Submission No. 01.8
(Quarantine Facility)
Date: 27/03/13

Australian Government
Department of Agriculture, Fisheries and Forestry

Ms Kirsten Livermore MP
Chairperson
Parliamentary Standing Committee on Public Works
Parliament House
Canberra ACT 2600

Dear Ms Livermore

In my letter of 5 April 2013 I advised you of the establishment of an Expert Advisory Group (EAG) to provide independent advice to the Department of Agriculture, Fisheries and Forestry (DAFF) and the Public Works Committee on the biosecurity implications of collocating consignments of imported live birds and hatching eggs within a single building envelope.

I am writing to present the report of the EAG, entitled *Use of Physical Containment Level 3 for Avian Imports at the Proposed New Government Quarantine Facility.* The report has the unanimous agreement of the EAG members who are experts in the fields of veterinary science and animal health, biosecurity, biocontainment, and commercial avian production.

The report was developed through extensive deliberation covering a wide range of issues. A draft of the report was also reviewed by the Animal Biosecurity Branch, the area within the department responsible for the provision of scientific advice on avian biosecurity, and it has concluded that the EAG has considered all relevant aspects within the scope of the terms of reference.

I trust that the report will be of assistance to the Committee in its consideration of an expediency motion.

Yours sincerely

Dr Colin J Grant
First Assistant Secretary
Post-Entry Quarantine Arrangements

10 May 2013

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10 May 2013

Dr Colin Grant
First Assistant Secretary
Post-Entry Quarantine Arrangements
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Dear Dr Grant

As Chair of the Expert Advisory Group (EAG) considering the use of biocontainment level 3 for the quarantine of live avian species at the proposed quarantine facility, I write to provide you with the report of the EAG.

The EAG conducted a series of productive discussions and the group was able to confidently draw its conclusions. Through these discussions the group concluded that biocontainment level 3 is appropriate for the quarantine of live avian species. The group also concluded that the design of the facility being developed by DAFF provides assurance that the risks of cross contamination between importations of avian species and between avian and other species on the site can be managed.

I hope that the report will assist the PWC in its consideration of the project.

I would like to thank you for the opportunity to participate in this group and I look forward to the successful commencement of this important national project.

Yours sincerely

Dr Hugh Millar
Chair
Expert Advisory Group

USE OF PHYSICAL CONTAINMENT LEVEL 3 FOR AVIAN IMPORTS AT THE PROPOSED NEW GOVERNMENT QUARANTINE FACILITY

A Report of the Expert Advisory Group to the

Department of Agriculture, Fisheries and Forestry

May 2013

Cataloguing data

Avian Expert Advisory Group *Use of physical containment level 3 for avian imports at the proposed new government quarantine facility* Report to the Department of Agriculture, Fisheries and Forestry, Canberra, May 2013

The activities of the Avian Expert Advisory Group, including the provision of a Secretariat and the publishing of this report, were supported by the Australian Government

Internet

"Use of physical containment level 3 for avian imports at the proposed new government quarantine facility" is available at daff.gov.au

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ACKNOWLEDGEMENTS

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1. EXECUTIVE SUMMARY

The Department of Agriculture, Fisheries and Forestry (DAFF) currently leases and operates five post-entry quarantine facilities. The leases on these facilities will expire between 2015 and 2018 and the government has determined that constructing a single new consolidated quarantine facility is the best option to address this situation. At a Parliamentary Standing Committee on Public Works (PWC) hearing into the proposed new facility, PWC members raised concerns about the ability of the proposed avian building at the planned new quarantine facility to effectively manage some of the potential biosecurity risks identified by stakeholders. In response, DAFF commissioned an independent review of the design, from a biosecurity perspective, of the proposed avian building by a group of relevant experts – the Expert Advisory Group (EAG).

The EAG considered both the need for the proposed building to contain exotic diseases that could be present in consignments undergoing post-entry quarantine (biocontainment) and industry's need for a functionally practical building that will exclude endemic diseases from consignments held within it (bioexclusion). Specifically, the EAG's scope was to consider the ability of the planned building to manage avian diseases within the following criteria:

1. Is physical containment level 3 (PC3) suitable for the containment of avian diseases?
2. Does the PC3 design of the proposed avian building allow groups of live birds or fertile eggs housed in different PC3 units of the building to be kept separate from each other from a biosecurity perspective?
3. Does the PC3 design of the proposed avian building allow adequate biosecurity separation to be achieved between consignments held in the avian building and consignments of other animal species held in other areas of the future post-entry quarantine facility?

The EAG considered these issues from both a scientific perspective and from a practical operational perspective. The group adopted a systematic review that grouped similar biosecurity risks into categories (airborne disease transmission into the building, airborne disease transmission out of the building, fomite[1] disease transmission, etc.) and then identified risk control measures in the government's planned building that addressed these risk categories., Broadly, the control measures were building structure and location, engineering functions, equipment and operational practices.

The government's proposed avian quarantine building is designed to consist of five operationally and functionally independent, biosecure subunits that are co-located in one building envelope. As a general principle, the EAG notes that as engineering standards are lowered, more reliance must be placed on operating procedures (which are more susceptible to human error). The proposed building has been designed with a high level of engineering to simplify operating procedures and facilitate compliance. The design is described in section 3.3 and a floor plan is provided in Appendix C.

Each subunit within the planned avian quarantine building is designed to PC3 standards. To achieve this level of containment requires structural, engineering, procedural, administrative and other criteria to be appropriately addressed and implemented. The relevant features of PC3 biocontainment buildings are discussed in detail in section 3.4 and the EAG's analysis of how the government's planned avian quarantine building incorporates these features is provided in section 4.1 (Scope 1).

[1] A fomite is an inanimate object (such as clothing, utensils, benches) that can passively carry and transmit micro-organisms

Additional to the PC3 biocontainment measures, the proposed building is designed with bioexclusion measures to prevent endemic diseases from entering any subunit of the avian building. The features of the design that facilitate biocontainment and bioexclusion to prevent cross-contamination are discussed in section 4.2 (Scope 2).

Section 4.3 (Scope 3) addresses the risk of cross-infection between consignments inside the proposed avian quarantine building and animals outside the building. The EAG considered that the risk of cross-infection is adequately addressed by the biocontainment and bioexclusion measures discussed in sections 4.1 and 4.2.

The EAG is satisfied that PC3 is suitable for the containment of avian pathogens and that the design of the government's proposed avian quarantine building has the necessary features to ensure biocontainment of an exotic disease outbreak within any of the building's biosecure subunits (Scope 1). The EAG also considers that the design incorporates sufficient redundancy features to manage the failure of essential equipment or systems. Furthermore, the EAG is satisfied that the PC3 design of the government's proposed avian quarantine building adequately supports the prevention of cross-contamination between consignments held in different subunits of the proposed avian building (Scope 2) and between consignments in the avian building and other animals at the future post-entry quarantine facility (Scope 3). Additionally, the bioexclusion measures designed into the proposed building provide an extra level of assurance and provide a suitable barrier against the entry of endemic diseases into any subunit of the proposed building.

2. INTRODUCTION

As at May 2013, the Department of Agriculture, Fisheries and Forestry (DAFF) leases and operates five post-entry quarantine facilities for the management of imported animals and plants under the *Quarantine Act 1908*. The leases on these facilities expire between 2015 and 2018 with no opportunity for lease extension in the medium term. Consequently, new post-entry quarantine facilities and infrastructure are required that satisfy contemporary quarantine standards and meet future demands. A single consolidated facility was determined by the government to be the best option to respond to this need and the Department of Finance and Deregulation has procured a suitable site at Donnybrook Road, Mickleham, Victoria. The estimated capital cost of the future post-entry quarantine facility is $293.1 million (excluding land).

As the capital cost of the future post-entry quarantine facility will be greater than $15 million the project was referred to the Parliamentary Standing Committee on Public Works (PWC) as required by the *Public Works Committee Act 1969*. On referral to the PWC, DAFF provided a 30% concept design report to the committee which included a description of the need and purpose, and a cost-effectiveness and public value assessment for the future post-entry quarantine facility. The PWC held a public hearing into the proposed new facility on 27 March 2013. Twenty-one submissions from stakeholders were received by the PWC, of which eleven pertained to the proposed avian building, six to the horse compounds, two to plant facilities and two to the general facilities.

Avian stakeholder submissions raised concerns about possible biosecurity risks (both exotic and endemic disease risks) associated with the design of the proposed avian building and with the post-entry quarantine facility generally. Their biosecurity concerns focused on the possibility of diseases moving between different consignments held in separate subunits of the avian building, and between birds in the avian building and other species of animals at the post-entry quarantine facility.

PWC members at the hearing reflected the stakeholder concerns, specifically seeking assurance that the physical containment level 3 (PC3) design of the proposed avian building is suitable to manage the potential risks raised by stakeholders. In response, DAFF undertook to commission an independent review of the proposed avian building by a group of relevant experts – the Expert Advisory Group (EAG).

The EAG has assessed the suitability, from a biosecurity perspective, of the design of the proposed avian building to contain avian diseases, and prevent cross-contamination between consignments in different subunits and between consignments in the building and animals outside the building (imported and local). This report presents the outcome of that assessment.

The EAG's assessment was limited to the following scope (listed in the EAG's terms of reference in Appendix F):

1. Is physical containment level 3 (PC3) suitable for the containment of avian diseases?
2. Does the PC3 design of the proposed avian building allow groups of birds or fertile eggs housed in different PC3 units of the building to be kept separate from each other from a biosecurity perspective?
3. Does the PC3 design of the proposed avian building allow adequate biosecurity separation to be achieved between consignments held in the avian building and consignments of other animal species held in other areas of the future post-entry quarantine facility?

3. BACKGROUND

3.1 Principles of biosecurity risk management

Australia's biosecurity risk management arrangements seek to minimise the risk of entry of harmful exotic pests and diseases into Australia whilst facilitating the introduction of new genetics for commercial and other purposes. This is achieved by DAFF and stakeholders through the implementation of a number of pre-border and border measures including pre-export quarantine, border inspections and post-entry quarantine. The provision of this service is also intended to discourage smuggling activities.

When a new commodity is proposed for import into Australia DAFF conducts an import risk analysis (IRA) to assess the risk of introducing pests and diseases that may be associated with the new commodity. The IRA determines which pests and diseases pose a threat to Australia's plant, animal and human health and/or the environment, and propose risk management measures that form the basis of import conditions. For live animal commodities, these risk management measures usually include a combination of pre-export and post-entry requirements, including disease testing, treatments and quarantine. Of the potential live avian commodities, IRAs have only been performed for fertile eggs (hens, ducks and turkeys) and live pigeons. Consequently, these are the only live avian commodities permitted to be imported into Australia from countries other than New Zealand. During the last three years, there have been on average just over 31,000 fertile eggs and 343 live pigeons imported each year through the government's post-entry quarantine facilities at Torrens Island and Spotswood (see Appendix B for details).

3.2 Biosecurity risk management for birds and fertile eggs

Pre-border risk management

Both fertile eggs and live pigeons can only be imported from a small number of countries approved by DAFF on the basis of their systems to manage and certify their biosecurity health status to an acceptable level. Table 1 summarises the key pre-border and border controls used to reduce biosecurity risk, and Appendix A provides details of the testing requirements for live avian commodities.

Table 1 Pre-border and border risk management for avian diseases

	Pre-border			Border		
	Residence in source flock	**Approved pre-export quarantine facility**	**Disease testing**	**Post-entry quarantine period**	**Sentinel birds co-housed**	**Disease testing**
Fertile eggs	90 days before egg collection	No	Appendix A	Approximately 12 weeks (including egg incubation)	Yes	Appendix A
Live pigeons	6 months before export	55 days	Appendix A	35 days	Yes	Appendix A

Post-entry risk management

1. Principles of post entry quarantine

Post-entry quarantine facilities enable the use of quarantine as an important biosecurity control measure. The fundamental premise that underpins post-entry quarantine of animals is that facilities and procedures be based on the assumption that imported animals, and the goods associated with them may be infected or contaminated with an exotic agent of concern and must be managed as if they were a quarantine risk until the prescribed post-entry quarantine requirements (including tests and treatments) have been met. During the post-entry quarantine period, the successful containment of biosecurity hazards involves a combination of building structure and location, engineering functions and operational practices. So long as Australia remains free from many of the serious avian diseases it will be necessary for imported birds and fertile eggs to undertake post-entry quarantine to mitigate biosecurity risks.

2. Quarantine process

During post-entry quarantine, fertile eggs (and later the birds hatched from these eggs) and live pigeons are subjected to treatments, testing and observation in biological isolation from the local Australian bird population (Table 2). This is undertaken to address residual risk and provides additional assurance, beyond the pre-export testing, that there are no pests or diseases of biosecurity concern (see Appendix A). In addition, both hatched birds and live pigeons must be raised with sentinel Australian chickens which are tested for seroconversion to diseases of quarantine concern during the post-entry quarantine period. Due to the length of time consignments must spend in post-entry quarantine, the current government facilities can only accept three consignments at Torrens Island (fertile eggs) and five consignments at Spotswood (pigeons) per year.

3. Post-entry quarantine facilities

Quarantine can be performed in a facility with full high level biocontainment or in a facility with spatial separation from high risk hosts as defined in the relevant IRAs and enforced through the *Quarantine Act 1908*. The government operated post-entry avian quarantine facilities use full high level biocontainment to mitigate the possible biosecurity risk associated with avian imports. Australia's two privately operated (and DAFF approved) facilities for avian imports use a combination of spatial separation of the premises from high risk hosts and other biocontainment measures.

The government currently operates two PC3 facilities; one at Torrens Island in South Australia and a smaller, but functionally identical facility at Spotswood in Victoria. The diseases of primary concern associated with avian imports are avian influenza and Newcastle disease. The viruses that cause these diseases have been categorised by Australian/New Zealand Standard 2243.3:2010 (Section 3) as Risk Group 3 pathogens (see Appendix E) and as such these viruses, or animals potentially harbouring these viruses, should be housed in a PC3 facility if they are to be fully contained in the absence of substantial spatial separation from susceptible hosts. Based on these guidelines, fertile eggs and live birds in government run quarantine are housed in specialised PC3 facilities until the successful completion of all quarantine requirements. Due to the size of typical consignments, and current facility size differences, live pigeons undertake post-entry quarantine at the Spotswood PC3 facility, while fertile eggs are generally imported through the Torrens Island PC3 facility.

There are two private facilities approved by DAFF for the post-entry quarantine of fertile eggs. These private facilities use only outflow HEPA filters to contain pests and diseases until the results of final source flock testing are received and confirm their negative disease status. After this time the hatched birds are held in a facility that maintains their biosecurity using spatial separation. This alternative approach is supported by risk analysis provided the following three criteria are met: 1. there is only one

consignment at the facility at a time, 2. the entire consignment enters and leaves the facility at the same time and 3. these facilities are surrounded by a large poultry-free buffer zone (at least 2km from commercial poultry farms, and at least 400m from all other poultry). These criteria minimise the possibility that any exotic pathogens in the imported consignment can infect a host amongst the local Australian bird population. These facilities will be permitted to continue in operation, subject to ongoing compliance checks, after the opening of the new government facility.

3.3 The proposed new government avian quarantine building

The government's proposed avian quarantine building has been designed to meet current and future quarantine needs. It will function as both a PC3 biocontainment facility and a bioexclusion facility. All avian post-entry activities including hatching and rearing of birds, and sampling and basic laboratory work will be performed inside a PC3 environment. Using PC3 biocontainment also provides the flexibility to house consignments of other avian species if future IRAs determine that this level of containment is required due to risk group 3 pathogens. Additionally, aggregating all quarantine activities into one facility provides the opportunity to multi-skill management, operational and maintenance support staff, which will create efficiency in operations and enhance emergency response capability.

The design of the government's proposed new avian quarantine building consists of five operationally and functionally independent PC3 subunits that are co-located in one building envelope (see Appendix C). Three subunits are designed for the post-entry quarantine of imported fertile eggs (and the birds hatched from these eggs) and two are designed for the post-entry quarantine of imported live birds. The fertile egg component of the proposed building will have three times the bird rearing floor area of the current Torrens Island facility and the live bird component will have approximately twice the live bird capacity of the current Spotswood facility. The increase in floor space and its division into multiple PC3 subunits will also allow flexibility in accessing quarantine space that has the potential to reduce facility access waiting times and increase throughput of new genetic material for poultry and pigeons.

The design of the proposed avian quarantine building will be complemented by operational procedures to both prevent the escape of exotic pathogens into the environment, and protect the avian consignments from local pathogens and cross-contamination between consignments. The building is designed with HEPA filtration of air intake and exhaust in each subunit preventing aerosolised micro-organisms from both entering and exiting the biocontainment area. The pathways for material entering the subunits for quarantine and material being released from quarantine do not overlap. Furthermore, these activities will be timed such that they will not overlap. The subunits for live birds will be physically separated by a wall from the subunits containing fertile eggs (and their subsequent hatched birds) and entry into each sector will be security controlled.

The movement of DAFF and importer staff as well as items into subunits will be strictly controlled. Staff access to the avian building and the subunits will be controlled by security measures such as electronic cards and access to the subunits will be via a timed shower airlock. Furthermore, only trained DAFF staff will manage the live bird consignments. The design of the building is also such that maintenance personnel can conduct most work outside of the biocontainment area in separate security controlled areas. Items that need to enter the subunit during quarantine will be decontaminated before entry (for example, feed will be double bagged and irradiated) and can also be fumigated in the subunit's decontamination chamber, passed through the dunk tank or autoclaved into each subunit. These items, as well as other risk material (such as solid waste) will not leave the subunit until the end of the quarantine period unless they are suitably decontaminated (autoclaved for example).

3.4 Requirements of physical containment level 3

Physical containment (PC) is the term used to describe procedures and structures designed to reduce or prevent the release of viable organisms into the outside environment. The design and management of PC facilities is described by Australian/New Zealand Standard (AS/NZ) 2243.3.2010 *Safety in Laboratories: Part 3 Microbiological Safety and Containment* (the Standard) which is approved by the Council of Standards Australia. The Standard includes guidelines and requirements related to building designs and location, engineering function, equipment, and work practices intended to allow the safe handling and containment of micro-organisms.

The concept of PC has been accepted worldwide for several decades, although the specific terminology and definitions vary from one country to another. The United States Centers for Disease Control and Prevention developed the Biological Safety Levels (BSLs) to contain pathogens in the 1950s. Since then this standard has been adopted by the United States[2], and is used by several other countries, such as the member states of the European Union[3] and Australia, to develop their own standards that reflect their specific legislation. These standards are revised regularly to accommodate new scientific knowledge and technologies.

PC has four levels (PC1 to PC4) that are assigned for work with different micro-organisms or animals likely to contain micro-organisms of concern. The Standard classifies micro-organisms into Risk groups 1 - 4 based on their pathogenicity, mode of transmission and host range, as well as the availability of effective preventative measures and treatments (Appendix E). Risk group 4 organisms pose the highest risk to humans, animals and the environment. The PC facility used to contain a micro-organism or an animal potentially harbouring a micro-organism of concern, should match and be suitable for the risk group of the pathogen. For example avian influenza and Newcastle disease viruses are Risk group 3 pathogens and therefore these pathogens should be contained in a PC3 facility.

PC3 facilities provide additional building features and services beyond those of PC1 or PC2 facilities to minimise the risk of infection to individuals, the community and the environment. These differences are explained further in Table 2 which is derived from the Standard. The Standard addresses these differences in the categories of construction, ventilation, access to services, containment equipment, work practices and health monitoring (Appendix D). A key feature of PC3 facilities is that they operate at a significant negative air pressure; in combination with outer change rooms, airlocks and inner change rooms. This negative air pressure regime ensures that an inward air flow is maintained, including during the access and egress of operational staff. These facilities also use HEPA filters which filter air discharged to the environment preventing the release of aerosolised particulates that could potentially harbour micro-organisms.

[2] Richmond JY, McKinney RW (editors) (1999). Biosafety in Microbiological and Biomedical Laboratories (5th ed.). ISBN 0-7881-8513-6),

[3] Council Directive 90/679/EEC of 26 November 1990 on the protection of workers from risks related to exposure to biological agents at work, OJ No. L 374, p. 1.

Table 2: Summary of PC requirements according to AS/NZS 2243.3: 2010

Criteria		Physical containment level			
		PC1	PC2	PC3	PC4
Access:	Secure from general access	YES	YES	YES	YES
	Security controlled and self-closing	NO	YES	YES	YES
Room sealable for gaseous decontamination		NO	NO	YES	YES
Ventilation:	Inward air flow	NO	YES	YES	YES
	Controlled ventilation system	NO	YES	YES	YES
	HEPA filtered exhaust air	NO	NO	YES	YES
Ante- room		NO	Risk based	n/a	n/a
Entry via controlled airlock		NO	NO	YES	YES
Shower on exit		NO	Risk based	Risk based	YES
Effluent decontamination		NO	NO	Risk based	YES
Steam steriliser:	Available	NO	YES	YES	YES
	Barrier double door type	NO	NO	Preferred	YES
Decontamination of solid waste		NO	YES	YES	YES

Note: Where any of the above features are nominated as risk based, the design of the proposed avian facility incorporates the highest level of recommendation from the Standard.

Approval of a PC3 facility is dependent not only on the facility meeting structural and engineering criteria but also operational controls to maintain containment and to protect workers, animals and the environment from exposure to undesired micro-organisms. Central to these requirements are:

- Engineering controls to establish and maintain space conditions, air quality, HEPA filtration of exhaust air, physical security and biocontainment continuity, monitoring and alarms
- Engineering control measures for solid waste (steam sterilisers or autoclaves), high temperature liquid waste decontamination systems, decontamination chambers and dunk tanks for the introduction or removal of equipment.
- Strict access control within the avian quarantine building and the post-entry quarantine facility, ensuring all operational staff are suitably trained and experienced. Note that this includes importers' and DAFF staff, as well as maintenance personnel accessing ancillary areas. It includes segregation between the live bird zone and the hatching zone and segregation between individual sub-units within these zones.
- Availability and use of appropriate personal protective equipment for staff that operate each facility subunit
- Operational procedures to manage issues such as an accident, outbreak or spillage.
- Ongoing review and management of procedures, and DAFF and importer staff training to maintain the operational status at an acceptably high standard for safety, security and biocontainment
- Suitable administration, documentation, data logging and record keeping to maintain ongoing validation of procedures
- Periodical maintenance, drills, testing and certification of critical operational equipment to assure ongoing suitability.
- The provision of backup (redundancy of systems) for all critical items including air conditioning for animals, exhaust ventilation to maintain containment, chillers and heating equipment to keep facility spaces cool or warm at different times of the year, and backup electrical power in event of loss of mains electrical supply.

The EAG notes that DAFF intends to develop the above procedures and security provisions with guidance from the current DAFF and Australian Animal Health Laboratory (AAHL) operating procedures, suitably adapted for the proposed building layout.

4. ANALYSIS

4.1 Is physical containment level 3 suitable for the containment of avian diseases?

PC3 and avian disease containment

The government's proposal is to construct a PC3 building to manage avian disease risks associated with avian imports. The pathogens of most concern in the context of avian imports are avian influenza virus and Newcastle disease virus. Both of these pathogens are classified as risk group 3 pathogens (Appendix E) and so a PC3 facility is necessary for their full containment. Hence, by definition, the government's proposed PC3 facility will be appropriate to contain the diseases of concern to avian imports.

PC3 features of the proposed avian quarantine building

1. *Monitoring and control systems*

The successful containment of diseases is dependent on a good relationship between construction and operational procedures (Table 3). Section 3.4 describes features of PC3 units that are necessary to prevent accidental escape of pathogens. Equally important is the regular monitoring of essential systems. The proposed new avian quarantine facility will incorporate a modern automated control and monitoring system that includes automated reporting and logging of normal operational parameters (e.g. temperatures in animal rooms, PC3 air pressure conditions, etc), as well as alarm sensing and logging with reporting to on-site and off-site (auto-dial) maintenance personnel according to the nature of the alarm. More specifically, the system is designed to: 1. monitor and control the systems, 2. automatically initiate standby systems in event of critical equipment failure and 3. minimise and manage single points of failure. These measures help maintain biocontainment and support animal welfare protecting valuable stock.

Integral to establishing and maintaining biocontainment is the development of materials and processes for the training of staff in operational procedures, and regular inspections of the facilities and assessment of staff competencies. DAFF has reported to the EAG that it has well established systems for independent audit and internal verification, developed training material, such as an instructional material library, and procedures for staff training and assessment. Additionally, DAFF reports that the proposed new avian building will not be commissioned for operation until it has undergone a thorough assessment that includes independent expert review to ensure it meets the PC3 containment level and is fit for purpose. Indeed, it is a requirement of all PC3 facilities that they be assessed for compliance with both physical and operational components of the Standard before they are commissioned into service.

Table 3: Features of DAFF's proposed avian building to prevent transmission of pathogens

	REMEDIATION	
PATHOGEN TRANSMISSION	**Physical**	**Operational**
Airborne – into PC3 subunit	-incoming air passes through a HEPA filter -double door access via airlock -gaseous decontamination chamber -exhausted air not recirculated -airtight construction of facility	-training in the operation of a PC3 facility
Airborne – out of PC3 subunit	-outgoing air is passed through a HEPA filter -negative pressure maintained within the barrier -airlock -airtight construction of facility	-standard operating procedures and training to minimise the creation of contaminated aerosols -training in spill management
Liquid waste	- heat treated -If heat treatment failure waste can be treated with chemicals -the basement level of structure is bunded to secure leaks/spills -smooth non-permeable walls, floors and surfaces -the basement can be cleaned and disinfected -a safety shower in the basement	-training of users in liquid waste procedures -use of disposable (or autoclavable) personal protective equipment - shower in and out policy -training in spill management
Solid waste	-autoclaved before leaving PC3 facility -sufficient cold storage space for storing all waste in quarantine period	-training of users in solid waste procedures -use of disposable(or autoclavable) personal protective equipment e.g. gloves - shower in and out policy -decontamination of surfaces
Fomites	-dunk tank -autoclave -gaseous decontamination chamber -smooth non-permeable walls, floors and surfaces - shower with outer and inner change rooms	-use of disposable (or autoclavable) personal protective equipment - shower in and out policy -decontamination of surfaces
Disease outbreak in a subunit	-HEPA filtration of exhaust air from contaminated subunit -HEPA filtration on intake air into neighbouring subunits -airlock -airtight construction of facility -negative pressure - subunits designed for full gaseous decontamination	-full decontamination procedures -operation of other subunits is not impacted

2. *Redundancy for system failures*

An important component for this avian PC3 building will be the inclusion of redundancy in order to ensure that biocontainment is not compromised in the event of equipment or system failure. Redundancy has been designed into the proposed avian quarantine building at all levels. This includes multiple chillers for space cooling, multiple water heating units for space heating and multiple steam boilers for steam driven equipment such as autoclaves (steam sterilisers) and liquid waste treatment systems. Duplex pumping systems are provided in the event of liquid circulation failure. Backup power, in the form of three diesel generators, is provided in the event of site electrical power supply loss. All of these systems are designed to operate and switch to backup sources automatically in the event of a primary supply failure. Within each subunit, backups are also proposed for air conditioning supply and exhaust ventilation systems.

Redundancy has also been proposed for solid and liquid waste management. In the event of autoclave failure, redundancy will be provided through sufficient cold room storage to accommodate waste until the consignments are released from quarantine, or the autoclave is repaired. Similarly, if the liquid waste heat treatment system fails, chemical treatment will provide an effective backup.

3. *Enhancements specific to the DAFF facility*

i. *High engineering standard*

Designing a facility that allows relevant biosecurity procedures to be implemented intuitively is very important. The lower the standard of engineering the more biosecurity becomes reliant on operating procedures. The proposed avian quarantine building has a high level of engineering to simplify operating procedures and facilitate compliance.

ii. *Bioexclusion controls*

The proposed avian quarantine building will have the dual roles of preventing the escape of exotic pathogens into the environment (biocontainment) and protecting the consignments held within it from infection by local pathogens carried by wild birds, fomites or cross-contamination from other subunits (bioexclusion). To ensure endemic diseases do not enter the building, such as through the air intake or on risk materials including clothing and animal feed, HEPA filtration of intake air and decontamination chambers, autoclaves and dunk tanks will be provided. Furthermore, access to the avian building and the individual subunits will be security restricted, and personnel entering subunits must undergo full decontamination through the shower airlocks.

iii. *Decontamination provisions*

The provision of access, through the use of a gaseous decontamination chamber or dunk tank, will allow urgent supplies to be delivered or maintenance to be carried out as required. This feature will be essential to ensure that a quarantine programme does not need to be terminated due to the unexpected failure of serviceable items or the need to provide food or support materials (such veterinary equipment or tools for fixing equipment). Additionally, the building has been designed such that individual subunits can be fumigated between consignments or in the event of a disease outbreak in the subunit without affecting the operations of the other subunits.

The EAG is satisfied that PC3 is suitable for the containment of avian pathogens and diseases and that the design of the government's proposed avian quarantine building has suitable redundancies to maintain biocontainment in the event of an equipment or systems failure.

4.2 Does the PC3 design of the proposed avian building allow groups of birds or fertile eggs housed in different PC3 units of the building to be kept separate from each other from a biosecurity perspective?

By virtue of their design, each PC3 subunit in the proposed avian quarantine building functions independently of the others. Each separate PC3 subunit has its own shower airlock, and decontamination chamber. However, as noted above, the definition of PC3 includes more than just physical structures – equipment, ventilation, access to services, work practices and health monitoring are all integral parts of the classification. Some key components of the proposed new facility that will allow the subunits to operate as biologically distinct entities are discussed below.

Spatial separation of functions

Air handling and liquid waste equipment will be located separately to the PC3 containment subunits that are at ground level. Air handling equipment will be housed in a dedicated roof-space plant room directly above the biocontainment level. Below the ground level there will be a basement where drainage pipes are located and connect to the liquid waste decontamination equipment. This design allows gravity drainage of liquid waste, eliminating the hazards associated with pumped or pressurised waste pipe systems. The building has been designed such that the great majority of maintenance and repair work, such as for mechanical and ventilation equipment, electrical switchboards, fire protection systems, control panels, can be carried out without the need to enter the biocontainment area.

HEPA filtration

Appropriate filtration of air is an integral part of the design of the proposed avian PC3 facility. The proposed design includes HEPA filtration of both air intake and outflow for each independent subunit in the avian facility. HEPA filters are designed to capture aerosolised particulate matter that may contain micro-organisms. They are an extremely reliable and proven technology and are widely used throughout the world to manage biocontainment hazards. The HEPA filters will be located in the exhaust air streams from each containment subunit (including shower airlocks, laboratories, incubation rooms, main bird rooms, waste collection rooms and decontamination chambers). The majority will be accessible in the roof area so they can be monitored and replaced without entering the biocontainment area.

The integrity of the exhaust duct systems and HEPA filter housings is essential to maintain the PC3 status. The exhaust duct systems and HEPA filter housings will be gas tight and of fully welded construction. Additionally, the exhaust HEPA filter housings can be independently gas-decontaminated as required to permit safe access for maintenance, filter integrity testing and replacement. The location of the exhaust duct system and HEPA filter housing in the avian building and their design is such that they can be tested regularly to ensure their ongoing air-tightness and performance,

In the proposed new avian quarantine building additional high quality filtration will also be used upstream to protect and prolong the life of the HEPA filters. Within the PC3 subunits, high capacity dander filters will be used that can be easily accessed by facility operational staff to allow monitoring and replacement as needed. Additional filters downstream of these dander filters will be included to further protect the HEPA air filters.With the protecting filters proposed for the facility, the HEPA filters are designed to last for 10 years. Programmed monitoring of the filter loading allows planned replacement outside of quarantine periods.

The inclusion of both inflow and outflow air filtration in the proposed design manages the risk of airborne release of exotic diseases from birds contained inside the building as well as the risk of airborne introduction of local diseases into any subunit of the building.

Waste treatment

The proposed avian quarantine building design includes a centralised, backflow- protected, gravity fed liquid waste treatment plant. The proposed system will include high temperature sterilisation which offers the highest performance against known pathogens of concern. It is also likely to offer the best long-term performance and hence, as far as possible, future proofing.

The decontamination of solid waste during the quarantine period will be managed through individual autoclaves associated with each PC3 subunit. The total physical segregation of each subunit ensures that there is no inter-connection of any potentially contaminated zone with any other subunit.

There are additional levels of biosafety designed into the proposed facility for waste treatment. In the event of a heat system failure liquid waste can be decontaminated using chemicals. Similarly, in the event of an autoclave failure there is sufficient cold storage for solid waste until the autoclave is repaired or the quarantine completed.

Equivalent PC3 facilities

The government's proposed avian quarantine building is, in effect, similar to the facilities at AAHL, the New South Wales Department of Primary Industries' Elizabeth Macarthur Agricultural Institute and other high security animal research and disease contamination laboratories around the world. The purpose of these facilities differs from the proposed new avian quarantine building in that animals in research facilities are generally intentionally infected with pathogens or are known to have a disease status that can result in high titres of pathogens in the air, on personal clothing and equipment and in solid waste and liquid waste streams. The co-location of independent PC3 subunits in the one building is standard practice in such high security laboratories and it allows biocontainment efforts and resources to be focused where they are most needed. For example, AAHL operates 26 PC3 subunits side by side in one building envelope and has done so for over 25 years without a single incident of cross-contamination between these subunits.

The EAG is satisfied that PC3 is suitable for the containment of avian diseases within each of the subunits in the proposed DAFF design. Together with DAFF's proposed exclusion enhancements to PC3 containment, the EAG is satisfied that the proposed design provides sufficient biosecurity separation between consignments held in different subunits of the proposed avian building.

4.3 Does the PC3 design of the proposed avian building allow adequate biosecurity separation to be achieved between consignments held in the avian building and consignments of other animal species held in other areas of the future post-entry quarantine facility?

Cross-species disease spread is uncommon and generally requires the affected species to be held in close association with each other, or for direct linkages to be established through other means (for instance, feeding meat from horses infected with influenza to dogs). DAFF has been operating multispecies quarantine facilities for decades and cross-species disease transfer has never been

recorded at these facilities. Similarly, AAHL has not observed any occurrence of cross-contamination between its 26 co-located PC3 subunits in its more than 25 years of operation.

The risk of cross-contamination between species in different locations at the quarantine facility is managed by physical and operational controls. Before imports of any animal species can occur, they are subject to a comprehensive risk assessment which forms the basis of Australia's import conditions. One component of this risk assessment is the identification of pathogens of concern, how the pathogens are transmitted and what species can be infected by these pathogens. Thereby, Australia's import conditions include measures to manage the risk of pathogens of concern being transmitted to susceptible species while in quarantine. These measures may take the form of physical separation distance (e.g. horses in quarantine must be at least 100 meters from other horses not of the same import consignment) or specialised containment facilities (e.g. PC3 buildings for birds). Beyond these measures to maintain biosecurity, the new quarantine facility has been designed with additional separation between compounds to ensure that if one compound is locked down on account of a disease concern, other compounds can continue to operate as normal.

Operational procedures will also be integral to maintaining biosecurity at the proposed quarantine facility (see section 3.4). Stakeholder submissions to the PWC raised concerns about the potential for pathogens to be transmitted on personnel and equipment that moves between different compounds. Operational procedures will manage this risk at the proposed future quarantine facility as they do at DAFF's existing facilities. The most fundamental procedures relate to facility security and the strict control over who can enter the different compounds at the future quarantine facility. For example, personnel at the new facility will be assigned to specific roles, trained in standard operating procedures (including showering in and out of relevant compounds) and only given access to specific compounds that relate to their roles in order to prevent cross-contamination. In the proposed new avian building, personnel working in one PC3 subunit will not be able to access any other subunit holding a different consignment.

The proposed new quarantine facility has been designed to include redundancies to maintain the overall biosecurity of the site. The quarantine facility has also been designed to maintain continuity of operation and therefore biosecurity integrity, via the inclusion of multiple system redundancies, to manage the risk of breakdowns or failure of mechanical plant or utilities (see section 4.1).

The EAG is satisfied that birds held in the proposed avian quarantine building will not pose a biosecurity risk to any animals outside the avian building and that animals outside the avian quarantine building will not pose any biosecurity risk to birds held in the building.

5. CONCLUSION

The EAG is satisfied that it has been able to make an informed assessment of the government's proposed avian quarantine building from a biosecurity perspective. In relation to the scope defined in the EAG's terms of reference, the group has concluded:

1. ***Is PC3 suitable for the containment of avian diseases?***

The EAG is satisfied that PC3 is suitable for the containment of avian pathogens and diseases and that the design of the government's proposed avian quarantine building has suitable redundancies to maintain biocontainment in the event of an equipment or systems failure.

2. ***Does the PC3 design of the proposed avian building allow groups of birds or fertile eggs housed in different PC3 units of the building to be kept separate from each other from a biosecurity perspective?***

The EAG is satisfied that PC3 is suitable for the containment of avian diseases within each of the subunits in the proposed DAFF design. Together with DAFF's proposed exclusion enhancements to PC3 containment, the EAG is satisfied that the proposed design provides sufficient biosecurity separation between consignments held in different subunits of the proposed avian building.

3. ***Does the PC3 design of the proposed avian building allow adequate biosecurity separation to be achieved between consignments held in the avian building and consignments of other animal species held in other areas of the future post-entry quarantine facility?***

The EAG is satisfied that birds held in the proposed avian quarantine building will not pose a biosecurity risk to any animals outside the avian building and that animals outside the avian quarantine building will not pose any biosecurity risk to birds held in the building.

APPENDIX A

IMPORT TESTING REQUIREMENTS FOR FERTILE EGGS AND LIVE PIGEONS

	Pre-export testing		Post-entry testing	
	Fertile hen eggs	**Pigeon**	**Fertile hen eggs**	**Pigeon**
	Source flock	Each bird	Source and sentinel flocks	Each bird and sentinel flocks
Pathogen				
Avian influenza virus	Serology	VI and Serology	VI and Serology	VI and Serology
Newcastle disease virus	Serology	VI and Serology	VI and Serology	VI
Paramyxovirus 1 pigeon	Serology	VI and Serology	NT	VI and Serology
Paramyxovirus 2	Serology	VI	VI	VI
Paramyxovirus 3	Serology	VI	VI	VI
Equine viral encephalomyelitis	NT	Serology	NT	NT
Salmonella Gallinarum	Freedom or Serology	Faecal culture	Culture and Serology	Serology
Salmonella Pullorum	Freedom or Serology	Faecal culture	Culture and Serology	Serology
Salmonella Enteritidis	Freedom or Serology	Faecal culture	Culture and Serology	Serology
Salmonella Arizona	Freedom or Serology	Faecal culture	Culture and Serology	NT
Ornithobacterium rhinotracheale	NT	If suspected	If suspected	If suspected
Infectious bursal disease virus	NT	Serology	VI and Serology	NT
Pigeon herpes encephalomyelitis virus	NT	If suspected	NT	NT
Chlamydophila psittaci	NT	If suspected	NT	NT^
West Nile virus	NT	Country freedom or serology	NT	NT
Avian pneumovirus	Serology	NT	Serology	NT
Mycoplasma iowae	Only turkeys	NT	Only turkeys	NT

VI virus isolation, NT Not tested, ^ all birds treated during quarantine

APPENDIX B

NUMBER OF IMPORTED FERTILE EGGS AND LIVE PIGEONS

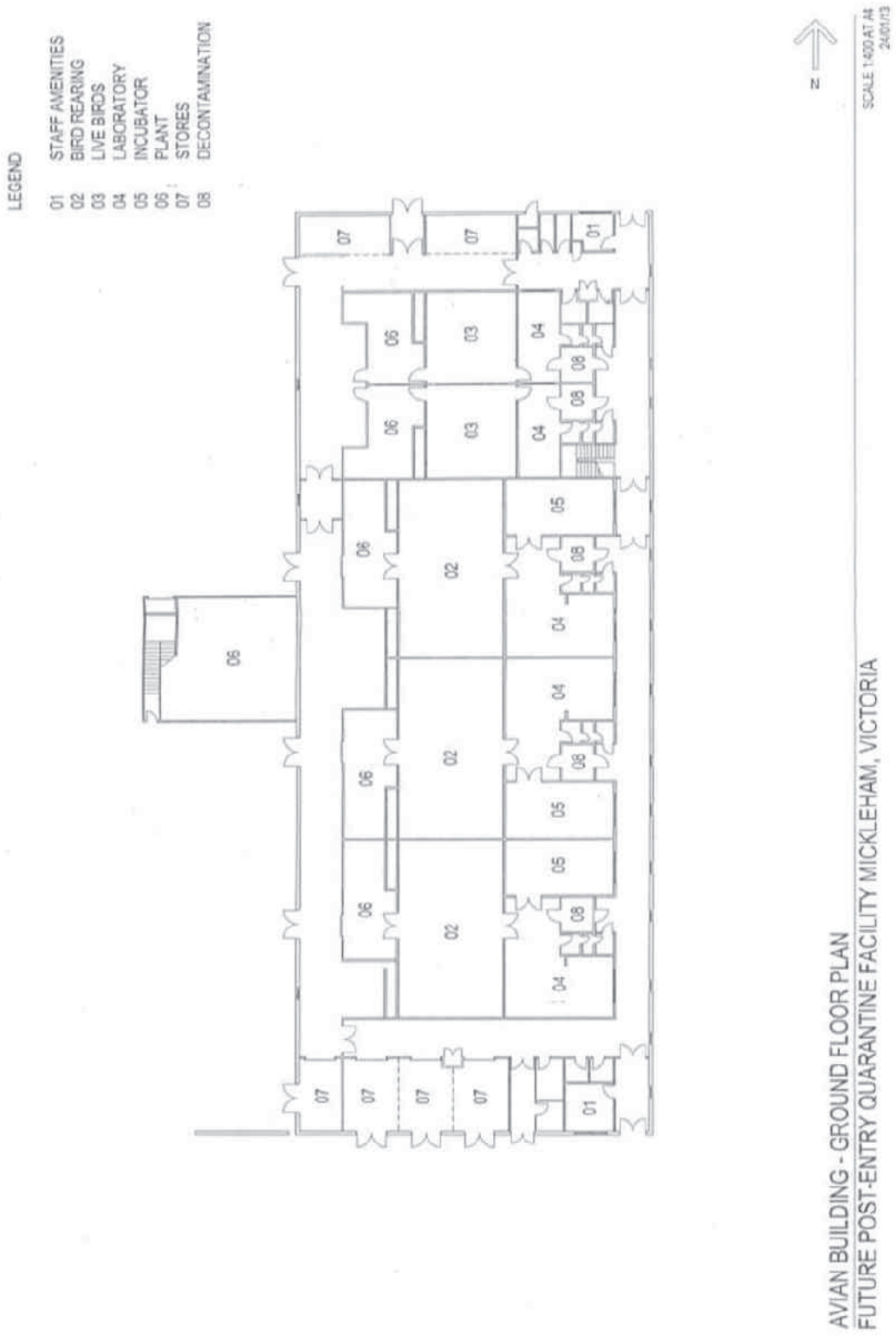
In the past three years Australia has imported an average of 31,053 fertile eggs (hens, ducks or turkeys) and 343 live pigeons each year that were housed in the government's post-entry quarantine facilities.

Fertile eggs and pigeon imports processed through DAFF post-entry quarantine facilities 2010-2012

Commodity	Year	Number of Consignments	Number of eggs/birds
Eggs	2010	2	28,360
	2011	2	26,560
	2012	3	38,240
Pigeons	2010	2	320
	2011	1	156
	2012	4	553

APPENDIX C

AVIAN FACILITY FLOOR PLAN



APPENDIX D

AUSTRALIAN/NEW ZEALAND STANDARD 2243.3:2010
Safety in Laboratories
Part 3: Microbiological safety and containment
Section 6 Animal containment facilities

This standard can be purchased from
http://infostore.saiglobal.com/store/details.aspx?ProductID=1430097

APPENDIX E

AUSTRALIAN/NEW ZEALAND STANDARD 2243.3:2010
Safety in Laboratories
Part 3: Microbiological safety and containment
Section 3 Degree of hazard from micro-organisms

This standard can be purchased from
http://infostore.saiglobal.com/store/details.aspx?ProductID=1430097

APPENDIX F

TERMS OF REFERENCE

EXPERT ADVISORY GROUP

April 2013

1.0 PURPOSE

The purpose of the Expert Advisory Group is to advise the Department of Agriculture, Fisheries and Forestry (DAFF) and the Public Works Committee (PWC) on the suitability, from a biosecurity perspective, of the design of the proposed avian building in the proposed future post-entry quarantine facility in Victoria.

2.0 AIM

To assess the suitability, from a biosecurity perspective, of the design of the avian building in the proposed future post-entry quarantine facility in Victoria and produce a report on this issue by Monday 13 May 2013 for submission to the PWC.

3.0 SCOPE

The Expert Advisory Group will consider and advise on the following issues:

1. Is physical containment level 3 (PC3) suitable for the containment of avian diseases?
2. Does the PC3 design of the proposed avian building allow groups of birds or fertile eggs housed in different PC3 units of the building to be kept separate from each other from a biosecurity perspective?
3. Does the PC3 design of the proposed avian building allow adequate biosecurity separation to be achieved between consignments held in the avian building and consignments of other animal species held in other areas of the future post-entry quarantine facility?

The following issues are not within the Expert Advisory Group's scope: alternative avian building designs, the inclusion of sleeping accommodation at the future post-entry quarantine facility, the size of the avian building and its subunits.

4.0 MEMBERSHIP

4.1 Expert Advisory Group Structure

- **The Expert Advisory Group shall consist of:**
  - The Australian Chief Veterinary Officer
  - A representative of Biosecurity Victoria
  - A representative of the Australian Animal Health Laboratory
  - A representative of the Australian Veterinary Association

- An international representative from the Competent Authority of an Australian trading partner.
- Two independent experts familiar with the Australian poultry industry.
- An engineer with expertise in biocontainment and containment level standards

- The Biosecurity Victoria representative shall be the chairperson of the Expert Advisory Group.

4.2 Nomination and appointment:

Suitable representatives will be nominated by DAFF to ensure that there is appropriate expertise and a broad representation of different stakeholder interests on the Expert Advisory Group. The nominated representatives are:

- Dr Hugh Millar, Executive Director Biosecurity Victoria (chair)
- Dr Kurt Zuelke, Director, Australian Animal Health Laboratory
- Dr Kevin Doyle, Veterinary Director, Australian Veterinary Association
- Dr Matthew Stone, Ministry for Primary Industries, New Zealand
- Dr Peter Scott, Scolexia Animal and Avian Health Consultancy
- Dr Paul Gilchrist, veterinary advisor to avian importers
- Mr Neil Walls, engineer specialising in biocontainment
- Dr Mark Schipp, Australian Chief Veterinary Officer

4.3 Term of office

The term of office for each Expert Advisory Group member shall be from the date of appointment until 7 June 2013.

5.0 RESPONSIBILITY OF MEMBERS

5.1 Code of Conduct

Expert Advisory Group members must:

- Sign, date and return a copy of the Expert Advisory Group Terms of Engagement which includes the Code of Conduct for the Expert Advisory Group;
- Adhere to all aspects of the Expert Advisory Group Code of Conduct.

6.0 BUSINESS OPERATIONS

6.1 General Meetings:

- At least one face-to-face meeting will be conducted during the course of the Expert Advisory Group's business. Members are expected to attend this and any other face-to-face meetings considered necessary by the Group.
- Other meetings may be held by teleconference as considered appropriate by the Group's chair.

- The venue for face-to-face meetings will be the DAFF offices in Canberra.

6.2 Quorum:

- A quorum of the Expert Advisory Group is constituted by attendance of the Chair and at least four other members, either those members attending personally or involved via teleconference.
- No meeting of the Expert Advisory Group shall commence or continue unless a quorum is present.

6.3 Meeting Minutes and Expert Advisory Group Report:

- The Chair will ensure the secretariat sends minutes of the meeting to members as soon as practicable after a meeting.
- The Chair will ensure the secretariat produces a draft report based on the Expert Advisory Group's discussions and provides the draft report to members for review and endorsement prior to finalisation.

6.4 Conduct of Business Between Meetings:

Where practical, the Expert Advisory Group may conduct business between meetings. This 'out of session' business may be conducted by email, facsimile or mail as appropriate to the circumstances.

7.0 FUNDING, FEES AND EXPENSES

- Funding for catering, venue costs, secretariat costs etc. will be provided by DAFF.
- Expert Advisory Group members will be entitled to reimbursement of costs (such as meals and incidentals) associated with their participation in Expert Advisory Group activities.
- Members appointed to the Expert Advisory Group will be paid a sitting fee in accordance with appropriate Remuneration Tribunal rates to attend and participate in meetings. Members must maintain a time sheet detailing their involvement in Expert Advisory Group work and provide this to the secretariat when requested.

8.0 SECRETARIAT

DAFF will provide a secretariat for all meetings of the Expert Advisory Group. The secretariat will:

- produce and distribute minutes to Expert Advisory Group members;
- produce and distribute a draft report to Expert Advisory Group members;
- where required, make travel and accommodation bookings to facilitate the participation of members in activities of the Expert Advisory Group;
- organise teleconference services to facilitate meetings of the Expert Advisory Group; and
- co-ordinate the reimbursement of expenses and payment of sitting fees to members.

APPENDIX G

LETTER FROM DAFF TO PWC - ESTABLISHMENT OF EAG

Australian Government
Department of Agriculture, Fisheries and Forestry

Ms Kirsten Livermore MP
Chairperson
Parliamentary Standing Committee on Public Works
Parliament House
Canberra ACT 2600

Dear Ms Livermore

I am writing to confirm the delivery of the undertaking made by the Department of Agriculture, Fisheries and Forestry (DAFF) at the Parliamentary Standing Committee on Public Works hearing on 27 March 2013 regarding the construction of a new post-entry quarantine facility at Mickleham, Victoria.

Mindful of the concerns expressed in public submissions to the Committee in respect of the collocation in one building envelope of avian egg hatching and live bird quarantine containment units, DAFF will establish an Expert Advisory Group to provide it with independent advice that will consider the biosecurity feasibility of the proposed building design to co-locate these activities. The Group will comprise industry, regulatory, scientific and design expertise, and enclosed is the indicative membership of the Group. DAFF has spoken with each identified party and each has agreed, in principle, to be a member of the Group. Accordingly, DAFF is in the process of settling arrangements for their participation.

DAFF looks forward to providing the Committee with an expert technical and operational assessment of the feasibility of operating and managing collocated biosecurity, QC3, quarantine units for these commodities. It is hoped that this will assist to alleviate the concerns expressed in some public submissions. DAFF will support the deliberations of the Group through the provision of a secretariat, and it is intended that a report will be produced and provided to the Committee by early May.

DAFF is hopeful that this action will assist to overcome any delay that the Committee may encounter in finalising its consideration of the project and preparation of an expediency motion for the May sitting of Parliament. DAFF appreciates the cooperation and support of the Committee's members and looks forward to continuing our productive relationship in the development of a new post-entry quarantine facility for Australia.

I have copied this letter to Mr Greg Whalen, First Assistant Secretary, Property and Construction Division, Department of Finance and Deregulation.

Yours sincerely

Dr Colin Grant
First Assistant Secretary
Post-Entry Quarantine Arrangements

5 April 2013

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APPENDIX H

EXPERT ADVISORY GROUP MEMBERS

- **Dr Hugh Millar,** Executive Director Biosecurity Victoria (chair)

Dr Millar is the Executive Director Biosecurity Victoria, with the Regulation and Compliance Group of the Department of Primary Industries. He has over 35 years experience in veterinary science and the development of animal health and biosecurity policies and programs, filling the role of Victoria's Chief Veterinary Officer for over 10 years. He is a current member of the National Biosecurity Committee (NBC), National Animal Welfare Committee (AWC) and currently Chairs the Vertebrate Pests Committee (VPC), in addition to participating in many other high profile national committees and working groups.

Dr Millar is responsible for the Department's policies, standards and regulatory activities relating to plant health, animal health and welfare, and the use of agricultural and veterinary chemicals. He also is responsible for the development of policy and standards and the delivery of systems and services to enhance biosecurity, food safety, invasive weeds and pest animals and to preserve market access for Victoria's agricultural industries.

Dr Millar has international experience, having travelled extensively overseas on behalf of the Commonwealth to supervise the preparation of consignments of livestock destined for import into Australia, and to liaise with international government agencies and veterinary authorities on matters of importance to Australia's trade in livestock and livestock products.

- **Dr Mark Schipp,** Australian Chief Veterinary Officer

Mark Schipp was appointed Australian Chief Veterinary Officer in 2011 and is Australia's representative to the OIE (world Organisation of Animal Health). In 2012 he was elected to the OIE Council. Dr Schipp has been with the department for 19 years and has previously been responsible for negotiating market access and export certification requirements for Australian food products.

Dr Schipp served two terms overseas as Agriculture Counsellor in Seoul, South Korea from 2000 to 2003 which was followed by a similar posting in Beijing, China from 2003 to 2006. Prior to moving overseas in 2000 he worked in the Australian Quarantine & Inspection Service in the export meat program at a number of levels – in abattoirs, in Canberra and in policy roles.

Mark is a biology and veterinary graduate of Murdoch University. After graduation he worked with the Western Australian Department of Agriculture.

- **Dr Matthew Stone,** Director Animal & Animal Products, Ministry for Primary Industries, New Zealand

Matthew Stone is the Director of Animal and Animal Product Standards in the Ministry for Primary Industries, responsible for animal biosecurity import and export, animal processing food safety and suitability, and animal welfare standards. He is a veterinary epidemiologist,

educated at Massey University and a member of the Australia New Zealand College. Mat has held many biosecurity-related positions in MPI since joining in 1994 after five years in clinical practice. Mat represents New Zealand at the OIE, or World Organisation for Animal Health, as New Zealand's Permanent Delegate. Within the OIE, he holds the position of Secretary General for the Asia Far East and Oceania Region.

- **Dr Kevin Doyle,** National Veterinary Director, Australian Veterinary Association

Dr Kevin Doyle is National Veterinary Director of the Australian Veterinary Association. Previously he was Deputy Chief Veterinary Officer for Australia for eight years. As a member of the Senior Executive Service of the Federal Government for some 20 years, he had 17 years as head of Branches / Divisions responsible for animal quarantine and exports including, for some time, of plant and general quarantine. He was also responsible, for various periods, for endemic and exotic disease control programs and animal and plant health research within the Department of Primary Industries and Energy.

Prior to appointment to the Senior Executive Service he had nearly four years as Veterinary Attache at the Australian Embassy, Washington and the Australian High Commission, Ottawa.

Dr Doyle had several terms as a member of the International Animal Health Code Commission of the World Organisation for Animal Health (Office International des Epizooties), Paris. He has also been Australia's representative to the OIE General Session. Dr Doyle has special interests in biosecurity, quarantine, risk analysis and infectious disease.

Dr Doyle is currently responsible AVA veterinary technical and policy services and for promotion of AVA's role in animal health and welfare to the community, governments and the profession.

He is a member of the Australian Animal Welfare Advisory Committee. Other current and recent memberships of Ministerial advisory /national committees, include the Horse Industry Consultative Committee, the AAHL Security Assessment Group and the NH&MRC Transmissible Spongiform Encephalopathy Advisory Committee.

He is President of the ACT Veterinary Surgeons Board and teaches Masters students in Veterinary Public Health at the University of Sydney

He has been involved in development assistance (aid) projects for AusAID, the Australian International Development Assistance Bureau, and consultancies in Asia.

Dr Doyle led a team in the then Australian Quarantine Service that built 3 new animal quarantine stations, in the Cocos (Keeling) Islands, Sydney and Perth and added new highly secure facilities on existing stations in Melbourne and Adelaide. They also developed new systems for privately owned stations, a bee quarantine facility and for competition horses for the Olympic Games and other events including the Melbourne Cup. Quarantine protocols were developed for many animal species and products while quarantine risk analysis methods were developed for international trade.

He has published on quarantine and risk analysis.

- **Dr Kurt Zuelke,** Director of the Australian Animal Health Laboratory, CSIRO Animal, Food and Health Sciences

Previously Dr. Zuelke was the Director of the USDA Agricultural Research Service's National Animal Disease Center (NADC) from 2006 to 2012. Located in Ames Iowa, the NADC is the largest US federal animal health research facility focused on high impact endemic diseases of livestock and wildlife species.

While at NADC, Dr. Zuelke led NADC's strategic business reorganisation and relocation into new $470M state-of-the-art facilities that support large-scale BSL-2, BSL-3 and BSL-3Ag level research in livestock and wildlife species. Dr. Zuelke co-founded the USDA National Centers for Animal Health (NCAH), and served on the NCAH Board of Directors in conjunction with Directors of the USDA APHIS National Veterinary Services Laboratory (NVSL), and USDA APHIS Center for Veterinary Biologics (CVB).

From 1995 to 2001, Dr. Zuelke was with the Victoria Department of Primary Industries in Melbourne, Australia where he led industry and government-sponsored research performing functional genomics and biotechnology research in dairy cattle and native Australia wildlife species. Partnering with industry and university researchers, Dr. Zuelke's team produced the first transgenic cloned calf in Australia.

From 2005 to 2006, Dr. Zuelke served as the USDA's representative in President Bush's Office of Science and Technology Policy where he coordinated federal, agricultural, biotechnology and life science research and policy issues, and led the US delegation to the OECD Working Party on Biotechnology.

- **Dr Paul Gilchrist,** Technical advisor to Luv-a-Duck

Paul Gilchrist BVSc FANZCVS is a consultant veterinarian with experience in government, pharmaceutical and poultry industries as well as having consulted to international organisations in poultry and livestock foreign aid projects in China, Indonesia, and Oceania.

One China project was the CSIRO poultry project that involved, *inter alia*, the planning and construction of an SPF facility for the veterinary research institute in Harbin. Paul was also involved in regulation of avian vaccine production at both the National Biological Standards Laboratory committee level and in registration of laboratories and SPF facilities in NSW.

He consults to users of avian quarantine facilities including a commercial poultry company (Luv-A-Duck Pty Ltd), the Australian Rare Poultry Importation Syndicate and the Associated Birdkeepers of Australia Inc.

Paul was a member of the original Department of Health working party developing testing and quarantine conditions for fertile hen eggs and was a member of the Import Risk Analysis (IRA) panel for chicken meat. He has also been involved in an application for approval to export cooked duck meat to NZ.

He is currently preparing, for the Associated Birdkeepers of Australia Inc., a feasibility study supporting the need for a re-examination of conditions for the importation of psittacine species.

- **Dr Peter Scott,** Scolexia Animal and Avian Health Consultancy

Peter has spent 32 years working in the livestock industry including poultry and pigs. His experience provides a holistic approach to all aspects regarding the management of intensive livestock with a particular specialty in the poultry industry. He established Scolexia as an animal and avian health consultancy in 1989, a company now providing a diverse range of services in agribusiness. He is a Senior Research Fellow University of Melbourne where he is Coordinator of Applied Research at the Asian Pacific Centre for Animal Health.

He is actively involved in a number of research areas including vaccine development, metagenomics, pathogenesis of avian diseases and more recently an interest in synbiotics. Peter's concern of the declining skill base affecting the intensive animal industries worldwide has also meant his desire to create training and educational opportunities for those working in all disciplines within the agricultural industry.

His mix of research and applied field experience coupled with involvement in industry and government policy has enabled a multi skilled approach to agribusiness management.

Other entities include Scolexia Project Management, which is involved in the planning and development of poultry housing facilities and infrastructure, part owner of Ace Laboratories (veterinary diagnostic services and autogenous vaccine production) and Pacific Agriculture (commodity trading).

A recent addition to Scolexia has been the Scolexia Animal Research Facility (SCARF) which focuses on nutritional trial work.

He has a Ph D in Veterinary Immunology.

- **Mr Neil Walls,** Neil Walls Consulting Pty Ltd

Neil Walls specialises in Bio-containment and bio-contamination engineering. His work includes the design of containment facilities up to PC4 (the highest microbiological containment level), specialist health and containment laboratories as well as facilities for animals, aquatics, plants and invertebrate species.

Neil also undertakes specialist facility inspections and reports. He is the Director of Neil Walls Consulting Pty Ltd.

- Member American Biosafety Association, European Biosafety Association and contributing member to the International Federation of Biosafety Associations (IFBA)
- Committee Member, Australian Standard for "Safety in Laboratories, Microbiological Aspects and containment facilities"
- Registered Third Party Assessor, DAFF (Australian Federal Department of Agriculture, Fisheries and Forestry)
- External Advisor to WHO – "Stop TB" Programme
- Founding Director and Member of ABSANZ – Association of Biosafety for Australia and New Zealand