AUSTRALIAN VETERINARY EMERGENCY PLAN

AUSVETPLAN

1996

Enterprise Manual

Poultry industry

INTERIM DOCUMENT

AUSVETPLAN is a series of technical response plans that describe the proposed Australian approach to an exotic animal disease incursion. The documents provide guidance based on sound analysis, linking policy, strategies, implementation, coordination and emergency-management plans.

Agriculture and Resource Management Council of Australia and New Zealand

This Management Manual forms part of:

AUSVETPLAN Edition 2.0, 1996

[AUSVETPLAN Edition 1.0, was published in 1991]

This strategy will be reviewed regularly. Suggestions and recommendations for amendments should be forwarded to the AUSVETPLAN Coordinator (see Preface).

Record of amendments to this manual:

There are occasional minor differences in the page breaks between the paper and this electronic version which we can unfortunately not avoid.

ISBN 0 642 24506 1

PREFACE

The Enterprise Manuals constitute part of the Australian Veterinary Emergency Plan (AUSVETPLAN Edition 2.0). AUSVETPLAN is an agreed management plan and set of operational procedures which would be adopted in the event of an exotic animal disease outbreak in Australia. The procedures are outlined in the AUSVETPLAN **Summary Document**. The Enterprise Manuals are written with specific reference to certain animal industries where a greater than normal risk of harm could be expected from an exotic disease outbreak. This manual covers eight types of enterprise found in the poultry industry as follows (ownership of a number of the enterprises is commonly held by a single integrated company in this industry):

Fertile egg breeder farm
Hatchery
Meat chicken farm
Poultry processing plant
Layer (table egg farm)
Egg product processing plant
Stockfeed mill
Diagnostic laboratory

This Enterprise Manual for the **poultry industry** is aimed at both government and industry personnel who may be involved in exotic disease preparedness. For government personnel, the manual brings together from many sources operational guidelines, plans of action, or other issues pertaining to an exotic disease emergency. For owners or managers, the manual provides guidelines on the strategies that may be adopted to improve preparedness for, or for the handling of a suspected exotic disease. Managers should include elements of this manual in the operational manuals of their enterprise.

The manual refers to the control of both Newcastle disease and virulent avian influenza as both diseases are controlled in a similar manner. Where differences in control procedures exist they are mentioned. The manual should be read in association with other AUSVETPLAN documents, especially the **Disease Strategy for Virulent Avian Influenza** and **Disease Strategy for Newcastle Disease**.

In addition, *Exotic Diseases of Animals: A Field Guide for Australian Veterinarians* by W.A. Geering, A.J. Forman and M.J. Nunn (Australian Government Publishing Service, Canberra, 1995) is a source for some of the information about the aetiology, diagnosis and epidemiology of animal diseases and should be read in conjunction with this manual.

Detailed instructions for field implementation of the strategies are contained in the AUSVETPLAN **Operational Procedures Manuals** and **Management Manuals.** Cross-references to strategies, manuals and other AUSVETPLAN documents are expressed in the form:

> Document Name, Section no.
> For example, **Decontamination Manual, Section 3**.

This manual is being released as an interim document to allow for full industry/government consultation before it is approved by the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ).

The manuals will be revised and updated from time to time to ensure that they keep pace with the changing circumstances of the particular industry they cover. Comments and suggestions are welcome and should be addressed to:

The AUSVETPLAN Coordinator
Animal Diseases/Incidents Section
Livestock and Pastoral Division
Department of Primary Industries & Energy
GPO Box 858
CANBERRA ACT 2601
Tel: (06) 272 5540; Fax: (06) 272 3372

Membership of writing group

The initial draft of this manual was prepared by Dr Paul Gilchrist BVSc, FACVSc, 2 Warraba Road Booral NSW 2425 (consultant).

Tel 049-976671 or 015-012575; Fax 049-976663

The consultant was responsible for drafting this manual. However, the text may have been amended at various stages of the consultation/approval process and the policies expressed in this version do not necessarily represent the views of the consultant. Contributions may also have been made by other people not listed above and the assistance of all involved is gratefully acknowledged.

Contents

1 NATURE OF THE ENTERPRISE

Risk enterprises are defined as those with a high potential for disease spread or for economic loss. The eight poultry-related enterprises considered in this manual all qualify because they have large numbers of live birds or there is movement of birds, product, materials or people which could carry virus. Many are also large-scale enterprises with high economic value. For example, a single breeder farm may have an output of meat chickens valued at $20 million in a year. The manual deals with enterprises in the commercial chicken (meat and layer) industry which has large numbers of susceptible birds. It does not deal with the other poultry industries such as ducks or turkeys or with backyard or fancier poultry keeping which involve smaller numbers of birds and thus pose less economic risk.

Two diseases are considered, virulent avian influenza and Newcastle disease. These are both absent from Australia and are classified as 'exotic' in AUSVETPLAN. They are both included in the Commonwealth/States cost-sharing agreement for certain exotic animal diseases[1]. Most avian species are considered to be susceptible to both of these viruses but in some species the diseases may be clinically inapparent.

1.1 The poultry industry and its enterprises

1.1.1 The poultry industry—overview

The poultry industry is based on the production of two types of product namely eggs and meat. There are many interconnections between the egg and poultry meat industries. A few breeding enterprises produce day-old chicks of both egg and meat types. The layer type is used to produce table eggs while the meat type produces meat chickens. The two industries may operate from a common base of breeders, stockfeed mills, equipment and pharmaceutical suppliers.

There are a number of areas with a concentration of poultry population usually with many farms adjacent to one another with a high chance of spread of an exotic disease. The incidence of endemic diseases has led to the development of policies of isolation and separation being adopted by the larger commercial producers but this is not the case with older and smaller farms.

The poultry industry is aware of the danger of disease transmission and practises a high level of hygiene. Breeder birds are usually protected better than commercial birds, but at least some farms restrict entry of people, machinery and vehicles, while requiring visitors to wear overalls or dust coats and to put on overshoes - usually lightweight plastic disposable shoe covers.

Both the egg and meat industries principally supply domestic markets. A significant but small export market exists which would be curtailed by an exotic disease outbreak.

---

[1] The cost-sharing agreement only covers the virulent form of avian influenza and Newcastle disease in its classical virulent form.

Commercial production and processing of eggs and poultry meat occur in separate industries but which are often geographically close and share a number of infrastructure elements. Virus spread from one industry to the other is likely.

The egg industry

Eggs are produced by specially selected layer breeds of hen. The eggs of other avian species are not often used for human consumption. Australians eat about 150 chicken eggs per year. These eggs are worth $280 million at the farm gate and are produced by 10 million layer hens held on 1,600 farms located either, on the outskirts of the major metropolitan areas close to the major city markets, or around a few country centres close to feed sources. Approximately 95% of commercial egg production is sourced from caged layer farms, with the reminder produced in deep litter free range or barn laid farms. Approximately 12% of Australian egg production is sourced from backyard flocks. Between 6-7% of households in Australia have a backyard flock.

Layer hens are reared to maturity (18-22 weeks) in a rearing shed or farm. When reared in a separate farm and sold to the producer at point of lay they are called started pullets. Traditionally, adult hens are kept in production for about 12 months. However, a significant proportion of producers recycle hens at the end of a first cycle of production after a spell in moult for a further cycle of production.

Hen eggs are produced in all States with 26% of farms and 40% of hens in NSW (including ACT); 26% of farms and 28% of hens in Victoria; 13% of farms and 13% of hens in Queensland; 20% of farms and 7% of hens in South Australia; 11 % of farms and 8% of hens in Western Australia and 3% of farms and 2% of hens in Tasmania.

Egg production is in the hands of individual producers or family companies. Since deregulation in recent years the size of farms has increased with a consequent decrease in the number of farms. Layer farms vary in size but the average is about 12,000 hens. Some farms have over 200 000 hens.

The chicken meat industry

Poultry meat production is principally from meat chickens but some meat is produced from turkeys, ducks, geese and game fowl (pheasant, guinea fowl, partridge, quail, squab pigeons).

This industry produces over 300 million chickens per year with 25 kg consumed per person. The value of this product is $838 million. NSW produces 40%; Vic - 26%; Qld - 15%; SA - 9%; WA - 8.5% and Tas 1.5%.

Most meat chicken production is in the hands of individual producers who have contracts with processing companies. The processing companies also have their own growing facilities. The **producer** owns the land, shed and equipment and is paid a rearing fee by the processor who owns the chickens and the feed. The **processors** usually are vertically integrated companies with ownership of the breeding and hatching operation, feedmills, processing plants and wholesale marketing.

If an exotic disease emergency were to occur in a flock of birds approaching slaughter age *it would not be possible to hold them on the farm for long as the stocking density would soon become excessive and result in deaths from the effects of overcrowding.*

Movement of live poultry and product

Live poultry, eggs and poultry products are moved widely throughout the country including commonly across State borders. There is a small but significant export industry

for various products. Processing plants, hatcheries, stockfeed mills, fertile egg farms and meat chicken farms are often owned by a single vertically integrated company. All the companies are competing for the same markets and thus their delivery of chicks, started pullets and products overlap one another continually.

The commercial egg industry is less vertically integrated and egg production farms and egg product processing plants may be owned by individual, though sometimes quite large, companies which may be horizontally integrated (owning a number of separate farms). The larger companies are competing for the same markets and thus overlaps occur in movements of chicks and eggs.

Feed

Many stockfeed mills are owned by integrated chicken meat companies to supply their own farms. Some independent mills remain and are all competing for the same market resulting in many opportunities for cross-infection via feed trucks. Better designed breeder farms have feed delivery points (auger or blower intakes) located outside the perimeter fence to prevent access of trucks and drivers to the proximity of the birds.

Waste disposal

As waste is a source of infection with endemic diseases it is usual for precautions to be taken with disposal. Dead birds and offal are collected by a commercial operator, burned, buried, composted or rendered. Effluent is treated in a two or three-stage system and sprayed on pasture or passed to a sewer. A high mortality on a farm may overload the disposal system and lead to carcases being held in an inadequate manner for a lengthy period. Manure and litter are sometimes stockpiled on the farm. This is not a desirable practice. Litter may be reused in a shed for several batches.

1.1.2 Ratite industry

Ratites (ostrich and emu) are farmed in increasing numbers throughout the grazing areas of Australia. Hobby farms frequently have a mixture of avian species including ratites.

1.1.3 Description of enterprises

The eight poultry-related enterprises of concern in exotic disease preparedness and control are:

- fertile egg (breeder) farm
- hatchery
- meat chicken farm
- poultry processing plant
- layer (table egg) farm
- egg product processing plant
- stockfeed mill
- diagnostic laboratory

Each of these establishments has separate problems in exotic disease preparedness and control. This manual seeks to provide a uniform approach to the interrelated problems of the whole industry while addressing the specific problems of each establishment in detail.

Fertile egg (breeder) farm

Fertile egg production occurs in two stages. The first or nucleus breeder stage comprises the grandparent and great grandparent breeders. The second or multiplication stage comprises the parents of the commercial birds. The nucleus birds have a much higher

value than the parent breeders and the extent of the isolation (quarantine) procedures practiced on such farms reflects the high value of the birds. Multiplication or commercial breeder farms are sometimes operated on a franchise arrangement with the primary breeder.

Hatchery

A hatchery is usually on a separate property from the breeder farm. Fertile eggs from breeder farms are transported to the hatchery in an insulated truck. The eggs are received in an egg-handling room which includes a fumigation chamber where they are fumigated to kill bacteria on the shell. Before setting eggs may be stored in a cool room at 12–15 °C for 14 days with a 1% loss per day from 7-8 days onwards. They are then incubated in a setter machine for 18 days and then transferred to the hatcher machine for the last 3 days. Some chicks may start pipping through the shell at 19 days. The hatcher trays are taken to a separate chick handling room where they are sorted, culled, sexed (this is rare with commercial meat chickens), vaccinated and placed in plastic crates (or sometimes in cardboard boxes) for transport to the farm. Plastic crates are sanitised before reuse but cardboard boxes should be left on the farm and not reused because they are difficult to decontaminate.

The selected hatched chicks are held for as short a time as possible in the hatchery and quickly delivered to the farm where they will be reared. Day old male layer strain and other cull chicks are slaughtered at hatching. The chicks can last up to 3 days without food and water if kept at the correct temperature.

A small number of hatcheries supply almost the whole industry. Many day-old chicks travel great distances including across State borders.

Hatchery debris consists of unhatched eggs, egg shells and culled chicks. These can cause a disposal problem.

Meat chicken farm

Meat chickens are reared in sheds of about 20 000 birds each, with about three or four sheds per farm. A few large company owned farms have near 100 sheds. Birds are taken to the processing plant at 32-63 days of age.

Day old chicks delivered to the farm from the hatchery are provided with a supplementary source of heat for the first three to four weeks of life. At about 5–8 weeks of age they are taken to a processing plant for slaughter. Birds cannot be kept on the farm for much longer as they soon become overcrowded and may be stressed and even die, especially in hot weather. Partial shed pickups or thinouts occur from 32 days of age.

Meat chicken farms may be owned by the processing company or by individual growers who have a contract to supply the processor for a rearing fee. The birds and the stockfeed used are owned by the processor not the grower.

Poultry processing plant

Meat chickens are caught and transported to the processing plant. The loaded truck is weighed at a weighbridge.

The products from the processing plant are raw which may be chilled and frozen and presented as whole carcasses, or further processed into raw, flashfried (parcooked), or fully cooked poultry products at a further processed poultry plant. The parts not suitable for human consumption may be used for pet food or rendered into poultry meal or feather meal. Finished product is usually stored in chillers or freezers on the premises for as short

a period as possible. *Most of the raw market is for chilled product* which has a short shelf-life. A larger proportion of the further processed poultry (FPP) is for frozen product. Some frozen product is stored but as storage is expensive it also is kept for as short a period as possible. **Rendering plants** may be on the processing plant premises and recontamination of rendered material may be a problem. Also a rendering plant may receive offal from a number of distant processing plants, and in turn supply meals to several feed mills.

The **effluent** from poultry processing plants is treated in a manner approved under environment protection legislation before it is used for fertiliser or goes to the sewer.

Layer (table egg) farm

Layer farmers may rear their own chicks from day old or may purchase birds at about 18 weeks of age from a started pullet rearing specialist. The birds start to lay eggs at about 20 weeks of age and continue to lay for the next 12 months. At this stage birds may be placed in a moult for about three weeks. Birds in these flocks then return to a feed ration which allows for the resumption of a laying cycle. When birds are no longer required for a laying cycle, they are called spent hens and they are taken from the farm and sold to a processing plant which is usually a specialist plant using equipment suitable for the larger birds.

Eggs are usually graded and packed on the farm and go direct to the market or may go to a separate establishment for grading and packing. Most eggs are sold fresh, meaning within 2-3 days of laying. The 'use by' period for shell eggs without cooling is 21 days and thus any storage is for limited periods. Cool room storage has been used in the past for up to 4 months to overcome disparities in seasonal supply and demand. The use of lighting programs for layer hens eliminates the effect of seasonal variations in light and dark periods and allows closer control of supply to coincide with demand. *However eggs could be stored for several months if needed*, especially if they were to be used for cooking or making into egg pulp.

Egg product processing plant

Most eggs are sold as whole shell eggs but lower quality or surplus eggs are sent to an egg processing plant to be broken out of the shell to be sold as egg pulp which might be egg white, egg yolk or whole egg pulp. These products may be pasteurised and may be frozen or dried. Finished product is usually stored on the premises. Shell eggs destined for pulping or use in cooking can be held at 4°C for four months while assessing their freedom from contamination.

Stockfeed mill

The mill converts vegetable and some animal ingredients into compounded feed. Some mills make feed for a number of livestock industries but some specialise in poultry feed. Rendered chicken offal and feathers are sometimes used as feed ingredients. The feed trucks which travel from farm to farm are a possible carrier of infectious organisms. This risk is reduced in some breeder farms as they have a special feed delivery point located outside the perimeter fence of each shed.

Diagnostic laboratory

Most large meat chicken organisations have their own diagnostic laboratory. Smaller meat chicken organisations and layer farmers usually use State government laboratories. There are very few private veterinary practitioners or laboratories involved in the poultry

industry. Because of their closer association with their industry company laboratories pose a different risk compared to government laboratories.

1.1.4 Existing legislation and codes of practice

Legislation

Legislation for the purpose of controlling exotic animal diseases has been enacted at both the Commonwealth and State levels. The Commonwealth legislation is primarily concerned with preventing the introduction and establishment of disease or of things that may carry disease. Statutory provisions exists in all States/Territories aimed at the control and eradication of disease in animals, and establishes controls over animal movement, treatment, decontamination, slaughter and compensation. Wide powers are conferred on government inspectors, including the power to enter premises, to order stock musters, to test animals and order the destruction of animals and products that are suspected of being infected or contaminated.

Each State and Territory has legislation controlling the design and operation of poultry processing plants. This legislation is aimed at maintaining good hygiene and matters related to consumer protection.

The poultry industry is also subject to the Prevention of Cruelty to Animals Act (or its equivalent) in each State or Territory.

Codes of practice

As a part of the Commonwealth Government initiative which resulted in the development of an Australian Model Code of Practice for the Welfare of Animals there is a code for domestic poultry. The current third edition of the Australian code relating to domestic poultry is obtainable from CSIRO Publications, 314 Albert Street, East Melbourne 3002, telephone 03 941 87333. In some states the welfare code has been incorporated in the relevant State/Territory Act. Even if it is not incorporated it is taken as the best indicator of welfare needs of poultry.

Handling and killing of birds to be slaughtered as part of a stamping-out policy is to be done with animal welfare in mind and in a manner which produces minimal distress and results in a rapid death.

Local government and environment protection agency provisions will apply to manure, waste and effluent disposal. Some States have produced a set of poultry farming guidelines which show how to conform with such requirements. The 1994 version of the NSW document is available from NSW Agriculture, 161 Kite Street Orange NSW 2800.

Each enterprise will have its own operational procedures but many will not have these in a written form. Occupational health and safety rules for the establishment should be available in a written form.

1.2 Exotic diseases of concern

There are two major exotic diseases of poultry of concern to Australia, both of which are subject to the Commonwealth/States cost-sharing agreement for certain exotic animal diseases. These are *virulent avian influenza* and *Newcastle disease (in its classical virulent form).* Most avian species are considered susceptible to infection by the viruses which cause each of these diseases but many species do not develop any signs of disease.

The diseases could enter Australia through smuggling of birds or their products, via wild birds, on fomites (inanimate objects capable of carrying the agent) or by sabotage using exotic disease agents. Some people consider poultry farms, especially cage layer farms, to be contrary to the welfare of poultry and extreme actions may be attractive to them.

Virulent avian influenza is a lethal generalised disease of poultry caused by specific types of avian influenza virus. Disease outbreaks occur most frequently in chickens and turkeys. Signs of the disease include severe respiratory signs and blue discolouration (cyanosis) of the comb and wattles. Many wild species, particularly waterbirds, are also susceptible but infections in these birds are generally subclinical and they can be carriers of the virus.

Newcastle disease is a highly contagious lethal viral disease of chickens, turkeys and other birds. Virus strains vary in pathogenicity from non-virulent to highly virulent. Highly virulent strains cause rapid death and are characterised in chickens by haemorrhages in the trachea and intestinal tract.

Newcastle disease has occurred twice in Victoria in the early 1930s; the second probably connected with the first due to release of frozen product kept since the first outbreak. On both occasions it was self limiting as it killed all the birds on the farms involved and did not spread. Since then there have been no outbreaks but a non-pathogenic form of the virus is endemic in some intensive poultry production areas in Australia. This form is widespread through commercial poultry but as it does not cause disease it is not subject to control measures. The presence of this non-pathogenic virus may confuse the issue in an outbreak because it acts as a vaccine which prevents signs of the disease from developing but the birds may still harbour the virulent virus. This means that the presence of a more virulent virus could be hidden.

The non-pathogenic Newcastle disease virus also stimulates the production of low levels of antibodies which could confuse the surveillance phase of the outbreak resulting in false positive reactions. Isolation of virus and testing for pathogenicity may be necessary to determine the real status of a flock.

In Australia both virulent diseases are absent from commercial poultry, although the virulent avian influenza virus has caused mortality in commercial chickens on four occasions (three in Victoria and one in Queensland) in recent years with a strong likelihood that it was introduced by wild waterfowl in each case. Testing of waterfowl has not led to isolation of the virulent virus but influenza viruses are notoriously unstable and are prone to change from non-pathogenic to pathogenic forms as a result of re-combination of various parts of their structure. It is only when a virulent form of the virus is present that eradication is undertaken.

The incubation of the diseases may be very short, only a few days, but it can be delayed for two weeks. Because of the chance of such a long incubation period the accepted critical period before signs are first seen has been set by the office International des Epizooties (OIE) at 21 days for both viruses.

Both diseases may be confused with other diseases endemic to Australia and differential diagnosis can be difficult. This is particularly the case for Newcastle disease where the non-pathogenic form of the virus may be found as a result of isolation attempts or the pathogenic form may be disguised in birds already exposed to the non-pathogenic form.

Differential diagnosis of both diseases must include consideration of the following diseases which occur in Australia:

- infectious laryngotracheitis
- pasteurellosis (fowl cholera)
- botulism
- acute poisoning
- Colibacillosis *E.coli* (septicaemia or cellulitis of the head)
- mycoplasmosis
- coryza or other paramyxovirus infections

NB There are several other significant poultry diseases which do not occur in Australia but they are not covered by the Commonwealth and States Cost Sharing Agreement and no control plan has been developed. They are mentioned here because the methods of control of avian influenza and Newcastle disease could be applied by industry or government in the event of an outbreak:

- duck viral hepatitis
- duck viral enteritis
- turkey rhinotracheitis
- very virulent infectious bursal disease (also known as Gumboro disease)

1.2.2 Potential occupational health issues

Newcastle disease is a zoonosis or a disease which can spread between animals (in this case birds) and humans. The virus can cause a mild conjunctivitis and flu-like symptoms in humans. While this has not been known to be a occupational health concern it has the potential to become one. The spread of the virus of Newcastle disease by infected humans is not recorded as having been a problem in spread of the disease in poultry but it must be kept in mind. However, mechanical spread of infection by people is very important.

1.2.3 AUSVETPLAN strategy and OIE requirements

Virulent avian influenza and Newcastle disease are covered by the Commonwealth/States cost-sharing agreement and both have agreed strategies based on stamping out. The disease control strategies for these two poultry diseases are similar. In this document they are treated as one unless important differences occur in which case the difference is mentioned.

The strategy for control of both diseases is:

- stamping out by slaughter of birds and disposal of bodies and products;
- strict quarantine, movement controls, tracing and surveillance of contacts; and
- decontamination of materials on infected premises.

Further details are available in the **Disease Strategy for Virulent Avian influenza** and for **Newcastle Disease**. The AUSVETPLAN **Summary Document** also provides more information.

The other diseases mentioned in Section 1.2.1 (duck viral hepatitis, duck viral enteritis, turkey rhinotracheitis, Gumboro disease) are exotic to Australia but there are no agreed plans for their control.

1.3 Inputs—the risk of introducing disease

Direct contact with infected birds is the most likely source of infection in both diseases. Mechanical transmission is also very important in Newcastle disease but less so in avian influenza, although in some of the Australian outbreaks AI did spread mechanically to other premises in close contact. For further information on inputs see Section 2.5.

1.3.1 Live poultry/products

Most species are considered possible sources of the two viruses. Both viruses survive in carcases, feathers, meat, eggs, offal, effluent and manure. See the **Disease Strategy** for each disease for more detailed information.

Waterfowl are considered the most likely source of avian influenza virus. Sheds should be bird-proofed and water sources should be isolated from waterfowl or else treated before use (see Section 2.2.1). Smuggled birds, products or by-products are considered to be the most likely sources of Newcastle disease. Sick or dead birds going to the laboratory for diagnosis with secondary spread from there is possible if adequate precautions are not taken.

1.3.2 Feed

The feed used for poultry consists of grains (wheat, sorghum, barley—corn is not routinely used here) as a source of energy and protein and protein feeds which may be supplied as vegetable protein meals (soybean, sunflower, canola etc.) or as animal protein meals (meat, fish, poultry, feather). Microingredients (vitamins and minerals) are supplied as a pre-mix which is added during mixing. The ingredients are ground finely, mixed together and presented as mash or pellets. Most feed for breeders and meat chickens is supplied in pelleted form. The heat involved in pelleting is a good decontaminating process. Some layer feed is supplied as mash.

The risk of introduction of salmonellae through animal protein sources has led to a reduction in their use.

Feed ingredients arrive in bulk rail or road trucks. Grains arrive direct from country silos. Vegetable protein meals come from processing plants. Animal proteins come from rendering plants which are sometimes located at abattoirs (meatmeal) or at poultry processing plants (poultry and feather meal). Fishmeal is largely imported. Microingredients are supplied as separate items to be mixed at the mill or are supplied as a premix made at a specialist mixing plant. Some ingredients are delivered in bags which may be plastic, multi-walled paper or hessian. New bags are satisfactory but reusable bags which could have been anywhere beforehand may be contaminated.

A major outbreak of VND in the UK was caused by pigeons contaminating feed ingredients. While the heat involved in pelleting might inactivate most viruses, cross and re-contamination are very real possibilities in most feed mills.

1.3.3 Vehicles and equipment

The viruses can be carried mechanically on any inert material including vehicles and equipment. These are less likely to be a source of virus than infected birds especially in the case of avian influenza but must be considered in planning preventive measures.

Live poultry are transported from farm to farm (eg started pullets) and from farm to processing plant (meat chickens or spent hens), and in the case of day-old chicks from the hatchery to the farm in reusable plastic crates which are normally sanitised after each use. Fertile eggs are transported from the breeder farm to the hatchery in plastic 'filler' trays stacked on metal trolleys. Both fillers and trolleys should be sanitised after each use.

1.3.4 People

People can carry the viruses on their clothing, skin, hair and within the upper respiratory tract and eyes. Newcastle disease can infect humans leading to a mild conjunctivitis accompanied by flu-like symptoms.

1.4 Outputs—the risk of spreading disease

For further information on outputs see Section 2.5.

1.4.1 Live poultry

Live poultry are the greatest danger. Pickup vehicles visit several farms every night and part pickups are common to reduce bird density. They are transported to processing plants in open plastic crates and could disperse considerable amounts of virus for short periods of time at any particular spot. No live birds or product normally return to the farm. Live poultry are sold by the farmer under some circumstances. Contract poultry meat growers have been known to sell some poultry direct to buyers in small numbers if the price is attractive. Some layer farmers sell spent hens to backyard producers. Only in a few places in Australia are there live bird markets. In other countries live bird markets are a major factor in dissemination of disease especially as unsold birds may be returned to the farm after becoming infected at the market.

Chicks

Day-old chicks leave the hatchery to go to breeding or rearing farms. Hatchery waste, including egg shells, unhatched eggs, culled chicks and unwanted off-sex chicks are sent to a renderer or to a garbage tip. Off-sex chicks are normally male chicks of the commercial layer breed but may include females or males of some parent or grandparent strains.

1.4.2 Products

Chicken meat

Chicken meat is likely to be contaminated in an outbreak. Poultry are slaughtered to produce chilled, frozen, parcooked (flashfired) and fully cooked products including whole carcases, cut-up pieces and further processed products. Finished product is usually stored chilled or frozen on the premises. Chilled product is stored for as short a time as possible because it has a shelf life of 7–10 days. Frozen product may be stored for a longer period but this is programmed to be as short as possible for economic reasons. Some FPP products have a shelf-life up to 24 weeks.

However, the likelihood of contaminated chicken meat being fed back to poultry is extremely low.

Eggs

The level of contamination of the shell and contents is small and the chance of recycling organisms to poultry is not great.

Eggs are graded and packed either on the farm or at a centralised packing station and go for human consumption. Eggs retain full freshness for 21 days if kept below 25°C. Kept at 4°C they are considered 'useable' for cooking or pulp making for 3 months.

At an egg product processing plant, egg pulp is processed into a number of products. Whole egg, egg white or yolks may be produced as liquid or powder. Liquid egg pulp is generally pasteurised and is usually stored on the premises. Both frozen and dried product can be kept for long periods.

1.4.2 By-products

Poultry meat offal (unsuitable for human consumption) is used for pet food manufacture or is rendered into poultry meal or feather meal.

Recontamination of rendered material by untreated infected material is probable if storage facilities or plant design allow contact to occur. Rendering plants which have received material from a poultry processing plant involved in an exotic disease outbreak could be required to divert all their product to non-poultry outlets.

1.4.3 Effluent

Effluent from processing and egg packing plants is treated and used as liquid fertiliser or disposed of through the sewer. Egg wastes and hatchery wastes are disposed of in garbage tips or are rendered. Vehicles used for disposal of wastes may become contaminated.

1.4.4 Manure

Poultry manure includes the concentrated urine of the bird as well as the faeces. This gives it a high nitrogen content. Layer farm manure is undiluted and is too powerful for direct use as fertiliser. Commercial treatments (such as Dynamic Lifter) are available to compost it and dilute it with other organic matter for use in domestic gardens as fertiliser. Breeder and meat chicken farm manure is mixed with litter, usually wood shavings or rice hulls etc. and is sufficiently dilute to use directly as fertiliser. It is often used on pasture.

1.4.5 Diagnostic specimens

The remains of specimens are usually burnt, buried, composted or disposed of by clinical waste disposal operators. Cultures are usually autoclaved and then buried or burnt. Autopsies are commonly performed on the farm by the farmer or the serviceperson. Only unusual cases are sent to the laboratory.

The diagnostic laboratory can be a dispersal centre for infectious organisms unless routine precautions are taken. Specimens and cultures must be disposed of by burning, burying, or approved clinical waste collection. People, equipment, pets, and wild birds must be kept away from the laboratory.

1.4.6 Carcases of dead birds

On farms the dead birds are usually burnt, buried or composted. At processing plants they are rendered. The facilities to handle large numbers of dead birds are usually limited.

2 RISK REDUCTION/CONTINGENCY PLANNING

The level of risk of transmission of disease can be reduced in various poultry enterprises by *taking some elementary precautions in design and operation.* These precautions have a benefit in preventing the spread of endemic diseases as well.

2.1 Design of the enterprise

All enterprises should be isolated from others as an aid in control of endemic diseases. This will be an asset in the event of an exotic outbreak.

If premises are easy to decontaminate they can be returned to normal operation more readily. Decontamination is easier if gross organic matter is reduced. Impervious surfaces such as metal or plastic are preferred to wood or fibreboard. Impervious floors (bitumen or concrete) are preferred to earth.

Partitioning an establishment[2] may be acceptable to the control authorities especially in the case of avian influenza which is less communicable than Newcastle disease. Partitioning consists of dividing the premises into sections which are subject to a different level of control because isolation of birds or segregation of product from different sources is possible. In designing the enterprise and its operational procedures it is important to attempt to keep large distances between sheds and to maintain the identity of product batches through the plant, or egg batches through the hatchery to facilitate partitioning if needed.

Details of design features that will assist disease control programs for each of the eight poultry-related enterprises are given below.

2.1.1 Fertile egg (breeder) farm

Distance from other poultry farms (1km) and between age group sections (200–400 m) on the farm is the main defence. Entry and internal movement of people, vehicles and equipment should be restricted. Most breeder farms require people to shower before entry onto the shed area. Vehicles and equipment should be kept off the area or decontaminated before entry. Separate equipment should be provided for each area. Disposal of dead birds must be by burning, burying, composting or commercial collection where the other methods are not allowed (EPA) .

Town water should be used, but if not available water supplies should be stored away from possible contamination by wild birds or treated by filtration to remove organic matter (which inactivates disinfectants) and chlorine to kill organisms (with minimum 20 minutes contact time and 5ppm available chlorine). Ultraviolet (UV) treatment is another option. Drinking water from dams frequented by waterfowl are thought to be a source of avian influenza virus.

Sheds should be proof against wild birds and animals, vermin, pets and unauthorised people. Sheds should be capable of being easily cleaned and disinfected. This means there

[2]An infected premises under AUSVETPLAN is a defined area that may be all or part of a property

must be access for a 'bobcat' or other similar equipment to remove manure. Floors should preferably be concrete or bitumen rather than earth (but many are earth).

Feed storage on farm should be proof against vermin, wild birds and animals. Bulk storage in securable silos is preferred by most commercial farmers but some bagged feed is used especially when required in smaller quantities. Chick starter feed requirements for a batch of baby chicks may be delivered in bags. Bags are usually plastic or multi-walled paper but some hessian bags are still used. Contamination of used bags can be a problem.

While a farm may not be selected on the basis of the availability of a mass burial site that could be required in the unlikely event of an exotic disease, potential sites should be identified for possible use in the future. This can save time in an emergency. Note, burial of large amounts of animal/animal waste is now not allowed in many areas.

2.1.2 Hatchery

Hatchery design is based on a flow pattern from the dirty end (egg receival) through various stages to the (clean) delivery point for day-old chicks. The hatchery has separate rooms to keep contaminants from spreading. Fertile eggs are collected on the farm in plastic 'filler flats' which are transported to the hatchery in cardboard boxes or in metal trolleys. The cardboard boxes are usually used for long-distance transportation such as by air and should not be reused as they are difficult to decontaminate.

Separation of batches of eggs by date of lay and by source flock is helpful in identifying later problems with source flock and time of occurrence. Separation is done by the use of markings on cards on fillers and incubator trays.

Wastes include culled chicks (which are killed humanely), unhatched eggs and egg shells. Disposal of wastes is usually by placing in a sealable container for transport to a tip or to a renderer. Disposal at a tip is undesirable unless immediate burial is arranged. Effluent (floor washing from the hatcher machines and chick handling area) is handled through a treatment system with solids being filtered and added to the waste disposal while liquids go to the sewer or an enviocycle-style unit prior to irrigation.

2.1.3 Meat chicken farm

Isolation from other poultry farms (preferably 1 km) and restriction on entry of people, vehicles and equipment are important. Other consideration for meat chicken farms are as described for fertile egg (breeder) farms (Section 2.1.1).

2.1.4 Poultry processing plant

A poultry meat processing plant normally consists of a single building with separate rooms for various elements of the process with a flow pattern from heavily contaminated live bird areas through to cleaner finished product areas. These rooms **are separated** by a self-closing door for staff access and a small opening for the carcasses to pass through.

Plants should be designed so that areas containing live birds (which can produce large outputs of virus in exhaled air and faeces) are physically separate from subsequent parts of the processing operation. Further separation between the scalding/defeathering area and the evisceration is desirable but not always possible in smaller plants. Separation between the evisceration area (with heavy faecal contamination) and the chilling/packing area is essential.

Poultry from a particular farm usually arrive at the plant and **are processed in a batch** and records are kept in a way which allows identification of birds from a particular flock. This enables tracing back to source flocks and forward to possible contaminated product.

Plant design features should include **separation by at least 1 km** from possible sources of contamination such as live bird facilities or from a diagnostic laboratory. Separation can be augmented by barriers such as trees. Recontamination of clean materials or equipment by dirty items should be minimised by physical separation and by hygiene practices. Offal and effluent handling must be planned to contain contamination.

Crates should be washed and sanitised before leaving the plant.

2.1.5 Layer (table egg) farm

As for fertile egg farms (see Section 2.1.1). Also provide for suitable disposal of broken eggs.

2.1.6 Egg product processing plant

Batches of eggs from a particular supplier should be identified during processing and storage to enable tracing. Waste disposal should be hygienically arranged.

2.1.7 Stockfeed mill

The stockfeed mill should be designed to separate feed ingredients from finished product. If the plant produces pelleted feed it may be necessary to ensure that contamination of finished product by raw materials does not occur. The main risk of spread of infectious organisms is by vehicles and drivers moving from farm to farm.

2.1.8 Diagnostic laboratory

Exclusion of people (especially service personnel and farmers), pets and wild birds, from the laboratory is essential. Disposal of carcases and specimens by incineration is best. Cultures should be autoclaved. Staff should adopt routine hygienic practices routinely. Contaminated areas (especially holding areas for live and dead bird specimens and the autopsy room) should be washed and sanitised at least daily when in use (see **Laboratory Preparedness Manual, Sections 5.1 and 5.2**).

2.2 Procedures for early detection and notification of disease

Intensive poultry raising requires the daily inspection of live birds and recording of mortalities. Early detection of abnormal signs or death rates is very likely to occur. Poultry enterprises are normally aware of the impact of endemic disease and have established procedures for detection and notification within the organisation. Training should also include awareness of the signs of exotic diseases and the requirement to notify the authorities. It is to be expected that an employee of a poultry company will notify the company staff first. A veterinarian is usually involved early in the investigation of any unusual disease condition.

The owner and veterinarian have a special interest to notify unusual disease, but everyone is responsible for reporting such events. Suspicious conditions should be notified to the local government veterinarian or on the exotic disease hotline – **1 800 675 888**.

2.2.1 Fertile egg (breeder) farm

Regular inspection of flocks and autopsy of any abnormal mortalities is required for endemic disease control and quality control purposes and should result in early detection of exotic disease.

2.2.2. Hatchery

A drop in egg production or hatchability could be the result of an exotic disease and may be observed at the hatchery which usually keeps good records and may have computerised monitoring procedures in place. Trace-back to the flock of origin should result in inspection of the flock by a serviceperson or a veterinarian.

2.2.3 Meat chicken farm

As for fertile egg (breeder) farm.

2.2.4 Poultry processing plant

Antemortem inspection is needed under normal circumstances to ensure that each batch of birds is in good health to assist in quality control. This will also assist in identifying exotic disease outbreaks when abnormal signs and deaths in the crates can be expected.

2.2.5 Layer (table eggs) farm

As for fertile egg (breeder) farm.

2.2.6 Stockfeed mill

The feed truck driver is the 'intercom' of the industry and will usually be one of the first to know of an abnormal event. A high mortality problem would lead to a reduction in food being ordered but as many other events have the same effect, it is unlikely that feedmill staff will be alert to such an indicator. However this could become an element in monitoring during an outbreak.

2.2.7 Diagnostic laboratory

The laboratory is one of the most likely places for an exotic disease to be suspected initially. Familiarity with symptoms of exotic diseases and the procedures to be adopted, when one is suspected, are essential.

2.3 Training of staff

All staff should be aware of the risk of exotic disease of poultry and of the main signs which they might encounter in their workplace. The importance of reporting **suspicious signs** is paramount. Overall, Australia has about 60 suspicious exotic disease alerts each year. Reporting of suspicious signs should be made a simple process for the farmer or employee who should be able to make one telephone call, to the veterinarian, the hotline or the laboratory, and not to have to fill in forms or report through a chain of command.

Training in hygiene disciplines is important in all the enterprises and exotic disease awareness should be a part of all such regular training.

The staff responsible for antemortem inspection at the processing plant should receive training in recognising abnormality. All supervisory staff should be trained in recognising conditions for which poultry meat should be condemned. This skill will improve their ability to recognise exotic disease signs.

Hatchery staff should be trained and experienced in **tracing back and forward** to investigate poor production results. Such experience will be useful in an exotic disease.

Staff at the stockfeed mill and egg product processing plant should receive training in general exotic disease awareness so they will realise the need to report suspicious matters.

All farm staff should know the normal appearance, behaviour and production parameters of the farm so that abnormality is recognised. The reporting of suspicious signs is essential.

Diagnostic laboratory staff should be trained regularly in:

- diagnostic signs of exotic diseases;
- notification procedures; and
- decontamination procedures.

2.4 Work procedures and staff hygiene

In all instances work practices should be designed with hygiene in mind. Staff should have special protective clothing. These precautions are helpful in minimising the spread of organisms which contribute to poor shelf life of product and which may be involved in food poisoning. Good precautions include the use of protective clothing, a visitors book at each establishment, and a requirement that visitors sign an undertaking that they have not visited other farms for 24-72 hours depending on the site eg breeder or broiler.

Staff should be required to undertake to have no contact with other poultry or pet birds in their homes.

Safe methods of collection and dispatch of live and dead birds to the laboratory should be a part of normal procedures.

Facilities for decontamination should be provided. For details see the **Decontamination Manual, Section 4.1,** and Section 4.3 of this manual.

2.4.1 Fertile egg (breeder) farm

Staff should change into clean protective clothing when entering the farm and have no outside contact with poultry.

2.4.2 Hatchery

Good hatchery hygiene is accepted for endemic disease control. Regular monitoring of batch identification systems is needed. Staff should have no outside contact with any birds.

2.4.3 Meat chicken farm

As for fertile egg (breeder) farm.

2.4.4 Poultry processing plant

Staff commencing a shift should put on clean protective clothing and avoid contact with the staff on the previous shift. Tools should be cleaned and plunged into hot water between uses. Regular hand washing should be required. Crates used for live bird or egg transport should be washed effectively in detergent and disinfectant between uses. Washing facilities should be provided for trucks, pallets, trolleys and forklifts. Escaping live birds should be recaptured promptly. Offal and effluent disposal should be planned and supervised well.

Pick-up teams used to catch live birds at the farm are often a particular example of poor hygiene. The staff are often not regular employees and imposition of hygiene discipline is difficult. Clothing may not be changed between farms and disease transmission is a risk. Such teams returning to breeder or layer farms may carry pathogenic organisms. The danger is less for meat chicken farms where a clean up and spelling period is normal practice.

2.4.5 Layer (table egg) farm

As for fertile egg (breeder) farm.

2.4.6 Egg product processing plant

Salmonella contamination of egg products is a continuing risk and staff should be aware of hygiene and decontamination procedures. Protective clothing will minimise the contamination of staff which could lead to spread of microorganisms.

2.4.7 Stockfeed mill

Regular monitoring of batch identification systems is needed. Drivers should ensure that they observe all quarantine practices in place on farms and be aware of truck decontamination procedures.

2.4.8 Diagnostic laboratory

Protective clothing, good hygiene practices and decontamination procedures are needed. Staff should have no outside contact with any birds.

2.5 Movement conditions review

The enterprise manager should make up a list of inwards and outwards movements based on the following comments and document methods of limiting all movements if needed. Movement of people and vehicles between all enterprises is most important.

2.5.1 Poultry processing plant

Inwards movements. Pick-up teams catch birds, often at night, placing them into crates or modules and putting them on the back of trucks by forklift. Trucks loaded with crates full of live birds arrive at the plant in the early hours of the morning and queue up to unload. After unloading at the plant the truck is washed and reloaded with clean, sanitised crates and returns to the farm for another load or waits till the next evening. The loaded truck is weighed at a weighbridge which may be on the processing plant premises but may be a public weighbridge where contact with birds from other organisations is possible.

Outwards movements. Product is stored in chillers or freezers and is moved off premises by refrigerated truck to go to market outlets. Offal and waste go by various vehicles to pet food manufacturers, a rendering plant or to a garbage tip. Some of these vehicles are leaky and a source of contamination.

2.5.2 Hatchery

Inwards movements. Eggs come to the hatchery in plastic fillers in metal trolleys or if from afar they may be in cardboard boxes. Closed, insulated trucks designed to protect the fertile egg from the climate are used in local transportation. Eggs may come from distant fertile egg farms even from another state. The truck picks up eggs from a special delivery point at the perimeter of the fertile egg farm or at the hatchery and is not normally sanitised on each journey.

Outwards movements. Day-old chicks go in plastic crates or cardboard boxes by special truck to farms. The plastic chick crates are usually sanitised on return to the hatchery. Cardboard chick boxes can be fumigated before further use but are often not so treated. Fumigation of cardboard containers is not an adequate method of decontamination. Trucks are not usually sanitised unless going to breeder farms. Hatchery waste goes to a rendering plant or to a garbage tip. Some of these vehicles are leaky and a source of contamination.

2.5.3 Stockfeed mill

Inwards movements. Poultry and feather meal are brought onto the premises in bulk or in bags which may be multi-walled paper bags or else hessian or plastic feed bags, which may be new or used.

Outwards movements. Mixed feed leaves the mill in bulk trucks which may go to one or more farms for delivery into silos. Smaller consignments may be in bags which could be multi-walled paper bags or else hessian or plastic feed bags, which may be new or used.

2.5.4 Fertile egg (breeder) farm

Inwards movements. Day-old chicks come from the nucleus (or grandparent) hatchery by insulated truck. The source hatchery may be remote even sometimes in another state. Feed comes by truck from the feedmill and sometimes may visit several farms on each trip.

Outwards movements. Fertile eggs leave on a special closed truck and go to a commercial hatchery which is usually different from the nucleus hatchery. The eggs may go to several hatcheries which may even be in another state. Dead birds are removed from the premises and taken to a rendering plant or a burial site.

2.5.5 Meat chicken farm

Inwards movements. Day-old chicks come from the commercial hatchery by insulated truck. Feed comes by truck from the feedmill and sometimes may visit several farms on each trip.

Outwards movements. Grown meat chickens are picked up by a pick-up team, placed in plastic crates or modules and put on a truck to go to the processing plant. Shed litter may be removed after each batch or else retained to build up over several batches. It is removed by a 'bob-cat' and placed on a truck for uses as a fertiliser. Dead birds are often removed from the premises and taken to a rendering plant or a burial site.

2.5.6 Layer (table egg) farm

Inwards movements. Day-old chicks come form the hatchery (which may be in another State) in an insulated truck. Started pullets come from the started pullet farm in plastic crates and are placed into cages. Feed comes by truck from the feedmill and sometimes may visit several farms on each trip.

Outwards movements. Eggs are taken by an egg pick-up truck to a central grading floor or direct to the market. Second quality and surplus eggs go to an egg processing plant. The egg pickup point is usually remote from live birds and contamination of vehicles may be minor. Dead birds are often removed from the premises and taken to a rendering plant or a burial site.

2.5.7 Egg product processing plant

Inwards movements. Second quality and surplus eggs come direct from a grading floor which may be on a farm or elsewhere.

Outwards movements. Dried or frozen product goes direct to end users.

2.5.8 Diagnostic laboratory

Inwards movements. Sick and dead birds are brought to the laboratory by farmers or service personnel. Holding arrangements for such specimens are often unsatisfactory and danger of spread is a concern. Specimens of non-commercial species of bird are a likely source of exotic agents and should not be accepted at the diagnostic laboratory.

Outwards movements. Left over autopsy materials are usually burnt, buried or composted. Cultures are usually autoclaved.

2.6 Internal quarantine (partitioning)

Internal enterprise divisions may allow part of the property to be left outside the declared infected premises. Significant factors will be the complete separation of staff, equipment, and vehicles; drainage and for Newcastle disease the space between buildings.

2.6.1 Fertile egg (breeder) farm

Nucleus breeder farms may be multi-age operations but isolation and hygiene practices between sections are applied. Each shed or group of sheds will be a single age, all-in-all-out operation. In the case of multiplication (parent) breeders the whole farm is filled in one period which may be spread over days or a few weeks. Each shed or group of sheds is treated as a single age, all-in, all-out flock and such sheds or sections are usually separated from others by 200–400 metres. The distance between sheds within a single age farm is usually about 20–25 metres. Sick birds are killed. Some injured birds may be held within the shed to allow recovery.

2.6.2 Hatchery

Fertile eggs can be stored at about 12–15°C for up to 14 days with only a little loss in hatchability. Most hatcheries have only limited space for storage at this temperature. While eggs from various sources are identified as to source it is not likely that physical separation will be maintained in the setters or hatchers.

2.6.3 Meat chicken farm

The whole farm is filled in one period which may be spread over days or a few weeks. The farm is treated as a single age, all-in-all-out flock. The distance between sheds within

a single age farm is usually about 20–25 metres. Sick birds are killed. Some injured birds may be isolated to allow recovery.

2.6.4 Poultry processing plant

There is no provision for holding suspect birds at a processing plant. They can be slaughtered and disposed of to a rendering plant.

2.6.5 Layer (table egg) farm

Many layer farms are multi-age operations with little isolation between age groups. If isolation and hygiene practices between sections are applied each shed or group of sheds may be a single age, all-in-all-out operation. Sick birds are killed. Some injured birds may be held within the shed to allow recovery.

2.6.6 Egg product processing plant

Shell eggs may be able to be isolated and stored for up to 4 months at 4°C for use in making pulp or in cooking. Once eggs are pulped they lose their identity!

2.6.7 Stockfeed mill

Mills have storage for major ingredients because there is seasonal production and availability of most ingredients. There is little storage available for finished feeds as mixing is normally done immediately prior to delivery. Many mills have bulk outloading bins for storage of finished feeds.

2.6.8 Diagnostic laboratory

Live or dead specimens of birds may be held in cages, crates or boxes in an area outside the autopsy room. This must be under cover to prevent climatic stress on live birds and must be an enclosed area to prevent escape or allow access of wild animals or birds which may spread organisms. Dead birds should be held at 4 °C in a refrigerator to prevent decomposition.

2.7 Veterinary services

Most integrated meat chicken organisations have their own laboratory and veterinarian. Servicemen, who are usually supervised by a veterinarian, are employed by processing companies, feedmills, medication suppliers etc. Veterinarians are involved in staff training programs.

Much of the poultry veterinary expertise in Australia is employed by the industry. Government veterinarians may not be experienced in poultry health matters and will often be unaware of the intricacies of the industry structure and operation.

2.8 Disposal methods

2.8.1 Fertile egg (breeder) farm

Dead birds are burnt, buried, composted or collected by a commercial dead bird disposal operator. Litter, including manure, is sold as fertiliser - mainly for pasture.

2.8.2 Hatchery

Hatch waste goes to rendering plants or commercial dumps. Effluent is treated and goes to the sewer. Note– many hatcheries sell culls to fauna parks etc and the majority of other waste is buried.

2.8.3 Meat chicken farm

Dead birds are burnt, buried, composted or collected by a commercial dead bird disposal operator. Litter, including manure, is sold as fertiliser - mainly for pasture.

2.8.4 Poultry processing plant

Offal goes to pet food manufacturers or to rendering plants. Effluent is treated on site and used as fertiliser on pastures or goes to the sewer.

2.8.5 Layer (table egg) farm

Dead birds are burnt, buried or collected by a commercial dead bird disposal operator. Manure is sold as fertiliser. Much manure is now composted, pelleted and sold for fertiliser.

2.8.6 Egg product processing plant

Waste is treated and goes to the sewer.

2.8.7 Stockfeed mill

Waste is a minimal problem. Feed dust is collected in coarse filter bags and reused as a minor ingredient in feed.

2.8.8 Diagnostic laboratory

Incineration and medical waste collection are the most common disposal methods but burial or composting are sometimes used for carcasses. Cultures are autoclaved.

2.9 Records

Records are kept for commercial reasons (invoicing, quality control, etc) and in some cases for technical reasons such as tracing problems to the source. Records should include source of birds or product; number of units; mortality; hatchability; feed delivery details; feed consumption; movements to and from the premises and visitor details.

2.9.1 Fertile egg (breeder) farm

Records are kept of the breeder flock of origin, date of hatching, daily mortality, body weight, egg production, bird movements and of any events of significance such as vaccination, weather changes.

2.9.2 Hatchery

Each batch of eggs arriving at the hatchery is usually identified to its source flock of breeders to enable monitoring of flock performance. In many organisations this monitoring will be continued by watching chick performance on the farm.

2.9.3 Meat chicken farm

Records are kept of the breeder flock of origin, date of hatching, daily mortality, body weight and movement of birds.

2.9.4 Poultry processing plant

Good records are kept up to the arrival of birds at the plant because producers are paid on the basis of the liveweight of birds. The processor is usually interested in the further performance of the flock as it goes through the plant but identity is usually lost once the product is processed.

2.9.5 Layer (table egg) farm

Records are kept of the breeder flock of origin, date of hatching, daily mortality, body weight, egg production, bird movements and of any events of significance such as vaccination, weather changes.

2.9.6 Egg product processing plant

Commercial records show the origin of batches of eggs but this identity is lost after processing.

2.9.7 Stockfeed mill

Records of each batch are kept for invoicing and because customers have an inclination to blame many of their problems on the feed.

2.9.8 Diagnostic laboratory

Specimens arriving at the laboratory are usually accompanied by a written case history report which has been completed by the farmer or a serviceperson.

2.10 Water supply arrangements

Most poultry establishments are connected to town water supplies. Some farms use dam water and may have a problem with contamination by coliforms and maybe exotic disease agents because of the exposure to waterfowl which may be carriers. Chlorination is the common treatment used where needed. Access to additional water may be needed for use in decontamination of vehicles, equipment and sheds. Some use dam water for washdown. This water should be chlorinated.

2.11 Wildlife/feral animal control

Buildings on poultry establishments are usually bird and rodent proof. Many layer farms are not adequately protected. Water reservoirs may be poorly protected from waterfowl. Evaluate whether environmental conditions are attracting excessive numbers of wild birds.

3 RESPONSE PLANS IN A DECLARED AREA

3.1 Introduction

This section addresses the situation where a poultry-related enterprise, although not having any clinical or suspected cases of a disease itself, is within either a restricted area (RA) or control area (CA) due to an outbreak on another property.

3.1.1 Declared areas

The term **declared area** is one which has been subjected to a legal declaration and includes both a restricted area and a control area.

A restricted area (RA) is a relatively small area around an infected premises (IP) and is subject to intense surveillance and movement controls. It may include some dangerous contact premises (DCP) and some suspect premises (SP) as well as enterprises which are not infected or under suspicion. Movement out of the area will in general be prohibited, while movement into the restricted area would only be by permit. Multiple *restricted areas* may exist within one *control area*. Guidelines for establishing restricted areas are provided in Appendix 1 of each disease control strategy and in the Office International des Epizooties (OIE) Animal Health Code.

A control area (CA) is a buffer between the restricted area and areas free of disease where restrictions will reduce the chance of the disease spreading further afield. The control area should reduce in size as confidence about the extent of the outbreak becomes clearer (minimum 10 km radius). The shape of the area may be modified according to circumstances. In principle, birds and specified product will only be able to be moved out of the control area into the free area by permit.

3.1.2 Local disease control centre

In the event of an exotic disease outbreak in the area of a poultry-related enterprise, enterprise managers should be in contact with the local disease control centre (LDCC). All staff should be fully aware of LDCC requirements and of all arrangements to avoid the risk of spread of disease.

3.2 Can a disease-free enterprise continue to operate in a declared area?

The approval to continue operating will depend on circumstances relating to the epidemiology of the outbreak, including the possibility of infection, provided the movement of birds or product involved from and within the declared area can be allowed without risk to the remainder of the industry.

Enterprises within the declared areas are initially subject to a ‘standstill’ on movement of live birds (taking into account the welfare of the birds) and products until the disease picture becomes clearer. Restrictions may be modified once properties are cleared following inspection and possibly testing. Additional testing and/or inspections may be necessary before a particular movement is permitted to confirm continuing freedom from the disease. With Newcastle disease it must also be remembered that serological testing

may produce a false positive result because of the presence of the non-pathogenic strain of the virus in this country. Such a "positive" will be taken as positive until virus isolation and pathotyping establishes that the non-pathogenic strain is present. Because superinfection by the pathogenic strain may occur in birds exposed to the non-pathogenic strain it will be difficult to be sure if the pathogenic strain is absent.

In most cases, poultry enterprises not directly affected should be able to operate subject to some additional hygiene and security measures. Product and by-product may have to be held until cleared, treated or decontaminated. People, vehicles and equipment should be decontaminated before entering and leaving a poultry premises.

Socioeconomic impact on the industry and individuals affected and the consequential loss to associated parts of the industry and employees must be balanced against the direct costs and the benefits to the industry of eradicating the disease.

Advance arrangements for funding an approved eradication plan are agreed by the Commonwealth and States but the amount of such funds is not limitless. Commonwealth, State and Territory governments are continuously involved, through the Consultative Committee of Exotic Animal Diseases (CCEAD), in evaluating the cost-effectiveness of the measures being taken. There may come a point in any control program when a serious reconsideration of the costs must be undertaken. Each step in expenditure requires approval by CCEAD and sometimes by ministers through ARMCANZ.

If an enterprise is closed some of the local socioeconomic effects can be reduced by employing staff in the control activity.

3.2.1 Fertile egg (breeder) farm

Fertile eggs from an unaffected breeder farm may be permitted to go to an approved hatchery in the declared area. (see the appropriate **Disease Strategy, Appendix 2**).

3.2.2 Hatchery

The hatchery should be excluded from the restricted area if at all possible. If in a control area it may continue to receive fertile eggs from properties which are not IP, DCP or SP if:

- it has not been contaminated and receives fertile eggs from disease free properties only; or
- having been contaminated it is decontaminated under supervision and receives fertile eggs from disease free properties only.

Such a plant may receive fertile eggs from outside the control area under permit.

Fertile eggs may be held in isolation in a cool room (12–15°C) for up to 14 days before setting and for the first 18 days of incubation while the status of the source flock is clarified. Genetic salvage may be permitted under strict conditions.

See the appropriate **Disease Strategy, Appendix 2** for more information.

3.2.3 Meat chicken farm

Grown meat chickens from disease-free farms may be permitted to go to an approved processing plant.

3.2.4 Poultry processing plant

A processing plant should be excluded from the restricted area if at all possible. If in a control area it may continue to receive birds from properties if:

- it produces cooked product only, or
- it has not been contaminated and receives birds from disease-free properties only; or
- having been contaminated it is decontaminated under supervision and receives birds from disease-free properties only.

Such a plant may receive birds from disease free farms in the control area or from outside the control area if the transport vehicles used are disinfected before leaving the control area. Stored, uncooked product from an SP may be allowed to be held under secure storage until the disease status is established.

3.2.5 Layer (table egg) farm

Eggs from unaffected farms may be sold, but in most occasions under permit (see the appropriate **Disease Strategy, Appendix 2**).

3.2.6 Egg product processing plant

If in a declared area it may continue to receive eggs from properties which are not IP, DCP or SP if:

- it produces cooked or pasteurised product only;
- it has not been contaminated and receives eggs from disease free-properties only; or
- having been contaminated it is decontaminated under supervision and receives eggs from disease-free properties only.

Such a plant may receive eggs from outside the control area if the transport vehicles used are disinfected before leaving the control area. Stored, uncooked product from a DCP or SP may be allowed to be held under secure storage until the disease status is established.

3.2.7 Stockfeed mill

A stockfeed mill should be excluded from the restricted area if at all possible. Alternately, if there are sufficient birds within the declared area to consume the mill's output it may be preferable to include it in. If vehicles are decontaminated as they leave the control area, then bulk feed may be able to be delivered into or out of the Control Area. It is the trucks and the drivers which present the greater risk of disease spread, rather than the mill itself.

3.2.8 Diagnostic laboratory

The diagnostic laboratory should not be excluded from the declared area as it is a prime site for cross-infection and contamination to occur. Its presence in a declared area could be useful to examine specimens from suspect farms. In this case the staff and the laboratory will be subject to rigorous decontamination procedures.

If the laboratory is not used to examine specimens from suspect premises it may be allowed to continue to receive specimens from farms outside the declared area. In this case vehicles should transfer specimens at the perimeter of the area to minimise the need to subject departing vehicles to decontamination procedures.

3.3 Minimisation of risks associated with continued operation

There are steps which can be taken by the operator and staff to minimise the risk of introducing the viruses. These include control of the entry of birds, product and fomites. Normal hygiene should be improved and records of poultry and product movement should be maintained thoroughly. Enterprises which operate under a code of good manufacturing practice or some similar quality assurance program will have an advantage in minimising disease risks.

The original source and the actual spread of the organism will be unknown at the beginning of, and possibly at times during an outbreak. For this reason all enterprises in a declared area should take extra precautions. Preventing the spread of the organism from infected locations to the enterprise and from the enterprise to other locations are the objectives.

Movement of live poultry and people must be restricted. Clean overalls and gum boots should be provided for essential visitors at a fixed entry point on the perimeter.

Staff should be monitored for conjunctivitis (which could be caused by Newcastle disease virus infection) and allowed to take sick leave. The control authorities should be notified of any such cases as samples of eye exudate will be taken (with a swab) to check for virus.

Vehicles and equipment should be decontaminated as a routine. This is especially important for pick-up vehicles going back to farms where contact with live birds will occur.

Establish contact with the LDCC to ensure all regulations are being satisfied, and the enterprise is aware of developments.

Vaccination

Vaccination against AI is not an option. Vaccination against ND if adopted as part of the control strategy, will be under the strict control of regulatory authorities.

In addition, in the case of avian influenza the efficacy of vaccines is doubtful.

The following points refer to precautions appropriate to each establishment in addition to the requirements of the authorities as a result of the establishment being in a declared area.

3.3.1 Fertile egg (breeder) farm

Prohibit entry of non-essential people or vehicles. Staff with any access to birds off the premises should be allowed to take leave or given duties which keep them out of contact with poultry.

If allowed by the authorities, placement of new chicks should continue. Manure can be composted in the shed. Birds nearing the end of their productive life may be held on the farm for a longer period if circumstances suggest it would be useful to do so. Meat chickens can be held for only a short time especially in hot weather as overstocking with consequent mortalities could result.

Live birds of any species are a risk and thus bird-proofing of sheds is imperative.

Spread of the Newcastle disease virus on the wind can occur over about 15 km. The geography of the area is therefore important and if possible, ways should be found interrupting the wind flow from any poultry farm or backyard poultry unit. Closing the

curtains on the side of the shed nearest to the possible source of virus may be all that can be done.

The surrounds of sheds should be cleared of any materials (including long grass) that can harbour vermin.

3.3.2 Hatchery

Staff with any access to any birds off the premises should take leave or be given duties where they have no contact with live birds ie in the hatchery area or in the chick handling area.

As eggs from breeder farms could be coming from birds incubating the disease it is prudent to delay setting so as to extend the period between laying and hatching to allow any incubating virus to develop and be detected on the farm. Eggs from undeclared properties should be clearly identified and isolated before setting. With AI, even eggs from SPs could be set, (provided a dedicated machine was used). The eggs can then be disposed of with little risk if the farm becomes a DCP or IP.

3.3.3 Meat chicken farm

The same precautions apply as for fertile egg (breeder) farms.

3.3.4 Poultry processing plant

Live poultry are the main danger but most species of birds are susceptible. Mechanical means of spread such as vehicles, people and equipment are also risks. These will not be allowed to move from an IP or a DCP but the manager should take additional precautions about allowing them from other establishments. This caution should be balanced by a desire to continue to operate despite the situation.

An operating enterprise will need to allow the entry of some people, vehicles and equipment but should exclude any which may have been exposed to infected birds, including commercial poultry, backyard poultry and pet birds. Staff with access to any birds off the premises should take leave or be placed on duties which do not bring them in contact with live birds, or product which they could contaminate and assist in spreading the virus.

Staff movements between farms and other enterprises should be stopped.

3.3.5 Layer (table egg) farm

The same precautions apply as for fertile egg (breeder) farms.

3.3.6 Egg product processing plant

Processing eggs in batches identified as to farm of origin and holding processed product for a period of at least seven days may enable a contaminated batch to be withdrawn if it is from a farm in the incubation stage of the disease.

3.3.7 Stockfeed mill

Control of staff movements and decontamination of vehicles should be tightened.

3.3.8 Diagnostic laboratory

Staff movement control should be instituted and decontamination of people, equipment and vehicles should become essential. Disposal of all autopsy material should be by burning, burial or medical waste disposal.

4 RESPONSE PLANS IN AN INFECTED OR DANGEROUS CONTACT PREMISES

4.1 Introduction

This section covers the situation where poultry-related enterprises either have infected animals on the premises or animals known to have been in direct contact with infected animals.

Declared premises that are proclaimed by the CVO of the State,under State legislation, in the event of an outbreak of an exotic disease, are described below.

Infected premises (IP): defined as the area (which may be all or part of a property) in which an exotic disease exists, is believed to exist, or in which the infective agent of that exotic disease exists or is believed to exist.

Dangerous contact premises (DCP): defined as premises containing animals showing no clinical signs of disease but which, by reason of its probable exposure to disease, will be subjected to disease control measures.

Suspect premises (SP): defined as an area containing animals that have possibly been exposed to an exotic disease through possible contact with infected animals or facilities, people, equipment, semen or embryos, and currently show no symptoms; OR where the disease symptoms are evident, but the diagnosis is as yet to be confirmed.

On an SP, quarantine and movement controls will apply but slaughter and destruction will be postponed until it is reclassified as an IP, DCP or disease free. The control measures are described in detail in Sections 3 and Appendix 2 of the **Disease Strategies for Virulent Avian Influenza and Newcastle Disease.**

The declaration by the CVO of an IP, DCP or SP is determined by the AUSVETPLAN strategies in order to minimise the spread of disease.

4.2 Can the enterprise continue to operate if declared infected?

This section applies to the enterprise only while it is an IP, DCP or SP. Section 3 applies to premises which have not been declared or have been cleared as free.

On an IP[3] live birds are killed and carcases, products, by-products, offal or other material which is known or suspected to be infected or contaminated must be destroyed or effectively decontaminated. In the poultry industry many enterprises have some isolation between sections which may allow them to be partitioned for disease control. Distance and clear operational divisions (separate services, staff and equipment) are sometimes provided for endemic disease control or other reasons. In some enterprises separation of products is practised for technical or commercial reasons. The potential cost (to the industry and to the governments paying the cost of control measures) which could result from slaughter or destruction of all the birds on certain farms or products in storage in a large processing plant could be prohibitively large. Limiting the cost by partitioning the

[3]Depending on exposure some birds may also be destroyed on DCPs - especially with Newcastle disease.

property could be attractive to all concerned provided that disease control can still be accomplished.

The definition of premises (see Glossary) need not be taken as automatically applying to the whole property under one ownership and may allow a section to be operated by separate staff, services and equipment. Newcastle disease can spread from infected birds on the wind under cold, humid, overcast conditions and thus large distances would be needed before considering separation of sections on one enterprise if this were the disease being controlled.

4.3 Elimination of the disease

4.3.1 Stamping out/destruction of animals

Most avian species are susceptible to both Newcastle disease and avian influenza and will be slaughtered if in contact or infected. The only possible exception is for pet birds kept securely inside a house or shed when avian influenza is involved.

4.3.2 Disposal of carcases/materials

All carcasses and any equipment which could have become contaminated and which cannot be decontaminated effectively will be destroyed by burning or burying.

4.3.3 Salvage of poultry or product.

Under some circumstances salvage of birds and product may be possible.

Feed which has been stored in a secure silo is unlikely to have become contaminated and may be quarantined for 30 days after the completion of decontamination and reused either when the farm is restocked or on other livestock, preferably in a non-susceptible species of animal.

See the appropriate **AUSVETPLAN Disease Strategy, Appendix 2**.

4.3.4 Prevention of spread

Before birds have been slaughtered, closing sheds as much as the weather permits will reduce the chance of virus being spread on the wind. Carcases, contaminated equipment and manure which cannot be disposed of promptly should be held in a shed or under cover or in a way which prevents virus from being spread by the wind and vermin.

4.4 Decontamination

The **Decontamination manual** should be consulted for details of chemical agents and methods suitable for various purposes. Both avian influenza and Newcastle disease viruses contain lipids and are therefore susceptible to detergents. In both cases transmission is by infected secretions from the respiratory and intestinal tract, which results in heavy contamination of all facilities, manure and the litter. Following decontamination a farm must be left depopulated of birds for 30 days. In the case of other enterprises where impervious surfaces are decontaminated it should be possible that they can return to full operation immediately after decontamination is completed.

Table 1 Decontamination for poultry enterprises

Live birds	Slaughter
Carcases	Burn or bury
Product or by-product	Cooking, canning, rendering, burning or burying
Animal housing and equipment	Detergents, alkalis[1], Virkon®, hypochlorite, steam
Humans	Warm soapy water
Electrical equipment	Formaldehyde vapour[2]
Water (tanks or dams)	Drain to pasture where possible
Feed	Quarantine in silo or bury
Effluent	Bury, burn or treat with alkalis* or acids (citric or hydrochloric)
Manure	Bury, burn or treat with alkalis or acids (citric or hydrochloric. Compost inside shed for 30 days
Human housing	Detergents, Virkon®, hypochlorite
Machinery and vehicles	Detergents, alkalis
Clothing	Detergents, alkalis, Virkon®., hypochlorite
Aircraft	Detergents, Virkon®

Cooking conditions which will inactivate the virus are detailed in of the **Disease Strategy for Newcastle Disease, Appendix 5**

4.5 Tracing requirements

The movement of live birds, eggs, products, feed, litter/manure, wastes, equipment and people over the previous 21 days will need to be traced in order to identify possible sources of spread of infection and contamination. Records of each enterprise as well as memories of events will be called upon by veterinary investigation officers. The information is recorded and entered into a computer where a special program called ANEMIS (see Glossary) treats the information and prompts further action.

4.6 Proof of freedom

Proof of freedom of farms requires a complex procedure and involves a period of 30 days after decontamination before restocking is allowed because of the high organic matter levels present. Processing plants (meat and egg), hatcheries and diagnostic laboratories which have impervious surfaces and can be adequately disinfected may commence operation as soon as effectively decontaminated.

---

1 Alkalis corrode aluminium and its alloys.

2 Formaldehyde vapour is dangerous and should be used in a confined space under experienced supervision.

Farm premises and the declared area cannot be assumed to be free of the virus without intensive efforts being made to establish that the virus is eradicated. This can involve restocking under supervision and surveillance of all flocks in the declared area. For further discussion about surveillance see Appendix 4 in the appropriate AUSVETPLAN **Disease Strategies.**

4.6.1 Restocking

The farm can be restocked with commercial birds 30 days after completion of decontamination procedures. Samples of birds dying on the farm are collected and taken to the laboratory for virus isolation attempts. Sentinel birds are not favoured for these two diseases because restocking the farm has been found to be more effective.

4.6.2 Surveillance

The **Disease Strategies for Virulent Avian Influenza and Newcastle Disease Appendix 4**, provides details of the surveillance procedures used in various stages of an outbreak.

4.7 Media and public relations

Maintaining an appropriate channel of communication with the media is an important function of the LDCC. It is made very difficult if other information is coming from elsewhere that may appear to conflict with advice given by the LDCC. The enterprise will need to advise clients of the situation, as it affects their provision of services. Advice to the media should be restricted to activities directly affecting the enterprise. General inquiries about the particular disease or the control activities that are being undertaken in the area must be directed to the Public Relations Unit in the LDCC. For further information see the **Public Relations Manual.**

Appendix 1 List of AUSVETPLAN diseases

African horse sickness

African swine fever

Aujeszky's disease

Avian influenza

Bluetongue

Bovine spongiform encephalopathy (BSE)

Sheep and goat pox

Classical swine fever (hog cholera*)

Equine influenza

Foot-and-mouth disease

Lumpy skin disease

Newcastle disease

Peste des petits ruminants

Rabies

Rift Valley fever

Rinderpest

Scrapie

Screw-worm fly

Swine vesicular disease

Transmissible gastroenteritis

Vesicular exanthema

Vesicular stomatitis

Bee diseases:

Braula fly (*Braula coeca*)
tracheal mite (*Acarapis woodi*)
tropilaelaps mite (*Tropilaelaps clarae*)
Varroa mite (*Varroa jacobsoni*)

* this term is not used in AUSVETPLAN

Appendix 2 Summary role statements for enterprise manager

(a) On a disease free enterprise in a declared area

State/Territory and regional disease control authorities will be responsible for the detection, control and monitoring of the disease outbreak. The enterprise manager will be responsible for protecting the enterprise and for the following procedures.

- Arrange telephone (mobile?) and fax connections.
- Obtain or prepare a map of declared area.
- Arrange to get a copy of all relevant AUSVETPLAN documents.
- Brief staff on the situation and their responsibilities for avoiding contamination.
- Liaise closely with LDCC.
- Liaise closely with your industry organisation.
- Record and review all inwards and outwards movements (of birds, product, by-product, manure, people, equipment and vehicles) over the previous 21 days.
- Institute restricted movement controls for all inwards and outwards movements for the duration of the emergency.
- Provide identification and segregation of all batches of product entering the premises.
- Train staff in any new procedures required.
- Review Section 3 of this manual and make appropriate changes to operations.

(b) On an IP, DCP or SP

State/Territory and regional disease control authorities will be in charge of the stamping out and decontamination program but the enterprise manager needs to be involved and will be responsible for the following procedures.

- Arrange telephone (mobile?) and fax connections.
- Obtain or prepare a map of declared area.
- Arrange to get a copy of all relevant AUSVETPLAN documents.
- Brief staff on the situation and their responsibilities for avoiding contamination.
- Liaise closely with the officer in charge (the site supervisor) of the infected premises operations team (IPOT).
- Liaise closely with your industry organisation.
- Allocate staff responsibilities appropriate to the situation.
- Make surplus staff available for employment by the LDCC.
- Review Section 4 of this manual and make appropriate changes to operations.

GLOSSARY

ANEMIS	*An*imal Health *Em*ergency *I*nformation *S*ystem. A system for the collection, assimilation, actioning and dissemination of essential disease control information using paper documentation and a computer data base.
AUSVETPLAN	A series of documents that describes the Australian response to exotic animal diseases linking policy, strategies, operations, coordination and counter-disaster plans.
Chief Veterinary Officer of Australia	The nominated senior Commonwealth veterinarian in the Department of Primary Industries and Energy who manages Australia's international animal health commitments and the Commonwealth's response to an exotic animal disease incursion.
Chief veterinary officer	The senior veterinarian of each State or Territory animal health authority who has responsibility for exotic animal disease control in that State or Territory.
Control area	A bigger area than a restricted area (possibly initially as big as the State) where restrictions will reduce the chance of the disease spreading further afield. The control area may reduce in size as confidence about the extent of the outbreak becomes clearer but must remain consistent with OIE Codes. In principle, animals and specified product will only be able to be moved out of the control area into the free area by permit.
Cost-sharing agreement	Commonwealth/States cost-sharing agreement for the eradication of certain exotic animal diseases.
Dangerous contact animal	An animal showing no clinical signs of disease but which, by reason of its probable exposure to disease, will be subjected to disease control measures.
Dangerous contact premises	Premises that contains a dangerous contact animal(s).
Declared area	A defined tract of land for the time being subject to disease control restrictions under exotic disease legislation. Types of declared areas include restricted area; control area; infected premises; and dangerous contact premises.

Disposal	Sanitary removal of animal carcases and things by burial, burning or some other process so as to prevent the spread of disease.
Enterprise	*see* Risk enterprise.
Exotic animal disease	A disease affecting animals that does not normally occur in Australia. Also called foreign animal disease.
Fomites	Inanimate objects (eg surgical equipment) which can carry the exotic agent and spread the disease through mechanical transmission.
Foreign animal disease	*see* Exotic.
Forward command post	A field operations centre, subsidiary to a Local Disease Control Centre.
Infected premises	A defined area (which may be all or part of a property) in which an exotic disease or agent exists, is believed to exist.
Job card	A written list of tasks to be carried out by an individual in the early stages of an emergency response.
Local disease control centre	An emergency operations centre responsible for the command and control of field operations in a defined area.
Movement control	Restrictions placed on movement of animals, people and things to prevent spread of disease.
National disease control headquarters	A centre established in Canberra from which national disease control actions are coordinated in an exotic animal disease emergency.
Quarantine	Legal restrictions imposed on a place, animal, vehicle or other things limiting movement.
Risk enterprise	Livestock-related enterprise with a high potential for disease spread or economic loss.
Rehabilitation	Process of adjustment to circumstances prevailing in the aftermath of an exotic disease outbreak.
Restricted area	A relatively small declared area (compared to a control area) around an infected premises that is subject to intense surveillance and movement controls. Movement out of the area will in general be prohibited, while movement into the restricted area would only be by permit. Multiple restricted areas may exist within one control area.

Sentinel animals	Animals of known health status monitored for the purpose to detect the presence of a specific exotic disease agent.
State disease control headquarters	The emergency operations centre that directs the disease control operations to be undertaken in the State.
Stamping out	Eradication procedures based on quarantine and slaughter of all infected animals and animals exposed to infection.
Surveillance	A systematic examination and testing of animals or things to determine the presence or absence of an exotic disease.
Suspect animal	An animal which may have been exposed to an exotic disease such that its quarantine and intensive surveillance, but not pre-emptive slaughter, are warranted; Or, an animal not known to have been exposed to a disease agent but showing clinical signs requiring differential diagnosis.
Suspect materials or things	Materials or things suspected of being contaminated by an exotic disease agent.
Suspect premises	Premises containing suspect animals which will be subject to surveillance.
Tracing	The process of locating animals, persons or things which may be implicated in the spread of disease.
Zoonosis	A disease that can be spread between animals and people.
Zoning	The process of defining disease free and infected zones in accord with OIE guidelines, in order to facilitate trade.

Glossary of poultry terms

'Chook'	Australian colloquial for chicken.
Broiler	A meat chicken.
Chick	Baby chicken especially as 'day old chicks' sometimes written as DOC.
Chick sexing	Determining the sex of day old chicks at the hatchery by inspecting characters which can indicate sex, namely the lining of the cloaca, the feather colour or the length of wing feathers.
Chicken	Internationally it means any *gallus gallus* - in Australia it means a juvenile fowl.
Chicken meat	The industry which produces meat chickens and the product.
Cockerel – Cock or Rooster	Adult male fowl.
Crumbles (or kiblets)	When pellets are broken into smaller particles for feeding to smaller birds.
Egg fillers or flats	Moulded fibre or plastic egg trays.
Egg marketing premises	An egg packing enterprise sometimes owned by an Egg Marketing Board in some States (Qld, WA or Tas) an egg producer co-operative (Vic or SA) or by commercial egg producers (anywhere).
Fertile eggs	Eggs for hatching.
Fowl Pest	An old name for Newcastle disease.
Fowl Plague	An old name for avian influenza.
Genetic salvage	Special provisions for breeder flocks identified in advance as being of great significance.
Grandparent breeders	The generation of breeders before the parents. They are often crossbred strains.
Hen	Adult female fowl.
Incubator	A machine for incubating fertile eggs.
– hatcher	An incubator for the last 3 days.
– setter	An incubator from day 1 until 3 days before hatch.
Integrated organisation	When several sectors of the industry are owned by a single organisation.
– horizontal	When a number of successive units are owned.
– vertical	When a number of similar units are owned.
Layer	A special breed of fowl for egg production.
Litter	Material used on the floor of breeder and meat chicken sheds to absorb faeces. Wood shavings, rice hulls and waste paper are commonly used.

Mash	Feed which has been ground and mixed but not pelleted.
Meat chicken	A special breed of fowl for meat production.
Nucleus breeders	The breeders in which the main genetic selection is undertaken in pure strains. They are the great-grandparents of commercial birds.
Off-sex chick	One sex which is not required for the next stage of breeding or production.
Parent breeders	These are sometimes called multiplication breeders and are usually crossbred strains. They produce the commercial birds.
Pellets	When mash is subjected to pressure and heat to form it into pellets.
Pipping	Breaking of the shell by a chick.
Pullet	Immature female fowl - especially approaching maturity.
Setting	A number of eggs placed together for hatching.
Shell eggs	Unbroken eggs as distinct from pulp.
Spent hen	After the completion of her productive life.
Started pullet	Almost mature hen reared on a separate farm and transferred to the adult quarters.
Table eggs	Eggs for eating as distinct from fertile eggs.
Unsexed chicks	Unselected mixed sexes.

Abbreviations

ARMCANZ	Agricultural Council of Australia and New Zealand
ANEMIS	Animal health emergency information system
AUSVETPLAN	Australian Veterinary Emergency Plan
CA	Control area
CCEAD	Consultative Committee on Exotic Animal Diseases
CVO	Chief veterinary officer
DCP	Dangerous contact premises
EDSC	Exotic Diseases Sub-Committee (of AHC)
EPA	Environmental Protection Authority
FPP	Further processed product
IP	Infected premises
LDCC	Local disease control centre
OIE	Office International des Epizooties (The World Organisation for Animal Health)
RA	Restricted area
SCARM	Standing Committee on Agriculture and Resource Management
SDCHQ	State disease control headquarters
SP	Suspect premises

References

Miller, L. A. Simpson-White, P.H. (1988) Guidelines for preventing exotic and serious endemic poultry diseases *Technical Report Series* 151, Department of Agriculture and Rural Affairs (Victoria).

OIE publications

OIE Code (1992). *International Animal Health Code* (6th edition), OIE, Paris, France.

OIE Manual (1992). *Manual of Standards for Diagnostic Tests and Vaccines* (2nd edition), OIE, Paris, France.