

The Australian Compartmentalisation Program: A new client service model for the agricultural export trade in animals and animal products

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FINAL REPORT

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Glossary¹

Biosecurity plan	A plan that identifies potential pathways for the introduction and spread of disease in a zone or compartment, and describes the measures which are being or will be applied to mitigate the disease risks, if applicable, in accordance with the recommendations in the OIE Terrestrial Code
Compartment	an animal subpopulation contained in one or more establishments, separated from other susceptible populations by a common biosecurity management system, and with a specific animal health status with respect to one or more infections or infestations for which the necessary surveillance, biosecurity and control measures have been applied for the purposes of international trade or disease prevention and control in a country or zone.
Competent Authority	The Veterinary Authority or other Governmental Authority of a Member Country having the responsibility and competence for ensuring or supervising the implementation of animal health and welfare measures, international veterinary certification and other standards and recommendations in the Terrestrial Code and in the OIE Aquatic Animal Health Code in the whole territory.
Compliance cost	Under the Australian Government's Regulatory Burden Measurement framework (OBPR 2016), compliance costs include: "costs incurred by regulated entities primarily to demonstrate compliance with the regulation (usually record keeping and reporting costs)" and "costs incurred to deliver the regulated outcomes being sought (usually purchase and maintenance costs)". In this report, compliance costs also include the other main component of regulatory costs, namely delay costs, defined by the OBPR (2016) to include expenses and loss of income incurred by a regulated entity through an application delay, and/or an approval delay
Early detection system	<p>A system for the timely detection and identification of an incursion or emergence of diseases/infections in a country, zone or compartment. An early detection system should be under the control of the Veterinary Services and should include the following characteristics:</p> <p>a) representative coverage of target animal populations by field services;</p>

¹ All terms in the glossary, other than Net incremental compliance cost and Net incremental non-recoverable cost are reproduced from the OIE Terrestrial Animal Health Code Glossary.

- b) ability to undertake effective disease investigation and reporting;
- c) access to laboratories capable of diagnosing and differentiating relevant diseases;
- d) a training program for veterinarians, veterinary para-professionals, livestock owners/keepers and others involved in handling animals for detecting and reporting unusual animal health incidents;
- e) the legal obligation of private veterinarians to report to the Veterinary Authority;
- f) a national chain of command

International veterinary certificate

A certificate, issued in accordance with Chapter 5.2 of the OIE Terrestrial Animal Health Code, describing the animal health and/or public health requirements which are fulfilled by the exported commodities

Listed disease A disease, infection or infestation listed in Article 1.2.3. of the OIE Terrestrial Animal Health Code after adoption by the World Assembly of OIE Delegates

Net incremental compliance cost

The cost to a producer of complying with additional regulatory requirements less any reduction in compliance costs compared to current operations

Net incremental non-recoverable cost

The additional cost to a government of establishing and administering a government program less any reduction in government costs arising from the policy change.

Notifiable disease A disease listed by the Veterinary Authority, and that, as soon as detected or suspected, should be brought to the attention of this Authority, in accordance with national regulations

OIE World Organisation for Animal Health

Registration The action by which information on animals (such as identification, animal health, movement, certification, epidemiology, establishments) is collected, recorded, securely stored and made appropriately accessible and able to be utilised by the Competent Authority

Veterinary Authority	The Governmental Authority of a Member Country, comprising veterinarians, other professionals and para-professionals, having the responsibility and competence for ensuring or supervising the implementation of animal health and welfare measures, international veterinary certification and other standards and recommendations in the OIE Terrestrial Animal Health Code in the whole territory
WTO	World Trade Organization
WTO SPS Agreement	WTO Agreement on the Application of Sanitary and Phytosanitary Measures

Executive Summary

Project Aims

The report describes an economic assessment of a proposed program to offer OIE-compliant compartmentalisation to producers in Australian animal production industries, with a focus on export-oriented poultry enterprises. The focus on poultry exporters does not imply that these are the only, or the largest, potential beneficiaries of an Australian compartmentalisation program. Other intensive and vertically integrated industries, including pig, aquaculture and animal genetic material industries, may benefit substantially from compartmentalisation. The underlying principles of compartmentalisation also apply to export market access for plants and plant products, however this was not within scope of this assessment. The assessment was undertaken by the Centre of Excellence for Biosecurity Risk Analysis (CEBRA) at the request of the Department of Agriculture (DA).

The project was originally intended to address three aims that collectively inform the decision on whether to implement the Australian Compartmentalisation program:

1. Estimate the benefits and costs of the proposed compartmentalisation program.
2. Assess whether the program promotes Australian biosecurity policy.
3. Develop a compliance cost calculator to assist producers in estimating the costs of becoming a compartment to assist them in determining whether to participate in the proposed compartmentalisation program.

The first of these aims was subsequently revised in agreement with the Department of Agriculture and Water Resources (DAWE), with the third aim being deferred to a successor project that will commence after the Australian compartment standards have been fully developed. The first aim was modified as follows:

- Instead of estimating all the main costs of the proposed compartmentalisation program to governments (state and Federal), an assessment was made of whether the non-recoverable cost to the Australian Government of establishing the Program is likely to be large enough to require a detailed assessment. The program establishment cost is defined here to include all costs associated with establishing the program as a new Approved Arrangement under the *Export Control Act* (assent pending), communicating the program to stakeholders, developing auditing guidelines and conducting trials. This excludes unrecoverable government costs in negotiating export market access on behalf of compartments after the program has been established.
- Instead of estimating all the main costs and benefits to producers in different industries who might participate in the program, costs were estimated for an individual poultry exporting enterprise. An indicative assessment was then made of whether the costs expected to be incurred by that producer are likely to be outweighed by the expected benefits to that producer of participating in the program.

- These changes to the first aim were made to focus on the question of whether to conduct a full cost-benefit analysis before the decision is taken on whether to establish the Australian Compartmentalisation program. It is argued that this decision can be taken based on whether program establishment costs are likely to be minimal or not, rather than requiring a comprehensive cost-benefit analysis before the program is implemented.

These changes were made due to data availability gaps and a finding that the project's overarching aim can adequately be addressed without the need for a comprehensive cost-benefit analysis. The reasons for this finding are explained in the Methodology.

Key data gaps included:

- Producer participation benefits:
 - The primary benefit of compartmentalisation is the additional expected net revenues to participating producers from the increased likelihood of being able to export to preferred markets during disease outbreaks in Australia that would otherwise halt trade due to country-freedom requirements.
 - None of the producers consulted for this report were willing to make available information on the additional net revenues they would obtain if they were able to export during a disease outbreak as this is commercially sensitive information.
- Resources required to establish a compartmentalisation program. A precise estimate of these resource requirements was unavailable at the time of this analysis. DAWE staff consulted on this question included staff in the following programs and divisions:
 - Export Meat Program, Exports Division
 - Certification Management Group, Exports and Veterinary Services Division
 - Biosecurity Research, Compliance Division - Risk & Innovation
 - Agriculture Trade Group, Trade Reform, Biosecurity Integrated Information System
 - Import Approved Arrangements
- Resources required to negotiate market access, including conditions for allowing Australian exports to continue during a national disease outbreak occurred outside export supply chains or production areas. DAWE staff consulted on this question included staff in the Animal Biosecurity Branch (International Strategy & Technical Assurance).

Overview of Key Findings

It appears likely that establishing the proposed compartmentalisation program will have a minimal non-recoverable cost to the Australian Government. If this finding is confirmed by a more detailed internal assessment by the Department of program establishment costs it is recommended that the Program be established as soon as possible without a fully quantitative cost-benefit analysis. The two reasons for this recommendation are that:

1. An assessment that there is a high likelihood that, should the Program be established, the main program costs (namely, investments by producers in upgraded facilities and operations to comply with compartment standards, and non-recoverable government costs of negotiating market access) will be exceeded by the program's benefits, irrespective of whether the program is further assessed before it is implemented. Key program design elements that help to achieve this high likelihood of cost-beneficial investments and trade-support activities include:
 - It is planned by DAWE to engage closely with producers on the development of standards and in communicating information relevant to producer participation and investment decisions (particularly program compliance requirements and the conditions that must be met for the Australian Government to negotiate market access agreements on a producer's behalf). This information exchange and cooperation in developing standards is likely to encourage efficient self-selection by producers in the sense that the producers who choose to compartmentalise:
 - i. are likely to be those that would benefit most from the program, and
 - ii. are likely to participate only if it is cost-beneficial for them to do so.

Both of these producer self-selection attributes enhance the efficiency of the program.

- DAWE's method for assessing and prioritising export market access requests further increases the likelihood that compartmentalisation investments and export market access negotiations will be cost-beneficial. This reflects that these methods are designed to maximise the expected net benefits of market access requests.
2. Delaying the program's implementation will delay compartmentalisation by producers, including producers that have already expressed an interest in participating in the program. The latter producers include:
 - Australia's largest supplier and exporter of live fin fish genetic material (Mainstream Aquaculture Pty Ltd.)
 - Project Sea Dragon, a proposed vertically integrated prawn aquaculture project being developed in northern Australia by Seafarms Group Ltd. The project is being promoted by its developer as Australia's largest future producer of farmed prawns, with a projected production of 100,000 tonnes/year.

- Australia's largest pig artificial insemination centre (Sabor Ltd.), to support export of boar genetic material.
- Australia's largest domestic supplier and exporter of meat chicken breeding stock (Aviagen Australia Pty Ltd).

The proposed program would protect Australian exporters by allowing disease-free compartments to continue exporting during disease outbreaks elsewhere in Australia, or where the disease is endemic in the surrounding environment. This would reduce export losses from pests and diseases. No other current biosecurity measure offers producers the opportunity to continue exporting in areas with notifiable disease outbreaks or where the disease is endemic in the surrounding environment. Zones allow producers to continue exporting when notifiable diseases exist outside the zones but they do not allow disease-free producers within the zone to continue exporting when such diseases exist within the zone. Furthermore, zones provide no benefits to producers outside the zones who could isolate their operations from potential disease sources.

The proposed program would also promote at least two Australian Government objectives:

- Sharing of biosecurity responsibilities between industry and government, as set out in the Intergovernmental Agreement on Biosecurity (IGAB).
- Growing access to premium export markets, as set out in the Agricultural Competitiveness White Paper (Australian Government, undated).

The proposed program would also be consistent with the IGAB Review finding that “Australia’s trading partners want government certification”.

These findings are explained in more detail below.

Program benefits substantially exceed costs

Investments in Australia’s regulatory capacity to establish and maintain disease-free compartments, as necessary and in accordance with the criteria established by the OIE, are likely to produce substantially larger benefits than costs. This primarily reflects three factors:

1. The large benefits to trade-dependent producers from avoiding export trading halts during notifiable disease outbreaks in Australia.
 - This is illustrated by the Australian poultry industry, which experiences sporadic outbreaks of notifiable strains of Avian Influenza (AI), including Highly Pathogenic Avian Influenza (HPAI). Although the HPAI virus has not been detected in wild birds in Australia (Grillo et al. 2015), Low Pathogenic Avian Influenza (LPAI) strains occurs naturally in particular species of wild birds and can occasionally infect domestic poultry through contact with wild birds. The virus may subsequently mutate to HPAI in domestic poultry flocks. When this occurs, because poultry exports trade on the basis of country freedom, all Australian

poultry exports cease, both during the outbreak and in its immediate aftermath while market access is restored.

- **Industry losses from the two most recent HPAI outbreaks, the 2012 outbreak near Maitland and the 2013 outbreak at Young, exceeded \$57 million** (DAWE, pers. comm.). These losses are still accumulating because some countries, including China, have continued to apply market access restrictions to Australian poultry exports following the outbreaks.
 - **These costs were potentially avoidable by implementing a compartmentalisation program because the exporters affected had no confirmed cases of AI.**
 - **The losses to a single Australian producer from the two outbreaks were \$8 million, and \$5 million in lost orders, respectively** (Dr Tim Ryan, pers. comm.). The large magnitude of these losses to an individual producer implies large potential gains from investments in compartmentalisation.
2. The small additional cost of the program to the Australian Government:
- This cost is small because **the proposed program will leverage off highly competent existing capability**. Australia already has the regulatory capacity and Veterinary Services required to operate the program, including the required veterinary expertise and experience in leading trade negotiations on behalf of animal/animal product exporters.
3. The program has built-in safeguards against the possibility that program costs will exceed benefits.
- The program would be fully cost-recovered and participation in the program by producers is voluntary. **The only producers likely to seek compartment certification are those who would expect to receive larger benefits than costs** (i.e., the program encourages efficient “self-selection” by producers). By fully recovering program costs from participating producers and encouraging efficient self-selection, the program minimises the likelihood that program costs will exceed benefits.

Compartmentalisation promotes efficient sharing of biosecurity responsibilities between government and industry

A key principle of The Intergovernmental Agreement on Biosecurity (IGAB) is to encourage efficient sharing of biosecurity responsibilities between stakeholders. **Compartment certification promotes this policy objective by imposing direct obligations on producers to invest in biosecurity measures and reinforcing these mandatory obligations by creating commercial incentives to invest in biosecurity measures:**

1. Mandatory obligations for increased producer investments in biosecurity: Compartment certification directly requires producers to invest in biosecurity measures to comply with standards that would be agreed to as part of bilateral trade negotiations. Guidelines on

appropriate standards are included in the OIE Terrestrial Animal Health Code (OIE 2018). The standards are aimed at excluding diseases from production operations, and facilitating rapid traceback of incursions, should they occur. Producers' investments and actions to meet these standards would be independently audited by a Competent Authority.

2. Voluntary incentives for increased producer investments in biosecurity: Compartment certification not only directly requires producer investments in biosecurity but it indirectly incentivises such investments by requiring that compartments be independently tested for diseases. The testing would be conducted by accredited animal health laboratories and audited by a government Competent Authority. This incentivises producer investments in preventive biosecurity measures because any incursions, should they occur, are likely to be detected and reported to trading partners under mandatory disclosure rules.

Compartmentalisation would help to grow Australian exports to premium export markets

A key objective included in The Agricultural Competitiveness White Paper (Australian Government, undated) is to grow Australian exports to premium export markets. A key means by which compartmentalisation would promote this objective is by **removing the dependence of Australian exporters on the animal health status of non-exporting producers**.

The two most recent avian influenza outbreaks in the Australian poultry industry occurred in non-exporting production enterprises. Both of the outbreaks occurred in free range or semi-free-range layer farms (Barnes et al. 2019; Scott 2018), and both outbreaks were traced to vulnerable biosecurity systems in non-exporting producers that created substantial risks of contact between domestic poultry and wild waterfowl (Scott 2018). The affected enterprises were not exceptional cases, with many non-exporting producers having less stringent biosecurity systems than those of exporting producers (Scott et al. 2018a, 2018b, 2018c, 2018d, Barnes et al. 2019). Compartment certification is of particular importance in industries with substantial differences between exporting and non-exporting producers in terms of their vulnerability to export-limiting disease outbreaks. The poultry industry is an example of such an industry but there may be other industries with this characteristic. Compartmentalisation readily allows exporters to exclude diseases of trade significance and thereby protect themselves from biosecurity lapses by other producers.

Introduction

The Compartmentalisation Concept

Disease-free nations face the risk of incurring export losses arising from trade-limiting animal disease outbreaks. This risk is increasing with increases in passenger and freight movements (Cameron 2019). Outbreaks may also occur via migratory animal movements or from natural reservoirs in wild animal populations, as demonstrated by the spread of highly pathogenic avian influenza (HPAI) (Hagenaars et al. 2018).

Export losses arising from trade limiting disease outbreaks can be substantial. This is illustrated by a potential Australian outbreak of foot and mouth disease, which was estimated to cost up to \$51.8 billion (Buetre et al., 2013). The large magnitude of potential losses reflects the requirement of many importing countries for their international trading partners to be entirely free of specific diseases (“country freedom”).

The two main options available to a country to reduce export losses arising from disease outbreaks are to: (1) increase the effectiveness of national biosecurity measures to maintain country freedom, and/or (2) invest in measures to exclude outbreaks from export supply chains, either through geographic and/or epidemiological separation.

Geographic and epidemiological separation are recognised in international standards as the two main alternatives to country-level exclusion of diseases for maintaining international trade during disease outbreaks in exporting nations.

- Zoning involves the partitioning of a country into distinct geographic zones capable of physical separation that, with adequate biosecurity measures, allows for exports to continue from unaffected zones while a disease response is underway elsewhere. Examples of industries that are potentially well suited to zoning include broad acre cattle and sheep farming.
- Compartmentalisation involves the partitioning of individual enterprises or groups of linked enterprises based on their biosecurity risk mitigation practices rather than their geographic location. A compartment would be less likely to be affected by a disease incursion than other enterprises and on this basis would be allowed to continue trading even when other enterprises are impacted by a disease outbreak. The enterprises best suited to compartmentalisation have the capacity to be isolated from non-participating and more disease-prone enterprises. This is illustrated by a vertically integrated poultry producer that integrates broodstock, layer production, egg production, meat production, egg production for vaccines, processing, laboratory services, logistics and related peripheral services. Other intensive and vertically integrated industries that are potentially well suited to compartmentalisation include the aquaculture and pig industries, and genetic material production sectors.

The OIE compartmentalisation principles have been developed as guidelines and added as chapters to the OIE Terrestrial and Aquatic Animal Health Codes. These provide detailed and

comprehensive guidance to veterinary authorities for establishing compartments that are free of a specific disease. The OIE Codes state:

Zoning and compartmentalisation are procedures implemented by a Member Country under the provisions of this chapter with a view to defining subpopulations of distinct health status within its territory for the purpose of disease control or international trade.

OIE Member countries agree with, and recognise the international framework, making it suitable for application by bilateral and multilateral trading partners in negotiating and establishing compartments for the purposes of sustainable safe trade. Bilateral recognition of effective functional compartments between trading partners mitigates the risk of unnecessary whole-of-country animal and animal product trade bans resulting from a disease notification.

The two primary aims identified by the OIE in developing the compartmentalisation concept are to (1) assist prevention and control of diseases and (2) facilitate exports of animals and animal products from countries that are unable to eradicate diseases in the short term (Kahn 2015). In the early stages of compartmentalisation within a country, adoption rates are likely to be too low to materially influence the likelihood that a new disease will become established and spread within the country. This implies that the primary benefit of compartmentalisation will initially be in facilitating exports of animals and animal products. Compartmentalisation has a demonstrated capacity to maintain sustainable export market access to global markets during national disease outbreaks outside compartments. Information from a poultry producer surveyed for this report and the latest official disease notification data from OIE WAHIS indicates that countries with poultry compartments continue to enjoy uninterrupted export trade during disease outbreaks outside the compartments.

By its nature, importing from countries that are experiencing a disease outbreak presents a larger risk than importing from countries where no diseases of trade significance are present. Therefore, any agreement to maintain international trade during disease outbreaks would need to provide importing nations with a high degree of assurance that the trade would not spread diseases of concern. The OIE compartmentalisation approach provides assurance in two ways:

1. Developing standards on the basis of high-quality scientific evidence on their effectiveness. OIE compartment standards relate to identification of potential disease entry pathways, a biosecurity plan detailing how bio-exclusion of the target disease(s) is achieved via risk mitigation measures, verification and audit procedures, animal health testing and traceability systems to ensure that any outbreaks can rapidly be traced to their source.
2. Requiring that compartments be supervised and approved by a government Competent Authority (CA) rather than a non-government third party organisation. The demand from trading partners for government-managed assurance relating to biosecurity is recognised by a recent review of Australia's Intergovernmental Agreement on Biosecurity (IGAB) (Craik *et al.* 2017). The OIE conducts evaluations of Competent Authorities to ensure they are capable of providing independent, reliable and valid certification that exported animals and animal products meets the importing country's requirements. Australia's Veterinary Services were evaluated in 2015 by the OIE and

were found to have a high level of competency (Schneider et al. 2015). In addition to OIE evaluations, CAs can also be evaluated by trading partners to ensure they meet importing country requirements.

Current Australian biosecurity initiatives to support exporting

The Australian Government currently applies a range of biosecurity measures to support exporting, focusing primarily on measures to maintain country freedom of specific diseases through pre-border and border activities. The Government also supervises and approves geographic separation programs (“zoning”) for selected animal diseases and industries. A recent example of this approach is the agreement between Australia and Singapore to maintain the export of Australian pig meat in the event of an outbreak of African swine fever (ASF) (Australian Government, 2020).

Currently, the Australian Government does not supervise and approve epidemiological separation programs aimed at maintaining exports by Australian animal industries. This potentially will deprive Australian export producers that are not already covered by zoning agreements of an opportunity to continue exporting to premium markets during national disease outbreaks. The proposed compartmentalisation program would address this gap in Australian biosecurity policy and programs aimed at facilitating exports.

The potential benefits of compartmentalisation are illustrated by the Australian poultry industry, which loses export market access whenever a disease of trade concern occurs in Australia. There have been three Australian outbreaks of highly pathogenic avian influenza (HPAI) since 2012, each resulting in substantial export losses due to the large price premium received for exports compared with domestic sales. In 2012 an outbreak of highly pathogenic avian influenza (HPAI) occurred in NSW resulting in 21 countries placing trade restrictive import conditions on poultry meat and poultry products from Australia. Although Australia regained freedom from HPAI according to OIE guidelines in 2013, seven countries maintained restrictions. In October 2013, a second outbreak occurred in NSW resulting in another 8 countries restricting trade. Australia regained freedom again in 2014. However, exports have again been halted by the current HPAI outbreak in Victoria. Market access losses from the 2012 and 2013 outbreaks were estimated in an unpublished Australian Government submission at \$57 million by 2015 (DAWE, pers. comm.). The poultry industry estimates that ongoing restrictions are costing the Australian poultry industry approximately \$40 million/year in lost trade.

Current approach applied by the Australian Government for prioritising export market access requests involving biosecurity considerations

The Department prioritises applications for market access negotiations involving biosecurity considerations based on a range of factors including:

- The degree of regulation of the export market, including the Acceptable Level of Protection (ALOP). The more stringent the ALOP, the more resources are likely to be

required to negotiate access with the government of the target market, which affects the priority assigned to applications for market access negotiations.

- The quality of the scientific evidence supporting the application. In general, applications supported by higher quality and more compelling evidence have a higher likelihood of resulting in successful negotiations with the government of the target export market. This influences the prioritization of applications for market access negotiations by affecting the expected benefit of the negotiations.
- Prevailing resource availability at the time the application is made and/or when there is an opportunity to progress the application. If DAWE staff are fully occupied on higher priority market access requests, new requests may be delayed, and the extent of any delay will depend on circumstances that cannot accurately be predicted without a knowledge of the specific request. Delay costs are potentially one of the main costs of market access negotiations, reflecting that resources for conducting such negotiations are limited.

The factors considered by DAWE in prioritizing applications for market access support can vary substantially between different applications. This makes market access negotiation costs highly case-specific. Previous market access applications that included provisions for allowing trade to continue during disease outbreaks, and which were processed relatively quickly include:

- The pre-emptive Australia-Singapore-Australia ASF zoning arrangement agreement, which was concluded in under 12 months from the initial technical submission.
- The UK-Australia poultry compartment agreement, which concluded comparatively quickly after commencement of dedicated technical engagement (noting that the initial request was made some years earlier).

Both agreements were concluded in less than 12 months, at a modest cost to the Australian Government in terms of staff resources. The UK-Australia poultry compartment agreement was established at a cost to Australia of approximately \$275,000 (DAW pers. comm.). However, market access requests typically involve much longer timeframes, which reduces the short-term benefits of such agreements to producers and can substantially increase costs to the Department. Responses to some requests have been ongoing for many years, reflecting delays in gaining priority with governments in export markets, technical complexities, the need to prioritise more urgent work within the Australian Government, or a combination of these and other factors.

The Department's system for prioritizing market access requests provides scope for industry applicants to proactively influence the priority given to their request through measures including:

- Providing detailed supporting information, including scientific information and market information (relating to the significance of potential commercial benefits, whether there is demonstrated support for the market access request in the importing country, and other factors).

- Providing a commitment to make the required investments to meet importing country requirements (eg, investments in epidemiological separation). However, given the potentially large magnitude of such investment costs (over \$1.5 million for the poultry producer consulted for this report, as documented in Table 1 below), market access applicants are likely to require a degree of assurance of national support for export market access requests before making compartmentalisation investments. DAWE works closely with beneficiary industries and, while no guarantees can be offered on the outcomes of market access requests, a range of formal arrangements with trading partners setting out current and future negotiating priorities provide a degree of assurance of national support, where appropriate. These assurances have usually been sufficient to encourage producers to take actions that would expedite the process of prioritising and supporting market access requests, including investments to meet importing country requirements (DAWE pers. comm.).

By allowing producers to influence the process through provision of key information and investments to meet importing country requirements, the program would achieve further efficiencies by reducing information costs to the Govt and in allocating a larger share of costs to producers where this aligns producer incentives with the national interest

The foregoing points indicate that if the Compartments program is endorsed by DAWE, Government prioritisation processes would ensure that market access requests by compartments would be acted on where this is justified by national interest cost-benefit considerations, potentially assessed using cost-benefit analysis (CBA).

The proposed Australian Compartmentalisation Program

The proposed Australian Compartmentalisation Program would assess and approve animal production industry participants according to generic Australian Compartment Standards. Unlike the UK, US and EU poultry compartment standards, Australian standards (in the form of Approved Arrangement guidelines and technical specifications) focus on common compartmentalisation principles that apply to any suitable animal production industry, which would maximise the potential participation rate in the program.

The specific industries that would participate in the program are not yet known. Producers in a small number of industries have expressed an interest in becoming compartments (DAWE, pers. comm.), including:

- Aquaculture: Finfish (genetic material).
- Aquaculture: prawns, prawn products and genetic material.
- Pork Industry (genetic material).
- Poultry (genetic material).

It has not been determined by the Australian Government whether to establish a compartmentalisation program and, if so, how it would be implemented. Based on consultation

with the Department, it is likely that a compartmentalisation program, should it be endorsed by the Government, would be implemented in stages:

- In the initial stage, a generic compartmentalisation program would be developed as a new form of Approved Arrangement. The *Export Control Bill 2019* (assent pending), Chapter 5, provides the legal references for the Australian Compartmentalisation Program for compartments to be administered and regulated as an Approved Arrangement. Completion of this stage is a necessary condition for compartments to become established and for market access negotiations to be conducted by the Australian Government on behalf of participating producers.
- The second stage, which may overlap with the first stage or be conducted in parallel, would inform industries of the opportunity to become compartments and would commence engagement with those industries that express an interest in the program. This stage would also include the development of compartment standards in collaboration with participating industries.
- In the third stage, requests by producers for market access support from the Australian Government could be made. More specifically, once the compartmentalisation program is developed and implemented as a new Approved Arrangement, producers could choose to apply for compartment certification and subsequently apply for Government assistance in negotiating market access agreements with specific countries. As with all market access requests by Australian businesses, the Australian Government would determine whether to support the request and, if so, the level of priority to assign to it (which can influence the time taken to act on the request), based on a set of criteria. In this assessment it is assumed that the Australian Government would apply existing prioritisation criteria for export market access requests.

Methodology for addressing the study objectives

The assessment approach illustrated in Figure 1 was applied. Under this approach, the decision on whether to undertake a detailed and fully quantitative CBA depends primarily on whether the program can be established at minimal cost to the Australian Government.

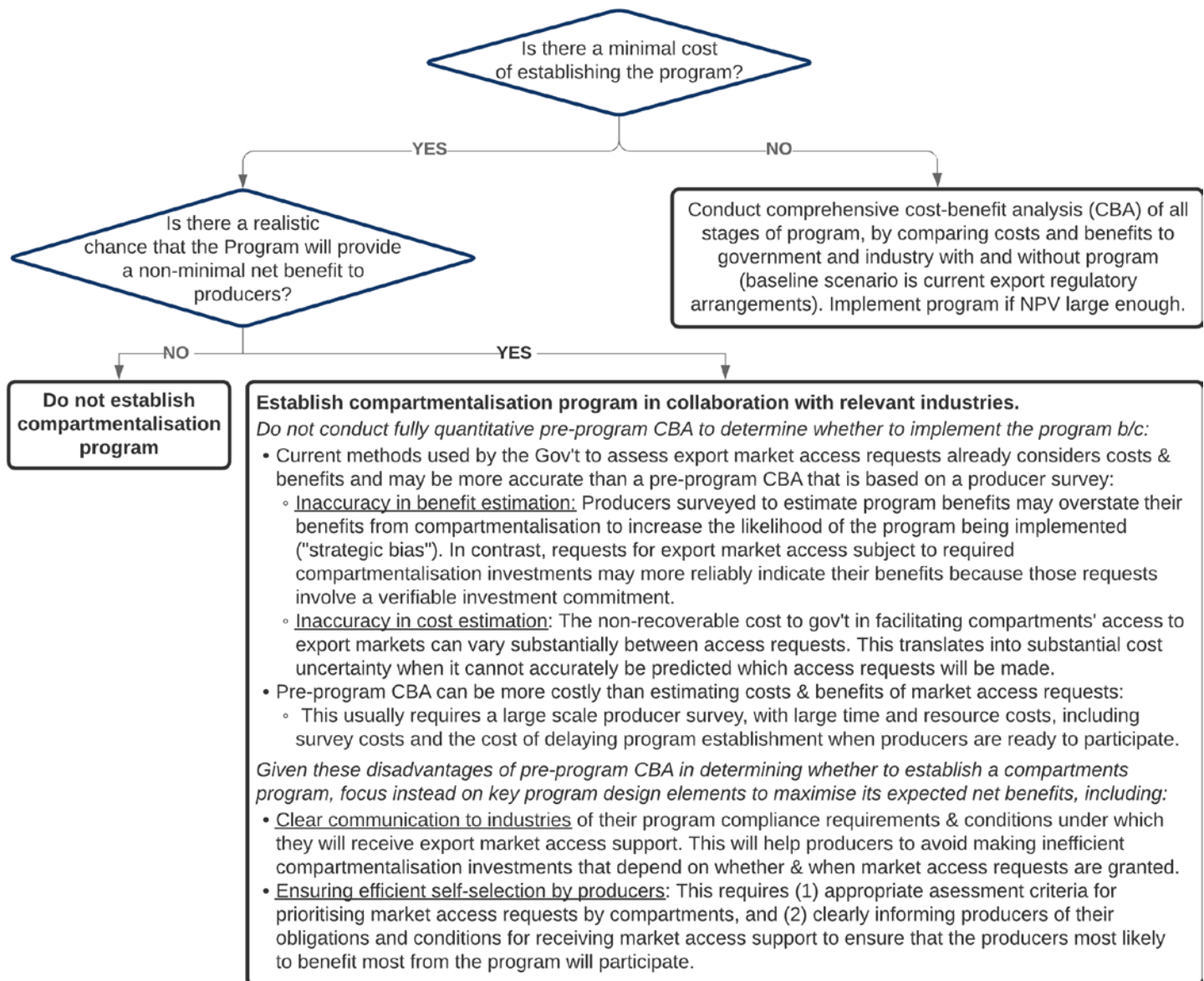
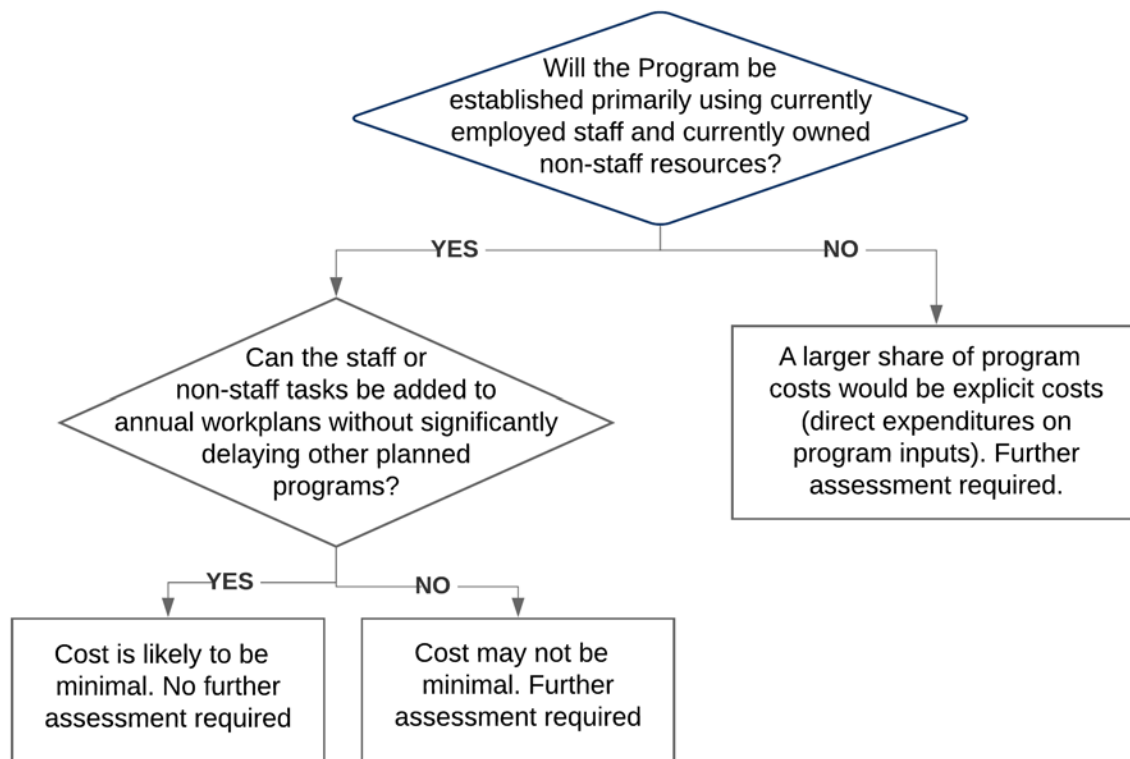


Figure 1: Flow chart for determining when to apply qualitative cost-benefit analysis and how to apply it to inform the decision on whether to implement a compartmentalisation program

1 To address the top-level question posed in Figure 1, the following flowchart was applied (Figure
2 2).



3
4 Figure 2: Approach taken to assess whether program establish costs are likely to be large
5 enough to require detailed estimation

6 The reasoning underpinning this methodology is that if there is a minimal cost in establishing
7 the program, it can be undertaken with minimal risk, and the focus of assessment should be on
8 avoiding activities that have a potentially large cost and a substantially smaller benefit.

9 Activities with a large cost would occur after the program is established if it is true that program
10 establishment has a minimal cost. Some of the latter activities are automatically assessed under
11 current government practices. For example, requests by compartments for export market
12 access negotiations by the Australian Government would be assessed by DAWE, and this
13 assessment could potentially include cost-benefit analysis (DAWE, pes. comm.).

14 Other activities that occur after the program is established and which have potentially
15 significant costs are investments by producers in compartmentalisation. Table 1 below indicates
16 that such investment costs can substantially exceed one million dollars. Producer investments
17 in compartmentalisation are not assessed using formal CBA methods but it is possible to
18 manage the risk that investments will be inefficient through appropriate compartmentalisation
19 program design. In particular, the risk of inefficient investments is reduced by adequately
20 informing producers of their compliance obligations and by providing producers with adequate

assurances from the Australian Government regarding their requests for market access negotiations. Discussions with DAWE indicate that both of these requirements for efficient producer investment decisions are currently met by planned processes for implementing the compartments program. This reduces the need for a detailed fully quantitative CBA of all stages of the proposed compartmentalisation program, and increases the potential benefits of conducting a more limited semi-quantitative analysis along the lines illustrated in Figure 1 and Figure 2.

The first step in applying this methodology is to identify and assess the main non-recoverable costs to governments involved in the proposed compartmentalisation program.

Australian Government costs

The government costs considered in this assessment are net incremental non-recoverable costs. These are the extra costs that would be incurred by the Australian Government if the compartmentalisation program is implemented, and which would not be recovered from industry via fees and charges. The focus on non-recoverable government costs ensures there is no double-counting of program costs when government and industry costs are aggregated and makes explicit the public cost of the program. The latter cost must be known to estimate the return on the public's investment in the program.

Net government costs are considered because of potential offsetting effects of the program. The program may have offsetting effects on costs if producers who would participate in the program already export under different institutional arrangements that involve costs to the Australian Government. These current costs would be avoided if producers become compartments, and these avoided costs would need to be subtracted from the new costs incurred by the Government in supporting compartments. The net incremental non-recoverable Federal Government costs of the program considered in this analysis were identified based on consultation with DAWE staff and a desktop review of current institutional arrangements that would be replaced by the program.

Capacity building costs

To perform its audit and registration functions, DAWE must have the required expertise and data management systems. DAWE already performs these functions to support exports by animal industries, implying that the proposed compartmentalisation program would impose extra costs only if there is a need for additional auditing expertise, or auditing personnel, or additional data management capacity.

Program marketing costs

The proposed program is a voluntary program that would impose costs on industry participants and potential commercial benefits. As such, producers contemplating whether to participate in the program require accurate information on the government charges involved and the compartment standards that would have to be met. For existing exporters, information also

would need to be provided on the additional standards to be met beyond the standards already specified under existing export conditions. Producers also require a realistic appraisal of the potential benefits of the program. The cost to DAWE of an information campaign to make producers aware of the compartmentalisation program and of its costs and potential benefits is not recoverable from industry, and therefore is included as a government cost in this assessment.

Trade negotiation costs

Most of the potential benefits to a producer from becoming a compartment would only be realised if export markets accept their produce during disease outbreaks. This requires government-to-government negotiations. The cost of such negotiations is not recovered from industry.

DAWE already conducts trade negotiations to support export market access. A compartment AA is an alternative form of arrangement for producers to consider. Accordingly, the compartmentalisation program would impose no additional trade negotiation costs unless the negotiations required to support a compartment AA have a larger cost than the negotiations required to support a non-compartment export market access request. There may also be additional costs incurred by government when producers who currently export under existing Approved Arrangements become compartments. In those circumstances, there may be a need to amend existing Approved Agreements to account for the existence and operations of compartments in Australia. For example, compartments may be allowed to continue moving animals within and between zones during outbreaks of the disease of interest, which may not be permitted under existing zoning-related Agreements with different trading partners for the same disease.

A potential reason why trade negotiation costs may be larger for a compartment AA than a standard export market access request is the requirement for trading partners to accept Australian compartment consignments during an outbreak of a disease for which the compartment is defined or if that disease is, or becomes, endemic, in the area outside the compartment. If this results in trading partners requiring greater assurance of the safety of compartment exports, DAWE may need to host additional evaluation visits by trading partner delegates, increasing non-recoverable costs to DA. However, this potential extra cost for a compartment AA may be offset by avoided costs in negotiating future AA's. This reflects that the purpose of a hosted visit to Australia by a trading partner is conducted to allow the trading partner delegates to evaluate the Australian Compartmentalisation Program, not the individual producers participating in the program. Once an importing country approves the program they are, in effect, approving Australia's capacity to audit, approve, register, regulate and add participants. It would then be determined by Australia how best to ensure that industry participants meet the program standards. The key consideration for the purpose of this analysis is that the trading partner (the importing country Competent Authority) evaluation of the Australian Compartmentalisation Program is conducted only once, with the aim of assessing the Australian Competent Authority's capacity to manage the program and perform its regulatory

roles. Once a compartment AA has been negotiated for a specific industry, the biosecurity component of the AA would apply to all future compartment AA applications made by participants in that industry. By focusing on program evaluation rather than evaluating individual program participants, compartment AA's can have a lower total cost of hosted visits by trading partner delegates for industries where multiple producers seek a compartment AA. In these circumstances, the compartmentalisation program could thereby reduce trade negotiation costs to DA. The existence of offsetting costs requires the estimation of "net incremental costs" to government arising from the compartmentalisation program.

Costs of providing financial and in-kind incentive measures to producers

In addition to these three government cost categories, a potential fourth category can be considered if a decision is made to provide in-kind incentives to producers to become a compartment. One option is for DAWE to provide expert advice, assistance and collaborate in related research projects with "first adopter" compartments in each industry. Such an approach would provide essential information required to set-up, test, develop audit standards and operate the ongoing compartment program in partnership between government and industry.

The economic rationale for encouraging early adoption of compartmentalisation is to provide "spillover benefits" to other Australian producers contemplating whether to become a compartment. These spillover benefits primarily include the benefit from the knowledge that a specific export market will or will not accept compartment consignments during a disease outbreak, as demonstrated by the first-adopter compartment. This knowledge can assist producers in determining whether to make the investments required to become a compartment. Importantly, this benefit would not be considered by an early adopter but it would have value to the industry as a whole and therefore should be compared with the costs of in-kind assistance to determine whether this is an economically justifiable use of government funds.

A complementary approach to sharpen incentives for early adoption is to charge a fee to non-compartmentalised producers to reimburse the Australian Government for any additional trade negotiation costs arising from the need to host visits by importing country Competent Authority (CA) representatives. This option would be a negative cost to government that would offset non-recoverable costs. This additional fee imposed on non-compartment producers could be applied when CA representatives request to visit the producers' facilities to satisfy biosecurity requirements. This additional cost would not be incurred by producers who choose to become compartments, because additional hosted visits would not be necessary for such producers if an AA has already been agreed to for an early adopter compartment. In those circumstances, the import country CA would not need to visit Australia to confirm whether its biosecurity measures are satisfactory because this would already have been confirmed as part of the original evaluation.

135 State government costs

136 State governments have complementary programs to support animal health and welfare but
137 these are assumed to be unaffected by the proposed compartmentalisation program. The latter
138 program is aimed at supporting export market access, which is a Federal Government
139 responsibility. DA's role would be in providing audit and registration services as the regulating
140 Competent Authority and in negotiating Approved Arrangements for compartments.
141 Compartments would be expected to continue to comply with State regulations i.e. business-
142 as-usual. It is assumed in this analysis that State regulations would not be affected by the
143 proposed compartmentalisation program.

144 Producer costs

145 The cost to current exporters in complying with compartment standards is the additional
146 compliance cost involved compared to current exporting arrangements less any savings from
147 reductions in red tape and fees/charges. Currently, poultry producers wishing to export must
148 be a registered export premises with an Approved Arrangement in place for poultry meat and
149 poultry meat products (Approved Arrangement Guidelines - Poultry Meat – 18 May 2018). The
150 registration and approved arrangement process require audit by DAWE to meet OIE Code
151 Chapter 6.5, as well as other market access requirements including food safety, product
152 integrity and animal welfare. A current exporter may incur additional costs in becoming a
153 compartment, such as additional disease testing costs (if required). Offsetting these additional
154 costs are potential reductions in red tape when replacing a current export arrangement with a
155 compartment AA. For example, fees and charges may fall when a current exporter replaces
156 multiple AAs, each of which incurs a fee, with a single compartment AA. The increase in
157 compliance costs to an exporter who becomes a compartment, less any cost savings from
158 reduced red tape or reduced fees and charges, is referred to here as the net incremental
159 compliance cost.

160 Estimating the net incremental compliance cost to a specific producer requires knowledge of
161 current and proposed standards, and in particular, the cost of complying with the additional
162 standards involved in switching from a current export arrangement to a compartment AA.

163 There is substantial overlap between the standards required to be met by Australian exporters
164 and the standards required of compartments. Both sets of standards are based on the OIE
165 Terrestrial and Aquatic Animal Health Code (Code) guidelines.

- 166 • Export industry guidelines such as the National Farm Biosecurity Manuals are generally
167 in harmony with the relevant chapters of the OIE Codes.
- 168 • Compartment guidelines are drawn firstly from the relevant chapters of the OIE Codes
169 and from additional resources such as the OIE Checklists for the relevant industries (for
170 example, Appendix XLIX Checklist On the Practical Application of Compartmentalisation
171 for Avian Influenza and Newcastle Disease, and form the basis of the proposed
172 Australian Compartmentalisation Standards for poultry compartments).

- 173 • Overlap between relevant Code chapters (primarily Chapters 4.3 and 4.4 of the OIE
174 Terrestrial Animal Health Code) and the Australian Compartmentalisation Standards
175 (arising from overlap between Code chapters and OIE checklists) implies that current
176 Australian poultry exporters already comply with many of the proposed draft Australian
177 Compartmentalisation Standards. This applies to producers who are audited for export
178 registration approval against OIE Terrestrial Code chapter 6.5 (Biosecurity Procedures in
179 Poultry Production) and are audited for compliance against the DAWR Guidelines for
180 poultry meat AAs (as set out in DAWR 2018).
- 181 • The net incremental cost to producers in becoming a compartment is the cost of
182 complying with OIE compartmentalisation recommendations that do not overlap with
183 existing Australian poultry exporter requirements (OIE Terrestrial Code chapter 6.5 and
184 the Approved Arrangement Guidelines - Poultry Meat – 18 May 2018). These additional
185 standards required of compartments in the poultry industry will be included in the final
186 report.
- 187 Estimates of some of the additional costs likely to be required by the surveyed producer to
188 comply with poultry compartment standards are summarised in Table 1:

Table 1¹

Broad cost category	Activity	Cost
investments in epidemiological separation and on-farm biosecurity	vehicle washing facilities	\$600,000
	integrated QA system	\$150,000
	Changes to food sourcing	\$200,000
	Extra equipment for depleting end of lay flocks. These currently go to an outside processor and there is a need to further isolate this procedure from the rest of the operation	\$450,000
Periodic facilities audits		\$12,000/yr, up from \$6,000/yr currently (incremental cost of \$6,000/yr)
Periodic animal health testing	220 lots of samples across all flocks per year. Test 30 birds per flock to detect disease prevalence of 10% with 95% confidence (this is higher than required by UK compartments scheme)	~ \$110,000/yr
Total		

1. Source: Tim Ryan, Veterinarian, Aviagen Australia and New Zealand, pers. comm.,

Table 1 illustrates that investments by market access applicants to meet importing country requirements can have a substantial cost. In the case of the producer consulted for this assessment the cost of investments in compartmentalisation could exceed \$1.5 million. Producers that face large compartmentalisation investment costs would benefit from being able to make a realistic assessment of the likelihood that their export market access requests will be negotiated by the Australian Government, as discussed in the report recommendations.

Producer benefits

The method adopted in this report to estimate benefits to producers was to survey a producer from a selected industry (poultry) where compartmentalisation has occurred overseas.

However, due to commercial sensitivities, it was not possible to obtain a precise estimate of the profits lost in the three most recent trade-limiting disease outbreaks. Even if this information were available, additional uncertainty would arise about the future frequency of trade limiting disease outbreaks, trading partners' Competent Authorities' willingness to recognize compartments and their willingness to accept imports from recognized compartments during disease outbreaks. Given these significant sources of uncertainty about producer benefits from compartmentalisation, a qualitative assessment was made of whether the profits lost by recent past disease outbreaks are likely to exceed the cost of compartmentalisation. The historic frequency and duration of HPAI events in Australia, and the duration and magnitude of trade losses for each event, were used to provide an indicative estimate of the costs expected to be avoided by a producer who becomes a compartment. Estimates of these factors were provided by the surveyed producer Aviagen, which is one of Australia's largest exporters of premium genetic material (poultry breeding stock).

Findings: Cost-benefit assessment

Government costs in establishing the compartmentalisation program

These costs were defined here to include all costs associated with establishing the program as a new Approved Arrangement under the *Export Control Act* (assent pending), modifying IT systems to support the new form of Approved Arrangement, communicating the program to stakeholders, developing auditing guidelines and conducting trials. These costs exclude unrecoverable government costs in negotiating export market access on behalf of compartments after the program has been established.

The following categories of incremental non-recoverable costs to government were considered (these are the additional costs that would be incurred if the compartmentalisation program were implemented):

- Policy development for the proposed compartmentalisation program.
- Program marketing.
- Capacity building.
- Additional software and records management costs to administer the compartmentalisation program.
- Additional auditing costs per producer above the audit costs per producer for current export arrangements.

These costs were assessed in consultation with the Department. Most of the costs were assessed to be minimal. This reflects the costing method applied. In particular, the cost of a specific activity was estimated to be zero if the Department would not require any additional resources to implement the activity and if the activity could be incorporated into annual workplans without significantly delaying other planned tasks of the affects work groups. This

reflects that when most of the resources (staff and non-staff) required to establish Findings are summarised in the following dot points:

- Policy development costs: These include the costs of developing the legislation, supporting regulations and the policy and procedures required to implement the compartmentalisation program. It was assessed that these tasks would be conducted by existing government personnel without the need for additional resources.
- Program marketing costs: The main marketing costs identified were (1) marketing conducted by the Department's media team to help promote the compartmentalisation program and its website in news media and the Internet, and (2) targeted engagement with industries likely to benefit most from compartmentalisation. The Department's marketing team has sufficient capacity to incorporate the compartmentalisation program marketing activities within the team's work program without the need for additional staff.
- Capacity building (including staff training) costs to achieve the required competency for managing the compartmentalisation program were assessed to be minimal, based on advice provided by the Department that the required competency has already been achieved.
- Additional software and records management costs to administer the compartmentalisation program: These costs were assessed to be minimal based on advice from the Department that no additional software will be required for the program. A new IT system was recently developed to implement Approved Arrangements (this is relevant because the compartmentalisation program would be implemented as a form of AA). The current Approved Arrangement IT system has been developed only for imports but is planned to be developed for exports, and this planned extension will be able to accommodate the specific requirements of the compartmentalisation program at no additional cost to the department.
- The only incremental non-recoverable costs to government identified in this review are:
 - the cost of adjusting existing policy and implementation guidelines for the relevant animal industry (for example, for the poultry industry, changes would be made to Approved Arrangement Guidelines - Poultry Meat – 18 May 2018 (DAWR 2018); and
 - providing the new compartment program audit templates.

The proposed compartmentalisation program would have a minimal non-recoverable cost to the Australian Government (costs not recovered from producers via fees and charges) because most of the institutional capacity required to implement the program already exists. However, total non-recoverable costs could potentially increase if the compartmentalisation program would stimulate an increase in export activity rather than only divert exports from non-compartmentalised producers to compartments without changing total exports. However, any increase in non-recoverable costs to government arising from an increase in compartments is likely to be modest, for at least two reasons.

- First, a compartmentalisation agreement, once it is reached with a specific export market Competent Authority, would apply to all compartments seeking to access that market. This implies that the addition of new compartments would not add to the Australian Government's trade negotiation costs, which is one potential source of non-recoverable costs.
- Second, much of the cost in maintaining records of producer participation in the compartmentalisation program is incurred in establishing or upgrading relevant software systems, not in adding new producers to the system.

The program may result in a diversion of some export activity from non-compartmentalised producers to compartments. This could influence non-recoverable costs to government if there is a difference in the per-producer cost of supporting trade for the two classes of exporter. Discussions with DAWE staff indicate that any such difference in non-recoverable costs is likely to be modest.

Other potential non-recoverable costs are discussed in more detail below:

Export Market Access Negotiation through Trade and Market Access Division (TMAD)

Trade negotiation costs incurred by the Trade and Market Access Division (TMAD) of DAWE are already covered through the Department's core operational resources. More specifically, any compartment-associated market access requests will be scheduled into the TMAD work plan, as occurs under the current process for prioritizing and scheduling market access requests more generally. Typically, departmental resources are not increased unless there is a clear business need demonstrated with a comprehensive business plan. Consultations with DAWE indicated that any market access requests that might be made under the compartment program would not require additional departmental resources. However, it is possible that market access requests by compartments may delay other market access requests and thereby incur an opportunity cost by delaying benefits from those other market access requests. These delay costs have not been estimated here. Two reasons for omitting this cost are:

1. The time and resources required to negotiate market access can vary greatly between different access requests. In the absence of any information on which requests will be made by potential future compartments, there is gross uncertainty about delay costs.
2. The assessment and prioritization methods applied by TMAD to market access requests are assumed here to efficiently determine which access requests to act on and if so, how to prioritise those requests. This reduces, and potentially removes, the need for estimating market access costs and benefits before the compartmentalisation program is implemented.

Approved Arrangements (AA's)

AA's and audit for export market access for animals/animal products are governed by the *Export Control Act 1982* and administered primarily by DA's Export Division. However, it is more

313 likely that by the time an Australian Compartmentalisation Program becomes fully operational
314 it will be subject to the *Export Control Bill 2019* (pending assent 2020), Chapter 5. The
315 compartmentalisation program would be a new form of AA, or at least an addition to, and/or
316 consolidation of current AA's required for export premises.

317 Business-as-usual operations for AA's are administered using a recently introduced IT system
318 that manages the entire process from application, review, inspection, audit, approval,
319 certification and day to day operational requirements. The new IT system is for imports only (as
320 of August 2019). Applications by producers for compartment status, and the audits and
321 certification/registration to be provided by DA, will be managed by the new IT system
322 (scheduled for development for export AA's). The only anticipated additional costs incurred by
323 DAWE will arise from the need to develop compartment-specific forms and supporting
324 operational policy for the DAWE Export Division. There are existing funded DAWE personnel
325 that would perform these tasks. The Department advises that any additional work created by
326 the compartmentalisation program will be scheduled into their work program.

327 Consultation with DAWE indicated that the Department already has the required appropriately
328 qualified auditors to carry out desk-top and on-site audits for the compartmentalisation
329 program. No additional training will be required and no additional audits will be required
330 beyond those that already exist for Approved Arrangements and export registration. All
331 compartment-associated work completed by the DAWE Export Division and trained experts will
332 be scheduled into the operational work plan and no additional resources will be required.

333 These considerations indicate that there will be no additional costs incurred by DAWE in
334 completing AA's for compartments.

335 [Media and Consultation Strategy](#)

336 A critical element of the compartmentalisation program is to inform producers of those costs of
337 compartmentalisation that are determined by DA, and to assist producers in estimating other
338 costs that depend on the additional standards required to be met by producers to become a
339 compartment.

340 One of the methods to be used by the Department to communicate compartment program
341 costs and potential benefits to producers is to conduct workshops and meetings. The main cost
342 of workshops conducted at the Department's premises is conference room costs and the use of
343 Internet media. Discussions with the Department indicate that conference room costs are likely
344 to be minimal because the rooms can be scheduled at no cost. Communications with industry
345 stakeholders (sending out of invitations and conducting a public advertising campaign) will have
346 a cost that will be estimated by the Department for inclusion in the final report. Initial
347 discussions with the Department, which will be confirmed in the final report, indicate costs not
348 exceeding a budget of \$50,000.

349 Cost Reduction strategy for participants

350 The Australian Government currently is providing financial and in-kind support for the research
351 and development of improved testing methods that have a lower operational cost compared to
352 current methods. Testing for a pest or pathogen is one of the main costs to producers of
353 complying with compartment standards, and a substantial cost to producers who export under
354 current arrangements. Discussions with DAWE indicate that investments by DAWE to reduce
355 disease testing costs have either already occurred or would occur irrespective of whether the
356 compartmentalisation program is implemented, and therefore are not relevant for inclusion in
357 this assessment. However, if these R&D support costs by DAWE do successfully reduce testing
358 costs, producer compliance costs would fall and the compartmentalisation program would be
359 even more cost-beneficial.

360 Officially endorsed test protocols developed for use in the NATA accredited national laboratory
361 network have already been developed for Avian Influenza (Avian Influenza. Australia and New
362 Zealand Standard Diagnostic Procedures, September 2012). The tests chosen for surveillance
363 purposes would be required to meet or exceed OIE standards, as described in the Manual of
364 Diagnostic Tests and Vaccines for Terrestrial Animals 2018. The tests and the laboratory
365 conducting them would have to be NATA accredited. The cost of NATA accreditation and the
366 set-up costs for conducting new tests, not required under current export arrangements, would
367 need to be included in the total cost of the compartmentalisation program. If these costs are
368 not fully borne by the private sector, that is, if some costs are borne by the Australian
369 Government and are not fully recovered from industry, they should be added to other non-
370 recoverable program costs incurred by the Australian Government.

371 Under current Australian Government policy, new regulatory programs such as the
372 compartmentalisation program should not impose a substantial additional compliance burden
373 on industry participants through unnecessary administrative or operational costs. The
374 Department plans to ensure that no unnecessary compliance cost burden will be imposed on
375 program participants by taking opportunities to reduce these costs at all critical points in the
376 export market access pathway. For example, the Biosecurity and Policy Implementation (BPI)
377 Division, the Biosecurity Integrated Information System branch and the Biosecurity Analytical
378 Centre have existing capability to develop IT analytical systems such as the new Enterprise
379 Surveillance System that can be adapted to support all required compartment reporting
380 activities, such as laboratory results and surveillance system analytics. The Research and
381 Innovation branch of BPI is also investing in research to develop cost-efficient in-field eDNA
382 testing devices that may significantly reduce sampling, surveillance and testing costs.

383 Discussions with DAWE staff indicate that the Department will independently review the
384 compartmentalisation program system for quality management and continual improvement
385 purposes. The review would consider the scope for DAWE to reduce compliance costs through
386 improved disease testing methods and reduced red tape.

387 Incremental Producer benefits

388 From time to time, the Australian poultry industry experiences outbreaks of High Pathogenic
389 Avian Influenza (HPAI), which is an OIE-listed disease and is on the National list of notifiable
390 animal diseases.

391 Each outbreak results in a cessation of all exports, both during the outbreak and in its
392 immediate aftermath while market access is restored. The losses stemming from a single HPAI
393 outbreak to a single Australian producer surveyed for this report, have been up to \$8 million in
394 lost orders, which occurred during the 2012 HPAI outbreak near Maitland, with further lost
395 orders of \$5 million one year later from the 2013 HPAI outbreak at Young (Dr Tim Ryan, pers.
396 comm.). Actual losses would be smaller to reflect the costs involved in production and transport
397 of the consignments to export markets but would still be likely to exceed the discounted total
398 cost of a compartmentalisation program to the Australian Government. The commercial costs
399 involved in animal exporting is confidential information and was not provided by the producers
400 consulted for this analysis.

401 When other producers and other industries are considered, it is likely that difference between
402 compartmentalisation program benefits and costs will be substantial. Consultation with the
403 Department indicated that the estimated cost of market access losses for edible poultry
404 products, rendered poultry meal and feather meal, and pet food arising from the two most
405 recent HPAI outbreaks is \$57 million. This estimate is based on a paper prepared by the Export
406 Standards Branch, Department of Agriculture, for the National Animal Health Information
407 System Coordination Committee, dated 26 June 2016. These losses are an under-estimate
408 because some markets, such as China, have not been restored as a consequence of the HPAI
409 outbreaks (Dr Tim Ryan, pers. comm.).

410 Policy Analysis

411 To assess whether the proposed compartmentalisation program promotes current Australian
412 biosecurity policy aims, a desktop review was conducted of key policy documents, focusing on
413 the Intergovernmental Agreement on Biosecurity (IGAB), and the Agricultural Competitiveness
414 White Paper (Australian Government, undated).

415 Specific policy aims and principles were selected from these policy documents and an
416 assessment was then made of whether the proposed compartmentalisation program would
417 promote these policy aims and principles. The assessment included an economic analysis of
418 whether compartments provide improved economic incentives for promoting the selected
419 policy aims compared to alternative biosecurity arrangements such as zoning.

420 Overview of policy aims and principles addressed by the compartmentalisation 421 program

422 To provide context for the policy analysis, Figure 2 illustrates Australia's biosecurity system in
423 terms of program logic, which describes the system in terms of its key inputs, the main
424 activities performed within the system, and resulting outcomes. It draws on the description of
425 the national biosecurity system in the Intergovernmental Agreement on Biosecurity (2012), as
426 well as the detailed descriptions contained in the Risk Return Resource Allocation model. The
427 figure is taken from a previous CEBRA report (Figure 1, Dodd *et al.* 2017), with the elements
428 that are relevant to the proposed compartmentalisation program highlighted in yellow. An
429 additional element was included describing one of the recommendations of the IGAB Review
430 (Craik *et al.* 2017).

431 The compartmentalisation program addresses the IGAB principle that zero risk is unattainable
432 by mitigating the consequences of disease incursions should they occur. Consequences are
433 mitigated by allowing for trade to continue from unaffected animal sub-populations during
434 disease outbreaks. If compartmentalisation is adopted by a large number of producers, it could
435 potentially also reduce likelihoods of outbreaks occurring or spreading, but this is unlikely when
436 few producers become compartments.

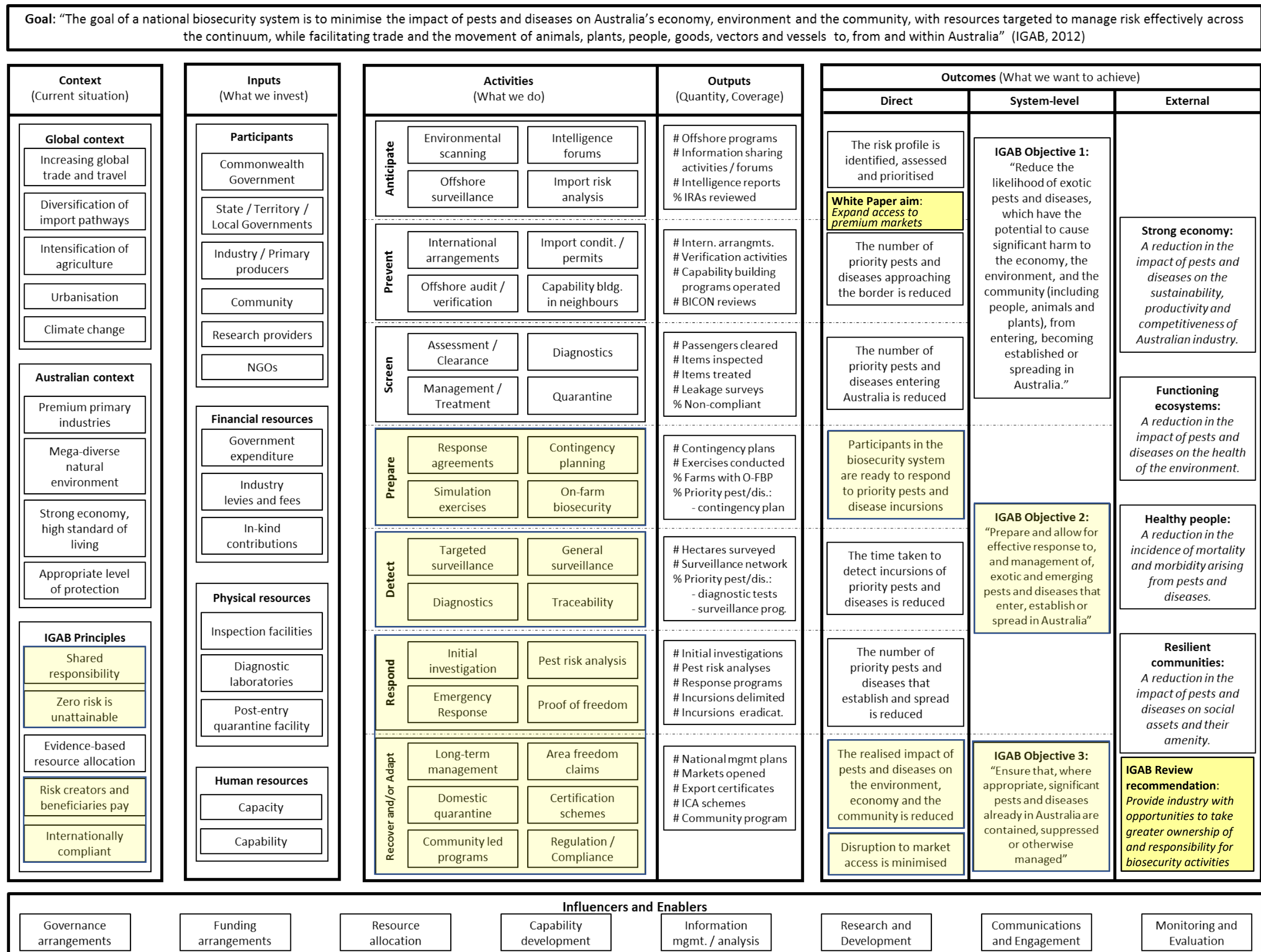
437 Three other IGAB principles addressed by the proposed compartmentalisation program are:

- 438 • The program contributes towards sharing of biosecurity responsibilities between
439 stakeholders, particularly sharing between agricultural producers and government.
- 440 • The program ensures that participating producers, as beneficiaries of the program and
441 potential risk creators, would contribute towards implementing the program, thereby
442 promoting the IGAB principle that biosecurity risk creators and biosecurity program
443 beneficiaries should pay for the programs.
- 444 • The program is compliant with the World Trade Organization Agreement on the
445 Application of Sanitary and Phytosanitary Measures (the SPS Agreement), thereby
446 addressing the IGAB principle that Australia's biosecurity efforts be compliant with
447 international agreements.

448 In addition to promoting three IGAB principles, the proposed compartmentalisation program
449 also promotes two IGAB objectives:

- 450 • By supporting trade by disease-free compartments during disease outbreaks, the
451 proposed program contributes to meeting the second objective of the IGAB, which is to
452 prepare and allow for effective response to, and management of, exotic and emerging
453 pests and diseases that enter, establish or spread in Australia.
- 454 • The program would help Australia's biosecurity system to recover from and adapt to
455 incursions and thereby provide benefits to the economy and broader community from
456 reduced disruptions to international market access. This contributes to meeting the

457 third IGAB objective to ensure that, where appropriate, significant pests and diseases
458 already in Australia are contained, suppressed or otherwise managed.



459 Figure 3: Program logic diagram highlighting (in yellow) where the compartmentalisation program would contribute to meeting policy goals and principles (adapted from Dodd *et al.* 2017).

Compartmentalisation also addresses a recommendation made in the recent IGAB review (Craig *et al.* 2017) to provide system participants with opportunities to take greater ownership of, and responsibility for, activities in the national system. This is achieved both directly, by requiring compartments to invest in agreed biosecurity measures, and indirectly, by providing incentives for producers to take any additional actions within their control for further reducing likelihoods of disease incursions. This is explained in more detail in the section Compartments as an incentives approach for encouraging sharing of biosecurity responsibilities.

Sharing biosecurity responsibilities

The proposed compartmentalisation program directly contributes to achieving the IGAB Review objective to provide industry with opportunities to take greater ownership of and responsibility for biosecurity activities. This reflects that a compartment bears responsibility for its own biosecurity while the government conducts auditing.

Furthermore, the sharing of responsibilities encouraged by the compartmentalisation program is likely to enhance economic efficiency. There are different reasons for this, including the following:

1. By making compartmentalisation voluntary, the program ensures that it would be adopted only by those producers who would benefit from it.
2. Economic incentives of producers can lead them to underinvest in biosecurity and under-report new disease incursions. Both of these incentive problems are mitigated by compartmentalisation.

Before explaining how compartmentalisation enhances producers' incentives to invest in efficient biosecurity measures and report new incursions in timely fashion, background information is provided on why biosecurity responsibilities should be shared and alternative approaches for sharing responsibilities.

Rationales for sharing biosecurity responsibilities

There are policy, ethical and economic efficiency rationales for sharing biosecurity responsibilities.

A policy rationale for sharing biosecurity responsibilities that is emphasised in the IGAB is the limited availability of public resources for biosecurity, which creates a need for private biosecurity actions to adequately mitigate biosecurity risks. This rationale is often invoked in the context of growing passenger and freight numbers into Australia, with consequent increases in pest and disease arrival rates.

Potential ethical rationales for sharing biosecurity responsibilities include the "beneficiary pays principle", which applies to stakeholders who benefit from biosecurity actions, and the "risk creator pays principle", which applies to stakeholders who contribute to biosecurity risks. Both of these principles are met by the proposed compartmentalisation program because producers

496 who participate in the program both benefit from the program and potentially add to
497 biosecurity risks in the absence of the program.

498 Economic efficiency rationales for sharing of biosecurity responsibilities exist where sharing
499 would reduce overall biosecurity costs and/or increase the benefits of biosecurity efforts. For
500 example, the cost of early detection of new disease outbreaks can potentially be reduced
501 through passive surveillance by industry members rather than relying solely on organised
502 monitoring by government biosecurity agencies. The low cost of passive surveillance reflects
503 that it can be conducted as a by-product of routine animal management activities. Producers
504 also can potentially reduce the cost of preventing disease outbreaks through undertaking
505 biosecurity measures beyond those implemented by government agencies.

506 An economic efficiency rationale for sharing biosecurity responsibilities between producers and
507 government is that producers acting alone may have financial incentives to underinvest in
508 biosecurity or under-report new incursions, and that these incentives problems can be
509 mitigated by government intervention. A potential cause of industry underinvestment in
510 biosecurity measures that would reduce likelihoods of disease outbreaks is commonly referred
511 to as “collective action problems” (Sutcliffe *et al.* 2018). These are problems in which individual
512 members of a group have an incentive not to implement actions that would provide net
513 benefits to the group as a whole. This arises, partly, because benefits accrue at the group level
514 but costs are incurred by individuals. This makes it possible for individuals to “free-ride” by not
515 paying this cost of assisting the group whilst still receiving the same benefits as all other group
516 members.

517 Collective action problems have been identified as a cause of underinvestment by agricultural
518 producers in biosecurity (Perrings 2002; Sutcliffe *et al.* 2018; Hennessy 2007). This can be
519 illustrated by a hypothetical investment in preventing a disease outbreak. All producers in the
520 affected industry or region would benefit from the avoided outbreak and from the actions of
521 individual producers. However, an individual producer may have to incur a substantial cost to
522 contribute to regional disease freedom and therefore may choose to rely on the efforts of other
523 producers (“free-riding”). By withdrawing its own efforts, the producer would not appreciably
524 reduce the overall region-wide risk of an outbreak, but the biosecurity costs avoided would be
525 substantial. Another perspective that can help explain why producers may underinvest in
526 disease outbreak prevention measures is provided by Perrings (2002), who describes
527 biosecurity as a form of weakest link public good. A key attribute of such goods is that the total
528 amount of protection from disease is primarily determined by the producer who makes the
529 weakest biosecurity efforts. In these circumstances, efforts to maintain regional or national
530 disease freedom can potentially be undermined by a single producer who has lapses in its
531 biosecurity efforts, even if all other producers are vigilant in applying prevention measures.
532 When market access is vulnerable to the biosecurity efforts of individual producers and when
533 the number of producers is large, the risk that at least one producer will contribute to an
534 outbreak can undermine group efforts. Since investment in biosecurity to maintain market
535 access is costly, but is only worthwhile if it successfully maintains market access, individual
536 producers may decide to underinvest. This reflects that the gains from a biosecurity investment

537 may be reduced below its costs as a result of the producer's dependence on the biosecurity
538 investments of other producers.

539 Circumstances where animal industry producers have incentives to free-ride on the biosecurity
540 efforts of other producers are discussed by Hennessy (2007, 2008) in the context of disease
541 prevention and response. The problem can be viewed as a form of "sharing problem" that
542 arises when there is a shared resource. In the case where regional or country-freedom is
543 required to sustain trade, disease freedom can be viewed as a shared resource.

544 Incentives for sharing of biosecurity responsibilities

545 Compartmentalisation mitigates the collective action problem identified above by separating
546 the compartment's animal subpopulation from other animal subpopulations ("epidemiological
547 separation"). This removes the dependence of a compartment on the biosecurity efforts of
548 other producers, and thereby ensures that the compartment's capacity to trade depends only
549 on its own disease status, not the disease status of other producers. This possibility is not
550 available under a country-freedom system or a zoning system, because in both systems, an
551 individual producer who is free of a notifiable disease must cease exporting when that disease
552 is present anywhere within the country or zone.

553 Reducing the vulnerability of compartments to biosecurity lapses by other producers increases
554 the expected payoff to a compartment from applying effective biosecurity efforts, and thereby
555 increases the incentive for compartments to apply effective biosecurity measures. In addition, a
556 compartment bears a large share of the loss from a biosecurity lapse that results in a disease-
557 of-concern event. This reflects that exports would cease while the disease is present, as
558 confirmed by government-monitored surveillance and regular sampling. The cost of a trading
559 halt would not be fully compensated under the Emergency Animal Disease Response
560 Agreement (EADRA), which covers only those costs incurred in the emergency response and the
561 immediate losses during the emergency period prior to transition to ongoing disease
562 management. The large magnitude of uncompensated commercial losses arising from notifiable
563 disease events strengthens the incentives of compartments to undertake effective biosecurity
564 measures.

565 Compartment certification can be viewed as a new form of property right that provides a
566 compartment with the right to continue trading during disease outbreaks or disease presence
567 outside the compartment. This property right currently does not exist in Australia.

568 Although compartmentalisation solves the free-rider problem arising when a group of
569 producers share the disease status of their region or country, it can create other incentives
570 problems, depending on how biosecurity responsibilities are shared between the compartment
571 and the Competent Authority. Therefore, compartmentalisation would improve economic
572 incentives for disease prevention and early reporting only if these compartment-specific
573 incentives problems are of smaller consequence than the incentive problems that arise because
574 of free-riding in the absence of compartments.

The assessment made here is that the sharing of responsibilities between a compartment and the Competent Authority is likely to create appropriate incentives for efficient investments in biosecurity by the compartment, whilst ensuring new disease incursions are detected with a high degree of confidence in timely fashion. This assessment was made by applying the reasoning of principal-agent theory, which is a well-established discipline of economics concerned with understanding why goal-focused relationships may fail or succeed in achieving their aims (Laffont and Martimort, 2002). This theory views the compartment as an agent acting on behalf of a Competent Authority who acts in the interests of the industry and national economy. A key finding of principal-agent theory is that a well-designed contractual relationship requires the agent's incentives to be aligned with the goals of the principal. This occurs when stakeholders have enough information to make appropriate decisions, and the incentive to do so.

In the case of a compartment, the producer has responsibility for implementing biosecurity measures and the Competent Authority has responsibility for auditing the measures taken by the compartment. A well-functioning compartment should, inter alia, make appropriate investments in biosecurity and the Competent Authority should ensure that notifiable disease incursions are detected and reported in timely fashion, before being transmitted to export markets. According to principal-agent theory, a compartment's relationship with the Competent Authority may fail to sustain trade with high probability if two conditions occur simultaneously:

1. The compartment's incentives to invest in biosecurity measures conflict with the goal of sustaining trade.
2. The compartment has more information than the Competent Authority about the compartment's own biosecurity efforts or the health of its animal sub-population.

The terminology commonly used to describe these two conditions is "incentive conflict" and "asymmetric information". Informal reasoning can explain why both conditions must exist for compartmentalisation to create an unacceptably low probability of sustaining trade. If the Competent Authority has accurate information on the biosecurity efforts of the compartment, then any conflict between their interests could be addressed by the Competent Authority enforcing appropriate biosecurity efforts by the compartment. However, this enforced action may not occur if the Competent Authority is unaware that the compartment is not applying the most effective level of effort required to achieve an acceptably low risk of disease incursions, or an acceptably high probability of detecting new incursions.

The assessment made here is that it is unlikely that both of these two conditions will occur in the relationship between a compartment and the Competent Authority, and, consequently, compartmentalisation is assessed to have a high likelihood of meeting its goals of sustaining trade. This reflects the following elements of compartmentalisation. First, compartmentalisation involves independent monitoring of animal health within compartments using a reliable sampling method determined based on established epidemiological principles that take into account the attributes of notifiable diseases (for example, their rate of spread

within a compartment and the sensitivity of the test). Importantly, the responsibility for confirming disease freedom through applying periodic testing resides not with the compartment but with the Competent Authority. The Competent Authority has a strong incentive to ensure that the animal health monitoring is conducted to a high standard of reliability because a failure to detect a notifiable disease could result in its transmission to the export market, with potentially severe consequences to the international reputation of the Competent Authority. By assigning responsibility for animal health monitoring to the Competent Authority, the compartment program sharpens producer incentives to invest in effective disease prevention. This reflects that if a disease is detected as part of the audit process, large losses would be incurred by the producer in the form of lost market access. Since the compartment cannot avoid these losses by under-reporting disease events (because of frequent independent disease testing), this provides the compartment with a strong incentive to prevent disease incursions rather than to under-report their occurrence.

Importantly, the incentives for a compartment to invest in biosecurity are enhanced by compartmentalisation without the need for publicly funded subsidies (financial or in-kind). Instead, the incentives are achieved by market forces combined with changed trading rights i.e., making market access solely dependent on actions and conditions in the compartment rather than also depending on animal health conditions outside the compartment.

The likely effectiveness of compartmentalisation in incentivising efficient sharing of biosecurity responsibilities between producers and government can be more fully appreciated when compartmentalisation is compared with current institutional arrangements for managing biosecurity risks. These include arrangements aimed at encouraging reporting of animal diseases by offering compensation for losses arising from such reporting, rather than conducting independent monitoring of animal health, as required under the compartmentalisation program. Under the EADRA, compensation is paid by the Australian Government for costs incurred by producers in the emergency response and during the emergency period prior to transition to ongoing disease management. The potential effects of compensation can be illustrated with reference to car insurance. The person covered by car insurance may drive their insured vehicle with less caution if the insurance policy involves no excess payment in the event of damage to the vehicle. This reflects that when there is no excess payment required, there would be no financial costs to the vehicle owner if the vehicle is damaged. A potential solution to this problem of inadequate preventive effort to avoid losses is to impose an excess payment in the event of damage to the vehicle occurring. However, this solution may not be effective in the case of animal industries because the imposition of costs on producers for reporting diseases (for example, incomplete compensation for depopulation of flocks in poultry producers who report avian influenza) may reduce reporting incentives.

The challenge in finding a compensation method that encourages optimal sharing of biosecurity effort without discouraging reporting of new outbreaks has led to national biosecurity agencies investigating alternative compensation arrangements. For example, the United States Department of Agriculture has introduced a compensation scheme in which a producer's eligibility for compensation is conditional on the producer having a biosecurity plan in place

(USDA undated). In the case of the poultry industry, a producer must have a flock plan to receive compensation for depopulation, disposal, or virus elimination activities. The flock plan is an agreement between the US Government, the State Animal Health Official, and the producer that includes an undertaking from the producer to eliminate HPAI from its premises and to “maintain strong biosecurity measures to prevent transmission or future introduction of the virus” (USDA undated). Tying compensation payments to evidence of biosecurity effort is a promising option for incentivizing producers to contribute to effective prevention and rapid reporting of new disease outbreaks. However, this approach can inadvertently provide a disincentive for biosecurity investment and rapid reporting if the compensation payments are not appropriately structured (Gramig *et al.* 2006, 2009). One potential source of inefficiency in tied compensation schemes is a reliance on unreliable evidence of biosecurity effort. For example, having a biosecurity plan in place may not guarantee that appropriate investments or management efforts were made in prevention, early detection and response to new disease incursions.

When biosecurity effort is imperfectly observable, there can be advantages in the compartmentalisation approach, in which there is independent monitoring of animal health and the compartment bears a substantial share of the losses arising from a disease outbreak (in the form of uncompensated export losses). No existing Australian biosecurity program jointly addresses the collective action and principal-agent problems that could motivate underinvestment in biosecurity by agricultural producers. For this reason, the compartmentalisation program could potentially offer a means of mitigating one of the most challenging problems in Australian biosecurity.

Growing export market access

A key focus of the Agricultural Competitiveness White Paper (Australian Government, undated) is to promote enhanced access of Australian exports to premium export markets. The compartmentalisation program contributes to meeting this policy objective by offering, for the first time, a pathway for sustainable export market access to existing exporters and emerging industries wishing to expand, target and capture export markets.

The program would remove a key potential source of trade disruptions, namely diseases of concern to trading partners that occur outside the producers’ establishments. The two most recent avian influenza outbreaks in the Australian poultry industry occurred in non-exporting production enterprises. Compartment certification is of particular importance in industries with substantial differences between exporting and non-exporting producers in terms of their vulnerability to export-limiting disease outbreaks. As noted, the poultry industry is an example of such an industry but there may be other industries with this characteristic. Compartmentalisation readily allows exporters to exclude diseases of trade significance and thereby protect themselves from biosecurity lapses by other producers.

Compartmentalisation not only reduces the likelihood that trade-limiting diseases will reach compartments, but it also provides assurance to trading partners that compartments and their

695 exported consignments are free of the diseases. This assurance is provided through regular
696 testing of animals and auditing the biosecurity risk management measures taken by the
697 compartments. This, in turn, facilitates the removal of non-tariff export trade barriers that
698 could reduce access to premium markets.

699 In addition to addressing biosecurity concerns underpinning export trade barriers, the
700 compartmentalisation program would further contribute to increased export market access
701 through providing an opportunity for applying the principle of reciprocity in trade. This is one of
702 the key principles underpinning the multilateral trading system. It is defined loosely in the
703 preamble to the Agreement Establishing the World Trade Organization, which notes that the
704 negotiating parties are expected to enter in ...reciprocal and mutually advantageous
705 arrangements directed to the substantial reduction of tariffs and other barriers to trade. Under
706 this principle, Australia's acceptance of consignments from overseas compartments during
707 disease outbreaks may increase the likelihood of Australian compartment exports being
708 accepted during outbreaks in Australia. If this principle is accepted by the trading partner, the
709 country may formally recognise Australia's compartment program. In these circumstances, the
710 country would not be able to apply whole-of-country bans on Australian imports and protect
711 trade with a technical barrier for pre-agreed compartments, unless there is evidence that the
712 Australian compartment/s was or is infected. Australia already accepts imports from
713 compartments in countries where the Competent Authority has been assessed to be capable of
714 effectively managing a compartmentalised system, for example, compartments comprising
715 biosecure processing, strict traceability protocols and logistical chains to prevent risks arising
716 from contaminated and substituted commodities. This enhances Australia's capacity to assist
717 Australian compartments accessing overseas markets and having their export consignments
718 accepted by those markets regardless of the disease status in Australia. This contributes to the
719 overall aim of the Australian biosecurity system of reducing likelihoods and adverse
720 consequences of exotic pest and disease outbreaks, which is partly reflected in IGAB objective
721 #3.

722 Another approach that could potentially support formal recognition of Australia's compartment
723 program by trading partners is the trusted-trader concept. Australia and a number of other
724 countries have developed trusted-trader programs, which are forms of "Accredited Operator"
725 (AO) schemes (Widdowson *et al.* 2014). The aim of these schemes is to protect international
726 supply chains from terrorist and other threats while facilitating legitimate trade. Although not
727 explicitly stated, the forms of threat addressed by such schemes could potentially include
728 biosecurity threats, which are the primary focus of compartmentalisation. Current AO schemes
729 internationally include specific agricultural export programs that require exporters and service
730 providers, such as ports and freight companies, to demonstrate their compliance with
731 regulatory standards as a prerequisite to exporting (Widdowson *et al.* 2014). The Australian
732 Trusted Trader (ATT) program, which was introduced in 2016, provides accreditation to
733 businesses with a secure supply chain and compliant trade practices. Accredited Trusted
734 Traders receive trade facilitation benefits, including various forms of cost savings from reduced
735 inspections. A key activity of the ATT is the negotiation of Mutual Recognition Arrangements
736 with Australia's key trading partners to enable accredited businesses to benefit from a reduced
737 regulatory burden in accessing reciprocal trading partner markets. To date, MRAs have been

signed with China, Australia's largest trading partner, New Zealand, Korea, Canada and Hong Kong (Craik *et al.* 2017). As at 14 June 2019, the ATT program had 409 accredited Trusted Traders involved in import, export, or provision of trade related services such as logistics customs brokerage and transport (Australian Border Force 2019).

Compliance cost considerations

A key requirement of the compartmentalisation program is to adequately inform potential industry participants about the requirements of compartment certification, including any requirements likely to involve a cost to producers. Producers can then determine whether to incur those costs in the same way that they make other business investment decisions. Under these circumstances, compartmentalisation costs to producers would only be incurred if they are assessed by producers to be outweighed by their likely benefits. Provided that producers are given adequate information to accurately estimate their compartmentalisation costs, there can be a high degree of confidence that the program would be cost-beneficial. Further confidence that the program would be cost-beneficial arises because producers contemplating whether to become compartments have the option of exporting under standard approved arrangements. This implies that the decision to compartmentalise would only be taken if the associated incremental net benefits (i.e., additional commercial returns less additional compliance costs) exceed the incremental net benefits of continuing to operate under existing export arrangements.

Some of these producer compliance costs would be known by the administering government agencies, including fees and charges payable to the Department, given that the Department determines these costs. However, other producer costs, including the cost of complying with compartment standards would not known by the Department and therefore would have to be estimated by producers. To assist producers in estimating compliance costs, producers would need to be provided with accurate information on the additional standards that would have to be met beyond those already met under current institutional arrangements. For example, an existing exporter of poultry already meets a range of standards covering the export component of operations and the specific industry being considered.

Consultations to date indicate that the following Australian compartment standards are likely to be additional to existing Australian poultry industry export requirements:

- A.I. testing
- Sampling and surveillance program including wild birds
- NATA accredited diagnostic testing laboratory availability
- QMS and auditable data and record keeping systems/standards
- Some specific on-farm biosecurity measures e.g. installation of a vehicle wash and waste water treatment station
- Policy (developing a biosecurity plan)

775 • Manuals and staff training in place

776 • Electronic traceability system

777 A more detailed description of the draft Australian Compartment Standards not covered by OIE
778 Chapter 6.5 and the Approved Arrangement Guidelines - Poultry Meat – 18 May 2018 (current
779 export registration requirements), and which, therefore, are additional to the standards that
780 must be met by a current poultry exporter, follows.

781 1. Australian Compartment Standard #3: Surveillance and Sampling.

782 • OIE Chapter 6.5, Article 6.5.7, point 7 states: Where feasible, surveillance should
783 be carried out in these markets to detect infectious agents of poultry. The
784 surveillance program should be determined by the Veterinary Services, and in
785 accordance with recommendations in relevant chapters of the OIE Terrestrial
786 Animal Health Code. As Australian STD #3 is compulsory it will be an additional
787 measure to those currently required under OIE Chapter 6.5.

788 2. Australian Compartment Standard #4: Laboratory Testing and Accreditation.

789 • OIE Chapter 6.5 does not contain this requirement. As Australian STD #4 is
790 compulsory it will be an additional measure to those currently required under
791 OIE Chapter 6.5.

792 3. Australian Compartment Standard #7: Documentation and Quality Management

793 • While OIE Chapter 6.5 requires records be maintained it does not specify
794 document standards or Quality Management Systems. As Australian STD #7 is
795 compulsory it will be an additional measure to those currently required under
796 OIE Chapter 6.5.

797 4. Australian Compartment Standard #8: Reporting, Notification and Emergency Response

798 • OIE Chapter 6.5 does not contain this requirement. As Australian STD #8 is
799 compulsory it will be an additional measure to those currently required under
800 OIE Chapter 6.5.

801 5. Australian Compartment Standard #2: Biosecurity Plan: All Facilities.

802 • Australian Compartment Standard #2 (including standards 2.1 to 2.6) requires a
803 detailed biosecurity plan that must contain all biosecurity procedures in OIE
804 Chapter 6.5 currently required for export registration. Standard #2 also requires
805 that a compartment must be aligned with other industry standards (current
806 published standards and guidelines) where available, such as:

807 i. National Farm Biosecurity Manual for Chicken Growers. First Edition
808 2002. Australian Chicken Meat Federation. Available online:
809 <http://www.chicken.org.au/page.php?id=238>

- ii. National Farm Biosecurity Manual Poultry Production. First Edition 2009. Australian Government Department of Agriculture. Available online: <http://www.chicken.org.au/page.php?id=238>
- iii. COMMISSION REGULATION (EC) No 616/2009 of 13 July 2009 implementing Council Directive 2005/94/EC
- iv. USDA Poultry Compartment Specifications. Available online: <https://www.poultryimprovement.org/documents/SubpartF-Compartmentalization.pdf>
- v. GB Enhanced Standard. Available online: <https://www.gov.uk/guidance/avian-influenza-bird-flu-and-newcastle-disease-prevention-join-the-compartmentalisation-scheme>
- The Australian Compartment Standard #2 audit tables include the requirements for the industry standards and guidelines listed here. Assessors will ensure that all requirements for standard #2 and all listed industry standards are met. There is significant overlap between biosecurity plan standards, meaning that if OIE Chapter 6.5 has been met, then all other industry standards are likely to have been met. However, the listed industry standards vary in detail and where a standard is more detailed than OIE Chapter 6.5 the facility will be required to upgrade to the industry standard or add the standard if missing completely. This would be determined at the time of audit and any upgrade will be at the assessor's discretion. This may result in an upgrade or additional measure to those currently required under OIE Chapter 6.5 and provision to meet the audit corrective actions should be accounted for in the cost benefit analysis.

Compliance costs could potentially be reduced by allowing private sector auditing of producer compliance with compartment requirements. Although a thorough assessment of this option is beyond the scope of this study, there are significant potential issues with private auditing that would need to be carefully assessed before a decision is made whether to adopt this approach. Profit-driven private auditors may have incentives to conduct audits less thoroughly to reduce their costs and thereby gain a competitive advantage in tenders for auditing contracts. Another potential concern is the risk that private auditors will have an incentive to overlook or downplay any problems they observe in order to retain their clients. It is recommended here that before any decision is made regarding who conducts the audits (government or private companies), a review be conducted of international experience with private auditing of biosecurity certification programs and related programs such as those involving food safety.

Some Considerations for Implementation

The Australian veterinary regulatory system involves specific roles for State/Territory veterinary agencies and Commonwealth Government agencies. As such, the success of a national compartmentalisation program, if it is implemented, will rely on effective cooperation between

848 state and Commonwealth Government agencies and a clear specification of program roles for
849 the two levels of government.

850 The specific assignment of roles and responsibilities between different government agencies at
851 State and Commonwealth levels in relation to compartmentalisation program activities such as
852 surveillance, diagnostic sampling and disease reporting is outside the scope of this report. As
853 already noted, the primary focus of this report is on assessing whether an Australian
854 Compartmentalisation Program (ACP) is consistent with current Australian biosecurity and
855 agricultural policy, and has a realistic prospect of being cost-beneficial. Although it is largely
856 beyond the scope of this report, a brief discussion of implementation and jurisdictional issues is
857 provided here.

858 The proposed ACP has been developed specifically for the purposes of international market
859 access. The final authority for compartments approval under this program lies with the
860 Competent Authority, the Australian Government Department of Agriculture, Water and the
861 Environment (DAWE). Compartments operating under the ACP will be approved, regulated and
862 audited as an Approved Arrangement in accordance with the Export Control Act 1982 (Export
863 Control Bill 2019. Section 5 Approved Arrangements, pending assent).

864 Advice provided by the Department during the preparation of this report is that the draft
865 Australian Compartmentalisation Standards (ACS), which are not included in this report, are
866 compliant with international standards and must, by default, be compliant and at least
867 equivalent to relevant State/Territory laws, regulations, animal health programs and standards.
868 To be effective as a Competent Authority-regulated animal health service, the ACP and
869 supporting ACS will involve the participation of State/Territory/Federal animal health services.
870 Consultation with DAWE indicated that once the ACP becomes fully operational it will be
871 available to all animal production sectors for domestic and international trade purposes.
872 Stakeholder consultation, as well as stakeholder roles and responsibilities, would be subject to
873 consultation with the National Biosecurity Committee (NBC) and, if required, directed to its sub-
874 ordinate committees, such as Animal Health Committee.

875 Advice provided by the Department during the preparation of this report is that if the
876 States/Territories were to implement their own ACP for the purposes of domestic interstate
877 trade (integrated and aligned directly with the nationally consistent and coordinated program
878 being assessed in this report), extensive consultation, information sharing and collaboration
879 between relevant Federal and State Competent Authorities would be conducted via the NBC in
880 the first instance. Approval, regulation and audit would fall under the full responsibility of the
881 relevant State/Territory jurisdictions. Recognition and evaluation of compartments for the
882 purposes of inter-state trade would be a matter for the State/Territory Competent Authorities
883 on a bilateral or multilateral basis. Should any State/Territory compartment wish to seek
884 approval as an Approved Arrangement under the Export Control Act for export market access,
885 collaboration between the State/Territory and DAWE (e.g. for auditing) is recommended for the
886 application of consistent and transparent governance standards.

Delegation of responsibilities to state/territory agencies, as well as cooperation and alignment between jurisdictions already occurs in supporting exports of Australian animals/products. It is noted here that the ACP is in the early stages of development and assessment as a proposed program. As such, implementation issues including legislative considerations, governance, delegation and responsibilities, IT and data standards, industry-specific costs/benefits, further industry specific scientific information, and a detailed review of overlap between the ACS and existing State/Territory responsibilities has not yet commenced. These elements of program development and assessment, which form part of the normal strategic business planning process of DAWE, would occur only after the decision is taken within DAWE to formally endorse the ACP.

Concluding remarks

Compartmentalisation has important advantages over zoning, which is the only other comparable biosecurity measure for facilitating trade in animals and animal products from parts of Australia during outbreaks elsewhere in the country. All producers within a zone lose favourable market access conditions during disease outbreaks within the zone, even when most of those producers are free of the disease. In contrast, disease-free certified compartments can continue exporting to countries that accept compartment certification, as determined in bilateral trade negotiations. Overseas experience has demonstrated that premium export markets, including Japan, have already accepted imports from compartments during disease outbreaks in exporting countries.

Compartmentalisation has built-in safeguards against the possibility that program costs will exceed benefits, thereby achieving a high likelihood of being cost-beneficial. Importantly, these safeguards are likely to be more effective than those achieved by other Australian biosecurity programs because of the unique self-selection mechanisms built into the program.

- Many current biosecurity programs rely on producer compliance with mandatory obligations rather than providing commercial incentives for compliance. This places a large burden on government when compliance requires intensive monitoring by government.
- Although some biosecurity programs do provide commercial incentives for producer investments in biosecurity, those incentives can be weakened when biosecurity efforts are shared between multiple producers because of problems such as free-riding. In contrast to zoning, which requires cooperative biosecurity efforts by all producers within a defined geographic area, individual compartments have sole responsibility for their biosecurity investments and have appropriate commercial incentives to ensure their investments are effective. This ensures that the program would fulfill a key objective of the IGAB, which is to encourage efficient sharing of biosecurity responsibilities between industry and government.

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