

SUMMARY OVERVIEW

Economic Impact of 2016 White Spot Disease Outbreak

Project 2016-267

Prepared by Ridge Partners 2017

This summary is a short overview of the project which aims to quantify the impact of white spot disease on the prawn farm and wild catch sectors. Due to the commercial in confidence nature of some material this summary has been prepared. It also provides addresses *criteria* from the [Senate Inquiry related to White Spot Disease](#) – outlined below.

Senate Inquiry related to White Spot Disease

On 21 March 2017 the Senate adopted the recommendations contained in the Senate Rural and Regional Affairs and Transport References report Import of seafood and seafood products and referred the following matter for inquiry and report by 22 June 2017:

- The biosecurity risks associated with the importation of seafood and seafood products (including uncooked prawns and uncooked prawn meat) into Australia.

Inquiry Terms of Reference

Inquiry into the biosecurity risks associated with the importation of seafood and seafood products (including uncooked prawns and uncooked prawn meat) into Australia, with specific reference to:

- a. Management of the emergency response and associated measures implemented to control the outbreak of White Spot Syndrome Virus;
- b. The effectiveness of biosecurity controls imposed on the importation of seafood and seafood products, including, but not limited to, uncooked prawns and prawn meat into Australia, including the import risk analysis process concluded in 2009 that led to these conditions being established;
- c. The adequacy of Commonwealth resourcing of biosecurity measures including Import Risk Assessments;
- d. The effectiveness of post-entry surveillance measures and "end use" import conditions for seafood products including, but not limited to, uncooked prawns and uncooked prawn meat into Australia, since the import conditions implemented in 2010 were put into place;
- e. The impact of the outbreak on Australia's wild and farm prawn sectors;**
- f. The economic impact on Australian wholesalers and retailers;
- g. Domestic and foreign trade implications for Australian industries resulting from the suspension of importation of seafood and seafood products, including, but not limited to, uncooked prawns and uncooked prawn meat in Australia;
- h. Matters to be satisfied in the management of biosecurity risk before imports of seafood and seafood products, including, but not limited to, uncooked prawns and uncooked prawn meat into Australia could recommence;
- i. Any related matters.

The committee invites you to make a submission addressing all or some of the terms of reference for this inquiry by **13 April 2017**.

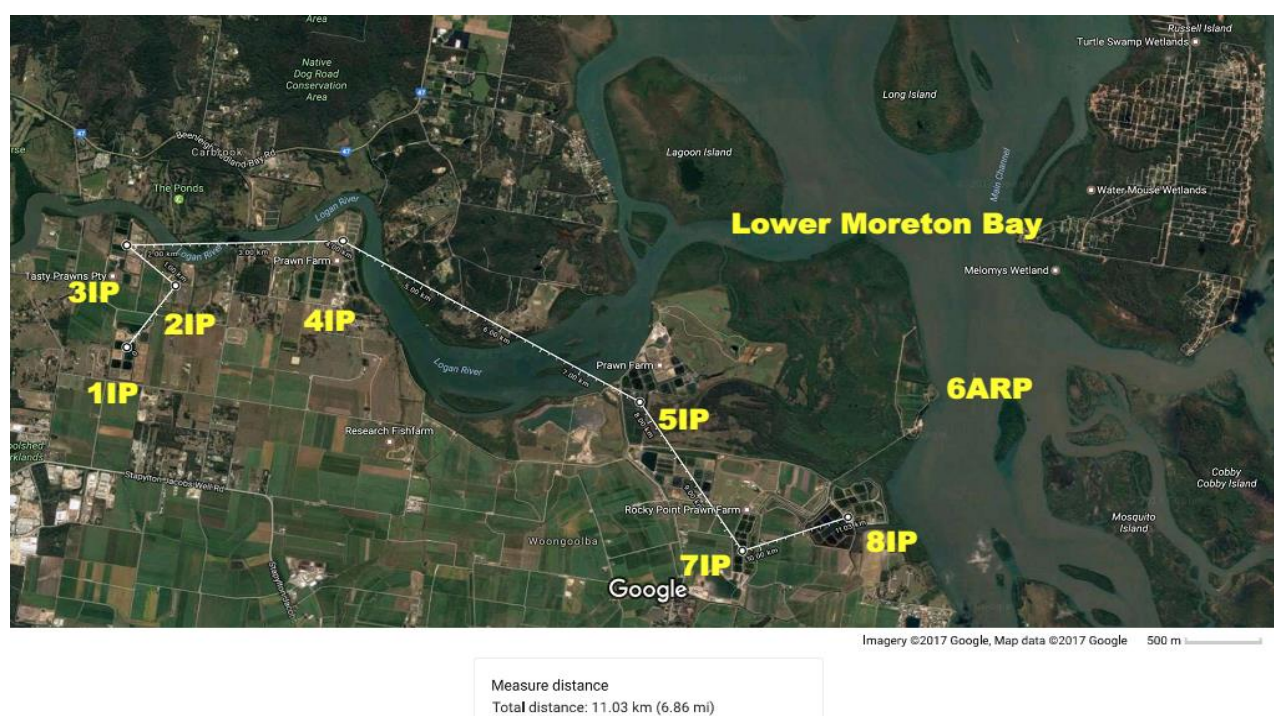
BACKGROUND

A. WSD Outbreak Timing

Since the first positive recording of the disease in early December 2016, the outbreak has had a direct financial and economic impact on prawn farms and wild fishers (prawn and crab fishers only) in the **Logan River Region and southern Moreton Bay**.

The outbreak occurred at a time when farmers and fishers were nearing their 2016-17 seasonal productivity peak, with expectations to service the forthcoming summer’s seafood demand at optimum prices.

Figure 1. Regional Map of Impacted Prawn Aquaculture Enterprises and Wild Catch Zones



B Regional Financial and Economic Scale

Farm and fisher enterprises have been impacted financially and socially by these WSD events. The emergence of WSD continues to create complex social and economic impacts on farmers, fishers, their communities and supply chain partners. This complexity drives financial impacts, direct and indirect that are still evolving.

The Logan Region is a significant contributor to national crustacean seafood supply. The three seafood product supply chains from the region are:

- **Farmed Black Tiger Prawns:** ~1,200 tonnes of farmed Black Tiger Prawns are produced each year, at a farm gate value of approximately \$24 million. This is around 25% of the value of the Australian aquaculture prawn sector.
- **Wild Catch Prawns:** ~30 tonnes of wild catch prawns are harvested annually from the Logan River and related estuary in the southern Moreton Bay. The main species (Banana, Bay, Greasyback, and School Prawns) are harvested by beam trawling at a landed value of \$250,000

per year. This harvest serves regional fresh seafood markets (~15%), and recreational and commercial fishing bait markets (~85%)

- **Wild Catch Crabs:** ~200 tonnes of wild catch crabs are harvested annually from the Logan River and related estuary in the southern Moreton Bay. The main species (Mud, and Blue swimmer crabs) are harvested with an aggregate live landed value of \$2-3 million, subject to seasonal market conditions in the main fresh seafood markets of Brisbane and Sydney.

Logan River region farmers and fishers schedule their live and fresh seafood harvests to meet peak summer consumer demand. In particular, some farms and all wild crabbers target the three festival periods when Australians increasingly seek out seafood – Christmas, Chinese New Year, and Easter.

All enterprises must now face difficult facts about today's financial position, as well as complex strategic choices to optimise tomorrow's investment returns. At the date of this report WSD treatment measures on farms are complete, but WSD *eradication* and "disease free status" are remote aspirations. The extent of the WSD virus's distribution across the regional inshore wild fishery is still a work in progress. If the disease is not proven to be eradicated in two years, the regulatory and financial imposts of *control and containment* of the disease are very onerous for Logan Region farms and fishers, and ultimately for crustacean producers across Australia.

Precise financial impacts are often difficult to determine for fishers and farmers, as they are often mixed family enterprises. For example, some prawn farm families also operate local quarrying, sugar cane or construction businesses on land within or adjacent the aquaculture license area. Farm equipment and infrastructure is shared between these activities. Some wild fishers also have operational interests in multiple harvest licences, or are part-time employees in a separate local industry. Separating the financial impacts of WSD is not always straightforward nor precise.

This report considers financial impacts on enterprises, and broader indicative economic impacts on the region. It does not consider social or community impacts.

FARM ENTERPRISES

A. Farm Enterprise Impacts

The financial and economic impact has been direct and immediate on all five prawn farming families – resulting in immediate closure of their farms and most hatcheries with total loss of stock in all growout ponds, stock in most hatcheries, and stock in breeding programs that supply some hatcheries.

Financial impacts vary greatly by enterprise type. The following table identifies both separate and integrated enterprises that undertake prawn aquaculture in the Logan Region. Regulators have formally identified and reported on eight aquaculture enterprises “at risk” or “infected”, all of which are variously included in the table.

One commercial hatchery in the region remains open, but the indirect impacts on this enterprise are uncertain. The demand from existing aquaculture farmer customers around Australia will likely be reduced as the enterprise is located within the WSD quarantine zone.

Seafood Business Family	Date of 1 st WSD Positive on Farm	Enterprise Closed and Stock Lost			Enterprise not Closed
		Farm	Private Hatchery	Breeding Program	
#1	22 Nov 2016	Farm	-	-	-
#2	9 Dec 2016	Farm	Private Hatchery	Breeding Program	-
#3	28 Dec 2016	Farm	Private Hatchery	Breeding Program	-
#4	11 Feb 2017	Farm	-	-	Commercial Hatchery
#5	28 Jan 2017	Farm	Private Hatchery		
Total		6	3	2	1

B. Financial Impacts on Farms, Hatcheries and Breeding Programs

The following data has been compiled based on confidential interviews by an independent consultant with the owners of all prawn aquaculture enterprises. The figures are aggregated to include all prawn aquaculture activity, and preserve enterprise confidentiality. The figures are best estimates based on available data.

a. Lost 2016-17 Crop

There are two approaches to estimating the crop market value lost to prawn farmers:

1. Additive value approach

Grown-out costs - Based on data from farmers, the estimated cost of production (wages, electricity, feed, post larvae, and other operating costs) to grow the lost crop to the point of destruction is \$8.1 million.

Margin foregone - If this crop had been successfully grown out to full term and sold at the farm gate at average market prices (based on prior years), the aggregate net profit margin (before tax) on this crop would have been \$12 million.

Expenditures forgone - From late November 2016, prawn farms progressively recorded positive WSD readings, prawns were destroyed, and farms and hatcheries were closed across a linear distance of 11 kms, over an 81-day period. Allowing for this transition industry estimates the aggregate crop was 70% grown out to harvest size. Assuming 30% of the growout investment (primarily for prawn feed, farm wages and farm electricity) was still to be incurred, a further \$3.5 million of farm expenditure was lost to the regional economy in wages, feed and expenses after the farm closures.

This approach indicates the total market value of the lost crop for these three elements would have been \$23.6 million (8.1 + 12.0+ 3.5).

2. Market value approach

The annual farm gate value of farmed prawns produced in the Logan Region (as noted above in the introduction, part B) is \$24 million. This is based on the estimated share of the Australian prawn aquaculture industry GVP attributable to the Logan Region.

As the virus progressed from farm to farm, some minor harvests of undersize prawns were undertaken by three farms. While most of this early harvest volume was proven to be outside market specifications (and was dumped at no commercial value), commercial sales totaling \$0.6 million were achieved across all farms for the 2016-17 crop.

This suggests that \$23.4 million (24- 0.6) is the net market value of prawns lost in the 2016-17 crop.

These two approaches both indicate the market value of the lost crop is approximately \$23.5 million.

b. Lost Hatchery and Breeding Stock

The loss of post larvae (PL) stock in the three private hatcheries (refer table above) was negligible as these seasonal operations were dormant at the time of the outbreak.

The commercial hatchery had approximately five million PLs on hand during the outbreak, none of which were lost to WSD.

However, the two farms that operated Black Tiger Prawn breeding programs in their private hatcheries lost 100% of the spawning stocks and their related genetic development capacity. The commercial value of these breeding program stocks is subject (as with stud cattle, for example) to many dynamic variables.

However in the case of prawns, this market value is not reflected in any readily available market or proxy price for prawn genetic material.

Australian prawn breeders had, until late 2016 some of the most advanced genetic family lines in the global prawn industry. The CSIRO (2015) estimated that these breeding programs would deliver “an industry yield improvement of 39% above existing industry production projections (i.e.an increase in farm gate value of \$120 million if the genetics was rolled out to industry”). The industry body, the Australian Prawn Farmers Association estimates the cumulative cash investment to establish these breeding lines over the last decade has been \$5-6 million. The destruction of the bulk of these stocks (a small proportion were kept off-site) means their genetic improvement potential for the industry has been severely constrained.

Loss of Hatchery “Area Disease Freedom” status also creates significant PL capacity shortfalls for the rest of the farmed prawn sector for the coming 2017-18 season. Farms outside the quarantine control zone are unlikely to purchase PLs (as they have in recent years) from hatcheries inside the quarantine control zone. New capital will be required promptly to build this additional hatchery capacity for farms wishing to restock in August 2017.

c. Biosecurity Upgrades

The Australian Prawn Farmers Association and the Logan farms are now working with the Qld Department of Fisheries, and the regulator (Biosecurity Queensland), to develop Minimum Biosecurity Standards for prawn farming based on global best practices in WSD impacted environments. Six farm infrastructure upgrade measures have been identified and will be required for these prawn farms (and ultimately all others in Australia) to be able to come back into production:

1. Farm design – measures to change ponds and drainage systems, to enable water to be held on farm for disinfection treatment,
2. Crab fencing – physical barriers that will stop farm entry by small crustaceans,
3. Pond lining – heavy duty plastic to seal pond walls and preclude disease vectors,
4. Bird netting – low level barriers across all production ponds to preclude birds as a disease vector,
5. Water filtration – high technology filtration systems on all waters entering and leaving the farm,
6. Hatchery upgrades – various measures including some of the measures above, and the purchase and installation of modern ozone water treatments technologies.

The estimated cost to establish this infrastructure to the agreed minimum standard for Logan region farms is \$12.6 million.

d. Care & Maintenance Costs due to Shut Down

In order to facilitate complete eradication of the WSD virus from the Australian aquaculture industry, farms and regulators are considering a closure of the affected prawn farms in the Logan Region for an 18-month period from December 2016 to June 2018.

There are a range of fixed and variable costs that enterprises will incur during the proposed 18-month Care & Maintenance shut down period. These costs are not uniform across all enterprises. Farms variously have and need to maintain:

- Minimum monthly take-or-pay contracts with power utility companies,
- Existing finance agreements with commercial banks which require monthly loan repayments,

- Farm and hatchery operating permits and licences which must be maintained,
- Ongoing farm equipment depreciation and technology obsolescence,
- Plant and equipment repairs and maintenance schedules that will be moderated as utilisation falls, but also need to include decommissioning costs. Some demobilised gear (e.g. pumps, paddlewheel aerators) in the marine environment will now be more prone to corrosive obsolescence and lose value.
- Experienced management and technical staff who are critical to aquaculture activities and will be hard to replace in 18 months-time,
- Buildings, and other infrastructure that service mixed enterprises (e.g. sugar cane, sand mining),
- Insurance policies and on-farm security systems that protect buildings, plant and equipment and strategic assets.

All enterprises have ongoing needs to retain a minimum level of accounting and administrative staff to maintain their commercial prawn aquaculture enterprises, and manage and secure prawn farm sites and infrastructure.

The estimated financial costs to decommission farms, and establish a care and maintenance program prior to recommissioning 18 months, is \$11.9 million.

C. Regional Economic Flows

a. Employment

Prawn farms provide direct full time and part time employment in the Logan Region. Based on prior years, the number of people directly employed by the impacted farms across a production year is:

- | | |
|-----------------------|-----------|
| • Full time employees | 36 |
| • Casual employees | <u>86</u> |
| • Total employees | 122 |

b. Growout Expenditures Foregone

As noted above, as the crop was not fully grown to market specifications, a further \$3.5 million of farm expenditure was lost to the regional economy in wages, feed and expenses after the farm closures.

c. Regional Service Inputs

In addition to lost input investment, there are a number of prawn farm output services that have been lost to the regional economy.

Regional cool-chain freight businesses that carry product to market have lost an estimated \$80,000 in revenue, and prawn marketing businesses that work in-store with retailers to promote prawns have lost an estimated \$90,000 in revenue.

D. Summary Financial Impact

A summary of these financial impacts on prawn farms is discussed below. The estimated cost to the industry and community of this outbreak to date is:

Cost of growing the 2016-17 crop to point of destruction	\$8.1	
Loss of hatchery and breeding stock	\$5.5	
Loss of market margin (\$12 - \$0.6 in early sales)	<u>\$11.4</u>	\$25 million
If Logan River farms are to begin farming again in future the cost of their biosecurity upgrade will be an additional investment of		\$12.6 million
If these farms are forced to remain closed for another year, the additional care and maintenances cost for that period will be		\$11.9 million
Estimated total loss		\$49.5 million

These losses are in addition to:

- potential permanent loss of 122 jobs, and
- annual loss of \$3.67million (\$3.5 + 0.08 + 0.09) that would be injected into the local supply businesses?

WILD FISHERS

A. Wild Fishery Enterprise Impacts

Since the WSD outbreak in December 2016, twelve wild fishers in the Logan River and southern Moreton Bay have been significantly impacted by the WSD outbreak. A further six in this region have been minimally impacted since that date.

For the Logan River and southern Moreton Bay Region, the wild catch fishery has an estimated GVP of \$2.25-3.25 million comprising prawns and crabs.

However, as a result of new WSD positives in the northern waters of Moreton Bay in March 2017, regulators have extended the WSD quarantine control zone across the whole of Moreton Bay including the Brisbane River. These impacts are still being assessed and “at risk” and “infected” fishers identified.

The potential impacts on commercial fishers now include all commercial fisheries of species impacted by the WSD virus. The following table summarises the already impacted (i.e. Logan Region) and the “at risk” wild fisheries elsewhere in the bay and Brisbane River, by species, harvest volume (# or kg) and GVP.

The data is drawn from the Qld Department of Agriculture and Fisheries, and presents average volumes and values over the last three years. The data indicates that the total commercial wild fishery gross value of production (“impacted” and “at risk”) across the whole extended control zone is in the order of \$20.5 million

Fishery	# Active licences	Catch	GVP	Market price \$/unit	Format
Beachworm	17	231,059 (#)	\$346,589	\$1.50	Green
Bloodworm	24	314,561 (#)	\$471,842	\$1.50	Green
Yabby	14	1,024,622 (#)	\$133,201	\$0.13	Green
Mud Crab	72	148,000 (kg)	\$2,960,000	\$20	Green
Blue Swimmer Crab	68	246,000 (kg)	\$2,460,000	\$10	Cooked + Green
Otter Trawl (banana, tiger, bay, eastern king, endeavour prawns)	73	774,530 (kg)	\$13,167,010	\$17	Cooked 80% (mostly for human consumption)
Beam Trawl (greasy back, bay, banana, school prawns)	23	181,757 (kg)	\$908,785	\$5	Green 80% (mostly to bait)
Estimated GVP at risk			\$20,447,426		

Source: Department of Agriculture and Fisheries – Fisheries Statistics

B. Financial Impacts on Wild Catch Fishers

a. Logan Region and Southern Moreton Bay

The December 2016 discovery of WSD resulted in immediate closure of Logan River and estuary waters to commercial crustacean (prawn and crab) fishers.

Independent and confidential consultation with all individual fishers and families has commenced. Operational and financial data is now being gathered from fishers, their accountants, state agencies that hold and manage confidential log book data, supply chain partners, and local input and service companies. Detailed estimates of direct financial costs and broader economic impacts are not yet available, and are expected to be clarified in May - June 2017.

For licensed commercial inshore trawl and crab fishers in the Logan River and southern Moreton Bay region this has resulted in the following operational and industry impacts:

- For all fishers, immediate loss of access to all traditional local wild catch harvest areas and volumes,
- For some fishers, the standing down and idle mooring of some vessels and equipment,
- For other fishers, the movement of their effort (i.e. vessel, equipment, captains and deck hands, infrastructure, fishery access rights, etc) to another part of Moreton Bay, the Brisbane River or elsewhere. These new fishery locations and costs (e.g. mooring and infrastructure access costs, extra fuel and on-water man-hours) are now being mapped and financial impacts estimated.
- For some fishers, additional costs incurred to chlorinate vessels, freezers, wholesale facilities, and equipment at the request of biosecurity regulators,
- For other older fishers, the decision by fishery families to bring forward retirement from the industry, and early sale or disposal of vessels and fishing rights and equipment,
- For some fishers, the closure of bait supply, wholesale and related supply chain enterprises and related forward commitments,
- Negligible loss of any inventory stocks of prawns held by any fisher for human consumption,
- For some wholesale and retail bait prawn outlets, the loss and destruction of all bait prawn inventory,
- In at least one case the fisher has temporarily left the fishing industry for employment in an unrelated industry, interstate.

The aggregate GVP of the known impacted wild commercial fishers in the Logan River and southern Moreton Bay region is less than \$5 million. Based on the aggregate direct operational and financial impacts known to date and listed above, initial direct financial impacts are estimated at less than \$3 million.

b. Northern Moreton Bay, Brisbane River and elsewhere

Crustacean fishers in the northern Moreton Bay, Brisbane River and elsewhere are likely to be impacted in ways similar to that noted for Logan and southern bay fishers.

The range and severity of financial impacts faced by fishers of other species noted in the table above, is yet to be determined.