waterway Management Strategy, Regional Catchment Strategies and Waterway Strategies, various Aboriginal Strategies, and Victoria's Agriculture Strategy.

Confirm new partnership arrangements that clarify roles and responsibilities

Develop place-based partnerships. Local areas often have their own unique set of problems and priority-setting challenges that can benefit from better coordination of relevant stakeholders. Special area plans that facilitate these partnerships can help here. In some jurisdictions more formal agreements or accords are established to help manage specific biosecurity risks. For example, Western Australia has processes to formally recognise biosecurity risks raised by communities, which triggers supporting funding mechanisms.[vi]

Coordinate and harmonise across borders. A specific type of area planning challenge is the harmonisation of biosecurity policies and procedures across national and state borders. Negotiating the unique guidelines and requirements of different states can be frustrating for industry, particularly in cross-border regions. Harmonisation challenges are best tackled regionally first – for example, through a region-to-region dialogue to identify specific harmonisation issues – before escalating them to states to resolve.

Strengthen sector-based partnerships. There are also many instances where industry-government partnerships are crucial for effective action, such as preparing for and responding to biosecurity incursions. Sometimes clarifying how decision-making, responsibilities and costs will be shared on specific priority issues can enhance readiness and response. Any work here will need to complement the national industry-government agreements.

Work with Traditional Owners to understand and support biosecurity practice on Country

Expand opportunities for involvement. There are significant benefits for the biosecurity system from the greater participation of Traditional Owners. These include: drawing on and helping to protect traditional knowledge and better alignment with the range of priorities in various Aboriginal plans and strategies. However, each Traditional Owner group will bring different perspectives on how to do this. It is important that conversations continue with different groups about the role they would like to play in biosecurity.

Support participation. The involvement in the development and delivery of different strategies and projects puts a significant burden on the limited resources of Traditional Owner groups. Therefore, providing support (resources, time, information) is a crucial condition for a genuine engagement of Aboriginal communities. Working through existing arrangements, for example, Traditional Owner forums, can help reduce the burden of consultation fatigue, as can providing time and space for a quality contribution to decision-making.

Promote collaborative governance. There are collaborative governance models already in place that put Traditional Owners at the centre of decision-making and can be the foundation for how best to collaborate, and share knowledge, with different Traditional Owner groups. For example, various forms of caucuses have been used for mobs in Victoria to develop a shared understanding and collective voice on key issues and how best to work together into the future.

PRIORITY ACTIONS

1 **Establish collaborative governance arrangements and priority setting principles to deliver this Strategy.**

2 **Support community and industry to lead priority local or industry biosecurity issues.**

3 **Support Traditional Owner involvement in decision-making on biosecurity issues relevant to them.**

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vi Western Australia's Biosecurity and Agriculture Management Act 2007 (BAM Act) outlines processes for formal recognition of community biosecurity groups and supporting funding mechanisms. Under the Act, groups that are tackling established declared pests that impact on the public and private interests may be formally recognised by the Minister as a 'Recognised Biosecurity Group' (RBG).

The BAM Act raises a 'Declared Pest Rate' from landholders in specific areas, with the state government then required to match the funds raised from the rate dollar-for-dollar. The combined funds are made available to RBGs. They provide support to landholders to manage widespread and established declared pests. (Department of Primary Industries and Regional Development, Recognised Biosecurity Groups, 2022.)

STRATEGIC GOAL #2

PREVENTION – Make biosecurity everyone's business

There are many simple practices that each of us can adopt to help prevent a serious plant or animal pest or disease from getting a foothold in Victoria. Some examples include: as a tourist, respecting biosecurity signage; as a contractor or farm visitor, using footbaths and signing-in; as a farmer, having a biosecurity plan; as a park visitor, being vigilant and reporting suspicious plant and animal species. Success here depends on everyone with a stake in reducing the likelihood of a serious incursion – government, industries and communities – playing their role. This is the essence of what is described as shared responsibility.

The uptake of these practices is highly variable across industries and regions. Reasons for this include: relatively low levels of awareness or understanding in some sectors of the nature of the biosecurity threat; a level of complacency or indifference – particularly in the absence of imminent threats; and the pull of competing pressures, where a commitment to good biosecurity practice can get swamped by more pressing priorities. There is broad agreement that improving performance here is the most significant change we can make to reduce our vulnerability to new biosecurity incursions.

There is no simple solution here. Achieving greater awareness, understanding and ultimately action to reduce the risks of new threats taking hold will need to start with more sophisticated media and communications campaigns. These campaigns should be segmented for different stakeholder groups and based on a solid understanding of the key drivers of behavioural change for each of those groups. Segmentation will need to extend to ensuring there is a range of different incentives and disincentives aligned with the motivations of landholders. This ranges from public recognition and peer engagement for landholders inclined to comply, to recognising those regulated entities that are sufficiently mature by providing incentives for voluntary compliance and addressing those who do not comply through compliance activities proportionate to risks.

Dramatically increase awareness of, and action to mitigate, biosecurity risks

Scale up awareness raising campaigns. There are various initiatives designed to build awareness and understanding of biosecurity risks. However, achieving the dramatic increases in awareness and, ultimately, action requires a significant scaling-up of effort. This starts with effective, targeted media and communication campaigns that can build emotional connections to the values that biosecurity protects – in other words, personalising biosecurity risks. Often it helps to link these campaigns to tangible emerging threats, such as those posed by foot-and-mouth disease and varroa mite.

Target behavioural change strategies. To achieve the necessary breakthroughs here, targeted engagement based on a deep understanding of the key drivers of behavioural change is important.[vii] Working through existing local networks – for example, those that provide services to landholders and local government, such as veterinarians – can help achieve better engagement with biosecurity messages. In particular, industry and community champions of good biosecurity practice will ensure the messages are not just seen to be coming from government.

Evaluate initiatives. Achieving sustained change will also mean building effective evaluation strategies into behavioural change campaigns and initiatives to better understand what works and does not in making biosecurity risks everyone's business.[vii] It will be important to agree on key measures and targets that will help understand the extent to which understanding of risks, knowledge of biosecurity practices and practice change are being achieved and to be able to distil key insights to continually improve relevant programs.

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vii In particular, this includes an understanding of 'appeals' – i.e., what will appeal to different audiences in terms of their relationship to behavioural change goals – and 'barriers,' i.e., everything that predisposes an audience against these goals. Whether messaging focuses on appeals or barriers depends on the situation. (Sandman P, *Precaution Advocacy Messaging Strategy: The GAAMM Model*, 2007.)

viii A study into pro-environmental behaviour mapped out the determinants that form key barriers or enablers for people to engage (or stop engaging) in the relevant behaviour, and their corresponding targeted interventions. (van Valkengoed, AM, et al., *To select effective interventions for pro-environmental behaviour change, we need to consider determinants of behaviour*, 2022.)

Improve the use of incentives and disincentives to encourage compliance with good practice

Promote incentives. Implementing biosecurity actions into more industry certification and accreditation schemes can help incentivise better biosecurity practice. Supply chains are increasingly key agents in promoting change and could play a greater role here. An example is retailers building on existing schemes (such as Livestock Production Assurance) to create incentives for better adherence to good biosecurity practice. Similarly, the Victorian Significant Disease Investigation Program, which enables veterinarians to undertake wildlife and livestock disease investigations that may otherwise be commercially unviable, could be adapted to other sectors. Industry, government and community agreeing on key standards can also help improve the uptake of biosecurity measures.

Improve compliance and enforcement toolkit. There may be a role for policy or regulatory incentives and disincentives to improve compliance where the incentives are otherwise diminished. For example, absentee landholders who visit their property only occasionally may not always understand or fulfill their biosecurity responsibilities. This may increase risks for neighbouring landowners. The improvement of compliance and enforcement strategies addressing priority risks of harm will enable a stronger regulatory response to non-compliance and increase voluntary compliance.

Communicate standards and provide guidance. Compliance strategies and protocols developed in partnership with industry and other groups will need to identify priorities based on risk of harm, inform annual operational plans and build commitment to collective action. Following this, engagement with duty holders will ensure that they are aware of obligations and generate increased engagement across the biosecurity system to promote compliance.

Enable wider participation in our systems for surveillance and early detection

Promote smart surveillance tools. Surveillance and early detection are crucial for limiting the spread of pests and diseases. New technologies have a key role to play here. Victoria has invested in smart surveillance tools that have the potential to involve more people on the frontline and through the supply chain in surveillance, provided the users can interpret results accurately. Diagnostics that support surveillance, for example rapid pen-side testing, will also increasingly be used to support market access by providing evidence of absence of pests and pathogens.

Support community engagement in surveillance. Community and industry engagement initiatives designed to help with surveillance and early detection can also play a role here. Initiatives like the Biosecurity Quest could serve as a call-to-action for the public, inviting communities to get involved in citizen science. It is important not to solely rely on these programs for surveillance but to appreciate their contribution to increasing awareness and understanding of the nature of biosecurity threats.

Improve uptake of traceability schemes. Traceability schemes also have a crucial role to play in limiting the size of an incursion and the time taken to resume market access after a biosecurity event while also maintaining market confidence that Victorian produce is meeting compliance, market and consumer requirements. Victoria has one of the strongest traceability systems in Australia,[145] having pioneered the use of electronic identification in cattle, sheep and goats, but there are still opportunities for improvement in traceability across other industries.

PRIORITY ACTIONS

4 Improve stakeholder and community engagement to increase awareness, drive behavioural change and manage key biosecurity risks.

5 Strengthen the network of industry and community biosecurity champions and involve them in policy and program design.

6 Improve the compliance and enforcement toolkit to incentivise good biosecurity practices and discourage non-compliant behaviours.

7 Support people to better manage biosecurity risks; for example, through accreditation programs, agreements, business and risk management planning, expert advice, standards, and guidance.

8 Support initiatives that enhance community and industry engagement in reporting pest and diseases to both build awareness and improve early detection of biosecurity threats.

9 Improve the uptake of traceability systems across industries to enable fast response and maintain market access.

STRATEGIC GOAL #3

RESPONSE – Broaden the base for preparedness and response

The impacts of a biosecurity emergency, like the outbreak of an emergency animal disease, can be profound – for farmers, local communities and businesses, industry and the wider Victorian community. Fast detection of an outbreak, followed by a quick, coordinated response, is the key to reducing impacts. This depends, in turn, on the level of preparedness for the emergency. Effort in preparedness has typically fluctuated according to perceptions of threat, but with biosecurity risks intensifying sustained attention to preparedness is crucial. Once an outbreak has been controlled, the right relief and recovery initiatives are also important in helping businesses and communities get back on track.

More effective preparedness, response and recovery depend on collaboration and partnerships. The Department of Energy, Environment and Climate Action, as the Control Agency for biosecurity emergencies in Victoria, plays a lead role here (typically working with its federal counterparts, and with other state agencies as required). However, it crucially depends on its partnerships with industry to mount an effective response, with industry bringing important expertise and intelligence about what is happening on the ground. The work of industry and government in responding to the varroa mite threat is a recent example of how well this can work (see case study on the varroa mite response).

But more is required to broaden the base of organisations involved in the management of biosecurity emergencies. For example, a foot-and-mouth disease outbreak would quickly overwhelm the resources of Agriculture Victoria and its industry partners. The wider emergency management sector, with its commitment to coordinated preparedness and response, will support. However, that sector is under increasing pressure as it deals with more frequent, more intense and (often) concurrent emergencies. Moreover, much of the required expertise and equipment is not readily found in government. Broadening the base means more partnerships between government at all levels, industry, and private and not-for-profit service providers.

Strengthen industry and community networks for more effective response coordination

Strengthen networks. Effective emergency response coordination is about government, industry and community working together based on a clear understanding of respective roles and responsibilities. This understanding typically develops through participation in networks. Often, it is through regular engagement in these networks that organisations develop an understanding of not only what their specific obligations are but also the other ways they may be able to support biosecurity emergencies by drawing on their particular skills and resources.

Increase joint training and exercises. There are many ways to encourage this engagement, for example, by emphasising more formal networking opportunities such as communities of practice. One of the best ways is to encourage participation across government, industry and, where relevant, communities, in joint training and exercises. Through these exercises, participants can test ways to work together in an actual biosecurity emergency and identify gaps in current arrangements.

Share lessons and insights. The lessons and insights of the actual experiences of preparing for and responding to biosecurity events can also help. It is important that government, industry and community organisations work together to ensure we distil the lessons from past emergency responses to inform continuous improvement and better direct resources to fill existing gaps. The recent experiences with foot-and-mouth disease preparedness and varroa mite response provide key insights.

Improve access to the people, skills and equipment required for faster, more effective response

Support surge arrangements. One way to access the workforce required to support large biosecurity emergencies is through surge arrangements, including provisions in place with other agencies and industry. These typically involve offering training for base-level emergency management roles, such as logistics or communications, combined with more tailored just-in-time training for specific emergencies. These models have been effective in supporting biosecurity events when they are able to overcome the barriers to participating, such as competing workloads. Some of these initiatives are already underway but responding to intensifying biosecurity risks will require more to address future surge workforce requirements.

Develop new resourcing models. A Surge Workforce Strategy has already been developed to improve Agriculture Victoria's ability to secure a surge workforce during an emergency and support the establishment of diverse and mature workforce models over time. Existing emergency resource arrangements, partnership agreements, contract arrangements and a government mobility model are all key components of the Surge Workforce Strategy. Work is also underway to enable Agriculture Victoria to draw in the resources and capabilities from industry and community networks, including private veterinarians. This will require further effort to help address challenges, such as accessing specific skills, working with all parts of the supply chain, undertaking surveillance, coordinating with national and state counterparts, and controlling borders.

Access specialised skills and equipment. The irregular nature of some biosecurity events makes it harder to maintain the required skills in reserve. This means it makes sense to rely more on the private sector in accessing specialised skills and equipment. These arrangements need to be in place before an emergency to ensure fast access to skills and equipment is possible. This depends on a deep understanding of requirements, and the establishment of appropriate procurement arrangements, such as panels of contractors that are regularly renewed.

Strengthen the resilience of the system before, during and after the event

Focus more on relief and recovery. In non-biosecurity emergencies there is generally strong recognition of the importance of a well-managed recovery phase. This has led to permanent arrangements to coordinate the network of organisations with a role to play in relief and recovery, as well as pre-agreed relief and recovery measures. There is an opportunity for Victoria to look to these approaches in order to strengthen the relief and recovery phase for businesses and industries impacted by biosecurity events.

Embed biosecurity risk in business planning. It is important that industries and communities are building resilience to more frequent shocks – not just biosecurity events, but fires, floods and droughts. There is broad recognition that resilience, in the face of increasing uncertainty, requires much more business and risk management planning by landholders. Various incentives are now available to encourage landholders to embed biosecurity risk management into their planning processes.

Anticipate new risks. As biosecurity risks intensify, building resilience depends on a better understanding of the key risks (and the potential system-wide consequences) that Victoria needs to be prepared for. New ways of thinking will be important to navigate this rapidly changing environment. For example, the National Disaster Risk Reduction Framework proposes a strengthening of strategic anticipation capabilities to inform community and industry resilience initiatives.

PRIORITY ACTIONS

10 **Undertake joint planning, training and exercises to help identify opportunities for improving coordinated action and filling existing gaps.**

11 **Strengthen arrangements for managing biosecurity events, including surge resources, access to specialised skills, and a wider network of organisations to support recovery.**

12 **Strengthen the capabilities for anticipating new biosecurity risks and potential impacts to improve preparedness and resilience.**

STRATEGIC GOAL #4

MANAGEMENT – Reduce the impacts of established weeds and animal pests through local action

While the gains in the management of established weed and pests are hard won, efforts by public land managers could be supported through *community-led action*. Community-led action can be defined as government supporting communities to implement decisions about what will work best for their areas (or place-based solutions). Community-led action for managing weeds and animal pests can take many forms, such as through Landcare or other existing community or industry groups, or through community groups set up specifically to tackle weed or pest issues. All community groups can be powerful change agents if engaged on the issues that matter to them.

Ultimately, successful management of established weeds and pests requires long-term commitment – it is hard to achieve sustained improvements quickly. This means that partnerships are important, with government and community working together towards longer-term goals. Some good examples of these partnerships are the Victorian Community Pest Management Groups (CPMGs) established to manage the challenges posed by blackberry, gorse, serrated tussock and rabbits. The CPMGs feature representatives from communities and government agencies involved in pest management, with a strong focus on rural and regional community-based leadership and supporting cross-tenure management.

Partnerships with Traditional Owners are particularly important for the management of established weeds and animal pests. There is an opportunity for Traditional Owners to play a bigger role in decision-making to reduce some of the key weed and pest threats to Country. Some pilot programs demonstrate the value of partnerships between Traditional Owners, government and landholders, for example, the work to reduce the impact of rabbits on significant cultural heritage sites on public land. It is important to create opportunities for all mobs to demonstrate how traditional ways of knowing, being and doing can make a significant contribution.

Enable industry-and community-led action to reduce the impact of established weeds and pests

Support community-led action. Encouraging action on the management of weeds and animal pests starts by recognising and promoting the key elements of effective community-led action, such as the genuine empowerment of people motivated by community values. This needs to be reinforced in all interactions with communities, from communication campaigns to inviting communities to set priorities in pest management.

Provide information, education and expert advice. Education and training play a key role in enabling community-led action. This includes the provision of scientific and credible information – it is often not clear to people where to go for the answers. However, it is more than just providing information. Effective engagement depends on making connections with people, creating environments where people can ask hard questions and can see how to apply good practice to their real-life challenges.

Support champions of good practice. Facilitators, coordinators and extension officers, who work with community and industry groups, are therefore particularly important to the success of community-led action. Sustainable long-term changes typically happen through continued one-on-one interactions with people who are trusted. These people at the centre of community-led action – along with the industry and community leaders who champion them – should be the focus of support.

Foster much greater Traditional Owner involvement in weed and pest management

Promote use, integration and implementation of Country Plans. There are various ways to encourage much greater Traditional Owner involvement in weeds and animal pest management. Partnering with Traditional Owner groups to support the implementation of Country Plans is one key approach. These plans represent the aspirations of Traditional Owners for the care of their communities and Country – setting out the landscape-scale action and priorities important to Traditional Owner groups.

Protect key cultural and ecological assets. It is important to continue supporting initiatives where Traditional Owners partner with public and private land managers to protect key cultural and ecological assets. There is a particular opportunity to find ways to improve connections between Traditional Owners and private landowners. Learning about the aspirations of Traditional Owners – as custodians of land – for the management of culturally significant sites can lead to better outcomes for these sites, including in biosecurity.

Encourage delivery of services. Finally, more and more Traditional Owners are becoming involved in roles that support caring for and healing Country. This creates more opportunities to deliver natural resource management services, including weed and animal pest management. Indigenous procurement is one of the mechanisms that can help increase participation of Traditional Owners and ensure these communities receive financial and social benefits while fulfilling their responsibilities as custodians of land and nurturing traditional knowledge.

Promote sustainable models for long-term, whole-of-landscape weed and pest management

Encourage landscape-scale planning. Increasingly, the collective governance of investment and management of established pests and weeds requires a whole-of-landscape approach , which also includes waterway and public land management. The *Parks Victoria Land Management Strategy 2022* describes the essence of this landscape approach as land management that ignores tenure and boundaries to tackle issues such as land health, habitat restoration and pest plant and animal programs.[146]

Create supporting mechanisms. New mechanisms are required to enable whole-of-landscape approaches. These may include landscape-scale plans and funding for areas that communities identify as high priority as a result of specific biosecurity risks. Typically, these areas include significant areas of public land, and depend on public and private land managers and Traditional Owners working together to coordinate action. These arrangements may be formalised in some form of special area plan as discussed in Strategic Goal #1: PARTNERSHIPS.

Establish effective governance arrangements. For sustained improvement, new governance arrangements will need to support and coordinate community-led action. The new Victorian Invasive Pest Advisory Board is an example, providing a forum for community, industry and government stakeholders to collectively govern investment and management of established invasive pests across landscapes. This includes strategic advice on the design and delivery of programs that support community-led action.

PRIORITY ACTIONS

13 **Promote and support community-led place-based action on established weeds and pests.**

14 **Strengthen partnerships between Traditional Owners and private and public land managers to protect key cultural and ecological assets.**

15 **Engage key participants in landscape-scale planning for high-priority areas.**

STRATEGIC GOAL #5

ENABLERS – Strengthen the enablers for system-wide action

A focus on system-wide action does not mean a smaller role for government, but it does mean a shift in government's role – with a greater emphasis on enabling the wider system to work together more effectively to manage biosecurity risks. This system steward role is consistent with broader public administration trends. Over the past decade or so, many parts of government have come to understand their role to be less about the design and delivery of programs and initiatives, and more about improving the capacity of networks of community, industry and government organisations to function effectively as a system that delivers value.

This system steward role is particularly relevant for challenging areas like biosecurity, for example, where:

- there are complex networks of people, businesses and organisations already involved, operating at different scales – national, state, regional and local
- some level of coordination is required to achieve the best outcomes for the system
- this is best achieved by working together through relationships characterised by high levels of trust.

Typically, the system steward takes responsibility for the overall functioning of the system – helped by access to funding, policy, regulatory and delivery levers.

It is clear that many parts of the biosecurity system expect Agriculture Victoria to play a key leadership role. The coordinated and consultative development of this Strategy, focused on clarifying the shared goals and priorities for the sector, is an example. As attention turns to implementation, it is important that Agriculture Victoria focuses on how it can best enable system-wide action in ways that are consistent with aspirations of shared responsibility. Key roles where it can add the most value here are in: building system-wide capability for collective action; delivering the required legislative reforms; and investing in underpinning systems, science and tools.

Build capability and capacity throughout the biosecurity system for collective impact

Identify skills gaps. Collective action, based on an understanding of key biosecurity risks, depends on access to expert advice and timely support. There are some key capability gaps in the current system. For example, in the extent to which we are prepared for increased incursions. As a result, a system-wide assessment of current and future workforce capability requirements will be helpful. Insights from this assessment can be used to develop strategies to address the key technical and people capability gaps and inform strategic workforce planning initiatives.

Identify sustainable funding models. The nature of biosecurity events means that investment in preparedness for and management of key threats tends to ebb and flow. New thinking about sustainable funding models is required across the continuum, including for public land management, and some innovative models may offer inspiration. For example, Western Australia's Recognised Biosecurity Groups receive funding for pest management through a collaborative cost-sharing approach, where landholders in prescribed areas contribute to a Declared Pest Rate that is matched dollar-for-dollar by the State.[147]

Invest in system-wide monitoring and reporting. It is important to monitor and review the ongoing performance of the biosecurity system to identify vulnerabilities and opportunities for improvement and to secure the evidence base for better decision-making. At a system-scale, this works best when there is a shared set of performance measures that are based on credible information and promote accountabilities between those operating in the biosecurity system.

Deliver legislative reform and strengthen regulatory programs to support greater participation, enable collaboration and promote compliance

Empower people to play their part. Biosecurity legislation needs to help us respond to the changing and uncertain nature of modern biosecurity risk. It also needs to reflect that a wide range of people and entities have responsibility for, and enjoy the benefits of, good biosecurity. This includes more appropriately distributing roles and responsibilities, empowering the widest range of people to play their part and supporting better coordination across land tenures and industries.

Support more flexibility and collaboration in managing biosecurity risk. This requires legislative reform that is outcomes-focused and inclusive, based on regulation that is proportional to risk, reduces red tape and incentivises compliance. An effective set of tools, rights and duties enables risks to be addressed by those best placed to do so. For example, reforms could improve the consistency of traceability arrangements across sectors and support more co-regulation arrangements between government and industry. Shared responsibility could be better supported through ensuring appropriate compensation mechanisms across relevant sectors.

Promote compliance. Effective regulation requires a range of programs and activities, engaging with regulator parties to adopt better biosecurity practices. Along with maintaining and strengthening the current regulatory approach, a revised suite of enforcement tools would improve options to respond. Balanced against this, flexibility in the compliance framework would enable regulators to create incentives for good biosecurity practices. For example, a basic, underlying obligation, formalised in legislation, could outline how all Victorians are expected to reduce biosecurity risk.

Invest in the systems, science and tools that enhance intelligence gathering, risk analysis and action

Improve online access to data and information systems. The proficient use of information systems is an important enabler of collaboration, for example, for the early detection of pests, the effectiveness of traceability programs and ensuring prompt, coordinated responses to incursions. Agriculture Victoria will help improve decision-making through access to data and reporting tools, reduce administrative overheads for community and industry by providing them with modern interactive services and contribute to improving data-sharing at a national level.

Target scientific investment in new tools. Science and innovation partnerships have an important role to play in the search for breakthroughs in reducing biosecurity risks and impacts, building on existing strengths on our research and development, diagnostics and forecasting capabilities. Priorities include more region-specific predictive modelling (for example, using weather stations to provide warning on conditions conducive for the spread of pest and diseases) and more landscape-scale innovative solutions and control tools for established invasives.

Build the evidence base. Ultimately, reducing biosecurity risks requires system-wide action and a precondition to this is investment in the evidence base and in research partnerships that can support effective decision-making. For example, our understanding of the key drivers of and barriers to behavioural change is limited and additional research is needed to fully appreciate how market mechanisms can more effectively support change.

PRIORITY ACTIONS

16 Identify and develop strategies for addressing the key skill and capability gaps in the wider biosecurity system.

17 Identify sustainable funding models for priority biosecurity threats across the landscape, from exotic to established diseases, weeds and pests.

18 Monitor the ongoing performance of the biosecurity system to identify vulnerabilities and opportunities for improvement to inform better decisions.

19 Improve legislation to support the management of biosecurity across the system, clarify roles and responsibilities, and improve regulation and compliance.

20 Invest in support systems, science and tools, including improving access to data and information, to better manage biosecurity risks and enhance research partnerships.

6

Bringing the Strategy to life

Well-thought through governance arrangements and clear implementation planning are critical to driving the delivery of the Biosecurity Strategy, monitoring progress and maintaining stakeholder confidence.

Governance arrangements

The first steps in bringing the Strategy to life will be defining the governance arrangements that will support ongoing whole-of-system commitments to change. Given the breadth of the Strategy and its aspirations for system-wide collaborative governance and shared responsibility, the arrangements will need to feature broad representation.

The governance structure will draw on the structures that were in place for the development of the Strategy, including the Biosecurity Reference Group and the Biosecurity Interagency Committee, and will be further refined to ensure representation from across the biosecurity system.

Implementation planning

In addition to outlining the transition towards new governance arrangements, implementation planning will cover the following:

- a roadmap for Strategy implementation including resourcing and work plans to enable the development of functionality for Strategy implementation
- plans for coordination, roll-out and monitoring of any immediate (for example, first year) actions proposed
- monitoring and evaluation requirements to measure the effectiveness of the Strategy, including developing appropriate metrics and mechanisms to report progress
- arrangements to sustain momentum and relationships with stakeholders on implementation, including annual prioritisation workshops, roundtables and other forums to address emerging priorities.

For updates on the progress with the Strategy implementation, please visit www.agriculture.vic.gov.au/2023-biosecurity-strategy.

Photo by Colin Page

Commitment by Agriculture Victoria

Agriculture Victoria , as part of the Department of Energy, Environment and Climate Action, will continue strengthening its role in system-enabling functions, outlined in the Enablers section, in particular, strengthening the capability and capacity of the system; improving legislation to support system-wide management of biosecurity; clarifying roles and responsibilities; investing in support systems, science and tools.

Agriculture Victoria is also committed to supporting the process of the Strategy roll-out. It will facilitate the establishment of governance arrangements and the development of the implementation plan and monitoring and evaluation framework. The reporting on the progress against the Implementation Plan will be made public, so that government, industries and communities can hold each other accountable. Agriculture Victoria will also host an annual workshop with governance groups to decide on priorities for implementation and facilitate future reviews of the Strategy.

We are excited about the collaborative work ahead of us to bring the Strategy to fruition.

Photo by Anthony Webster

A

Appendix A: Strategy development process

The Strategy has been developed in two key stages, outlined below and summarised in Figure 5.

The first stage ended in September 2022 with the release of the Victoria's Biosecurity Statement.[148] This Statement was the result of an extended period of research and consultation during 2019-2022 with people who participate in or benefit from Victoria's biosecurity programs.

This included:

- a state-wide survey with 1,472 survey respondents
- over 110 structured interviews
- the Shaping Victoria's Biosecurity Future Workshop
- 10 workshops dedicated to Statement co-development.

The Statement was designed to reflect the voices, perspectives and language of the breadth of people and organisations across the system and sets a shared purpose and ambition for the future of Victoria's biosecurity system.

With the release of the Statement, work began on the Strategy to help bring this vision to life. Through multiple rounds of listening and testing with stakeholders, each iteration of the narrative gained more focus, detail and colour, informed by perspectives and insights of the range of stakeholders involved in crafting the Strategy. The essence of this ambition is captured in the shared vision for Victoria's biosecurity system.

The initial broad engagement (round one) included ten regional workshops across Victoria with about 370 stakeholders – representing farmers, agriculture industry bodies, supply chain businesses, community, transport, emergency management, Traditional Owners and government. These workshops explored how well current biosecurity risks are currently managed, and identified specific, tangible ways to deliver a better biosecurity system. The outputs from these workshops informed the initial set of strategic goals and supporting priority actions.

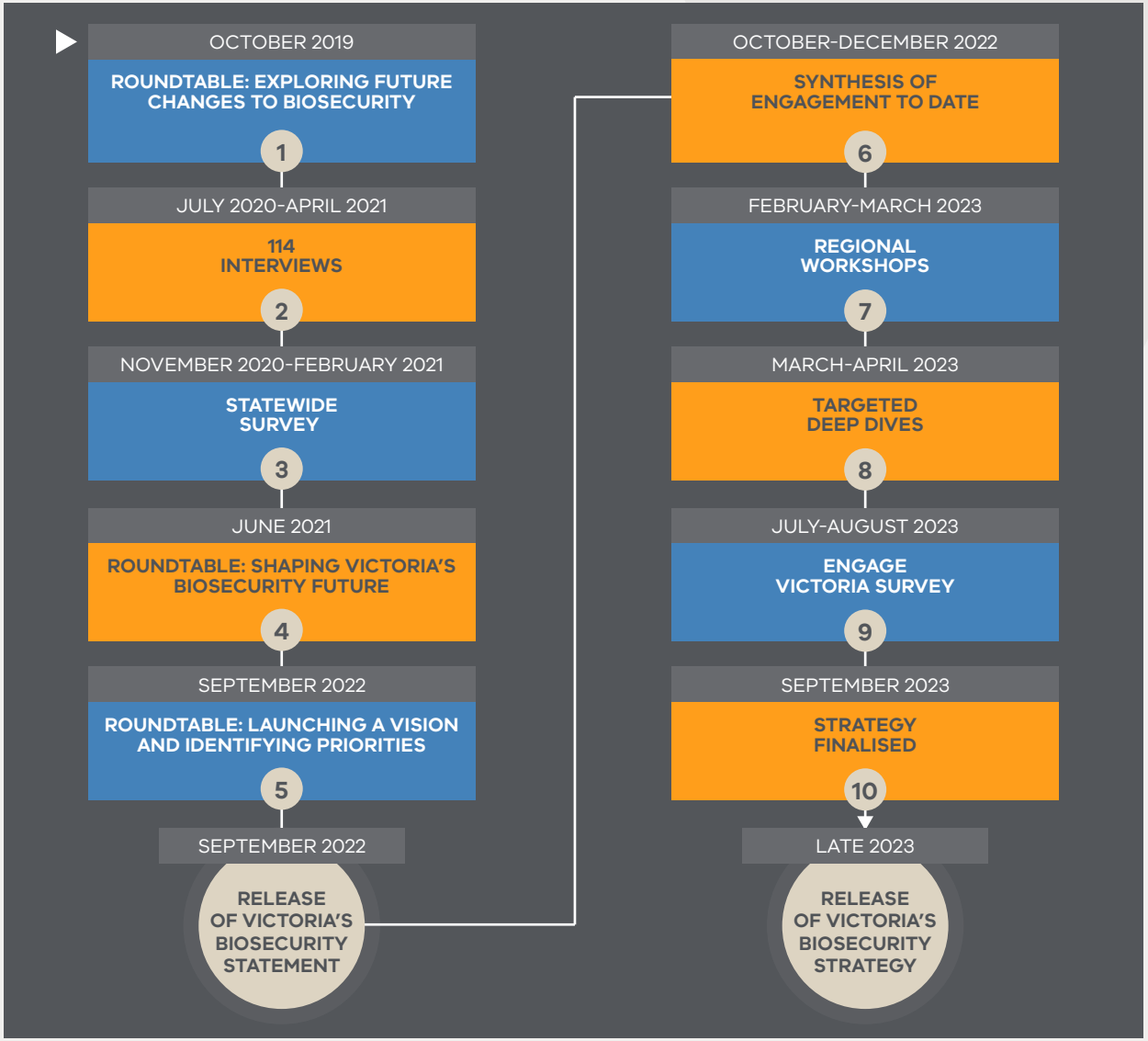
The subsequent series of focus groups (round two) helped source expert advice to better shape the priority actions that will help deliver each strategic goal. Focus groups were also held with Traditional Owners and environmental agencies. Through rounds one and two, nearly 450 stakeholders contributed to the development of the Strategy.

The final broad engagement (round three) – public consultation through the Engage Victoria online platform – provided opportunities for all interested Victorians to review and comment on the draft Strategy. Over one hundred responses were provided, including 32 written submissions from stakeholders across biosecurity system.

The final goals and actions in the Strategy were informed by the contributions of all those who had their say during consultations. Where there were varying views on how to approach and prioritise goals, the prevailing decision was based on a democratic process.

In addition to these three rounds of engagement, each iteration of the Strategy has been tested and refined with two consultative groups: the Biosecurity Reference Group[149] and the Biosecurity Interagency Committee. Together, these groups represent experts in biosecurity and related fields from community, agricultural industries and government.

Figure 5 | The Biosecurity Statement and Strategy reflect the voices of people and organisations across the system



B

Appendix B: Stakeholders involved in Strategy development

The following organisations have participated in workshops and consultations focused on developing the Strategy over 2022-23.

Organisations and stakeholders	
Agribusiness Gippsland	Ball Australia
Agribusiness Yarra Valley	Barengi Gadjin Land Council Aboriginal Corporation
Agriculture Victoria	Best Wines
Alpine Shire	Cattle Compensation Advisory Committee
Angus Australia	Centre of Excellence for Biosecurity Risk Analysis
Animal Care Australia	Chalmers Wines Australia
Animal Health Australia	Chestnuts Australia
Animal Medicines Australia	Citrus Australia
Animal Justice Party	City of Greater Bendigo
Apicultural Industry Advisory Committee	City of Greater Geelong
Apple and Pear Australia	City of Whittlesea
Association for Conservation of Australian Dingoes	Colac Otway Shire
Australian Almond Board	Coles Group
Australian Dairy Products Federation	Coliban Water
Australian Food Sovereignty Alliance	Corangamite CMA
Australian Honey Bee Industry Committee	Corangamite Shire
Australian Livestock & Property Agents Association	Crawford Fund
Australian Livestock Saleyards Association	CSL Seqirus
Australian Pork Limited	Dairy Australia
Australian Processing Tomato Research Council	Department of Agriculture, Fisheries and Forestry
Australian Table Grape Association	Department of Energy, Environment and Climate Action
Australian Veterinary Association – Victorian Division	Department of Families, Fairness and Housing
AUSVEG	Department of Health
Avocados Australia	Department of Jobs, Skills, Industry and Regions

Organisations and stakeholders		
Department of Premier and Cabinet	Goulburn Broken CMA	Melbourne Water
Department of Treasury and Finance	Goulburn Murray Water	Melton City Council
Dja Dja Wurrung Clans Aboriginal Corporation	Grains Research and Development Corporation	Meridian Agriculture
Dried Fruits Australia	Grassy Plants Network	Mildura City Council
East Gippsland Shire	Greenlife Industry Australia	Mitchell Shire Council
East Gippsland CMA	Gunaikurnai Land and Waters Aboriginal Corporation	Mt Alexander Shire Council
Emergency Management Victoria	Gunditj Mirring Traditional Owners Aboriginal Corporation	Murray Dairy
Environmental Protection Authority	Herd Solutions	Murray Valley Winegrowers Inc
Equine Health Industry Group	Hume City Council	National Emergency Management Authority
Fathom Pacific	HVP Plantations	North Central CMA
Federation of Victorian Traditional Owner Corporations	Indigo Shire	North East CMA
Field Naturalists Club of Victoria	Invasive Species Council	North East Wine Zone Committee
First Nations Ag College Modernisation Program Working Group	Labor Environment Action Network	North Grampians Shire Council
First People of the Millewa-Mallee Aboriginal Corporation	Landcare Victoria	Nursery and Garden Industry Victoria
Fonterra	Latrobe City Council	Nutrien Ag Solutions
Food & Fibre Gippsland	Latrobe Region Hospital	Parks Victoria
G21 Rural and Peri-urban Advisory Committee	Latrobe Valley Authority	Perennial Pasture Systems
Gippsland Agriculture Group	Light Foot Wines	PIC Australia
Gippsland Dairy	Livestock and Rural Transporters Association of Victoria	Plant Health Australia
Gippsland Ports	Longerenong College	Pony Club Australia
Glenelg Hopkins CMA	Macedon Ranges Shire Council	Port of Melbourne
Glenelg Shire	Mainstream Aquaculture	Port Phillip Ecocentre
Golden Plains Shire Council	Mallee CMA	Rabo Bank
Good Ancestors Project	Melbourne Polytechnic	Racing Victoria

Organisations and stakeholders		
Reach Agribusiness Services	Surf Coast Shire Council	Vline
Redefining Agriculture	Swan Hill Rural City Council	Wadawurrung Traditional Owners Aboriginal Corporation
Regional Development Victoria	The Nature Conservancy	Wandoon Estate Aboriginal Corporation
Royal Botanic Gardens Victoria	Tickenhall Alpacas	Wangaratta Rural City
RSPCA	Trust for Nature	Wellington Shire Council
Rural City of Ararat	Victoria Police	WestVic Dairy
Rural City of Wangaratta	Victoria Police - Mounted Branch	Wimmera CMA
Rural Financial Counselling Service Victoria	Victorian Apiarists Association	Wine Victoria
Seaway Logistics	Victorian Avicultural Council	Wiran Aboriginal Corporation
Sheep and Goat Compensation Advisory Committee	Victorian Blackberry Taskforce	Woolworths
Southern Cross Farms	Vic Catchments	Work Safe
Southern Farming Systems	Victorian Farmers Federation	Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation
Southern Grampians Shire	Victorian Fisheries Authority	Yarra Ranges Rural Advisory Committee
Southern Rural Water	Victorian Forest Products Association	Yarra Riverkeeper Association
Steritech	Victorian National Parks Association	Yarrawalla
Strathbogie Shire Council	Victorian Rabbit Action Network	Zoos Victoria
Strawberries Victoria	Victorian Serrated Tussock Working Party	

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