



Avian Influenza Gap Analysis for the Egg Industry

Final Project Report | September 2022

A report for Australian Eggs Limited
by Dr Ron Glanville

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Foreword

This project was funded from industry revenue which is matched by funds provided by the Australian Government.

This report is an addition to Australian Eggs Limited's range of peer reviewed research publications and an output of our R&D program, which aims to support improved efficiency, sustainability, product quality, education and technology transfer in the Australian egg industry.

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Executive Summary

With a predicted high likelihood of an Avian Influenza (AI) outbreak in the near future, Australian Eggs requested that this project be conducted to ensure that the industry is suitably prepared for when the next outbreak occurs. The overall aim is to assess the adequacy of the existing processes and resources for supporting the industry in responding to an AI outbreak. This was done by reviewing industry documents and interviewing a range of relevant stakeholders.

Overall, the egg industry has done a good job in preventing and preparing for future AI outbreaks, but more can be done. This report suggests a range of measures that, if all implemented, would significantly enhance prevention and preparedness. However, given limited organisational resources these will likely need to be prioritised.

The risk to the Australian industry is real. Apart from the previous pattern of infection, the situation in both Europe and the USA has changed dramatically since the emergence of the gs/GD lineage HPAI H5Nx virus clade 2.3.4.4. It is easy to presume that a similar situation would not occur in Australia, given our different production systems and different epidemiology in wild birds. However, recent studies show that migrating water birds have been exposed to these strains, and although transfer from migratory birds to Australian water birds is relatively rare, it does happen on occasion.

A review of relevant industry documents indicated that these are generally fit for purpose. However, a number of suggestions for improvement are made. One further deficiency is the lack of a document for industry participants that summarises egg industry emergency response arrangements, including communications processes

The review indicated that the demographics of the industry continues to create increased risks of outbreaks occurring and there is a need to continually find ways to reduce this risk. The issues primarily relate to the polarised nature of the industry, with perceived increasing numbers of small, free-range producers, as well as variable implementation of farm biosecurity protocols more generally.

Shared responsibility is an espoused feature of Australia's biosecurity system. However, the required culture is not fully embedded. Hence, there is a need to continually work on the relationships with government response agencies and for the industry to play a stronger and more pro-active role in response management, including some operational matters. There is also a need for more planning at the enterprise level for key response operations, particularly destruction and disposal.

The review also highlighted that there is limited expert capability and capacity within the industry to enable the industry to play its part. Some suggestions are made regarding how this situation could be improved.

Eight specific recommendations are made. However, a number of other lower-level suggestions are also made within the body of the report.

List of Recommendations

Recommendation 1. Australian Eggs should produce a short document that summarises emergency response arrangements for the industry, including communications processes.

Recommendation 2. Australian Eggs should facilitate amendments to the industry documents as suggested within this report.

Recommendation 3. Egg industry organisations should endeavour to ensure that effective formal and informal networks are maintained amongst people with relevant skills who may be called upon to represent industry during an EAD response.

Recommendation 4. Egg industry organisations should explore ways to increase the number of industry specialists who could be available to assist in managing an EAD response..

Recommendation 5. The egg industry should endeavour to educate all producers regarding the importance of farm biosecurity and explore new ways to capture all producers within industry processes.

Recommendation 6. Industry organisations, or their representatives, should endeavour to take a more active role in communications with affected producers during EAD responses.

Recommendation 7. The egg industry organisations should endeavour to actively work with governments to build a partnership approach to response management, including the use of industry expertise in operations.

Recommendation 8. The egg industry should advocate for destruction, disposal and disinfection planning within the industry on an enterprise-by enterprise basis, particularly for larger producers, and for these plans to be recognised by government.

1 Background

Avian influenza (AI) is a highly contagious disease of poultry that is notifiable under international reporting arrangements¹ and is also listed under Australia's Emergency Animal Disease Response agreement². Highly pathogenic AI (HPAI) is also highly fatal to domestic poultry, particularly chickens. There have been eight outbreaks of HPAI in poultry in Australia between 1976 and 2020, as well as detection of low pathogenicity AI (LPAI) on a number of occasions. Each outbreak of HPAI has been eradicated through depopulation and disinfection of the affected premises.

AI virus strains have been regularly isolated from wild birds in Australia and this presents an ongoing risk that future outbreaks will occur, particularly where strict separation of domestic poultry from wild birds (primarily ducks) is not maintained. Given the increasing use of free range production techniques in Australia, the appearance of new virus strains and, perhaps, changing climate patterns, the probability of further AI outbreaks is ever present.

With a high likelihood of an AI outbreak in the near future, Australian Eggs requested that this project be conducted to ensure that the industry is suitably prepared for when the next outbreak occurs.

2 Terms of Reference

The overall aim of this project is to assess the adequacy of the existing processes and resources for supporting the industry in responding to an AI outbreak.

More specifically, with reference to the current industry structure and risk profile:

- Review current AI preparedness and response resources at an industry level.
- Identify key processes controlled by third parties that would have a significant impact on the outcome of an AI incident.
- Identify deficiencies in processes and response resources that could be improved.
- Engage with key stakeholders (experts, farmers, Australian Eggs staff, EFA) to test observations.

Fourteen relevant stakeholders were consulted, including people from industry organisations, state and Australian governments, poultry specialists, industry veterinarians and farmers previously affected by AI.

¹ <https://www.woah.org/en/disease/avian-influenza/>

² <https://animalhealthaustralia.com.au/eadra/>

3 Avian Influenza the Disease

The characteristics and epidemiology of AI are very well documented in AUSVETPLAN³. However, the essential features are summarised here.

There are four influenza virus types (A, B, C and D) that affect a wide variety of animals, but only type A affects poultry. AI was first recognised in Europe in 1878 and described as 'fowl plague'. However, it wasn't determined to be an influenza A until 1955. There are many subtypes of influenza A, with many more being recorded in birds than in other species such as people, pigs, horses, cats and dogs. The various subtypes are classified according to the characteristics of their haemagglutinin (HA) and neuraminidase (NA) surface glycoproteins, for example H5N1. Particular characteristics of the HA gene (the amino acid sequence at the cleavage site) determine whether it is HPAI or LPAI. To further complicate the picture, some strains of LPAI can be associated with severe disease in the presence of other respiratory diseases.

Another characteristic of influenza viruses is their ability to change their genetic makeup through either antigenic drift caused by point mutations in the HA and/or NA genes, or antigenic shift which arises from genetic reassortment between the gene segments of two different influenza viruses that infect the same cell. The ability of many strains to infect poultry, pigs, people and other species contributes to the latter. Either mechanism, but primarily antigenic drift, can lead to an LPAI strain becoming an HPAI strain.

3.1 Avian Influenza Internationally

Influenza occurs in all continents and outbreaks of AI are very common across Asia, with southern China having been dubbed the 'influenza epicentre'. The majority of human pandemic strains have originated from that region, given that human influenza occurs throughout the year, the majority of AI virus subtypes are present in ducks, agricultural practices are conducive to transmission between species and aquatic birds migrate and over-winter in the region.

There have been many AI outbreaks in commercial poultry in developed countries, particularly Europe and the USA in recent years. HPAI has resulted in the death and mass slaughter of more than 316 million poultry worldwide between 2005 and 2021, with peaks in 2021, 2020 and 2016. During each of the years 2006, 2016, 2017 and 2021, more than 50 countries and territories were affected with HPAI worldwide.

In 2014, and again in 2016, gs/GD lineage HPAI H5Nx virus clade 2.3.4.4 emerged and rapidly spread with wild birds from Asia to Europe, Africa, and North America⁴. Unlike other lineages, these 2.3.4.4 clade viruses appear to cause low morbidity and mortality rates in wild birds, enabling their rapid intercontinental spread through bird migration. Asia, Europe, and Africa continue to report outbreaks of HPAI H5 viruses. Thus far, Australia and South America remain free from gs/ GD lineage viruses.

The United Kingdom has been experiencing a very severe event over the past year involving the

³ <https://animalhealthaustralia.com.au/ausvetplan/>

⁴ Wille, M., Lisovski, S., Risely, A., Ferenczi, M., Roshier, D., Wong, F.Y.K., Breed, A.C., Klaassen, M., Hurt, A.C. (2019) *Serologic Evidence of Exposure to Highly Pathogenic Avian Influenza H5 Viruses in Migratory Shorebirds, Australia*. Emerging Infectious Diseases www.cdc.gov/eid • Vol. 25, No. 10.

above lineage, which appears to be associated with increased AI prevalence in wild birds. Since

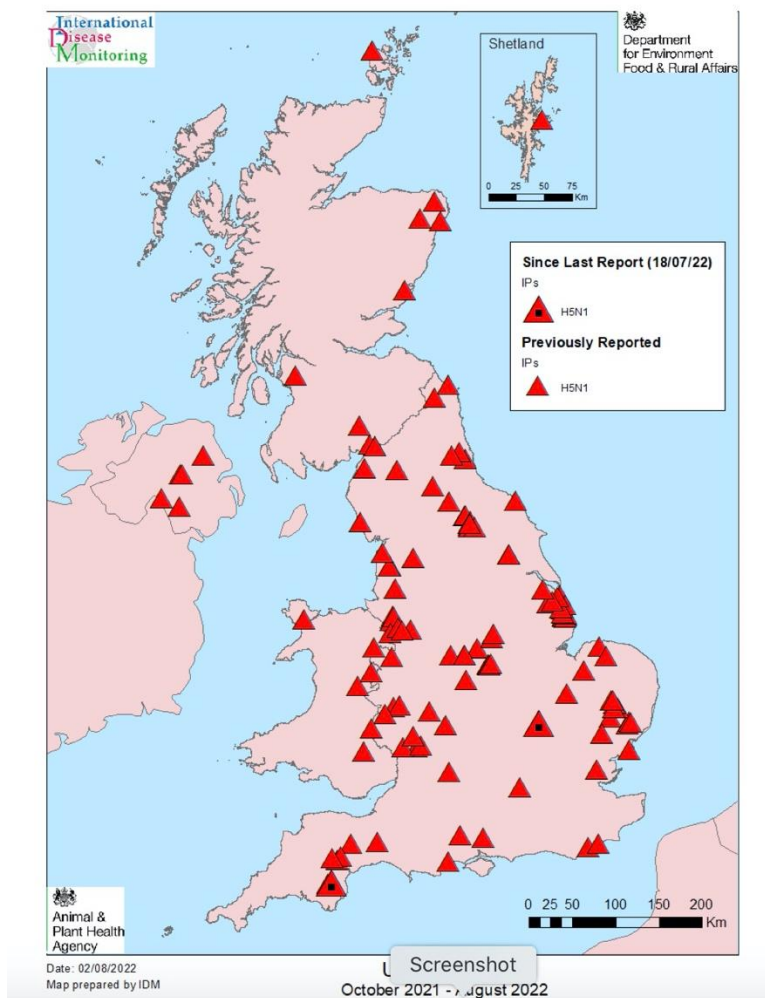
the first HPAI H5N1 detection on 15 October 2021, there have been around 120 further confirmed infected poultry and captive bird premises in across England, Wales and Scotland.

Over the same time period there were about 46 cases across the rest of Europe. The following maps to illustrate this situation were extracted from:

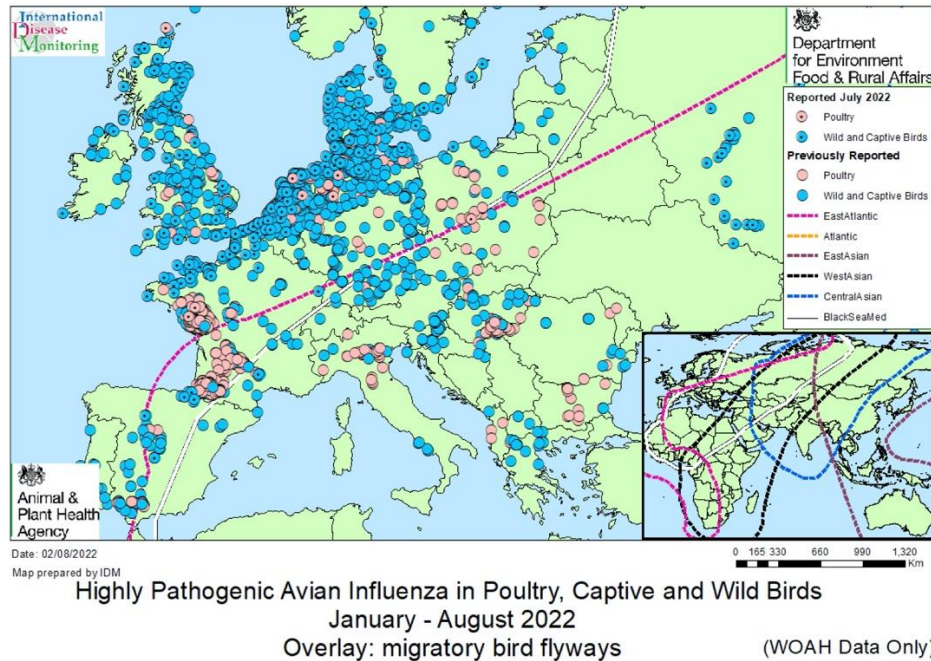
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1096689/HPAI_Europe_number31_1_August_2022.pdf

It is interesting to note that this pattern of high numbers of individual premises infections in individual years did not occur in the UK prior to around 2014. Before that, the UK only experienced sporadic outbreaks similar to what we have seen in Australia.

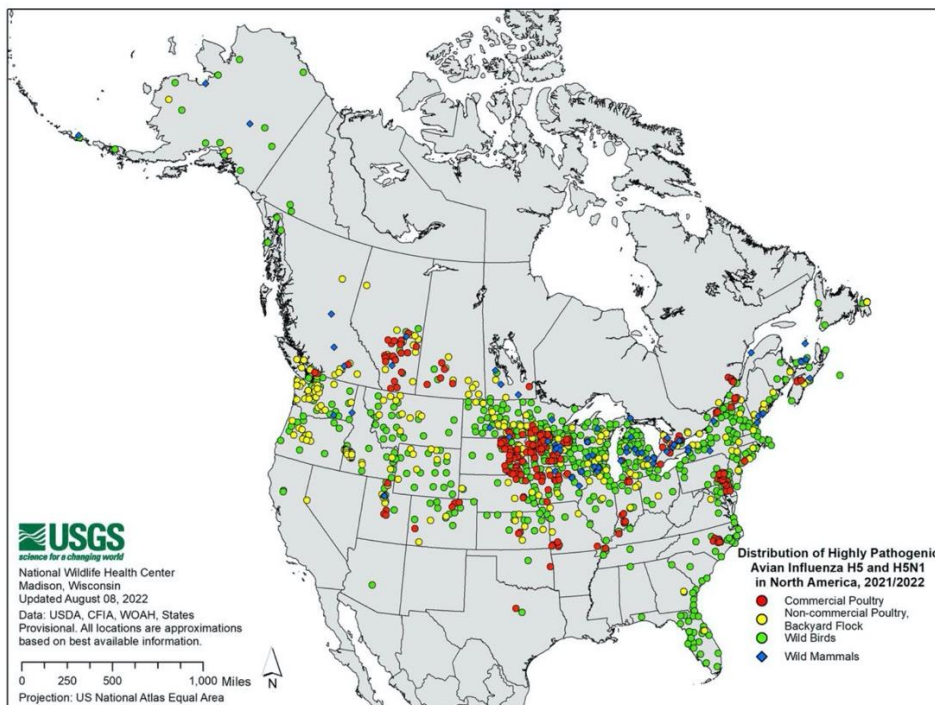
Map 1: HPAI H5 outbreaks in domestic poultry¹ and captive birds across the United Kingdom, October 2021 to 01 August 2022



Map 3: HPAI outbreaks (from WOAH) in poultry, captive, and wild birds across Europe, January 2022 to 01 August 2022.



Similarly, up until 9 August there have been 400 confirmed detections of HPAI in the USA during 2022 (189 commercial flocks and 211 backyard flocks – see map below from <https://www.usgs.gov/centers/nwhc/science/distribution-highly-pathogenic-avian-influenza-north-america-20212022>).



3.2 Avian Influenza in Australia

In Australia, previous HPAI outbreaks have been caused by H7N2, H7N3 and H7N4 and H7N7 strains. The eight outbreaks have all been in Victoria (4), NSW (3) and Queensland (1). The most recent outbreak in 2020 in Victoria was H7N7. However, there were also two concurrent LPAI cases in turkeys (H5N2) and emus (H7N6). Only LPAI strains (H1, H5, H13 and H15) have been isolated from wild birds in Australia (many other strains have been isolated overseas). The wild bird species have included ducks, terns, coots, ibis and shearwater, with detected prevalence rates of 1.4 – 3.2 percent. Outbreaks of HPAI in domestic poultry have been thought to occur through transmission of LPAI from water birds into domestic poultry, with subsequent genetic mutations into the more pathogenic form. However, the existence of HPAI strains in wild birds and their direct transmission to domestic poultry cannot be discounted. This also appears to be the case with the current outbreaks in Europe. Either way, the primary risk factor for domestic poultry is contact with wild birds, particularly ducks.

In terms of the risk of new strains of AI virus (AIV) being introduced from overseas, Australia is on the route of a major migratory bird flyway and AI has been detected in these species. However, these are shorebirds and it has been thought that there is very little interaction with our local species (e.g. ducks) that pose the greatest risk to domestic poultry.

Recent work has indicated that the evolution of AIV in Australia differs from patterns found in the northern hemisphere⁵. A key observation was that AIV in Australia is characterised by infrequent, but enduring introductions followed by decades of isolated circulation. Hence, Australia appears to be a ‘sink for AIV genetic diversity’ and not closely linked to the Eurasian virus gene pool. That is, movement of AIV strains is one-way from Asia to Australia, not vice versa. Once introduced, lineages circulate in isolation until extinction. It is most likely that the limited introductions of novel AIV lineages to Australia are associated with long-distance migratory shorebirds flying from their northern hemisphere breeding grounds along the East Asian Australasian Flyway to Australia for the duration of their non-breeding season. The transfer of viruses to domestic species is infrequent because of the infrequent interactions as mentioned earlier.

As Australian waterfowl are nomadic rather than strictly migratory, there are no key migratory flyways within the continent. Rather, ducks have “erratic” movement patterns across the continent which are heavily dictated by the availability of water. Hence, consistent patterns of AIV movement between specific locations would not be expected.

⁵ Wille, M., Grillo, V., Ban de Gouvea Pedrosa, S., Burgess, G.W., Crawley, A., Celia Dickason, C., Philip M. Hansbro, P.M., Hoque, A., Horwood, P.F., Peter D. Kirkland, P.D., Yu-Hsin Kung, N., Lynch, S.E., Martin, S., McArthur, M., O’Riley, K., Read, A.J., Warner, S., Hoye, B.J., Lisovski, S., Leen, T., Hurt, A.C., Butler, J., Broz, I., Davies, K.R., Patrick Mileto, P., Neave, M.J., Vicky Stevens, V., Breed, A.C., Tommy T. Y. Lam, T.T.Y., Holmes, E.C., Klaassen, M., Frank Y. K. Wong, F.Y.K. (2022) *Australia as a global sink for the genetic diversity of avian influenza A virus*. PLoS Pathog 18(5): e1010150. <https://doi.org/10.1371/journal.ppat.1010150>

A recent analysis by Ferenczi, Beckmann and Klaassen⁶ suggests that the risk of AI outbreaks in poultry increases after a period of high rainfall, with peak AI risk two years after the onset of the high-rainfall period. This is presumably triggered by increased rates of waterbird breeding and consequent higher proportions of immunologically naïve juvenile waterbirds entering the population directly after major rainfall events, which subsequently aggregate near permanent water bodies when the landscape dries out.

This is obviously a complex area, but it makes sense that environmental conditions will affect the abundance of risk species and the apparent prevalence of AI viruses that they carry. However, caution is urged in adjusting risk mitigation strategies based on environmental conditions. That is, AI transmission from wild birds should always be considered possible.

3.3 The Disease Risk in Australia

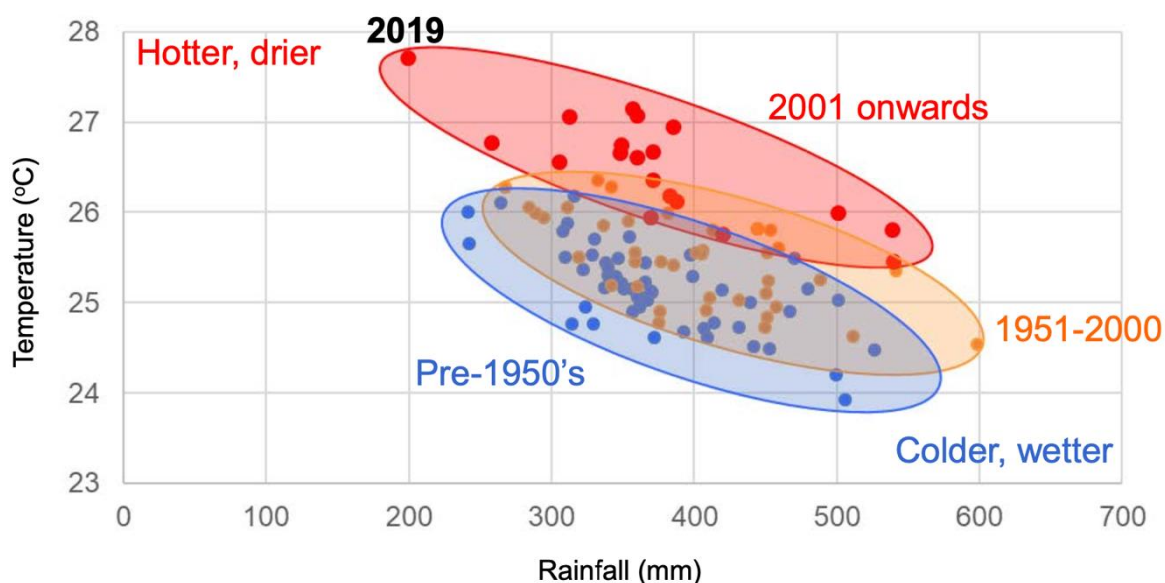
Despite the rather dramatic situation in both Europe and the USA depicted above, it is easy to presume that a similar situation would not occur in Australia, given our different production systems and different epidemiology in wild birds. However, millions of shorebirds that are reservoirs for AIV migrate from Siberia to Australia, with stopover sites along the coast of East Asia. It has been recently demonstrated that these intercontinental migratory birds have been exposed to gs/GD lineage HPAI H5Nx viruses (currently responsible for outbreaks in Europe) and have the potential to bring these viruses into Australia (Wille et al). As indicated above, transfer to Australian water birds is relatively rare, but does happen.

Hence, we cannot assume that the current pattern will always be operating across the country, viz:

- A different AIV lineage that is more transmissible could enter Australia and become endemic in our water birds. This is essentially what appears to have happened in Europe and the USA.
- There are some densely populated (poultry) areas that can lead to enhanced disease transmission. For example, this occurred with Newcastle disease at Mangrove Mountain during the late 1990s.
- While large, commercial producers generally practice high standards of biosecurity, this is not universal. My biosecurity gap analysis report of 2018 concluded that biosecurity standards within the industry are variable. Further, there seems to be a growing polarisation within the industry, with fewer numbers of very large producers and more small, niche egg producers who often are not well connected to mainstream industry. Commercial pressures also means that there are also more free range producers, with the inherent biosecurity risk associated with this type of production (that is, it is much more difficult to exclude potentially infected wild bird species).
- The 2020 AI outbreak in Victoria indicated that there can be heightened risk from wild birds over a wide geographic area – three separate outbreaks of HPAI (1) and LPAI (2). These risks are difficult to forecast, but there is no doubt that our weather patterns are changing (see graphic below – provided by Professor Mark Howden from ANU) and this will no doubt have an impact of wild bird species and the diseases they carry. However, just how this will affect disease distribution and risk to the industry is difficult to say.

The bottom line is that the egg industry will need to be constantly vigilant regarding the probability of future AI outbreaks. Many consider that it is a matter of when, not if, the next outbreak will occur.

⁶ Ferenczi, M., Beckmann, C., and Klaassen, M (2021). *Rainfall driven and wild-bird mediated avian influenza virus outbreaks in Australian poultry*. BMC Veterinary Research 17:306 <https://doi.org/10.1186/s12917-021-03010-9>



3.4 Ongoing Cost-sharing

Given that responses to HPAI outbreaks are the most common for any emergency animal disease in Australia, the fact that the disease is present in wild birds and certain egg industry production practices lead to a higher probability of outbreaks, industry needs to also consider the possibility that other cost sharing partners may withdraw from the cost sharing agreement in relation to this disease. For this reason, it is the best interests of the egg industry to do everything possible to prevent and prepare for future outbreaks. This report is written with this thought in mind.

4 Australia's Response Arrangements

Australia's response arrangements for emergency animal diseases like AI are summarised in attachment 1. The key features relevant to this review are:

- There is national cost sharing of responses under the Emergency Animal Disease Response Agreement (EADRA).
- Technical guidance regarding the disease response strategy is provided within AUSVETPLAN disease specific documents⁷, as well as various operational manuals and guidance documents.
- State agricultural agencies are primarily responsible for implementation of the response led by the Chief Veterinary Officer (CVO), but key decisions around cost sharing and the overall technical approach are made by the National Management Group (NMG), with technical advice from the Consultative Committee on Emergency Animal Diseases (CCEAD).
- AUSVETPLAN disease strategies do not need to be followed slavishly, but significant variations must be approved by NMG through the Emergency Animal Disease Response Plan.
- The concept of shared responsibility is embedded within the system, with industry involved at multiple levels (see below).

⁷ https://animalhealthaustralia.com.au/wp-content/uploads/dlm_uploads/2021/11/AUSVETPLAN-Response_Avian-influenza.pdf

- AI may be treated as a Category 2 or Category 3 disease depending on the virus strain involved. This means either 20 percent or 50 percent industry contribution to eligible costs.

A key aspect of management of a response is how industry is engaged and directly involved. Given the relevance to this review, more detail is provided below.

4.1 Industry/ Stakeholder involvement

Affected industries and/or communities have a key role in the management of emergency responses. A cooperative, partnership approach between government and industry in relation to response management is intended, but unfortunately not always practiced. However, such an approach should be fostered wherever possible to maximise effectiveness.

Simple consultation on the part of government is not enough. Particularly in complex responses, a true partnership approach and culture is ideal. This means genuine and regular engagement, being open and honest, and building a trusting environment where real issues can be addressed together. This particularly applies to developing response strategy, where often a balance needs to be struck between effectiveness of pest / disease control and minimising impacts on stakeholders. This approach provides the best chance of achieving commitment to the chosen approach from affected parties.

However, there are also operational aspects where industry advice and, potentially, direct management may be crucial, for example, where the relevant expertise lies within industry. During a cost shared emergency response, industry representation should occur at multiple levels. These include the NMG, CCEAD, the State Coordination Centre (SCC) and Local Control Centre (LCC) levels, but there is also likely to be direct liaison with key positions such as the CVO. Industry representatives (and other stakeholders) provide liaison between industry and government; provide specialist advice and knowledge; represent their industry as part of the decision making and planning processes; and also play a key communication role within their organisations.

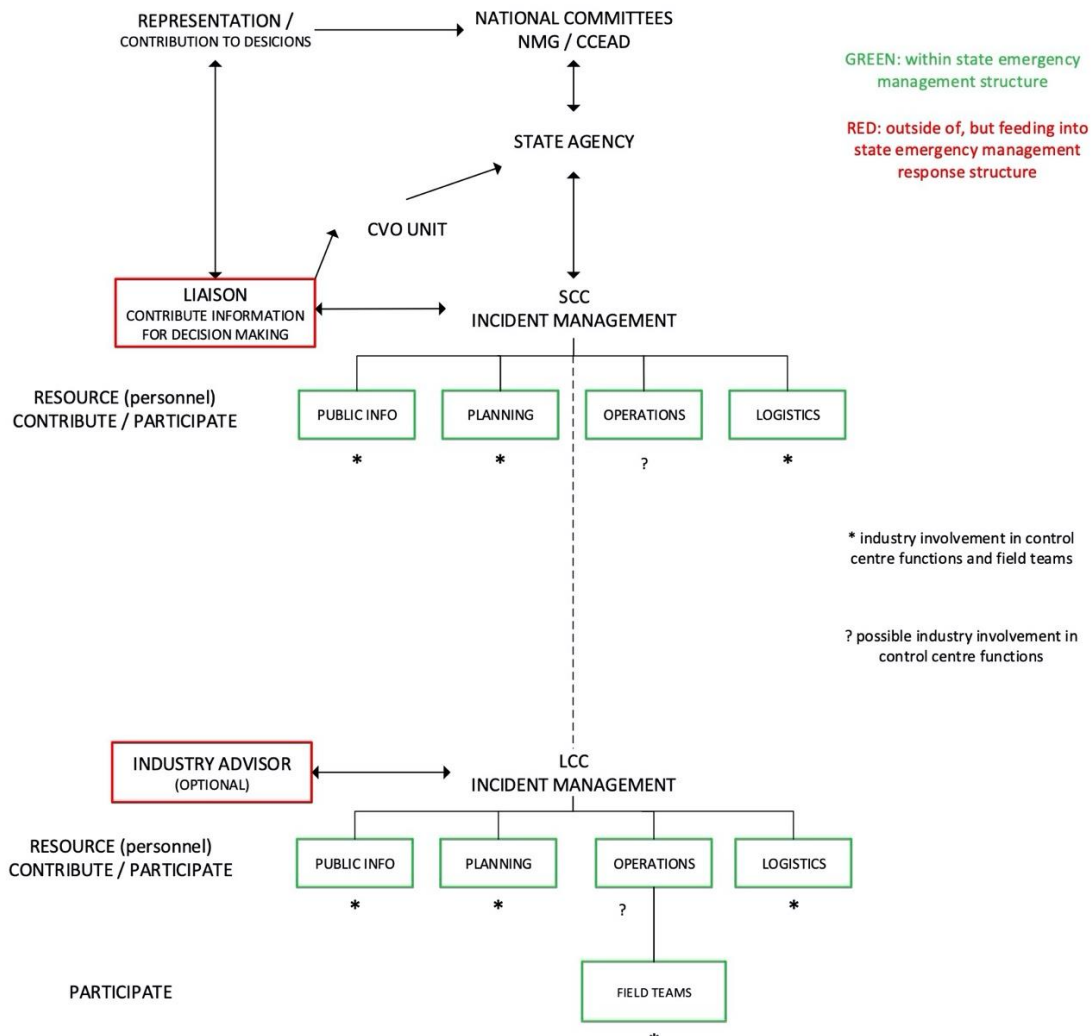
These roles vary in emphasis depending upon the level, with three broad types of involvement:

- representational functions at the NMG and consultative committee levels.
- liaison and advisory type functions where industry personnel remain independent of government – operating at CVO Unit, SCC or LCC levels. These people are now called Liaison Livestock Industry (LLI) within AUSVETPLAN.
- assistance type functions where personnel are directly employed within the response – generally operating at control centre or field operations levels. These people are designated Specialist Advice (SA) within AUSVETPLAN.

These arrangements were discussed in detail at a national government – industry workshop in 2013 and the arrangements in the following diagram were proposed. While some aspects were subsequently incorporated into AUSVETPLAN, from personal observations, the implied culture of a very close relationship does not appear to be embedded within each jurisdiction.

Different industry personnel may function at multiple levels within a response and contribute to a range of key areas (including advocacy and decision making, knowledge and intelligence, communications, personnel, skills and recovery). These functions range from strategic in nature through to operational. A scalable and flexible approach depending on the nature, size and complexity of the response is essential.

**PROPOSED STRUCTURE OF INDUSTRY INVOLVEMENT IN AN
EAD RESPONSE (expanded)**



As well as the three levels described above, a fourth level may also operate within the jurisdiction, slightly outside of the national framework, that is, within jurisdictional structures. For example, the “Control Group” model has been practised in Queensland where a high-level committee is established at the whole of agency level to oversee management of large or high-profile responses.

At the SCC and LCC levels industry personnel can have a variety of roles and functions, including the following:

- Providing detailed advice on industry demographics, structure, way of operation, marketing etc., which will assist in risk assessments and strategy development.
- Providing input into proposed disease control strategies. In difficult disease control situations this is essential, particularly to strike a good balance between disease control and minimising the impact of control measures on industry.
- Providing advice on logistics and potential resources (including people) that may be available from within the industry.
- Ensuring that effective communication occurs between the response centre and people within the affected industry.

During complex responses, the relationship between stakeholder representatives and the CVO may become a key ingredient. For example, during the 2007 equine influenza response, this reviewer (as CVO) spent many hours discussing disease control strategy in detail with representatives of key industry sectors. The result was mutually agreed approaches and high levels of commitment to implement these approaches from each industry sector. However, this can only work if a trusting environment can be established.

Establishing the above stakeholder relationships during a response is not ideal. In fact, it is often the relationships established before a response that are relied upon most during a response. If a relationship is not pre-existing, then considerable additional effort may be required.

Application of this model to the egg industry during an AI response is discussed later in this report.

4.2 Previous Reviews

This author conducted a biosecurity gap analysis for the egg industry in 2018. The executive summary and recommendations from that review are provided in attachment 2, as they remain relevant to this review. In particular, the issues that will again be raised in this report include: biosecurity systems for disease prevention; risks created by 'fringe' egg producers; industry – government relationships; and some aspects of response planning.

The efficiency advocate report on the 2020 Victorian AI response was also conducted and written by this author. While the report was commissioned by the National Management Group and cannot be reproduced here, again, a number of the issues raised are relevant to this report. The most important of these centred around how government and industry work together during a response, including operational matters where expertise resides within industry. Within Victoria it was recommended that an industry engagement plan is required for future responses. While many of the other recommendations were directed towards government or Animal Health Australia, one specific recommendation for industry stated:

The poultry industry should consider requiring all contractors to have up-to-date safety procedures, chemical approvals and staff with influenza and Q fever vaccinations, as normal practice.

This arose from the fact that lack these approvals etc delayed the use of industry contractors for some key operational aspects of the response.

5 Review of Industry Documents

A number of industry supplied documents relevant to AI prevention and preparedness were reviewed in detail. Some comments and/or suggestions for improvement are made below.

5.1 Incident and Crisis Management Plan

Pork have a comprehensive plan in place (*PorkSAFE Incident and Crisis Management Plan*). This plan is quite detailed, covering a range of incident management issues using an 'all hazards' approach.

I discussed this with staff from Australian Eggs who acknowledged that it was a deficiency. However, they made the valid point that it is a small industry, with relatively few staff within the industry

organisations. For example, Australian Eggs has only two people who deal with biosecurity issues. Hence, the required investment would need to be weighed against other priorities.

I accept that this position is reasonable. However, I also suggest that a relatively short document should be prepared for communication purposes within the industry. In talking to a number of stakeholders, there was some confusion regarding the relative roles of Australian Eggs, Egg Farmers of Australia and the State farming organisations, particularly during a response. This mainly related to communications within the industry and responsibilities for representing industry within the various forums. This document should cover:

- An overview of biosecurity response arrangements, including EADRA and AUSVETPLAN (information supplied in this report could be used for this).
- The role of industry during a response.
- Roles and responsibilities of the different industry organisations, including official industry representatives.
- Overview of industry communications approach and responsibilities.

This document should be made available on industry websites.

Recommendation 1. Australian Eggs should produce a short document that summarises emergency response arrangements for the industry, including communications processes.

5.2 National Farm Biosecurity Technical Manual for Egg Production

This is the key overarching document and it is quite comprehensive in its scope. Some suggestions for improvement follow.

Principles of Biosecurity, page 9.

The first paragraph states 'When there is a heightened threat of an EAD such as AI and vND, sound biosecurity principles must be in place at all times.' While there is a natural tendency, to increase biosecurity standards when there is a response underway, the manual should indicate that high standards should be in place at all times, not just when there is an alert.

This section should mention safe sources of introduced birds and isolation upon entry if possible. I note that this measure is covered in the separate document, *Guidelines for biosecurity plan workbook*, but should also be mentioned here.

It may also be worthwhile for this document to discuss the need for appropriate siting of new poultry farms to reduce the risk of new outbreaks (e.g. away from water bodies), as well as to reduce the risk of spread in an outbreak (separation distances from other farms).

Biosecurity Procedures, from page 13.

Section 1 - documentation and staff training. This section talks about the manual being readily accessible by staff. However, I question how likely it is that farm staff will actually read the manual. I suggest that there may be a need for simplified components of the manual to be produced that are relevant to particular categories of staff, perhaps laminated and placed in prominent locations so that they can be referred to regularly.

Section 2.5 - vehicle disinfection. The wording here could be clearer that the disinfection equipment

must be used on all vehicles that enter the property. Perhaps also consider whether vehicles should also be disinfected when leaving to protect other farms that may be subsequently visited.

Section 2.12. The wording of the second paragraph is ambiguous. It may be clearer to say that 'no other poultry species or backyard (domestic) poultry should be kept on a commercial production facility'.

Sections 6.2 and 6.3 - Free-range production operations. I'm aware that the requirement to minimise surface water at times conflicts with local government requirements. Perhaps the document should also state the need to consult with local authorities around this issue when planning new facilities.

As a separate activity, the industry organisations may also need to do more to educate local government about the associated risks.

This section could also refer to the Avian Influenza Guideline, which has a lot more detail regarding deterrent techniques. Full or partial exclusion fencing/netting may need to be more seriously considered in the longer term, even though it is currently considered cost prohibitive. I have seen quite large areas fully netted to protect high value horticulture crops. It has been suggested that netting an early section of the range only would be more practical / cost effective, yet cover a high proportion of hens that are ranging, thus significantly reducing risk.

Section 7, page 31. This section documents what happens following an EAD detection. NASOPs are discussed, but there is no summary explaining the national framework, EADRA and AUSVETPLAN (disease strategies and NASOPs), as well as some of the important principles like 'shared responsibility'. I consider that this would be useful to add for context. The summary provided in this report could be used as a basis for such an inclusion.

It may also be worthwhile to include an extra section about 'what to expect when an EAD occurs on your farm'. Some of this is provided in the document, 'Egg Farmer Checklist in the event of a positive result for Avian Influenza (AI)'.

The document should also advocate for the development of destruction, disposal and disinfection plans for individual enterprises (particularly large scale facilities), which is discussed later in this report.

5.3 Avian Influenza Guideline

Page 1 states that 'HPAI has never been detected in wild bird populations in Australia and therefore Australia is considered free of HPAI.' While this may be a true statement, it may be worth also stating that we should not assume that HPAI is not present in wild bird populations.

Reducing the Risk of AI, page 6. The entry of / contact with wild birds is by far the biggest risk factor for AI infection. This should be stated up-front and restricting wild bird contact should be the first item in the list of biosecurity measures. This is covered in detail starting on page 13, so I suggest briefly making it the first item on page 6 and referring to the detailed information on page 13.

Regarding the deterrent methods (pages 13-16), this section could possibly mention the work to develop machine vision technology that potentially may be used in unison with the techniques listed.

I again note that exclusion netting is mentioned but considered cost prohibitive. Perhaps more work is required on this from an industry R&D perspective, including assessment of partial netting,

particularly given that netting has the highest efficacy rating.

5.4 Egg Farmer Checklist in the event of a positive result for Avian influenza

This is a very useful document, with just a couple of suggestions for improvement:

The section on 'what to expect' could be reviewed, perhaps by some previously affected producers to ensure that it fully provides the key information a farmer needs.

Regarding the statement, *'The property is quarantined and becomes the responsibility of the CVO'* (page 1), this is incorrect and provides the wrong impression that the owner has no rights or role. A better statement would be: *'The property is quarantined and decisions around disease control are the responsibility of the CVO and/or the control centre. It is important that the property owner works closely with disease control officials to ensure the best outcome.'*

Given the earlier information on the role of industry, we should encourage egg farmers to have an active rather than passive role. This is discussed again later in this report.

5.5 Guidelines for a biosecurity plan template

This is an excellent document. Three suggestions for improvement are made:

- It may be worthwhile adding a section on destruction, disposal and disinfection plans in the case of an EAD event (discussed later).
- Step 3 - List the major disease risks to the farm. An example is provided for one disease but to do this from scratch for all relevant diseases may be a real challenge for most farmers. Given that most of the information is fairly generic, I suggest that a template with the basic technical information could be included for all significant diseases.
- The emergency procedures checklist is also fairly broad and general. I suggest that it needs more guidance regarding what is actually required.

5.6 Waste management guide for Australian egg farms

This appears to be a good document. However, if not already done, it should be reviewed by a waste disposal specialist. Some of the other documents could refer to this document.

5.7 National Water Biosecurity Manual for Poultry Production

Appears to be fit for purpose.

5.8 Livestock-Liaison Industry (LLI) Guide for the egg industry

This document was produced by the CEO of Egg Farmers of Australia following the 2020 AI outbreak in Victoria. It provides a practical and useful accompaniment to the LLI training provided by Animal Health Australia. The document would benefit from some judicious editing and re-organisation so that is presented in a more logical order. The essential information is all there, but for example, the background links to AHA information on the role of the LLI, EADRA, AUSVETPLAN etc is not provided until page 5. Further, the document goes into much operational detail, but I consider that it could also benefit from a higher-level discussion around how the LLI should operate and interact with the response centre(s).

Recommendation 2. Australian Eggs should facilitate amendments to the industry documents as suggested within this report.

6 Issues Arising from stakeholder Interviews

6.1 Organisational Arrangements

As discussed earlier there is some confusion / lack of understanding amongst egg producers regarding the relative roles of Australian Eggs (AE), Egg Farmers of Australia (EFA) and the State farming organisations. Some documentation to address this issue was suggested.

Some other related issues raised by stakeholders included:

- Staff within these organisations often don't have detailed industry technical industry expertise, particularly that is required during a response. This is not necessarily a problem, as they may have other required skills such as advocacy. However, what is critical is their ability to use industry networks so that a more consolidated industry position can be communicated.
- EFA in particular is not perceived to represent all egg producers, given that membership is voluntary. Hence, the organisation is seen (rightly or wrongly) to be driven by the larger players. More importantly, the smaller egg producers are not well represented and many are not on the membership database. This makes messaging about important biosecurity issues difficult. To an extent, AE was also perceived to be more representative of the larger producers.
- Related to the above is that there are limited organisational funds available to conduct biosecurity education. EFA really only has one staff member working on biosecurity issues, with two in AE.
- There was also a level of disquiet regarding the industry relationship with Animal Health Australia (AHA). AHA was perceived to be disconnected and had difficulty progressing issues in a timely way during the 2020 AI response.

It should be noted that the above are perceptions only gained from interviews with stakeholders. Whether all are true is difficult to say. However, they do highlight the importance of maintaining good relationships across industry and the various organisations. For example, during the 2020 response, EFA supplied the CCEAD representative and EA supplied the NMG representative and good communication between the two is essential. Again, some better documentation of the relative roles and relationships may be required.

Regarding representation on formal committees, where these people are drawn from is probably not critical, provided they are well connected within the industry and can speak for industry. A lesson learnt by the pig industry during the recent Japanese encephalitis virus (JeV) response was the importance of a good support network around the official representative. It was recognised that no single person could be across all aspects (disease characteristics, industry supply chain details etc), so a small support group was formed. Although there was some initial 'push back', eventually four to five observers were permitted to attend CCEAD meetings. This support during meetings proved critical for effective industry representation. A simple process of these people communicating via a WhatsApp group during meetings also proved very effective. The people involved should include a good cross-section of relative industry expertise.

Recommendation 3. Egg industry organisations should endeavour to ensure that effective formal and informal networks are maintained amongst people with relevant skills who may be called upon

to represent industry during an EAD response.

6.2 Capacity and Capability

A number of people raised the issue of limited specialist capacity and capability regarding the egg industry, particularly specialist knowledge around biosecurity. There is very little depth in terms of specific industry knowledge, for example there is now no poultry specialist in South Australia.

In relation to managing an EAD response, the number of trained LLI numbers are very few and currently there are no recognized LLIs for NSW or Tasmania. During an event, the time impost on these people is considerable and they often need to continue to cover their normal duties as well. Ideally there should be a significantly increased number so that there is some spare capacity in the system. However, this is difficult to achieve given that most people in the industry still have businesses to run during a response. A suggestion was made that the egg and meat industries should share these resources, which makes some sense, although it would depend on good cooperation between the sectors.

As well as the need to increase numbers, as discussed earlier there is also a need to establish good technical support networks for when the LLI's knowledge may be limited, essentially a network of expertise. Industry veterinarians should be part of this, but used sparingly, given that they are likely to have other important roles.

The above does not take into account that AUSVETPLAN also makes provision for Specialist Advice (SA) roles within control centres. These positions are paid by the response, but the issue remains where will they be drawn from. Again, the available expertise is 'thin'.

A number of stakeholders raised the issue of whether the industry organisations need to fund (or jointly fund) some specialist positions to improve this situation. I understand that AE has provision to pay the costs of LLIs during a response. However, this doesn't address the lack of capacity. Ideally, each state farming organisation would have one specialist poultry position. One stakeholder suggested that this is an initiative that could be done in conjunction with the chicken meat industry. I suspect that it is unlikely that government would share in the funding of industry staff. However, I suggest that industry pressure should be placed on jurisdictions to maintain existing government specialist positions, for example, the recently vacated position in South Australia.

One possible funding mechanism for this (and other) initiatives would be to activate the EAD levy mechanism on an ongoing basis so that funds generated could be used for preparedness activities (currently the levy is set at 1.1 cents to pay for the egg industry share of the 2020 AI response). I am aware that other industries are currently considering such an approach.

Recommendation 4. Egg industry organisations should explore ways to increase the number of industry specialists who could be available to assist in managing an EAD response.

6.3 Industry Structure/ Demographics and Biosecurity

As discussed in my biosecurity gap analysis of 2018, the stakeholders again highlighted that the egg industry is becoming increasingly polarised. For example, in South Australia there are approximately 96 egg producers (that we know of), but only 10 have more than 10,000 birds. Further, the belief is that there are increasing numbers of small, caravan type free range producers, many of which are not registered by government or are members of EFA. This lack of intelligence regarding industry demographics is potentially a significant impediment during a response. It is also considered that

their biosecurity standards are variable at best, whereas the larger producers tend to have greater resources and are in a better position to manage risks appropriately. They also have more to lose in the event of an AI outbreak. Many smaller producers do not have biosecurity plans or regularly use veterinarians. The major areas of concern are exclusion of wild birds, moving eggs between producers, re-use of cartons, fillers etc.

We do not know how many times unreported AI outbreaks on smaller farms have occurred, but most people considered that this has probably happened. It could be argued that this is not a problem if the disease has not spread to other farms. However, the possibility of the latter is always a concern. It should also not be assumed that medium to larger producers are always on the ball when it comes to biosecurity standards. There is an ongoing need for education in this area. One stakeholder put it well when he said that the large players need to implement a 'virtual wall' around their operations.

Addressing this issue is not easy and industry leaders are fully aware that it represents a significant risk factor. Stakeholders also considered that biosecurity is generally well promoted by the industry organisations. However, it is difficult to drive the issue. The ephemeral nature of many of these smaller operations also makes it difficult for government to enforce mandatory property registration requirements.

Previous experience with other industries indicates that the most effective way of attaining high compliance levels in this area is where the requirements are linked in some way to the marketing system. For example, abattoirs will not accept cattle unless they are identified with an official tag, which in turn is linked to a property identification code (PIC). Again, the nature of the lower end of the egg industry works against this, with many marketing locally, through farmers' markets etc where quality systems are not required.

One mechanism that does help is including biosecurity requirements within food safety auditing processes. However, it appears that application of this mechanism is quite variable between the jurisdictions and auditors may not have good biosecurity knowledge. Further, it is unclear what proportion of the smaller producers are captured within this system.

One further and more radical suggestion centres around the increasing inclusion of biosecurity obligations within modern biosecurity legislation (referred to as the General Biosecurity Obligation in Queensland, General Biosecurity Duty in NSW and Tasmania). For example, under the NSW *Biosecurity Act 2015*, *'Any person who deals with biosecurity matter or a carrier and who knows, or ought reasonably to know, the biosecurity risk posed or likely to be posed by the biosecurity matter, carrier or dealing has a biosecurity duty to ensure that, so far as is reasonably practicable, the biosecurity risk is prevented, eliminated or minimised'*.

An option to drive on-farm biosecurity planning and prevention practices may be to negotiate with governments to apply the General Biosecurity Duty / Obligation in the case of a disease outbreak. That is, following the outbreak if the owner was found to have not implemented their duty / obligation in the form of appropriate biosecurity preventative measures, then a penalty of some sort could apply, for example, withholding of compensation. This would be a tough stance to take and may take significant negotiation and legal advice to put in place. However, if clearly communicated to all chicken farmers with an appropriate grace period, then it should be a justifiable measure to achieve the desired culture change within the industry. Such an approach may also mitigate the possibility that cost sharing partners could withdraw from the cost sharing agreement, as discussed earlier.

Given all of these difficulties, a specific recommendation is difficult to make. I can only urge the industry to continue to work with government to improve official processes, as well as to continue to

educate producers at all levels regarding the importance of biosecurity.

Recommendation 5. The egg industry should endeavour to educate all producers regarding the importance of farm biosecurity and explore new ways to capture all producers within industry processes.

6.4 Communications during a Response

All stakeholders considered that messaging and communications during a response is very important. Both government and industry play important roles in this. However, producers indicated that during previous responses, they received little or no formal communications from AE or EFA. The information they received tended to come from government. However, they also indicated that the networking within industry was good.

It should be noted that this perception of lack of communication from the industry organisations may not reflect reality. Emergency responses are stressful times and communications is always a difficult area. Communications offered may not always be received.

Overall, the general view was that the industry organisations should be more prominent, in partnership with government, in getting key messages out to industry and the public. There was also one word of caution regarding the need to be very careful that communications do not lead to unintended consequences, such as market impacts. Effective consultation should guard against this risk. Again, roles and responsibilities regarding communications needs to be clear.

One specific suggestion was made that, based on previous personal experience, is very important. That is, the need to set up a farmer's meeting early in a response. Affected farmers often feel quite isolated and threatened during a response ("I was kicked off the site"). It is also very easy for a lack of specific information, as well as lack of opportunity to contribute their expertise to operational matters, to lead to resentment and anger. In most cases, effective engagement will lead to an all-round better result. Given that most AI outbreaks involve just one or a small number of sites, there is no reason for two-way conversations to not occur.

While the primary responsibility for communicating with the affected producer is arguably the role of the LCC, industry can play a very important facilitation role here. Some argued that AUSVETPLAN 'allows the owner to walk away'. This is not the current intent, but industry may need to be more active / assertive to ensure the correct approach is taken. Hence, I suggest that in the event of an AI (or other) response, one of the industry organisations (or the LLI) should pro-actively organise such a meeting between the farmer (and personal representatives if relevant), the industry representative organisation and government responders. At this meeting, all specific aspects of the response should be able to be discussed in an open and honest way. Given sensitivities around privacy, this may need to be organised by an LLI, rather than the industry organisation, noting that LLI's must sign confidentiality agreements to undertake the role. Again, although this support may be offered, it is up to the individual farmer whether it is accepted.

Further to the above, there may also be a need for a meeting with producers in the affected area (for example, the official Restricted Area) so that their specific concerns may be addressed (within reason). A third level that could be required is an industry wide Webinar so that all producers have an opportunity to be updated and ask questions.

Recommendation 6. Industry organisations, or their representatives, should endeavour to take a more active role in communications with affected producers during EAD responses.

6.5 Promoting a ‘Shared Responsibility’ Culture

As described in section 4.1, industry has a number of key roles to play during an AI response, in partnership with government responders. ‘*Shared biosecurity culture*’ is the first priority area listed in the recently released national biosecurity strategy⁸. This tends to work reasonably well at the NMG and CCEAD levels, but there appears to be room for improvement at the jurisdictional level. To a large degree it is my observation that this can be quite variable, influenced by factors such as the experience of some individuals, but also the culture of the (government) organisation. There has also been a trend for government agencies to become increasingly risk averse and to cite issues such as privacy laws as reasons to not fully engage industry. Further, during the 2020 response, the virtual nature of the response structures tended to work against fully engaging industry (particularly LLIs). In a traditional response, industry representatives, such as LLIs would be physically located within a control centre, making engagement much more natural.

The end result of this issue is sub-optimal response strategy or operations. For example, in 2020 there were problems with destruction and disposal that could have been avoided with earlier industry input. The surveillance strategy also could have benefited from earlier input, but when asked why this did not occur, privacy issues were given as the reason. I do not consider that this was valid, as the relevant LLI had signed a confidentiality agreement.

Irrespective of the reasons, industry through its own actions can promote and encourage the desired culture within government. This can occur on multiple fronts, for example:

- Regular engagement of each industry organisation level with government. Probably the most important of these is the state organisation forming a good working relationship and discussing the desired approach with the CVO and their key staff.
- Ensuring that government staff fully understand the role of the LLI, including the assistance they can provide to government.
- In my Efficiency Advocate report from the 2020 response, I recommended that the 2013 national workshop on the role of industry in EAD responses should be repeated. The egg industry should actively advocate for this and/or participate.
- Another recommendation from that report was that *Agriculture Victoria and industry should jointly develop an industry engagement plan for future responses*. This should be implemented in each jurisdiction and could be led by industry if government does not take the initiative.
- Jointly run exercises tend to encourage the desired culture. For example, experience with Exercise Razorback which focused on preparedness for African swine fever, reportedly had a positive impact on these relationships, which was evident during the 2022 Japanese encephalitis virus (JeV) response.

6.6 The Role of Industry in Operations

Flowing on from the above discussion is consideration of what active, operational roles or functions can be performed by industry. Increasingly, government does not possess the required expertise to manage and perform some functions (yet they continue to try and often ‘reinvent the wheel’). There was a strong view that industry needs to be firmer in providing advice to government. Government people often do not realise what industry can do from a logistical perspective.

Perhaps the best example of this is destruction, disposal and disinfection (DDD). In each of the recent responses, local industry people have been critical of the way DDD has been managed,

⁸ <https://www.biosecurity.gov.au/about/national-biosecurity-committee/nbs>

pointing out many practical improvements that could be made, both in terms of effectiveness and timing. There was common agreement amongst stakeholders that, as much as is possible, DDD should be undertaken by industry people under a contract arrangement, with joint planning and government oversight. Government officials need to understand that industry has the practical, day to day experience required, particularly in relation to rapid destruction / depopulation. "Government needs to help us and get out of the way. We do destruction every day." Overall, better utilisation of industry expertise should improve the speed of the response, which minimises the consequential losses experienced by the egg farmer. However, it should be noted that new methods may still need to be developed where very large volumes are involved.

Disposal of large volumes of dead poultry is more difficult than their destruction, but should at least be planned by government and industry jointly. Planning these types of operations together should avoid the almost inevitable criticisms associated with EAD responses. To progress and resolve this issue it should be included in the discussions suggested under the previous item.

Part of this issue is prior consideration of how contractors may be best used and communicating this with them. Otherwise, the situation will occur where contractors don't want to be involved in operations on infected premises, as this affects their ability to operate on other premises. Further, as recommended in my 2020 efficiency audit report, *The poultry industry should consider requiring all contractors to have up-to-date safety procedures, chemical approvals and staff with influenza and Q fever vaccinations, as normal practice*. Unless these are in place, they may not be able to enter into contracts with government. How to achieve this requires further consideration, given that there is very limited capacity for the industry organisations to communicate directly with contractors across the industry. Perhaps it should occur as part of DDD planning on an enterprise-by-enterprise basis, as suggested in the following section. It should also be noted that these requirements, as well as biosecurity procedures, may also apply to contractors not directly involved with the poultry but who come onto the site, such as gas suppliers and electricians.

From a government perspective, the point was also made that it would be advantageous for industry to have a readily accessible list of service providers / contractors / consultants for some tasks, as well as indicative prices for services. For example:

- Independent valuers.
- Depopulation, including CO₂ gassing in containers and sheds.
- Decontamination of sheds, egg grading equipment, etc.

Ultimately, it is up to government officials to accept any assistance that is offered and industry has no real control over this, apart from doing its best to ensure a good working and trusted relationship. The reality is that each jurisdiction has a different culture in this regard, with some more receptive than others.

Recommendation 7. The egg industry organisations should endeavour to actively work with governments to build a partnership approach to response management, including the use of industry expertise in operations.

6.7 Destruction, Disposal and Disinfection Planning

Part of the issue with DDD is lack of planning prior to an event. This needs to occur on a premises-by-premises basis and, from a practical perspective, can really only be done by industry or individual operators. Lack of DDD planning was a common theme with stakeholders interviewed and the producers interviewed admitted that they did not have DDD plans established for their farms. Smaller producers are probably not a significant problem, but with the advent of some very large

operations, prior planning is really required.

Agrifutures Australia and Australian Eggs in 2020 sponsored a report by Rod Jenner and others on *Mass Disposal Preparedness* (Project Number PRJ-011301). This is an excellent report and needs to be implemented. From the report:

"...It will also provide tools for processors and farmers to prepare for an EAD event and also fulfil their biosecurity and environmental obligations under various state biosecurity and environmental legislature. There was widespread support from key government stakeholders for the industry to undertake this project, as it is now recognised that industry can provide significantly more input into management of EADs than has previously been requested by government."

I have spoken to Rod Jenner and he advised that an on-line tool will soon be deployed that will allow producers to develop destruction and disposal plans for their operations. This should be strongly encouraged, particularly for the larger operators. Further, some discussion should occur with the jurisdictions with a view to having these plans recognised in advance of an outbreak. Currently there is a lack of confidence that government will approve or follow such a plan. This needs to change. The appropriate mechanism to progress this matter may be to present it as a proposal to Animal Health Committee.

I also note that the industry in Queensland is currently planning a desk top exercise to be held later this year, which will include consideration of DDD issues and associated logistical and industry staffing considerations. This pro-active approach from industry is strongly supported.

One specific issue raised during consultation, that although not critical, should be resolved. During one of the previous outbreaks, the chickens destroyed were disposed of by rendering, which is an acceptable method. However, subsequently the rendered product was not used (buried) as it was considered a disease risk. Given that the AI virus is killed relatively easily⁹, this should be very low risk product unless cross contamination has occurred. A risk assessment would appear to be indicated to clarify whether it can be used in future outbreaks.

Recommendation 8. The egg industry should advocate for destruction, disposal and disinfection planning within the industry on an enterprise-by enterprise basis, particularly for larger producers, and for these plans to be recognised by government.

⁹ Inactivation requires the product must be heated to a minimum core temperature of 70 °C for at least 1 minute or equivalent time/temperature.

6.8 After Action Reviews

Stakeholders noted that there had been no after action review / debrief following the 2020 response and that in NSW, the DPI had conducted a review but not invited industry to attend. My suggestion is that, rather than wait for government, industry should take the lead and initiate a review. This was done by Australian Pork Limited following the recent JeV response, with government being invited to attend. There was good representation from all sectors and the workshop was a success. As well as achieving the desired result, I'm sure that taking the initiative also improved the standing of industry with government. This suggestion complements recommendation 7.

6.9 Privacy and Confidentiality

A number of stakeholders expressed frustration with the way that privacy laws and conventions are being interpreted currently by government. I have also observed this issue increasingly in a number of unrelated areas and it is getting in the way of appropriate response management, particularly the proper involvement of industry. The issue mentioned earlier of LLIs not having access to the required information should not arise, given the confidentiality agreements maintained by AHA. The problem seems to be the application of these arrangements. However, this perceived 'over-interpretation' of privacy arrangements is overflowing into other areas, for example essential data sharing between response agencies and appropriate advice to farmers regarding where the disease is occurring.

This issue is more complex than described briefly here, for example, some farmers will be very keen that their details remain private. However, while it may not be an issue for industry to address directly, it is in the industry's interests to advocate for more sensible arrangements. My 2020 efficiency advocate report contained a recommendation, '*Animal Health Australia (perhaps in partnership with Plant Health Australia) should initiate a process to develop clearer and more workable arrangements around handling of confidential information during pest and disease responses*'. I'm not aware that this recommendation has been addressed, hence I suggest that the industry could apply some pressure to ensure that it is.

6.10 Free Range Standards

A few issues were raised in relation to the standards applicable to free range production that may need to be addressed by industry:

- There appears to be a lack of understanding amongst various authorities regarding the need to minimise water bodies around free range chicken farms. These include local authority planning departments and water authorities. A number of examples were provided of water bodies being established near farms and chicken farms being established near existing water bodies.
- During the 2020 response, dispensation was provided to allow free range farms in the Restricted Area to lock their birds up to reduce the AI risk. However, farms in other areas of Victoria were not given the same dispensation, despite some evidence that the risk was more widespread.
- RSPCA accreditation requires irrigation of free range paddocks. This creates green and/or wet areas that attract wild birds.

This is a potential policy and advocacy role for AE, EFA and the State bodies, provided there is available capacity within other organisational priorities.

7 Final Word

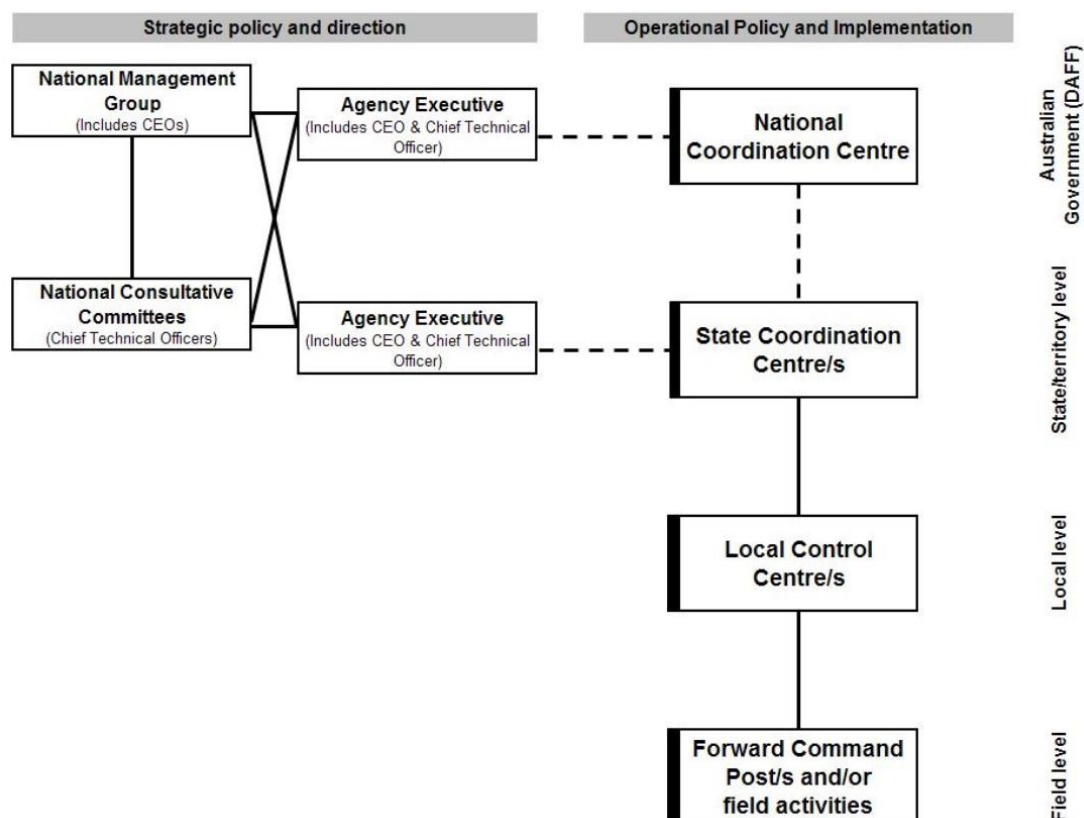
Overall, the egg industry has done a good job in preventing and preparing for future AI outbreaks, but more can be done. The most important issues identified by this review include:

- The ongoing risk of AI outbreaks, but also the potential for the risk profile and epidemiology of AI in Australia to change dramatically at any time in the future.
- The demographics of the industry creating increased risks of outbreaks occurring and the need to continually find ways to reduce this risk.
- The need to improve the relationships with government response agencies and for the industry to play a stronger role in response management, including operations.
- Limited expert capability and capacity within the industry to enable the industry to play its part.
- The need for planning at the enterprise level for key response operations, particularly destruction and disposal.

Given that all of the suggestions contained within this report constitute a significant body of work, it should be recognised that the industry organisations will need to prioritise them according to available resources.

Attachment 1- Australia's EAD Response Arrangements

Biosecurity emergencies in Australia are managed according to the national Biosecurity Incident Management System (BIMS)¹⁰, which is a biosecurity-specific implementation of AIIMS¹¹ principles. It is designed to complement state and national legislative obligations and whole of government emergency management arrangements, as well as sector-specific arrangements. For all biosecurity emergencies, governance follows similar arrangements as follows:



Emergency animal disease (EAD) responses are guided by the Emergency Animal Disease Response Agreement (EADRA)¹², which was developed and agreed under the stewardship of Animal Health Australia. Similar agreements are in place for plant and environmental biosecurity. The primary function of these agreements is to lay out the arrangements for cost sharing of responses to nationally significant emergency pest and disease events and management / decision making responsibilities.

Under Australia's constitution, states / territories are responsible for managing responses within their jurisdictions. However, other stakeholders, such as affected industries also have responsibilities under the generally agreed principle of "shared responsibility". For large responses the jurisdictional response agencies also have the ability to seek support from the broader, whole of government emergency response system.

¹⁰ <http://www.agriculture.gov.au/biosecurity/partnerships/nbc/nbepeg/bims>

¹¹ *Australasian Inter-Service Incident Management System. A Management System for any Emergency Third Edition (2004). Australasian Fire Authority Council*

¹² <https://animalhealthaustralia.com.au/eadra/>

Agencies and industries have an obligation to maintain the capability and capacity to detect and respond to suspected or confirmed emergency pests and diseases promptly and appropriately. This is referred to as their “normal commitment” or “baseline capacity”.

The key decision-making body with respect to national cost sharing of responses is the National Management Group (NMG), generally made up of the CEO’s of the agricultural agencies plus affected industries. NMG is supported by a consultative committee made up of the senior technical officers relating to the invasive species of concern, for example the Consultative Committee on Emergency Animal Diseases (CCEAD) is comprised of the Chief Veterinary Officers (CVOs) from the commonwealth and each state, plus affected industries’ representatives.

The primary document for NMG decision making is the emergency animal disease response plan (EADRP) developed by the responding jurisdiction(s) in consultation with the consultative committee. This plan should largely follow the disease specific and operational procedures outlined within AUSVETPLAN¹³, unless agreed otherwise by CCEAD. Decision making is by consensus. This means “the making of decisions by general agreement (which may involve a measure of compromise necessary to ensure a workable outcome), and that none of the Parties actively participating in the decision-making process opposes the decision”.

Diseases are categorised for cost sharing to determine the proportion of industry versus government costs. This is primarily based on the degree of private vs public good associated with eradication. For avian influenza there are two categories. HPAI caused by virus subtypes H5 or H7 is included as a Category 2 disease (80 percent government funding, 20 percent industry). HPAI caused by a virus of subtype not H5 or H7 and LPAI caused by a virus of subtype H5 or H7 are included in the EADRA as Category 3 (50 percent government, 50 percent industry). The categories were originally determined according to the following criteria:

Category 2

These are EADs that have the potential to cause major national socio-economic consequences through very serious international trade losses, national market disruptions and very severe production losses in the livestock industries that are involved. This category includes diseases that may have a slightly lower national socio-economic consequences, but also have significant public health and/or environmental consequences.

Category 3

These are EADs that have the potential to cause significant (but generally moderate) national socio-economic consequences through international trade losses, market disruptions involving two or more states and severe production losses to affected industries, but have minimal or no effect on human health or the environment.

It is assumed that HPAI caused by virus of subtypes H5 or H7 was determined to be category 2, justifying the higher government contribution, primarily because of potential public health consequences. There was major concern at the time that a H5N1 variant that had caused serious illness in people could become the next human pandemic.

Regarding the actual costs to be shared, these do not represent the total cost of the response. In essence, “eligible costs” are the marginal costs of conducting a response. In other words, only those additional costs directly attributable to a response will be covered. For example, overtime costs for existing staff and the cost of employing additional staff are eligible for cost sharing, but the salaries of public servants already employed are not eligible (irrespective of which agency employs them).

¹³ <https://animalhealthaustralia.com.au/ausvetplan/>

Attachment 2- Executive Summary- 2018

Biosecurity Gap Analysis for the Australian Egg Industry

In the past, the poultry industries in Australia have been significantly affected by disease events, particularly Avian Influenza and Newcastle Disease. Biosecurity¹⁴ risks globally and within Australia are generally considered to be increasing. Hence, the Egg industry has been making a conscious effort in recent years to improve biosecurity practices within the industry. This report presents a biosecurity gap analysis for the Australian egg industry that identifies the areas of greatest risk that warrant further risk mitigation strategies or actions.

The list of initiatives being implemented currently by the Egg industry to improve biosecurity is impressive. There is a particular focus on improving on-farm biosecurity practices and addressing a number of serious endemic diseases that have become more prevalent with the move towards production systems such as free-range farms. However, there remain some areas where further work will be required, or at least existing activity may need to continue for some time.

Probably the most important area is the need to ensure a lasting culture change within the egg industry. Currently, knowledge and attitudes are variable, hence the aim should be for biosecurity to be “front of mind” for all egg producers and for them to also have the knowledge to implement effective on-farm biosecurity systems. Current approaches, including provision of extension materials, workshops and R&D into farmer attitudes and drivers for change are strongly supported. However, a sustained and multifaceted approach is likely to be required for a number of years.

Other livestock industries are facing similar challenges regarding facilitating change within their industry and at least one is developing its own biosecurity strategy. This approach may be a worthwhile initiative for the Egg industry so that the vision for the future is clear to all and there is an agreed approach.

A very significant structural change within the industry has been the development and adoption of production systems that are alternatives to traditional layer cages. This trend is expected to continue and there is significant ongoing research and development aimed at addressing the re-emergence of endemic disease problems associated with these systems. However, there is a real need to develop ways of reducing the risk of emergency animal disease outbreaks, particularly avian influenza. Currently, there is a general view that further avian influenza outbreaks are inevitable.

There is also an apparent rise in the number of small, commercial producers using unconventional production systems such as “caravan” type free range operations. These also represent a significant disease risk, but many are also disconnected from the main stream egg industry and have poor knowledge of biosecurity. Work to connect with this sector of the industry is considered to be prudent risk management.

Compliance with and monitoring of mandatory Newcastle disease vaccination requirements in Australia is currently variable. It would be prudent for the industry to engage with government with a view to addressing this situation, as well as to ensure that members have a good understanding of the program’s requirements.

Regarding on-farm biosecurity programs, the standard of implementation across the industry is

¹⁴ For this report, biosecurity is defined as “the management of risks to the economy, the environment, and the broader community, of pests and diseases entering, emerging, establishing or spreading”.

variable. There are also a range of issues documented in this report that require better attention within farm biosecurity plans. Three particular issues require further work more generally.

- Lack of expertise in conducting risk assessments.
- People working on egg farms who represent an unquantified, but real risk of introducing pathogens onto farms.
- The biosecurity risk to farms presented by introduced feedstuffs.

Early reporting of disease events is a critical element of our biosecurity system and the degree of veterinary support is significantly lower in the egg industry than the chicken meat industry. The national significant disease investigation program should be more widely promoted within the industry to help address this issue.

Regarding preparedness for an emergency animal disease response, the egg industry has been active in this area recently, but further development of systems and processes will be required over time. In particular, more people should be trained in EAD systems, crisis communication processes should be enhanced, and better planning needs to occur at enterprise level, with government and for recovery.

Eight specific recommendations are made to address the issues identified.

List of Recommendations

Recommendation 1. The egg industry should take a long-term approach to improving attitudes and knowledge around biosecurity within the industry, including monitoring biosecurity attitudes and standards in a regular basis.

Recommendation 2. The Egg industry should consider developing its own biosecurity strategy which lays out a clear future path for enhancing biosecurity standards within the industry.

Recommendation 3. The egg industry should invest in development of systems and methods to reduce the risk of emergency animal disease outbreaks in free-range egg production systems.

Recommendation 4. The egg industry should investigate ways to better connect with “fringe” commercial egg producers in order to improve their level of understanding of biosecurity systems.

Recommendation 5. Eggs Australia should engage with state biosecurity agencies (possibly through Animal Health Australia or Animal Health Committee) to review the current state of the mandatory Newcastle disease vaccination program and push for enhanced compliance monitoring if necessary.

Recommendation 6. The egg industry should continue to work on improving guidelines for designing on-farm biosecurity plans, as well as systems to support farmers to develop these plans.

Recommendation 7. Australian Eggs should promote uptake within the industry of the national significant disease investigation program.

Recommendation 8. The egg industry should develop an Emergency Animal Disease Response Plan for the industry to guide future response planning activities.

