Wildlife Health AUSTRALIA

Photo: © Eric J Woehler

High Pathogenicity Avian Influenza (HPAI) and Wildlife in Australia

A RISK MITIGTATION TOOLBOX FOR WIDLIFE CARE PROVIDERS WITH A FOCUS ON HPAI H5 2.3.4.4b

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Table of Contents

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A risk mitigation toolbox for wildlife care providers with a focus on HPAI H5 2.3.4.4b

Avian influenza is a nationally notifiable disease.

Anyone who suspects an animal might be infected with avian influenza has a legal responsibility to report it to their jurisdiction's biosecurity agency by phoning the Emergency Animal Disease Hotline on 1800 675 888.

See: https://www.outbreak.gov.au/report-outbreak

Unusual signs of disease or deaths in wildlife can also be reported to the

State or Territory WHA Coordinator.

The advice in this document is focussed on the increased risk to Australia from HPAI H5 2.3.4.4b. Other strains of HPAI have not caused such widespread disease in wild birds and mammals, but the general principles within these documents can be applied to other HPAI strains, while also considering and adjusting for any known differences in epidemiology.

PART A INTRODUCTION AND BACKGROUND

1 Introduction to the toolbox

1.1 Aim and purpose of this toolbox

Wildlife care provider (hereafter WCP) refers to a facility or individual that undertakes care activities for wildlife that are sick, injured, orphaned or otherwise require human intervention. WCPs may include wildlife hospitals and rehabilitation centres, individuals (who may be part of a larger rehabilitator group or network) and veterinary clinics. These WCPs should be appropriately licenced as per the requirements in their jurisdiction.

This toolbox is intended as a guidance document to assist WCP in Australia in developing plans to mitigate the risk of high pathogenicity avian influenza (HPAI) to their operations. It aims to:

- enhance early detection of HPAI in wildlife
- enhance biosecurity measures for WCP's to reduce the risk of introduction, establishment and spread of HPAI
- reduce the risk to human, animal and environmental health posed by HPAI in wildlife
- prepare WCP's for the response to and recovery from an outbreak of HPAI in wildlife.

This toolbox provides guidance in line with Australia's existing emergency management arrangements and other guidance material (as described in Section 2.5). It is not intended to provide definitive advice or to replace individual site assessments and veterinary advice. Every WCP works within different circumstances and this document cannot predict all eventualities for all situations.

It is important to note that any decisions before or during an emergency response need to be made in line with current legislation and government legal orders or advice. It is up to individual WCPs to ensure they are following the most up-to-date jurisdictional legislation, legal orders and guidance relating to biosecurity, wildlife protection and conservation, animal welfare, emergency management and workplace health and safety. WCP's should contact the government authorities in their jurisdiction to clarify legal responsibilities or refer to the AUSVETPLAN documents and the Emergency Wildlife Disease Response Guidelines for relevant legislation.

The advice in this document is focussed on the increased risk to Australia from HPAI H5 2.3.4.4b. Other strains of HPAI have not caused such widespread disease in wild birds and mammals, but the general principles within these documents can be applied to other HPAI strains, while also considering and adjusting for any known differences in epidemiology.

1.2 Why should this toolbox be used?

High pathogenicity avian influenza presents risks to animal, human and environmental health, and these can be reduced by risk mitigation plans. Since 2021, a new strain of HPAI caused by the H5N1 2.3.4.4b strain has caused significant illness and deaths in wild birds, mammals (wild and domestic) and poultry in all geographical regions except Oceania (which includes Australia and New Zealand) (see Section 2.2 and 2.4). The current global situation means an increased level of risk to Australia via migratory birds from the northern hemisphere and local non-migratory movements of infected wildlife including from south-east Asia and the Antarctic / subantarctic regions. **Given the increased risk to Australia, there is a need for enhanced awareness and risk mitigation plans across various stakeholder groups, including WCPs.**

The urgent need for risk mitigation plans is also reflected in a statement by the joint Convention on the Conservation of Migratory Species of Wild Animals (CMS) and the Food and Agriculture Organization of the United Nations (FAO)'s Scientific Task Force on Avian Influenza and Wild Birds, which highlights the need for cross-sectoral multi-stakeholder contingency planning for HPAI outbreaks in wild birds.

1.3 Who should use this toolbox?

This document is designed for use by all **facilities and individuals that undertake wildlife care activities in Australia**, including wildlife hospitals and rehabilitation centres, individuals (who may be part of a larger rehabilitator group or network) and veterinary clinics. These facilities or individuals must be appropriately licenced as per the requirements in their jurisdiction.

The toolbox provides strategies for **HPAI risk mitigation in wild birds as well as wild mammals**.

Only **wildlife that present to a WCP** will be specifically considered by these guidelines, where a wild animal is as defined in the Australian Veterinary Emergency Plan (AUSVETPLAN) Wild Animal Response Strategy: *an animal that is found in the natural environment and does not live under human supervision and control. The species may be native to Australia or an introduced species. An introduced species may be a feral or invasive species*. A risk mitigation toolbox targeted to managers of free-ranging wildlife populations is also available on the Wildlife Health Australia (WHA) website, and shares common information with these guidelines.

The management of HPAI risk for wildlife held in captivity permanently (e.g. in zoos, fauna parks, wildlife parks), semi-permanently (e.g. captive breeding programs) or for domestic animals will not be considered specifically, although the principles and processes may be of some relevance to these situations. See Appendix 5 for biosecurity resources relevant to domestic animals and wildlife held in captivity.

1.4 How should this document be used?

This document contains three parts (Figure 1):

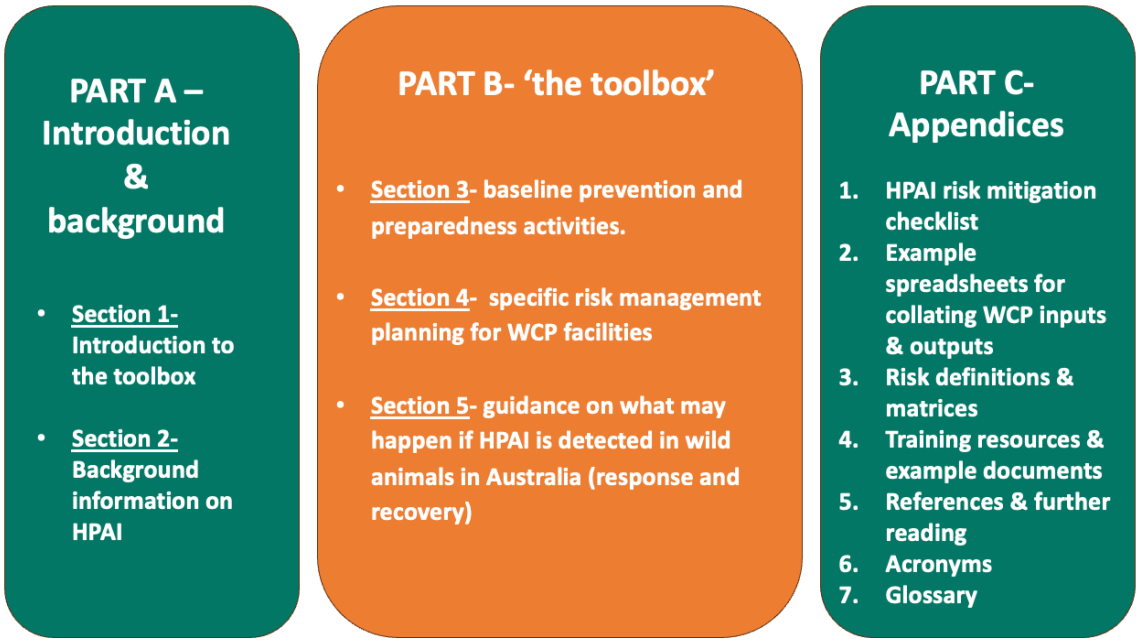

Figure 1: Structure of this document

WCPs should work through Part B, 'the toolbox' in a stepwise fashion (as shown in Figure 7) and use the resulting information to develop a HPAI risk mitigation plan tailored to their wildlife care activities or facility.

Text within grey boxes (example below) indicates actionable items that should be considered for inclusion within these plans, which are consolidated as an overall checklist in Appendix 1. Ideally, these plans should be implemented alongside (and where appropriate, integrated into) any other existing management plans or procedures for the WCP.

Text within these boxes indicates items that WCPs should consider in their HPAI risk mitigation planning.

2 Background information on HPAI

2.1 What is HPAI?

Avian influenza (AI), also known as bird flu, is a viral disease caused by influenza A virus. Strains of AI are categorised as either low pathogenicity (LPAI) or high pathogenicity (HPAI) depending on the potential severity of disease caused in poultry. Influenza A viruses are also categorised according to the serological subtypes of their surface glycoproteins, haemagglutinin (HA) and neuraminidase (NA). To date, 16 HA (H1–16) and 9 NA (N1–9) subtypes are recognised in birds and are found in different combinations (Figure 2).

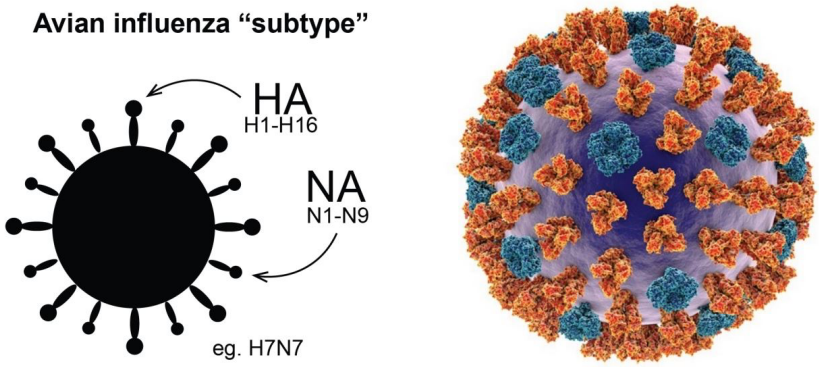

Figure 2: AI viruses are classified according to the serological subtypes of their surface glycoproteins (courtesy of Michelle Wille)

Avian influenza viruses constantly evolve resulting in ongoing emergence of new strains. Multiple strains of AI viruses have been classified based on sequence analysis and distributions of the viruses in hosts, geographic locations and time. Naming conventions for avian influenza viruses are complex, and this document will use the generic term 'strain' to distinguish the distinct avian influenza virus currently causing outbreaks of disease in animals overseas.

Around the world, including in Australia, LPAI viruses occur naturally in wild birds, notably waterfowl (ducks, geese and swans) and shorebirds. LPAI viruses typically do not cause severe disease. Some specific LPAI subtypes (subtypes H5 and H7) can evolve to HPAI following spillover and circulation in poultry. HPAI infections typically causes severe disease in poultry and may also impact other species including wild birds, humans and other mammals (Figure 3). The spillback of HPAI from poultry into wild birds contributes to the geographic spread of HPAI. (NOTE: The epidemiology of currently circulating strains of HPAI does not fit this typical pattern. See Section 2.2).

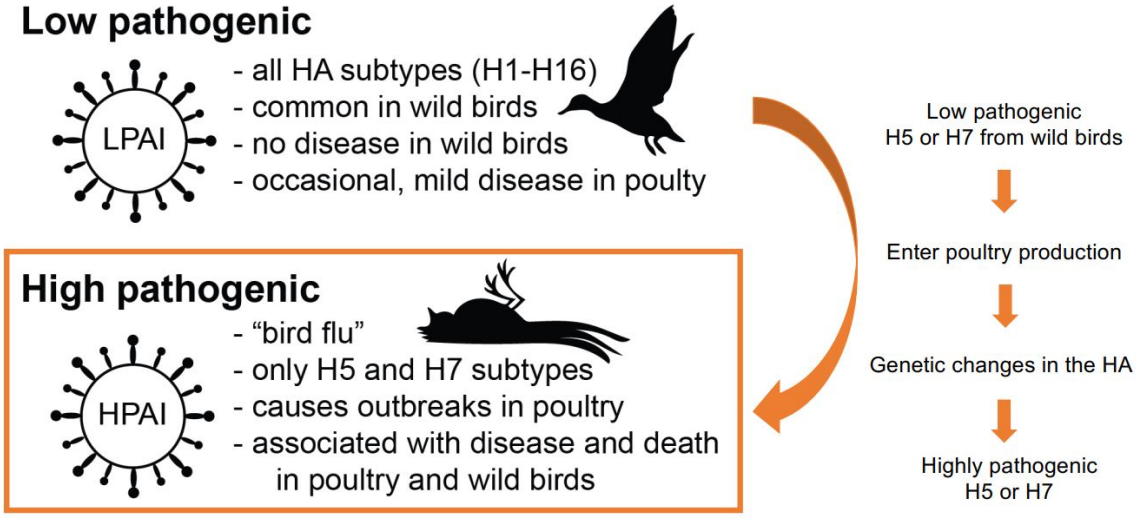

Figure 3: Low pathogenicity AI vs high pathogenicity AI (courtesy of Michelle Wille)

Although AI viruses do not normally infect humans, some subtypes (including strains currently circulating globally) have been associated with disease in humans ranging from mild illness to severe disease and death (see Australian Department of Health and Aged Care).

AI viruses are most commonly transmitted between birds or to other animals via direct contact with respiratory aerosols / secretions and faecal material, as well as indirect exposure to contaminated environments, water or objects (e.g. clothing, boots, equipment, etc.). In the case of mammals (both terrestrial and marine), infection is also thought to occur via ingestion of infected birds through predation or scavenging behaviours.

AI is a nationally notifiable disease, meaning that it must be reported to biosecurity authorities (see Section 3.2). For more information on AI in wild birds, see the Wildlife Health Australia (WHA) Fact Sheet.

2.2 Current global status - the emergence of strain 2.3.4.4b

Currently, the AI viruses of most concern worldwide belong to the H5 subtypes of the "A/goose/Guangdong/1/96" lineage. This lineage has been present in various parts of Asia for the past two decades, evolving constantly and causing HPAI outbreaks in both wild birds and poultry overseas, mostly in Asia and Europe. **In 2021, a new strain from this lineage emerged, strain 2.3.4.4b. The emergence of strain 2.3.4.4b has been a 'game changer', causing a significant increase in the frequency and geographic range of HPAI outbreaks in both wild birds and poultry overseas. Strain 2.3.4.4b has now caused unprecedented outbreaks of HPAI in wild birds, mammals (both wild and domestic) and poultry in all geographical regions except Oceania (which includes Australia and New Zealand).**

At least 500 species from more than half of all bird orders have been affected by HPAI worldwide, with over half being newly reported species since 2021 when 2.3.4.4b emerged. More than 60 mammalian species have also been affected by HPAI, with over half being newly reported species since 2021. See the WHA Technical Issues Update for more information and the FAO's list of species in which HPAI has been detected. Figures 4-6 illustrate the significant increase in frequency, geographic range and range of bird species and mammals impacted by HPAI in recent years.

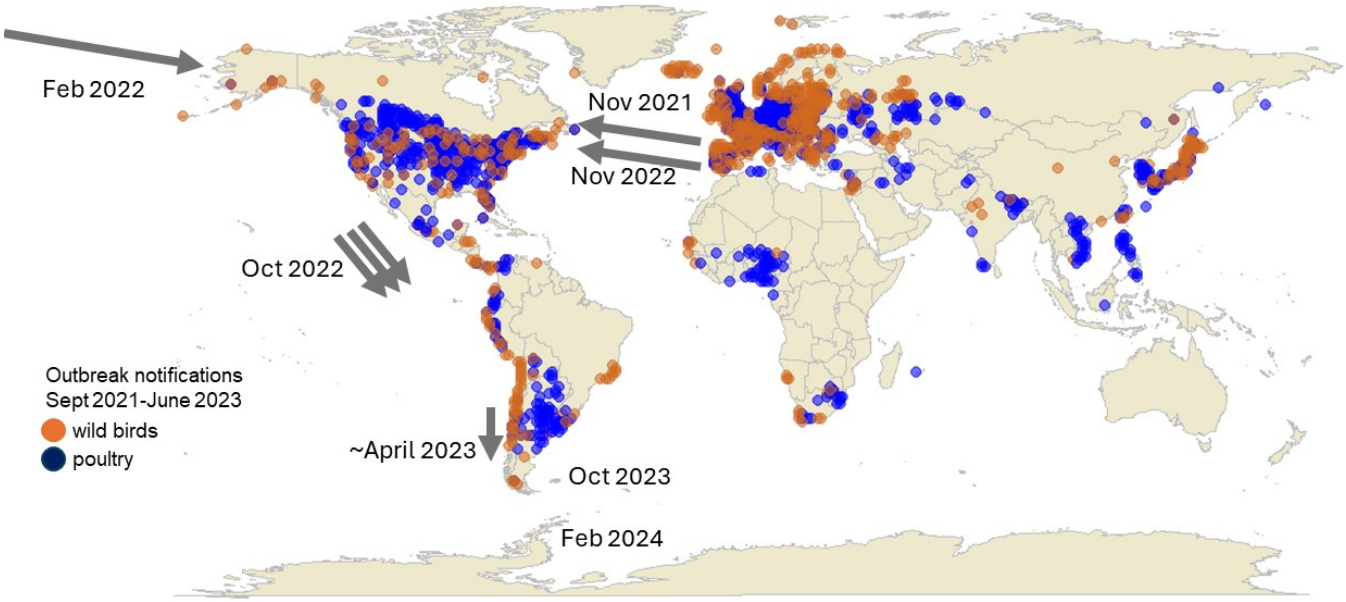

Figure 4: H5 HPAI outbreaks October 2021 to March 2023 in poultry and wild birds. Grey arrows and dates indicate the approximate timeline of geographic spread. Adapted from Klaassen and Wille (2023).

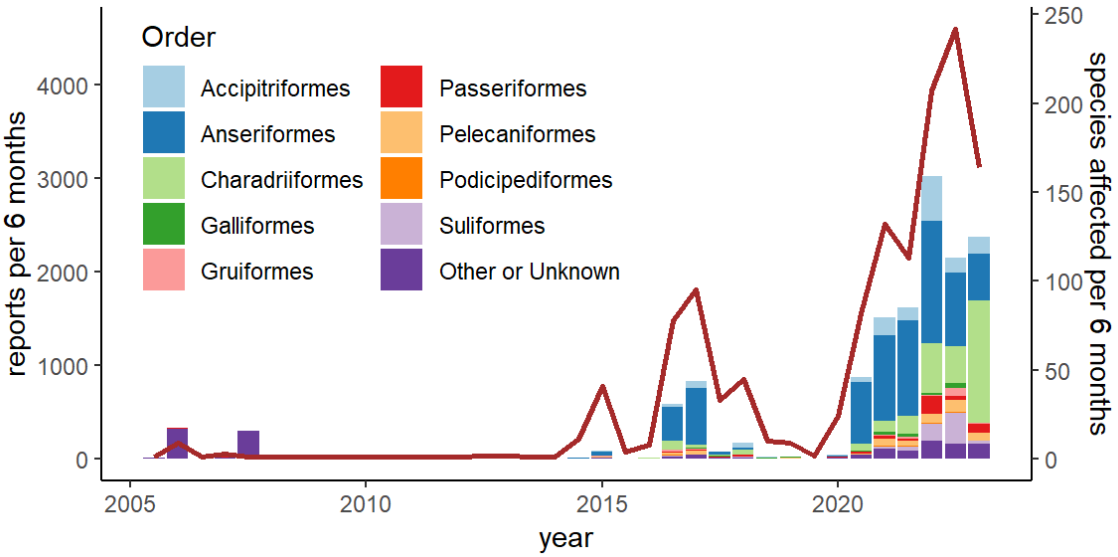

Figure 5: Total number of wild bird cases reported (stacked bars) and number of species involved (brown line) as a function of time (half yearly periods). The different colours denote the order to which the various species of birds belong. Data from World Animal Health Information System. From Klaassen and Wille (2023).

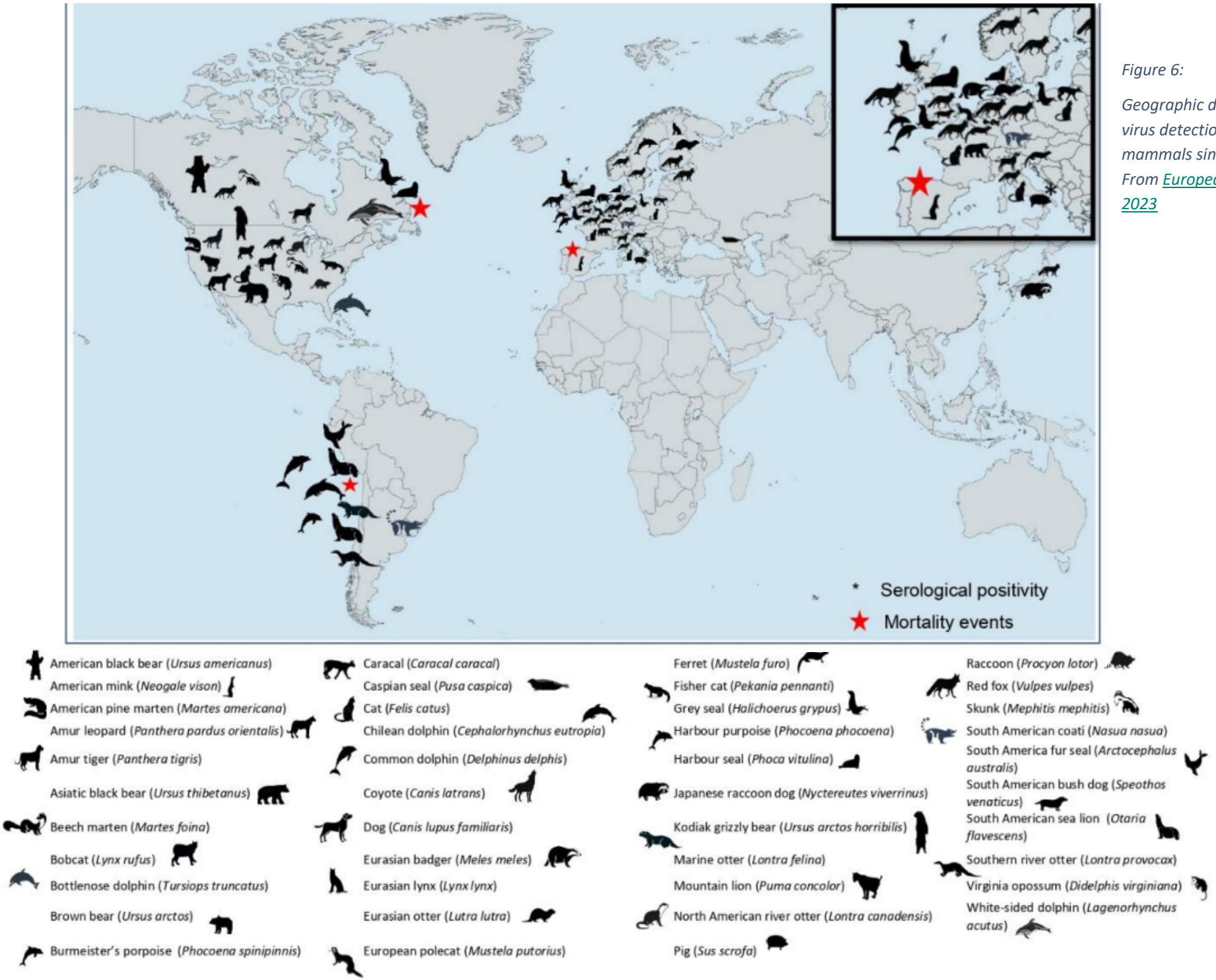

Figure 6:

Geographic distribution of HPAI virus detections in non-human mammals since 2016 to June 2023. From [European Food Safety et al 2023]

2.3 Occurrence of HPAI in Australia

HPAI strain 2.3.4.4b has not been detected in Australia.

The National Avian Influenza Wild Bird Surveillance (NAIWB) program collects and screens samples from Australian wild birds for AI viruses and the data generated are used to monitor and understand AI in wild birds in Australia. Sequence analysis of AI viruses detected in wild birds through the NAIWB program contributes to tracking Australian virus evolution and dynamics, maintaining currency of diagnostic tests, and maintaining a virus sequence library allowing comparison of Australian and overseas strains.

LPAI viruses are occasionally detected in wild birds in Australia and are part of the natural virus community of Australian wild birds. HPAI viruses have not been detected in free-ranging Australian wild birds.

There have been 11 outbreaks due to HPAI H7 viruses in Australian poultry since 1976, with the most recent outbreaks in 2024 in Victoria, NSW and ACT. All previous outbreaks were successfully eradicated and response to the three 2024 outbreaks is ongoing at time of publication. These outbreaks were most likely caused by introduction of local wild bird LPAI viruses and subsequent mutation from LPAI to HPAI after circulation in poultry: a well-documented occurrence.

2.4 Risk of HPAI to Australia

The risk of HPAI to Australia is dependent on the likelihood of entry, establishment and spread of the virus, as well as the potential consequences of this to Australia, including impacts on animal, human and environmental health.

HPAI could occur in Australia by the following means:

- transfer of local LPAI viruses from asymptomatic waterfowl to susceptible poultry flocks via close contact, including direct contact or contamination of poultry feed and water by wild bird droppings or secretions, followed by mutation to HPAI in poultry
- migration of HPAI infected wild birds via established flyways
- non-migratory movements of HPAI infected wildlife
- the importation of HPAI virus-contaminated poultry products, equipment or other materials.

A formal HPAI incursion risk assessment for the risk (likelihood and consequence) of HPAI H5N1 clade 2.3.4.4b incursions into Australia via wild birds was undertaken in 2023. This risk assessment found that the risk of HPAI virus incursions into Australia via wild birds has increased due to changes in the epidemiology and ecology of viruses within the current HPAI H5N1 clade 2.3.4.4b. Poultry industries, wild bird and mammal populations, and

potentially humans, will be impacted should disease enter and become established within Australia.

A report from the Joint WOAH-FAO Scientific Network on Animal Influenza on the continued expansion of HPAI has indicated that incursion into Australia from the Antarctic regions via infected birds is plausible, although given the current unprecedented HPAI situation and limited movement data for birds in this region there is uncertainty surrounding this potential route of introduction.

The emergence of the 2.3.4.4b strain overseas means an increased risk to Australia, due to the increase in the likelihood of entry into Australia via wild bird movements, and anticipated increased consequences if it were to enter.

2.5 HPAI response arrangements in Australia

The Australian approach to managing emergencies recognises four phases of emergency management: **prevention, preparedness, response and recovery**. Although HPAI has not been detected in wild birds in Australia, **prevention and preparedness** activities should be implemented. If HPAI were to be detected in wild birds in Australia, **response and recovery** activities may occur. The Australian Veterinary Emergency Plan (AUSVETPLAN) is a series of technical response plans that describe the current proposed Australian approach to an emergency animal disease (EAD) incident, such as a detection of HPAI. There are many AUSVETPLAN manuals covering different elements of an EAD response, however of key relevance to HPAI in wildlife for WCPs are:

- AUSVETPLAN Response Strategy: Avian Influenza describes the nationally agreed response to an incident – or suspected incident – of AI in poultry, cage (aviary) or zoo birds in Australia. This manual also contains information on the response to a detection of AI in wild birds.
- AUSVETPLAN Operational Manual: Wild Animal Response Strategy (WARS) describes the overall framework for the management strategies and control procedures for wildlife during an EAD incident in Australia.
- AUSVETPLAN Management Manual: Control Centres Part 1 and 2 describes how EAD incidents are managed across animal authorities at national, state and local levels, including how decisions are made, the roles and responsibilities of the groups involved, and coordination of the scientific, logistic, managerial and financial resources.

WCPs should be aware that broad decisions on response and recovery activities will be made at a national level by the **Consultative Committee on Emergency Animal Disease (CCEAD),** depending on the specifics of the outbreak. Implementation of these activities, including on-the-ground response activities, is the responsibility of the biosecurity agency in each jurisdiction.

The role of WCPs is to support these activities and provide information to decision-makers in government authorities as required through the established EAD response framework.

The EAD response arrangements and roles and responsibilities of various groups during a response to disease in wildlife are described in greater detail in Emergency Wildlife Disease Response Guidelines.

WCP engagement with the biosecurity agency in their jurisdiction **before** an HPAI outbreak is recommended. Sharing a completed risk management plan and other preparedness activities with jurisdictional authorities will help promote understanding and integration of WCP knowledge and expertise into overall incident management planning where appropriate.

☐ **Ensure that WCPs have a basic understanding of how emergency animal diseases such as HPAI are managed in Australia and the role they might play during an HPAI response. Consider:**

- ⇨ **training, such as the EAD foundation course (see Appendix 4)**
- ⇨ **engagement with the biosecurity agency in the relevant jurisdiction.**

2.6 Diagnostic testing for notifiable animal diseases in Australia

HPAI is a notifiable disease, therefore laboratory testing and diagnosis for HPAI is the responsibility of the biosecurity agency in each jurisdiction. While WCP activities are important for detecting and reporting signs of disease in wildlife (see Section 3.2), and undertaking sample collection if required, **diagnostic testing for HPAI must not be undertaken without the oversight and approval of the biosecurity agency in the relevant jurisdiction**.

Point of care diagnostic testing (or pen-side testing) refers to the use of test kits in the field (outside of authorised laboratories), to test animals for specific diseases. The use of point of care testing for animals is regulated by the animal biosecurity authority in each jurisdiction. There are no point of care diagnostic tests for HPAI currently approved for use in Australia. See the Department of Agriculture, Fisheries and Forestry for more information.

☐ **Ensure that WCPs are aware that they must not undertake diagnostic testing for HPAI without the oversight of the biosecurity agency in the relevant jurisdiction. Consider:**

- ⇨ **training**
- ⇨ **engagement with the relevant biosecurity agency.**

PART B HPAI RISK MITIGATION TOOLBOX

Figure 7 summarises the recommended stepwise approach to using the risk mitigation toolbox (RMT). At all points of development, ongoing communication with the relevant staff, agencies and other key stakeholders is an important component of effective risk management.

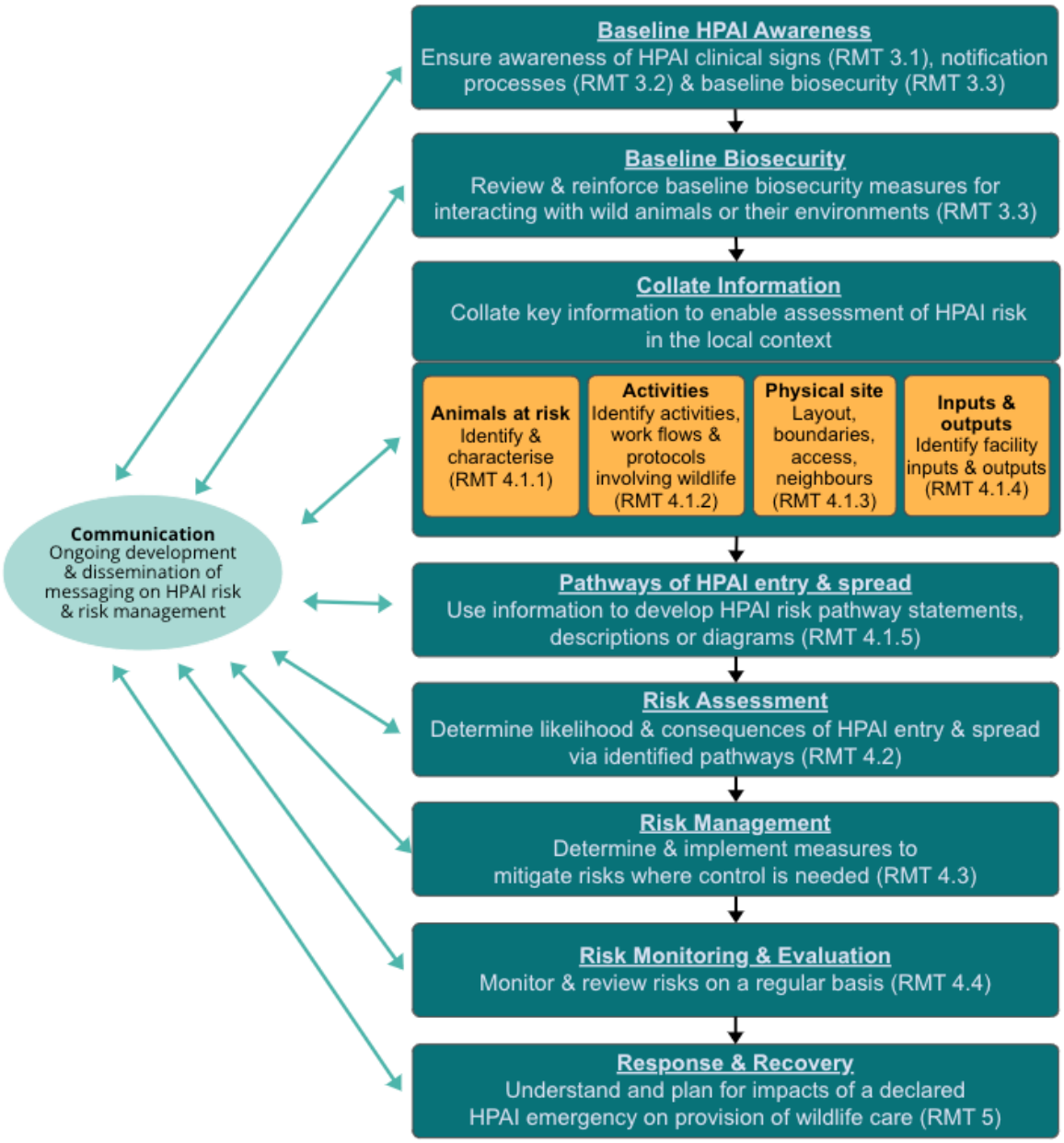

Figure 7: The recommended stepwise approach to using the toolbox.

3 Prevention and preparedness for HPAI: baseline strategies

The following information sets out baseline strategies that should be employed by all stakeholders that interact with wildlife to reduce the likelihood and consequence of HPAI entry and spread:

- Be aware of clinical signs of HPAI (Section 3.1).
- Report signs of HPAI (Section 3.2).
- Practice good baseline biosecurity (Section 3.3).

These strategies should be employed at all times, even when HPAI is not detected in Australia.

3.1 Be aware of clinical signs of HPAI

3.1.1 Wild birds

A wide range of wild bird species can be infected with HPAI. **It should be assumed that all bird species may be infected by HPAI virus.** See the FAO's list of species in which HPAI has been detected.

Clinical signs in wild birds are largely neurological, respiratory or gastrointestinal. These can include:

- incoordination, tremors, swimming in circles
- twisted necks or other abnormal posture
- inability to stand or fly
- diarrhoea
- difficulty breathing, coughing or sneezing
- swelling around the head, neck and eyes
- cloudiness or change in colour of the eyes
- sudden death.

Some species may not show any signs of disease or show only very mild signs.

In some cases, birds may die suddenly without displaying any clinical signs or be found dead.

See Appendix 4 for links to videos of wild birds affected by HPAI.

3.1.2 Mammals

A wide range of mammals can be infected with HPAI, particularly marine mammals and mammals that prey or scavenge on birds. See the FAO's list of species in which HPAI has been detected.

Infected mammals may show a wide range of clinical signs, including:

- incoordination and tremors
- seizures
- difficulty breathing
- nasal discharge
- drooling
- death, including the potential for mass mortality events.

☐ **Ensure WCPs are familiar with the clinical signs of HPAI. Consider:**
⇨ **training (see Appendix 4)**
⇨ **documenting clinical signs as part of HPAI risk mitigation plans.**

3.2 Report signs of HPAI

3.2.1 When should signs of HPAI be reported?

HPAI is a nationally notifiable animal disease, meaning that anyone who suspects an animal might be infected with HPAI has a legal responsibility to report it as soon as possible. As a guide, the following situations should be reported:

- small groups or clusters (5 or more) of sick or dead wild birds of any species
- individual or less than 5 sick or dead wild birds, if they are:
  - seabirds, waterbirds, shorebirds or birds of prey
  - any other bird species with signs of AI infection as outlined in Section 3.1
- sick or dead wild mammals with signs of AI infection as outlined in Section 3.1.

If the WCP suspects the animals may be infected with HPAI at any time, they must immediately follow the notification processes in Section 3.2.2 and 3.2.3, before proceeding with any, or further, intervention. **Do not handle or remove animals suspected to have HPAI unless instructed to do so by government authorities**.

3.2.2 What information should be reported?

Information that should be reported includes information about the affected animals, the facility or individuals that currently have possession of the animals, as well as information relating to the wildlife population or location from which they were or are to be rescued. As much of the following information should be reported and documented as possible, **where this can be achieved without compromising the baseline biosecurity measures** outlined in Section 3.3:

- species, age and sex (if known)
- number of animals affected
- date and time of report
- current location where the animals are (address, and GPS coordinates if possible)

- contact details for facility or individual currently caring for the animals (name and telephone number)
- date that the animals were presented to the WCP
- location from which the animals were found prior to collection from the wild (address, and GPS coordinates if possible)
- name and contact details of the individual who observed and collected the animals from the wild
- date that the signs of disease were first noticed
- clinical signs of the sick animals, including photos and videos if possible
- details of care or treatment provided, including euthanasia
- housing arrangements for affected animals (e.g. co-housed with other individuals of same species, in isolation/quarantine) and the health status of any in-contact animals
- estimated number and species of sick or dead animals in the wildlife population (if known).

A sample reporting form for disease incidents is available on the WHA website.

3.2.3 How should signs of HPAI be reported?

Reports of suspect cases of HPAI in wildlife (either in care or in the wild) must be made to relevant government authorities by contacting any of the following:

- the Emergency Animal Disease Hotline on 1800 675 888 (24 hours per day from anywhere in Australia)
- the State/Territory WHA Coordinator in which the event is occurring
- the biosecurity agency in the jurisdiction in which the event is occurring.

☐ Ensure that WCPs are aware of when and how to report signs of disease consistent with HPAI, and what information to collect when reporting signs of disease. Consider:

⇨ training

⇨ documenting HPAI disease reporting procedures as part of the HPAI risk mitigation plan, including:

- **contact details for the relevant jurisdiction**
- **when should signs of disease be reported**
- **what information should be collected and reported.**

3.2.4 What will happen following reporting of signs of disease?

The biosecurity agency in the jurisdiction in which the event is occurring will determine whether further investigation is needed and whether any other activities are required. Samples may be sent to an officially designated laboratory to investigate HPAI as the cause

of disease. The reporting WCP will be advised on the next steps and should await further direction.

There may be circumstances in which a decision is made not to undertake AI sampling and testing, e.g. if related investigations are underway in the vicinity, if no suitable samples can be obtained, or if samples cannot be obtained safely. Even if testing is not undertaken, all reports help to inform understanding of the disease and how to manage it.

☐ **Ensure that WCPs are aware that following reporting of suspicion of HPAI in wildlife, WCPs should wait for further direction from the biosecurity agency in the jurisdiction in which the event is occurring before undertaking any further activities.**

3.3 Practice good baseline biosecurity

During routine wildlife care activities, operate with an increased awareness of potential risks of disease in wildlife. If the WCP suspects animals may be infected with HPAI at any time, they must immediately follow the notification processes in Section 3.2, before proceeding with any, or further, intervention. Do not handle or remove animals suspected to have HPAI unless instructed to do so by government authorities.

Always maintain good hygiene and biosecurity practices before, during and after working with wildlife, even when HPAI is not present in Australia. These are considered "baseline biosecurity measures".

Measures should be tailored to the specific activities and facilities, following a risk assessment (see Section 4). In the event that HPAI is present in Australia, or animals are displaying signs of HPAI, heightened biosecurity and hygiene practices may be needed (see Section 5.4).

3.3.1 Prior to and arriving at a field site for rescue of wildlife

Prior to arriving at a field site for the purpose of rescuing wildlife, the WCP should attempt to collect as much information as possible about the situation and any clinical signs that the animals are displaying. Any suspicion of HPAI must be reported as described in Section 3.2.

In all cases, WCPs should prepare the appropriate personal protective equipment (PPE) to take to the field, as described below.

Where possible, before undertaking any activities or interventions, observe the animals for any unusual signs of sickness or deaths from a distance. Any suspicion of HPAI must be reported as described in Section 3.2. Do not handle or remove animals suspected to have HPAI unless instructed to do so by government authorities.

3.3.2 Personal protective equipment (PPE) and biosecurity measures during wildlife handling (in the field, veterinary clinic or rehabilitation centre)

During handling of wildlife:

- Wear appropriate PPE (e.g. disposable waterproof gloves, facemasks and eye protection), and ensure PPE is removed properly to avoid self-contamination (see Appendix 5 for resources).
- Particular attention should be given to hand washing after handling wildlife, after contact with potentially contaminated materials and after removal of gloves. Hands and arms should be washed with abundant soap and warm water, then dried thoroughly, even if gloves are used. Hand sanitizer (gel with 60 to 90% ethanol concentration) can be applied to reinforce disinfection but should not replace proper handwashing.
- Avoid rubbing eyes or touching the mouth, eating, drinking, or smoking while working with animals or their products.
- Where practicable, handle animals in a well-lit and well-ventilated area to minimise the possibility of inhaling dried faecal or other material.
- Use new or appropriately cleaned and disinfected equipment and PPE for handling of each animal.

Any suspicion of HPAI must be reported as described in Section 3.2.

3.3.3 PPE and biosecurity measures after wildlife handling (in the field or WCP facility)

After handling of wildlife:

- Clothing, shoes and equipment (e.g. used for capture, handling, marking, holding [e.g. transport boxes/bags]) should be thoroughly cleaned after use, followed by disinfection. There are a range of cleaning and disinfectant agents that are effective against AI viruses which are listed in AUSVETPLAN Operational Manual: Decontamination. The WOAH & IUCN Wildlife Health Specialist Group Avian Influenza and Wildlife: Risk management for people working with wild birds document also contains succinct information on cleaning and disinfectant agents for HPAI.
- Waste material (e.g. disposable equipment or PPE) should be disposed of appropriately.
- Anyone who has handled wildlife should avoid contact with domestic birds and poultry for 48 hours, and should avoid visiting multiple sites in one day.

3.3.4 Biosecurity considerations for WCP facilities

As well as the PPE measures, hand hygiene and equipment hygiene measures described above, wildlife care facilities (including those in private homes) should also consider facility

hygiene measures, facility design and workflow practices to minimise the risk posed by infectious diseases such as HPAI. **Baseline measures** include:

- Quarantine or isolation facilities for new admissions or wildlife suspected of having an infectious disease
- keeping the work environment clean and tidy
- cleaning spills of blood and other bodily substances
- cleaning and disinfecting (or safely disposing of) equipment after use
- appropriate management and disposal of waste material (including animal, food, water and clinical waste)
- appropriate management of laundry (bedding, towels and worker clothing)
- safe use and disposal of sharps such as needles and scalpel blades, as well as knives for food preparation
- managing accidental exposures to blood and body substances, as well as animal bites, scratches and sharps injuries.

Facilities should develop and maintain a set of operational protocols and guidelines relating to these baseline biosecurity measures.

For further information see the National Wildlife Biosecurity Guidelines and AVA Guidelines for Veterinary Biosecurity.

☐ **Ensure that WCPs are aware of baseline biosecurity and hygiene measures for HPAI and have the resources to implement them in the field and in facilities. Consider:**

⇨ **training** (see Appendix 4)
⇨ **developing procedures and guidelines covering PPE, biosecurity and hygiene measures in the field and in facilities**
⇨ **ensuring availability of appropriate PPE, soap and disinfectants, equipment washing facilities and disposal sites for waste materials.**

4 Prevention and preparedness for HPAI: WCP facility-specific risk management plan

This section sets out a suggested framework for developing a WCP facility-specific risk management plan for HPAI, including undertaking a simple risk assessment. Alternatively, WCPs may prefer to use any established risk assessment processes. For further information on undertaking risk assessments and risk management plans, see the WHA's National Wildlife Biosecurity Guidelines , the World Health Organisation's Joint Risk Assessment Operational Tool and the International Union for Conservation of Natures Manual of Procedures for Wildlife Disease Risk Analysis.

The HPAI risk for a particular WCP facility will not be static, and may change due to facility and disease factors, including changes to the animal numbers or species at the facility, changes in facility design, biosecurity and workflow practices, and the AI strains circulating in the area at the time. Most importantly, the HPAI risk for WCP facilities will change significantly from its current level if the 2.3.4.4b strain were to enter Australia**. It is recommended that facility-specific risk management plans should be developed based on the current situation (where HPAI is not present in Australia), and frequently reviewed and updated as required.**

4.1 Establishing the context

This section identifies key features of the WCP facility that will inform the likelihood of entry of HPAI, as well as the consequence if it does enter.

4.1.1 Identify and collate information on the animals at risk

The details of animals that typically require rescue or enter and are held for treatment at the WCP facility should be identified and documented. As described in Section 3.1, all wild bird species should be assumed to be susceptible to HPAI. A wide range of wild mammals are also susceptible, particularly marine mammals and mammals that prey or scavenge on birds.

Types of information that should be collected includes:

- species of animals accepted for rescue and at the facility, including (if known):
  - **conservation status** of the species and any species-specific recovery plans currently applicable
  - where the species demonstrates **behaviours that increase their risk of infection** with HPAI, such as colony nesting, communal feeding, communal roosting, scavenging or having close association with seabirds or waterfowl
  - **other key features of the species or population** from which the animal came (or individual animals in the population) in terms of public interest, tourism, research etc.

- approximate numbers of animals accepted for rescue by the facility (by species or other taxonomic group), age groups typically admitted to the facility, including any seasonal patterns to admissions
- any other animals typically held at the facility such as other wildlife under care, wildlife held permanently (e.g. for educational purposes), or domestic animals (e.g. in private veterinary clinics).

4.1.2 Document activities undertaken at the facility, workflow practices and biosecurity operational protocols

Types of information that should be collected includes:

- procedures and protocols for admission to the facility including:
  - initial examination and triage protocols including location
  - whether a veterinary examination is involved as part of the routine admission process
  - any defined period of isolation/quarantine for newly arrived animals
- procedures or protocols for categorising animals at the facility for biosecurity and workflow purposes, such as:
  - newly-arrived wildlife rescue cases for treatment and rehabilitation
  - wildlife cases suspected or confirmed to be suffering from contagious disease such as HPAI
  - wildlife cases confiscated from captivity with unknown history
  - captive-bred or wild-caught wildlife prior to and immediately following translocation
  - any species-specific categories
- post-admission biosecurity measures, including:
  - PPE, cleaning and disinfection of people, clothing, equipment and facilities, between individual animals and between categories/groups of animals or different areas of the facility
  - workflow practices according to biosecurity status of individuals or groups of animals at the facility, including classification of work situations by level of biosecurity risk, quarantine processes and designing work days or sessions to commence in “clean” work areas, progressing to “dirty” areas
- procedures for individually identifying animals that enter the WCP, and processes for recording the animals entering / leaving the facilities, their original source and onward movements to facilitate traceability if required
- routine monitoring and observation of animals for signs of disease
- availability of onsite veterinary treatment or surgical services and facilities
- activities other than wildlife care or rehabilitation undertaken at the facility, such as off-site educational visits for the general public, teaching, research
- carcass and waste disposal protocols, including food, water, bedding, equipment

- food sources for carnivorous animals
- details of individuals who also work with conservation critical animals or those with poultry or pet birds at work or home.

4.1.3 Document physical details about the facility

The following key natural and built features of the site should be documented to inform disease risk pathways, as well as informing response activities set out in Section 5:

- layout of the facility, including locations of animal housing, treatment or isolation areas, entry and exit points into different areas of the facility
- connectivity of animals, enclosures, or areas of the facility such as direct animal contact, water sources, waste, ventilation, order of service etc.
- facility boundaries, including any natural or built barriers at the perimeter of, or within the site
- facility access, into and out of the facility and its surrounds, and around the facility, including public and private roads, maintenance tracks, walking trails
- details of neighbouring properties, including proximity to commercial or backyard poultry
- proximity to or access to free-ranging wildlife (describe species, numbers and type of contact where applicable), details of habitats accessible to free-ranging wildlife and ability to reduce or limit contact with free-ranging wildlife.

4.1.4 Document facility inputs and output

In a facility, pathogens such as HPAI may enter or leave via a number of routes. Any animal, human, biological product, vehicle, equipment or other product entering (an **input**) or leaving a facility or a geographic location (an **output**) should be seen as a possible route for disease transmission. Figure 8 summarises inputs and outputs from facilities that are possible pathways of HPAI transmission.

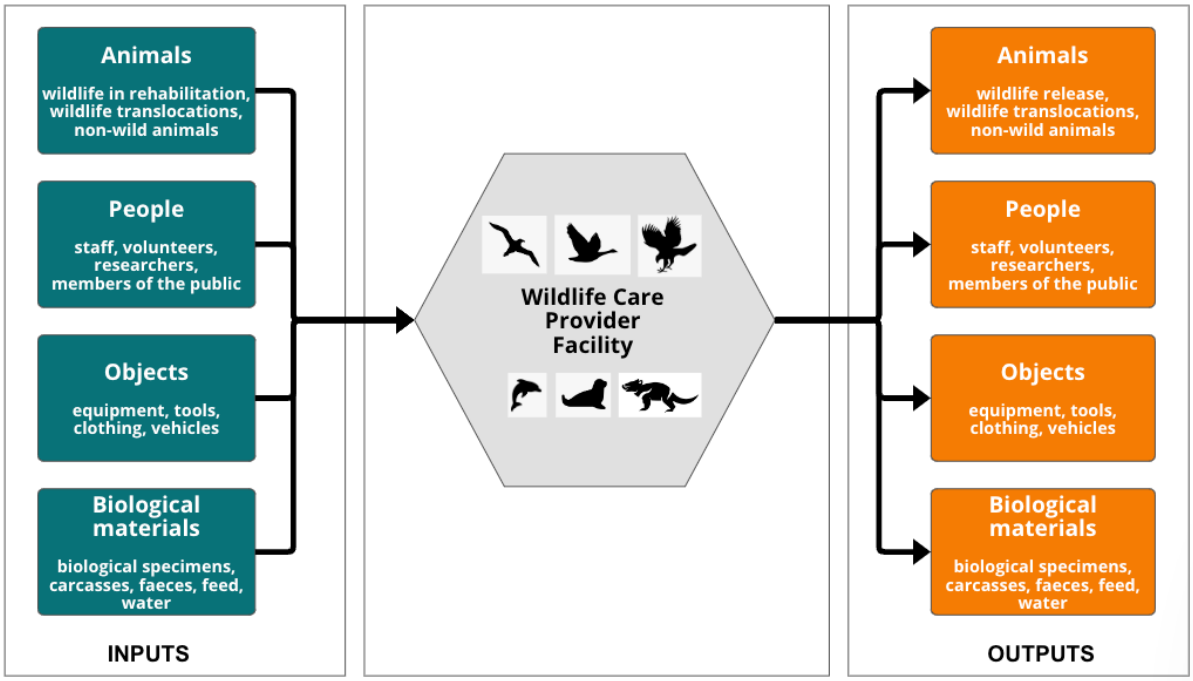

Figure 8: Inputs and outputs of HPAI to and from WCP facilities

An example spreadsheet of how this information can be captured is shown in Appendix 2. This spreadsheet is also provided as a separate attachment on the WHA website.

4.1.5 Document disease risk pathways (disease entry to the facility, spread within the facility and out of the facility)

All of the potential pathways of HPAI entry into the facility, spread within the facility and spread from the facility should be documented. The information on inputs and outputs collected in 4.1.4 should help to identify key pathways. It may be useful to compile a list of HPAI risk pathway statements, for example:

Example 1:

Type of facility: Rehabilitation facility for seabirds

HPAI risk pathways statement: HPAI could enter the facility through admitting seabirds that are infected with HPAI.

Example 2:

Type of facility: Rehabilitation and education facility for all native bird species

HPAI risk pathways statement: If an HPAI infected bird was admitted to the facility, it could spread to the birds kept permanently at the facility for educational purposes through animal handling equipment becoming contaminated with virus and being shared between infected and non-infected birds.

(Continued over page)

Example 3:

Type of facility: Private veterinary clinic

HPAI risk pathways statement: If an HPAI infected bird was admitted to the clinic, clinic staff could spread HPAI to any cage birds or backyard poultry that they have at home, if they are wearing virus-contaminated clothing and footwear home.

Example 4:

Type of facility: Rehabilitation facility for birds of prey

HPAI risk pathway statement: HPAI could enter the facility and potentially infect birds of prey through infected food items (e.g. poultry or wild bird carcasses).

Example 5:

Type of facility: Home-based rehabilitation in a private residence for all native species (including birds and mammals)

HPAI risk pathways statement: If HPAI infected wildlife was admitted for rehabilitation, HPAI could enter the facility and spread to other wildlife, pets or backyard poultry kept at the home through direct contact between animals or viral contamination of food, bedding, clothing or equipment.

4.2 HPAI risk assessment

Using the information gathered in Section 4.1, for each of the disease risk pathways described above, consider the likelihood and consequence of that HPAI transmission pathway occurring, and assign an overall risk rating (see Appendix 3 for example likelihood and consequence definitions, and risk overall matrices). There will be **many factors** that impact on the likelihood and consequence of the risk pathways occurring, and in many cases not all of the information to make an assessment may be available. It is recommended that WCP facilities conduct as thorough an HPAI risk assessment as possible, to help identify key risk pathways and populations.

For the example scenarios in 4.1.4, some example questions to consider when assigning risk ratings are included as follows:

Example 1:

Likelihood: What is the likelihood that seabirds admitted to the facility are infected with HPAI?

Consequence: If HPAI-infected birds were to be admitted to the facility, what would be the impact on the health of other animals at the facility, and potential risks to human health?

(Continued over page)

Example 2:

Likelihood: What is the likelihood that animal handling equipment could transmit live HPAI virus between these two categories of birds?

Consequence: If birds kept permanently at the facility for educational purposes became infected with HPAI virus, what would be the impact on their health, potential risks to humans and impacts on the educational activities undertaken at the facility?

Example 3:

Likelihood: What is the likelihood that the clothing and footwear of staff members become contaminated with HPAI virus if there was an infected HPAI bird in the clinic? What is the likelihood that staff members leave the clinic wearing contaminated clothing and footwear? What is the likelihood that staff members wearing contaminated clothing and footwear have contact with cage birds and backyard poultry that they have at home?

Consequence: What is the impact on the health of the cage birds and backyard poultry if they became infected by HPAI?

4.3 Risk control measures

Consider measures that could be put in place to reduce the risk. Measures could reduce either the likelihood or consequence components to risk, or both. The baseline strategies discussed in Section 3 should be considered in light of the risk assessment, and some of the measures in Section 5 may also be appropriate (e.g. 5.3, 5.4).

It will not always be possible to eliminate risk when working with wildlife, but everyone should work to an agreed acceptable level of risk (or a safe or minimum risk level). An acceptable level of risk is the maximum overall exposure to risk that can be accepted, based on the benefits and costs involved. This may be determined by the authorities, by an organisation or by an individual.

4.4 Monitoring and evaluation

Once the risk assessment has be undertaken and any risk control measures determined and implemented, they should be monitored and reviewed on a regular basis. Monitoring and evaluation aims to make sure that risks have not changed, that control measure are being properly implemented, that the control measures are continuing to appropriately minimise the risk, that no additional control measures need to be implemented and that the controls are not causing any new problems. **A key trigger for review of the risk assessment will be if the HPAI 2.3.4.4b strain were to enter Australia**.

☐ **Undertake an WCP facility-specific HPAI risk assessment, which is reviewed and updated frequently as required, and particularly if HPAI enters Australia.**

5 Response and recovery from HPAI in wildlife

As described in Section 2.5, the pre-agreed national response arrangements following a detection of HPAI in Australia are set out in *AUSVETPLAN Response Strategy: Avian Influenza.* This section of the toolbox describes **potential** approaches to **response and recovery activities**, following a detection of HPAI in wildlife in Australia, and is based on information in the AUSVETPLAN.

Response and recovery activities aim to contain and eradicate the disease in the shortest possible time, reducing environmental contamination and the risk of disease spread to captive birds, wild birds, poultry and other animals.

Response and recovery activities may be relevant to WCPs even if no HPAI has been detected at the site. Action items for WCP facilities listed in this section are designed to support decision making and on the ground response activities **if they are required** under the response framework as discussed in Section 2.5. In addition to any required response and recovery activities, WCPs may elect at any time to implement some of the following activities, to mitigate their HPAI risk, based on their risk assessment undertaken in Section 4.

5.1 Source of the outbreak

If HPAI is detected at a WCP facility, an investigation may be undertaken by government authorities to determine how the animals came to be infected. This will help identify other animals or wildlife populations that may be infected or at risk of infection.

☐ **Ensure that the WCP facility is able to rapidly provide information to government authorities that will inform how the animals came to be infected.**

⇨**This information will be collected during the risk assessment process in Section 4.**

⇨**Ensure that records of animals entering the facility are maintained.**

5.2 Animals at risk of infection

If HPAI is detected at a WCP facility, an investigation may be undertaken by government authorities to determine what other animals may be at risk of infection, including animals currently at the facility, animals that have recently left the facility, or animals in the surrounds of the facility. This will help inform decisions around whether risk mitigation actions are needed.

☐ **Ensure that the WCP is able to rapidly provide information to government authorities about other animals that may be at risk of infection, including animals currently at the facility, animals that have recently left the facility, or animals in the surrounds of the facility.**

⇨This information will be collected during the risk assessment process in Section 4.

⇨Ensure that records of animals at the facility and leaving the facility are maintained.

5.3 Restrictions on activities

There may be need for prohibition, reduction or restrictions on visitors and activities at WCP facilities or at field sites accessed by WCP individuals, as directed by government authorities. Activities that may be subject to restriction may include, but are not limited to:

- access by WCP to wildlife populations and their environment
- access of non-essential staff to WCP facilities
- wildlife rescue and rehabilitation of some or all species
- wildlife rescue and rehabilitation of animals that are suspected or confirmed to have HPAI.

Government authorities will ultimately determine the minimum required restrictions on activities, but WCPs should consider what activities they would regard as being essential, and the associated rationale, so that they are able to provide this information to government authorities. Permits or restriction exemptions may be required for certain activities if deemed appropriate by government authorities.

WCP facilities and individuals should also consider if it is appropriate to voluntarily suspend, reduce, or restrict their activities during a response to HPAI in Australia based on assessment of risk, even if it is not mandated by government authorities. For example, WCP facilities, groups or individuals may decide to halt new admissions or suspend certain rehabilitation activities, due to potential risk for other animals (e.g. existing patients, educational animals) or people. Early discussion and planning of such scenarios is an important aspect of preparedness. WCP's should consider also discussing any proposed voluntary suspension, reduction, or restriction to normal wildlife care activities with the relevant licensing body in their jurisdiction, especially where it may affect large scale service provision or animal welfare.

☐ **Ensure that any restrictions on visitors and activities at the facility can be quickly and effectively implemented if required. Consider:**

⇨documenting the usual visitors and activities undertaken at the site as set out in Section 4.

⇨maintaining contact lists of stakeholders that usually visit the facility to ensure that any restrictions can be easily communicated

⇨identifying any essential activities that WCPs think should not be subject to restriction and the reason why

⇨documenting the entry and exit points to the facility and how general access may be restricted (e.g. locking gates, barriers)

⇨documenting the impact of a reduction or cessation in animal rescue and rehabilitation activities.

5.4 Enhanced hygiene and biosecurity measures

In the event that HPAI has been detected in Australia, there may be a recommendation or requirement for enhanced biosecurity and hygiene measures by WCPs in addition to the baseline measures in Section 3.3. Enhanced hygiene and biosecurity measures will also be required if HPAI is detected in a WCP facility. Measures may include:

- increased vigilance in implementing the baseline measures as determined in Section 3.3
- enhanced PPE for both human and animal health protection, such as disposable overalls, rubber/polyurethane boots, safety goggles, heavy duty rubber gloves, facemasks with increased protection levels or full-face respirators. Personnel using enhanced PPE will require specific training in its use
- enhanced hygiene and biosecurity measures for new animal admissions, such as:
    - including a veterinary examination of the animal as part of the initial assessment of new animal admissions
    - establishment of an area for initial examination and admission to the facility that is separate to the rest of the facility
    - quarantining of new admissions into the facility for a designated time period in a dedicated area of the facility, with frequent monitoring for signs of disease during the quarantine period (contact the relevant biosecurity agency for information on recommended quarantine protocols)
    - using dedicated equipment for animals in quarantine that is not shared with other animals in the facility
    - alternative management strategies for animals with clinical signs consistent with HPAI on admission (e.g. euthanasia)

- post-admission biosecurity measures, such as:
    - PPE, cleaning and disinfection of people, footwear, clothing, equipment and facilities between individual animals and between categories/groups of animals (the range of cleaning and disinfectant agents that are effective against AI viruses are listed in AUSVETPLAN Operational Manual: Decontamination)
    - workflow practices according to biosecurity status of individuals or groups of animals at the facility, including classification of work situations by level of biosecurity risk, and designing work days or sessions to commence in "clean" work areas, progressing to "dirty" areas
    - restriction of access or increased biosecurity requirements for individuals who also work with conservation critical animals or those with poultry or pet birds at work or home
- biosecure disposal of animal carcasses, animal waste, food, water, bedding and equipment. Biosecure disposal methods are listed in the AUSVETPLAN Disease Strategy for Avian Influenza and the AUSVETPLAN Operational Manual: Disposal.

Examples of enhanced biosecurity measures in WCP facilities that have been utilised overseas are listed in Appendix 4.

☐ Ensure that any enhanced biosecurity and hygiene measures can be quickly and effectively implemented if required. Consider:

⇨ developing a site-specific standard operating procedure (SOP) for baseline hygiene and biosecurity measures in WCP facilities (as per Section 3.3)

⇨ documenting potential options for enhanced biosecurity and hygiene measures that could be realistically implemented at the facility

⇨ documenting local suppliers of appropriate PPE and disinfectants

⇨ engaging with the biosecurity agency in the relevant jurisdiction as part of HPAI preparedness to discuss quarantine and biosecure disposal options at WCP facilities.

5.5 Enhanced disease surveillance

Response activities may include enhanced disease surveillance as directed by government authorities for early detection of disease and to monitor its spread. Disease surveillance strategies that could be undertaken by government authorities include:

- implementing a regular schedule of observation of animals held by WCPs for signs of disease
- collection of samples from apparently healthy live animals being held by WCPs for HPAI testing

- collection and archiving of samples from any animals that die or are euthanased at the WCP facility, even if HPAI is not suspected.

☐ **Ensure that any enhanced disease surveillance measures required by government authorities can be quickly and effectively implemented if required. Consider:**
  - ⇨ **ensuring that there are procedures and systems for identifying individual animals and maintaining records of animal health observations.**

☐ **Ensure that WCPs are familiar with the clinical signs of HPAI. Consider:**
  - ⇨ **training (see Appendix 4)**
  - ⇨ **documenting clinical signs as part of HPAI risk mitigation plans.**

5.6 Euthanasia of free-ranging wildlife

Australia's policy as per the AUSVETPLAN *Disease Strategy for Avian Influenza* is that no destruction or culling of free-ranging healthy wild birds will occur as part of a response to HPAI, because it is not practical or environmentally sound and may be counterproductive in stopping spread of the disease. This is irrespective of the species of bird, and whether it is a native or introduced species, and is reflected in advice from joint CMS and FAO's Scientific Task Force on Avian Influenza and Wild Birds.

Euthanasia of individual sick wild birds may be undertaken on considerations of individual animal welfare, consistent with the animal welfare legislation in the relevant jurisdiction.

5.7 Euthanasia of wildlife in care

Any requirements to euthanase animals at an WCP facility to control the spread of HPAI during a response will be determined by government authorities based on a risk assessment. Under specific circumstances, euthanasia of susceptible species may be required even if no HPAI is detected at the facility. It is recommended that WCPs engage with their jurisdictional biosecurity agency and wildlife licencing agency as part of their HPAI preparedness activities to discuss the possible outcomes for animals in WCP facilities when HPAI is present in Australia.

Euthanasia of individual sick wildlife in WCP facilities, in line with existing WCP decision-making processes, may take place based on evaluation of individual animal welfare, consistent with the relevant animal welfare legislation in the relevant jurisdiction.

☐ **Policy and procedures should be in place for euthanasia of individual wild birds if required. Consider:**

- ⇨**documenting this policy and procedures as part of the site HPAI risk mitigation plan**
- ⇨**ensuring appropriate PPE is available and staff are trained in its use.**

☐ **Engaging with the biosecurity agency in the relevant jurisdiction as part of HPAI preparedness to discuss likely outcomes for animals with HPAI is suspected or confirmed.**

5.8 Vaccination of wildlife

Following an outbreak of HPAI, Australia's current preferred policy is to control the disease without the use of vaccination. The use of vaccination in wild birds is not considered to be a feasible control option in Australia under AUSVETPLAN. However, vaccination may be considered in poultry if the outbreak has become widespread, or to protect rare, endangered and valuable captive birds under AUSVETPLAN (see AUSVETPLAN Avian Influenza and AUSVETPLAN Guidance Document-Risk-based assessment of disease control options for rare and valuable animals). Decisions around implementing vaccine programmes will be made by government authorities.

The current global HPAI situation has prompted exploration of the use of vaccination in wild birds overseas. While the advice from the joint CMS and FAO's Scientific Task Force on Avian Influenza and Wild Birds is that vaccination could be considered for key localised populations, there are a number of constraints to the use of vaccination as a risk mitigation tool for HPAI in free-ranging wildlife, and its application in this context has been limited (see vaccination of California Condors in the California Condor Recovery Program or the Bird flu vaccination trial in Aotearoa New Zealand). WOAH has produced a guidance document on Considerations for emergency vaccination of wild birds against HPAI in specific situations to assist decision-makers.

☐ **Be aware that under current policy in Australia, vaccination of wild birds will not be undertaken irrespective of the species of bird. Consider:**

- ⇨**staff awareness**
- ⇨**documenting this policy as part of the site HPAI risk mitigation plan.**

PART C APPENDICES

Appendix 1 HPAI risk mitigation checklist

	TOOLBOX REF.	Y	N	N/A	COMMENT e.g. what do you currently do, what document currently exists?	FOLLOW UP ACTION REQUIRED? Describe what action is required.
HPAI AWARENESS, TRAINING AND OUTREACH						
Do you have a **basic understanding of how emergency animal diseases such as HPAI are managed in Australia** and what role WCP individuals and facilities might play during an HPAI response?	2.5	☐	☐	☐		
Are you aware that WCPs **must not undertake any kind of diagnostic testing for HPAI** without oversight of the biosecurity agency in your jurisdiction?	2.6	☐	☐	☐		
Have you (or your organisation) **engaged with the biosecurity agency in your jurisdiction** to discuss HPAI prevention and preparedness, including: • diagnostic testing for HPAI • biosecure disposal options at WCP facilities • euthanasia requirements for animals held by WCPs Please read the entire toolbox and complete the checklist before reaching out.	2.5 2.6 5.4 5.6	☐	☐	☐		

	TOOLBOX REF.	Y	N	N/A	COMMENT e.g. what do you currently do, what document currently exists?	FOLLOW UP ACTION REQUIRED? Describe what action is required.
Are you, your staff and anyone regularly interacting with wildlife, **familiar with the clinical signs of HPAI** in wildlife?	3.1	☐	☐	☐		
Are you and your staff aware of **how to report** suspicious signs of HPAI including what situations warrant reporting, who to report signs to, what information to collect and what to do following reporting?	3.2	☐	☐	☐		
Are you, your staff and anyone regularly interacting with wildlife **aware of baseline biosecurity procedures** to follow in the field and in WCP facilities?	3.3	☐	☐	☐		
Are you and your staff aware of the **response activities that are <u>not</u> currently supported** by Australia's AI response frameworks? Specifically: euthanasia or culling of wildlife and vaccination of wild birds.	5.6 5.8	☐	☐	☐		
PLANS AND PROCEDURES						
Do you have a documented **WCP facility-specific HPAI risk assessment?**	4	☐	☐	☐		
Do you have a **documented plan or procedure for how to report suspicion of HPAI** in wildlife, including: • clinical signs that should raise suspicion for HPAI	3.1 3.2	☐	☐	☐		

	TOOLBOX REF.	Y	N	N/A	COMMENT e.g. what do you currently do, what document currently exists?	FOLLOW UP ACTION REQUIRED? Describe what action is required.
• contact details relevant to your jurisdiction • information to be collected for reporting • actions to take following reporting						
Do you (or your organisation) have a **documented plan or procedure for baseline biosecurity measures,** to be undertaken by anyone interacting with wildlife in the field and in WCP facilities?	3.3	☐	☐	☐		
Have you (or your organisation) documented potential ways in which **biosecurity measures could be enhanced** beyond baseline in the event of an HPAI outbreak?	5.4	☐	☐	☐		
Do you have a **system for recording individual animals that enter and leave** the WCP facility?	5.1 5.2	☐	☐	☐		
Do you **maintain contact lists of stakeholders** that usually visit the facility, to ensure that in the event of an HPAI outbreak, any restrictions on activities can be easily communicated?	5.3	☐	☐	☐		
Have you identified and documented **any activities undertaken at the facility that you would regard as being essential to the health and welfare of the animals at the site?**	5.3	☐	☐	☐		
Have you documented the likely impact of a **reduction or cessation in animal rescue and rehabilitation activities?**	5.3	☐	☐	☐		

	TOOLBOX REF.	Y	N	N/A	COMMENT e.g. what do you currently do, what document currently exists?	FOLLOW UP ACTION REQUIRED? Describe what action is required.
Have you identified and documented the **entry and exit points** to the facility and how vehicle or pedestrian access could be restricted in the event of an HPAI outbreak (e.g. locking gates, barriers)?	5.3	☐	☐	☐		
Do you have procedures and systems for **identifying individual animals** and **maintaining records of animal health observations?**	5.5	☐	☐	☐		
Do your (or your organisation's) HPAI preparedness plans and procedures make it clear that euthanasia or culling of healthy wildlife and vaccination of wild birds **do not form part of the planned response** to an outbreak of HPAI in Australia?	5.6 5.8	☐	☐	☐		
Do you (or your organisation) have established procedures for **euthanasia of individual sick wildlife** if required to mitigate animal welfare risks?	5.7	☐	☐	☐		
EQUIPMENT AND FACILITIES						
Do you **have PPE, soap and disinfectants, equipment washing facilities and disposal sites for waste materials** appropriate to the **baseline biosecurity** measures for your site?	3.3	☐	☐	☐		
Have you (or your organisation) identified **suppliers** of PPE and disinfectants?	5.4	☐	☐	☐		

Appendix 2 Example spreadsheet for collating WCP facility inputs and outputs

This image demonstrates the layout of a spreadsheet for recording WCP facility inputs and outputs. An electronic version is available on the Wildlife Health Australia website: [High Pathogenicity Avian Influenza Information].

HPAI WCP Facility Assessment - Inputs and Outputs Date:

WCP Facility Information: Initials of contributors:

	INPUTS			OUTPUTS	
	Y/N	DETAILS		Y/N	DETAILS
ANIMALS					
Wild birds			Wild birds		
Marine mammals			Marine mammals		
Other free-ranging wildlife			Other free-ranging wildlife		
Domestic poultry			Domestic poultry		
Domestic birds (other)			Domestic birds (other)		
Domestic carnivores			Domestic carnivores		
Domestic mammals (other)			Domestic mammals (other)		
Other			Other		
PEOPLE					
Staff			Staff		
Volunteers			Volunteers		
Researchers			Researchers		
General public			General public		
Other			Other		
OBJECTS					
Equipment			Equipment		
Tools			Tools		
Clothing			Clothing		
Vehicles			Vehicles		
Other			Other		
BIOLOGICAL MATERIALS					
Biological specimens			Biological specimens		
Carcasses			Carcasses		
Faeces			Faeces		
Feed			Feed		
Water			Water		
Other			Other		

Appendix 3 Risk definitions and matrices

The following definitions are provided as an example of ways in which likelihood, consequence and overall risk could be evaluated for the entry and spread of HPAI to a given population. The matrix in Table 3 demonstrates how the likelihood and consequence can be combined to give an overall risk estimate.

Table 1: Likelihood definitions

Likelihood level	Definition
Negligible	Almost certain not to occur except in exceptional circumstances
Low	Unlikely to occur
Moderate	May occur
High	Likely to occur

Table 2: Consequence definitions

Description	Definition
Insignificant	- No deaths or euthanasia of animals held at the facility. - No impact on activities normally undertaken at the facility. - No impact on resources (e.g. financial, staffing, capacity).
Very minor	- Death or euthanasia of a single animal held at the facility. - Delays or temporary suspension to small numbers of the activities held at the facility. - Very minor impact on resources (e.g. financial, staffing, capacity).
Minor	- Deaths or euthanasia of a small number of animals held at the facility. - Cancellation, delays or temporary suspension to small numbers of the activities held at the facility. - Minor impact on resources (e.g. financial, staffing, capacity).
Moderate	- Deaths or euthanasia of a moderate number of animals held at the facility. - Cancellation, delays or temporary suspension to a significant number of the activities held at the facility. - Moderate impact on resources (e.g. financial, staffing, capacity).
High	- Deaths or euthanasia of a large number of animals held at the facility. - Cancellation or permanent suspension of most of the activities held at the facility. - Major impact on resources (e.g. financial, staffing, capacity).
Catastrophic	- Deaths or euthanasia of all of animals held at the facility. - Closure of the facility. - Severe impact on resources (e.g. financial, staffing, capacity).

Table 3: Overall risk ratings

		Consequences of HPAI entry and establishment					
		Insignificant	**Very minor**	**Minor**	**Moderate**	**High**	**Catastrophic**
Likelihood of entry and exposure	**Negligible**	Negligible risk	Negligible risk	Negligible risk	Negligible risk	Negligible risk	Very low risk
	Low	Negligible risk	Negligible risk	Low risk	Low risk	Moderate risk	High risk
	Moderate	Negligible risk	Very low risk	Low risk	Moderate risk	High risk	High risk
	High	Negligible risk	Very low risk	Low risk	Moderate risk	High risk	Extreme risk

Appendix 4 Training resources and example documents

Note that the following lists are not comprehensive, and include resources, information and advice from official and un-official sources from Australia and overseas. Example resources may be applicable at the national, jurisdictional or local levels, or targeted to various stakeholder groups that interact with wildlife. Information contained in these links has not been assessed for accuracy.

Training material- Australia's emergency management arrangements

- Animal Health Australia's Emergency Animal Disease foundation course

Training material - clinical signs of HPAI

- Links to photos and videos of wildlife affected by HPAI
  Link 1 Link 2 Link 3 Link 4

Example HPAI biosecurity measures for WCP facilities overseas

- British Veterinary Association Avian influenza (AI) advice for vets dealing with wild birds and backyard poultry
- Environment and Climate Change Canada Guidance to Wildlife Rehabilitation Facilities Regarding the Intake of Birds during a Highly Pathogenic Avian Influenza Outbreak

Example outreach material and contingency planning documents

- Wildlife Health Australia's HPAI resources:
  - HPAI Advice for people who encounter sick or dead wild birds
  - HPAI Risk management advice for bird banders, wildlife rangers and researchers
  - HPAI Advice for veterinarians and animal health professionals
  - HPAI Risk mitigation toolbox for wildlife managers
- Northern Australia Biosecurity Strategy Avian influenza awareness: Keep a TopWatch! (video)
- WOAH & IUCN Wildlife Health Specialist Group Avian Influenza and Wildlife: Risk management for people working with wild birds
- Department for Environment Food & Rural Affairs Mitigation Strategy for Avian Influenza in Wild Birds in England and Wales
- Scottish Govt Scottish wild bird highly pathogenic avian influenza response plan
- U.S. Fish & Wildlife Service California Condor Recovery Program
- Michelle Wille Avian influenza resources and Highly pathogenic avian influenza panzootic and the threat to wildlife and ecosystems
- Govt of Canada Wildlife & avian influenza Handling guidelines to protect your health
- Government of South Georgia & the South Sandwich Islands Biosecurity Handbook

Appendix 5 References, resources and further reading

Wildlife Health Australia

- Fact Sheet: Avian influenza in wild birds in Australia
- High Pathogenicity Avian Influenza Resources
- National Avian Influenza Wild Bird Surveillance
- Emergency Wildlife Disease Response Guidelines

Australian Biosecurity Manuals

- National Wildlife Biosecurity Guidelines
- National Farm Biosecurity Manuals – Poultry (e.g. chickens)
- National Zoo Biosecurity Manual
- Australian Veterinary Association (2017) Guidelines for Veterinary Personal Biosecurity

Australian Department of Agriculture, Water and the Environment

- Information on Avian Influenza or Bird Flu and Information for bird owners
- Outbreak.gov.au provides details on how to prepare for and respond to animal pests and diseases
- Descriptive characteristics of the seven HPAI outbreaks in Australia from 1976 to 2013 and of the confirmed LPAI reports in poultry in Australia from 1976 to 2018 are described in Scott et al. 2020

Human Health

- Australian Dept of Health and Aged Care information on Avian influenza in humans
- The Communicable Diseases Network Australia (CDNA) National Guidelines for Public Health Units on Avian Influenza
- Australian Health Management Plan for Pandemic Influenza

Personal Protective Equipment

- Australian Veterinary Association (2017) Veterinary personal biosecurity & PPE and Guidelines for Veterinary Personal Biosecurity
- National Wildlife Biosecurity Manual

AUSVETPLAN

- The AUSVETPLAN Disease Strategy for Avian Influenza sets out the nationally agreed response approach to AI outbreaks in Australia. This includes agreed policy in Australia with respect to LPAI or HPAI detection in wild birds.
- The AUSVETPLAN Disease Strategy for Avian Influenza can be downloaded from Animal Health Australia website under Disease-specific documents.

- Also see: AUSVETPLAN Management Manual: Control Centres Part 1 & 2 and AUSVETPLAN Wild Animal Response Strategy (WARS), also available from the Animal Health Australia website.

World Organisation for Animal Health (WOAH)

- WOAH website on avian influenza
- WOAH Considerations for emergency vaccination of wild birds against HPAI in specific situations
- WOAH Practical guide for authorised field responders to HPAI outbreaks in marine mammals, with a focus on biosecurity, sample collection for virus detection and carcass disposal
- WOAH & IUCN Wildlife Health Specialist Group Avian Influenza and Wildlife: Risk management for people working with wild birds
- Terrestrial Animal Health Code

Global Situation

- World Organisation for Animal Health (WOAH) website on avian influenza
- Joint OIE-FAO Scientific Network on Animal Influenza (OFFLU) situation updates and statements on avian influenza, Statement on Continue expansion of HPAI H5 in wildlife in South America and incursion into the Antarctic region
- Food and Agriculture Organisation of the United Nations (FAO) Global AIV with Zoonotic Potential situation update
- Avian influenza in Europe update
- Convention on the Conservation of Migratory Species of Wild Animals Scientific Task Force on Avian Influenza and Wild Birds
- Centres for Disease Control and Prevention Information on Bird Flu
- Regional or country-specific data
    - European Union Reference Laboratories (EURL) Avian Flu Data Portal
    - Canadian Food Inspection Agency National Emergency Operations Center GIS services High Pathogenicity Avian Influenza in Wildlife dashboard
    - United States Department of Agriculture HPAI in wild birds map
    - Information on current and suspected HPAI wildlife cases arising in the Antarctic and subantarctic region SCAR Antarctic Wildlife Health Network HPAI database

Other international resources

- Department for Environment Food & Rural Affairs Mitigation Strategy for Avian Influenza in Wild Birds in England and Wales
- Scottish Govt Scottish wild bird highly pathogenic avian influenza response plan
- U.S. Fish & Wildlife Service California Condor Recovery Program

- Michelle Wille Avian influenza resources and Highly pathogenic avian influenza panzootic and the threat to wildlife and ecosystems (video)
- Govt of Canada- Wildlife & avian influenza Handling guidelines to protect your health
- Government of South Georgia & the South Sandwich Islands- Biosecurity Handbook
- Agreement on the Conservation of Albatrosses and Petrels (ACAP) Guidelines for working with albatrosses and petrels during the high pathogenicity avian influenza (HPAI) H5N1 panzootic
- USGS Vaccinating California Condors to Protect Against Highly Pathogenic Avian Influenza (video)
- The Raptor Centre (University of Minnesota) Avian Influenza
- International Bird Rescue HPAI in the USA: Rehabilitation from the trenches (video)

Appendix 6 Acronyms

AI	Avian influenza
AUSVETPLAN	Australian Veterinary Emergency Plan
CCEAD	Consultative Committee on Emergency Animal Disease
CMS	The Convention on Migratory Species
EAD	Emergency Animal Disease
FAO	Food and Agricultural Organisation of the United Nations
HPAI	High pathogenicity avian influenza
LPAI	Low pathogenicity avian influenza
NAIWB program	National Avian Influenza Wild Bird program
PPE	Personal protective equipment
WCP	Wildlife care provider
WHA	Wildlife Health Australia
WOAH	World Organisation for Animal Health

Appendix 7 Glossary

Biosecurity agency	Any government agency responsible under law for managing biosecurity in Australia or part thereof. This is generally the Department of Primary Industries or Agriculture in each jurisdiction.
Pathogen	Any organism causing disease.
Spillback	The reverse of *spillover*. For example, HPAI viruses in poultry can be transmitted back (spillback) to wild birds.
Spillover	An event during which a *pathogen* which occurs naturally in one species moves into another species; such movement can result in a disease outbreak. For example, LPAI viruses known to occur naturally in wild birds in Australia can spillover to poultry, resulting in outbreaks of disease.
Strain	A distinct category of virus characterised by its genetic lineage and ability to cause disease. For example, the new AI strain causing unprecedented outbreaks of disease worldwide is the H5Nx 2.3.4.4b strain, which evolved from the A/goose/Guangdong/1/96 lineage.
Subtype	A categorisation of influenza viruses according to the characteristics of the haemagglutinin (HA) and neuraminidase (NA) surface glycoproteins.
Surveillance	A systematic program of investigation designed to establish the presence, extent or absence of a disease, or of infection or contamination with the causative organism. It includes the examination of animals for clinical signs, antibodies or the presence of the *pathogen*.
Wildlife or wild animal	An animal that is found in the natural environment and does not live under human supervision and control. The species may be native to Australia or an introduced species. An introduced species may be a feral or invasive species.
Wildlife care activities	Any direct intervention on sick, injured or orphaned wildlife by humans including their rescue, transport, treatment and rehabilitation.

Wildlife care facility	Any place which provides care to wildlife. These facilities may range from large, staffed wildlife hospitals or veterinary hospitals to the private homes of rehabilitators.
Wildlife care provider	A facility or individual that cares for wildlife that are sick, injured, orphaned or otherwise require human intervention.