

Chapter 3

Seafood imports and potential disease pathways

3.1 The committee's interim report provided information on WSSV, including its virulency, hosts and the ways in which the virus can be transmitted.¹ As the inquiry continued, the committee heard evidence regarding the possible pathways by which WSSV may have entered the country, and therefore how the WSD outbreak occurred in Queensland.

3.2 Since the outbreak of WSD in the Logan River prawn farms, there has been ongoing discussion and speculation as to how the white spot virus may have entered Australia, given it is an exotic disease to the country. As many of the countries that import seafood product into Australia have white spot in their prawn populations, importation has received significant attention as a possible disease pathway.

3.3 This chapter considers importation and other possible pathways that may have introduced white spot into Australian prawn populations, including five pathways specifically being considered by DAWR. There is also discussion of biosecurity failures that may have led to white spot entering Australia.

3.4 Genetic testing may provide information as to the origin of the recent WSD outbreak. The findings to date of genetic testing are presented in this chapter.

Five possible pathways

3.5 DAWR advised the committee that it was considering five possible pathways that may have led to the introduction of WSSV into Australia. The pathways being considered for the entry of WSSV into Australia are:

- that the virus could have already been present in Australia without prior detection;
- via imported aquatic feed or feed supplements;
- via diseased broodstock or their progeny;
- through a human element, including the importation of associated equipment; or
- via raw imported prawns being used as bait.²

1 Background information on WSSV can be found in Chapter 1 of the committee's interim report.

2 Department of Agriculture and Water Resources, *Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016, Interim Report*, May 2017, p. 6.

3.6 Further, in a report from May 2017, DAWR submitted that the spread of WSD could be attributed to a number of factors including 'common water exposure, movement by wild animals and birds, sharing of equipment and common production inputs', as well as water run-off and oral transmission (for example, prawns and crabs eating infected species).³

3.7 However, DAWR considered that the risks associated with vessel ballast water and biofouling as pathways for the introduction of WSSV to Australia were 'very low to negligible', especially in light of ballast water management practices implemented from 2001.⁴

3.8 As of 11 September 2017, DAWR had yet to determine a definitive cause of the outbreak, and was continuing to examine the variety of possible pathways. It was also continuing genetic testing to identify any link between the infected prawns and overseas strains of the white spot virus.⁵

Pathway 1: Present in Australia without prior detection

3.9 The committee heard some evidence that, despite no clear detection, WSSV may have been present in wild seafood populations in Australia for some time at very low levels, prior to the 2016 incursion. Therefore, this may have been a pathway to the WSD outbreak.

3.10 In response to questioning from the committee, DAWR advised that as part of the development of the 2009 IRA, the department considered whether white spot could establish and maintain itself in the wild. Dr Andrew Cupit of DAWR acknowledged that there was 'every possibility' that white spot may not be able to maintain itself in the wild, and noted that in the wild, the disease would also be subject to natural predators. DAWR noted that it had now established surveillance in wild prawn populations to try and more definitively ascertain the likelihood of this pathway.⁶

3.11 Dr Patrick Hone of the FRDC noted that there was a low probability that the disease had existed undetected in the wild, prior to the outbreak. Dr Hone stated that if it had been present in the wild for some time, there would have been 'so many

3 Department of Agriculture and Water Resources, *Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016, Interim report*, May 2017, pp. 7-8.

4 Department of Agriculture and Water Resources, answers to questions on notice, 5 September 2017 (answered 18 September 2017).

5 Ms Lyn O'Connell, Department of Agriculture and Water Resources, *Committee Hansard*, 11 September 2017, p. 2.

6 Dr Andrew Cupit, Department of Agriculture and Water Resources, *Committee Hansard*, 11 September 2017, p. 5.

opportunities for it to express itself as a disease, through either farms or other avenues, that we would have probably seen some mortality event'.⁷

3.12 This position was also put forward by Dr Ben Diggles, who argued that this was one of the least likely pathways, 'as if this were true, WSSV outbreaks would have been observed on the Logan River and elsewhere before November 2016'.⁸

3.13 DAWR additionally noted that until genetic testing on WSSV in Australia was completed, it was not possible to draw any conclusions about the origin of the outbreak or the period of time it may have been present in Australia.⁹

Pathway 2: Aquatic feed or feed supplements

3.14 It was suggested that prawn feeds and associated products could be the source of WSSV entering Australia.

3.15 The Ridley Corporation provides approximately 80 per cent of the prawn feed market in Australia. The Ridley Corporation provided evidence that WSSV is highly heat sensitive, with heat treatments shown to kill the virus. The Ridley Corporation advised that 'heat treatment has been validated globally on many occasions as a standard means of deactivation of white spot virus and other pathogens in feed and other biological materials including uncooked prawns'.¹⁰

3.16 The Ridley Corporation advised that the OIE considers that white spot is destroyed by heating it to 60 degrees Celsius for one minute, or 70 degrees Celsius for 0.2 minutes. In response to claims that white spot may have entered Australia via infected prawn feed, Dr Richard Smullen of Ridley Corporation advised the committee that:

All our feed is heat treated to between 85 and 110 degrees for 45 minutes. All our marine raw materials that are imported are also heat treated to a very high level. We also, just to be 100 per cent sure, do not use any farmed crustacean material in our feeds. Although, there is evidence that, even if farmed prawns that have white spot have been put into feed experimentally

7 Dr Patrick Hone, Fisheries Research and Development Corporation, *Committee Hansard*, 28 August 2017, pp. 16-17.

8 Dr Ben Diggles, *Field observations and assessment of the response to an outbreak of White Spot Disease (WSD) in Black Tiger Prawns (Penaeus monodon) farmed on the Logan River in November 2016*, Fisheries and Research Development Corporation, 21 February 2017, p. 44.

9 Department of Agriculture and Water Resources, *Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016, Interim report*, May 2017, p. 15.

10 Ridley Corporation, opening statement, p. 2 (tabled 27 June 2017).

and then the feed made using the normal process, it is not possible to transfer that disease to the prawns.¹¹

3.17 Dr Smullen argued that as Ridley feed product was distributed throughout Australia and overseas, and no other prawn farms developed white spot, the recent disease outbreak could not be attributed to prawn feed. If feed did transfer WSSV, it would be expected that all farms in Australia would be infected with WSD. Similarly, as feed is distributed across all prawn ponds on a farm simultaneously, it would be expected that an outbreak would likewise occur in all ponds simultaneously, and this was not the case in the Logan River farms.¹²

3.18 In testing the feed used on the farms, DAWR found that WSSV DNA fragments were present in prawn feed pellets produced by one feed supplier. However, the DNA was fragmented due to heat treatments and other manufacturing processes, rendering the virus unviable. DAWR noted that feed, additives and similar products should be treated, stored and transported appropriately to reduce the risk of disease.¹³

3.19 However, DAWR did not rule out this pathway as being responsible for the Logan River outbreak, and argued that:

the illegal transport and use of these products has been known to occur and cannot be ruled out. This is because samples and small quantities of products can be easily moved between countries and it can be difficult for regulatory authorities to detect. Previous investigations conducted by the department uncovered hatchery feed products being illegally imported into Australia. The companies responsible were prosecuted. Illegally imported feed represents a high risk pathway for WSSV and cannot be ruled out as a possible pathway for the Logan River area outbreak.¹⁴

Pathway 3: Diseased broodstock

3.20 For prawn farms to begin production each year, they require ponds to be stocked with juvenile prawns, known as 'post larvae' (PLs). PLs are produced in hatcheries from adult, broodstock prawns. Farmers may either run their own hatcheries, or purchase PLs from other farms or commercial hatcheries. Of the Logan

11 Ridley Corporation, opening statement, p. 2 (tabled 27 June 2017), Dr Richard Smullen, Ridley Corporation, *Committee Hansard*, 27 June 2017, p. 12.

12 Dr Richard Smullen, Ridley Corporation, *Committee Hansard*, 27 June 2017, p. 14.

13 Department of Agriculture and Water Resources, *Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016, Interim report*, May 2017, pp. 11-12.

14 Department of Agriculture and Water Resources, *Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016, Interim report*, May 2017, p. 12.

River prawn farms infected, three also operated hatcheries to produce PLs to stock their farms.¹⁵

3.21 DAWR advised that broodstock used by the hatcheries were sourced from wild caught stock sourced from Australia's northern prawn fishery waters. When 10 per cent of these wild-caught prawns were tested for WSSV as part of standard screening processes, the virus was not detected. However, DAWR warned that the 'collection of wild broodstock to produce PLs for domestic grow out purposes is not recommended industry practice for biosecurity reasons', and warned that the remaining 90 per cent of product was not tested.¹⁶

3.22 Given that all farms outside the Logan River area that received PLs remained uninfected with white spot, it was suggested by DAWR that PLs might not be the source of the outbreak. However, as broodstock and PLs 'represent the most direct pathway for entry, exposure, vertical transmission of disease, establishment and spread of disease', it could not be discounted as the original source of the infection.¹⁷

3.23 However, Dr Diggles argued that broodstock being the cause of the WSD outbreak was 'extremely unlikely', as a number of prawn farms outside the Logan River area had been supplied with hatchery stock from a Logan River farm, and remained negative for WSSV. Additionally, the prawn farms along the Logan River obtained PLs from different sources.¹⁸

3.24 In his March 2017 report, Dr Len Stephens argued that the reliance on wild caught, rather than farmed broodstock was now an 'unacceptable risk for the industry'. Dr Stephens noted that in relation to wild broodstock, 'extensive testing of broodstock for WSD and other diseases is essential to prevent disease entering production farms and nurseries'.¹⁹

15 Dr Len Stephens, *Final Report: Prawn White Spot Disease Response Plan*, Fisheries and Research Development Corporation, March 2017, p. 10.

16 Department of Agriculture and Water Resources, *Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016, Interim report*, May 2017, p. 13.

17 Department of Agriculture and Water Resources, *Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016, Interim report*, May 2017, p. 13.

18 Dr Ben Diggles, *Field observations and assessment of the response to an outbreak of White Spot Disease (WSD) in Black Tiger Prawns (Penaeus monodon) farmed on the Logan River in November 2016*, Fisheries and Research Development Corporation, 21 February 2017, p. 44.

19 Dr Len Stephens, *Final Report: Prawn White Spot Disease Response Plan*, Fisheries and Research Development Corporation, March 2017, pp. 6, 17.

Pathway 4: Human activity and farming equipment

3.25 DAWR investigations into the potential pathways of the white spot outbreak included the virus being introduced into Australia via infected farming equipment or direct human intervention.

3.26 Dr R Parry Monckton, of Monckton Consulting, argued that the use of contaminated equipment was a significant transmission route between prawn ponds and hatcheries, as was the movement of people in and out of prawn farming facilities. Dr Monckton stated that modern prawn facilities have 'rigid biosecurity protocols to prevent any uncontrolled people movement', but some Australian prawn farm facilities did not appear to have such biosecurity protocols.²⁰

3.27 A similar argument was put forward by DAWR. DAWR submitted that its investigations had found that:

on most farms, on-farm biosecurity for movement control of people and equipment was below international best practice. On some farms it was non-existent, and no evidence could be collected that demonstrated visitation or biosecurity measures. On enquiry, farm staff confirmed that some equipment is shared between farms, for example, prawns from other farms are cooked on their premises to share processing equipment. Farm staff also confirmed that their farms are visited by peripheral industry representatives including feed manufacturers, equipment salesmen, production consultants and various sales representatives from Australia and overseas.²¹

3.28 Overall, DAWR's investigations found no evidence that contaminated equipment or direct human involvement introduced the disease to the Logan River area. The disease was 'unlikely to remain viable on dry equipment or clothing'.²²

3.29 However, DAWR noted that some prawn farms had hosted two foreign visitors on 25 November 2016, three days after the first signs of WSD on the first infected property. While not considered significant to its investigations, DAWR stated that it was continuing its enquiries in this area.²³

20 Monckton Consulting Pty Ltd, *Submission 10*, p. 3.

21 Department of Agriculture and Water Resources, *Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016, Interim report*, May 2017, p. 14.

22 Department of Agriculture and Water Resources, *Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016, Interim report*, May 2017, p. 14.

23 Department of Agriculture and Water Resources, *Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016, Interim report*, May 2017, p. 14.

3.30 In response to the claim that overseas visitors may have brought white spot into the country, the APFA argued that it was 'disingenuous to put this forward as a genuine line of inquiry'. The APFA noted that it had not observed any behaviour that would support the position that overseas visitors had 'any possible involvement in the WSSV incursion'.²⁴

Pathway 5: Imported raw prawns used as bait

3.31 As highlighted in the committee's interim report, a number of witnesses submitted that imported infected raw prawns, intended for human consumption, were the cause of the outbreak. It was argued that infected raw prawns that were used as bait in the Logan River introduced the disease to those waterways used by prawn farmers.

3.32 As part of its investigations, in December 2016 DAWR officers visited a number of sites along the Logan River commonly used by anglers to determine if raw prawns were being used as bait in the river. Two recreational fishermen were found to be fishing with raw imported vannamei prawns, intended for human consumption. The prawns being used as bait were tested for WSSV, returning positive results from multiple laboratories. DAWR stated that:

The fishermen admitted that this was the third occasion that they had fished in the river using prawns for human consumption but claimed they were unaware that prawns of this nature should not be used as bait. The prawns used by the fishermen on this occasion were from a bag that was labelled 'for human consumption'.²⁵

3.33 In January 2017, DAWR conducted further surveys of fishermen on the Logan River, and found that out of 144 anglers interviewed, nine reported using raw prawns intended for human consumption as bait. DAWR concluded that:

it is evident that some raw imported prawns recovered from retail outlets proximal to the infected properties tested positive to WSSV. It is also known that to some extent these WSSV infected prawns are used by fishermen in the river and also discarded or fed to birds following the fishing activity. Using prawns as bait for fish represents a possible entry and exposure pathway for susceptible crustaceans.²⁶

3.34 DAWR's findings were supported by evidence in other reports about the outbreak. In a February 2017 report, Dr Diggles noted that the major risk factor for

24 Australian Prawn Farmers Association, Supplementary submission, p. 3 (tabled 27 June 2017).

25 Department of Agriculture and Water Resources, *Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016, Interim report*, May 2017, p. 9.

26 Department of Agriculture and Water Resources, *Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016, Interim report*, May 2017, p. 10.

farm infection 'appeared to be water intake from the [Logan] River or Moreton Bay'. Dr Diggles presented evidence that infected bait in the waterways was a plausible pathway, arguing that:

the epidemiology and chronology of disease spread together with evidence of significant recreational fishing effort in and adjacent to the intake canal at [the first infected farm], strongly suggests, in my professional opinion, that the incursion pathway was most likely introduction of WSSV via the [first infected property] intake canal. Indeed, surveys by Fisheries officers allegedly found several groups of recreational fishers using imported green prawns as bait within 500 meters of the intake of [the third infected farm], and of these 33% of bait samples were positive for WSSV. This pathway is plausible given evidence that; 1. Increasing numbers of recreational fishers are using imported prawns as bait, and 2. Biosecurity breakdowns at the international border resulting in c. 50-54% of imported green prawns sold at the retail counter being WSSV positive in the leadup to Christmas/New Year 2016.²⁷

3.35 Dr Diggles therefore concluded that 'there is a strong possibility that the disease incursions in the Logan River and Moreton Bay were caused by use of imported uncooked prawns as bait or burley by recreational anglers'. Dr Diggles reinforced this view by stating that it was unlikely that the WSSV disease pathway was via ballast water discharge, biofouling of shipping, infected broodstock prawns, or aquaculture feed.²⁸

3.36 Dr Diggles argued that the intake canals for prawn farms have limited water exchange and are accessed by large numbers of potential disease hosts such as prawns, crabs and plankton. Given the semi-isolated nature of the canals, they are 'perfect for establishment of WSSV infection in wild reservoir hosts and vectors'.²⁹

3.37 The APFA drew on the findings of Dr Diggles and presented its view that the outbreak of WSD was most likely due to the importation of raw prawns infected with WSSV, subsequently used as bait in the Logan River.³⁰

3.38 The committee put to QDAF the possibility that the virus was building up in the Logan River as a result of contaminated bait being used in its waters. Contaminated river water would then be drawn into the first prawn farm, noting that in most instances of infection, the first pond infected was the first to be filled by river

27 Dr Ben Diggles, *Field observations and assessment of the response to an outbreak of White Spot Disease (WSD) in Black Tiger Prawns (Penaeus monodon) farmed on the Logan River in November 2016*, Fisheries and Research Development Corporation, 21 February 2017, pp. 4, 43.

28 DigsFish Services Pty Ltd, *Submission 1*, p. 7.

29 Dr Ben Diggles, *Field observations and assessment of the response to an outbreak of White Spot Disease (WSD) in Black Tiger Prawns (Penaeus monodon) farmed on the Logan River in November 2016*, Fisheries and Research Development Corporation, 21 February 2017, p. 46.

30 Australian Prawn Farmers Association, *Submission 2*, p. 9.

water. The virus would then concentrate in the pond, be released back into the river, where the same activity at the next farm would further concentrate the virus prior to re-release into the river. QDAF considered this to be a 'plausible pathway'.³¹

3.39 Mr Ian Rossmann, of the GI Rural prawn farm, has publicly stated his view that the infection was a result of imported prawn product, and that the infection took hold in the Logan River. Mr Rossmann told media that:

I'm very confident it came from the [Logan] River, we pump water into the farm from the river and tests have shown it is positive in the river...We have been very concerned about white spot introduction into Australia through green prawn imports and we believe 100 per cent that that is where it came from. Anyone who purchases a green prawn from overseas from a white spot infected country, that can get into our waterways by bait, crab bait or even just throwing it into the water.³²

3.40 SIAA expressed its 'amazement' that recreational fishers and the general public were able to achieve such close proximity to the Logan River prawn farms, 'when the biosecurity risk was so well known to industry and State government regulators'. SIAA argued that closing this pathway would be very effective in blocking a disease incursion from this source.³³

Regulating bait usage

3.41 The IRA provides that labelling imported prawns as 'for human consumption only' and 'not to be used as bait or feed for aquatic animals' may reduce the likelihood of WSSV exposure to the environment. However, the IRA goes on to state that 'as this labelling would not necessary apply at retail sale, the general public may be unaware of this requirement' and therefore by itself, this labelling was 'not considered likely to reduce the overall risk to an acceptable level'.³⁴

3.42 Supporting this view, the committee heard concerns that there was a lack of education in the recreational fishing and broader retail market about the implications of using raw imported prawns for bait. This included removing marinade coverings from raw prawns so that they could be used as bait.

3.43 In his submission to the inquiry, Dr Diggles observed that in visiting retail outlets over the Christmas period in 2016-17, 'not one of them were selling imported

31 Senator Chris Back and Dr Allison Crook, Chief Veterinary Officer, Biosecurity Queensland, *Committee Hansard*, 27 June 2017, p. 20.

32 Marty McCarthy, 'White spot outbreak a 'wake-up call for Australia's biosecurity system, as prawn farmers claim imports are to blame', *ABC Rural*, 23 December 2016, <http://www.abc.net.au/news/rural/2016-12-23/qld-prawn-farmers-blame-white-spot-outbreak-on-imported-prawns/8144876> (accessed 19 July 2017).

33 Seafood Importers Association of Australasia Inc., *Submission 13*, p. 21.

34 Biosecurity Australia, *Generic Import Risk Analysis Report for Prawns and Prawn Products*, October 2009, p. 182.

prawns over the delicatessen counter with warnings to customers that they should not be used as bait'. Further, some outlets had placed bait freezers in close proximity to the seafood section, 'encouraging consumers to relate the two together'.³⁵

3.44 The committee was concerned by evidence suggesting that in some forums, fishing industry participants were encouraging the use of raw supermarket prawns intended for human consumption as bait. In these forums it was argued that these raw prawns were cheaper than prawns sold specifically for bait usage.³⁶

3.45 The committee queried whether there was capacity to place restrictions on bait usage, particularly in the Logan River area. In response, prawn farmers indicated that this would be a very difficult task. Ms Serena Zipf of the Rocky Point Prawn Farm stated that, even after fishing activities were banned around the farm's property following the WSD outbreak, recreational fishers continued to fish in quarantined areas and 'in our channels with imported bait'.³⁷

3.46 With regards to bait use restrictions, Ms Zipf also noted that:

the rule is only as good as the policing effort that you are prepared to put behind it. We could spend all weekend policing our channels and we would not catch every fisherman who was trespassing on our properties with bait which should not be used as such. So the answer is it is impossible to police.³⁸

3.47 This position was supported by QDAF, who advised that it was very challenging to enforce bait use restrictions, and would require compliance or enforcement officers to prove that raw prawns being used as bait were not local prawns. Additionally, QDAF argued that educational campaigns were challenging, and noted that the decision to use raw prawns intended for human consumption as bait was often driven by price.³⁹

3.48 Mr Eric Perez of QSIA argued that it was 'almost an impossibility' to control how seafood bought at a retail level was used. Mr Perez went on to state that:

Once imported, seafood has been sold at the retail level. You cannot control its use or where and when it is used. We do not know how you could do that. Obviously risk reduction in the seafood supply chain must be applied before retail or at the retail counter. Once it is sold, it is too late, and you

35 DigsFish Services Pty Ltd, *Submission 1*, pp. 14 -16.

36 Ms Serena Zipf, Rocky Point Prawn Farm, *Committee Hansard*, 27 June 2017, p. 7.

37 Ms Serena Zipf, Rocky Point Prawn Farm, *Committee Hansard*, 27 June 2017, p. 7.

38 Ms Serena Zipf, Rocky Point Prawn Farm, *Committee Hansard*, 27 June 2017, p. 7.

39 Mr Scott Spencer, Queensland Department of Agriculture and Fisheries, *Committee Hansard*, 27 June 2017, pp. 23-24.

will never educate the masses that a seafood product that is safe to eat is not safe to use as bait.⁴⁰

3.49 The NSIA supported this view, stating that the only proper way to control risk in the supply chain was pre-border or at the border. NSIA argued that once imported seafood products 'clear quarantine, and are sold across the retail counter, all control of the end use is lost'.⁴¹

3.50 GSDA argued that imported prawn products should be accompanied by a statement, declaring that it is illegal for the prawns to be used as bait. Such a statement should be included regardless of the type of processing or packaging of the prawns. GSDA also called for the development of an easily identifiable packaging logo to emphasise the risk.⁴²

3.51 In March 2017, the NSW Minister for Primary Industries, the Hon Niall Blair, called for a 'national co-ordinated strategy to educate stakeholders' on movement control orders and the biosecurity risks associated with using raw prawns as bait. Minister Blair noted that NSW had tested over 17 000 wild prawn samples as part of an ongoing surveillance program. NSW would also 'contribute funding towards a multi-media campaign to ensure everyone in the fishing community is aware of the risks [of white spot]'.⁴³

On-farm biosecurity practices

3.52 During the course of the inquiry, evidence was submitted to suggest that poor on-farm biosecurity practices at prawn farms were a potential cause of the WSD outbreak, or that Australian prawn farms were not appropriately equipped to deal with disease incursions.

3.53 As part of its report into the cause of the 2016 WSD outbreak, DAWR noted that effective on-farm biosecurity management and practices were necessary to reduce the risk of pest and disease incursions. In relation to the Logan River prawn farms, DAWR stated that:

The production and biosecurity practices of each infected premises were observed, highlighting not only the differences across the seven infected premises but also the standard exhibited on the Logan River properties compared with the farming and biosecurity techniques recommended for use in modern prawn farming operations. There were few biosecurity infrastructure and/or practices in place capable of preventing the disease

40 Mr Eric Perez, Queensland Seafood Industry Association, *Committee Hansard*, 27 June 2017, p. 30.

41 National Seafood Industry Alliance, *Submission 16*, p. 11.

42 Global Seafood Distributors Australia Pty Ltd, *Submission 11*, p. 4.

43 The Hon Niall Blair MLC, Minister for Primary Industries, Regional Water and Trade and Industry, 'White spot top priority for fisheries ministers', *Media Release*, 31 March 2017.

transmission (apart from some water filtering, pond fallowing and probiotic use), which is in stark contrast to modern-day farming techniques and the biosecurity practices that are put in place to prevent disease outbreak.⁴⁴

3.54 DAWR further argued that poor on-farm biosecurity measures on some farms may have contributed to the WSD outbreak or in the spread of the disease. DAWR called for prawn farms to implement effective biosecurity measures, including appropriate strategies for crab and bird mitigation (as both animals can play a role in spreading WSSV), and water filtration.⁴⁵

3.55 SIAA suggested that the prawn farms on the Logan River had not invested appropriately in biosecurity infrastructure, including closed water systems. Further, management systems were required on the farms to prevent and manage serious disease events. SIAA noted that these statements were 'consistent with advice given to the prawn farmers by biosecurity experts advising them on recovery and future phases'.⁴⁶

3.56 SIAA called for all stakeholders to consider the location, design and management of prawn farms, given that intensive prawn farming can escalate exotic diseases from low prevalence to an epidemic, which can then spread to the environment. SIAA encouraged Australian prawn farms to implement the same biosecurity standards of many prawn farms that it had observed overseas, where WSSV is endemic but effectively managed.⁴⁷

3.57 The ACPF acknowledged that intensive prawn farming is a known disease vector and that 'proximity of prawn farms to wild prawn populations requires careful biosecurity management by prawn farming businesses'. The ACPF supported calls for prawn farms to use new infrastructure and better practices to improve on-farm biosecurity.⁴⁸

3.58 In response to claims of poor on-farm biosecurity practices, Mr Alistair Dick, Gold Coast Marine Aquaculture, argued that this line of inquiry 'fails to recognise the extreme lengths that people need to go to to protect themselves against white spot', and that such processes would not be entered into lightly. Mr Dick stated that the

44 Department of Agriculture and Water Resources, *Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016, Interim report*, May 2017, p. 15.

45 Department of Agriculture and Water Resources, *Report into the cause of white spot syndrome virus outbreak in the Logan River area of Queensland – December 2016, Interim report*, May 2017, pp. 15-17.

46 Seafood Importers Association of Australasia Inc., *Submission 13*, p. 20.

47 Seafood Importers Association of Australasia Inc., *Submission 13*, pp. 16-17.

48 Australian Council of Prawn Fisheries, *Submission 14*, p. 17.

argument of poor farming practices was viewed as 'quite offensive' by the prawn farming industry.⁴⁹

3.59 This position was also put forward by Ms Serena Zipf of the Rocky Point Prawn Farm, who stated that:

that exact phrase, 'poor on-farm biosecurity', was in fact the subject of a press release by DAWR the day after the prawn farmers left Canberra after we met with the department. We obviously did not take very kindly to the timing of that press release or the insinuation contained in the release.⁵⁰

3.60 The prawn farmers expressed their concern to the committee that reporting on the outbreak had, intentionally or otherwise, placed blame for the outbreak on farming practices. Farmers felt that media had reported on the progress of the virus among the farms and may not have given sufficient consideration to the role of the river in spreading the infection, and thus for the farms 'the stigma was there right from the word go'.⁵¹

Genetic testing

3.61 Both the Queensland and federal biosecurity departments are undertaking genetic testing on the white spot virus responsible for the outbreak in the Logan River in 2016.

3.62 In a submission to the inquiry, Associate Professor Wayne Knibb advised of genetic testing on WSSV being completed by the University of the Sunshine Coast (USC), Queensland. Associate Professor Knibb contended that understanding the source of the infection would assist the industry in preparing for the future, depending on whether the source was determined as local, or from overseas.⁵²

3.63 Associate Professor Knibb advised that WSSV DNA sequences were obtained from a Logan River aquaculture farm, during the outbreak in late 2016. Further samples were examined from overseas areas with current WSSV outbreaks, and from imported highly processed prawn products. Associate Professor Knibb advised that 'by far the best hypothesis that fits the data is that the Logan River WSSV is a very recent arrival from overseas'. Some DNA sequences were found to be 'nearly exact matches' for 'one overseas region'.⁵³

3.64 Having argued that WSSV entered Australia via an overseas source, the submission further stated that:

49 Mr Alistair Dick, Gold Coast Marine Aquaculture, *Committee Hansard*, 27 June 2017, p. 2.

50 Ms Serena Zipf, Rocky Point Prawn Farm, *Committee Hansard*, 27 June 2017, p. 3.

51 Mr Ian Rossmann, GI Rural, *Committee Hansard*, 27 June 2017, p. 3.

52 Associate Professor Wayne Knibb, *Submission 19*, p. 1.

53 Associate Professor Wayne Knibb, *Submission 19*, p. 2.

Notwithstanding further testing of overseas samples which will be ongoing, we believe we now have a match (analogous to matching bullets from the same gun), and our research will shift focus to discovery of the exact pathway of entry (we need to find the "gun"); accordingly our research will now focus on testing Australian retail samples from the "region of interest".⁵⁴

3.65 In response to the genetic testing undertaken by USC, DAWR stated that it would welcome detailed information from the researchers about their findings and methods. A DAWR spokesperson said that USC 'have not made the methodology or data associated with this report available to the department. The department is unable to provide an informed comment on these assertions'. The spokesperson also argued that confirming the origin of the virus would not demonstrate the pathway by which the outbreak occurred.⁵⁵

3.66 Associate Professor Knibb argued that the authorities had access to the same technology used by his team, and greater financial resources, and should therefore be able to complete the same testing to help determine a possible source country of the infected product.⁵⁶

3.67 However, at a hearing on 11 September 2017, DAWR confirmed to the committee that investigations to date had not confirmed the cause or pathway of the outbreak. The department was continuing with genetic analysis to identify any link between infected prawns in Australia and overseas WSSV strains; however this work was not yet complete.⁵⁷

3.68 DAWR was able to advise that preliminary DNA analysis of two samples from infected farms, and one from northern Moreton Bay, indicate that the samples share more than 99.9 per cent nucleotide identity with each other. These results suggest that the viruses are from a single source, and not from multiple WSSV incursions.⁵⁸

54 Associate Professor Wayne Knibb, *Submission 19*, p. 2.

55 Marty McCarthy, 'Aquatic researchers say they have proven white spot outbreak in prawns came from overseas', *ABC Rural*, 19 June 2017, <http://www.abc.net.au/news/rural/2017-06-19/white-spot-research-blames-imported-prawns/8629918> (accessed 19 June 2017).

56 Marty McCarthy, 'Aquatic researchers say they have proven white spot outbreak in prawns came from overseas', *ABC Rural*, 19 June 2017.

57 Ms Lyn O'Connell, Department of Agriculture and Water Resources, *Committee Hansard*, 11 September 2017, p. 2.

58 Department of Agriculture and Water Resources, answers to questions on notice, 5 September 2017 (answered 18 September 2017).