

Review report No. 2017–18/01

# Summary–Uncooked prawn imports: effectiveness of biosecurity controls



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## Background

On 17 February 2017 I advised the Hon. Barnaby Joyce, Minister for Agriculture and Water Resources, of my intention to review:

* circumstances leading to the 6 January 2017 suspension of uncooked prawn imports into Australia, and
* biosecurity considerations relevant to future trade in uncooked prawns.

The suspension followed initial investigations into the source of an outbreak of the previously exotic white spot disease (WSD) in prawn farms and wild crustacean populations near the Logan River, in south-east Queensland.

WSD is caused by white spot syndrome virus (WSSV) infection of crustaceans. It is not of concern to human health. However, it is one of the most severe diseases of farmed prawns, especially the valuable black tiger prawn Penaeus monodon farmed in Australia. WSD can kill up to 100 per cent of prawns in a pond within two to five days of the first signs of disease. Since its emergence in China in 1992, WSSV has become endemic in all countries with prawn aquaculture industries, except New Caledonia and Australia, costing at least US$1 billion a year.

On 21 March 2017 the Senate, through its Rural and Regional Affairs and Transport References Committee, finalised terms of reference of an inquiry into ‘Biosecurity risks associated with the importation of seafood and seafood products (including uncooked prawns and uncooked prawn meat) into Australia’. The committee held public hearings and published its final report on 31 October 2017.

On 6 July 2017 the suspension of uncooked prawn imports lapsed. By this time, the Director of Biosecurity had put in place alternative import conditions for selected prawn products from specified countries. Implementation was underway when this report was being prepared.

Public submissions to both my review and the Senate inquiry have been published. The information summarised in my report is drawn from these documents and from the findings of my field work and internal inquiries at the Department of Agriculture and Water Resources.

## White spot disease outbreak in south-east Queensland, 2016–17

### Outbreak and disease control in prawn farms near the Logan River

On 22 November 2016 the owner of a prawn farm (first infected premises ‘1IP’) near the Logan River in south-east Queensland noticed unusual prawn deaths in one pond. He notified the Queensland Department of Agriculture and Fisheries (QDAF) on 24 November. By 28 November, 90 per cent of prawns in the first pond were dead, and prawns were dying in other ponds. On 30 November QDAF’s Biosecurity Sciences Laboratory found that specimens from 1IP tested positive for WSSV. On 1 December this was confirmed by the Australian Animal Health Laboratory (AAHL).

Australia’s Aquatic Consultative Committee on Emergency Animal Diseases (AqCCEAD) coordinated the subsequent response in accordance with a pre-existing disease control strategy. QDAF led the response, supported by the Department of Agriculture and Water Resources.

Despite rapid chlorination and destocking of 1IP, by 13 February 2017 WSD had spread to six nearby prawn farms. By late May 2017 these farms were also destocked and decontaminated.

The Australian Government provided financial support so that affected farms could remain destocked during the 2017–18 prawn-growing season. It was hoped they would be able to resume production the following season.

### Spread to wild crustaceans and further control measures

Sampling found WSSV in wild prawns and crabs in the Logan River in December 2016, then in nearby southern Moreton Bay in January 2017 and eventually in north-west Moreton Bay, about 60 nautical miles away, in March 2017. From 9 December, QDAF imposed restrictions on fishing and movement of uncooked prawns and other crustaceans from a widening zone to protect other populations from possible infection. Progressively, some other state governments also imposed similar restrictions on uncooked crustacean movements from the infected zone.

Further environmental sampling in late August and September 2017 found no other WSSV-infected animals. However, wider environmental surveillance will be needed for at least two years after the last positive finding to ascertain whether WSSV infection in the wild has died out.

### WSD outbreak costs

The Australian Government provided $1.87 million in 2016–17 to help control the spread of WSD and will provide up to $20 million in 2017–18. During 2016–17 the Queensland Government spent more than $17 million on the WSD response and has committed up to $9 million over the two years to 2018–19. Logan River prawn farming industry production losses in 2016–17 were estimated to be $43 million (excluding their response costs). Of these costs, the Australian and Queensland governments reimbursed or would reimburse $21.5 million and pledged a further $30 million for concessional loans.

Commercial fishing industries subject to closures or movement controls and other state governments involved in response or surveillance also incurred substantial costs.

### Source of infection of 1IP, Logan River

Immediately after the WSD outbreak at 1IP was reported, two investigations began into the possible source of the infection. In their separate investigations, independent aquatic health consultant Dr Ben Diggles and the Department of Agriculture and Water Resources (the department) considered potential pathways for the entry of WSSV into 1IP, including:

* hatchery broodstock or their progeny
* prawn feed
* longstanding, previously undetected infection in the local marine environment
* ballast water
* industry visitors to 1IP
* aquaculture equipment from overseas WSSV-infected prawn farms, or
* imported uncooked retail prawns used as bait or berley or for criminal sabotage.

Dr Diggles focused on the immediate sequence of infection spread in the infected premises and the likely epidemiology of local spread. He concluded that the most likely pathway for disease spread to 1IP was from infected imported prawns used as bait or berley. The department examined the other pathways in greater detail but found no evidence that any were higher risk than the bait pathway. Later genotyping studies by QDAF of WSSV recovered from Queensland crustaceans found only limited similarity between them and the viruses in any of the imported prawn products genotyped up to October 2017. Further genotyping work is needed.

Risk mitigation processes for each of the possible pathways of infection need reviewing and strengthening—a process that should involve industry and governments. However, the department has rightly focused on addressing evident biosecurity problems in the imported uncooked retail prawn pathway.

### Risks of uncooked prawn imports into Australia led to import suspension, January 2017

On 6 January 2017 the Director of Biosecurity suspended the import of uncooked prawns for 6 months, effective from 9 January, after determining that the biosecurity risks of these imports had risen above Australia’s appropriate level of protection (ALOP). This decision was based on:

* evidence (detected largely in late 2016) of major and systematic non-compliance with prawn import conditions by a number of prawn importers
* proof that fishers were using imported uncooked retail prawns for bait upstream from WSD-affected farms and that these bait prawns had tested positive for WSSV, and
* high levels of WSSV in imported uncooked prawns purchased within 10 kilometres of the infected prawn farms. On 4 January 2017 AAHL reported that 14 out of 19 samples (74 per cent) tested positive for WSSV. This final trigger led to the import suspension decision.

To understand how this happened, we must consider the history of prawn imports into Australia and the department’s attempts to keep serious prawn diseases out while at the same time meeting Australia’s import demands and its trade obligations.

## Prawn production, trade and diseases

### World and Australian prawn industries (wild-caught and farmed)

Australian demand for prawns is met by local and imported product. Over the last 20 years, supply has shifted towards a greater reliance on local prawn aquaculture and cheaper imports from Asian aquaculture industries. **Australia’s prawn industry (**wild-caught and farmed**) produces about 25,000 tonnes of prawns per year, worth about $358 million.** In 2016, 27 Australian prawn farms produced almost 5,000 tonnes of prawns worth $87 million.

### Prawn disease emergence and impact

Globally, the prawn farming industry has been threatened by emergence of serious crustacean diseases, the most severe being WSD. These diseases affect farmed and wild prawns and other crustaceans. WSD is lethal, not only to prawns but to freshwater crayfish, threatening farmed marron and wild yabbies. Overseas, prawn farmers have responded by farming more robust prawn species (mostly the lower-value *Penaeus vannamei* prawn, which is exotic to Australia) and increasingly with sophisticated on-farm biosecurity practices. WSD cost Asian prawn farming industries US$6 billion in 1992–1993 after it first emerged.

### Australian prawn diseases

Viral infections in northern Australian wild prawns were first found in the 1980s. In 1986 monodon baculovirus (MBV) was found in farms in northern Queensland’s emerging prawn aquaculture industry. By 1995, 12 viral diseases had been identified. Most had been brought into prawn farms from the wild via broodstock used for hatchery post-larvae production. To mitigate this risk, protocols were put in place from 2005 for biosecure prawn broodstock translocations from northern tropical waters to Queensland prawn hatcheries. Because WSD and yellow head disease (YHD) were absent from Australia, prawn farmers could farm black tiger prawns without adopting costly on-farm biosecurity practices regarded elsewhere as ‘world’s best practice’.

### ‘The Darwin incident’—incursion of WSSV in 2000

The only incursion of WSSV in Australia before December 2016 was in 2000, when three Darwin aquaculture facilities were found to be using imported uncooked prawns (which they thought were ‘Australian’) as aquaculture feed. As a result, these facilities had to be destocked and disinfected. Sampling in Darwin Harbour revealed a small number of WSSV-positive prawns and crabs, but no clinical signs of disease. A month later, further testing gave no positive results. In 2001–02 a comprehensive survey of wild prawns and other crustaceans from 64 sites around Australia found no evidence of WSSV. Due to this incident, in 2001 Australia introduced its first requirement for testing imported uncooked prawns.

## Regulatory control of biosecurity risks in Australia

### International obligations

The World Trade Organization’s Agreement on the Application of Sanitary and Phytosanitary Measures (SPS agreement) sets out obligations for countries to ensure that biosecurity measures are undertaken on sound scientific grounds and do not restrict trade unnecessarily. Countries can set their own risk-based standards to achieve their appropriate level of protection (ALOP). The World Organisation for Animal Health (OIE) specifies international standards and recommendations for preventing the spread and/or introduction of terrestrial and aquatic animal diseases. Aquatic diseases are covered by the OIE’s *Aquatic Animal Health Code* and Manual of diagnostic tests for aquatic animals.

### National regulatory framework

Australia manages biosecurity risks associated with trade through the Department of Agriculture and Water Resources. The department undertakes risk assessments and imposes various pre-border and border management measures to minimise the entry of regulated pests and diseases into Australia through imported products. States and territories are responsible for biosecurity risk management and aquatic disease control within their boundaries, including 3 nautical miles out to sea. The Australian Government has jurisdiction in the Australian Fishing Zone, from 3 to 200 nautical miles from shore.

The department’s biosecurity powers were reformed when the Commonwealth *Biosecurity Act 2015* superseded the *Quarantine Act 1908* in June 2016. This required a massive internal overhaul of policies, procedures, guidelines and training, as well as extensive stakeholder engagement. Implementation went smoothly and inspection and enforcement activities continued, but departmental resources were extremely stretched in the process. Key differences between the two Acts and the processes required to administer them affected management of the WSD outbreak, suspension and resumption of uncooked prawn imports, and management of the wider biosecurity risk framework.

The Intergovernmental Agreement on Biosecurity (IGAB), in place since 2012, has strengthened the partnership between Australian, state and territory governments to deliver national biosecurity system improvements. A recent IGAB review has reaffirmed its value and set new priorities for collaboration between governments.

### Sharing responsibility between governments and industry

Biosecurity issues of national significance, including incursion responses, are managed through various cooperative national decision-making and cost-sharing arrangements between Australian, state and territory governments and relevant industries. These arrangements are less well-developed for aquatic than for terrestrial animal biosecurity.

Governments alone cannot deliver biosecurity. Agricultural industries must also be involved. This has been recognised since the 1990s, with the formation of Animal Health Australia and then Plant Health Australia. Formal cost-sharing agreements for emergency (terrestrial) animal and plant pest and disease incursion preparedness and responses have been invaluable to clarify roles of Australian, state and territory governments and industry in implementing their shared responsibility for post-border biosecurity outcomes. These agreements have often included provisions for animal industries to share responsibility for preventing disease outbreaks by implementing on-farm biosecurity programs.

Development of a similar agreement for aquatic animal diseases (an ‘aquatic deed’) has lagged due to the complex legal nature of the ownership and use of aquatic resources and the difficulty in apportioning ownership of the significant risks associated with historical emerging endemic diseases as well as exotic incursions.

### Governance of laboratory testing for international trade quality assurance

Testing of imported products to identify unwanted pests or disease agents is an important component of biosecurity risk management and is highly technical. The OIE designates international reference laboratories and experts on specific diseases. Australia also designates national reference laboratories and experts. The International Organization for Standardization and the International Electrotechnical Commission maintain ISO/IEC 17025, a standard for the competence of testing and calibration laboratories. All laboratories conducting testing for trade purposes must comply with this standard. In Australia, the National Association of Testing Authorities (NATA) is responsible for ensuring that its member laboratories maintain quality assurance arrangements and comply with ISO/IEC 17025.

The Australian National Quality Assurance Program and the Laboratories for Emergency Animal Disease Diagnosis and Response network conduct proficiency testing to ensure that government veterinary laboratories are achieving comparable and accurate results. Both bodies are coordinated by the Animal Health Committee through its subcommittees.

The department approves both government and private laboratories to carry out import testing, with separate approval processes and requirements for handling specimens that may contain exotic pathogens, and specific technical requirements for the performance of different tests.

## Generic import risk analysis (IRA) for prawns, 2009

### Development of import conditions before and during the IRA process

From 1992 Australia responded to emerging prawn disease risks by progressively introducing conditions for the import of certain classes of prawns. The conditions were aimed at minimising biosecurity risks—especially those posed by WSSV and YHV—to farmed and wild-caught prawn industries and other crustacean industries. From 1997 the implementation of conditions was managed through a generic import risk analysis (IRA) process that concluded in 2009. New import conditions, especially the requirement to sample and test individual batches of prawns for freedom from certain diseases, led to importers successfully requesting that new categories of highly processed prawns, such as marinated prawns, be exempt from testing. Most stakeholders considered the final IRA was a major improvement over previous arrangements. However, a minority felt that selected arrangements were either unnecessary, too strict or not strict enough.

### Achieving an appropriate level of protection

The 2009 IRA aimed to comply with WTO SPS agreement requirements and to achieve Australia’s ALOP of ‘providing a high level of sanitary and phytosanitary protection aimed at reducing risk to a very low level but not to zero’. The underlying assumptions about how application of the prawn import conditions in the IRA would achieve Australia’s ALOP were poorly spelt out, lacked measurable verification measures, and were not revisited after 2009. It can be inferred that prawn import conditions were designed to allow only a very low level of WSSV and YHV in retail prawns. This would greatly reduce the risks that, if retail prawns were used for bait, any of them would be infected, and therefore risk infecting any nearby prawn farms or wild native crustaceans.

### Sampling and testing a batch of imported prawns for WSSV and YHV

A key measure developed during the 2009 IRA process (and applied ever since) was the requirement to randomly sample and test each batch of certain classes of prawn products in an imported consignment. This was designed to detect viruses with 95 per cent probability, where the prevalence of infection in the consignment was assumed to be at least 5 per cent (the OIE standard in 2006). The technical parameters for determining what constituted a batch, and the sampling and testing regimes to be followed, were complex and not easily understood or verifiable. However, the accuracy of the final classification of batches as positive or negative depended heavily on correct sampling and test performance and interpretation.

## Implementing IRA prawn import conditions, 2010 to 2016

### Volume, value and source of imported prawns

The prawn import conditions recommended in the IRA were applied from 2010 to 2016 to prawn imports worth from around $230 to 365 million per year. Annually, this represented between 10 to 14,000 tonnes of cooked prawns, 10 to 17,000 tonnes of uncooked prawns, 6 to 7,000 tonnes of marinated prawns and 2 to 3,000 tonnes of other highly processed prawns, including breaded and battered prawns. These imports were from up to 40 countries, mostly Vietnam, Thailand, China, Malaysia and Indonesia. The mix of countries exporting different categories of prawns changed from year to year.

### Pre-border biosecurity risk management, 2010 to 2016

The department manages as many biosecurity risks as possible offshore, keeping risks as far away from Australia as possible. It assesses and approves competent authorities (listed overseas government agencies) to certify that consignments and batches of prawns meet Australia’s conditions, including country, zone or compartment disease freedom; supply-chain segregation; and pre-export verification testing and/or labelling.

Specific offshore arrangements that applied from 2010–16 included:

* recognition that New Caledonia was free of WSSV, YHD and taura syndrome virus (TSV) and could therefore export uncooked whole prawns without inspection or testing on arrival, and
* approval for Thailand to re-export Australian wild-caught prawns processed through a government-approved supply chain.

For other uncooked prawn imports, importers had to obtain certification from a competent authority stating that each batch of prawns were free of visible signs of infectious disease, processed as stipulated and correctly labelled.

A batch was defined as ‘a population from a different pond population or fishing period population’. However, in practice it was hard for a government official to verify that batches emerging from a processing plant complied with the batch definition in the import conditions.

A government inspector was most unlikely to be inspecting for signs of infectious disease in frozen whole prawns that arrived at a processing plant, or in the same prawns as they were being thawed and put onto a production line for sorting, shelling and deveining. Any inspector examining uncooked prawn meat post-processing could almost never find signs of disease.

The import conditions assumed that the country of origin of the prawns was the competent authority’s country. However, without adequate tracing systems in place, it is likely that some batches of prawns arriving at processing plants came from other countries.

### Border biosecurity management activities, 2010 to 2016

The task of verifying the new 2010 conditions was added to the duties of frontline assessors and inspectors—with little extra training and limited resources.

Based on import documentation for each declared uncooked prawn consignment, border assessors had to determine whether batches needed to be inspected (in quarantine approved premises), verified (to show that prawns were sufficiently highly processed to not require testing) or sampled and tested for WSSV and YHV.

Import permits were issued to importers for two-year periods. Each year, around 200 importers brought in about 4,000 consignments of prawns (cooked, processed and raw). Of these, about 1,100 consignments were inspected, 250 were verified and 900 were sampled and tested. Sydney and Melbourne each received about 30 per cent of consignments, with smaller volumes going to Brisbane, Adelaide and Perth.

In the three years to 2015–16, 3,474 inspection directions (including verification, sampling and testing) were recorded. On average, inspectors took about half an hour per consignment to complete the inspection directions at the warehouse, with costs recovered from the importer.

In this period, prawn samples were sent to 1 of 2 (and later 3) laboratories for testing, and 7 per cent of batches tested positive for WSSV. Positive batches had to be re-exported, cooked or destroyed—most were listed as being re-exported. Limited verification of re-export was carried out before late 2016, largely due to incompatibilities between Customs and Quarantine computer systems.

### Post-border controls

All imported uncooked prawns and prawn products had to have the words ‘For human consumption only—not to be used as bait or feed for aquatic animals’ on each carton and plastic bag in which they were imported, and border inspectors had to check each batch for compliance. However, once a consignment had been released from quarantine, the Australian Government had no further control over it. Uncooked or marinated prawns were removed from their packaging and thawed for sale in fish shops or supermarkets. Most buyers, including recreational fishers, may not have realised that these prawns should not be used for bait.

The intent of requiring the warning statement on each package was to prevent wholesale purchase of imported prawns by bait shops, which would pose a much greater risk than retail prawns of transfer of any residual infection into wild crustaceans. Surveillance of bait shops was never undertaken to ensure that they were not selling uncooked imported prawns. Any legal powers for action against such practices were unclear or non-existent.

## Non-compliance with prawn import conditions, 2010 to 2016

### Mistaken release of WSSV-positive batches, 2010

In 2010 a WSSV-positive consignment of 20 tonnes of uncooked imported prawns was mistakenly released onto the retail market. This incident was investigated by the Interim Inspector-General of Biosecurity (IIGB), who found that the release was due to an inspector’s ‘human error’. However, the IIGB concluded that, though not all these prawns could be traced and recalled, the chance of infected prawns from this consignment introducing WSSV infection into high-risk pathways was extremely low, so there was a negligible likelihood of WSSV establishing in Australia due to this consignment’s release. The department implemented the IIGB’s recommended changes to laboratory test reporting and recording to reduce the chance of similar errors in future.

### AAHL detection of WSSV in retail prawns, 2013

On 17 May 2013 AAHL advised the department that batches of uncooked prawns imported from 3 countries and purchased at 3 different Geelong supermarkets had tested positive for WSSV. On 13 December 2013 AAHL advised that it had confirmed that these prawns contained infectious virus by transmitting WSD to Australian prawns using inocula from these WSSV-positive prawns. This information was not shared with states and territories.

### Operation East Leichhardt investigation into marinated prawn imports, 2014

In 2013 the department received allegations that inadequately marinated prawns were being re-processed after import and sold as uncooked prawns. In 2014 the department implemented Operation East Leichhardt, which found major irregularities in the importation of marinated prawns. Five of 7 targeted consignments failed inspection because the prawns were inadequately covered with marinade. As a result, 57.9 tonnes of prawn products were re-exported, although no importers were prosecuted. The export containers were tracked and no evidence of re-import attempts was found. No changes were made at that time to import conditions, but the findings led to more investigations of the imported uncooked prawn trade.

### Non-compliance detected at border assessment and inspection 2013–14 to 2015–16

Between 2013–14 and 2015–16, a high proportion of uncooked prawn consignments arriving at the border were found to be non-compliant with import conditions, violating entry-level, document or inspection requirements. Minor errors were remedied on the spot, but re-export was ordered for consignments with more serious non-compliance. In some cases, importers were later detected trying to re-import these failed consignments.

### Operation Cattai investigation into systematic importer non-compliance, 2016

In late 2016 Operation Cattai found systematic non-compliance with uncooked prawn import conditions by six major importers, who had handled 46.7 per cent of uncooked prawn imports in 2016. It also found an unexpectedly high level of WSSV in imported retail prawns.

The investigation found that a number of importers were misdeclaring prawn shipments or falsely presenting goods for inspection and foiling the random sampling stipulated in the import conditions. As a result, many batches likely to be WSSV-positive were not tested. In some cases, Australian prawns were substituted in some cartons from batches of imported prawns. These consequently tested negative, clearing the consignment for import.

Operation Cattai led to a much higher batch failure rate than business-as-usual inspection and testing. As a result, many containers full of uncooked infected prawns were listed for re-export by late 2016. Proving re-export of some consignments was difficult, and there was one confirmed case of re-import. By November 2017, after follow-up investigations, the department was taking action against nine importers who had handled about 70 per cent of uncooked prawn imports during 2016.

## Lessons from Operation Cattai

### Too much trust in importers to do the right thing

Several import conditions relied on importers to accurately and appropriately present prawn consignments for inspection, sampling and testing. Import conditions were hard to verify:

* Batches of prawns could not be traced back to farm level, making it difficult for both the competent authority and the border inspector to verify whether a consignment contained one or more batches.
* Complexity of the tariff codes and goods descriptions made it difficult for border assessors to direct consignments for the correct level of inspection, sampling and testing.
* The requirement for unpack rather than seals-intact inspections allowed importers to unload containers into freezers and later request an inspection of one or several mingled consignments at a time convenient for them.
* Delays between cargo discharge and inspection booking averaged four weeks and were sometimes much longer. This would allow certain cartons to be prepared so that they were likely to test negative for WSSV and marked so that they would be presented for inspection.

Importers and/or operators of cold stores were trusted and seen as clients. The department strove to complete prescribed inspections quickly to save importers money and facilitate trade.

### Weak assessment and inspection procedures

Operation Cattai showed that inspection and sampling of prawn consignments was not being carried out as envisaged by the IRA’s authors, due to technical and practical issues, including:

* Assessment of documents accompanying prawn imports was complex and needed more time than was generally allocated.
* Training on true random sampling had never been provided, was not incorporated in work instructions and in practice was impossible once consignments were unloaded into freezers, with cartons piled high and shrink-wrapped on pallets.
* Inspector safety would be compromised by working for any length of time in freezers (some down to –30 °C), without suitable protective clothing. Freezers can be dangerous, with rapid forklift traffic moving heavy loads where there is limited visibility and space.
* A single inspector was expected to complete inspection and, if needed, sampling of a typical consignment in about half an hour. According to instructions at that time, inspectors had to enter the freezer, indicate which cartons were to be sampled and have them brought to an inspection point outside the freezer. There were differences in how this was applied locally.

In contrast, the detailed seals-intact inspections conducted during Operation Cattai (which found so many cases of non-compliance) needed at least two inspectors for four hours or more.

### Variation in laboratory testing procedures and interpretation

Laboratories carrying out testing of imported prawns for WSSV were required to be NATA accredited and use a test described by the World Organisation for Animal Health (an ‘OIE test’). However, detailed laboratory procedures and test result interpretations were not standardised.

Different testing methods and interpretation of results led to different rates of prawn batches failing WSSV testing, depending on where they were tested. Private screening laboratories, which were doing the bulk of the testing, were classifying as ‘negative’ some samples (and therefore batches) that the government screening laboratory would have called ‘positive’.

## Handling prawns during import suspension, 6 January to 6 July 2017

### Implementing the suspension of uncooked prawn imports

From 6 January 2017 the department informed importers of its intention to suspend import permits for uncooked (including marinated) prawns effective from 9 January. By 13 January 2017, 246 permits were fully suspended and 63 partially suspended because they included other non-suspended product types.

Prawn consignments were subject to greatly strengthened assessment, inspection, sampling and testing procedures. Inspectors increased the verification of importer/broker declarations and inspection of consignments that appeared to have been incorrectly declared. All containers with declared uncooked prawn consignments were subjected to seals-intact inspections and supervised unpacking and sampling of cartons and batches by two or more inspectors.

Laboratory testing protocols were tightened, with standardised criteria for test result interpretation and retesting of negative samples by AAHL. Improved re-export verification procedures for any failed consignments were put in place.

A number of consignments of uncooked or marinated prawns were already on their way to Australia when the department announced the suspension. These were permitted entry, subject to these tighter procedures, or importers could re-export them without inspection.

### Post-border withdrawal of uncooked and marinated prawns

Immediately after the import suspension, the department began withdrawing and testing (at AAHL) uncooked and marinated imported prawns from the post-border supply chain. It aimed to reduce the volumes of previously cleared WSSV-infected prawns reaching the retail market.

The department had powers to secure and test any product still in regulated freezers at approved arrangements. However, large quantities of the product had already moved into the complex domestic supply chain. A lack of recall or notification power under the *Biosecurity Act 2015* made it difficult to find the product.

The department used a ‘secure-and-test’ strategy that prioritised larger commercial stocks of uncooked imported prawns held by major retailers and distribution networks, followed by other approved and non-approved arrangements and retail outlets. This prevented the supply of prawns to the consumer retail market until they could be (re)-tested for WSSV.

By 18 October 2017 about 2,523 tonnes of post-border prawn product had been placed under biosecurity control, and 73 per cent of batches had tested positive for WSSV. Only product that tested negative or was cooked was cleared to re-enter the domestic supply chain. About 1,834 tonnes either tested negative and were released for sale, or were destroyed, cooked in an approved manner or exported. About 689 tonnes remained under biosecurity control.

The high rate of positive detections when samples were tested at AAHL led to some concerns that the testing applied by AAHL might be over-sensitive and detect contamination rather than true WSSV infection. However, most batches found positive by AAHL were at levels that would also have been classified as ‘positive’ by the government screening laboratory.

### Variations to uncooked prawn import suspension order, January to June 2017

From January to June 2017, various categories of uncooked prawns were progressively exempted from the suspension order based on individual risk assessments. Some importers began importing different categories of uncooked prawns to meet the new requirements.

Before the suspension, marinated prawns had been classified as ‘highly processed’ and therefore exempt from testing. Import of these products was suspended due to their very high rate of WSSV and the possibility that some might be used as bait. ‘Breaded, crumbed or battered’ prawns were considered less likely to be diverted for sale as uncooked prawns so their import was not suspended. The requirement since 2014 had been that 25 per cent of these consignments were subject to verification inspections after being unpacked from their containers. However, between February and March 2017, there was a fourfold increase in consignments of breaded, crumbed or battered prawns. From 22 March 2017, 100 per cent of these consignments were scheduled to undergo full seals-intact inspections. Some importers then simply turned containers around for re-export without inspection.

Cooked prawns also arrived in greater volumes and they too were subject to a higher random inspection rate. Inspectors noted an increase in consignments of very lightly blanched prawns, with some cartons bearing the warning ‘Must be further cooked’.

When the suspension order lapsed at midnight on 6 July 2017, new interim import conditions were introduced. These required that all uncooked (including marinated) prawn batches be certified by the relevant competent authority as having passed pre-export, post-processing testing for WSSV and YHV. On arrival in Australia, these batches would then be subject to thorough seals-intact inspection, and once again sampled and tested.

## Future pre-border and border measures for trade in prawns

### Revising prawn import conditions

The interim conditions were to apply pending full revision of the 2009 IRA prawn import conditions, which should take at least two years. During the revision, the department would further consider whether or how uncooked prawn imports could meet Australia’s ALOP given that most countries with prawn aquaculture industries are infected with WSSV and YHD, and that other prawn diseases are emerging.

The prawn-farming industry has long argued for limiting the entry of prawn products to cooked product only. This would help protect Australia from WSD and other prawn diseases. And it would be in line with Australia’s requirement that pork and most other meat imports are cooked before final release into the market, unless the exporting countries are demonstrated to be free of specific serious exotic diseases. This measure will need reconsideration during the review of import conditions, but in the meantime some uncooked prawn imports will continue.

### Future pre-border biosecurity risk management for trade in prawns

Competent authorities and the department will need to become more actively engaged in overseeing offshore measures to prevent infected uncooked prawn product being sent to Australia. Pre-export testing is a step forward in keeping more infected prawns out of Australia, but it can only reduce risks, not eliminate them. Overseas through-supply-chain traceability and biosecurity enforcement arrangements need strengthening to enable the department to have confidence that importers are sourcing product from disease-free countries, zones or compartments. Some countries and companies may be able to develop vertically integrated prawn production and processing facilities with quality assurance systems that provide biosecurity and food safety guarantees.

### Future border biosecurity compliance management

Future imports of prawns and other frozen foods should receive thorough assessment and inspection over the longer term given evidence of serious non-compliance and the financial incentives to misdeclare or co-mingle prawn shipments with other products. Seals-intact inspections should apply indefinitely to all uncooked prawn shipments and randomly to a much greater proportion of other seafood and other frozen foods.

Encouraging industry self-regulation and quality assurance programs through the supply chain, with government as the regulator of last resort, is a key means of reducing unnecessary regulation. However, self-regulation needs to be monitored more closely, with more risk-based and unannounced spot audits. Higher levels of random inspection of all prawn products and other frozen foods may be relaxed once an importer has demonstrated compliance, but it would be most unwise to revert to previous levels of trust in importer declarations. The department needs to strike a better balance between facilitating efficient transborder movement of goods and ensuring that biosecurity risks are effectively managed, recognising that the key clients of the biosecurity system are the Australian community, industries and the environment.

Upskilling and motivating staff is an ongoing issue in the face of rapidly changing work environments. The department’s training processes, instructional material and work directions need ongoing review and monitoring to ensure that they are up to date and can be applied as intended. The department needs to provide regular and ongoing feedback and recognition for excellent work and implement processes that detect and deter poor work practices.

### Resourcing border biosecurity adequately into the future

Stronger pre-border and border biosecurity risk management measures to prevent unwanted pest or disease entry into Australia require long-term secured funding. Frontline inspector numbers have fallen by 25 per cent over the past five years, but volumes of incoming sea and air cargo, mail and passengers continue to rise steadily, as do accompanying biosecurity risks.

Governments are always trying to reduce public costs by various means, including imposing cost-recovery and average staffing level (ASL) ceilings or budget cuts. Biosecurity activities funded by cost-recovery should be exempt from ASL ceilings. This would enable the department to employ adequate staff during periods of increased trade or biosecurity risk.

Sufficient government or general levy funding should always be provided for verification of compliance with import conditions for commodities, and for risk-based targeted enforcement operations, which will always be labour-intensive to police. Ongoing investment in better IT systems and associated internal business process transformation will also be needed.

### Stronger powers and penalties under the *Biosecurity Act 2015*

In the past, the low penalties for non-compliance (under the *Quarantine Act 1908*) and the difficulties of mounting successful prosecutions even for serious non-compliance, meant that it was difficult to deal effectively with many behaviours which increased biosecurity risks. In practice, the penalties available and applied were often not commensurate with the potential profits to be made or risks that could be caused by the non-compliant behaviour. While the *Biosecurity Act 2015* provides for greater powers and more severe penalties, these must be kept under active review to ensure that they can manage and deter illegal uncooked prawn importation.

Powers to impose direct penalties (for example, by ordering destruction of non-compliant imports) and penalty levels for serious offences need to be reviewed regularly and made easier to apply where appropriate. The department also needs to consider introducing powers to recall goods for biosecurity purposes.

### Improve biosecurity risk governance and risk communication

The complexity of the system for managing the biosecurity risks posed by a dizzying range and volume of imports disguised rising risk levels in the prawn trade. These heightening risks were essentially invisible to the government and not actively managed with the urgency they deserved because of poor internal communication between frontline inspection, compliance enforcement, technical standard setting and policymaking staff. Competing priorities and resource constraints contributed to the problem.

The department needs to improve and continually review processes that enhance risk identification, communication, management and governance. Also needed is a defined and documented triaging and escalation procedure for communicating risks to the government, industry and the community.

Mechanisms for joint biosecurity risk assessment and communication between the department, states and territories and industry need to be reviewed and strengthened. Raising public awareness of issues and promoting behaviours that reduce biosecurity risks are complex tasks that require sustained joint action.

### Better national technical coordination and oversight of laboratory testing

Reform of prescribed relationships between the department and all import testing laboratories should address potential conflicts of interest. Laboratories need to understand that, although the importer pays the bill for import testing, the department is the primary client for the results and relies on those results for border biosecurity protection.

The department, in collaboration with NATA, needs to take a stronger ongoing role in the oversight of standardised testing performance of all import testing laboratories and their alignment with overseas laboratories, to assist with pre-border biosecurity assurance.

The complementary roles of Australian, state and territory governments in managing biosecurity will require ongoing input from and oversight of wider national laboratory testing and quality assurance arrangements by the Animal Health Committee’s National Laboratory Task Group and Sub-Committee on Aquatic Animal Health.

## Future post-border biosecurity—implementing a shared responsibility

### Stronger network of aquatic animal disease expertise

As a result of the WSD outbreak and response, the biosecurity and wider communities in Australia have been sensitised to issues around prawn production, its supply chains and biosecurity management. Emerging broader aquatic issues include increased aquaculture of many species (with accompanying disease risks) and climate change impacts on aquatic animal disease susceptibility. Specialised science is developing new diagnostic methods for aquatic animal diseases, genomic approaches for identifying viruses and their origins, and barcoding or e-DNA capability to detect prawn and other aquatic species. To benefit from these developments, the department must foster strong links with specialised aquatic health and production experts in governments, universities and industry nationwide and internationally.

The department needs to monitor the dynamics of serious prawn and other crustacean diseases worldwide, particularly in farmed and wild-caught prawns from countries that export prawns to Australia. This will enable timely and effective risk management.

### Finalising an aquatic deed for emergency animal disease response

Lack of an aquatic deed hindered funding of and decision-making about the 2016–17 WSD response. A deed would be a critical step in implementing a shared responsibility between industry, states and territories and the Australian Government. Cost-sharing principles for the proposed aquatic deed are complex because Australia’s relatively infant aquaculture industries are dispersed around the country, some interact with wild populations and each faces threats of many potentially serious diseases. Negotiations underway across all aquatic sectors aimed to reach an agreement on principles by the end of 2017 and finalise the deed by the end of 2018.

### Stronger on-farm biosecurity programs for prawn and other aquaculture industries

The many lessons learned from the WSD outbreak should enable better preparedness for and handling of any future prawn disease outbreak. In particular, strengthening on-farm biosecurity by prawn and other aquaculture farmers needs ongoing attention. Requirements for minimum on-farm biosecurity standards should be incorporated into the aquatic deed and/or state and territory legislation as appropriate. Surveillance of nearby wild crustaceans may also be needed.

### Post-border verification that risks of WSSV-infected prawns entering waterways are minimised

The authors of the 2009 IRA assumed that their recommended import conditions would allow only small quantities of WSSV to slip across the border. However, the high prevalence of WSSV in uncooked imported prawns at retail outlets (from at least 2013 onward) should have clearly indicated that this was not the case. Despite enhanced pre-border and border measures, the resumption of uncooked prawn imports still poses the risk of infected prawns entering Australia for retail sale and entering Australian waters. Measures for monitoring and minimising these risks, agreed and cost-shared between the department, states/territories and industry, as relevant, could include:

* periodic surveillance of retail prawns for target diseases
* periodic assessment of fishing practices
* targeted public awareness programs against use of imported prawns as bait
* prevention of recreational fishing close to prawn farms
* surveillance of bait shops to ensure that they are not selling imported uncooked prawns.

### Uncooked prawns for food service industry versus retail sale

The intent of the 2010 prawn import conditions was that imported uncooked prawns would all be cooked once in Australia, so that virtually none would be diverted for bait and berley and thus enter waterways in an uncooked state. During the post-border prawn withdrawal program, some importers wished to send their products solely to food service industry outlets where they would definitely be cooked and then pose no risk. However, experience with managing marinated and other highly processed prawns has shown how difficult it is to prevent diversion of uncooked prawns destined for the food service industry to the retail sector.

Nevertheless, some importers supplying major food service and restaurant clients may be able to set up reliable post-border quality assurance supply schemes. In view of previous non-compliance with import requirements, any such scheme would need tight conditions and strong verification over time. The department does not have the legal jurisdiction or resources for this, so any such scheme would have to be driven by importers and the food service industry and have regulatory support from state and territory governments.

## Conclusion

In 2016–17, the major WSD outbreak in Queensland prawn farms led to a six-month suspension of uncooked prawn imports into Australia. Very high levels of WSSV were found in imported uncooked prawns, destined for retail outlets across the country, which had already passed Australia’s border biosecurity controls. This indicated a major failure of Australia’s biosecurity system, which was not providing an appropriate level of protection.

During this review, I found several deficiencies in the management of the biosecurity risk of uncooked prawn imports, with broader implications for Australia’s biosecurity risk management more generally. I found that specific policy elements and their implementation had sowed the seeds of failure many years before, while progressive and cumulative acts, omissions and systemic factors at many levels exacerbated the risks over time. Many of these failings have been swiftly addressed by the department and other stakeholders, but more needs to be done to manage the biosecurity risks of prawn imports in the future. I have made recommendations to improve this biosecurity risk management framework and its ability to deal with ongoing and emerging challenges. Long-term adequate resourcing will be a key success factor in this endeavour.

The importation of uncooked prawns and other seafood into Australia will continue to pose significant and changing challenges for the department and industry. The recent WSD outbreak in Queensland, and the subsequent findings of massive importation of WSSV-infected prawns, despite previous import requirements intended to keep this virus out, highlight the need for the department to remain vigilant, proactively review and update import requirements and policies, and maintain excellent communication with both government and industry stakeholders. Above all, detecting and deterring deliberate or inadvertent failures to implement biosecurity risk management policies effectively must be a priority. Governments and aquatic industries must cooperate to resource and implement these efforts. Failure to do so will imperil the future development of a sustainable and profitable aquaculture sector in Australia.

## Recommendations and departmental responses

The department’s full response to the recommendations is also at Appendix A.

### Recommendation 1

The department, in consultation with industry and state/territory governments, should review risk mitigation measures for the various pathways for white spot disease to enter and establish in Australia.

**Department’s response:** Agree. The department has commenced a review of the biosecurity risks of, and import conditions for, prawns imported for human consumption. There will be extensive consultation and engagement with aquatic health and production experts in Australian and state/territory government agencies, universities and industry to support the prawn risk review.

### Recommendation 2

The department should, as a priority, review the sampling regime for consignments of imported uncooked prawns and prawn products.

**Department’s response:** Agree. An improved sampling process for consignments of imported uncooked prawns and prawn products has been implemented. Sampling regimes will also be considered in the prawn risk review.

### Recommendation 3

The department should facilitate research to validate the impact of cooking on:

* white spot syndrome virus inactivation, and
* white spot syndrome virus testing results.

**Department’s response:** Agreed in principle. Research such as this, which could be commissioned by FRDC, will be considered in the context of the prawn risk review.

### Recommendation 4

The department should review import conditions for uncooked prawns listed on its Biosecurity Import Conditions (BICON) system to ensure clarity and consistency with OIE terminology, scientific accuracy and usefulness for verification at the border.

**Department’s response:** Agree. Import conditions have been reviewed and updated and will be further reviewed and updated as the risk review progresses.

### Recommendation 5

The department should work with competent authorities and industry to ensure that, where possible, uncooked prawn products are imported from specific pathogen-free countries, zones or compartments. This should be industry-driven and involve:

* quality-assured supply chain management
* competent authority verification of pre-border status of consignments, and
* regular departmental offshore audits or verifications of these arrangements.

**Department’s response:** Agree in principle. In conducting the risk review, the department will consult with competent authorities and industry to consider the designation of specific pathogen-free countries, zones or compartments for the import of uncooked prawn products.

### Recommendation 6

The department should continue to conduct full seals-intact inspections of uncooked prawn imports (by at least two inspectors). It should also review measures to ensure integrity of the seals-intact containers until inspection.

**Department’s response:** Agreed and implemented.

### Recommendation 7

The department should implement and publicise an ongoing program of random and risk-based, seals-intact inspections of frozen goods to ensure that uncooked prawns are not being imported as other frozen foods.

**Department’s response:** Agree. This may be implemented as part of the department’s cargo compliance verification program.

### Recommendation 8

The department should ensure that inspections at approved arrangements, especially at regulated cold stores, are periodically carried out by two inspectors. If only single inspectors are available, they should be regularly rotated.

**Department’s response:** Agree. Revised processes have been implemented.

### Recommendation 9

The department should facilitate the development and implementation of a nationally consistent competence and verification framework covering staff involved in assessing and inspecting imported uncooked prawns and other commodities. This should be regularly reviewed and adequately resourced.

**Department’s response:** Agree. The Department has implemented a national competency and verification framework for prawn inspections.

### Recommendation 10

The department should improve internal communication to develop and implement training processes, instructional material and work directions that are technically sound, suit the conditions being experienced and are applied as intended. These should be monitored and regularly reviewed.

**Department’s response:** Agree. The department has implemented improved internal communications arrangements, updated instructional material and has strengthened arrangements to ensure that the required processes are being applied as intended.

### Recommendation 11

The Australian Government should commit to ensuring adequate long-term funding for biosecurity risk management, including border inspections and enforcement. Funding should be linked to growth in imports and biosecurity risks, with cost-recovered functions exempt from efficiency dividends and staff ceilings.

**Department’s response:** Noted. This is a matter for government.

### Recommendation 12

The department should consider seeking stronger powers under the *Biosecurity Act 2015* to apply direct penalties for serious non-compliance and impose administrative sanctions or on-the-spot fines for relatively minor non-compliance.

**Department’s response:** Agree. While the Biosecurity Act already provides powers to apply direct penalties for serious non-compliance and penalties for relatively minor non-compliance in the form of infringement notices, the department will consider whether stronger powers are required.

### Recommendation 13

The Director of Biosecurity should seek powers under the *Biosecurity Act 2015* to conduct a general recall of goods for biosecurity purposes.

**Department’s response:** Agree in principle. Proposed changes to the Biosecurity Act have been drafted that will provide powers to enable the improved management of a similar event.

### Recommendation 14

The department should continue to improve internal biosecurity risk governance and communication to rapidly identify emerging biosecurity risks. Risks should be communicated to governments, the wider community and industry through a defined and documented triaging and escalation procedure.

**Department’s response:** Agree in principle. The department’s Active Risk Management program is helping to improve internal biosecurity risk governance and communication to rapidly identify emerging biosecurity risks. Risks will be communicated to other governments, the wider community and industry as appropriate to the specific circumstances.

### Recommendation 15

The department should discuss with the National Biosecurity Committee mandatory reporting of all post-border detections of prescribed exotic disease agents or pests to Australian and state/territory government departments.

**Department’s response:** Agree. The Australian government reports post quarantine detections to state and territory governments and will seek the National Biosecurity Committee’s agreement that states and territories share similar information with the Australian government and with each other.

### Recommendation 16

The department should collaborate with state/territory agencies, Animal Health Australia and relevant industry bodies to review and implement more effective communication policies to aid the early dissemination of information about exotic aquatic diseases and pests and their management to stakeholders.

**Department’s response:** Agree. Implementation is progressing.

### Recommendation 17

The department should formalise, oversight and monitor stronger prescribed arrangements for laboratories undertaking import testing to ensure their accountability and ongoing implementation of prescribed testing standards.

**Department’s response:** Agree. Implementation is progressing.

### Recommendation 18

The department should, in collaboration with National Association of Testing Authorities, oversight the performance of import testing laboratories in quality assurance programs. This should include regular proficiency testing and assessment of control samples distributed among the laboratory network, with means to ensure that laboratories rectify any identified deficiencies in a reasonable period of time.

**Department’s response:** Agree. Implementation is well progressed.

### Recommendation 19

The department should promote an update of the old Australian and New Zealand standard diagnostic procedure for white spot syndrome virus including peer review of the new *Procedure for detection of white spot syndrome virus for biosecurity risk management*. This should be conducted by a suitably resourced national technical group formed from the Animal Health Committee’s National Laboratory Task Group and Sub-Committee on Aquatic Animal Health.

**Department’s response:** Agree. Implementation is progressing.

### Recommendation 20

The department should maintain strong links with aquatic health and production experts in Australian and state/territory government agencies, universities and industry, to support decision-making based on:

* the latest scientific knowledge of new technologies, and
* international emergence, movements and risks to Australia of serious aquatic animal diseases.

**Department’s response:** Agree. There will be extensive consultation and engagement with aquatic health and production experts in Australian and state/territory government agencies, universities and industry to support the prawn risk review.

### Recommendation 21

The department should continue to work with Animal Health Australia, state/territory agencies and aquatic industries to develop an aquatic emergency animal disease response agreement (deed) as soon as possible.

**Department’s response:** Agree. Development of the aquatic deed is well progressed.

### Recommendation 22

The department and state/territory governments and industry should agree on (and cost share, as relevant) measures for monitoring and minimising risks of any imported uncooked prawn product entering waterways. Measures could include:

* periodic surveillance of retail prawns for target diseases
* periodic assessment of fishing practices
* targeted public awareness programs discouraging use of imported prawns as bait
* prevention of recreational fishing and surveillance of wild crustaceans close to prawn farms, and
* surveillance of bait shops to ensure they are not selling prawns imported for human consumption.

**Department’s response:** Agree in principle – These issues will be considered as part of a systems based approach. Regulation of domestic fishing practices is a matter for state and territory governments.



Dr Helen Scott-Orr

Inspector-General of Biosecurity

12 December 2017

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