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National Newcastle Disease Management Plan 2013-16

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***A national approach to the long-term
management of Newcastle disease in Australia***

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INTRODUCTION

The prevention of Australian-origin Newcastle disease (AoND) in Australia has been managed under the National ND Management Plan 2008-2012 following management plans that were in effect in 2002-03, 2003-04 and 2005-07. The Newcastle Disease Management Plan Steering Committee has subsequently developed a management plan that will operate for the period 2013-16.

The goal remains a vaccination program that mitigates the risk of an AoND outbreak. There have been no outbreaks of AoND since compulsory vaccination commenced under the first plan. The 2013-2016 plan is a continuation of the 2008-2012 version, consistent with previous modifications designed to reduce the amount of vaccination required by the standard operating procedures (SOPs).

The vaccination program aims to displace precursor strains of ND virus that have sequences close to the virulent sequence and that might result in the emergence of virulent ND virus. The revised plan includes vaccination (according to nationally agreed SOPs) of commercial domestic chickens in all states and territories. In jurisdictions considered to be of low risk for an outbreak of ND, vaccination of short-lived birds (i.e. birds of relatively low risk) may be reduced as per the revised SOPs. However, in flocks that opt for reduced vaccination, surveillance protocols as detailed in this plan must be implemented.

More detailed background information can be found in the 2002-03 to 2003-04, 2005-07 and 2008-12 versions of the National ND Management Plan.

STRATEGIC RISK MANAGEMENT APPROACH (2013-2016)

A national approach to ND prevention and management is necessary to reduce the prevalence of circulating precursor ND viruses that may mutate into virulent forms, resulting in clinical disease.

The integrated national approach aims to deliver the following outcomes:

- minimised risk of ND outbreaks from Australian-origin virulent viruses
- reduced risk of negative social, economic and trade effects of ND at farm, regional and national levels
- a risk-based strategy that will potentially minimise vaccination required to prevent outbreaks of Australian-origin ND.

The components to meet these outcomes are:

- application of poultry industry biosecurity plans¹
- the strategic application and monitoring of vaccination using live V4 and – where applicable – inactivated vaccine, to reduce the spread of precursor viruses
- adoption of agreed risk management approaches
- surveillance to monitor circulating strains of ND virus
- management and evaluation to provide national coordination and to review the implementation of the 2013-2016 National ND Management Plan after two years.

Risk assessment, management and commercial drivers will play a major role in achieving these outcomes. There is scope to significantly reduce the risk of potential negative effects of the occurrence of virulent ND at a flock and regional level with existing technology. On-farm management programs, coupled with market-driven quality assurance programs, can successfully lower the overall risks.

Since the inception of the previous version of the plan in 2008, there have been significant biosecurity improvements in the industry, through regulated requirements for compliance with biosecurity measures in the poultry meat sector (through jurisdictional implementation of food safety standards), through independently audited compliance in the egg industry (currently through the *Egg Corp Assured* program²), and through biosecurity investments on the grounds (e.g. shed upgrades).

¹ The National Farm Biosecurity Manual – Poultry Production was launched in June 2009. Its purpose is to establish a minimum of biosecurity standards, applicable to all poultry producers. See http://www.daff.gov.au/animal-plant-health/pests-diseases-weeds/biosecurity/animal_biosecurity/bird-owners/poultry_biosecurity_manual

² <http://www.aecl.org/egg-corp-assured/eca-policies>

The Food Standards Australia New Zealand *Primary Production and Processing Standard for Poultry Meat* (the Poultry Standard³) came into effect on 20 May 2012.

- a) The Implementation Sub-Committee of the Food Regulation Standing Committee (consisting of all relevant regulators of the states and territories) has agreed that compliance with the *National Farm Biosecurity Manual for Poultry Production* (2009)⁴ will be deemed to satisfy the requirements of the Poultry Standard.
- b) It is up to each state and territory to apply the Poultry Standard to their specific legislative framework. In Victoria⁵, for example, the completion of a food safety management statement is a legal requirement for all commercial poultry producers under the Poultry Standard. In New South Wales, the requirements were incorporated into the *Food Regulation 2010* on 21 December 2012.

In the egg industry, the Australian Egg Corporation's QA program already includes ND vaccination, i.e. all egg producers must operate in accordance with state legislation for all requirements including vaccination. Compliance is audited by a registered third party auditor. The program is currently undergoing further development, and all supporting materials are being rewritten to reflect a new QA Standard for Australian eggs that meets ISO reporting guidelines. There is a heavy focus on biosecurity control points (HACCP) and more prescriptiveness with respect to vaccination (e.g. the development of a pullet rearing standard).

This ND Management Plan is a continuation of the 2008-2012 version, consistent with previous modifications designed to reduce the amount of vaccination required by the standard operating procedures (SOPs). However, the layer industry in South Australia and Queensland chose to exceed the minimum requirements in the 2008-12 plan, thereby further adding to risk minimisation.

The National ND Management Plan aims to engage a broad range of stakeholders including poultry farmers and processors, poultry organisations, governments, avian societies and ratite industries.

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<http://www.foodstandards.gov.au/foodstandards/primaryproductionprocessingstandardsaustraliaonly/poultrystandards.cfm>

⁴ http://www.daff.gov.au/animal-plant-health/pests-diseases-weeds/biosecurity/animal_biosecurity/bird-owners/poultry_biosecurity_manual

⁵ PrimeSafe Guidelines Food Safety Management Statement for Poultry Producers (1 May 2011)

PROJECT PRIMARY OBJECTIVES

1. Implementation of vaccination and compliance with the SOPs by the commercial layer and broiler industries

Effective risk reduction using this strategy is aimed at:

- improving flock protection against ND virus, and
- the displacement of precursor viruses to reduce risks.

A risk management approach has been adopted that involves vaccination according to recommended national vaccination SOPs.

In September 2012, governments and industry, through the ND Steering Committee, supported modified management options including the use of modified vaccination SOPs as part of the long-term management strategy.

Monitoring of vaccine use can be achieved with minimum cost by:

- the monitoring of vaccine sales data, and
- a comparison of those data against the number of chicken expected to be vaccinated in accordance with the SOPs.

Assessment of vaccination compliance

Compliance assessment is focussed on programs in long-lived birds (higher relative risk) that use killed vaccine. Based on experience with previous plans, compliance with the use of live vaccine in long-lived bird is hard to assess because of the difficulty to differentiate live vaccine use in these birds from the far greater number of short-lived birds (lower risk) that receive live vaccine⁶.

- Animal Health Australia will collect annual vaccine sales data from vaccine companies to 31 December and present de-identified vaccine sales data (total vaccine sales only) to the Steering Committee by 30 June each year.
- Animal Health Australia will use a variety of sources including national levy revenue information and industry data sources to obtain a measure for the number of chickens that are expected to have been vaccinated each year and present these data to the Steering Committee by 30 June each year.

⁶ Approximately 20 million long lived birds are reared per year, whereas 10 million broilers are reared per week.

2. Ongoing surveillance is required to determine the ND viruses that are circulating in Australia

National surveillance

The Steering Committee supports the following elements of a national surveillance program as endorsed by the Consultative Committee on Emergency Animal Diseases (CCEAD):

- All poultry farms that report signs that may be suggestive of infection with precursor or virulent ND virus (e.g. unusual mortality, abnormal respiratory or nervous signs, sudden egg drop, abnormal soft-shelled eggs or white-shelled eggs in brown egg layers) must be investigated and samples must be taken for ND virus testing.
- Other disease investigations should be used as an opportunity for attempting to isolate ND virus where appropriate.
- Diagnostic opportunities to monitor ND virus presence in poultry submissions to veterinary laboratories should be taken wherever possible.
- All isolations of ND virus and consolidated serology results from government as well as private laboratories must be reported routinely in quarterly returns to the National Animal Health Information System (NAHIS).
- All isolates of ND virus must be held at laboratories for at least 12 months.
- All isolates of ND virus from any farm where ND virus has not been isolated within the previous three months or where ND is suspected must be submitted to AAHL for sequencing (HN and F genes).

Response to disease incidents under the EAD Response Agreement

In the event of an ND incident, the EAD Response Agreement provisions will apply where all Parties are meeting their obligations (e.g. vaccination, surveillance and biosecurity).

Outbreaks of ND will be managed in line with the AUSVETPLAN *Disease strategy: Newcastle disease*, as endorsed by Animal Health Committee and industry. Section 3.2 of the AUSVETPLAN *Disease strategy: Newcastle disease* discusses different strategies that may be considered for the eradication of exotic ND and AoND, respectively.

The response to outbreaks of AoND in unvaccinated broiler flocks⁷ in those states where broilers are no longer required to be vaccinated is to eradicate the outbreak by:

⁷ All long-lived commercial chickens (layers and breeding birds) remain vaccinated, and broilers will to some degree have maternal antibody protection because breeders (long-lived birds) remain vaccinated.

- quarantining infected flocks
- instigating vaccination of all unvaccinated at-risk chickens
- scheduling slaughter for recovery of meat where appropriate
- enhancing existing biosecurity.

The details of an eradication program will be determined by CCEAD in a manner specific to the nature of the outbreak.

Ongoing surveillance, as a minimum, involves detecting flocks affected by virulent ND and precursor viruses and determining changes in the distribution, prevalence and types of ND virus circulating in Australia, including by opportunistic sampling of laboratory submissions.

States and territories are responsible for maintaining a database that includes details of:

- date of notification
- reason for investigation (mortality, morbidity, egg production problems, veterinarian suspicion, farmer reporting, investigation into other problems, etc.)
- location, address, geo-reference, species, type of enterprise and other characteristics (if applicable: cage, free range, number of sheds, etc.)
- class of poultry (pullet, layer, meat, breeder; chicken/duck/turkey, etc.)
- number of stock
- age
- mortality
- morbidity
- predominant clinical signs
- relevant vaccination history
- summary of sample collected and dates
- basis for suspicion/diagnosis
- if no ND diagnosis, the differential diagnosis and species' specialist comments
- date of diagnosis
- ND viruses isolated and their molecular characteristics.

NAHIS, through its database and *Animal Health Surveillance Quarterly* (with summary data in the annual *Animal Health in Australia* reports) will report:

- date of notification
- state/territory
- class of poultry
- findings
- ND viruses isolated and their molecular characteristics.

IMPLEMENTATION OF THE 2013-2016 MANAGEMENT PLAN

The ND Steering Committee in September 2012 endorsed several changes to the 2008-2012 Plan. These changes have the net effect of altering the vaccination and monitoring protocols for ND in a manner consistent with the modifications introduced in 2008.

The 2013-2016 ND Management Plan is the next iteration of the 2008-2012 Plan with regard to reduced compulsory vaccination requirements for broilers, based on the assessed risk of an outbreak of virulent ND within Australia. This has required minor modification of the SOPs as they were previously written (ND Plan 2008-2012). The modifications to vaccination and monitoring only affect broilers, initially in Tasmania, Western Australia, Queensland and South Australia, and subject to review, in Victoria and New South Wales after two years into the Plan. There are no modifications for layers and layer breeders anywhere in Australia. The revised programs are laid out below:

Level 1 – Tasmania and Western Australia

In these two jurisdictions, compulsory vaccination for broilers was already no longer required under the 2008-2012 Plan, and a survey of broilers and layers did not provide evidence of the presence of virulent ND or precursor viruses. As of 2013, vaccination for broilers therefore remains voluntary, but on-going active surveillance is no longer required. Passive surveillance will continue as described in “Methodology”.

As in the 2008-2012 Plan, layers and layer and broiler breeders must be vaccinated, but the use of an inactivated ND virus vaccine is not required; rather, a live vaccine may be used.

If producers wish to voluntarily vaccinate their broilers, or use inactivated ND virus vaccine for their layers or layer and broiler breeders, **they will still be able to do so.**

Serological monitoring to determine post-vaccination titres is not compulsory in these states due to the low risk of ND virus infection.

Level 2 – Queensland and South Australia

The reduced vaccination requirements that came into force in Tasmania and Western Australia under the 2008-2012 Plan are now introduced in Queensland and South Australia. This means that vaccination of broilers is no longer compulsory in Queensland and South Australia. However, if producers wish to voluntarily vaccinate their broilers, **they will still be able to do so.**

The SOPs for layers, layer and broiler breeders have not changed, i.e. the compulsory use of the killed vaccine is not required. Producers wishing to use live V4 vaccine continuously must demonstrate that they are maintaining a titre of 2^3 . Producers who opt to continue the use of killed vaccines – currently the majority of layers – will not need to demonstrate their compliance by serological monitoring.

To support the low risk ND virus status (apparent from previous surveys and risk assessments carried out by the ND Steering Committee and its Surveillance Working

Group and Risk Assessment Working Group) assigned to Queensland and South Australia, in addition to the on-going passive surveillance for broilers and layers, active surveillance of broilers will be conducted for 12 months in those states, to assess the epidemiology of ND virus, including the serological profile of non-vaccinated flocks and, where required, the serological profile of vaccinated flocks. For replacement pullets, a titre of 2^3 (which is considered by the Steering Committee the minimum standard to give protection against ND) at 16-18 weeks of age will be accepted as providing sufficient protection.

Level 3 – New South Wales and Victoria

The existing SOPs are not changed. Results from surveillance in Queensland and South Australia will guide the Steering Committee to determine when and under what conditions vaccination requirements for short-lived birds in Victoria and New South Wales can be reduced, the default being 2 years into the new plan (2015).

ALL COMPONENTS OF THE PLAN (20013-2016) WILL BE REVIEWED BY THE STEERING COMMITTEE AFTER TWO YEARS.

Implementation of agreed Standard Operating Procedures

Vaccination of all commercial layer, broiler, breeder and production flocks in all states and territories must be performed in accordance with the agreed SOPs (see Table 1 for vaccination programs). Serological targets are given in Table 2; however, serological testing to demonstrate that these titres have been achieved are not mandatory in all cases – refer to Table 3 and check on requirements in various jurisdictions.

The national SOPs will continue to be monitored and amended as necessary to ensure their effectiveness, that is, to ensure that vaccination is achieving the desired results.

THE PURPOSE OF SURVEILLANCE IN QUEENSLAND AND SOUTH AUSTRALIA

1. To continue to support the low risk status of these two jurisdictions.
2. To demonstrate through active surveillance that the non-vaccinated chicken population (practical sentinels) remains free of non-vaccine ND virus.
3. To demonstrate that if sero-conversion occurs in these sentinels, it does not involve precursor or virulent ND virus.
4. To enable investigations of mortality or morbidity fitting the case definition in commercial poultry flocks in these jurisdictions (passive surveillance).
5. In the long term, to assist in the introduction of an exit strategy from compulsory vaccination across Australia.

METHODOLOGY

Case definition for the purpose of passive surveillance

Broilers

- any shed suffering mortality (not including culling) of 0.5% or higher per day for 3 or more consecutive days after the first week of placement
- any shed with evidence of respiratory signs lasting more than 2 consecutive days
- any shed with nervous signs regardless of the duration.

Layers and breeders

- any flock (shed) suffering a 10% drop in egg production or the appearance of 5% white eggs or 5% shell-less eggs over a period of 2-3 consecutive days
- any flock (shed) suffering increased mortality of more than 0.5% per day for 3-5 consecutive days
- any flock (shed) where nervous signs or respiratory disease signs are detected.

The following approach is to be used in Queensland and South Australia:

Broilers – active and passive surveillance

a) Active surveillance

1. In the first year of operation of the National Newcastle Disease Management Plan 2013-2016, a statistically valid and risk-based proportion⁸ of non-vaccinating broiler farms in Queensland and South Australia will be surveyed twice, with the two surveys approximately six months or three batches of broilers apart.
2. The surveys will commence no sooner than three batches (approximately six months) after the cessation of vaccination.
3. For the purpose of the surveillance, and in line with the epidemiological definition that considers a flock to be “a group of birds managed as a single unit”, the broiler farm is considered to be a flock because the birds are of single age and sheds are located within metres of each other and managed as a single unit are managed as a single unit and under the same biosecurity conditions. If disease occurred, it could easily spread within the group.

⁸ As agreed by the Steering Committee in the ND Surveillance Plan and further detailed in operational surveillance plans for Queensland and South Australia.

4. The sampling will consist of collection of tracheal and cloacal swabs from 10 birds (10 tracheal and 10 cloacal swabs) for PCR/virus isolation
 - a. between two and four weeks prior to slaughter if slaughtering at 50-54 days, or
 - b. two weeks before slaughtering at 40-49 days of age, and
 collection of 15 blood samples for serology at final slaughter, collected at the processing plant.
5. The swabs will be collected individually, with tracheal and cloacal swabs kept separately. They will be pooled into 5 swabs per sample at the laboratory prior to testing and stored at -80°C pending results of serology. If positive by haemagglutination inhibition, the swabs held in store from earlier sampling will be processed for PCR/virus isolation.
6. After two rounds of sampling and testing, the ND Steering Committee will review results and decide on the appropriateness and approach to further active surveillance.

b) Passive surveillance

1. Passive surveillance will be ongoing, i.e. it will take place during the active surveillance period and beyond.
2. Passive surveillance will be undertaken as per the case definition (see above). This will include serology (at least 15 blood samples), PCR (collection of tracheal and cloacal swabs from 10 birds) and histopathology on a range of tissues.
3. Operators of broiler farms keep records of mortality and are required to inform the owner of the birds (usually the processor) of any unusual clinical signs in the flock as part of their obligation under the contractual arrangements with the processor. The owner of the birds is expected to notify their relevant jurisdictional animal health authority should any of the case definition criteria be met in any farming operation.

Layers and breeders – passive surveillance only

1. Passive surveillance will be ongoing, i.e. it will take place during the active surveillance period in broilers (see above) and beyond.
2. All flocks meeting the case definition (as outlined above) are to be fully investigated to exclude ND, using serology (at least 15 blood samples), PCR (collection of tracheal and cloacal swabs from 10 birds) and histopathology on a range of tissues.
3. Operators of layer farming enterprises will be expected to keep records of the parameters constituting a case definition and notify their relevant jurisdictional animal health authority should any of the case definition criteria be met in any farming operation.

Laboratory/ test considerations

Laboratories testing for ND must use a standardised test supported by appropriate quality assurance and a proficiency testing program (e.g. the haemagglutination inhibition test as described in the Australian New Zealand Standard Diagnostic Procedure, with participation in a proficiency testing program coordinated by the Australian National Quality Assurance Program overseen by Animal Health Committee's Sub-Committee on Animal Health Laboratory Standards).

All laboratory testing associated with unvaccinated broilers in Queensland and South Australia will be conducted in state laboratories.

Birds that have not been immunised or infected with ND virus usually have titres $< 2^3$. Non specific titres above this level are rare.

Cross reactions between various paramyxoviruses are a consideration, but for the purpose of this surveillance this is not an issue because any flock with titres of 2^3 , or more than 20% of the titres with 2^2 , will be investigated further.

For the purpose of this surveillance, it is assumed that the sensitivity of ND virus haemagglutination inhibition test is 95%.

It is also assumed, based on surveillance during the ND outbreaks in New South Wales, that because broilers are on litter in a confined space, ND virus infection is likely to spread to 90% of the flock by the time they reach processing age (unless exposure occurred close to processing), and (based on data during surveillance in New South Wales and the practicality of broiler farming) that all sheds on the farm are likely to be exposed to ND virus if one shed is exposed.

LONG TERM STRATEGY

The goal of the Management Plan is to enable a risk-based policy of vaccination requirements against ND. Following on from 2008-2012 Plan, the first stage of the 2013-2016 Management Plan will further reduce the amount of vaccination carried out in low risk jurisdictions and low risk poultry categories. Following the review of the 2013-2016 plan after two years, it may be possible to recommend further modifications to the vaccination protocols, in particular to the protocols for broilers in Victoria and New South Wales. Any such decision will rely on the quantum and quality of surveillance in the national poultry flock to that point, and the prevailing evidence of precursor virus presence.

AHA COSTS AND FUNDING OF THE PLAN

The Plan relies on significant financial input by industry because the cost of vaccination alone could amount to \$6 million per year. Costs of compliance with the SOPs will be met by poultry producers. Monitoring of compliance with the SOPs in each jurisdiction is the responsibility of the respective jurisdiction. The broiler industry will be responsible for funding and administering the surveillance activities for unvaccinated broilers in Queensland and South Australia. Further details are captured in the ND Surveillance Plan agreed by the Steering Committee and the operational surveillance plans for Queensland and South Australia. Animal Health Australia will incur costs in managing the national plan. Costs for the management of the National ND Management Plan will be recovered in the proportions agreed for a response to ND under the EAD Response Agreement (50% government, 50% industry), rather than absorbed by all Members of the Company.

The following table shows the Animal Health Australia budget required to manage the National ND Management Plan; it includes cash components only.

Item	Target Date	Budget (subject to ongoing review)				
		2012-13	2013-14	2014-15	2015-16	2016-17
ND Steering Committee meetings/ teleconferences	Six-monthly	\$7,000	\$7,000	TBA ⁹	TBA	TBA
Two-year ND Mgt Plan Review	By 31 Dec 2014	n/a ¹⁰	n/a	TBA	TBA	TBA
Management, administration and communication costs	Ongoing	\$28,000	\$38,000	TBA	TBA	TBA
Four-year ND Mgt Plan Review	By 30 Sept 2016	n/a	n/a	TBA	TBA	TBA
Total		\$35,000	\$45,000			

⁹ to be advised in September of each preceding year

¹⁰ not applicable