This attachment is the original submission provided by the Department of Agriculture and Water Resources. It has been superseded. The updated submission is published as submission 9.

Australian Government
Department of Agriculture and Water Resources

# Rural and Regional Affairs and Transport References Committee

*Inquiry into biosecurity risks associated with the importation of seafood and seafood products (including uncooked prawns and uncooked prawn meat) into Australia*

## Submission from the Department of Agriculture and Water Resources

13 April 2017

# Contents

# 1 Executive summary and introduction

*The Department of Agriculture and Water Resources welcomes the opportunity to provide this submission to the Rural and Regional Affairs and Transport Legislation Committee in response to its inquiry into the biosecurity risks associated with the importation of seafood and seafood products (including uncooked prawns and uncooked prawn meat) into Australia.*

*This submission provides an overview of Australia's biosecurity system in the context of the import of prawns and prawn products into Australia and the Logan River WSSV incursion. Further information on any aspect of this submission can be provided to the Committee on request.*

***Australia's biosecurity***

Biosecurity is the management of risks to the economy, the environment and the community, of animal and plant pests and diseases entering, emerging, establishing or spreading. Managing biosecurity is critical to sustaining a productive agricultural sector, protecting the environment and maintaining export markets. The absence of many significant pests and diseases in Australia safeguards and provides benefits to Australia's natural environment.

Australia's biosecurity system supports our reputation as a safe and reliable trading nation. It provides assurance for the export of Australian agricultural, fisheries and forestry products, which typically account for 15 per cent of the value of Australia's annual merchandise exports.

The biosecurity system is complex, and operates in an environment characterised by the continual movement—in and out of the country—of living things and goods. It is not possible or desirable to manage biosecurity risk to one sector in isolation from another, or without a strong network that includes different levels of government, industry, non-government organisations and the community working together to achieve a common objective. Zero risk is not achievable—however, biosecurity threats are effectively managed using a risk-based approach.

Biosecurity risks are managed offshore, at the border, and within Australia—the biosecurity continuum. Offshore biosecurity requirements play a key role in Australia's biosecurity system by reducing the biosecurity risk associated with imported goods. This is achieved by understanding global risks through intelligence and surveillance; working with international trading partners in multilateral forums; conducting risk assessments and developing biosecurity conditions; and undertaking audit and verification activities.

Border activities seek to verify that imports meet import conditions and intercept biosecurity risks that may be present in live animals and plants and their products, cargo, mail and with passengers to reduce the likelihood of pests or diseases entering the country. This includes working with importers, and biosecurity industry participants to achieve voluntary compliance and assessment of goods by trained biosecurity officers.

Within Australia, activities are undertaken in partnership with state and territory governments, industry and the community to reduce the likelihood that a pest or disease establishes and minimise their potential impact; through early detection activities such as surveillance and diagnosis; and a capability to prepare for, and respond to, an incursion. It also includes the management of established pests and diseases.

Prioritisation of risk, compliance and continual improvement are integral to the operation of the biosecurity system, which is supported by research to drive innovation. Scientific principles inform decisions on how to best manage biosecurity risks. They underpin evidence-based policy development, intelligence gathering, decision-making and service delivery.

### *Australia's prawn aquaculture*

Before 1992, Australia did not regulate the import of prawns or prawn products other than to restrict pest infestation. In 1992, reports began to emerge of a new disease causing significant mortality of prawns in overseas prawn farms. The Director of Quarantine implemented import conditions for prawn feed requiring that it be heat treated.

Since then the disease has been called white spot disease (**WSD**) and it has been identified as being caused by white spot syndrome virus (**WSSV**). WSSV has now spread to nearly every part of the world where there is a prawn farming industry. It is highly contagious and results in the onset of high mortalities within only a few days. WSSV and WSD are not harmful to human health. It is safe to eat infected prawns.

Australia takes a risk-based approach to biosecurity risk to ensure that biosecurity risks remain below Australia's appropriate level of protection—a very low level of risk but not zero risk. As a member of the World Trade Organisation, Australia has agreed that it will not implement a biosecurity measure more restrictive than necessary to maintain Australia's appropriate level of protection. Australia's international obligations are reflected in the domestic *Biosecurity Act 2015* (Cth).

This has meant the Director of Biosecurity, supported by the Australian Government Department of Agriculture and Water Resources, has progressively implemented import conditions on prawns to mitigate the risk posed by WSSV.

The suite of biosecurity measures introduced were directed to reducing Australia's overall risk and reducing the likelihood of WSSV entering high risk pathways. Requiring heat treatment of prawn feed targeted the most significant and direct pathway by which WSSV could be introduced, establish or spread in Australia—the feeding of infected prawns to other prawns in hatcheries. The Department has since progressively strengthened and adapted import conditions to meet the WSSV risk based on the best available information and after conducting ongoing risk assessments. This included an IRA—the most significant form of risk assessment available to the Department. The resulting import conditions for prawns were based on rigorous scientific evaluation of biosecurity risks, and are the most stringent biosecurity risk management measures in the world for the importation of prawns for human consumption.

For nearly sixteen years, since the eradication of an incursion of WSSV in Darwin in 2000, Australia was one of a handful of countries that remained WSSV free despite a global epidemic. The Queensland Government, with assistance from the Australian Government, intends to eradicate WSSV after the recent incursion in the Logan River.

The cause of the current Logan River WSSV incursion is unknown. The Department is investigating its cause but it may never be identified. Prawn farms in the Logan River area have suffered losses because of WSD. Commercial and recreational fishers as well as the broader community have also been affected.

# 2 Timeline

The following is a timeline of key events until the Logan River WSSV incursion:

| Date | Event |
|---|---|
| 1992 | First reports of WSSV epidemics in Taiwan, Japan and Korea. |
| | The Director of Quarantine prohibits the import of manufactured prawn meal and prawn feed without a permit. Heat treatment is made a permit condition, as it inactivates most of the virus; prawn meal and feed making its way into prawn hatcheries is considered the most direct and high-risk pathway into Australia of WSSV.[1] |
| 1992-1996 | WSSV spreads throughout Asia. |
| 1996 | The National Task Force on Imported Fish and Fish Products recommends reviewing biosecurity requirements for imported bait prawns, prawn feed and prawns for human consumption.[2] |
| September 1996 | The Department commences of a review of aquatic animal biosecurity policies including prawn importation policies. |
| 1996 | The Director of Quarantine updates import conditions. Import permits required for uncooked prawns not fit for human consumption.[3] Imported prawn use for bait and berley considered a high-risk pathway for WSSV to enter Australian waters. |
| May 1997 | The Department commences preparation of a comprehensive IRA on prawns and prawn products. The purpose is to deliver biosecurity policy recommendations based on sound science, transparency, fairness and consistency. An IRA assists Australia to meet its international obligations in relation to imposing sanitary and phytosanitary measures. The IRA is to address WSSV and YHV. |
| 25 August 2000 | The Department releases a draft IRA for comment. |
| 15 December 2000 | The Director of Quarantine updates import conditions as a result of recommendations in the draft IRA. The import of all uncooked prawns is prohibited without a permit. Conditions for permits amended to require:[4]<br><br>• certification by an approved body in the exporting country that:<br>o prawns have not been emergency harvested;<br>o prawns processed, inspected, and graded at approved facility under the control of the approved body;<br>o the place of harvest is WSSV or YHV free (or the prawns are labelled with country of origin, labelled for human consumption only, labelled with graded count and size and |

[1] AQPM 1999/57.
[2] Higgins 1996
[3] AQPM 1996/59. On 7 July 1998, the *Quarantine Proclamation 1998* (Cth) takes effect. It is a consolidation of proclamations previously issued. See ss 44, 45 – permits required for prawn meal, raw prawns, prawns not fit for human consumption, and dried prawns (other than prawn meal) unless free from insects, soil, and other debris.
[4] ABPM 2000/057; *Quarantine Amendment Proclamation 2000 (No. 3)* (Cth)-permit required for prawns fit for human consumption.

| | |
|---|---|
| | each prawn is greater than 15g individual weight);<br><br>• the importer to:<br>o declare that the prawns are only for human consumption;<br>o keep sales records (ie. dates, purchaser, and end-use); and<br>o only commercially process the prawns at approved facilities. |
| 15 November 2000 | A WSSV incursion is suspected in Darwin after imported prawns are inadvertently fed to mud crabs and prawns at aquaculture facilities. As a result:<br><br>• all crustaceans at the facilities are destroyed;<br>• feeding of prawns is discontinued;<br>• holding tanks and associated equipment are disinfected; and<br>• samples for WSSV testing are obtained.<br><br>WSSV is confirmed after testing on 5 December 2000. However, further testing has shown that WSSV did not establish in Darwin Harbour. |
| 5 February 2001 | The Director of Quarantine updates import conditions in response to Darwin WSSV incursion. Key permit conditions amended as follows:<br><br>• WSSV testing of whole and unpeeled uncooked prawns required unless from a country or zone that is declared WSSV free; and<br>• WSSV positive prawns to be destroyed or re-exported.[5] |
| 28 May 2001 | The Director of Quarantine updates import conditions. Key permit conditions amended as follows:<br><br>• all uncooked unpeeled and headless prawns to be kept in biosecurity bond until tested for WSSV using a protocol designed to detect infection at 5% prevalence with a minimum 95% confidence;<br>• an approved body to certify there is no visible infection and certify packages are marked for human consumption only-not to be used as bait or feed for aquatic animals;<br>• prawns less than 15g allowed but must have head removed; and<br>• infected batches can be processed at an approved facility.[6] |
| 25 June 2002 | The Director of Quarantine updates import conditions. Permit conditions amended to allow breaded or battered prawns, and to remove the no emergency harvesting requirement for such prawns, if:<br><br>• peeled to the tail segment;<br>• greater than 18g individual weight; and<br>• packaged in lots no more than 3kg weight.<br><br>Processed prawns were assessed as having an extremely low probability of being used as bait. Removing the head and shell was also considered to reduce the viral load within a prawn to acceptable |

[5] ABPM 2001/06. Programs also announced for education of bait wholesalers, recreational fishers, and restaurants; development of codes of practice with industry; and working with states and territories to impose post-border controls.
[6] ABPM 2001/11.

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| | levels (as it concerned human consumption).[7] |
| 2004 | Report published showing Australia is free from WSSV after a national survey of 3,081 samples from 56 locations throughout Australia.[8] |
| 23 November 2006 | The Department issues a revised draft IRA. Fifty-one stakeholder submissions were received following its release. |
| 2006 | The Department undertakes Operation Penaeus. During a routine border inspection, an importer is found with goods not covered by an import permit. The goods are prawn hatchery supplements. As a result, search warrants are executed on three prawn farms followed by successful prosecutions. There was no known connection to WSSV. |
| 24 July 2007 | The Director of Quarantine updates import conditions and inspection requirements. Testing and conditions relevant to IHHNV, YHV, and TSV added alongside WSSV.[9] |
| 12 September 2008 | The Director of Quarantine updates import conditions. Conditions for IHHNV are removed as an Australian strain of the virus is identified.[10] Key permit conditions are also amended as follows:<br>• uncooked uncooked prawns with head and shells removed may be:<br>o coated for human consumption in a wet marinade (no less than 12% of the total weight of the product);<br>o coated for human consumption in a dry marinade (that must clearly cover the product);<br>o coated for human consumption by being marinated and placed on skewers (the marinade must clearly cover the product); or<br>o processed as dumpling, spring roll, samosa, or similar products. |
| December 2009 | The Department issues the final IRA. |
| 22 April 2010 | Director of Quarantine issues a policy determination based on the final IRA following four failed appeals against the final IRA. Prawns and prawn products can continue to be imported into Australia under conditions that reflect the existing interim conditions. |
| 3 September 2010 | The Department inadvertently releases a WSSV positive consignment from quarantine. |
| 24 September 2010 | The Department orders the WSSV positive consignment into quarantine. |
| 22 November 2010 | A review into inadvertent release of the WSSV positive consignment by the Interim Inspector General of Biosecurity finds there is an extremely low risk that the prawns entered high-risk pathways and a negligible likelihood that WSSV would have established in Australia |

[7] ABPM 2002/33. See 6.5 below below on the removal of the head and shell to reduce viral load by at least 50%.
[8] East IJ, Black PF, Findlay VL and Bernoth EM 2004.
[9] BAPM 2007/16. The import conditions followed review of stakeholder submissions on the draft IRA.
[10] BAA 2008/30.

| | |
|---|---|
| | as a result.[11] |
| 10 February 2014 | The Department commences Operation East Leichhardt. The operation focused on imports of highly marinated prawns that did not meet import conditions. |
| 25 May 2016 | The Department commences implementation of Operation Cattai. The operation was designed to confirm and respond to suspected avoidance of biosecurity border controls in relation to the imported uncooked prawn trade. It identified high risk activity by a number of importers. |
| 14 November 2016 | First notice of intention issued to importer of prawns with approved arrangement. |
| 22 November 2016 | The first infected property on the Logan River, south of Brisbane, notifies Biosecurity Queensland of unusual mortalities of prawns. |
| 30 November 2016 | QCVO informs the ACVO of the possible WSSV incursion. |
| 1 December 2016 | Testing by AAHL confirms WSSV infection at the first infected property. |
| | The AqCCEAD meets for the first time to consider the incursion. |
| | The Department notifies the OIE. |

The timeline during the Logan River WSSV incursion continues at 8 below. The department's actions in response to Operation Cattai are set out at 5.5.

[11] Interim Inspector General of Biosecurity 2010.

# 3 Australia's prawn industry

## *3.1 Australian demand for prawns*

Australia imported $2 billion worth of fisheries products in 2014-2015, 14% being prawns.[12] The top sources, by value, were Vietnam ($132m), China ($127m) and Thailand ($99m).

The following table outlines Australia's prawn imports in 2015-16:[13]

| **Product** | **Value** |
|---|---|
| Prawns frozen | $266 million |
| Prawns prepared and preserved | $133 million |
| **Total** | **$399 million** |

## *3.2 Australian prawn exports*

In 2015-16, Australian prawn exports were valued at around $114m. Australia mostly exports prawns to markets in Japan, Hong Kong and China with prawns sourced from wild capture and from aquaculture. Typically, Australian exported prawns are sold for a higher value than if they were sold domestically, benefiting Australia's prawn exporters. Kuruma prawns, which Australia exports, are highly valued in Japan.

In 2014-15, Queensland contributed $63m (23%) to wild-caught production and $81m (94%) to prawn aquaculture (farming) production by value. Prawn wild-capture fishing employs approximately 445 people.

The following table outlines Australian prawn production in 2014-15:

| **Product** | **%** | **Value** |
|---|---|---|
| Wild-caught prawns | 76% | $272 million |
| Prawn aquaculture | 24% | $86 million |
| **Total** | **100%** | **$358 million** |

## *3.3 Australian prawn aquaculture*

Penaeid prawn species form the basis of Australian prawn aquaculture including black tiger prawns, kuruma prawns, brown tiger prawns and banana prawns. Black tiger prawns are the single most commonly cultivated species. Prawn aquaculture in Australia is concentrated on the east coast with a majority of farms in Queensland and a few in northern New South Wales.

## *3.4 Australian prawn capture fisheries*

The majority of prawn capture fisheries in Australia are found in the Exmouth Gulf on the west coast and in Moreton Bay on the east coast. Penaeid prawns form the basis of Australian commercial capture fisheries in all States except Tasmania. Other commercially important marine species include deep water prawns belonging to the families *aristeidae*, *solenoceridae* and *pandalidae*. These are trawled in waters off the north-west coast of Western Australia and off the coast of New South Wales.

[12] Savage J 2015. All statistics in part 3 of this submissions for 2014-15 can be found in this report.
[13] ABARES, Agricultural commodity statistics 2016. All statistics in part 3 of this submissions for 2015-16 can be found in this report.

The largest single prawn fishery is the Northern Prawn Fishery situated in the Gulf of Carpentaria. It is managed by the Australian Fish Management Authority because it is fished by vessels from Western Australia, the Northern Territory and Queensland. Its catch is sold domestically and overseas.

In Queensland, in 2014-2015, the East Coast Trawl Fishery dominated prawn landings. The East Coast Trawl Fishery has 388 licence holders which target tiger, banana, king, Endeavor and bay prawns. Also in Queensland, the River and Estuary Trawl Fishery has 89 licence holders which target banana, bay and tiger prawns.

## *3.5 Australian recreational and traditional fisheries*

It is difficult to value the recreational sector, however, recreational fishing is a popular activity that contributes economic and social benefits to the Australian economy.

# 4 WSSV and WSD

## *4.1 What is it?*

WSD is a highly contagious viral disease of penaeid prawns caused by WSSV. WSSV first emerged in Northeast Asia in 1992-1993 and is now globally widespread.

In farmed prawns, WSD is characterised by the rapid onset of high mortalities. During an incidence of WSD at a prawn farm, prawns typically cease feeding a few days before moribund prawns will appear at pond edges, followed by mass mortalities a day or so later. Clinical signs include dark-reddish colouration of the whole body and white spots on the carapace and appendages of the prawns.

WSSV can infect a wide range of crustaceans without causing WSD. WSD therefore has a broad range of potential hosts including decapods (eg. crabs and crayfish) and annelids (eg. worms).

With respect to wild prawn capture fisheries, there is no evidence that WSSV has impacted the wild catch, even in countries where the prevalence of infection in wild crustaceans is very high. This is because WSSV infection is not likely to cause disease in all susceptible crustacean species. Further, disease only occurs in prawns when viral loads are very high. In the farming environment, this is usually precipitated by stress and sustained by high stocking densities, neither of which commonly occur in wild crustaceans.

## *4.2 When did it emerge?*

WSSV was first linked to WSD in 1993 following outbreaks in Kuruma prawns farmed in Japan, although WSSV may have originated in Taiwan and China in 1991 and 1992. It is likely to have originated in the wild.

By the end of the 1990s, WSSV was endemic throughout all countries in Asia and the Americas that had substantial prawn aquaculture industries. WSD has been listed as a non-exotic pathogen in the European Union due to previous disease outbreaks in penaeid farms in Greece, Italy and Spain.[14]

WSD has caused extensive losses in farmed prawns throughout the world and is also causing damage to wild freshwater crayfish populations in the United States. There are likely to be different strains of WSSV with slight differences in virulence but all strains are currently considered highly virulent and contagious.

## *4.3 What has been the global response?*

Despite severe initial production losses and widespread infection in wild crustacean populations, farm production in many other countries has gradually recovered and continued to increase in volume. By adopting various biosecurity measures to prevent or limit production losses, prawn farmers have learned to live with WSSV.

In general, foreign biosecurity practices have been designed to prevent WSSV entering ponds at seeding or during grow-out by managing pond conditions and the production cycle. Generally, this has been achieved by the use of uninfected broodstock for pond seeding and adopting closed-cycle production.

The availability of large numbers of pathogen free Vannamei prawns from breeding programs based primarily in Hawaii has led to their widespread adoption through Asia and the Americas. Selectively bred Vannamei also have a shorter production cycle

[14] Stentiford, GD & Lightner DV 2011, vol. 319, pp. 302–06.

and excellent feed conversion ratios. This led to an almost complete switch by Asian farmers to Vannamei prawns during the 2000s.

Prawn imports to Australia from Asia for human consumption are now almost exclusively Vannamei prawns. However, Vannamei prawns are not resistant to WSSV. Aquaculture practices overseas have switched to a closed-cycle in order to continue.

Access to disease free broodstock bred in containment would be a crucial need for Australian farmers if WSSV or other prawn diseases become endemic in Australia.

### *4.4 What are its effects on humans?*

The effect on humans of WSD is economic and flows from its impact on aquaculture. Human health is not affected by eating WSSV infected or WSD affected prawns.

### *4.5 Is Australia WSSV and WSD free?*

In 2004, a national survey found no evidence of WSSV in Australia. Australia was one of only a few countries with a prawn aquaculture free from WSD.

Australia's WSSV free status was supported by ongoing passive surveillance (eg. testing to exclude exotic diseases during routine disease investigations) and some targeted surveillance such as that associated with translocation of wild caught prawn brood stock (10% of brood stock tested).

As a result of the Logan River WSSV incident, Australia cannot declare its status as free from WSSV, noting that an eradication response is currently underway. It will take time before it is clear whether or not the virus has established in wild prawn populations. Under the OIE proof of freedom requirements surveillance is required for 2 years with no evidence of infection.

### *4.6 Testing for WSSV*

**Introduction**

The OIE recommends a number of different tests for detecting WSSV. PCR testing is recommended in most situations. The OIE also recommends a sampling regime that would provide 95% confidence of detecting WSSV if it is present at a 5% prevalence.[15] The IRA adopted the OIE recommendations, as does the AQUAVETPLAN.

The Department does not undertake its own testing. The Department approves laboratories for testing imported aquatic animals for biosecurity purposes according to an established policy.[16] Laboratories must be accredited by the National Association of Testing Authorities to the international standard ISO/IEC 17025 and hold an approved arrangement with the Department. Accreditation must cover a WSSV test described by the OIE. Three labs have been approved by the Department to conduct WSSV testing of imported prawns. They are AAA, AgriGen and EMAI. AAHL is also NATA accredited to perform WSSV PCR testing.

On 5 February 2001, the Director of Quarantine first introduced mandatory WSSV testing on all uncooked unpeeled and headless prawn imports from countries or zones that were not declared as WSSV free. WSSV testing was an import permit condition; it is the responsibility of importers to meet import permit conditions. Biosecurity

[15] There are a number of different kinds of tests available for detecting WSSV including a number of different kinds of PCR tests. The OIE recommends a nested-PCR protocol developed by Lo et al. 1996; Lo & Kou 1998; see also AQUAVETPLAN. Note that PCR testing cannot distinguish between infectious and non-infectious virus.
[16] Policy for the suitability of laboratory facilities for testing imported aquatic animals and/or their products for biosecurity purposes, 2016

officers obtain samples of imported prawns and direct the samples for testing. Importers would choose one of the accredited laboratories for testing.[17] Importers were responsible for testing expenses.

**PCR testing**

There are many variants of PCR tests. The one employed for prawn testing is known as real time PCR, where the amplification of target DNA in the reaction can be monitored in real time. Real time PCR testing involves preparing a sample of DNA from prawns in a solution and targeting certain WSSV DNA sequences within it.

The solution is then put through a series of heating and cooling cycles during which the targeted DNA doubles after each cycle. As the solution is heated the existing DNA in the sample uncoils and short pieces of introduced DNA (called primers and probes) bind to the targeted DNA. When recoiled, an enzyme amplifies, or replicates, the targeted DNA and causes the release of a florescent compound.

The machine in which the testing is being conducted looks for an increasing florescent signal. When the signal reaches a certain threshold the sample is considered to be WSSV positive. If no signal is detected (or it does not reach the threshold), the sample is considered to be WSSV negative. PCR testing is highly sensitive.

All the approved laboratories and AAHL conduct real time PCR using the TaqMan™ system. However, the Department understands that there are differences in the ways DNA samples are prepared and how results from the TaqMan PCR system are interpreted. For example, different cut-off values for negative results are applied by the different laboratories. The cut-off value is known as the $C_t$ value. The OIE does not recommend a specific $C_t$ value for real time PCR tests using the TaqMan™ system.

**AAHL**

The AAHL is operated by the CSIRO. It is Australia's leading animal health laboratory. All of the approved laboratories conduct PCR tests for WSSV to the OIE standard but the AAHL undertakes further steps including:

- an additional, parallel, real time PCR test for WSSV which the AAHL developed;
- testing samples neat, at 1/10 dilution and in duplicate; and
- running PCR reactions for 45 cycles.

An additional test run by the AAHL, when its duplicate WSSV tests are negative, is a control test that does not specifically target WSSV. It targets prawn gene sequences which, if there is no indication of amplification, indicates that there may be inhibition of the critical enzyme used in the test. By conducting a test using a 1/10 dilution (rather than conducting only neat testing as required by the OIE), the AAHL may identify potential inhibition in its neat tests. Neat tests can occasionally lead to false negatives as too much DNA in the test preparation can inhibit the test.

[17] The four laboratories were: AAL, AAHL, AgriGen, and EMAI.

# 5 Australia's prawn biosecurity

## *5.1 What is biosecurity?*

**Biosecurity is the management of risk**

Biosecurity is the management of the risks to the economy, the environment, and the community, of pests and diseases entering, emerging, establishing or spreading.[18]

Biosecurity underpins the Australian way of life. It protects our environment and our farmers from the impacts of serious pests and diseases that can significantly affect our native flora and fauna and increase the costs of production and ability to access markets, both domestically and internationally.

**Biosecurity risk**

Generally, biosecurity risk means:

(a) the likelihood of a disease or pest:

  (i) entering Australian territory or a part of Australian territory; or

  (ii) establishing itself or spreading in Australian territory or a part of Australian territory; and

(b) the potential for any of the following:

  (i) the disease or pest to cause harm to human, animal or plant health;

  (ii) the disease or pest to cause harm to the environment;

  (iii) economic consequences associated with the entry, establishment or spread of the disease or pest.

**Biosecurity is a shared responsibility**

Responsibility for Australia's biosecurity is shared between the Australian, state and territory governments. Responsibility is also shared with those who benefit from biosecurity, such as farmers, exporters and retailers.

To coordinate and implement national action on biosecurity issues, well-established relationships and national arrangements are in place between the Australian, state and territory governments, relevant industry associations and members and other stakeholders.

The Intergovernmental Agreement on Biosecurity came into effect in January 2012. It has been signed by all jurisdictions except Tasmania.[19] The IGAB establishes a clear vision for building a smarter biosecurity system through improved collaboration between the Australian, state and territory governments. It sets the foundation for improved partnerships between governments and industry, environment groups and the community to manage biosecurity threats.

Australia has also entered into international arrangements on biosecurity.

**The Department's role**

[18] Intergovernmental Agreement on Biosecurity dated 13 January 2012 at 1.1.

[19] Tasmania did not sign the IGAB due to concerns with section 7.19 which allowed the Commonwealth to override state and territory controls on interstate trade where a measure is scientifically unjustified and/or unnecessarily trade restrictive. Tasmania has agreed to abide by the other provisions of the IGAB and participates in all activities relating to the agreement.

Under the Biosecurity Act, the Australian Government manages biosecurity risks and emergencies and gives effect to Australia's international rights and obligations, including the *Agreement on the Application of Sanitary and Phytosanitary Measures* (**SPS Agreement**). It does so largely through the Department.

## *5.2 Australia's biosecurity risk settings*

**Risk based approach**

Historically, the Australian Government's approach to biosecurity had been underscored by mandatory border intervention targets, rather than assessing the differing level of risk posed by different passengers or goods, or where along the continuum intervention would be most effective. With increasing biosecurity risks due to the growth in trade and movement of passengers, this approach was not sustainable, nor was it the most effective way of managing biosecurity risk.

In line with recommendations from the 2008 independent review of Australia's biosecurity and biosecurity arrangements, the Australian Government moved to a risk-based approach for biosecurity, supported by intelligence. [20]

**International arrangements**

Biosecurity restrictions on imports must conform to Australia's rights and obligations as a World Trade Organization Member country. These rights and obligations derive principally from the SPS Agreement. Specific international guidelines on risk analysis developed under the IPPC and by the OIE are also relevant. The SPS Agreement provides the following:

- A WTO Member determines the level of sanitary and phytosanitary protection it deems appropriate, known as the appropriate level of protection or ALOP.
- An importing Member has the sovereign right to take measures to achieve the level of protection it deems appropriate to protect human, animal or plant life or health within its territory.
- An SPS measure must be based on scientific principles and must not be maintained without sufficient scientific evidence. An SPS measure is any measure applied to protect human, animal or plant life or health within the territory of a Member from risks arising from the entry of pests and diseases, or from contaminants in food.
- An importing Member must avoid arbitrary or unjustifiable distinctions in the levels of protection it considers to be appropriate in different situations, if such distinctions result in discrimination or a disguised restriction on international trade.
- An SPS measure must not be more trade restrictive than required to achieve an importing Member's ALOP, taking into account technical and economic feasibility.
- Where a relevant international standard, guideline or recommendation does not exist or where, in order to achieve an importing Member's ALOP, a measure needs to provide a higher level of protection than accorded by the relevant international standard, such a measure must be based on a risk assessment; the

[20] Beale R AO 2008.

risk assessment must take into account available scientific evidence and relevant economic factors.

- Where the relevant scientific evidence is insufficient, an importing Member may provisionally adopt SPS measures on the basis of available pertinent information; but in such circumstances, Members shall seek to obtain the additional information necessary for a more objective assessment of risk and review the SPS measure accordingly within a reasonable period of time

- An importing member must recognise the concepts of pest- or disease-free areas and areas of low pest or disease prevalence, and shall take into account, inter alia, the level of prevalence of specific diseases or pests, the existence of eradication or control programs and appropriate criteria and guidelines which may be developed by the relevant international organisations.

**Australia's appropriate level of protection**

Australia's ALOP is expressed as providing a high level of sanitary or phytosanitary protection whereby risk is reduced to a very low level, but not to zero. Zero risk would be impossible to achieve and would lead to significant curtailment of foreign trade to the determent of Australia's economy and way of life.

Australia's ALOP is prescribed by the Biosecurity Act s 5 as follows:[21]

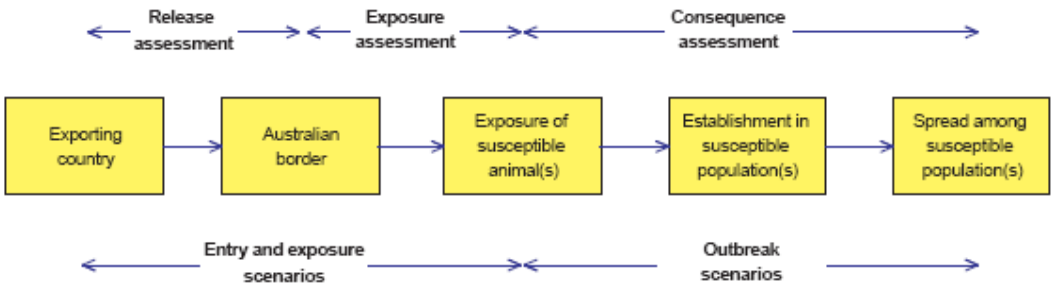
> The ***Appropriate Level of Protection*** (or ***ALOP***) for Australia is a high level of sanitary and phytosanitary protection aimed at reducing biosecurity risks to a very low level, but not to zero.

State and territory governments have indicated their support for Australia's ALOP through the Primary Industries Ministerial Council.[22] Australia's ALOP informs the Department's risked based approach to biosecurity.

**Biosecurity risk assessments**

To ensure imported goods meet Australia's ALOP, the Department continually assesses the biosecurity risk associated with goods and diseases. It does so by carrying out risk assessments. Risk assessments set out the level of biosecurity risk associated with goods or diseases and detail conditions that might be imposed to reduce these risks to an acceptably low level.

Risk assessments take on various forms. They are deployed at different stages within Australia's biosecurity system and they have varying degrees of formality. The following diagram shows some of the components of risk assessment:




[21] See previously the Quarantine Act ss 5D and 44D(2) which also set a high level of protection for Australia.
[22] PIMC 2002.

*Fig. 2*[23]

Biosecurity risk assessments include:

- **A biosecurity import risk analysis**.[24] A legislated process to evaluate the level of biosecurity risk associated with goods or a class of goods, and to determine appropriate import conditions.

- **A policy setting risk assessment**.[25] A highly flexible range of risk assessments that the Department undertakes to guide biosecurity policy. They range from assessments that take up to 18 months to complete, to risk assessments that take a day. Policy setting risk assessments are agile and can be adapted to changing circumstances including rapidly changing science, where an import risk analysis cannot. For example, the Department may impose import permit conditions based on a policy setting risk assessment, with an import risk analysis to follow.

- **Risk assessment undertaken by officers.**[26] The on-ground risk assessments conducted by Australia's biosecurity officers thousands of times a day across the country. Biosecurity officers assess front-line biosecurity risk informed by policies, including import risk analyses and policy setting risk assessments. These policies are frequently distilled into a work instruction, operational staff notices or technical policy advice. These inform the exercise of biosecurity officers' discretion in assessing and managing biosecurity risks posed by goods and diseases.

**Prioritisation of biosecurity risk assessments**

Decisions on whether to carry out risk assessments will in part be driven by an understanding and prioritisation of risks, relevant national and international obligations and historical, operational and feasibility considerations.

When assessing priorities for risk assessments, the following factors are considered:

- whether a risk assessment is required to manage existing biosecurity risks to an acceptable level;

- whether the risk assessment will increase organisational efficiency to enable a greater focus on higher risk products, or to decrease regulatory burden on imports;

- trade implications, including if there is a nexus between the import request and Australian export market access objectives; and

- practicality, including staff availability and workload.

## *5.3 Australia's biosecurity compliance strategy*

The Department imposes requirements to be met offshore, at Australia's borders and onshore to reduce biosecurity risks. A range of sophisticated technologies and approaches including research, shared international resources and intelligence are used to help reduce biosecurity risk. Pests and diseases could potentially enter

[23] Biosecurity Australia 2009.
[24] Biosecurity Act s 166 where it is now referred to as a BIRA or Biosecurity Import Risk Analysis.
[25] Under the Quarantine Act s 70 the Director of Biosecurity was required to consider risk when granting import permits. In practice, this took place a number of ways within the Department. The assessment of biosecurity risk is also fundamental to the Biosecurity Act. For example, see Biosecurity Act ch 3 pt 1 divs 3, 4.
[26] Biosecurity Act ch 3 pt 1 div 4.

Australia through a number of import pathways—natural, legal trade, illegal trade, passengers, mail and cargo.

The Department works across the biosecurity continuum to manage biosecurity risk. This includes working closely with foreign governments, relevant international organisations, and state and territory governments.

**Pre-border activities**

The Department imposes requirements for offshore activities to minimise the likelihood of pests or diseases reaching Australian territory. Offshore activities include:

- conducting risk assessments to consider the level of biosecurity risk that may be associated with imports and identifying risk management measures;
- conducting offshore verifications, inspections and audits;
- collaborating with international partners on biosecurity issues and standards;
- regional capacity building through collaborative activities; and
- intelligence and surveillance to determine and assess potential biosecurity risks.

A key import condition for many goods is requiring export certification from an approved body. The department approves bodies in foreign countries to certify exports. The Department conducts reviews of each candidate body before the Director of Biosecurity will approve the particular body.

Requiring certification by an approved body in the exporting country reduces the biosecurity risk of goods before they reach Australia. Conditions requiring certification by approved bodies that imported prawns were free of visible signs of WSD were introduced by the Department to assist in reducing the WSSV risk.

**Border activities**

The Department's biosecurity activities at the border are focused on:

- screening and inspection of international vessels, passengers, cargo, mail, animals, animal products, plants, and plant products arriving in Australia;
- managing the high biosecurity risks of live plants and animals through containment, observation and/or treatment at biosecurity facilities; and
- raising awareness of travellers, importers and industry operators of Australia's biosecurity requirements.

The Biosecurity Act allows the Department to implement approved arrangements which allow third parties to carry out biosecurity activities using their own premises, facilities, equipment and people to manage biosecurity risks, without requiring constant supervision.[27] Biosecurity industry participants covered by such an approved arrangement are authorised and required to carry out biosecurity activities in accordance with the arrangement. This may be subject to directions given by biosecurity officers to manage specific biosecurity risks.

[27] Biosecurity Act ch 7; previously the Quarantine Act ss 46A and 66B.

To ensure the effective operation of these arrangements the Department conducts compliance monitoring and auditing. Approved arrangements were in place with a number of prawn importers. One has since had its approved arrangement revoked.

**Post-border activities**

Post-border activities are shared with the states and territories. See 5.4 below for details on Australia's incursion response strategy. The Department, together with others, can assess and manage biosecurity risks; this includes acting to prevent diseases, after entering Australia, from establishing or spreading.

**Biosecurity compliance**

Compliance describes the activities the Department undertakes to ensure that Australia's biosecurity requirements are followed. Compliance activities are conducted pre-, post-, and at the border and play a significant role in ensuring Australia's biosecurity systems meet community expectations and policy objectives.

The Department's approach to compliance is to first encourage stakeholders to voluntarily comply with biosecurity requirements and to deal with non-compliance appropriately depending on the biosecurity risk it represents.[28]

Key compliance activities include:

- **routine inspections** such as rural tailgate inspections for sea cargo containers, external surface inspections of sea cargo containers, commodity specific inspections, inspection of personal effects, screening international mail, inspections of commercial and non-commercial vessel inspections, surveillance on wharves in and around premises approved under an approved arrangements;
- **routine audits** of biosecurity industry participants;
- **targeted inspection** of goods and travellers based on intelligence;
- **executing search warrants** to assess biosecurity risk, monitor compliance with the Biosecurity Act or investigate potential breaches of the Act;
- **variation, suspension or revocation** of approved arrangements and import permits; and
- **prosecutions** of serious and deliberate non-compliance.

Below is an overview of the Department's biosecurity compliance model:

[28] Department of Agriculture and Water Resources 2016.

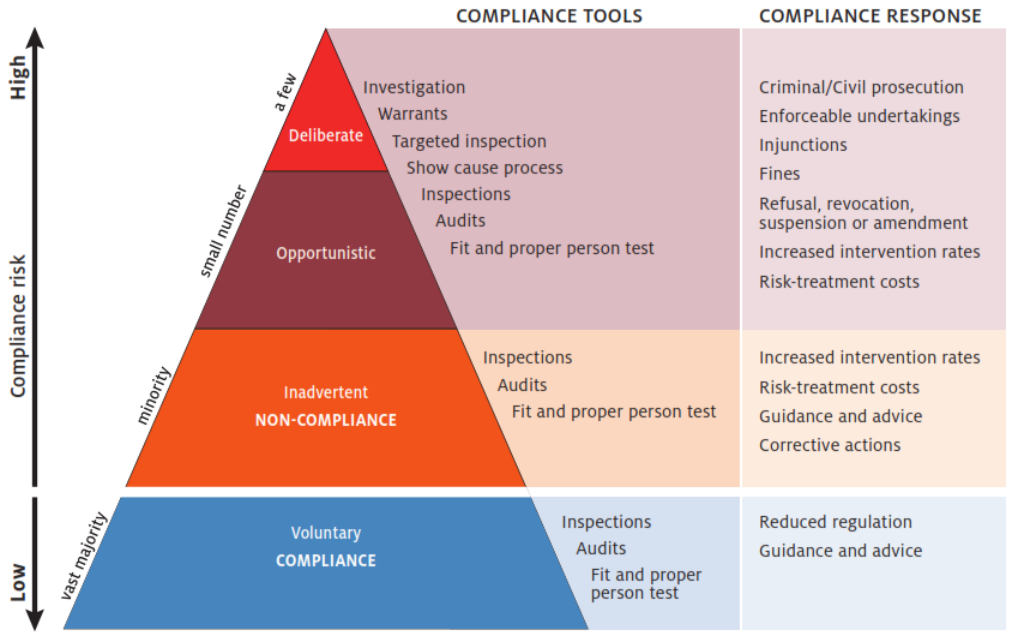



*Fig. 3*[29]

## 5.4 *Australia's incursion response strategy*

Despite all of the precautions in place, some imported goods may contain a pest or disease after entering Australia. Some pests and diseases may also arrive through natural pathways such as the winds and tides or illegal activity and some diseases emerge in Australia (such as Hendra virus).

As a result, the Department contributes to a range of measures within Australia in collaboration with stakeholders aimed at limiting the impact of a pest or disease should it be detected within Australia. There is a national capacity to respond to pest and disease incursions. It is underpinned by the Biosecurity Incident Management System in use by the Australian, state and territory governments, Plant Health Australia, Animal Health Australia, Wildlife Health Australia and the AAHL.[30]

The generalised biosecurity invasion curve below outlines the changing role (including funding) of governments and stakeholders as actions to respond to a pest or disease change from prevention, eradication, containment to asset-based protection. The 'return on investment' of public funds generally reduces when progressing along the invasion curve. For example, governments have a greater responsibility in the earlier stages of prevention and eradication, whereas those best placed to protect assets (public or private) from established pests and diseases are generally the owners of those assets. The environmental and production costs of inaction are high. While it is possible to determine the economic cost in terms of adverse effects on production; at present there is no agreed model to measure the ecological cost to the environment of exotic pests and diseases in economic terms.

[29] Adapted from Ayres and Braithwaite 1992.
[30] See http://www.agriculture.gov.au/biosecurity/partnerships/nbc/nbepeg/bims.

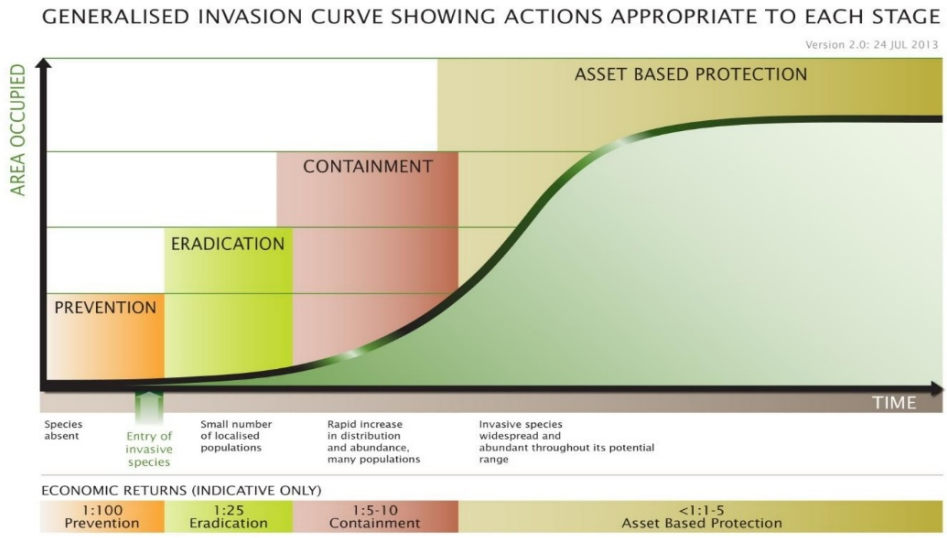



*Fig. 4.*[31]

**Technical response**

For aquatic animal disease incursions, the Aquatic Consultative Committee on Emergency Animal Disease coordinates the national technical response. The AqCCEAD response is guided by the AQUAVETPLAN, which is a series of manuals outlining technical response and control strategies that may be used. The disease strategy manuals cover many diseases, including WSD. The AQUAVETPLAN represents preparedness and contingency planning by the Australian Government. Within it, a series of disease response strategies have been developed.

**On farm biosecurity—a shared responsibility**

In February 1996, a review of Australia's biosecurity system commenced.[32] It covered a number of matters including that Australia needed a fundamental change to biosecurity culture with each Australian needing to assume ownership of biosecurity.

Australia's biosecurity system has, for some time now, been a system of shared responsibilities. This means that farmers must take some responsibility for their own biosecurity. Prawn farmers carry responsibility to protect their own economic interests from biosecurity risks that may occur.

Effective on-farm biosecurity practices and management are essential in reducing the risk of the introduction of pests and diseases. A farm that practices effective on-farm biosecurity is likely to be protected against biosecurity risks already in Australia and those which may arrive.

**Review and continual improvement**

External review and recommendations for improvement are provided by the Australian National Audit Office and other parties, as required. Review of an eradication response is a routine process to drive improvements. For example, following the detection of black striped mussels in Darwin Harbour in 1999, a national workshop was held to evaluate the response and how it was handled. This led to the

[31] Department of Environment and Primary Industries, Victoria; see http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds/protecting-victoria-from-pest-animals-and-weeds/invasive-plants-and-animals/invasive-plants-and-animals-policy-framework.
[32] Nairn ME, Allen PG, Inglis AR, and Tanner C 1996.

establishment of the national system which is being implemented to protect the Australian marine environment and industries.

In respect of the Logan River WSSV incursion and other WSSV and aquatic biosecurity activities the Department has commenced a review of risk management conditions and compliance arrangements to support the resumption of trade, and has made a referral to the Inspector General of Biosecurity.

## *5.5 Australia's biosecurity system in action*

**Biosecurity risk assessment**

Prior to 1992, there was no animal health related policy in Australia for the importation of prawns or prawn products—the only restriction related to insect contamination of dried prawn imports.

From 1992 to 2009 until the release of the final draft IRA, the Director of Quarantine prohibited the import of prawns and prawn products without import permits, and imposed a number of import permit conditions. The Department continually reassessed the biosecurity risk of WSSV and amended import conditions to maintain a very low risk to Australia consistent with Australia's ALOP. On completion of the IRA process, the necessary import conditions and biosecurity measures were already in place in Australia. The IRA process took a number of years to complete and during this time the IRA team provided the Department key information about the biosecurity risk of WSSV. In 2000, Australia experienced the Darwin WSSV incursion but eradication was successful.

Before and since the release of the final IRA, the Department has continued to monitor the biosecurity risk posed by WSSV and undertake continual compliance monitoring and enforcement activities. Each year the Department undertook a number of routine compliance operations, including prosecutions. It also engaged in a series of larger operations in response to intelligence on potentially non-compliant behaviours. The larger operations were called Operation Penaeus, Operation East Leichhardt and Operation Cattai.

**Processes for the importation of uncooked prawns**

*Sourcing*
Prawn farmers harvest to fill orders from processors and for forward contracts. In some regions prawns are sent to a peeling shed prior to sending to the processor for packaging

*Packaging*
Imported prawns are typically packaged in retail ready packs ranging from several hundred grams to several kilograms, and are generally packaged in cartons of up to 10kg.

*Transport*
Prawns are shipped in refrigerated (at or below – 18 degrees Celsius) shipping containers that typically hold up to 20,000kg of product. These containers are generally sealed with a tamper seal which features a unique identifier to ensure the contents of the container are not unpacked, substituted or interfered with during transport.

*Importation and assessment*
A range of documentation is required to accompany all imported commercial cargo consignments. A full import declaration (**FID**) is made when this documentation is lodged by Customs brokers in the Australian Border Force - Integrated Cargo System

(**ICS**). The *Biosecurity Act 2015* requires notice to be given of goods to be unloaded in Australian territory. Customs brokers who are specifically trained undertake this role on behalf of importers. Customs brokers answer commodity related profile questions on lodgement of FIDs in the ICS. The Department's commodity related profile questions are aimed at identifying the nature of the imported goods and the biosecurity risk they may present. Relevant commodities are referred from the ICS through to the Department of Agriculture and Water Resources', Agriculture Import Management System (**AIMS**).

Uncooked prawns and prawn products are only allowed into Australia upon the granting of an import permit by the Department. The permit is generally granted subject to conditions outlined in the Department's Biosecurity Import Conditions database (**BICON**).

Prawn consignments referred through to AIMS from the ICS are initially subject to document assessment by biosecurity officers. Through this process, commercial and government issued documents related to an import consignment, including any relevant import permit, are assessed to determine whether the goods are required to be inspected.

Inspection of consignments include the following types:

- **Seals intact inspection** – where the Department applies directions that require the container to remain sealed until a biosecurity officer is available to supervise the breaking of the seal and unloading of the container.
- **Unpack inspection** – where goods are unpacked from the containers in which they were shipped by a biosecurity industry participant covered by an approved arrangement and subsequently inspected by a biosecurity officer to ensure that they meet import conditions.
- **Tailgate inspection** – where consignments are examined from the open door of a shipping container. These inspections are generally undertaken where a close examination of the cargo being imported is not considered necessary – and usually, where concerns about the consignment relate to 'non-commodity' issues such as wooden pallets or container cleanliness.
- **Cargo Compliance Verification inspections (CCV)** – are undertaken to verify that consignments which would not normally be referred to the Department or would be released after a document assessment only, are compliant with import conditions. Consignments for the CCV process are randomly selected for inspection using tariff-based profiles in the ICS. Consignments selected for CCV are subject to 'seals intact' inspections which are conducted at the importer's premises or their nominated location.

Prior to 9 Jan 2017, the majority of inspections for uncooked unprocessed prawns were undertaken as an unpack inspection.

*Sampling*
All batches within a consignment of prawns are required to be sampled in accordance with the current instructional material and according to the rate set out in the 2009 prawn IRA. For each batch within a consignment 13 samples of five prawns are submitted for testing. Each sample is separately bagged and tagged and packaged and transported in a way that ensures it remains frozen to prevent degradation.

*Testing*

Prior to 9 Jan 2017, prawn samples were sent by the department to one of three approved laboratories for WSSV and YHV testing. Laboratories were nominated by the importer and test results were generally provided within 3 to 5 days.

*Release of prawn cargo*
Upon confirmation of a negative test from the approved laboratory the associated batches are released from biosecurity control. Where the test result is positive the importer is directed to export or destroy the consignment.

## *5.6 Compliance activities*

**Operation Penaeus**

In 2006, the Department undertook Operation Penaeus. The operation was commenced in response to the detection, during a routine border inspection, of imported goods that had not been manifested. The importer did not have an import permit for the non-manifested goods, which were prawn hatchery supplements. The goods were consigned to three farms, two of which were in Queensland and one in New South Wales.

In September 2006, search warrants were executed simultaneously on each of the properties to which the goods were destined. The illegally imported goods were seized and destroyed. Each farm was also criminally prosecuted for contraventions of the Quarantine Act. The goods were not tested for WSSV because the operation concerned the failure to declare the goods and importing them without a permit—there was no direct evidence of any WSSV implications.

**Operation East Leichhardt**

In 2013, the Department commenced planning for Operation East Leichhardt. The operation targeted concerns with specific importers of prawn and prawn products based on intelligence received by the Department. AAHL, as part of an independent proficiency testing program it had been conducting, tested and detected WSSV in three prawn samples and informed the Department.

This operation focussed on import of marinated prawns that were inadequately covered in marinade, or which had been inaccurately described. As a result of the operation, in early 2014, the Department identified a number of prawn consignments that did not comply with import permit conditions due to insufficient marinade coverage. All of the consignments were re-exported and the Department conducted surveillance operations to ensure that the consignments were not brought back into Australia. Instructional material to staff was updated to better inform officers about inspecting marinated prawns.

**Operation Cattai overview**

In 2016, the Department commenced Operation Cattai. Operation Cattai was developed as a targeted campaign to confirm and respond to suspected avoidance of biosecurity border controls for imported prawns. The operation was focussed on:

- identifying importers undertaking deliberate avoidance behaviours associated with the importation of uncooked prawns; and
- taking action to address and deter this behaviour to reduce the level of risk for the importer pathway.

The methodologies used by some traders observed during Operation Cattai were assessed by the department as being designed to avoid border biosecurity controls in relation to imported uncooked prawns. Some importers engaged in this behaviour were able to evade import controls. This potentially resulted in significant volumes of imported uncooked prawns that were WSSV positive entering Australia. In some instances the modus operandi employed by some importers became more sophisticated as the department's detection response improved.

The operation is now complete. It consisted of three phases:

- **Phase 1** involved the retail purchase and testing of imported prawns that had been released from biosecurity control at the border (May to June 2016).

- **Phase 2** involved the targeted inspection, sampling and analysis of specifically targeted imported prawn consignments that had not been released from biosecurity control (August to December 2016).

- **Phase 3** involved investigating avoidance associated with highly processed prawn products. It ran concurrently to phase 1 and 2 but could not be completed as planned once the import suspension was implemented.

**Phase 1 of Operation Cattai**

Phase 1 involved purchasing uncooked prawns from 30 retail and wholesale outlets across Brisbane (7), Sydney (13) and Melbourne (10). The purchases were informed by intelligence to target importer products that may have been imported through avoidance of departmental controls. Phase 1 purchasing activity results found that 45 of the 53 uncooked prawn products purchased were positive for the presence of WSSV. Goods that did not meet import conditions were also identified, including prawns imported with shells intact and incorrect species identification.

Phase 1 testing and review of screening laboratory tests from 2014-2016 indicated that there were discrepancies in results for WSSV testing between the different NATA-accredited labs. This informed the design of Phase 2 viral testing protocols.

**Phase 2 of Operation Cattai**

Operation Cattai Phase 2 was designed to confirm and respond to a number of methods apparently being employed by some importers to avoid WSSV and YHV testing on imported raw prawns and prawn products. The Phase 2 approach involved undertaking seals intact inspections of uncooked prawn imports by entities or supply chains suspected of non-compliant behaviour based on the outcome of Phase 1 and previous intelligence and investigation activities. Phase 2 incorporated a revised approach to viral testing; screening laboratories were required to supply raw data to the department for technical review prior to results being reported, and confirmatory testing for WSSV presence was carried out by AAHL.

Phase 2 uncovered concerning behaviour including substitution of imported prawns, possible re-importation of previously WSSV failed product, manipulating container locking mechanisms to avoid seals intact inspections and various methodologies for avoiding the random sampling process. Significantly higher failure rates for WSSV were in evidence for consignments subjected to the seals intact inspections as opposed to the busines as usual inspections. The table below sets out observed importer behaviour.

**Operation Cattai Phase 2 – observed importer behaviour**

| Behaviour | Number of consignments where behaviour was detected |
|---|---|
| Undeclared batches of uncooked peeled prawns | 24 |
| Carton marking (non strapping) | 22 |
| Carton marking using strapping/taping | 8 |
| Additional packaging | 10 |
| Undeclared goods | 6 (4 consignments with sample cartons, 2 consignments with commercial amounts of undeclared goods, 154 cartons of cooked prawns and 240 cartons of marinated prawns respectively) |
| Disregarding secure seals intact direction | 3 |
| Product re-labelling | 3 |
| Incorrect/missing documentation | 3 |
| Suspected consignment substitution | 2 |
| Incorrect country of origin labelling on goods | 2 |
| Possible re-import of prawns previously exported after a positive viral test | 1 |
| Mismatch between importer lodging declaration and importer on cartons | 1 |
| Documentation not matching import permit | 1 |
| **Total number of behaviours (66 consignments)** | **86** |

This indicated an increased biosecurity risk associated with certain importers.

Priority was given to ensuring that further WSSV infected prawns from these importers were prevented from entering Australian territory.

**Operation Cattai – responsive actions taken by the Department**

Results from Operation Cattai tended to show that WSSV presence in prawns tested at retail were likely to be the result of the interaction of three factors:

- **Importer behaviour.** This includes observed behaviour indicative of potential avoidance of testing, misdeclaration of goods in consignment and the importation of undeclared goods.
- **Inspection practices.** This included methods of sampling, type of inspection and time booked for an inspection of prawn consignments.
- **Testing methodology.** This included specific methodology and cut off values for declaring WSSV presence adopted by individual laboratories.

The Department acted to address each of these factors. The actions undertaken include:

- **Inspection practices.** The Department introduced seals intact inspections for Operation Cattai Phase 2 for targeted entities. This meant that these targeted consignments could not be deconsolidated before an inspection, and that

biosecurity officers would supervise the breaking of the seal and unloading of the container. Seals intact inspections were introduced for all prawn-related inspections from 9 January 2017.

- **Sampling practices.** A WHS risk assessment led by Service Delivery Division to support biosecurity officers entering cold storage areas to perform random sampling on uncooked imported peeled prawn products was developed in April 2016 and distributed to field staff prior to Operation Cattai Phase 2 commencing. Equipment to allow safe entry by the biosecurity officers into freezer areas was also made available. Biosecurity officers were also provided updates on the mechanisms being used by some importers to deliberately circumvent inspection and testing regimes. The department subjected certain consignments to six sided inspections, along with full checking of batch numbers.

- **Review of work instructions and training.** The Department issued updated work instructions to biosecurity officers. Biosecurity officers undertaking Operation Cattai prawn inspections were also provided training on enhanced sampling practices, potential circumvention behaviours, and prawn species identification. Situation reports and intelligence summaries were also disseminated to allow biosecurity officers to adapt to changing circumstances.

- **Administrative and enforcement actions.** As at 10 April 2017 the Department has actions underway against six importers to revoke approved arrangements and/or import permits for uncooked prawns. As at 10 April 2017, an approved arrangement has been revoked, two import permits suspended, and a referral has been made to the Commonwealth Director of Public Prosecutions.

- **Consistent testing processes**. The Department contacted laboratories to set out expected procedures for the testing of prawns, introduced confirmatory testing by AAHL, and commenced planning for a workshop with all testing laboratories to share technical knowledge and experience in conducting real time PCR testing for WSSV in prawns, and in reporting testing results for biosecurity purposes. The Department will review existing processes under the Animal Health Laboratory Standards for guidance in relation to improving consistency in commodity testing for biosecurity purposes.

**Factors contributing to increased detection rates for WSSV**

Traceback activities were conducted for over twenty consigments which had previously been released from biosecurity control and which subsequently tested positive for WSSV. Around half of the importers associated with these consignments were already undergoing compliance and enforcement action, with one already having had its approved arrangements revoked and import permits suspended.

The impact of what appears to be deliberate and sustained efforts by third parties to avoid assessment, sampling, testing and inspection processes was further amplified by local level differences in the application of the department's inspection, sampling regimes. In addition, the testing laboratories, while all NATA accredited and using the OIE test for WSSV, used different methodologies and interpreted results differently. While there may be some differences in these areas, they are consistent with the policy requirements for managing biosecurity risk in uncooked prawns.

Additionally, analysis of historical data associated with the inspection of uncooked prawns concluded that:

- there does not appear to be any correlation between individual biosecurity officers carrying out inspections and the release of WSSV positive consignments;

- the strengthening of inspection arrangements to address efforts by third parties to circumvent biosecurity testing and inspection processes increased the positive detection rate significantly.

**Allegations in relation to the actions of biosecurity officers**

The department trains and supports biosecurity officers in the performance of their duties. Biosecurity officers act in accordance with their responsibilities under the *Biosecurity Act 2015*. Throughout any compliance work undertaken, regular feedback and review of training is undertaken by the department.

Departmental staff who undertake biosecurity risk management inspection activities on cargo imported into Australia, such as that relating to uncooked prawns, must demonstrate their competency against mandatory training requirements to become an authorised biosecurity officer.

Biosecurity officers are appointed by the Director of Biosecurity under the *Biosecurity Act 2015*. To be appointed, a person must satisfy the training and qualifications set out in the *Biosecurity (Training and Qualification Requirements for Biosecurity Officers and Biosecurity Enforcement Officers) Determination 2016*. These are that the person completed training modules, delivered by the department, on the *Biosecurity Act 2015* and administrative decision making.

Mandatory training includes the Certificate III in Government, the *Public Service Act 1999 (including mandated behaviours of a Government employee)*, and training specific to the delegations and authorisations held by an authorised biosecurity officer.

Biosecurity officers undertaking prawn inspections are also required to demonstrate their proficiency in applying the instructional material to prawn consignments to a supervisor or senior prawn inspector prior to being deemed competent to undertake prawn-related inspections.

While there have been some allegations made in public forums around improper behaviour by biosecurity officers undertaking inspections of uncooked prawns, detailed analysis of the actions undertaken by biosecurity officers undertaking prawn inspections prior to 9 Jan 2017 concluded that there was no evidence of fraudulent or corrupt behaviour. These investigations included:

- analysis undertaken under Operation Cattai;
- discussions between the senior executive and staff associated with consignments that had positive test results in Cattai Phase 1;
- analysis of data for specific consignments that were previously released from biosecurity control and which subsequently tested positive, to determine whether there were any patterns or anomalies in relation to the actions of staff.

While no evidence of fraudulent or corrupt behaviour has been identified by the the Department in relation to prawn inspections, if evidence is provided of such behaviour it will be investigated and properly dealt with. This is consistent with the approach taken by the department to date. In addressing such behaviour the department has, and will continue to, cooperate with relevant law enforcement agencies at the Commonwealth level as well as across jurisdictions.

# 6 The import risk analysis into prawns and prawn products

## *6.1 Purpose*

As a result of the introduction of interim conditions and the need to address the biosecurity risk associated with prawns, in May 1997, the Department announced the commencement of an import risk analysis into prawns and prawn products.

The import risk analysis was an assessment of the biosecurity risks associated with the importation of non-viable (ie. not live) uncooked prawns and prawn products intended for human consumption. It also considered potential post-import misdirection of prawns or prawn products for use as bait or aquaculture feed.

The Department conducted the IRA consistently with the SPS Agreement, and based on the guidelines, standards and recommendations developed by relevant international organisations such as OIE.

An IRA was a significant undertaking. It involves notification to the WTO, public and industry consultation, and a public appeals process. Finalising an import risk analysis, including public appeals, could take a number of years.

Conducting an IRA consisted of the following major steps:

- **Initiation**. The need for an import risk analysis is identified. Not all biosecurity risks require an import risk analysis and can be justified by less formal means.
- **Scheduling and scoping.** All the factors that affect scheduling are considered. Consultation with states, territories and other Australian agencies takes place. Stakeholders can initiate appeals at this stage.
- **Risk assessment and risk management.** The major scientific and technical work relating to risk assessment is performed. There is detailed consultation with stakeholders.
- **Reporting.** The results of the import risk analysis are communicated formally. There is consultation with states and territories, and the report is referred to the Eminent Scientists Group.[33] Reporting can take place a number of times with the issuing of drafts for feedback before a final report is available.
- **Appeals.** After the final report is issued, stakeholders can appeal the findings and recommendations of the import risk assessment.
- **Policy determination.** The biosecurity policy recommendation arising from the import risk assessment are delivered to the Director of Animal and Plant Biosecurity.[34]

[33] Which consisted of Dr JC Radcliffe AM, Emeritus Prof. M Nairn AM, Dr M Lonsdale, Dr TJ Higgins, and Dr M Crane.
[34] Policy determinations could take place before appeals but, with the import risk analysis into prawns and prawn products, no policy determination was issued until after appeals were heard and disallowed.

## *6.2 Major exposure pathways identified by the IRA*

The pathways that were found to substantially contribute to the total risk appear in the following diagram as highlighted by bold lines.

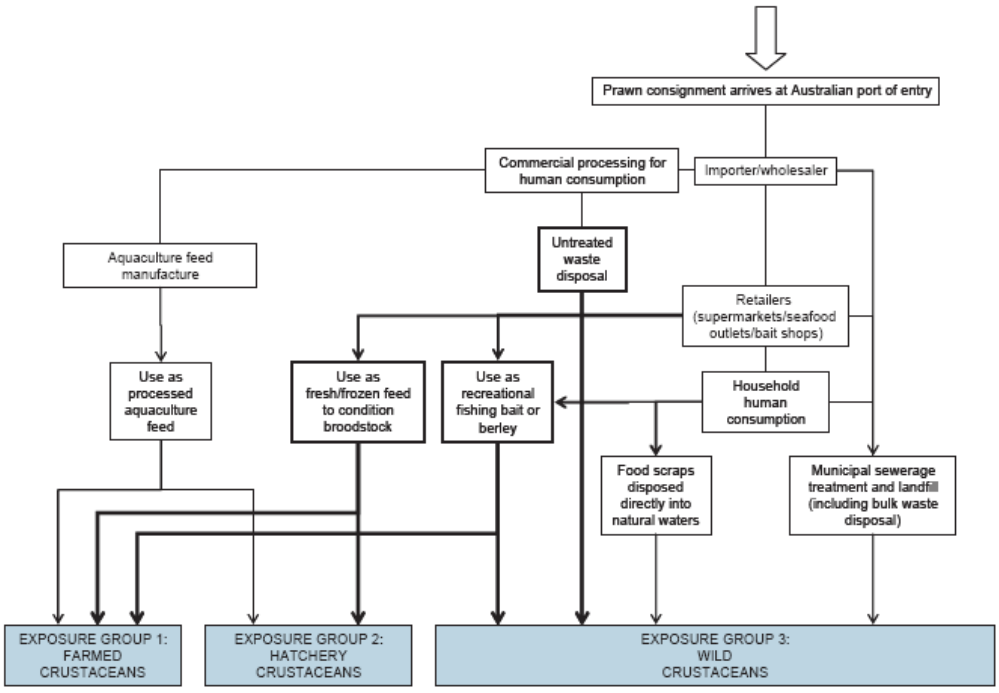



*Fig. 5*[35]

Estimation of the risk posed by each pathway took into account:

- the amount of imported commodity or associated wastes that enters the general environment of the susceptible animals;
- the amount of viable pathogen in the commodity or associated wastes; and
- the amount of contact between susceptible animals and the imported commodity or associated wastes.

**Use of imported prawns to fed hatchery prawns**

The use of imported prawns as feed to condition broodstock in crustacean hatcheries and as feed for crustaceans in research institutions and public aquaria (exposure group 2) represents the most significant pathway by which prawns in aquaculture and holding systems could become exposed to imported (and WSSV infected) prawns.

Head-on uncooked prawns are the preferred product for feeding prawn broodstock in hatcheries and research institutions and imported uncooked prawn meat is commonly used as feed. Although the practice is no longer widespread due to disease risks, imported uncooked prawns may still be being used. It is likely that the Darwin WSSV incident resulted from feeding imported prawns (albeit inadvertently) to broodstock prawns.

[35] Biosecurity Australia 2009.

Although the volume of imported prawns used in these ways would be very small, it represented a direct and significant pathway by which crustaceans in hatcheries, research facilities and public aquaria could be exposed to pathogen such as WSSV.

**Disposal of waste from commercial processing**

Waste from commercial processing in the Americas had been suspected as associated with the introduction of prawn diseases.[36] For economic reasons, commercial processing of imported prawns in Australia is not commonly practised. However, commercial prawn processing facilities are often situated near waterways in urban areas and may have access to both municipal sewers and natural waterways (which may not be subject to effluent controls). Although commercial prawn processing plants are typically distant from crustacean aquaculture areas, and processing of prawns on-site at prawn farms is typically restricted to the farm's own produce, there are some processing plants in proximity to prawn farming areas such as those in south-east Queensland. Under such circumstances, prawn material (and any associated pathogens), discharged from these plants may enter crustacean aquaculture facilities, albeit at very dilute concentrations.

**Use as bait for recreational fishing**

Recreational fishers throughout Australia commonly use prawns as bait or berley when fishing.[37] In Australia, bait prawns have had a commercial value comparable to that of similar-sized prawns for human consumption. Thus, there may be redirection of product intended for human consumption into the bait market.

The IRA team conducted a 2007 National Bait and Berley Follow-up Survey focussing on prawns. The 2007 survey confirmed that the use as bait of potentially imported prawns 'sold as seafood' occurs albeit at low levels when compared to total bait usage. The survey did not detect the use of large whole uncooked prawns (>13cm size limit). If it occurred, it iswas at levels below detection capabilities of the surveys. Earlier Departmental inquiries in 2000, and the 2002 National Bait and Berley Survey, also revealed that, based on the species and retail price of imported prawns at the time, uncooked prawns more than 15 grams were less likely to be used as bait than smaller prawns.

The potential exists for recreational bait-use to lead to direct exposure of farmed crustaceans through fishing in farm inlet channels. However, while a potentially significant pathway, the risks associated with such practices would be limited as much of this bait is likely to be taken by non-susceptible species.

## *6.3 Minor exposure pathways*

There are a number of uncommon low risk pathways through which WSSV may infect farmed prawns, hatchery prawns, and wild prawns. Some key low risk pathways considered included:

- **Human waste.** As the primary purpose for which prawns are imported is for human consumption, human waste was assessed as a possible pathway. However, WSSV would be nearly entirely eliminated in the human gastrointestinal tract. Human faecal waste is also normally disposed of via domestic sewerage systems which would again substantially reduce any remaining WSSV. Prawns eaten by humans were therefore not likely to present a significant biosecurity risk.

[36] Lightner et al. 1997b, Lightner et al. 1998.
[37] ADVS 1999.

- **Use of prawn by-product in prawn feed.** Historically, farmed and hatchery crustaceans were fed meal that included prawn-based ingredients (ie. prawn head and shell by-product from commercial processing). This represented a direct pathway for WSSV to reach farmed and hatchery prawns as many prawn farmers use imported processed aquaculture feeds. However, it was assessed that manufacturing processes would be likely to inactivate prawn pathogens and disease outbreaks in farmed prawns had never been causally linked with the use of pelleted feeds.

- **Prawn waste disposed at controlled landfill sites.** The vast majority of uncooked imported prawns for human consumption are transported frozen. A number of issues concerning disposal of defrosted imported prawns were considered including waste disposal sites, state and territory regulation of bulk animal waste, waste processing procedures, spread by birds on eating waste, and environmental conditions of landfill sites. It was determined that pathogenic agents including WSSV would not be likely to survive.

- **Food scraps discarded directly into the aquatic environment.** Waste from imported prawns could be discarded as food scraps directly into the aquatic environment. However, susceptible prawns or other crustaceans would be unlikely to become infected in this way because such scraps would not be expected to contain pathogenic agents in infective form or in high concentrations (as most would be cooked). Discarded scraps would also be more likely be consumed by non-susceptible than susceptible species.

- **Other minor pathways.** Other possible but unlikely exposure pathways included diversion of prawns for human consumption for use as agricultural fertiliser, disposal of packaging materials used in importation of whole uncooked prawns, use of imported prawns as an ingredient in animal feed manufacture (other than use in manufacture of crustacean aquaculture feeds), and use of imported prawns as feed for display animals kept in home aquaria.

### *6.4 Other findings on WSSV*

Key findings in the IRA on WSSV in infected prawns (and prawn product) include:

- **Presence of WSSV within prawns.** Uncooked prawn heads and shell wastes from commercial or domestic processing of imported prawns represent a high-risk commodity in terms of concentration of WSSV. Removal of the shell would be expected to reduce the viral load on a prawn. WSSV is not expected to occur in high concentrations throughout the body.

- **Stability of WSSV in prawns.** The ability of a pathogen, in prawns or associated wastes, to remain infectious at the point of exposure to a susceptible animal depends on transport, storage and processing. Prawns are usually cooked whole, and the head and shell are removed before consumption of tail meat (abdominal muscle).[38] Pathogens like WSSV are inactivated by heating and so cooking will inactivate them or significantly reduce their concentration.

- **Contact between host animals and farmed prawns.** It is almost certain that an imported prawn in the form of processed or unprocessed feed will make contact with, and be consumed by farmed prawns if introduced into their environment.

- **Contact between host animals and wild prawns.** Wild prawns may only be moderately likely to come into contact with prawn material introduced into their

[38] ADVS 1999.

environment. The volume of imported uncooked product released into the natural environment, the dispersal and dilution of that material, the presence and concentration of host animals in the area, and the proportion of material that might be consumed by other non-susceptible species in the vicinity will reduce the likelihood of contact. As a result of greater competition from other aquatic animals (especially fish, crabs and other crustaceans), only a small proportion of imported uncooked material may end up being ingested by wild prawns.[39]

## *6.5 WSSV risk reduction options*

The IRA considered a number of options that would reduce the unrestricted risk of WSSV infected prawns entering Australia. Unrestricted risk is where no import restrictions are imposed on import. Unrestricted risk was assessed as high and above Australia's ALOP but restrictions could be imposed to reduce the biosecurity risk to a very low level. The Director of Quarantine had also already imposed a series of conditions which the IRA addressed. The key restrictions and their risk reduction effects were as follows:

- **Cooking or freezing.** Cooking and freezing of prawns was considered for their effectiveness in inactivating WSSV in prawns. Cooking in boiling water for 3 to 5 minutes was considered effective enough to reduce the biosecurity risk to a very low level. Freezing prawns was considered ineffective to inactivate WSSV.

- **Testing.** Testing of prawns on arrival in Australia was considered as a possible risk mitigation measure. It was considered that testing would need to be to the OIE standard and would also require a 95% confidence of detecting WSSV if present at a prevalence of 5%. Testing alone was not considered capable of reducing the biosecurity risk to a very low level. There existed uncertainty in the sensitivity of available tests for prawn pathogens but testing with other measures was considered sufficient to reduce risk to a very low level.

- **Highly processed prawns.**[40] It was considered that 'highly processed' prawns (ie. head-off, shelled and coated for human consumption) presented a very low risk to Australia when the likely exposure to risk pathways and likely end-use of the highly processed prawns was reviewed. Unintended use of highly processed prawns as recreational fishing bait was considered but assessed a very low risk because head-on prawns were preferred as bait and highly processed prawn were typically an expensive option for bait.[41]

- **Head/shell removal.** Removal of the head and shell was considered likely to reduce the amount of any WSSV in a prawn by, at least 50%. The removal would also reduce the likelihood such prawns would be used as bait.

- **Minimum size.** It was considered that prawns over a certain size presented a lower biosecurity risk than smaller prawns because they were less likely to be used as bait. The National Bait and Berley Survey 2002 found no reports of prawns greater than 13 cm being used as bait. However, minimum sizes was not, alone, considered to be a measure able to reduce the biosecurity risk to the very low risk required by Australia's ALOP.

[39] Baldock 1999.
[40] Highly processed prawns did not include raw head-off and shelled prawns including if those prawns had been deveined, butterflied, skewered, or present in 'ring' packaging.
[41] Kewagama Research 2002.

- **Labelling for human consumption.** Labelling imported prawns for human consumption only and not to be used as bait or feed for aquatic animals was considered likely to reduce the risk the prawns would be used other than for human consumption. However, this measure was not considered sufficient to reduce the level of risk to an acceptable level as labelling requirements would not necessarily flow through to retail sale.

- **Other measures.** Other measures considered but not assessed as significant risk mitigation measures included post-harvest inspection by approved bodies in foreign countries, sourcing solely from wild stock, and sourcing from non-emergency harvested stock.

The IRA recommended that the following import conditions apply to the importation of prawns and prawn products for human consumption:

**1 Import Permit**

The importer must obtain a permit to import all *uncooked* prawns and prawn products into Australia for human consumption from AQIS, before the goods are imported.

The application to import must include:

- the name and address of the importer and exporter; and
- a description of the commodity to be imported.

**2 Uncooked prawns**

**2.1** All imported *uncooked* prawns must:

- be sourced from a country or zone that is recognised by Australia to be free of
- ALL the following pathogenic agents:
- White spot syndrome virus (WSSV),
- Yellowhead virus (YHV), and
- Taura syndrome virus (TSV),

OR

- be highly processed that is with the head and shell removed (the last shell segment and tail fans permitted) and;

- coated for human consumption by being breaded (crumbed) or battered, or
- coated for human consumption by being marinated in a wet marinade (the marinade must be no less than 12% of the total weight of the product), or
- coated for human consumption by being marinated in a dry marinade (the marinade must be clearly seen to cover the product), or
- coated for human consumption by being marinated and placed on skewers (the marinade must be clearly seen to cover the product), or
- the raw prawn meat processed into dumpling, spring roll, samosa, roll, ball or dim sum-type product;

OR

- have had the head and shell removed (the last shell segment and tail fans permitted), be frozen and each batch tested on arrival in Australia and found free of WSSV and YHV.

Batch testing for a pathogenic agent does not occur if sourced from a country or zone recognised by Australia to be free of that agent.

Testing is based on the polymerase chain reaction (PCR) tests in the current version of the World Organisation for Animal Health (OIE) *Manual of Diagnostic Tests for Aquatic Animals* or equivalent, and a sampling regimen that would provide 95% confidence of detecting the agent if present at 5% prevalence.

All consignments of prawns to be tested will be held under quarantine control in Australia where they will be sampled for testing. Prawns will remain under quarantine control until the results of the tests are available. Batches that return positive results must be re-exported, destroyed or further processed (i.e. cooked) in a facility approved by AQIS for that purpose.

For the purpose of this testing, a batch is defined as a population from a different pond population or fishing period population. Documentation from the exporter, supplier or the Competent Authority verifying the number of batches in the consignment must be provided to AQIS. This documentation must clearly detail the labelling of each batch in the consignment. If the number of batches cannot be determined from documentation, full unpacking and inspection may be required in order to determine the number of batches.

**2.2** For all uncooked prawns and prawn products (including those that are considered to be highly processed, as defined in Section 2.1), the Competent Authority in the exporting country must certify that the prawns or prawn products:

- are fit for human consumption, and
- have been processed, inspected and graded in premises approved by and under the control of the Competent Authority, and
- are free from visible signs of infectious disease.

In addition, for *uncooked* prawns that are not considered to be highly processed (as defined in Section 2.1), the Competent Authority must certify that:

- each package is marked with the words '*for human consumption only'* and *'not to be used as bait or feed for aquatic animals*'.

**2.3** Uncooked prawns and prawn products that are considered to be highly processed (as defined in Section 2.1) will be randomly inspected by AQIS to ensure the imported commodity complies with the product description on the import permit and health certificate

The final IRA report was issued on 7 October 2009, subject to a 30 day appeal period that closed on 6 November 2009

The prawn farmers and their representative organisations generally welcomed the recommendations and requested an immediate introduction of strengthened import conditions. However four submissions expressed concern at the continued importation of uncooked prawns.

Conversely, importers of prawn products and exporting countries were highly critical of the recommendations, arguing that they were overly conservative and trade restrictive.

Four appeals were received, two from countries exporting prawns to Australia, one from the Seafood Importers Association of Australasia Inc and one from the Australian Prawn Farmers Association (**APFA**).

APFA appealed the IRA on three issues, one of which was related to WSSV, claiming that:

- there was no evidence that marination of prawns or that washing the flesh of raw prawns denatures viruses in dead prawns so the import of marinated prawns constituted an unacceptable risk;
- there was no evidence that the pathological strain of IHHNV existed in natural populations in east coast prawn stocks or that there was exchange between the populations of the Northern Territory and the east coast, so that the import of prawns without risk management measures for IHHNV constituted an unacceptable risk
- that the import of prawns from other than a disease free source without TSV testing of each batch constituted an unacceptable risk

In each case, the Appeal Panel disallowed the claim on the basis that the claim was outside the grounds of appeal that it could consider

# 7 The Darwin WSSV incursion

## *7.1 The incident*

On 15 November 2000, a box of frozen prawns labelled 'Cocktail Prawns' and 'Product of Indonesia' was identified at a government run aquaculture facility in the Northern Territory. The prawns had been fed to mud crabs and had been purchased from a Darwin wholesaler on the understanding they were of Australian origin. It was the facility's policy of feeding locally caught rather than imported prawns to reduce disease risks and so using the imported prawns as feed was inadvertent.

It was reported later that a Northern Territory university had also been using uncooked 'River Prawns' from the same consignment to feed black tiger prawns.

## *7.2 The response*

Initially, WSSV was suspected but not confirmed by testing. Nonetheless, as a precautionary measure against transmission, all crustaceans at the aquaculture facility and university were destroyed, feeding of prawns discontinued and holding tanks and all associated equipment disinfected. Representative samples of crab tissues and the imported prawns were also collected for testing for WSSV.

An immediate audit of the origin of earlier batches of prawns was also undertaken. The wholesaler indicated that the prawns may have been imported from Indonesia via Perth, Western Australia and this was confirmed. The prawns were part of a large consignment imported in 1999 and that prawns from this consignment had been distributed for sale in another three states. A significant amount had been distributed for sale as bait.

On 20 November 2000, the NT Department of Primary Industry and Fisheries informed the ACVO of this incident and of the actions taken. The ACVO then informed state and territory Chief Veterinary Officers and Directors of Fisheries.

Following eradication procedures by the Northern Territory Government, by 5 December 2000, PCR test results confirmed the presence of DNA consistent with WSSV in the collected samples as follows:

| **Sample tested** | **WSSV results** |
|---|---|
| Imported 'River Prawns' and 'Cocktail Prawns' | 3 of 6 samples |
| Black tiger prawns cultured at the university | 11 of 11 samples |
| Prawns collected from the aquaculture facility | 2 of 4 samples |
| Mud crabs cultured at the aquaculture facility | 2 of 15 samples |
| Wild shore crabs collected from the aquaculture facilities outfall | 5 of 12 samples |

While WSSV was found in Darwin Harbour in the samples of wild shore crabs, subsequent testing has shown that WSSV did not establish in Darwin Harbour.

# 8 The Logan River WSSV incursion

## *8.1 The incident*

The following is a timeline of key events during the Logan River WSSV incursion:

| Date | Event |
|---|---|
| 22 November 2016 | 1IP notifies Biosecurity Queensland of unusual mortalities.[42]<br><br>• Water sourced from the Logan River and not treated. [43]<br>• Disease signs first in the ponds farthest from the river.[44] |
| 30 November 2016 | The QCVO notifies the ACVO of a suspected WSSV incursion after mortalities at 1IP become significant. ACVO informed that infected samples from local bait shops and wild prawns in the adjacent Logan River have also been identified. Samples not confirmed as positive for WSSV at this point. |
| 1 December 2016 | AAHL confirms that prawns at 1IP are infected with WSSV. |
| | AqCCEAD meets for the first time then meets regularly. |
| | The Department notifies the OIE. Weekly updates are provided from this date. |
| 5 December 2016 | Queensland places restrictions over 1IP.[45] |
| 5 December 2016 | 3IP is confirmed as infected with WSSV.<br><br>• Disease signs first in the ponds farthest from the river.<br>• The farm is adjacent to 1IP and close to 2IP. |
| 7 December 2016 | 4IP is confirmed as infected with WSSV.<br><br>• Disease signs first in the ponds farthest from water intake.<br>• The farm is nearly three kilometres downstream from 3IP. |
| | AAHL confirms six samples of wild prawns from the river near 1IP are WSSV positive (but with low-level PCR results). |
| | Queensland expands restriction area .[46] |
| 14 December 2016 | IMT meets for the first time then meets regularly. Six departmental staff are deployed to assist in Queensland. |
| 15 December 2016 | 2IP is confirmed as infected with WSSV.<br><br>• The farm is adjacent to 1IP.<br>• The farm has the same operators as 1IP. |

[42] Minor mortalities only. The infected properties were given reference numbers (IP means infected property). See Glossary.
[43] The water is filtered but wild prawn species including greasyback and banana prawns were found in the harvest indicating that wild prawn nauplii (larval prawns) enter the farms with the intake of water from the Logan River.
[44] Potential explanations for this anomaly exist including that the ponds farthest away from the river were stocked before the others giving WSD a longer time to manifest. At 4IP a large population of glass prawns live in the inlet channel close to the ponds.
[45] Queensland Government Gazette, No 24, 10 February 2017.
[46] Queensland Government Gazette, No 24, 10 February 2017.

| Date | Event |
|---|---|
| 14-15 December 2016 | Samples of uncooked prawns sold at retail outlets within a 10km radius of the incursion area obtained for WSSV testing. |
| 16 December 2016 | Treatment activities complete at 3IP and 4IP. |
| 19 December 2016 | Uncooked imported prawns intended for human consumption found in use as bait by two recreational fishers on the Logan River. Samples sent for testing at AAHL. |
| 21 December 2016 | Treatment activities complete at 2IP. |
| 22 December 2016 | Treatment activities complete at 1IP.<br><br>Samples taken from prawns being used as bait in Logan River on 19 December 2016 test positive for WSSV. |
| 29 December 2016 | 5IP is confirmed as infected with WSSV.<br><br>• Water is not sourced from the Logan River.<br>• The farm is nearly eight kilometres downstream from 3IP.<br>• The farm is the largest farm to be confirmed infected.<br>• Decontamination commences immediately. |
| 4 January 2017 | Test results from AAHL confirm WSSV detected in 17 of 22 retail samples of uncooked prawns obtained on 14-15 December 2016. |
| | The Department sends two additional officers to assist in Queensland. |
| 6 January 2017 | WSSV detected in a wild crab taken from a drainage channel near 7IP. 7IP not considered infected but considered at risk. |
| | Import permits of one importer suspended and approved arrangement revoked. Department asks other importers to voluntarily recall their prawns.<br><br>Director of Biosecurity makes a determination to suspend the importation of uncooked prawns for a six month period. |
| 7 January 2017 | Suspension of the importation of uncooked prawns and prawn products comes into effect.[47] Highly processed prawns and prawn products continue to be permitted entry. |
| 9 January 2017 | Enhanced testing at the border commences. |
| 10 January 2017 | Minister and the Department of Prime Minister and Cabinet briefed on support options for farmers and fishers. |
| 12 January 2017 | WSSV detected in three wild crabs taken near 5IP. |
| 20 January 2017 | Queensland expands restriction area.[48] |
| 31 January 2017 | WSSV detected in one wild prawn taken near 3IP. |

[47] Except from New Caledonia which is WSSV free. Biosecurity (Suspended Goods – Uncooked Prawns) Determination 2017 (Cth).
[48] Movement Control Order Notice (Logan and Albert Rivers) – White Spot Syndrome Virus, 20 January 2017.

| Date | Event |
|---|---|
| 2 February 2017 | 8IP is confirmed as infected with WSSV.<br><br>• Water is not sourced from the Logan River.<br>• The farm is not on the Logan River but close to the mouth.<br>• Treatment commences immediately. |
| 3 February 2017 | Discharge of inlet channel at 1IP commences. |
| 4 February 2017 | WSSV detected in 108 wild tiger prawns taken near 8IP.[49] |
| 4 February 2017 | Director of Biosecurity expands list of exceptions to the import suspension to allow:[50]<br><br>• dried prawns;<br>• shelf-stable prawn-based food products;<br>• irradiated bait for aquatic use; and<br>• uncooked prawns from Australia's exclusive economic zone. |
| 13 February 2017 | 7IP is confirmed as infected with WSSV.<br><br>• Water is sourced from the Logan River.<br>• The farm is adjacent to 8IP.<br>• Treatment commences immediately. |
| 28 February 2017 | Director of Biosecurity expands list of exceptions to the import suspension to allow:[51]<br><br>• uncooked prawns from an Australian territory, other than the controlled area in Queensland, that have not first been imported into any other country;<br>• uncooked prawns for laboratory analysis; and<br>• uncooked prawns intended to be transhipped to a passenger vessel that intends to leave Australia. |
| 6 March 2017 | Director of Biosecurity expands list of exceptions to the import suspension to allow uncooked prawns that were:[52]<br><br>• wild-caught in an Australian territory other the controlled area in Queensland; and<br>• first exported to Thailand from Australia and processed in a specific Thai factory. |
| 16 March 2017 | Queensland expands the area subject to movement controls.[53] |
| 3 April 2017 | Director of Biosecurity amends the suspension to ensure it reflects any changes to the controlled area in Queensland.[54] |

[49] It is unusual to find tiger prawns in the wild in the Logan River.
[50] Biosecurity (Suspended Goods – Uncooked Prawns) Amendment (Exceptions) Determination 2017 (Cth).
[51] Biosecurity (Suspended Goods – Uncooked Prawns) Amendment (Exceptions) Determination (No. 2) 2017 (Cth).
[52] *Ibid.* Director of Biosecurity issued amendments on 27 February 2017 but these amendments not effective until 7 days later.
[53] Movement Control Order Notice (Moreton Bay) – White Spot Syndrome Virus (Qld), 16 March 2017.
[54] Biosecurity (Suspended Goods – Uncooked Prawns) Amendment (Exceptions) Determination (No. 3) 2017 (Cth).

| Date | Event |
|---|---|
| 2 April 2017 | Director of Biosecurity expands exceptions to the import suspension to require certification by foreign approved bodies that Australian prawns processed overseas :[55]<br><br>• are wild-caught prawns of Australian origin;<br>• have been processed at an approved facility with procedures to ensure segregation from non-Australian prawns and from other sources of contamination; and<br>• are free of WSSV and YHV based on OIE testing standards. |

## *8.2 The on-farm biosecurity practices*

The production and biosecurity practices of each infected premises were observed by biosecurity officers and scientists. Observations were that biosecurity measures had not been implemented or were implemented in only limited ways. None of the farms implemented biosecurity measures that might be expected of modern prawn farming operations (apart from some water filtering, pond fallowing and probiotic use).[56]

All of the farms lacked crab-proof fences, which enabled the movement of crabs in and out of the river, between ponds and between farms. Similarly, some of the farms did not have in place measures to prevent bird predation. Some farms also lacked effective water filtration methods. Consequently, wild prawns were either transferred into ponds and grew there alongside farmed prawns, or allowed to grow in inlet channels potentially allowing free WSSV to move into production ponds each time the ponds are topped up with water from the inlet channel.

## *8.3 The response by the Queensland Government*

Biosecurity Queensland is undertaking a response to the outbreak.

- **Eradication.** Biosecurity Queensland commenced eradication operations upon confirmation of infection. Infected farms have been, or are being, treated with liquid chlorine. Once all ponds have been decontaminated and the water disposed of, the ponds will be required to lay fallow before re-stocking. Biosecurity Queensland, in conjunction with the AqCCEAD, is developing an approach for potential re-stocking of ponds.

- **Movement Control.** From 1 December 2016 until 16 March 2017, the Queensland Government implemented movement controls over a progressively larger area commencing with controls over 1IP to a Movement Control Order pursuant to the *Biosecurity Act 2014* (Qld) s 124 that covers Morton Bay and extends from Caloundra to the border of NSW.[57] The current Movement Control Order will last for three months and covers decapod crustaceans and polychaete worms which are prohibited from being moved out of the control zone unless they are cooked.

- **Education, on-farm biosecurity and on-farm monitoring.** The Queensland Government will work with the APFA and local farmers to ensure that on-farm biosecurity practices are at an acceptable minimum standard before operations recommence. A 'sentinel' (or monitoring) program will be in place to test newly

[55] *Ibid.* Director of Biosecurity issued amendments on 3 April 2017 but these amendments not effective until 4 weeks later.
[56] See 5.4 above for discussion on the shared responsibility of biosecurity in Australia. See also 8.4 below for a discussion on how the economic impacts of a viral incursion can offset the additional costs involved in adopting on-farm biosecurity practices.
[57] Movement Control Order (Moreton Bay) – White spot syndrome virus, 16 March 2017.

restocked prawns for any future WSD. An international expert has visited the farms and instructed the farmers on how to operate in the presence of WSSV.

- **Surveillance and testing.** The Queensland Government has engaged in a large surveillance and testing program of the Logan River and Moreton Bay area. Over 19,000 samples were taken of wild crustaceans. The Queensland Government has deployed a government owned research trawler and has obtained samples from commercial fishers.

  To date, the results of the surveillance and testing program are as follows:[58]

| | **Samples taken** | **Confirmed positive** | **Comments (positives)** |
|---|---|---|---|
| Northern Moreton Bay | 3,167 | 57 | 34 prawns<br>23 crabs |
| Southern Moreton Bay) | 1,483 | 0 | All negative |
| Commercial samples – Moreton Bay | 652 | 31 | 17 Deception Bay<br>14 Moreton Bay |
| Logan River area (wild) | 13,401 | 127 | 127 prawns |
| Pine River (commercial) | 235 | 0 | All negative |
| Brisbane River (commercial) | 494 | 0 | All negative |
| **Total** | 19,432 | 215 | |

  The Queensland Government is also conducting genetic sequencing of viral samples. This sequencing may assist in identifying the potential cause of the incursion. It may demonstrate that the cause was a native strain of WSSV.

- **Establishment.** The positive results are currently low relative to the total samples taken. However, the AqCCEAD will continue to assess the surveillance data because, given WSSV is exotic to Australia, it is not known how WSSV will behave in Australian native animal populations. It may take a number of seasons before the AqCCEAD can determine if WSSV has established. WSSV may disappear as it did in the case of the Darwin WSSV incursion.

## *8.4 The response by the Australian Government*

The Department supports Biosecurity Queensland. It provides technical advice via the IMT and the AqCCEAD, of which the QCVO is a member. The Australian Government has also made available to the Queensland Government a number of biosecurity officers to assist with the eradication efforts.

**AqCCEAD**

[58] As at 11 April 2017.

The AqCCEAD is a national committee consisting of representatives from the Commonwealth and all states and territories and is chaired by the Australian Chief Veterinary Officer. The AqCCEAD's role during the Logan River WSSV incursion is to provide technical advice to Biosecurity Queensland on response activities and objectives, facilitate Australia's international reporting obligations and coordinate communications.

**Investigation into cause of outbreak**

An investigation into the outbreak was commenced at the request of the IMT on 13 December 2016. The investigation focussed on identifying the potential pathways through which the virus may have been transmitted. The investigation involved Departmental scientists who visited the affected farms with investigators. The investigation did not identify the actual pathway.

The Department does not currently know the actual pathway but it is being investigated with Biosecurity Queensland. The pathways being considered are:

- that the virus was introduced via uncooked imported prawns being used as bait;
- that the virus was introduced via imported aquatic feed or feed supplements;
- that the virus was introduced through diseased broodstock or their progeny;
- that the virus was introduced via a human element, including the importation of associated equipment; or
- that the virus was present in Australia, potentially in the environment at very low levels, but had not been detected previously.

This is explained in more detail in the attached Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016.

**Secondments to Biosecurity Queensland**

The Department funded and sent, as secondees, up to thirteen officers to assist Biosecurity Queensland with the on ground eradication response.

**Fisheries Research and Development Corporation**

The Fisheries Research and Development Corporation has funded the APFA to develop an independent report into the priorities of Australia's prawn aquaculture industry including enhanced on-farm biosecurity practices and the ability to source disease free broodstock should WSD become endemic to Moreton Bay. The FRDC is co-funded by the Australian Government and the fishing industry.

**Assistance for Queensland and the industry**

The Australian Government has committed to assisting Queensland and the industry with the response to the Logan River WSSV incident. Up to $1.74 million will be provided by the Australian Government including up to $400,000 in direct support for Queensland's prawn farmers.[59]

On 1 March 2017, the Department provided the following grants:

[59] See http://minister.agriculture.gov.au/joyce/Pages/Media-Releases/Emergency-assistance-for-prawn-disease-response.aspx.

- $221,100 to the APFA to improve WSD management within the Australian prawn farm industry; and

- $220,000 to the QSIA to increase the preparedness of the wild harvest seafood industry through the appointment of a Biosecurity and Industry Liaison Officer and the implementation of biosecurity programs.

Much of the Australian Government funding will go to the Queensland Government, which will use the funding to conduct incursion response activities including destruction and decontamination, monitoring of waterways, surveillance and sample, and scientific and technical advice.

There are currently two industry-government agreements in relation to responses to diseases and pest incursions: one with animal production industries and one with plant production industries. These agreements cover funding arrangements, including owner reimbursement costs for producers affected by the incursion.

These agreements don't extend to aquatic industries, however the Australian Government is working with state and territory governments and industry to develop a formal aquatic agreement and has funded a four year project (2014-2018) to develop this agreement.

In the absence of established process for managing funding arrangements in relation to emergency aquatic diseases, on 31 March 2017, the Deputy Prime Minister wrote to the Australian Prawn Farmers Association and the Queensland government proposing a cost sharing arrangement in the spirit of the Emergency Animal Disease Response Agreement to assist industry to recover costs associated with the outbreak.

It is expected that the costs covered by the cost sharing arrangement will be consistent with those covered by the existing arrangements for terrestrial animal and plant pests, which have been in place for over a decade.

As with the existing arrangements, the Australian Government can initially meet the industry share of costs, with repayment to the Commonwealth occurring over an extended period.

**The import suspension**

On 7 January 2017, the Director of Biosecurity suspended all imports of uncooked prawns and prawn products (including marinated prawns) for a period of six months. [60] It was the first import suspension issued under the Biosecurity Act.

Goods already shipped to Australia before the suspension was announced were permitted entry to Australia but were subject to enhanced inspection with 100% of each consignment to be tested using a 'hold seals intact' inspection method. Importers could also elect to re-export the consignments without testing. Testing, re-exportation and destruction of infected prawns was at an importer's expense.

On 15 February 2017, persons with an approved arrangement sites capable of storing prawns were directed to secure all imported prawns pending further testing. The Department is working with industry to test all product held. [61]

**The prawn withdrawal program**

Following the suspension of uncooked imported prawns into Australia, the Department has initiated an extensive product withdrawal program to remove potentially WSSV positive prawn products already within Australia. A number of

[60] Biosecurity (Suspended Goods – Uncooked Prawns) Determination 2017 (Cth).
[61] See http://www.agriculture.gov.au/about/media-centre/media-releases/dept-action-white-spot.

importers were contacted on 6 January 2017 to conduct an immediate voluntary recall of product.

The first stage of the withdrawal program involved retail testing in areas proximate to prawn farms including Yamba, Gold Coast, Bundaberg, Mackay, Townsville, Cairns, Cardwell, and Mission Beach. The second stage involved a nation-wide testing regime that focussed on retail distribution centres including those of Coles, Woolworths, ALDI and Metcash. Some retailers have voluntarily withdrawn their product pending test results.

WSSV infected prawns are being removed from retail and the Department has issued, notices to secure goods to facilitate this process. WSSV infected products have been traced back to the importer so that the larger consignment in which they arrived in Australia can be managed. Importers are are being investigated. Prosecutions and civil penalties are also being considered and will be pursued where appropriate.

The Department has issued around 238 directions to secure goods to biosecurity industry participants covered by approved arrangements capable of storing prawns. The Department is seeking to appropriately manage biosecurity risk associated with the goods held in these approved arrangements. This will prevent any further infected prawns entering the retail supply chain. Any product held at these sites is undergoing testing; where the biosecurity risk is determined to be acceptable, such as through testing negative to WSSV, the goods will be released. Four major wholesalers, which together comprise around 70% of Australia's food service industry, have been contacted so that the Department can obtain access to their premsies in order to conduct biosecurity risk assessment.

## *8.5 The future*

**Eradication**

The current response strategy is eradication. The AqCCEAD continues to believe that eradication is technically feasible and so Australia may return to being WSSV free. WSSV in wild crustacean populations may not survive in Moreton Bay or the Logan River. It is highly likely that WSSV will be eradicated from the infected farms.

The process for demonstrating proof of freedom after an aquatic includes a minimum of two years of surveillance activities with no further detections. Biosecurity Queensland is conducting surveillance of prawn farms in Queensland.

OIE conditions for return to a disease-free status are as follows:[62]

- On detection of the disease, the affected area was declared an infected zone and a protection zone was established.
- Infected populations have been destroyed or removed from the infected zone by means that minimise the risk of further spread of the disease, and the appropriate disinfection procedures have been completed.
- Previous biosecurity conditions have been reviewed and modified as necessary and have continuously been in place since eradication of the disease.
- Targeted surveillance has been in place for at least the last two years without detection of WSD.

**Containment**

[62] OIE Aquatic Animal Health Code ch 9. 72, art 9.7.4.

If an eradication strategy becomes unsustainable, it is likely that a containment, control and zoning strategy will be adopted. The focus will shift to trying to prevent the further spread of WSSV throughout Queensland and Australia.

If, however, WSSV becomes endemic in Australia, restrictions in Queensland and in Australia on crustaceans will need to be reconsidered. Prawn aquaculture will need to adopt strict on-farm biosecurity by moving to a closed-system. Prawn farms can adapt to living with WSSV as they have in WSSV infected countries.

# 9 Improving Australia's biosecurity

The Australian Government must continually improve Australia's biosecurity system. With every incursion the Department undertakes a review of its actions. It is too early to accurately review the Department's actions as a number of facts remain unknown, including how WSSV entered high risk pathways and whether Australia's biosecurity system could have prevented it.

Nonetheless, the Department must ensure that Australia's ALOP is met. The Logan River WSSV incident may come to highlight a number of ways that Australia's biosecurity system can be improved including:

**Improving active management of risk – analytics tools**

The Agricultural Competitiveness White Paper committed an additional $200 million to biosecurity. The range of initiatives include the development of an integrated information system coupled with a biosecurity analytics capability will improve the department's ability to actively manage risk. As an example, the development of better information systems will allow the department to develop and deploy techniques such as anomaly algorithms to help identify which cargo should be more critically scrutinised.

**Powers to recall**

Through the department's activities in managing the withdrawal of imported prawns, several legislative changes to the B*iosecurity Act 2015* have been identified that would enable the department to respond more quickly and comprehensively to a similar type of incident. A key change includes considering a potential new power providing the Director of Biosecurity with the ability to issue a general secure direction for a specified good or class of goods and a requirement for persons in possession of those goods to provide information to the department. Similar to a 'recall' power, a secure and advise power would enable the Director of Biosecurity to prevent the further movement of biosecurity risk goods and to gather information to support a targeted operational response to control the risk.

**Review of import conditions for prawns**

The department will comprehensively review all biosecurity risks that might be associated with imported prawns. It will take into account any new and emerging risks, scientific papers and research and will take into consideration submissions from interested and affected parties. In undertaking the review, the department will also consider whether additional control measures across the biosecurity continuum should be implemented to mitigate risks. Such measures could include stronger offshore conditions and certification and improved on-farm biosecurity and surveillance.

**Gazetting laboratory testing.**

The department will work with NATA and the approved NATA accredited testing laboratories to develop a gazetted method for the application of the WSSV test. This will ensure greater consistency in testing processes and in the interpretation of test results.

# 10 Glossary

| Term | Meaning |
|---|---|
| 1IP | A prawn farm operated by GI Rural Pty Ltd. |
| 2IP | A prawn farm also operated by GI Rural Pty Ltd. |
| 3IP | A prawn farm operated by DS Farms Pty Ltd. |
| 4IP | A prawn farm operated by Chaz lake Pty Ltd. |
| 5IP | A prawn farm operated by Gold Coast Marine Aquaculture Pty Ltd. |
| 6ARP | A hatchery operated by Rockaqua Pty Ltd. It was not in production at the time of the Logan River WSSV incursion. It has not been confirmed infected with WSSV but it is an 'at risk premises'. |
| 7IP | A prawn farm operated by Genesis Pty Ltd. |
| 8IP | A prawn farm operated by Tomei Aqua Pty Ltd. |
| AAA | Advanced Analytical Australia. An independent laboratory accredited for WSSV testing. |
| AAHL | Australian Animal Health Laboratory. Operated by the CSIRO and the leading laboratory for animal health in Australia. Accredited for WSSV testing. |
| ABARES | Australian Bureau of Agricultural and Resource Economics and Sciences |
| ABPM | Animal Biosecurity Policy Memorandum |
| ACVO | Australian Chief Veterinary Officer. The nominated senior veterinarian in the Australian Government who manages international animal health commitments and the Australian Government's response to an animal disease outbreak. |
| ADVS | Aquaculture Development and Veterinary Services |
| AFMA | Australian Fish Management Authority |
| AgriGen | An independent laboratory accredited for WSSV testing. |
| ALOP | Appropriate Level of Protection |
| approved body | In the context of a body approved in a foreign country, the veterinary authority or other governmental authority of an OIE member nation that has the responsibility and competence for ensuring or supervising the implementation of aquatic animal health and welfare measures, international health certification and other standards and recommendations set out in the Aquatic Code. Previously known as a Competent Authority. |

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| AqCCEAD | Aquatic Consultative Committee on Emergency Animal Disease |
| AQIS | See Department. |
| AQPM | Animal Quarantine Policy Memorandum |
| Aquaculture | The farming of aquatic organisms including prawns. |
| Aquatic Animal Health Code | The OIE Aquatic Animal Health Code. A code that sets out standards for the improvement of aquatic animal health and welfare of farmed fish worldwide, and for safe international trade in aquatic animals and their products. |
| AQUAVETPLAN | Australian Aquatic Veterinary Emergency Plan. A series of manuals that outlines Australia's approach to national disease preparedness, and proposes the technical response and control strategies to be activated in a national aquatic animal disease emergency. |
| BAA | Biosecurity Australia Advice |
| banana prawn | *fenneropenaeus merguiensis* |
| BAPM | Biosecurity Australia Policy Memorandum |
| biosecurity | Management of the risks to the economy, the environment, and the community, of pests and diseases entering, emerging, establishing or spreading. |
| Biosecurity Act | *Biosecurity Act 2015* (Cth). Commenced 16 June 2016 and replaced the Quarantine Act. |
| Biosecurity Australia | See Department. |
| biosecurity continuum | A series of locations where biosecurity risks may arise and where biosecurity activities take place – pre-border, at the border and within Australia. |
| Biosecurity Queensland | Biosecurity Queensland is a service area of the Queensland Department of Agriculture and Fisheries. It leads the Queensland Government's efforts to prevent, respond to and recover form pests and diseases threatening agricultural prosperity, the environment, social amenity and human health. This is achieved by maintaining access to markers, protecting animal welfare and reducing the risk of contamination from agricultural chemicals. |
| biosecurity risk | The potential for a disease or pest to enter, emerge, establish or spread in Australia. |
| black tiger prawn | *penaeus monodon* |
| brown tiger prawn | *penaeus esculentus* |
| CCEAD | Consultative Committee on Emergency Animal Disease |
| CITES | Convention on International Trade in Endangered Species of Wild Fauna and Flora |

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| CSIRO | Commonwealth Scientific and Industrial Research Organisation |
| decontamination | Includes cleaning and disinfection to remove contamination |
| Department | Australian Department of Agriculture and Water Resources<br><br>Preceding agencies:<br>• 1987 to 1998–Department of Primary Industries and Energy<br>• 1998 to 2013–Department of Agriculture, Fisheries and Forestry<br>• 2013 to 2015–Department of Agriculture |
| Director of Biosecurity | In this submission, the Director of Animal and Plant Biosecurity. Previously the Director of Quarantine (or Director of Plant and Animal Quarantine). |
| DNA | Deoxyribonucleic acid. Molecules that carry the genetic instructions used in the growth, development and functioning of all known living organisms and viruses. |
| EADRA | Emergency Animal Disease Response Agreement |
| eastern king prawn | *melicertus plebejus* |
| EMAI | Elizabeth Macarthur Agricultural Institute. The NSW Department of Primary Industry's Centre of Excellence for Plant and Animal Health. Accredited for WSSV testing. |
| emergency response | The actions taken in anticipation of, during and immediately after, an outbreak in order to contain it and to minimise its impacts, including actions that constitute an initial response and actions that form part of a national biosecurity incident response. |
| eradication | Elimination of a disease from a specified area |
| established | In the context of a pest or disease, a pest or disease that is perpetuated, for the foreseeable future, in an area and where it is not feasible to eradicate it. |
| exotic | A disease that does not normally occur in Australia |
| greasyback prawn | *metapenaeus bennettae* |
| IGAB | Intergovernmental Agreement on Biosecurity |
| IHHNV | infectious hypodermal and haematopoietic necrosis virus |
| IMNV | infectious myonecrosis virus |
| IMT | Incident Management Team |
| incursion | An isolated pest or disease outbreak detected in an area where it had not previously existed and where it is not known to be established, but expected to survive for the immediate future. |
| infected premises | A defined area (which may be all or part of a property) in which a disease exists or is believed to exist, or in which the causative agent of that disease exists or is believed to exist. |

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| IP | infected premises |
| IPPC | International Plant Protection Convention |
| IQF | individually quick frozen |
| IRA | An Import Risk Analysis. A highly formal process to analyse the biosecurity risk of certain goods and used to develop policy to ensure that the level of biosecurity risk in the goods achieves the ALOP for Australia. See s 166 of the Biosecurity Act. |
| kuruma prawn | *marsupenaeus japonicus* |
| landing | In the context of fishing, the quantity of fish (including prawns) harvested from the sea and brought to land. It does not include product that is discarded. |
| movement control | Restrictions placed on the movement of fish, people and other objects or materials likely to transmit disease in order to prevent its spread. |
| NTF | National Task Force on Imported Fish and Fish Products |
| OIE | World Organisation for Animal Health, also known as the Office International des Epizooties |
| PCR | Polymerase Chain Reaction. A method of amplifying targeted DNA sequences to detectable levels, which can be used to confirm the presence of disease causing DNA, like WSSV DNA. |
| PIMC | Primary Industries Ministerial Council |
| polychaete worms | Generally, marine worms. |
| prawn by-product | Products of prawn origin destined for industrial use (eg. fishmeal) |
| prawn products | Prawn meat products and products of prawn origin (eg. eggs) for human consumption or use in animal feeding |
| QCVO | Queensland Chief Veterinary Officer |
| QSIA | Queensland Seafood Industry Association |
| Quarantine Act | *Quarantine Act 1908* (Cth). Repealed 1 May 2016. |
| red spot king prawn | *melicertus longistylus* |
| SPS | sanitary and phytosanitary |
| SPS Agreement | World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures |
| TSV | taura syndrome virus |
| vector | A living organism that transmits an infection |

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|---|---|
| WSD | white spot disease |
| WSSV | white spot syndrome virus |
| WTO | World Trade Organization |
| YHV | yellowhead virus |

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