

Management of Japanese Encephalitis

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Authorised by:	Group Director, Animal Biosecurity	Authorised date:	07 March 2023
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Category:	Operations and Industry	Review date:	07 March 2026

Scope:

This procedure is a State Priority for NSW and should be read in conjunction with the policies Biosecurity - Prohibited matter - pests and diseases of animals v2.0 and the Surveillance for pests and diseases of animals. This procedure applies to NSW DPI, an office within the Department of Regional NSW, and LLS in their role as Authorised Officers (AO) under the [Biosecurity Act 2015](#).

Management of the biosecurity risk

The management of Japanese Encephalitis (JE) adopts a One Health approach in collaboration with New South Wales (NSW) Health and is documented in the [JE One Health Plan](#).

JE is reportable to the World Organisation for Animal Health (WOAH); it is a nationally notifiable disease and is classified as prohibited matter under the [Biosecurity Act 2015](#).

This procedure aligns with the following strategic priorities in the 2022/2030 DPI biosecurity strategic plan:

1.2 Coordinate timely and risk proportionate responses

1.3 Rapidly and efficiently contain biosecurity threats

1.4 Work in partnerships to minimise impacts to primary industries and the environment from endemic biosecurity threats

This procedure provides instruction for Local Land Services (LLS) and New South Wales (NSW) Department of Primary Industries (DPI) staff involved in the management of JE in domestic pigs and horses. The outcome of these actions is to:

- Reduce impacts on pig and horse welfare and production.
- Work with industry and NSW Health to prevent and minimise JE cases through supporting pig producer/owners to develop and implement their industry program
- Conduct risk-based surveillance and tracing, in consultation with NSW Health and industry, to identify the spatiotemporal extent of JE virus in NSW
- Contribute to and work under nationally developed JE mitigation strategies and plans.

This procedure is supported by enterprise and hazard risk assessments and other documents as outlined in Section 8 – Documentation.

Background:

The first cases of Japanese encephalitis in NSW pigs were diagnosed on 25 February 2022. Japanese encephalitis (JE) is a disease caused by the JE virus (JEV) and is spread by mosquitoes. A wide range of species can be infected with JEV but only a few species will show clinical disease. Those that show clinical disease include pigs, horses, and people.

Pigs and wild wading water birds of the Ardeidae family are amplifying hosts of JEV. Clinical disease in pigs usually presents as reproductive failure with increases in late-term abortions and mummified foetuses, infertility in boars and nervous signs such as tremors and convulsions in piglets up to 6 months of age. Horses and people are dead-end hosts and clinical disease, while rare, is neurological in nature.

Biosecurity legislation summary

The [Biosecurity Act 2015](#) promotes biosecurity as a shared responsibility between government, industry, and communities. It provides for a flexible, outcome-focused approach to managing biosecurity risk and impacts. This means that community members can achieve the outcomes of preventing, eliminating, or minimising the biosecurity risks and impacts posed, or likely to be posed by pests and diseases of animals through a range of best practice management methods.

The [LLS Act 2013](#) outlines the role of LLS in administering, delivering and/or funding programs and advisory services associated with agricultural production and biosecurity including prevention, control and eradication and other emergencies impacting on primary production or animal health and safety.

The relevant NSW Health legislation is the [Public Health Act 2010](#) and [Public Health Regulation 2012](#), and the response is operationalised by Health Protection NSW and local public health units.

Reporting:

JE is classified as prohibited matter as listed in Schedule 2 of the [Biosecurity Act 2015](#). A person who owns or is caring for animals, or a person working in their professional capacity such as a veterinarian, who becomes aware of or suspects the occurrence of JE has a biosecurity duty to verbally notify an officer authorised under the Biosecurity Act 2015 (AO) Immediately. Section 32 provides an offence of failing to notify presence of prohibited matter.

General biosecurity duty:

People who own or manage animals have a general biosecurity duty for the management of the biosecurity risks and impacts associated with endemic animal pests and diseases. The general biosecurity duty is outlined in part 3 of the [Biosecurity Act 2015](#). The biosecurity duty applies to a person who deals with biosecurity matter (including pest animals) 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. Such a person has a biosecurity duty to ensure that, so far as is reasonably practicable, the biosecurity risk is prevented, eliminated, or minimised. Section 24 provides an offence of failing to comply with a biosecurity duty.

Disclosure of information:

The collection, use and disclosure of information in accordance with this procedure, including any internal or external discussion or distribution of information, must be in compliance with the [Privacy and Personal Information Protection Act 1998](#) or be exempted by the operation of section 387 of the Biosecurity Act (2015).

Section 387 (2) of the Biosecurity Act (2015) provides authority for the disclosure of information about a person, without the consent of the person: to a public sector agency, or to any other person,

but only if the disclosure is reasonably necessary for the purpose of exercising a biosecurity risk function. The NSW DPI procedure on Collection, Use and Disclosure of Information should be consulted for further information.

Work health and safety

The [Work Health and Safety Act 2011](#) places an obligation on the agency (NSW DPI and LLS) as a person conducting a business or undertaking and workers to provide a safe and healthy workplace. Safe Work Method Statements that support activities included in this procedure must be used in identifying, assessing, and controlling risks.

NSW DPI and LLS will work together to create a safe and supportive work environment when undertaking any activities for this procedure.

Field staff entering areas with high mosquito activity and known infected/suspect cases need to follow WHS as per the JE WHS Risk Assessment. See Section 8 for links to additional resources. Further information about JE, vaccines and recommendations for vaccination can be accessed from the [Australian Immunisation Handbook](#).

Roles and responsibilities:

- Chief Veterinary Officer (CVO)
 - Receive JE disease notifications and action as necessary
 - Liaise with and update industry, other jurisdictions (through Animal Health Committee)/CCEAD, Animal Health Australia, Office of the Australian CVO, and Commonwealth
 - Notify CVOs of other jurisdictions of interstate traces from JE cases
 - Facilitate NSW contribution to a nationally consistent approach for the management of JE in animal industries across jurisdictions
 - Liaise with the NSW Chief Health Officer
 - Note: Under the [Biosecurity Act 2015](#) all functions of the CVO can be undertaken by the Deputy CVO
 - LLS Authorised Officer (LLS AO)
 - Notify the EAD hotline (1800 675 888) as per the procedure Reporting notifiable pests and diseases of animals and biosecurity events
 - Investigate suspect JE pig events
 - Follow the biosecurity requirements to enter farms; see section 8 for the guide
 - Take precautions to minimise the risk of contracting JE, which may include mosquito bite prevention and vaccination.
 - When a producer directly contacts an LLS AO with a suspect case of JE in pigs, a LLS AO attends the property to complete an investigation.
 - Collect and submit specimens for laboratory analysis.
 - Record case details on LHMS, in accordance with the [LHMS guide – Japanese encephalitis](#)
 - Investigations may be performed by a private veterinarian; when the LLS AO is notified of the investigation, they will add a record to LHMS including lab references.
 - Receive and review laboratory results for the investigation
 - AO (or private veterinarian) notifies the property producer/manager of the results
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- Record results in LHMS
- If confirmed case;
 - Complete the JE 2022-23 Animal Investigation form (can be completed by the LLS Biosecurity Officer/LLS AO) with the pig producer: Add record to LHMS and liaise with the Animal Biosecurity pig species coordinator (pigs.labresults@dpi.nsw.gov.au). This form needs to be completed as soon as possible once JE has been confirmed.
 - Identify high-risk movements and provide details to the species coordinator.
 - NOTE: “high-risk movements” are any movements of pigs other than directly to a processing facility or to a commercial piggery.
 - Maintain contact with and provide support to the affected property producer/manager, referring them to other support services where appropriate (Rural Adversity Mental Health Program, Rural Assistance Authority, Rural Financial Counselling Service).
 - Provide the producer/manager with the link to NSW DPI website. If producers/managers lack internet access, print relevant information, and provide a hard copy to the producer
 - Provide mosquito management resources and support to producers as per Farm biosecurity tool kit
 - Ensure LHMS records for the case are completed.
- Investigate suspect / confirmed JE horse events
 - Investigations will generally be performed by a private veterinarian. When the LLS AO is notified of the investigation, they will add a record to LHMS, including lab references.
 - If “probable JE” case: Complete the JE 2022-23 Animal Investigation form (can be completed by the LLS Biosecurity Officer/LLS AO) with the horse owner; add record to LHMS and liaise with the Animal Biosecurity horse species coordinator. This form needs to be completed as soon as possible once JE has been confirmed.
- Ensure all JE cases and exclusions are entered into LHMS in a timely manner, in accordance with the LHMS guide – Japanese encephalitis and the general LHMS recording requirements, (see section 8, LHMS Field guide)
- Provide the producer/manager with the link to NSW DPI JE in pigs – information for producers website. If producers/managers lack internet access, print relevant information and provide a hard copy to the producer
- Provide resources and support for mosquito management in horses as per Farm Biosecurity website.
- Engage with the relevant industry at the regional level to provide updates on the risk and/or status of JE in the LGA/LLS region
- Refer any human health queries including vaccination of staff to the Local Public Health unit (www.health.nsw.gov.au, 1300 066 055)
- Refer pig or horse related enquiries to the relevant DPI species coordinator
- Refer all media enquiries to the DPI Species coordinator who will then liaise with BFS Communications
- DPI Veterinary Epidemiologist
 - Analyse epidemiological information, including tracing.
 - Produce epidemiological reports and provide information to support CVO in national and cross-agency discussions

- Lead/contribute to design of NSW surveillance plan/activities
- Represent NSW on any national JE epidemiology/surveillance groups
- Assist the DPI Species coordinator with JE risk assessments
- EMAI Customer Services
 - Develop, validate and distribute regular (at least weekly) JE Submission data reports from sample manager and for infections identified in horses and pigs) to feed into the JE dashboard and inform pig/horse species coordinator
 - See below for reporting responsibilities
- Animal Biosecurity pig species coordinator
 - Assess suspect JE case notification received via EMAI, the Emergency Animal Disease Watch Hotline 1800 675 888 (24-hour hotline), LLS, an AO under the Act, or an industry or private veterinarian or producer, that clinical signs consistent with JE have been detected in pigs
 - Liaise with NSW pig industry and inform DPI Animal Biosecurity Unit, Labs, Agriculture and LLS of the current JE situation
 - Provide technical advice for development of external communications documents
 - Attend local and interstate workshops and conferences to liaise with external stakeholders regarding NSW DPI management of JE
 - Monitor JE dashboard and validate reports, including requesting DVs to update LHMS and EMAI to ensure SampleManager data is correct, as required
 - Update the DPI/LLS JE Procedure and maintain supporting documentation
 - Provide oversight/participation in National JE working groups and research
 - Act as the point of contact for NSW Health for notifications and information sharing, unless otherwise stated within this procedure
 - Liaise with DRNSW Legal/Compliance Integrity Systems as required
 - Notify the D/CVO of any identified high risk movements of pigs off properties with confirmed JE cases; act on advice from the D/CVO.
 - Inform the relevant state/territory contact and notify CVO (or Deputy CVO) of any identified inter-jurisdictional high risk pig movements, where specific jurisdictions have requested such alerts
 - Report as per the Reporting notifiable pests and disease of animals and biosecurity events procedure
- Animal Biosecurity horse species coordinator
 - Inform the private veterinarian or owner of property that horses have been confirmed as cases or, as probable or possible cases for JEV on laboratory testing and refer to the Farm Biosecurity Website
 - Liaise with horse industry
 - Provide technical advice for development of external communications documents
 - Attend local and interstate workshops and conferences to liaise with external stakeholders regarding NSW DPI management of JE.
- Biosecurity and Food Safety (BFS) Communications and Engagement

- Provide support for JE communications as per the DPI JE Communications and engagement plan
- Manage media enquiries (proactive and reactive) in consultation with DPI Corporate Affairs
- Review and update communications plan and output as required
- Work in collaboration with LLS and NSW Health communications teams to ensure communications are timely and consistent
- Represent DPI on the National Biosecurity Communication and Engagement Network (NBCEN) and provide JE updates to the species coordinator
- BFS Geospatial team
 - Inclusion of other web map layers, e.g., affected LGAs, NSW water bodies, mosquito monitoring data (to be provided by NSW Health) as requested by the Animal Biosecurity Pig and horse species coordinators.
 - Work with Animal Biosecurity Pig and horse species coordinator to integrate the above mentioned data and publish on the JE website
 - Maintain JE dashboard (internal)
 - Share mapping data with NSW health for cross analysis with human and mosquito monitoring data, as directed by the Manager, Animal Biosecurity Preparedness Response.
- BFS Compliance
 - Support and liaise with DPI pig and horse species coordinators and LLS AO as necessary
- DRNSW Legal
 - Provide legal advice and development of legal instruments for the management of JE.

Notification and data sharing activities:

Notification and data sharing from NSW DPI to NSW Health for JE is to be undertaken as described in the table below

Data for notification	Notification method
Recent JE positive result from: <ul style="list-style-type: none"> - Clinical cases (passive surveillance- predominantly pigs and horses) - Sentinel animals (e.g., NAMP cattle/ pigs) - Opportunistic surveillance (e.g., wildlife/ feral animals) outside expected transmission area OR Any JE positive result in an atypical species	Email Health Protection NSW zoonoses and environmental health surveillance teams within one business day: NSWH-enteric@health.nsw.gov.au and hssg-ehbsurveillance@health.nsw.gov.au
Other JE results from: <ul style="list-style-type: none"> - Historical clinical cases (passive surveillance- predominantly pigs and horses) - Opportunistic surveillance (e.g., wildlife/ feral animals) within the expected transmission area, where available. 	Communicate with Health Protection NSW and environmental health surveillance teams via standard JE communications (e.g., regular)

Vector monitoring data (by DPI) with results outside of expected transmission area/ window*	Email NSW Health, via the NSW DPI pig inbox. Include the following group email addresses: pigs.labresults@dpi.nsw.gov.au NSWH-enteric@health.nsw.gov.au and hssg-ehbsurveillance@health.nsw.gov.au
Vector monitoring data (by DPI) with results within expected transmission area/ window*	Email Health NSW DPI pig inbox. Include the following group email addresses: pigs.labresults@dpi.nsw.gov.au NSWH-enteric@health.nsw.gov.au and hssg-ehbsurveillance@health.nsw.gov.au

*as per NSW One Health Surveillance Plan

Notification and data sharing to NSW DPI (from NSW Health) for Japanese Encephalitis will be undertaken as described in the table below:

Data for notification	Notification method
Data with positive results for JE from: - Vector monitoring (NSW Health) - Human cases	Email NSW DPI pig inbox within one business day: pigs.labresults@dpi.nsw.gov.au
Vector monitoring data (by NSW Health) with results within expected transmission area/ window	Weekly arbovirus monitoring report Email NSW DPI pig inbox: pigs.labresults@dpi.nsw.gov.au
Sentinel chicken surveillance – positive	Laboratories Customer Services / Laboratories notifies CVO by phone
Sentinel chicken surveillance - negative	Email NSW DPI pig inbox weekly: pigs.labresults@dpi.nsw.gov.au
Epi reports (share reports both ways) TBC with DPI and health.	TBC with Health

There may be additional data requests by either agency periodically.

1. Investigation of suspect cases
 - a. Pigs

- Where a private veterinarian supports a property, they can conduct the on-farm investigation and sampling, otherwise, an LLS District Veterinarian (LLS DV) completes the diagnostic investigation. Producers, staff and Biosecurity Officers may be able to assist with sample collection
 - Sample collection advice is available on the DPI website where necessary, the EMAI duty pathologist can provide further advice on sample collection and submission. [Sample collection advice](#)
- b. Horses
- Consideration should be taken when sampling neurological horses that Hendra, a sporadic but high consequence zoonotic disease, will be one of the differential diagnoses and appropriate precautions should be taken including PPE and limited invasive procedures performed. [Sample collection advice](#)
2. Sample submission
- a. Animal samples
- Samples collected for JE testing must be sent to EMAI for testing. EMAI must be notified prior to horse samples being sent as Hendra exclusion will be included in testing.
 - Submission of samples to EMAI from any animals that are not suspect JE cases require approval from the Pig species coordinator. It is preferable this approval is sought prior to collecting such samples
3. Notification of laboratory results
- JE laboratory results received from both EMAI and ACDP will be processed by EMAI Customer Services / Laboratories.
- a. Negative results – Animals
- EMAI email results to the following:
 - i. CVO
 - ii. Species Co-ordinator
 - iii. Private veterinarian
 - iv. LLS DV
- b. Positive results – Animals
- EMAI notifies CVO by phone as soon as practical, then issues report to:
 - i. CVO
 - ii. Species Co-ordinator
 - iii. Private veterinarian
 - iv. LLS DV
- c. Positive results from NSW health mosquito traps
- NSW health informs the Animal Biosecurity Species pig coordinator, who then;
 - i. Within 2 business days via email, informs the LLS regional team leader and BFS Geospatial unit that mosquitos have tested positive for JE
 - ii. Provide update to CVO, as per reporting procedure

Management of Confirmed and Suspect Cases:

Cases will be risk assessed by the relevant species coordinator and LLS AO and all relevant actions will be carried out as per the Roles and Responsibilities and Data and Information sharing sections of this procedure. This should include consultation with a property's private veterinarian where relevant.

If the General Biosecurity Duty is not adequately discharged in managing the risk on farm, an Individual Biosecurity Direction (IBD) may be issued by the LLS AO. Refer to the Issuing an IBD procedure for more information.

Interstate movements may be subject to restrictions from the other state. It is the responsibility of producers and people moving pigs to meet interstate requirements and they should contact the relevant agencies for more information

End of transmission season:

End of transmission season the relevant species coordinator will communicate with their respective stakeholders. End of transmission season is defined based on the weather data - minimum temperature of less than 10°C for 7 consecutive days and mosquito abundance and results of surveillance

Reporting:

The JE Veterinary Epidemiologist analyses epidemiological information in relation to JE in NSW and produces epidemiological reports as required for relevant internal and external stakeholders.

Definitions and acronyms:

- **ACDP:** Australian Centre of Disease Preparedness (formerly AAHL)
- **AO:** Authorised officer - A person who is appointed as an authorised officer under the Biosecurity Act and authorised by that appointment to exercise the function in relation to which the expression is used.
- **BIS:** Biosecurity Information System
- **CCEAD:** Consultative Committee on Emergency Animal Disease
- **CVO:** Chief Veterinary Officer
- **DCVO:** Deputy Chief Veterinary Officer
- **DV:** District Veterinarian
- **EAD:** Emergency Animal Disease
- **EMAI:** Elizabeth Macarthur Agricultural Institute
- **EM-BIS:** Emergency Biosecurity Information System
- **IBD:** Individual Biosecurity Direction
- **JE:** Japanese encephalitis
- **JEV:** Japanese encephalitis virus
- **LLS:** Local Land Services
- **LHMS:** Livestock Health and Management System
- **NLIS:** National Livestock Identification System
- **NSW DPI:** New South Wales Department of Primary Industries
- **PIC:** Property identification code
- **SVDL:** State Veterinary Diagnostic Laboratory

Case definition:

As agreed by CCEAD, March 2022.

A confirmed case of JE disease requires recognition of a recent clinical presentation consistent with Japanese Encephalitis in an animal that demonstrates any of the following laboratory results:

1. Isolation and identification of a flavivirus.

OR

2. Detection of a flavivirus by nucleic acid testing.

OR

3. Immunohistochemical detection of a flaviviral antigen in association with appropriate histopathological lesions.

OR

4. Seroconversion by testing paired serum samples or a significant increase in antibody level (a fourfold or greater rise in titre) to a flavivirus in a virus neutralisation test*.

OR

5. Detection of elevated levels of flavivirus-specific antibody (IgM or IgG) in cerebrospinal fluid.

OR

6. Detection of elevated levels of flavivirus-specific antibody (IgM) in serum

1. Clinical presentation of JE

Pigs

1. Reproductive disease in sows characterised by abortion, stillbirths, or mummified foetuses; paretic or clinically affected piglets that die soon after birth, above the expected level for the enterprise

2. Shaking/trembling, ataxic, or convulsing piglets (up to 6 months) that do poorly with variable pyrexia

3. Orchitis, decreased sperm number or motility in semen, or abnormal spermatozoa.

Equids

1. Neurologic disease characterised by ataxia (including stumbling, staggering, wobbly gait, or incoordination)

OR

2. Neurologic disease without ataxia, characterised by two or more of the following:

- Facial paralysis
- Muscle tremors/fasciculation
- Hyperaesthesia
- Circling
- Blindness
- Recumbency or inability to stand
 - Hind limb weakness
 - Multiple limb paralysis

- Altered mental state
- Hypermetria
- Depression

A **suspect case** is a case with recent clinical signs consistent with JE where diagnostic confirmation is pending.

A **probable case** is a case with recent clinical signs consistent with JE where diagnostic confirmation cannot be obtained due to samples being unavailable for testing.

A **possible case** is where the presence of cross-reactive antibodies means that the species of flaviviral infection cannot be definitively determined.

Documentation:

List associated policies, procedures and documentation where appropriate, must list the following

- [Hendra Investigation Guidelines](#)
- [NSW DPI JE Information page](#)
- [2022/2023 Investigation Form](#)
- [DRAFT Japanese Encephalitis One Health Framework 2022.docx](#)
- [Managing Animal Biosecurity risks during AO farm visits](#)
- [Integrated Mosquito Management principles for piggeries](#)
- [NSW Health Public Health Alert – Mosquito warning](#)
- [NSW Health Japanese Encephalitis Fact Sheet](#)
- [NSW Health Mosquitoes are a Health Hazard – Communicable Diseases Factsheet](#)
- Policy Records Management (IND-I-177; CM9 Ref INT18/122445)
- Policy - Information Security (IND-I-197; CM9 Ref INT16/138896)
- Policy - Classified Information (IND-I-196; CM9 Ref DSIRD14)
- Policy - Government Information (Public Access) (IND-I-178; CM9 Ref DSIRD112)
- [Policy - Biosecurity - Prohibited matter - pests and diseases of animals](#)
- [Procedure - Collection, use and disclosure of information](#)
- [Procedure - Reporting notifiable pests and diseases of animals and biosecurity events](#)

Records:

Documents related to regional, state and national pest and disease programs must be saved in HPE Content Manager.

Reports and details relating to prohibited matter, notifiable diseases and other biosecurity events related to individual premises are to be entered into the NSW information management system (including LHMS/ BIS).

Guidelines for data entry are outlined in the LHMS guidance document.

Records relating to properties placed under biosecurity restrictions must be maintained for at least ten years.

Revision history:

Version	Date issued	Notes	By
1	07 April 2022		JE Response
1.1			
1.2		Reviewed by internal and external stakeholders during the program	JE Program Team
1.3	20 February 2023	Review for 2022-23 season, removed reference to fact sheet – direct producers to JE website for up-to-date information, and farm biosecurity website	Animal Biosecurity

Contact:

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