

The Biosecurity impact on the Greater Blue Mountains World Heritage Area and Other Areas

Executive Summary

The Environmental Impact Statement for Western Sydney Airport (WSA) does not seriously address the biosecurity threat from building this airport as a major air freight hub for Sydney or its close proximity to the Greater Blue Mountains Heritage Area (GBMHA). It has also ignored submissions on biosecurity from the general public.

Western Sydney Airport would increase the risk of infestation through both passenger and cargo vectors. The ability to have effective biosecurity decreases as the number of flights and complexity in cargo arrangements increases.

Since the year 2000, “authorised persons” under the Quarantine Act 1908, has included the contracting out of biosecurity functions at airports to industry, as long as those persons are authorised by the Department of Agriculture and Water Resources. Further self-regulation by industry and intentions to place more responsibility through self-regulation onto industry to manage biosecurity risks has been established with the Biosecurity Act 2015. Since the year 2000, there have been six identified pest/disease infestations arising near Australian international airports. A further eight pest/disease infestations have occurred where the pathway for arriving in this country is unknown, possibly arriving by cargo.

The use of WSA as a freight hub with air, road and rail connections to regional Australia from International flights increases the risk of transmission of devastating pest and disease species into the main agricultural regions of Australia. The agriculture sector is worth \$B360 per annum to the Australian economy once merchandise and services are added to the basic value of the agriculture. A major infestation can easily wipe out 10% or more of this value and will affect a similar proportion of the 400,000 people working in industries related to agriculture and its products and services. For example in Florida, USA, the bacterial disease Huanglongbing has wiped out 50% of the citrus industry (Washington Post, 2015).

The proximity of WSA to the GBMHA, listed by UNESCO for its unique environment of Eucalypts, Acacias, fauna and threatened rare species such as the Wollemi pine, increases the risks of pest and disease infestation into the world heritage area. An infestation can devastate this flora and fauna with consequences on all animals in the food chain. It will decimate the local tourist industry which currently employs 1,960 people and is worth \$M399 to the local economy.

FACT SHEET ON WESTERN SYDNEY AIRPORT – BIOSECURITY IMPACT**Introduction**

It is a major concern that biosecurity has not been seriously considered in the Environmental Impact Statement for the proposed Western Sydney Airport. If this airport is built there will be major impacts of pest and disease on the Greater Blue Mountains World Heritage Area as well as other areas of the country.

Plant scientists have long considered that we have been fortunate to have the city barrier between Sydney Kingsford Smith Airport and rural/bushland areas. It does provide a certain barrier for control if invasive species were to escape.

1. Why is biosecurity a problem?

1.1 Health and Safety

Introduced pests can infest, sting or bite people, sometimes occasioning death, particularly the vulnerable in society; the young infirm and older persons. Examples include infestations of flatworms, an intestinal infection which can damage internal organs and be fatal and Red Imported Fire Ants which can kill people. Pests such as these can impact on our way of life and comfort.

1.2 Environment

Destruction of native flora and fauna. There are over 1500 plant species in the GBMWH which represents a significant proportion of Australia's biodiversity. There are 178 threatened species including the primitive Wollemi pine. The diverse plant communities and habitats support more than 400 vertebrate taxa (collections of groups of related fauna) of which 40 are threatened. One third (265 species) of Australia's birds inhabit the Blue Mountains.

Although invertebrates are still poorly known, the area supports an estimated 120 butterfly and 4000 moth species, and a rich cave invertebrate fauna (67 taxa).

The protection of the GBMWH is subject to the Environment Protection and Biodiversity Conservation Act 1999. Environmentalists are concerned that the Minister for the Environment in approving the Western Sydney Airport has been inconsistent with Australia's obligations under the World Heritage Convention and that the result will be a significant impact on the world heritage values of the GBMWH. Section 15A of the Act, relating to offences against World Heritage properties, clearly states that a person commits an offence if that person takes an action that is likely to have a significant impact on world heritage values of a declared World Heritage property.

1.3 Economic impacts

Serious threats to commercial species that can destroy an industry through direct infection and also by killing pollinating species. For example, locally this could affect the Radiata pine plantations around Oberon. Species such as the Giant Pine Scale (*Marchalina hellenica*) and Exotic Pine Nematodes can cause stunted growth, dieback and death. The softwood plantation industry is worth \$1.16B to Australia. The bacterial disease *Xyella fastidiosa* which has devastated the wine grape industry in California and the olive industry in Europe could easily spread to the Hunter Valley grape growing areas via pathways from WSA.

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1.4 Legal obligations

The Commonwealth Department of Agriculture and Water Resources (DAWR) is responsible for administering biosecurity requirements which are now subject to the *Biosecurity Act 2015*, a replacement of the *Quarantine Act 1908*.

The Department states that **“All aircraft arriving in Australia from overseas are subject to Australian biosecurity requirements administered by the Department of Agriculture”**. In recent years the Department of Agriculture has had a very poor record of preventing invasive species from entering Australia and there is no reason to think that WSA will be any different as the systemic failures leading to these introductions have not been addressed.

For example the infamous “Pistol and Boo” dog flight was not met by Biosecurity Officers. It relied on a media contingent to report them. The Minister was so embarrassed he reacted politically rather than allowing DAWR compliance staff to act appropriately. Instead of dogs they may have been exotic reptiles, pathogens or other flora and fauna which can have devastating consequences to the natural environments and commercial agriculture and farming.

2. The EIS and Biosecurity

2.1 EIS statements

Section 6.1.10 of the Western Sydney Airport Environmental Impact Statement mentions **“Introduction of novel species: As with any international airport or sea port, operation of the proposed airport poses a biosecurity risk. There is the potential for the introduction of exotic species as a result of the transport of goods on aircraft.”**

The use of the term “novel species” and “exotic species” in the one paragraph is curious as they give a perception that there are no significant risks from their introduction to Australia. The term “novel species” may just refer to a new indigenous species not found previously. In fact the term that should be used is “exotic plant and animal pests and disease causing pathogens, and invasive species that impact on our way of life and our environment”. Invasive species can include weeds and noxious pests, foreign fauna like flat worms, wasps, ants, vermin like rats, snakes, etc. that impact on our way of life, comfort and our environment.

An example given in the EIS is a reference to Yellow Crazy Ants arriving from New Zealand in air baggage. The reference quotes “Biosecurity New Zealand, undated”. In fact Yellow Crazy Ants were found near Cairns International Airport, QLD in 2001 and have spread extensively in QLD. The EIS recognises that the invasion of Yellow Crazy Ants are listed as a key threatening process under the Threatened Species Act of NSW and that **“Any escaped novel species could potentially establish in nearby vegetated areas, or be transported to other areas of native vegetation with cargo, and impact the local native flora and fauna.”**

The EIS goes on to say: **“All aircraft arriving in Australia from overseas are subject to Australian biosecurity requirements administered by the Department of Agriculture. Further, the proposed airport and airlines using the proposed airport would be expected to comply with all Australian laws relating to biosecurity, similar to existing airports already in operation.”**

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The above statement is also used as a response to EIS submissions (page 374 of the EIS) which says “Submissions expressed concern that the draft EIS did not look at the impact of biosecurity issues on the GBMWA, particularly the potential introduction of leaf hoppers capable of transmitting the bacterium *Xylella fastidiosa* and various invasive ant species.

2.2 The reality

In 2015-2016, the Commonwealth Department of Agriculture and Water Resources, screened 4.1 million passengers at Australian international airports (Sydney airport has 38.5 million passengers per year), seizing 270,000 items and issuing 3700 biosecurity infringement notices (Department of Agriculture, 2017a). Although these biosecurity measures have been administered there have been a number of serious pest and disease incursions near Australian international airports over recent years, most notable amongst these being the Red Imported Fire Ant which costs the USA \$US 6 billion each year for control, property damage and medical treatments (Invasive Species Council, 2016). Of note also is the incursion of Equine Influenza in 2007 which cost the Australian horse industry and government agencies, millions of dollars.

Further to this, biosecurity gaps have led to 36 invasive species entering and establishing in Australia since 2000 including Myrtle rust, Electric ants, Yellow Crazy ants, Asian Black Spined Toad, Pigeon paramyxovirus, Pacific Oyster mortality Syndrome and Prawn White Spot Disease, all of which have devastating impacts on our native flora and fauna.

The Invasive Species Council has compiled 12 case studies of Invasive Species entering Australia since 2000 which they submitted to the Senate Environment and Communications References Committee in 2014. There are over 40 invasive species incidents every year. About half are extensions of range. Some introduced exotic species are not discovered for years after their establishment.

The following three tables list the important recent incursions near Australian International Airports, other incursions of major concern and potential incursions.

Table 1 Recent Incursions of Invasive species found near airports

Pest, Pathogen or Disease Date Detected Airport Likely Pathway	Potential Impacts, actions and Costs
Red Imported Fire Ants (<i>Solenopsis invicta</i>) December 2014 Port Botany/ Sydney Airport	Dominates areas, displaces native ants and kills small animals. Cause serious economic and social impacts. They sting people, occasionally causing the deaths of infants and elderly people. They have the potential to ruin both the agriculture and the tourism industry. A 500 hectare surveillance area has been declared around this site.

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<p>Accidental introduction with cargo</p>	<p>Modelling by the Queensland Government indicates that in southeast QLD alone fire ants would impose costs of about \$43 billion over 30 years. In the US the ant costs \$7 billion a year in damage and control. Among the costs are damage to infrastructure (roads, footpaths and electrical equipment) and to farming enterprises. These ants damage crops, rob beehives and kill newborn livestock. During dry times they dominate the margins of dams and livestock cannot reach water without being seriously stung. (Invasive Species Council of Australia, 2015)</p>
<p>Zebra Chip Disease (<i>Candidatus Liberibacter solanacearum</i>) and associated Tomato - Potato Psyllid (<i>Bactericera cockerelli</i>)</p> <p>2014</p> <p>Norfolk Island International Airport</p> <p>Accidental introduction through Cargo</p>	<p>The vector for the zebra chip disease is the tomato-potato psyllid. This insect and bacterium complex is a serious threat to Australia's potato, tomato and capsicum/chilli crops. It causes crops to become unmarketable.</p> <p>Causes millions of dollars damage to crops in North America which have to be extensively sprayed with pesticides to control the disease.</p>
<p>Browsing Ants (<i>Lepisiota frauenfeldi</i>)</p> <p>2013</p> <p>Perth Airport</p> <p>Air Cargo</p>	<p>They are an ant-eating species that form super-colonies that can displace native ant species and most other invertebrates in the area of infestation. They would become significant horticultural and garden pests.</p> <p>The site has not yet been declared eradicated.</p>
<p>Asian Honey Bees (<i>Apis cerana javana</i>)</p> <p>2007</p> <p>Cairns International Airport</p> <p>Cargo</p>	<p>They are a natural host for Varroa mites which, if introduced, would pose a serious threat to the honey bee industry and crops that are dependent on European honey bees for pollination. They compete with native bee species for pollen & nectar & nesting cavities.</p> <p>They are now established in far North QLD and cannot be eradicated.</p> <p>There is a risk to the pollination and honey industry worth more than \$1 billion.</p>
<p>Electric Ants or Little Fire Ant, (<i>Wasmannia auropunctata</i>)</p> <p>2006</p>	<p>This ant's impact in those environments and countries outside of its place of origin has caused the reduction of species diversity, reducing overall abundance of flying and tree-dwelling insects, and eliminating spider populations. On the Galápagos Islands, it eats the hatchlings of tortoises</p>

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<p>Cairns International Airport Accidental Introduction with cargo</p>	<p>and attacks the eyes and other body parts of the adult tortoises. It is considered to be perhaps the greatest ant species threat in the Pacific region and is one of the worst alien species in the world according to The Global Invasive Species Database. They have the potential to ruin the tourism industry.</p> <p>Eradication program (national cost-sharing) in progress.</p>
<p>Yellow Crazy Ants (<i>Anoplolepis gracilipes</i>) 2001-2003 Cairns International Airport Accidental introduction with cargo, most likely timber.</p>	<p>Yellow crazy ants can form densely populated super-colonies with more than one queen. These super-colonies can have a huge impact on natural environments, including both native plants and animals. Yellow crazy ants can damage crops, horticulture and honeybee hives, and can adversely impact on our outdoor lifestyle. The ants spray formic acid which may cause burning and irritate the skin and eyes of animals and potentially humans.</p> <p>They have spread extensively. Despite Biosecurity Queensland's ongoing treatment and surveillance activities, the known infested areas have increased since 2007 and given the number of new infestations found in recent years statewide eradication is not considered possible.</p>

Table 2 Other recent invasive species incursions of major concern.

<p>Pest, Pathogen or Disease</p> <p>Date Detected</p> <p>Initial Location</p> <p>Likely Pathway</p>	<p>Potential Impacts, actions and Costs</p>
<p>Pigeon paramyxovirus</p> <p>2011</p> <p>Victoria</p> <p>Suspected introduction via a smuggled bird</p>	<p>Potentially infects a wide range of native bird species with a high rate of mortality.</p> <p>Containment actions only</p>
<p>Myrtle Rust (Fungal)</p> <p>2010</p> <p>Gosford NSW. Now spread to Queensland, Victoria</p>	<p>A fungal disease which infects hundreds of Myrtaceae species, (Eucalyptus, Melaleuca, Callistemon etc.) including threatened species. The disease can cause deformed leaves, heavy defoliation of branches, dieback, stunted growth and plant death. Is particularly detrimental to young plants.</p> <p>Found to be not technically feasible to eradicate. Australian Government invested \$1.5 million from July 2011 to June</p>

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and Tasmania Unknown pathway	2013 to progress a transition from eradication of myrtle rust to management of the disease as it becomes naturalised and establishes itself in various ecological areas across Australia.
Pacific Oyster Mortality Syndrome (POMS) or (OsHV-1 micro variant virus) 2010 Botany Bay NSW and a bay near Hobart Airport Unknown	<p>Infects Pacific oysters</p> <p>Found to be not technically feasible to eradicate. National survey conducted to confirm disease status of major oyster growing areas. Disease subsequently detected in Port Jackson (2011) and Hawkesbury River (2013). Response objective is containment to affected estuaries in NSW, combined with a national program of activities to enhance emergency preparedness, diagnostic capability and research to improve understanding of the disease and enable management.</p>
Prawn White Spot Disease (Virus) December 2016 South East Queensland Infected product has been found for sale in Australia.	<p>Self-regulation by importers with infected batches not being reported appears to be the most likely pathway with imported prawns either used as fishing bait or discarded into waterways.</p> <p>A highly contagious viral disease of prawns, lobsters and crabs that causes high rates of mortality in affected stock.</p> <p>Jeopardises the future of Australia's \$80 million prawn farming sector. The management of white spot disease is in accordance with the nationally agreed Emergency Animal Disease Response Plan (EADRP), which requires that all ponds on an infected farm be destocked.</p>
Asian Black Spined Toad (<i>Duttaphrynus melanostictus</i>) April 2014 and March 2015 Sunbury, Vic and Belrose NSW respectively Unknown, possibly as cargo	<p>An increasing number are being intercepted at Australian airports and sea ports from flights and ships arriving from Asia, where the toad is widespread. They are usually found in shipping containers, machinery and personal effects such as bags and shoes.</p> <p>Poisonous, prolific breeders that compete with native species for food and habitat and have the potential to cause environmental impacts similar to those of the cane toad, but survive in much cooler climates. The toxins they produce contain several bioactive compounds with lethal, hypotensive, hypertensive, neurotoxic, cardiotoxic, haemolytic and sleep inducing factors that could severely affect the snakes, goannas and quolls likely to prey on the toad.</p> <p>Toads found have been destroyed. Further toad incursions unknown.</p>
Cucumber Green Mottle Mosaic Virus (CGMMV)	The virus can remain dormant within the seed coat and can stay alive for an extended time in plant debris and soil and on vehicles, equipment and tools.

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<p>Sept 2014 April 2015</p> <p>Northern Territory, Queensland</p> <p>Illegal import of contaminated seed</p>	<p>It infects plants in the Cucurbit family including water melons, pumpkins, cucumbers, zucchinis. Breakdown of flesh occurs within the fruit. Infection may also cause fruit malformation or fruit may fail to develop and abort. There are many native species in the Cucurbitaceae family that could be infected.</p> <p>It is considered the \$60 million water melon industry of the NT will be destroyed. It has the potential to destroy the \$90 million melon industry in the state of QLD.</p>
<p>Giant Pine Scale (<i>Marchalina hellenica</i>)</p> <p>Nov 2014 Melbourne Eastern Suburbs and Adelaide</p> <p>Unknown but possibly with Air cargo</p>	<p>Affects Pines (including Radiata Pine), Spruce and fir trees. It is a threat to Australia's \$1.16 billion softwood plantation industry.</p> <p>Reports from Europe indicate that large populations of the Giant Pine scale can cause severe dehydration and dieback of branches. This can be followed by tree death.</p> <p>The South Australian State Government has destroyed all known giant pine scale infested trees in the state. This was completed in late 2016, with the removal of 91 infested trees and the sites decontaminated.</p> <p>In Victoria, it has not been possible to destroy giant pine scale. There are more than 4, 300 infested trees in the south east suburbs of Melbourne. Infested trees in Victoria were treated with the insecticide <i>imidacloprid</i> but the chemical injection treatments did not work as effectively as expected and live scale insects remain present on treated trees. The Consultative Committee on Emergency Plant Pests (CCEPP) considered alternative eradication options in Victoria but have concluded that giant pine scale could not be eradicated, because:</p> <ul style="list-style-type: none"> -chemical controls have shown to be ineffective -the only other control option was to remove all infested trees, and it was unlikely that this would have been publicly acceptable -costs would be considerably high to achieve full eradication of the pest.
<p>Mexican feathergrass (<i>Nassella tenuissima</i>) 1996</p> <p>Offered for sale by several nurseries in Victoria and New South Wales. Initially mislabelled and sold as an ornamental in Australia under the names Elegant Spear Grass, Pony Tail and Angel's Hair.</p>	<p>Mexican feather grass has been offered for sale in nurseries under at least two erroneous names—a nursery in Sydney sold specimens as <i>Austrostipa elegantissima</i> (an Australian native species) and a rare plants nursery near Melbourne sold specimens as <i>Stipa tenuissima</i> (an outdated synonym for <i>N. tenuissima</i>). To make matters worse, the Australian Quarantine and Inspection Service (AQIS) had listed <i>Stipa</i> species as permitted imports as seed, whereas <i>Nassella</i> species were prohibited. To date, <i>N.tenuissima</i> specimens at two Victorian nurseries have been destroyed by authorities.</p> <p>Mexican feather grass, is a potentially serious weed of pastures, native grasslands and woodlands. It is a highly adaptable grass that has the potential to infest up to 65% of</p>

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	<p>New South Wales (NSW), causing major economic and environment damage. Mexican feather grass is unpalatable to stock, difficult to control and capable of growing in a variety of climates and soil types. It is able to tolerate prolonged periods of drought and can flourish in areas that are heavily grazed.</p> <p>Mexican feather grass is closely related to serrated tussock (<i>Nassella trichotoma</i>), an invasive weed of temperate grasslands, and can only be distinguished when in flower</p> <p>If this species naturalises in Australia it potentially has a wider range than Serrated Tussock. If Mexican feather grass replaces other grasses on a large scale, the impact on beef and wool production could be substantial. It is a low protein, high fibre grass that has no grazing value. Pure stands of Mexican feather grass would render a paddock worthless.</p>
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Table 3 Potential Incursions of Invasive species

Pest, pathogen or disease	Potential Environmental Impacts
Likely pathway	Likely actions and costs
<p><i>Xylella fastidiosa</i>. (Bacteria)</p> <p>Air and Sea Ports Imported or smuggled plant propagative material, insect vectors such as the Glassy-winged Sharpshooter.</p>	<p>A bacterial disease which has the potential to infect 52 native plant families which includes 768 species in the Greater Blue Mountains World Heritage Area. Species include Eucalypts, Acacias, Banksias and Callistemons. An outbreak would leave the Greater Blue Mountains World Heritage Area devastated. (see Further Reading reference, Australian Journal of Entomology (2012) 51, 209-220) regarding - Incursion preparedness: anticipating the arrival of an economically important plant pathogen.</p> <p>Extremely difficult to control. Is one of the most dangerous plant bacteria worldwide, with huge economic impact for agriculture. It has destroyed many grape and olive plantations in Europe and devastated vineyards in the USA.</p>
<p>Citrus Canker <i>Xanthomonas axonopodis</i> (Bacteria)</p> <p>Possibly via air and sea ports. Can be spread on equipment (vehicles, tools). Also on hands, shoes and clothing. Illegal importation of infected plant material.</p>	<p>Affects citrus trees including oranges, grapefruit, mandarins, lemon and lime. Lesions on the leaves, stems and fruit cause leaves and fruit to drop and general tree decline. Fruit infected with canker cannot be sold. It can also affect other species of the Rutaceae family including Australian native species.</p> <p>Outbreaks have occurred in the Northern Territory and QLD, with the last detection in Emerald, QLD in 2005 resulting in the destruction of the plantation at great cost. US \$2 billion has been spent on control in Florida and the disease is still present.</p>
<p>Huanglongbing (HLB) or Citrus Greening <i>Candidatus Liberibacter</i></p>	<p>Leaves yellow, fruit becomes distorted, sour and bitter. Trees decline and die. It has no cure. HLB is spread by a sap-sucking insect that is not present in</p>

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<p><i>asiaticus</i> (Bacteria)</p> <p>May be spread via smuggled citrus budwood.</p> <p>Can be spread by Asian and African citrus psyllid if these ever become established in Australia. Curry leaves (<i>Berberis koenigii</i>) can be a host.</p>	<p>Australia. The only way to stop the disease is to destroy all infected trees and replace them. Spread by Asian and African citrus psyllid not present in Australia.</p> <p>HLB is one of the most devastating diseases of citrus and since its discovery in Florida, USA in 2005, citrus acreage in that state has declined significantly. A costly eradication program would need to be instituted to remove infected trees in order to protect the citrus industry.</p>
<p>Fireblight (<i>Erwinia amylovora</i>) (Bacteria)</p> <p>May be spread via smuggled budwood.</p>	<p>Infects a wide range of plants in the Rosaceae (rose) Family. Fire blight hosts include fruit trees such as apple, pear, quince, raspberry and amenity plants such as cotoneaster, crab apple, flowering quince and hawthorn.</p> <p>The Fireblight bacteria invade and kill the cambium tissue of the branch, and all flowers, leaves and fruit above the girdled area die. A bacterial ooze may be present. Also branches may display a typical shepherd’s crook appearance. Infected trees appear to be scorched by fire, hence the name ‘fire blight’. Dark sunken cankers may form in older wood which may eventually kill the tree.</p> <p>High risk countries such as Australia are encouraged not to import susceptible plants or fruits of the pathogen into their territory because, once the bacteria becomes established in an area it is nearly impossible to eradicate. Infected crops must be destroyed as soon as they are noticed since the bacteria spreads very rapidly and eradication methods are usually costly and inefficient. Besides the historical importance of being the first bacterium proven to be a plant pathogen, it is extremely economically important. Control and loss costs are estimated approximately \$100 million a year in the USA. Specifically, in Michigan in the year 2000, \$42 million in losses is estimated because of the removal of about 400,000 apple trees.</p>
<p>Newcastle Disease Virus (NDV)</p> <p>Transmission occurs by exposure to faecal and other excretions from infected birds, and through contact with contaminated food, water, equipment, and clothing. Virus-bearing material can</p>	<p>Newcastle disease is a viral disease of domestic poultry and wild birds characterised by gastrointestinal, respiratory and neurological signs. Infection of chickens with Newcastle disease can take a number of clinical forms, depending upon the virulence of the particular strain of virus, ranging from unapparent to rapidly fatal. Because of its highly infectious nature and the potentially severe impact of virulent Newcastle disease on flock performance and mortality, it is one of the most feared of poultry diseases.</p>

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<p>be picked up on shoes and clothing and carried from an infected flock to a healthy one.</p> <p>NDV can survive for several weeks in a warm and humid environment on birds' feathers, manure, and other materials. Smuggled pet birds, pose a great risk of introducing NDV.</p>	<p>Newcastle disease was first identified in Australia in the 1930s, when two disease outbreaks caused by an introduced virus were controlled by slaughtering infected stock. In 1966, a non-virulent strain of Newcastle disease virus, designated 'V4', was isolated in Queensland and, subsequently, evidence of infection with non-virulent Newcastle disease viruses was reported from other Australian states. Hence, from 1966 to 1998, all isolates of Newcastle disease virus detected in Australia were non-virulent and the Australian poultry industry therefore remained free of virulent Newcastle disease (ND) from 1932 until 1998. Between 1998 and 2000, however, there were a number of outbreaks of virulent ND in the Sydney basin, Mangrove Mountain and Tamworth areas in New South Wales (NSW), followed by further outbreaks in Meredith in Victoria and again in western Sydney in 2002. All these outbreaks were believed to have been caused by a virulent virus that had evolved, in Australia, from a local, a virulent strain of the virus. All of these outbreaks were brought under control through slaughter out or depopulation and decontamination of the affected flocks.</p>
<p>Avian Influenza virus</p> <p>Via Air Travel where people have been exposed to infected birds, including live bird markets and uncooked eggs.</p> <p>Contaminated feed, equipment and materials can harbour the disease. The disease can survive in faeces, on feathers, eggs or meat and in water.</p>	<p>The H5N1 strain is highly lethal to poultry. The virus remains a major issue in a number of countries where it has become endemic, including Egypt, Indonesia and Viet Nam.</p> <p>While other strains may have no effect on poultry, they can cause serious infection in humans. The H7N9 strain has been increasing in human virulence in China successively over the last four years including increased numbers of human to human transmission.</p> <p>The World Health Organization is worried that an avian influenza virus and a human influenza virus might mix with a third species such as pigs and result in a new strain of influenza virus that can be easily passed from person to person. This might trigger an "influenza pandemic", where the disease spreads rapidly around the world, infecting and killing many people.</p>
<p><i>Phytophthora kernoviae</i> (Fungal disease)</p> <p>As for SOD <i>Phytophthora ramorum</i> below.</p>	<p>Has been found to attack Custard Apples, Bilberry and ornamental plants including Magnolias, Rhododendrons, Camellia, Beech, Tulip trees, Oaks and Sequoia. Has been found on Australian native <i>Podocarpus</i> overseas. It could be a threat to other native species.</p> <p>Molecular analysis has revealed that an infection on <i>Pinus radiata</i>, recorded in New Zealand in 1950, was</p>

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	<p>caused by <i>P. kernoviae</i>. Since 2003, <i>Phytophthora kernoviae</i> has caused marked damage to ornamentals and species of trees in the Southwest United Kingdom. The pathogen was first discovered in the 1990s, yet only gained widespread attention when it was identified as one of the causal agents, along with <i>P. Ramorum</i>, of Sudden Oak Death.</p>
<p>Sudden Oak Death (SOD) (<i>Phytophthora Ramorum</i>) (Fungal disease)</p> <p>Via air and sea ports. Spread with infected plant material, or water, growing media and compost that has been in contact with infected plants. Maybe carried on shoes, camping equipment and tyres by those returning from overseas who have engaged in outdoor activities such as hiking, where SOD is present.</p> <p><i>Phytophthora Ramorum</i> can survive 8 to 11 months in soil.</p>	<p>Infects over 130 tree and shrub species. Stem cankers with red to black thick sap oozing on the bark surface lead to stem necrosis and death of the whole crown and tree.</p> <p>Plants affected include Oaks, Rhododendrons, Camellias, Magnolias, Maples, Roses, Avocados, Blueberries, Chestnuts, Hazelnuts, Macadamias, Truffles, Pinus radiata. Many native species including Eucalyptus may also be infected. Loss of dominant trees and a reduction in cover may reduce the habitat for wildlife and enhance weed invasion and erosion. This is a disease of major concern.</p> <p>In overseas forest ecology, especially in Western USA states where it has destroyed many forested areas, the pathogen contributes to loss of environmental services provided by diversity of plant species and interdependent wildlife. The pathogen has proved to be very difficult to eradicate.</p>

2.3 Intergovernmental Agreement on Biosecurity

A recent review of Australia’s Intergovernmental Agreement on Biosecurity, the so-called IGAB review, which received submissions from government, industry, researchers and the community, analysed the past five years and found broad concern that existing funding and resourcing are inadequate and ad hoc. If continued, the funding won't support the national biosecurity system into the future (Department of Agriculture, 2017b).

A capacity decline, with lack of expertise and renewal in technical skills and globalisation, which increases the risk of pests and disease entering the country through airports such as that planned for Badgerys Creek, will threaten not only the Greater Blue Mountains World Heritage area but Australian agriculture.

In February, 2016 a Greater Sydney Biosecurity Forum was held at the Royal Botanic Gardens. It was attended by 58 participants representing a variety of industry, government and special interest groups. The NSW Minister for Primary Industries, Lands and Water, Niall Blair attended the Forum and highlighted the importance of managing biosecurity risks in the Greater Sydney region (NSW Primary Industries, 2016)

It was mentioned that the periurban area around Sydney **has long been considered as a high biosecurity risk area for NSW**. Increased global travel and freight (both increase in geographical access and increased volume), climate change and agricultural intensification were identified as drivers for these risks.

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Serious Biosecurity incursions in the Sydney area over the past decade were discussed. These included Myrtle Rust, Equine Influenza, Red Imported Fire Ants, Asian Black Spined Toad and also Newcastle Disease (Dean Park incursion, Blacktown) was mentioned.

The risk of pests, pathogens and invasive species entering Australia from Sydney was clearly defined and **the risks of a future Western Sydney Airport were mentioned.**

2.4 Concerns

Aspects of concern which were mentioned included:

- Lack of knowledge/understanding/engagement by community and politicians regarding biosecurity.
- Imported freight products travelling to non-urban areas.
- Lack of vet awareness of exotic diseases.
- Exotic mosquitoes carrying disease/ lack of monitoring.
- Increased importation of cut flowers from developing countries in unsealed boxes, or boxes with open ventilation holes that could potentially allow insects to escape at airports.
- Airport fumigation area gap (risk 6 km).
- Increased importation of containerised product.
- Community apathy and complacency regarding biosecurity.
- Bioterrorism.
- Multiple ingress – KSA Airport, Port Botany, Future Western Sydney Airport, Freeways (Wollongong, Newcastle).
- Risks from overseas visitors bringing new vectors, often due to ignorance of importation rules/not caring about the rules.
- Bee biosecurity not identified as important by industry, who are most at risk.
- Not enough training of industry and government staff leading to greater biosecurity risk in peri urban areas.
- Disease spill-over at interface of wildlife, domestic animals and humans.
- Lack of comprehensive inspection of imported products coming into the country posing unknown/unacceptable biosecurity risks (especially certain product types e.g. flowers, plants, foodstuffs), related to a growing import/export trade.

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- The Sydney gateway to NSW protects \$12 billion NSW primary industries.
- Currently Sydney airport has 38.5 million passengers per year, 517,000 tonnes of air freight per year (408,000 tonnes international), more than half of Australia’s total.

2.5 Impacts

The Quarantine Act 1908, has allowed for the contracting out of biosecurity functions at Airports as long as those persons are authorised by the Department of Agriculture and Water resources. A review of Biosecurity regulations by the Department of Agriculture has proposed streamlining the system of outsourcing and self-regulation to industry, to increase industry’s involvement. This has resulted in the Biosecurity Act 2015 which allows for outsourcing and self-regulation to biosecurity industry participants. This increase in outsourcing and self-regulation of much of the biosecurity practice to private companies operating at ports and airports has resulted in a loss of expertise within the Department of Agriculture. The profit motive in private organisations undermines the maintenance of good biosecurity which has been evident from the number of incursions of pests and diseases into Australia since the year 2000.

WSA is to be operated as a cargo airport over a 24hr period. This allows international freight to come from a much wider source than is current through KSA. The domestic dispersion of freight by aircraft, rail and road through intermodals greatly increases the risk to agriculture and the environment.

Table 4 Commodity products in the agricultural sector. Note a) the value is that for exports and is likely to be more than this when domestic consumption is added into this figure.

Industry	Direct Value of commodity \$billion per annum	Economic impact of sector \$billion per annum
Wine	\$B13.3 (Ag-Econ-Plus,2015)	\$B40.2 (Ag-Econ-Plus,2015)
Crops (excluding grapes)	\$B23.1 (ABS June 2016)	-
Livestock and livestock products	\$B28.7(ABS June 2016)	-
Total rural products	\$B56(ABS June 2016)	\$B360 (ABARES,2016) ^a

Significant agricultural production is threatened with the current weak system that is operating in Australia. Experience overseas shows significant costs are involved in eradicating and mitigating the effects of introduced species. In addition to these costs

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are the losses that occur due to disease and infestation. Table 4 shows the value of some of Australia's agriculture industries for the year 2015-2016. The second column is the value of the unprocessed agricultural product. The third column includes the add-on value of manufacture and services to the basic product. For example sheep produces both food and wool. In the wine industry the service industry supports tourism and is a main reason amongst others given by tourists for coming to Australia (Ag-Econ-Plus, 2015).

If 10% of this value were to be affected by an infestation the cost to the nation would be a direct cost of \$_B 5 or \$_B 6 and an indirect cost of \$_B 31 and these orders of loss would be sustained over several years. Experience overseas would suggest that 10% is a conservative value and that specific industries can be ruined in a local area. An example of this was the Asian Citrus Psyllid which carried the bacterial disease, Huanglongbing, in Florida which has destroyed 50% of orange groves and decimated the \$_B9 industry in Florida (Washington Post, 2015).

These types of infestations can also affect the Greater Blue Mountains World Heritage Area which has an abundance of floral species as well as the fauna that depend on these native species. The impact of a serious infestation would be to lose a large portion of this unique environment. The flow-on effects are twofold: UNESCO would remove the Greater Blue Mountains Heritage area from its list and the tourist industry worth \$_M399 per annum and employing 1,960 people (BMEE,2016) would be devastated. It would also affect the \$_M49 per annum (BMEE, 2016) from the agriculture, forestry and fishing activities in the area.

Acknowledgements

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