Submission to the Innovation, Tourism Development and Environment Committee

on the

Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Bill 2019

March 2019

Submitted and directed to:

A/Committee Secretary
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By:

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[redacted]

The Australian Prawn Farmers Association (APFA) is pleased the Queensland Government is committed to encouraging best practice standards by key agricultural industries and strengthening the protection of the Great Barrier Reef (GBR).

Recognising that the consultation timeframe for submissions was quite short, APFA put forward the summary position below.

APFA supports regulation and policy that manages the real risks to the receiving environment and to the GBR and supports the agricultural industry adopting improved practices to reduce nutrient and sediment pollution load limits.

Pesticide risks from land-based agriculture and horticulture is also of major concern to aquaculture (as evidenced by the GBR Report Cards), and we query why this has remained outside the scope of this regulatory package and request that consideration be given to this important issue also.

Aquaculture and aquaculture best management practices are very different from agriculture and horticulture.

It is vital to formulate strategies that are based on evidence-based science and it has been shown that aquaculture discharge is unique in the fact that most nutrients, such as algae, are assimilated rapidly in the receiving environment. This cannot be said for other industries (horticulture and cattle) or urban runoff.

A peer reviewed comprehensive study titled "*The environmental management of prawn farming in Queensland – worlds best practice"* was undertaken by 30 scientists from several institutions, including the CSIRO, the Queensland Department of Environment and Heritage Protection, the New South Wales Environment Protection Authority, the Australian Institute of Marine Science, the University of Queensland, the, Griffith University, the University of Sydney, the University of Technology Sydney, the Marine and Freshwater Resources Institute in Victoria and the University of Maryland in the USA.

This peer reviewed multidisciplinary study was undertaken over a seven (7) year period from 1995 to 2002 and focused on the largest prawn farms in Queensland and New South Wales throughout the production cycle for several successive years. It was one of the most comprehensive analyses of the environmental management of prawn farming ever conducted.

The study focused on the origin, composition and ecological fate of waters discharged from Australian prawn farms and found that the prawn farming industry has achieved an effective balance between economic gains and conserving ecosystems, including the world heritage listed Great Barrier Reef[1].

A summary of the research along with references to the resulting 42 scientific publications and four final reports is at **Attachment 1**.

Every Australian prawn farm treats its discharge prior to either releasing it into ejection environments or recirculating it[2]. Australian prawn farms have the strictest regulations already imposed on them and they cannot

[1] Dr Nigel Preston, CSIRO et al., "*The environmental management of prawn farming in Queensland – worlds best practice",* Research Summary, 2009.

[2] Dr Nigel Preston, CSIRO, Hansard, "*Opportunities for expanding the aquaculture industry in Northern Australia*", 15.9.2015 p.23

discharge unacceptable levels of suspended solids or nutrients. The introduction of sediment ponds has also provided the industry with the opportunity to meet the strictest aquaculture discharge standards in the world[3].

Aquaculture practices do not place pesticides or herbicides into the environment, and these are shown as the main contributors to the increase in nitrogen reaching the GBR.

Any load reduction targets and/or offset system should be based on the residual nutrients measured after assimilation has been reviewed.

It is acknowledged and accepted that Australian prawn farms need to be aware of the immediate receiving environment, but again we argue that we do not contribute to the load upon the reef as our nutrients 1. Do not reach past the estuaries and 2. Do not include pesticides or herbicides. Our farms go above and beyond with ever improving technology with respect to nutrient discharge.

As mentioned, there have been many comprehensive, scientific studies into the environmental impacts of aquaculture in Queensland demonstrating no adverse ecological impacts on the receiving waters.

Australian prawn farms are carefully monitored and there are now over 20 years of independent third-party environmental monitoring that show that our companies have not caused environmental degradation.

We do not support a one size fits all requirement that all new or expanding environmentally relevant activities (ERAs) will be required to demonstrate that there will be no additional nutrient or sediment load as a result of the activity as this does not take in to account the minimal environmental impact by aquaculture and has the potential to stifle any aquaculture growth in Queensland.

Real change will come from strict licence conditions for pesticide use for horticulture/agriculture ventures that discharge into catchment areas.

The requirement for the introduction of zero net nutrient and sediment discharge for prawn farms is not borne out by the science. We regard environmental offsets as another punitive and expensive measure which could, depending on the money required for such remedial work, very well curtail any of our expansion or new development plans because of the extra cost burden.

We urge the Tourism Development and Environment Committee to review the publications and evidence-based science when considering the responses to the *Environmental Protection (Great Barrier Reef Protection Measures) and Other Legislation Amendment Bill 2019*.

We ask for assimilative capacity within individual systems for growth potential, and tighter control over those industries that currently do not require licencing.

It is vital that economic growth from responsible industries is not impeded. Imposing zero net nutrients on new or expanding prawn farms is unjustifiable.

In closing, we seek recognition that Australian prawn farming is a responsible and unique industry with limited environmental impact. If the evidence-based policy is recognised, it will allow the industry to expand and contribute significantly to the economy and regional jobs for Queensland.

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[3] Dr Nigel Preston, CSIRO, Hansard, "*Opportunities for expanding the aquaculture industry in Northern Australia*", 15.9.2015 p.21

The environmental management of prawn farming in Queensland – worlds best practice

Research Summary

The environmental management of prawn farming in Queensland – worlds best practice

The emergence of prawn farming as an economically successful industry in coastal regions of Queensland over the past two decades prompted a comprehensive, multi-disciplinary study of intensive prawn pond ecosystems, their ecological impacts on downstream environments and the development of cost-effective effluent treatment systems.

The seven year study (1995-2002) focussed on the largest prawn farms in Queensland and New South Wales throughout the production cycle for several successive years. The study encompassed a range of latitudes, discharge environments (e.g. tidal creeks and estuaries) and both flow through and recirculating water management systems.

The study integrated the research skills of 30 scientists from several institutions including CSIRO, Australian Institute of Marine Science, University of Queensland, Queensland Department of Environment and Heritage, New South Wales Environment Protection Authority, Griffith University, University of Sydney, University of Technology, Marine and Freshwater Resources Institute, Victoria and the University of Maryland, U.S.A.

The multidisciplinary study was the most comprehensive analysis of the environmental management of prawn farming ever conducted. The team developed rigorous techniques for sampling eutrophic pond ecosystems including sediment and water column nutrients and microorganisms, pond biota and abiotic variables. The application of enriched isotope nutrient labeling techniques, pioneered by the team, permitted the first accurate quantification

of the fate of feed nutrients in an intensive prawn farming system and downstream from the farm. The integrated approach adopted throughout the study also permitted the team to produce a multi-author synthesis of the dominant ecological processes in intensive shrimp ponds and adjacent coastal environments. Beyond developing a quantitative understanding of these processes the team analysed pond effluent composition and designed a cost-effective effluent treatment system based on sedimentation processes. The introduction of settlement ponds has also provided industry the opportunity to recapture water nutrients using natural biological filters.

The results of the project have been communicated via 42 refereed scientific publications and four final reports (see references).

The key elements of the study were:

- prawn pond sediment and nutrient processes (*references* 1-22)
- composition of prawn pond discharges (23)
- discharge treatment systems and environmental management (23-29)
- receiving waters - assimilation and monitoring (30-40)
- synthesis of pond processes and environmental management (41-45)
- aquaculture land use planning (46).

The key outputs of these studies were:

- Prawn pond sediment and nutrient processes rigorously quantified and modelled (1, 18)
- Pond discharge composition rigorously quantified (22, 23)
- Published the first synthesis of the dominant ecological processes in ponds and adjacent costal environments (30)
- In collaboration with industry, designed and implemented cost-effective treatment system based on sedimentation processes (24, 25, 27).

Outcomes and implications:

- All Australian prawn farms use environmental management practices, including discharge treatment systems, which enable them to meet world best practice discharge water quality.
- Progressive advances in treatment systems and practices have enabled some farms to increase their total production area with no net increase in sediment and nutrient loads discharged into receiving waters.
- Increasing production area without increasing sediment and nutrient outputs has been achieved by increasing the area of treatment ponds (in some cases up to 35% of the total pond area). There is a major opportunity to develop the next generation of discharge treatment technology to reduce the required area of treatment ponds.
- The prawn farming industry has achieved an effective balance between economic gains and conserving ecosystems, including the world heritage listed Great Barrier Reef.
- With these operating practices and regulations in place, there is significant opportunity for the industry to expand without compromising the economic and environmental sustainability of the industry.
- Broad scale desktop analysis identified 594,000 hectares of potentially optimal pond aquaculture land along the Queensland coast that would not compromise the environmental standards for the region (46).
- A fine scale land use modelling case study that enabled the expansion of an existing prawn farm adjacent to the Logan River, optimising the economic benefits of land use in the regions with no increase in nutrient or sediment discharges to the Logan River (commercial in confidence).
- For example an increase from the current 717 hectares of prawn ponds, producing 2,940 tonnes valued at $40 million to 5,000 hectares of ponds producing 30,000 tonnes valued at $400 million - would correspond to less than 1.4% of the existing sugar cane production area. The 5,000 hectares could be located within any of the 594,000 hectares of potentially suitable land between the border of New South Wales and Northern Territory border (a total distance of 13,347 km).

Scientific publications and reports - Prawn pond nutrient process, downstream impacts and environmental management options

In ponds

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