

# Market survey for selected seafood products to Australia and New Zealand

Technical Report 112

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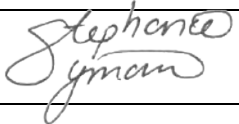
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## Acronyms

Abbreviation	Description
ACIAR	Australian Centre for International Agricultural Research
AQIS	Australian Quarantine Inspection Service
CFDA	Coastal Fisheries Development Agency
CIF	Cost Insurance and Freight
DAFF	Australian Department of Agriculture Fisheries and Forestry
DAWR	Australian Department of Agriculture and Water Resources
DWFN	Distant Water Fishing Nations
EEZ	Exclusive Economic Zone
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FAD	Fish Aggregating Device
FFA	Forum Fisheries Agency
FIA	Fishing Industry Association (PNG)
FSMA	Federated States of Micronesia
FSANZ	Food Standards Australia New Zealand
GDP	Gross domestic product
GMP	Good Manufacturing Practice
HACCP	Hazard Analysis and Critical Control Points
IRA	Import Risk Analysis
IUU	Illegal Unregulated and Unreported
MAFBNZ	Biosecurity New Zealand
MAWG	Market Access Working Group
MFN	Most-Favoured Nation
MoU	Memorandum of Understanding
MPI	New Zealand Ministry of Primary Industries
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
MT	Metric tonne
NAQIA	National Agriculture Quarantine & Inspection Authority
NGO	Non-governmental organisation
NZ\$	New Zealand dollar
NZ	New Zealand
PHAMA	Pacific Horticultural and Agricultural Market Access Program
PICs	Pacific Island Countries
PICTA	Pacific Island Countries Trade Agreement
PNA	Parties to the Nauru Agreement
PNAO	Parties to the Nauru Agreement Office

Abbreviation	Description
PNG	Papua New Guinea
POM	Port Moresby
SPARTECA	South Pacific Regional SPC Secretariat of the Pacific Community
SSOP	Sanitation Standard Operating Procedures
TAE	Total Allowable Effort
TIP	Trafficking in Persons
WTO SPS	Trade and Economic Cooperation Agreement SPS Sanitary and Phytosanitary
TSV	Taura Syndrome Virus
US\$	United States dollar
USDA	United States Department of Agriculture
WCP	Western and Central Pacific
WCPFC	Western and Central Pacific Fisheries Commission
WCPO	Western and Central Pacific Ocean
WSSV	White Spot Syndrome Virus
WTO	World Trade Organisation
YHV	Yellowhead Virus

## Executive Summary

The Pacific Horticultural Agricultural Market Access (PHAMA) programme has been requested by the National Fisheries Authority (NFA) and Fisheries Industry Agency (FIA) to undertake a market survey for a selected range of seafood products to Australia and New Zealand to assist in determining potential for export development.

Papua New Guinea (PNG) has a very large fisheries production base. In 2014 PNG exported 69,900 tonnes of marine products valued at Kina345.9 million which was predominately made up of tuna exports to Europe, though barramundi, lobsters, prawns, beche-de-mer and other marine species are exported to various parts of the world.

The commodities considered in this study as potential or improved exports to Eastern Australia and New Zealand were tuna (chilled whole, loins - fresh or frozen and canned), lobsters and prawns (tails or whole-fresh and frozen) and mud crabs (live, fresh, frozen).

Visits to Australia, PNG and New Zealand were augmented with desktop-based research and review, stakeholder consultations in PNG and the target markets, and market survey activities/interviews. As a general point of feedback most of the companies fishing and processing in PNG are interested in exporting to Australia but were unsure or sceptical of the economics of the operation.

### Australian market potential

Australia's seafood market is worth AU\$4.5 billion and growing strongly. Australian consumers are increasingly concerned about sustainability of all seafood products and it is becoming an essential element of marketing. Five of the six seafood products evaluated (barramundi, canned tuna, prawns, lobster and marine finfish) are either being exported or have reasonable prospects for export from Papua New Guinea to Australia. The sixth, live mud crabs, is not considered a feasible product for export to Australia.

**Canned tuna:** Presents good prospects although high freight rates may reduce pricing competitiveness. PNG is establishing an expanded regional tuna-processing hub with the intention of partnering with Pacific tuna-producing countries (PNA-Partners to the Nauru Agreement). It is suggested that development of the Australian market could be a stepping-stone for PNG canners as part of that expansion. This, coupled with the vastness of the available sustainable-certified (MSC-Marine Stewardship Council) resource within PNG and associated PNA waters, the recent establishment of a regional roadmap for development of the regional tuna-processing capacity and the labelling of PNA MSC canned fish by Pacificall, ensures PNG canners have a very sound base for potentially accessing the unique sustainably-based Australian market requirements.

**Recommendation:** That PNG/MSC certified canners process PNA/MSC certified skipjack and yellowfin tuna and approach Australian tuna brands for market access. World Wildlife Fund (WWF) Australia and Pacific Islands Trade and Invest should be approached for market entry assistance.

**Prawns:** PNG prawn exporters wish to explore alternative markets for their product outside of the traditional market to Japan. The Australian market offers an opportunity for PNG and was an export destination until 2007 when quarantine changes meant a loss of access for PNG. Currently PNG does not have access for whole prawns, and this will require disease surveys and a technical market submission to address. Alternatively, processed prawns (tails) could be exported but the economics of developing processing capacity to meet Australian standards would require close examination given the competition in this market sector from Asian sourced product. Sustainability certification would strengthen Australian consumers' acceptance of PNG prawns.

More recently (9 January 2017) Australia announced a six-month ban on imports of uncooked prawns and uncooked prawn meat (with some exceptions, such as product sourced from New Caledonia). This follows a reported outbreak of White Spot Disease of prawns in Australia. This will make seeking market access challenging, at least in the short-term.

Should PNG wish to develop prawn exports to Australia the following recommendations are made:

- *Develop a market access submission to Australia for whole prawns:* PNG authorities (NAQIA) should contact Australia's Department of Agriculture and Water Resources (DAWR) to confirm necessary steps and timescales for submission of an appropriate market access submission for whole frozen prawns to Australia, which will include conducting an appropriately structured



programme of testing to demonstrate freedom from White Spot Syndrome Virus (WSSV), Yellowhead Virus (YHV) and Taura Syndrome Virus (TSV).

- *Develop testing capacity for prawn viruses:* Discussions should be held between NAQIA and NFA to agree on potential capacity development needs so that prawn disease agents can be tested in PNG.
- *Obtain MSC certification for prawn fleet:* Employ a suitable conformity assessment body or consultant to do a MSC pre-assessment which will inform the industry as to any potential areas of improvement necessary to improve before proceeding to a certification assessment.
- *Develop a marketing plan for prawn exports to Australia:* The prawn business in Papua New Guinea is the second largest seafood business. The potential to increase fleet size and the development of bycatch marketing and added fish trawl business needs to be realized and promoted via a detailed marketing plan. An example of the type of marketing arrangements and considerations involved, following completion of all prerequisite requirements such as MSC and biosecurity clearance, is provided in Appendix H.
- *Promote development of a Prawn Industry Association:* To promote cooperation the prawn fishery should form an Association. This association should be an affiliate of the Fishing Industry Association (PNG) Inc. For promotional and marketing purposes the association's name should reflect the fact that the fishery is natural, wild, sustainable and totally owned by local business.
- *Memorandum of cooperation with DAWR:* Although not specific to prawns it is also recommended that PNG consider negotiating a memorandum of understanding for cooperation with Australia between NAQIA and DAWR. The agreement could consider assistance in trade facilitation and enhance co-operation and working relationships in the areas of information sharing, capacity building, market access, biosecurity, sustainable natural resources, industry development and research and development.

**Rock lobster:** Already being exported to Australia, much of which is then re-exported to lucrative Asian markets. The only recommendation that can be made is for frozen tails, which are currently a by-product from live catch wastage and from prawn fishing industry and generally are sold locally.

**Recommendation:** If a processing facility is built in Port Moresby (see recommendation under finfish section) then the lobster tails can be value-added and sold locally in Port Moresby or potentially exported to Australian or US markets.

**Barramundi:** Considered a good export prospect for Australia if farm-raised but noting the previous collapse of the wild fishery, the fragility of the stock and its importance to the local diet it is recommended that there should be no export of wild barramundi from PNG. However, the barramundi skins produced as a by-product from current limited processing has value as an export as either a finished leather product or as raw leather.

**Recommendation:** Barramundi skins should be processed for export and a working joint venture developed with a skin-processing firm in Australia. The consultant has facilitated initial contact between Daru processors and an Australian importer.

**Mud crab:** Live crab cannot be shipped into Australia so there is no market available for PNG mud crab at present. However, there is a possibility that frozen crab could be accepted in Melbourne and a trial shipment could be sent to the Melbourne markets to test market acceptance if adequate private sector interest in PNG ready exporters can be confirmed as any current export out of PNG at present is focused on the lucrative live crab market in Asia.

**Fresh tuna:** Reasonable potential for export to the Australian market and interested exporters may benefit from assistance in developing their quality assurance systems. Trial shipments will need to be conducted to test pricing and market acceptance.

**Recommendations:**

- *Assist interested exporters develop quality assurance systems:* PNG company Fair Well Fishery (PNG) Ltd. is aiming to export Grade B tuna to Australia. PHAMA could assist Fair

Well with development of a HACCP plan and training in associated quality assurance documentation (GMP and SSOPs).

- *Conduct trial shipments:* Interested tuna exporters conduct trial shipments to the Sydney Fish Market for an introduction to the Australian markets as well as Australian buyers at the markets. Suggested industry contacts at the Sydney Fish Market have been provided in the report

**Marine finfish:** Good potential for export to Australia and does not have any market access issues. The fish species are already well established in Eastern Australian markets.

Discussions with prawn companies, trawl company, fresh tuna exporters, local fish suppliers as well as barramundi farm developers indicate that a factory designed to EU and Australian processing standards would be essential for development of a seafood centre that would be efficient and help with marketing (see appendices for more detail on suggested marketing of PNG products) of PNG seafood.

Such a processing facility would enable PNG seafood businesses to provide a quality seafood product that is produced to international standards and would be accepted by any importing country. Local markets would be also able to purchase product from the centre that is increasingly being sought after by discerning residents and tourist hotels and restaurants.

To determine if such a facility should be progressed further discussion is required between industry and NFA.

**Recommendation:** That establishment of a Port Moresby-based processing facility for seafood is considered by NFA and Industry. If there is sufficient interest a feasibility study should be conducted for the proposed facility to determine its design considerations, operations, costs and potential management arrangements.

A market development programme for finfish should be drawn up involving the fishing companies and the major seafood markets in Sydney and Melbourne. This report outlines procedures that can be perfected with practical implementation under the guidance of the markets (Appendix H).

### **New Zealand market potential**

New Zealand is a significant exporter of seafood, and is one of the main suppliers to the Australian market. Its massive production base and market characteristics mean that the only seafood that has a viable market in New Zealand are those which are not caught or are only seasonally caught in New Zealand.

**Canned tuna:** It is considered that PNG canners have a good opportunity to attract NZ labels to support Pacific Island fishers and canners based on sustainability.

**Recommendation:** That PNG/MSC certified canners process PNA/ MSC certified skipjack and yellowfin tuna and approach NZ tuna brands for market access. WWF Australia and Pacific Islands Trade and Invest should be approached for market entry assistance.

**Marine finfish:** The market in NZ for fresh tropical pelagic fish is developing rapidly and prices are also robust and PNG suppliers should look carefully at this market. There is a distinct possibility of providing longline B-grade tuna and bycatch to the New Zealand Market.

**Recommendation:** Interested export ready businesses should contact the importers detailed in this report for initial introduction to the New Zealand market and trial shipments be considered.

**Prawns:** It would be difficult for PNG prawns to compete on price with other sources for the NZ market. PNG prawn industry would be better to explore market access to Australia.

**Barramundi:** Market opportunities for Barramundi are limited in NZ. Any potential PNG barramundi exporter should look at the Australian market before attempting the unknown.

**Rock lobster:** There is no opportunity seen for this product in New Zealand at this stage. The frozen lobster tail market is well catered for with what is perceived to be a superior local product. PNG should maintain its export business to Australia and on to international markets such as China.

**Mud crab:** The NZ market has potential for live crab exports from PNG however market access needs to be gained. Pricing competitiveness will need confirmation.

**Recommendation:** That PNG apply to NZ Ministry of Primary Industries (MPI) for inclusion in the pending Import Risk Analysis (IRA) by MPI on live mud crab from other Pacific countries such as Fiji. PNG Industry will then need to undertake analysis to determine if live crab exports will represent a profitable outcome. PNG exporters could approach Solander Gourmet Seafoods and Auckland Fish Market for market introduction possibly in collaboration with PT&I's Auckland office.

## 1.0 Introduction

According to PNG's National Fisheries Authority (NFA) statistics, PNG's fisheries zone is 2.4 million square kilometres. In 2014 PNG exported 69,900 tonnes of marine products valued at Kina345.9 million which was predominately made up of tuna exports to Europe, though barramundi, lobsters, prawns, beche-de-mer and other marine species are exported to various parts of the world. Total tuna exports in 2014 were valued at Kina321.3 million (US\$125.6M). A range of tuna products is exported (chilled whole, chilled or frozen loins and fillets or canned) with bulk of tuna being exported as whole fish. Approximately 1000 tonnes of prawn tails are also exported to Japan, Singapore (and previously Australia) or are sold domestically. PNG also exports barramundi, beche-de-mer, inshore reef fish, sharks, shells and shell meat, and lobsters.

Coastal fisheries are important for the domestic and subsistence economy and NFA has established sub-agencies like the Coastal Fisheries Development Agency (CFDA) to manage and develop this fishery. Overall it is believed that there is significant potential to increase the economic value of the fisheries sector through better management and development programs.

Management plans have recently been drawn up for tuna, beche-de-mer, lobster, aquaculture, Gulf of Papua prawn, sharks, longline tuna, FAD management policy, and barramundi and Torres Strait lobster. Many of these management plans are focused on fisheries production for food security, domestic and export trade. Research agencies such as NFA - Research Unit (Station) and ACIAR are assisting stakeholder in development of potential new production systems such as aquaculture and marine culture of other marine products.

Although PNG has a large tuna based fish export industry there is limited understanding of the market potential in Australia, New Zealand or PNG's other neighbours for tuna or other marine products.

During the inception phase of PHAMA, stakeholders identified priority areas for assistance in the fisheries sector as:

- Tuna to EU, strengthening compliance of health and catch certification systems, including benchmarking audits to provide a guide on compliance levels.
- Investigate market opportunities for coastal fisheries, fish/crustaceans, to Australia (e.g. crab exports).

In this context PHAMA has been requested by NFA and Fisheries Industry Agency (FIA) to undertake a market survey for a selected range of seafood products to Australia and New Zealand in order to assist in determining potential for export development.

## 1.0 Overview of Australian seafood market

Detailed analysis of fisheries statistics, various reports and trade information from Australia revealed that of the 193,000 tonnes of seafood imported in financial year 2008/9, some 250 species/products from aquaculture and wild catch fisheries, had a landed cost of AU\$1.3 billion and an estimated final sales value of AU\$4.5 billion. The business activities transacted in getting this seafood, imported by approximately 80 businesses, from the landing port to the consumer's plate added AU\$3.2 billion to the Australian economy. Almost all the imported seafood was used by the retail and the food service sector with little volume utilised for food manufacturing; utilisation of imported edible fisheries products as bait is negligible. These imported goods provided 72% of the fish and shellfish flesh consumed in Australia and underpinned more than two-thirds of Australia's employment in the seafood post-harvest sector i.e. seafood processing, wholesaling and retailing<sup>1</sup>.

Canned fish, frozen fillets, frozen whole and processed prawns and frozen squid products were the major imported items, in that order. The four most important sources were Thailand, New Zealand, Vietnam and China. Thailand alone accounted for 30% of the imported volume in 2008/9 and contributed 21% of the total Australian and imported seafood flesh consumed in that year. Thailand

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<sup>1</sup> FRDC, 2010. Fish prices and value: A marketing challenge. FRDC Fact Sheet. August 2010. [www.frdc.com.au](http://www.frdc.com.au).

was the principal source of canned tuna, frozen prawns and various highly transformed prawn products. New Zealand was the predominant source of fresh and frozen fish and fillets, and green mussel products. Vietnam was the supplier of Basa fillet and a large volume of highly processed prawns. China was also a major prawn supplier and the largest overseas source of squid.

Export potential for different seafood products that PNG currently produces is explored in the sections below.

## 2.0 Canned tuna

### 2.1 The PNG fishery

The Western and Central Pacific (WCP) tuna purse seine fishery catches almost 60% of the world's tuna. Most of the tuna fishing in the WCP occurs in the exclusive economic zones of Papua New Guinea, Kiribati, Federated States of Micronesia, Marshall Islands, Nauru, Palau, Solomon Islands and Tuvalu.

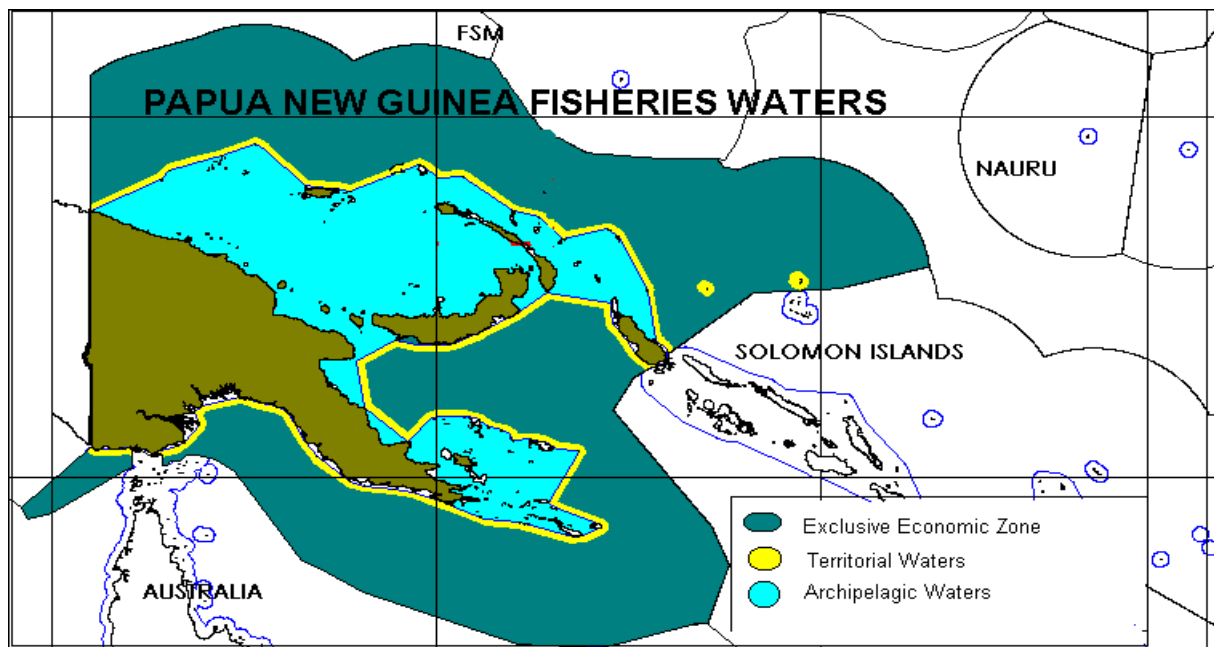


Figure 1. Map of Papua New Guinea Fisheries Waters

The Papua New Guinea fishery catches 15% of world tuna catch, represents 50% of the catch of countries participating as Parties to the Nauru Agreement (PNA- Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu) and has a sustainable catch of 720,000 MT of tuna/annum. The purse seine fleet licensed to operate in PNG waters numbered 215 purse seine vessels in 2012. This includes 53 domestic and local based and 11 FSMA vessels and 151 Distant Water Fishing Vessels (DWFNs)<sup>2</sup>

### 2.2 PNG tuna processing capabilities

Managing Director NFA John Kasu, has noted that PNG's processing facilities are purchasing 30% of the PNG catch while 70% is leaving the country unprocessed<sup>3</sup>. Of the processed catch the majority is exported to the EU while approximately 20 percent of PNG canned tuna production is consumed domestically.

New processing capacity in PNG is expected to disrupt current world tuna trade flows, create jobs in the Pacific Islands and increase competition for raw materials. Major tuna buyers and brands are

<sup>2</sup> NFA Data

<sup>3</sup> PNA Tuna Market Intelligence Issue 40, 21 June 2016

closely monitoring the developments in Thailand and PNG, as this industry shift will likely put competitive pressure on Thailand's processed tuna exports to major markets, such as the EU, US and Australia. Over the last 3 years, Australia's market has grown at a rate of 30% annually.

The ability to process tuna within the Pacific Islands can potentially shorten supply chains, improving quality, creating social and economic benefits for the Pacific Islanders, and allowing differentiation of Pacific Island products in the marketplace.

On the 4th November 2015 the PNG Minister for Fisheries, Hon. Mao Zeming announced the signing of the Dongwon Tuna Project, the 6th tuna-processing project to be built in Lae. The first three tuna projects; Frabelle, International Food Corporation and Majestic Seafoods are already operating. Nambawan Seafoods tuna project was commissioned in early 2016 and the new projects namely Hailsiheng and Dongwon will start construction in the first quarter of 2016. All of these projects once in commercial operation will, according to the Minister, process more than 1,000 metric tons of fish per day and involve more than 10,000 local jobs.

Dongwon industries operates 15 tuna purse seine fishing boats in PNG and the PNA waters and owns the Chicken of the Sea canned tuna brand, a USA icon. The Dongwon tuna project agreement requires its fishing subsidiary, Bulolo Fisheries Limited, to operate 10 purse seiners in PNG under domestic and locally based foreign flagged associated with supplying raw fish to its canned tuna factory. Two of the ten vessels will be re-flagged to PNG as domestic and 8 will be licensed as locally-based foreign flagged. Dongwon's remaining 5 vessels will remain under a foreign bilateral access arrangement.

### 2.3 World market for canned tuna

The world's largest traditional canned tuna markets – Europe and the USA – are maturing. The EU canned tuna market contracted by 5% in 2015 (although this reduction partially relates to an increase in cooked loin imports in place of finished goods). However, Pacific Island processors continue to depend heavily on the European market for light meat canned tuna and pre-cooked loin exports due to duty free access, as well as the US market for pre-cooked albacore loins.

Access to the EU market is becoming increasingly complex for Pacific Island processors due to strict regulatory requirements, particularly in relation to food safety and Illegal Unregulated and Unreported (IUU) fishing. Pacific Island processors are also facing increasing competition from other more cost-effective tuna processing sites in part due to the erosion of tariff preferences.<sup>4</sup>

PNG canners in Lae<sup>5</sup> report that European exports are being affected by the Philippines who now have duty free access and have negotiated considerably lower freights rate to EU.

Future growth in canned tuna market demand will likely stem from the Middle East, Latin America and other emerging markets such as Eastern Europe. The Forum Fisheries Agency (FFA) has previously analysed alternative markets<sup>6</sup> opportunities for Pacific Island exporters of canned tuna and pre-cooked frozen loins to access alternative markets, taking into account five factors: the dynamics of market demand, existing suppliers, tariffs and duty preferences available to PICs, non-tariff measures and freight costs.

Based on the interplay of these five factors FFA noted that no clear market opportunity is apparent for PNG exporters of canned tuna to Australia. Importantly, the Australian market is considered more cheaply supplied by competitors in terms of freight costs. Majestic Seafood Corporation Ltd of Lae indicated that this was the most important constraint at this stage with those canneries wishing to export to Australia.<sup>7</sup> This is of central importance because where a possibly significant tariff preference is apparent for PNG processors; it is probable that the freight costs alone outweigh the tariff advantage. Or as noted, in some cases, major competitors already have duty free access under existing trade agreements.

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4 FFA 2015 Assessing Alternative Markets

5 Mustafa Saleh IFC LAE Personal communication.

6 Pacific Islands Canned Tuna & Tuna Loins, prepared by Dr. Liam Campling, April 2015.

7 Wayne Adams General Manager Majestic Seafood Corporation, Lae, July 2016.

The FFA alternate market report goes on to say that even if PNG can offer an advantage of cheaper fish due to their closer proximity to fishing grounds, this appears to be countered by the other widely documented costs of doing business in island economies and lower levels of labour productivity. For example, the challenges of doing business in PNG, with high costs for utilities and poor service are exemplified by mains water supply in Lae which can be sporadic making the canneries have their own boreholes but still charged for 'stand-by fees'; similarly, electricity charges are some of the highest in the world, however, there are regular brown-outs requiring factories to have their own generators. Lae wharf is also inadequate to meet the demand of processors for unloading of around 300 tonnes per day, with priority given to cargo vessels. Frabelle have now built their own wharf to offload fish. One has the impression that PNG's inefficient state-owned enterprises are a major development obstacle.

Although there are significant negatives associated with the PNG commercial environment it is felt that the more positive attitude of the 'Roadmap' (Appendix G) and the plans in place by NFA, PNG canners armed with MSC certification and the Parties to the Nauru Agreement (PNA) MSC tuna purse seine achievements, will help overcome the barriers to export for Pacific/PNG processed tuna such as are identified in the FFA alternate markets report.

### **The Australian market for canned tuna**

The Australian market is dominated by two brands (John West and Sirena) and several other notable brands as well as the private label segment of Australia's two major supermarket chains (see Appendix B). Sustainability is an important determining marketing factor for Australian consumers.

### **Sustainability**

Sustainability encompasses environmental, social and economic pillars. To date, the global tuna industry's focus has been largely on the environmental pillar (MSC Certification), but attention is increasingly turning to social accountability, with labour issues in fishing and fish processing sectors becoming more prominent.

Thailand's fishing and seafood processing sectors have been under fire for labour rights abuses and human trafficking. However according to FFA Trade and Industry News Volume 9: Issue 3 May-June 2016 following two years running at the lowest rank in the US' Trafficking in Persons (TIP) report (Tier 3) the US Department of State has upgraded Thailand to the Tier 2 'Watch List' given its significant improvement in efforts to comply with the US' minimum standards of human trafficking, despite still not meeting minimum standards. The US' annual TIP report ranks countries into tiers according to human trafficking records – Tier 1 nations meet minimum US standards; Tier 2 are making significant efforts to meet the standards; Tier 2 Watch List are countries requiring special scrutiny; and Tier 3 are countries that are deemed to not be making significant efforts to meet the minimum standards.

In 2014, Thailand was downgraded from Tier 2 to Tier 3 following widespread allegations of human trafficking and forced labour violations in its commercial fishing and seafood processing sectors, amongst others. The Thai Government has made considerable efforts over the past two years to address trafficking issues, including revisions to fisheries and anti-trafficking legislation which strengthens penalties for traffickers and government officials complicit in trafficking crimes, enables the closure of businesses involved in forced labour and protects persons who report incidences of human trafficking. In association with efforts to combat IUU fishing, the Thai Government has established a dedicated command centre and 28 port centres that perform inspections to ensure vessels are operating legally and are not involved in human trafficking and forced labour. To avoid dropping back to Tier 3 again, Thailand will need to continue to make progress in reducing widespread forced labour in the seafood sector which is reportedly continuing to occur.<sup>8</sup>

After just one year on the Tier 2 Watch List, PNG has dropped back to a Tier 3 ranking. The State Department reports that foreign and local men are subjected to forced labour of fishing vessels operating in PNG's EEZ, amongst other violations. TIP reported that PNG authorities failed to prosecute on any trafficking offences or convict any traffickers, nor did they provide financial or in-kind support for protective services. PNG also failed to approve and implement a national action plan for human trafficking. Tier 3-rated countries like PNG risk aid or trade-related sanctions being placed on

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<sup>8</sup> Ross Davies, 'Thailand Bumped up to Tier 2 on TIP report; PNG, Myanmar downgraded', Undercurrent News, 30 June 2016. Available at: <http://www.undercurrentnews.com>

them by the US government.<sup>9,10</sup> Labour issues could raise its ugly head with markets such as Australia which lead the world in the availability of sustainably caught canned tuna on supermarket shelves.

Environmental sustainability is becoming an increasingly significant focal point for Australia's major canned tuna brands. In 2012, Greenpeace demanded John West stop using 'fish aggregating devices' (FADs). "Australians love tuna, but would be horrified if they knew the real cost of John West," said Greenpeace Ocean Campaigner Nathaniel Pelle. Simplot Australia, which owns the John West label, has responded to Greenpeace and made a commitment under its sustainable sourcing policy to only source tuna caught by sustainable fishing methods (i.e. pole-and-line and FAD-free purse seining) and from sustainable stocks. Simplot has ceased sourcing yellowfin; accordingly, 100% of John West products use skipjack, 95% of which is sourced from the Western and Central Pacific Ocean and 5% from Maldives (pole-and-line). On, Feb. 3, 2016 it was announced<sup>11</sup> that a collaborative effort by WWF, MSC and John West, will see Australians seeing over 100 million cans of clearly labelled MSC certified sustainably sourced tuna in supermarkets thus affecting a huge 43% of Australia's canned tuna. The John West Australia Sustainable Tuna Policy includes contractual measures that see all suppliers source only MSC purse seine caught skipjack tuna from the Western and Central Pacific Ocean. John West Australia has dedicated funds to WWF for on-ground conservation projects related to the John West supply chain, which aim to improve the livelihoods of coastal fishing communities in the Solomon Islands and Papua New Guinea.

By putting a label to sustainability, eco-labels are marking canned tuna with a seal of environmental safe approval. Eco-labels are given to products that are deemed to have fewer impacts on the environment than functionally or competitively similar products. The rationale for basic labelling information at the point of sale is that it links fisheries products to their production process. The goal of eco-labelling initiatives is to promote sustainably managed fisheries and highlight their products to consumers. Product claims associated with eco-labelling aim at tapping the growing public demand for environmentally preferable products. Eco-labels generally rely on life-cycle assessment to determine the environmental impact of a product 'from cradle to grave'. Usually claims appearing on a product must be preceded by a chain of custody exercise that documents that the product was derived from, for example, a fishery certified as being 'sustainably managed'.<sup>12</sup> There are a number of eco-labels in use to verify sustainability of tuna fisheries in the Pacific. Two of these dominate the Pacific tuna fisheries.

The dominant eco-label is MSC, which is an international non-profit organisation, established to address the problem of unsustainable fishing, and safeguard seafood supplies for the future. Using their fisheries certification and seafood-labelling program, MSC works with partners to promote sustainable fishing and transform markets. MSC does not address the full context of the word sustainability it only addresses the environmental aspect.

### **Marine Stewardship Council (MSC) and PNA**

On the 19th of September 2011 The PNA Western and Central Pacific skipjack tuna (*Katsuwonus pelamis*) un-associated set purse seine fishery (which includes PNG) was assessed and conformed to the requirements of the MSC principles and criteria for sustainable fishing as a well-managed and sustainable fishery. Product from the companies and vessels included within the PNA group 'Chain of Custody Scheme' only are authorised to enter into a MSC chain of custody certification programme. On 4th of February 2016 yellowfin tuna caught by the PNA Western and Central Pacific free school purse seine fishery is now eligible to carry the Marine Stewardship Council (MSC) eco -label. The Parties of the Nauru Agreement (PNA) is the first major free school purse seine yellowfin tuna fishery to achieve MSC certification. The certified fishery catches around 140,000 tonnes of yellowfin tuna a year, accounting for half of all yellowfin caught within PNA waters. This is significant and opens the way for the major brands to re-introduce canned yellowfin lines into the Australian market.

Pacific c.v. is a global tuna marketing company jointly set up by the eight PNA member countries to promote PNA and actively trade their MSC certified sustainably caught free school skipjack and yellowfin tuna. Pacific c.v. is a cooperation between The Parties to Nauru Agreement (the "PNA

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9 op.cit. US Department of State.,

10 FFA Trade and Industry News – May/June 2016

11 MELBOURNE, Australia, Feb. 3, 2016 /PRNewswire/

12 Deere, Carolyn L. (1999) Eco-labelling and Sustainable Fisheries, IUCN: Washington, D.C. and FAO: Rome.



Association”) and Sustunable B.V. (“Sustunable”) which entered into a limited partnership agreement effective 30 December 2010<sup>13</sup>. The Pacifical logo adds another dimension to the sustainable and Pacific island image portrayed on canned tuna.



Figure 2 Pacifical Logo

### Current status of Australian market

Australia’s canned tuna market is growing (47% growth from 2010-2014) and now exceeds 60,000 MT/year (~34,000 MT finished goods equivalent) see Table 1. Canned tuna represents around 80% of total canned seafood consumption (~43,000 MT) and is currently (2016) valued at around US\$350 million. Australia now imports 100% of its canned tuna since Port Lincoln Tuna Processors, Australia’s last tuna processing facility, ceased production of John West tuna in 2010. Thailand is the largest supplier, accounting for 90-97% of imports over the past five years. Indonesia is the second biggest supplier and the primary source of pole-and-line caught tuna. Small volumes are also imported from Philippines, South Korea and China.

Table 1. Australia’s canned tuna imports (in tonnes unless otherwise specified), 2010-2014

(Source: UN Comtrade 2015, from FFA)

Partner	2010	2011	2012	2013	2014
Thailand	40,286	52,024	50,623	52,602	55,363
Indonesia	409	643	1,652	3,243	4,516
Philippines	490	307	763	733	729
South Korea	107	101	79	218	237
China	209	247	250	224	113
Italy	81	130	96	124	95
Vietnam	124	115	95	77	83
Others	170	200	225	271	224
Total	41,875	53,767	53,784	57,491	61,361
Value in US\$	161,320,026	206,265,551	247,794,983	264,325,786	245,885,452

### Tariffs and non-tariff requirements

The Australian market is very open to international competition with an MFN tariff of only 5% and duty free access available to scores of countries, including those with major tuna processors (Table 2). The South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA) has been in place since 1981 and offers PICs duty free access to Australian and New Zealand markets for canned tuna. There have, however, been few gains. This can be explained by three factors:

1. As noted, the MFN duty is only 5%, and thus SPARTECA offers an insignificant competitive advantage compared to the lower cost structure of non-PIC producers;

<sup>13</sup> <https://www.msc.org/newsroom/news/pna-yellowfin-tuna-secures-msc-certification>

2. SPARTECA rules of origin (RoO) are quite demanding and have been hard for PICs to comply with;<sup>14</sup>

3. Major competitors now have duty free access to Australian canned tuna markets, making the SPARTECA advantage redundant. This includes Thailand since 2009 and the rest of the ASEAN countries since 2014 (including Indonesia, the Philippines and Vietnam).

**Table 2. Australia's tariff regime for canned tuna partners**

Partner	Tariff rate	Scheme
World	5	Most Favoured Nation duty rate treatment
Developing countries	0	Australia General System of Preferences (GSP) for Developing Countries
LDCs	0	Australia GSP for Least Developed Countries
PICs	0	Preferential tariff for Forum Island Countries (including Fiji) under the South Pacific Regional Trade and Economic Co-operation Agreement (SPARTECA)
ASEAN	0	Brunei, Myanmar, Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand and Vietnam (ASEAN)-AANZFTA - Australia-New Zealand Free Trade Area
Thailand	0	Preferential tariff for Thailand under (TAFTA) the Thailand-Australian Free Trade Agreement
Others	0	Preferential tariff for Brazil; Australia-Chile Free Trade Agreement (6 March 2009); Australia-New Zealand Closer Economic Relations Trade Agreement (ANZCERTA); Australia-United States Free Trade Agreement (AUSFTA)

## 2.4 The supporting agencies

There are several national agencies or parties regionally who have significant roles relating to PNG tuna products and their potential entry to markets. These include:

### The Papua New Guinea National Fisheries Authority (NFA)

The National Fisheries Authority (NFA) is a non-commercial statutory authority established and operating under the Fisheries Management Act 1998 and related regulations. NFA manage the fisheries in accordance with this Act and taking into account the international obligations of Papua New Guinea in relation to tuna and other highly migratory fish stocks. NFA shall, subject to the Pure Foods Act, the Commerce (Trade Descriptions) Act, the Customs Act, the Customs Tariff Act, and the Exports (Control and Valuation) Act, control and regulate the storing, processing and export of fish and fish products; and appraise, develop, implement and manage projects, including trial fishing projects; and prepare and implement appropriate public investment programmes.

### The Forum Fisheries Agency (FFA) and Secretariat of the Pacific Community (SPC)

Two key regional fisheries organizations (FFA) and (SPC) have developed 'A Regional Roadmap for Sustainable Pacific Fisheries'. This paper outlines seven clear goals for oceanic and coastal fisheries for the next ten years, as well as indicators that can be used to measure progress. To achieve these goals will require commitment by leaders to 11 strategies that will allow the region to take control of the future of their fisheries. As a 'Regional Roadmap', the strategies outlined below for tuna fisheries will be facilitated through FFA and SPC working together. The paper noted, however, that it is important that many of the issues require high-level political direction and government implementation.

The region's tuna catch in 2024 will be worth double what was in 2014. This will be achieved by increasing value rather than volume, by eliminating oversupply and targeting higher value products

<sup>14</sup> Amendments to the South Pacific Regional Trade and Economic Cooperation Agreement of 14 July 1980 (April 1989) Entry into force: 14 September 1989

and markets. In line with increased value and profitability, there will be scope to increase access fees for countries that wish to continue licensing foreign vessels.

Keeping the 'Regional Roadmap' in mind, the PNG fishery is developing along the desired track and progressing toward a sustainable fishery with good supplies of tuna, a grand tuna processing plan and is developing a regional hub that can cater for tuna from other FFA waters.

### **The Parties to the Nauru Agreement (PNA - <http://www.pnatuna.com/About-Us>)**

The Nauru Agreement, concerning cooperation in the management of fisheries of common interest, is an Oceania subregional agreement between the Federated States of Micronesia, Kiribati, the Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu. The eight signatories collectively control 25–30% of the world's tuna supply and approximately 60% of the western and central Pacific tuna supply. Historically, the Nauru Agreement and other joint fishery management arrangements made by the Parties to the Nauru Agreement have been concerned mainly with the management of tuna purse seine fishing in the tropical western Pacific<sup>15</sup>

On 16<sup>th</sup> July 2016 PNA reported that there are 198 seiners and 81 carriers under MoU so there is plenty of scope to ramp up production, which is growing as fast as demand can take it. Typically, PNA has about 12,000 MT at sea at any one time on seiners or carriers (10-12 week spread)<sup>16</sup>

### **World Wildlife Fund - Australia (WWF)**

The consultant and Pacific Islands Trade and Invest representatives visited WWF in Sydney. WWF has a Seafood Marketing programme and Jo-anne McCrea, WWF's Australian Fisheries and Seafood Manager, described the programme and offered suggestions for a way forward in the competitive canned tuna market that is being encouraged rather vigorously by the Australian consumers who are bent on buying environmentally sustainably caught canned tuna.

In Australia and throughout the oceanic region, WWF works with governments, businesses and communities and is a not-for-profit organisation with nearly 70% of their annual income donated by supporters. As part of a global conservation network, their Australian work focuses on the environmental issues that are most relevant to the region as well as the issues where Australia is best placed to take a lead.

One of the important concepts WWF has built its Australian conservation projects around is transforming consumer understanding (market transformation initiative), consequently they are focusing on improving the purchase of sustainable seafood (prawns and tuna). WWF has now implemented partnerships with major seafood businesses to bring about changes in supply chains and reduce the impacts of business operations on the environment.

As far as PNG tuna canning companies are concerned Ms McCrea emphasised that WWF only works with big players and has partnerships with leading major retailers (e.g. Coles and Woolworths) chosen because of their progressive practices and significant influence over supply chains and suggested that PNG canners that are certified and purchase fish from certified fisheries should approach the retailers with a well-presented business plan.

Ms McCrea explained that WWF have partnered with Blackmores (fish oil), Coles,<sup>17</sup> John West and Tassal<sup>18</sup> to help them transition to responsibly sourced seafood and fish oil products.

Another example that stands out in supermarkets in Australia and New Zealand is the branding on John West's canned tuna labels. John West Australia, WWF-Australia (WWF) the Marine Stewardship Council (MSC) and PNA (Pacifical)<sup>19</sup>, all came together to make the single biggest brand commitment, to help end unsustainable fishing methods within the canned tuna industry in Australia.<sup>20</sup>

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15 [https://en.wikipedia.org/wiki/Nauru\\_Agreement](https://en.wikipedia.org/wiki/Nauru_Agreement)

16 Maurice Brownjohn 2016 (16/7) pers comm..

17 [http://www.wwf.org.au/about\\_us/working\\_with\\_business/strategic\\_partnerships/coles/](http://www.wwf.org.au/about_us/working_with_business/strategic_partnerships/coles/)

18 <http://www.tassal.com.au/tassal-wins-australian-business-award-for-sustainability/>

19 <http://www.pacifical.com/articles/00082.html>

20 <http://www.prnewswire.com/news-releases/john-west-australia-wwf-and-msc-united-for-sustainable-oceans-300214359.html>

## 2.5 Canned tuna summary and recommendations

The traditional canned tuna market in Europe and in particular Germany has softened. Australia has significant canned tuna market, which could represent an alternative market although pricing competitiveness will be challenging and PNG will need to meet market requirements on sustainability.

Australia is leading the world in the availability of sustainably-caught tinned tuna on supermarket shelves responding to string customer demand. 'Sustainability' encompasses environmental, social and economic pillars. To date, the global tuna industry's focus has been largely on the environmental pillar (MSC Certification), but attention is increasingly turning to social accountability, with labour issues in fishing and fish processing sectors becoming more prominent.

The Parties to the Nauru Agreement (PNA), a group of 8 pacific island nations, which includes PNG, have formed an alliance to establish the world's biggest MSC sustainably caught free school skipjack and yellowfin tuna certified fishery. In addition, PNA has created PNA Pacifical c.v., a global tuna marketing company designed to promote PNA and actively trade their MSC certified fishery. Pacifical is cooperation between The Parties to Nauru Agreement Vereniging (the "PNA Association") and Sustunable B.V. ("Sustunable"), which entered into a limited partnership agreement effective 30 December 2010. The unprecedented scale of the MSC sustainably caught free school skipjack and yellowfin tuna certified fishery and help from WWF the MSC and Pacifical allowed John West Australia to stick to its commitment to put 100 million cans a year of sustainably tuna into supermarkets.

As PNG is establishing a regional processing hub with intentions of partnership between PNA countries, the PNA, MSC and Pacifical labels will certainly become a prerequisite for Australian canned tuna on market shelves. The brands are analysed in Appendix B and sustainability labelling detailed in Appendix F. The advantages associated with PNG processed tuna need to be demonstrated with a concerted market drive though Australian social media and NGO's such as WWF flying the sustainability and Pacific Islands banner will be essential

**Recommendation:** That PNG/MSC certified canners process PNA/ MSC certified skipjack and yellowfin tuna and approach Australian tuna brands for market access. WWF Australia and Pacific Islands Trade and Invest should be approached for market entry assistance.

## 3.0 Prawns

### 3.1 Industry background

Wild-caught prawn<sup>21</sup> make up about 45% of the global prawn supply, and generate incomes for an estimated 900,000 fishers worldwide. The rest is produced on small scale, open-air farms, mostly in developing countries where low land and labour costs can support the global appetite for cheap prawns.<sup>22</sup>

Thirty years ago, total global prawn production was less than 400,000 tonnes. In 2012, world prawn production registered a new maximum of 7.7 million tonnes.<sup>23</sup> In 2012, prawns were the largest single seafood commodity in value terms, accounting for about 15 per cent of the total value of internationally traded fishery products.<sup>24</sup>

This boom in global prawn consumption is a recent phenomenon, and tied to the explosion of farmed prawn production, especially in Asia. The quantity of aquaculture products directly consumed is now greater than that resulting from conventional fisheries.<sup>25</sup>

PNG is supplying prawns to a single buyer in Japan<sup>26</sup> Traditionally the Japanese consumer and, consequently, the wholesaler have demanded products that are natural, wild caught and as close as possible to live. This has changed with increasing Japanese population and the gradual eroding of tradition, so much so that products such as prawns, eels, abalone, seaweed, amberjack, bluefin tuna, and salmon to name a few, are farmed raised with increasing skill and attention to consumer demands for quality, sustainability in the broad sense, and price. In the case of prawns, the scale of success with world-wide farming techniques, the supply has forced the price down and made the prawn a fast seafood product.

Erosion of the Japanese yen, falling prices and the slow economy of Japan have impacted on the wild prawn market with reduced orders from the Japanese buyer.<sup>27</sup> The increased inventory in local PNG cold stores forced the PNG prawn fishing industries to look for alternate markets. The slow prawn market situation has also persuaded fishing companies to look at branding and sustainability (MSC certification) to obtain market edge. Fishing conditions have also encouraged companies to transfer effort to other fisheries (finfish trawling) and alter the balance of target species, including increasing dependency on retained species of finfish for local market and export.

Australia was an alternative market that PNG exported to until 2007 when changes in quarantine measures resulted in a loss of market access for whole prawns due to disease concerns on prawn viruses.

### 3.2 The PNG prawn fishery

The main prawn harvest is the banana prawn (*Fenneropenaeus merguianus*) and Indian banana prawn (*F. indicus*) comprising 50-60 percent, whilst black-tiger prawns (*Penaeus monodon* and *P. semisulcatus*) comprising 15-20 percent and the lesser value endeavour prawns (*Metapenaeus ensis*, *M. endeavouri*, and *M. demani*) makes up the remaining 10-15 percent.<sup>28</sup> All of the catch of larger vessels is processed on board into frozen packs for export, while the catch of smaller vessels is either processed on board or chilled and packed onshore.

The Gulf of Papua prawn fishery was one of the most valuable fisheries in Papua New Guinea but catches have fluctuated widely. In the later part of the 1990's trends in catches declined, so to maintain their economic viability fishers were increasing their illegal trawling inshore within the 3-nautical mile (5.6 km) traditional fishery zone. This resulted in irate villagers taking the situation into

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21 Holthuis, L. B. (1980) Shrimps and prawns of the world Volume I of the FAO species catalogue, Fisheries Synopsis No.125, Rome. ISBN 92-5-100896-5.

22 [http://wwf.panda.org/wwf\\_news/?201770/A-Blueprint-for-moving-toward-sustainable-tropical-shrimp-trawl-fisheries](http://wwf.panda.org/wwf_news/?201770/A-Blueprint-for-moving-toward-sustainable-tropical-shrimp-trawl-fisheries)

23 FAO, 'Yearbook: Fisheries and aquaculture statistics,' FAO, Rome, 2012 accessed 24 November 2015

24 [http://www.greenpeace.org/australia/Global/australia/15-094%20OCN%20PRA%20Report\\_LR4\\_F\\_Update.pdf](http://www.greenpeace.org/australia/Global/australia/15-094%20OCN%20PRA%20Report_LR4_F_Update.pdf)

25 [https://www.researchgate.net/profile/Morten\\_Rye/publication/236141522\\_](https://www.researchgate.net/profile/Morten_Rye/publication/236141522_)

26 Pers Comm PNG prawns companies

27 There is only one Japanese buyer for all PNG prawns.

28 <http://www.rebyc-cti.org/docevents/workplan-year1/REF05.pdf>

their own hands and boarding vessels illegally fishing within the traditional fishery zone and confiscating their catch<sup>29</sup>. The resulting continued tension between the commercial fleet and indigenous fishing communities over access, increasing fuel costs, old vessels and equipment and a mature prawn market in Japan resulted in considerable losses in economic returns. This forced the least efficient operators out of the fishery as their economic returns declined. Little information is available on annual developments but by 2016 increases in the price of fuel, and lower prawn demand from Japanese buyers due to competition from Asian prawn farms vessel helped the numbers to reduce to nine. (Table 1)<sup>30</sup>

**Table 3. PNG Prawn vessel licence, last updated 21 August 2016**

Company	Vessel Name
Nicoland Seafood	Clare
	Diane
	Diane Dos
	Diane Tres
United Seafood	Lou Aro
	Lavai No 1
	Siwi
Tatiduh Seafoods	Charisma
	Ipali

### 3.3 Current prawn exports

Prawns from the Gulf of Papua have been exported to 15 countries; Australia, China, Fiji, Guam, Hong Kong, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore, Solomon Island, Taiwan, Vanuatu, and Vietnam. Japan is the main country of export followed by Australia, Vanuatu and Korea, whilst other countries being occasional buyers.

**Table 4. Summary of prawn exports from PNG 1993-2011**

Year	Qty (kg)	Qty (MT)	Value (US\$)	Value (Kina)	Country of Export
1990	320,084	320	2,662,835	2,552,236	Japan
1991	586,239	586	5,470,767	5,209,530	Japan Australia Guam
1992	684,834	685	5,473,712	5,285,768	Australia, Hongkong, Guam, Japan, New Zealand, Vanuatu
1993	689,740	690	5,847,688	5,717,237	Australia, Hongkong, Japan, Korea, Vanuatu,
1994	577,608	578	6,008,264	6,003,077	Australia, Japan, Solomon Is, Vanuatu, Vietnam
1995	720,483	720	7,284,995	9,532,392	Australia, Japan, Malaysia, New Zealand, Solomon Is, Vanuatu

<sup>29</sup> [http://aciir.gov.au/files/node/14130/biology\\_and\\_status\\_of\\_the\\_prawn\\_stocks\\_and\\_trawl\\_f\\_64244.pdf](http://aciir.gov.au/files/node/14130/biology_and_status_of_the_prawn_stocks_and_trawl_f_64244.pdf)

<sup>30</sup> Personal communication. Paul Apio, Jacob Kamau, Augerea Kilalema.

1996	708,410	708	5,639,436	7,359,716	Australia, Japan, Korea, Malaysia, Taiwan, Vanuatu
1997	537,405	537	4,807,953	6,876,792	Australia, Japan, Korea, Singapore, Taiwan, Vanuatu
1998	905,592	906	8,703,967	18,424,518	Australia, Japan, Philippines, Singapore, Vanuatu
1999	806,338	806	6,928,693	17,828,815	Australia, Fiji, Japan, Vanuatu
2000	929,183	929	8,134,705	21,806,919	Australia, China, Fiji, Hongkong, Solomon Is
2001	992,778	993	8,509,232	28,770,367	Australia, Japan, Vanuatu
2002	803,795	804	6,344,185	24,629,541	Australia, Japan, Korea, Vanuatu
2003	859,611	860	6,143,671	22,014,540	Australia, Japan, Vanuatu
2004	619,384	619	4,163,854	13,393,992	Australia, Japan, Korea, Vanuatu
2005	520,581	521	4,038,831	12,538,943	Australia, Japan, Korea, Solomon Is, Vanuatu
2006	284,579	285	2,281,002	6,948,431	Australia, Japan, Korea
2007	401,711	402	3,371,809	9,996,683	Australia, Japan, Korea
2008	389,614	390	4,522,757	12,135,071	Japan
2009	198,471	198	1,931,772	5,239,870	Japan
2010	651,263	651	4,800,007	13,077,781	China, Japan, Korea, Taiwan
2011	439,264	439	2,952,173	6,831,343	China, Japan, Taiwan

### 3.4 Australian prawn market

Australia imports prawns from 21 countries.<sup>31</sup> Vietnam is the largest source of imported prawns in Australia, followed by China and Thailand, with Malaysia also on the rise. In three decades, global production of prawns has increased almost twenty-fold and demand shows no signs of abating. The market price of imported prawns, once a luxury item, has plummeted and Australians now eat about as many tonnes (about 50,000) of prawns every year, as they do of canned tuna.<sup>32</sup>

The Australian industry struggles to compete with vast quantities of cheaper imported prawns that are not differentiated from Australian at point of sale due to Australia's inadequate food labelling laws. This situation will undoubtedly come to a head with pressure exerted by media<sup>33</sup>, NGOs and lobbying from the Australian councils and associations for wild caught<sup>34</sup>,<sup>35</sup> and farmed<sup>36</sup>, prawns.

Woolworth's long-term aim is to have all wild-caught seafood certified by the Marine Stewardship Council (MSC) or equally credible certification schemes.<sup>37</sup>

#### Australian public and the desire to eat sustainable seafood

'Sustainability' encompasses environmental, social and economic pillars. To date, the global industry's focus has been largely on the environmental pillar, but attention is increasingly turning to social

31 Australian Bureau of Statistics (ABS), 'International Merchandise Trade: Customised report,' 2015, prepared for Greenpeace Australia Pacific

32 <http://www.greenpeace.org/australia/en/what-we-do/oceans/resources/reports/Dodgy-Prawns/>

33 <http://www.sbs.com.au/programs/whats-the-catch>

34 <http://www.prawncouncil.com.au/meet-us>

35 <http://npfindustry.com.au/>

36 <http://apfa.com.au/>

37 [http://www.woolworthslimited.com.au/page/A\\_Trusted\\_Company/Responsible\\_Sourcing/Sustainable\\_Fish\\_and\\_Seafood/](http://www.woolworthslimited.com.au/page/A_Trusted_Company/Responsible_Sourcing/Sustainable_Fish_and_Seafood/)

accountability, with labour issues in seafood catching processing sectors becoming more prominent<sup>38</sup>. When it comes to canned tuna Australians are leading the way.

Below are reflections of publicly reported views indicative of increasing importance of sustainability to Australian consumers.

### **SBS<sup>39</sup>**

Most of the prawns from SE Asia are farmed. Establishing prawn farms involves widespread clearing of mangrove swamps. Prawns live on a commercial feed made partly from fishmeal, a product that usually contains ground up wild marine animals specifically targeted and trawled from the sea floor. Workers migrating from Burma, Laos and Cambodia pay brokers to smuggle them over the border and secure them jobs in factories in Thailand, instead, many are sold into slavery, kept out at sea on fishing boats for long periods of time and unable to escape. Many of the prawns imported from S.E Asia thus come from unsustainable sources. The solution according to SBS: "Prawns are a delicacy we just might have to eat less of until a solution to producing them sustainably is found. Choose Australian farmed prawns and, occasionally, wild Australian caught prawns that come from certified fisheries."<sup>40</sup>

The Marine Stewardship Council has certified the Northern Prawn Fishery in Northern Australia as sustainable and the Australian Marine Conservation Society lists farmed Australian prawns from Queensland, New South Wales, Western Australia and the Northern Territory as a better choice. They have found that prawn farms in these areas are generally well managed and that the waste generated by prawns causes only limited pollution to surrounding waterways.

### **Greenpeace**

For a number of reasons when most Australians are purchasing prawns or other seafood, they are unlikely to be given enough information to make an informed choice about where their seafood comes from, how it was produced, or even what species it is.<sup>41</sup> Environmental problems and labour issues in farm raised prawn production in SE Asian countries have been highlighted by NGOs as being problematic and as such these should be identified so that Australian buyers can choose to buy them or not. Greenpeace notes that when Australians buy cheap Asian prawns, they could be supporting human trafficking and environmental destruction.

### **WWF**

Very few prawn stocks appear to be stable. Examples of stocks harvested to optimal levels include fisheries in Australia, the U.S., and two stocks in Mexico (Pacific and Atlantic brown prawn). Papua New Guinea fishery is sustainable and not yet harvested to optimal levels. All other stocks are experiencing strong declines. In fisheries with open access regimes (e.g. India, Indonesia, Vietnam, Mexico, Nigeria, and Guyana) fishing effort may need to be cut by at least 50 percent in order to restore fisheries to sustainable levels<sup>42</sup>. WWF considers MSC to be the world's best standard for sustainable wild-caught seafood

## **3.5 Market potential for PNG prawns in Australia**

### **Shortfall in Australian supply of prawns**

The Australian appreciation of prawns has grown considerably.<sup>43</sup> This has put a huge strain on Australian wild prawn resources. In the 1970s, production of seafood from Australian waters peaked at about 250,000 tonnes per annum, but was simply not sustainable at that level. The depletion of some prawn stocks, and the potential for long-term damage from over-fishing, has forced significant reductions in effort in the past thirty years, towards more sustainable catches especially in the northern prawn fishery. Catch constraints are not the only problem facing Australian fishermen. High operating costs means much of Australia's seafood has to be sold to high-priced export markets such as Japan

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39 <http://www.sbs.com.au/programs/article/2014/10/06/thai-prawns>

40 <http://www.sbs.com.au/programs/article/2014/10/06/thai-prawns>

41 <http://www.greenpeace.org/australia/en/what-we-do/oceans/resources/reports/Dodgy-Prawns/>

42 <http://www.worldwildlife.org/industries/tropical-shrimp>

43 [http://www.seafoodimporters.com.au/about\\_IS.php](http://www.seafoodimporters.com.au/about_IS.php)



and China to be economically viable. So, with a natural shortfall in supply to start with, and a necessity to export what they catch and grow, there is a huge shortfall in meeting their own domestic market requirements. This does present a potential opportunity for PNG prawns.

### **Sustainability (environmental, social and economic)**

Taking into account the developing media war against the “dodgy”<sup>44</sup> prawn farming and fishery of a large proportion of SE Asian prawn operations, Papua New Guinea prawns will fare well as they are caught sustainably with labour conditions in tune with PNG law. The fishery appears to mimic the Australian Northern Prawn Fishery so that with good publicity and media exposure the PNG fishery should appeal to the Australian market. Vessel economics will have to be studied but one of the positive factors with vessel operational costs in PNG is that operational costs other than fuel can be significantly lower than an Australian counterpart.

The Gulf of Papua Prawn Fishery provides only the second example in the world of a fishery that uses a maximum economic yield (MEY) target; the Northern Prawn Fishery in Australia is the first. The Gulf of Papua prawn fishery has the advantage of not being over-exploited to begin with, so that rather than undergoing the painful process of industry restructuring to rebuild stock to obtain MEY, the National Fisheries Authority has only to provide conditions conducive to increasing fishing capacity. This can be done with the current fleet size and, indeed, reaching MEY catch levels will increase profits and maintain, if not increase, employment levels. Cooperation between the commercial fleet and the indigenous owners<sup>45</sup> of the inshore fishery ensures added profitability and the sharing of gains from this productive area. Both of these actions, establishing the right target and ensuring sound cooperation between relevant stakeholders, should provide welcome win-win outcomes for Papua New Guinea.<sup>46</sup>

### **PNG private sector factors**

Players in the PNG prawn industry are interested in obtaining market access to Australia. United Seafood in personal discussions explained that prawn prices had remained flat in Japan and orders had fallen off leaving them with large frozen inventory and resulting desire to encourage NFA to fast track the acceptance of frozen prawns into Australia. Indications are that the export of prawns to Australia by the prawn companies is feasible but the consultant could not verify this with detailed analysis as time was limited to two one-hour office visits. It was also felt that United Seafood and the other two companies were comfortable with the business possibilities in Australia if they could get there. They had not done their homework on processing or value-adding to prawns and would seek assistance as a united group if this turned out to be necessary should access for whole prawns not be achievable. Once approval was made for export to Australia it is felt that the capacity to fulfil orders and to fill shipping containers is viable.<sup>47</sup>

With regard to the economic feasibility of the PNG industry, as shown with the MEY economic studies<sup>48</sup> the first and most important economic factor affecting profitability of a fishery is the catch. The fishery must remain economically sustainable. The second and very important factor is the business of operating a vessel to produce a profit. Money is the common dominator in nearly all business objectives. Economic concepts and tools are valuable to business objectives and usually fisherman and small scale fishery business managers' lack training in these concepts and survive by working by the seat of their pants. This may well have been the reason behind the survival of the existing three prawn businesses in PNG.

Advantages PNG prawn business operators may have over their Australian counterparts and to their profitability could be in more favourable catch/hour rates and general operating costs.

A good generic business study on the operating costs of a typical PNG prawn fishing vessel and business would be an excellent way of assisting in the continued survival and sustainability of these businesses.

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44 <http://www.greenpeace.org/australia/en/what-we-do/oceans/resources/reports/Dodgy-Prawns/>

45 Pers. Comm, PNG Boat Owners. (August 2016)

46 Managing the Gulf of Papua prawn fishery: sustainability, maximum returns and cooperation between commercial fishing and indigenous fishing communities Tom Kompas and Ron Kuk [https://crawford.anu.edu.au/pdf/staff/tom\\_kompas/Kompas\\_Kuk\\_PEB.pdf](https://crawford.anu.edu.au/pdf/staff/tom_kompas/Kompas_Kuk_PEB.pdf)

47 United Seafoods Managing Director, personal communication.

48 Pacific Economic Bulletin Volume 23 Number 1 2008 © Asia Pacific Press

### Improving Industry Cooperation.

There are three prawn companies in PNG and with the good business and personal relationships the companies appear to have, there is good reason for them to form an association to provide a means of formal representation for the industry and focal point for consultation with government. This association should be an affiliate of The Fishing Industry Association (PNG) Inc. For promotional and marketing purposes the association's name should reflect the fact that the fishery is natural, wild, is sustainable and totally owned by local business.

## 3.6 Market access issues

### Biosecurity issues - prawn viruses

In 2007 Biosecurity Australia introduced interim requirements that imported prawns and prawn product should be sourced from the country or zone that is recognised by Australia to be free of white spot virus (WSSV), Infectious Hypodermal and Hematopoietic Necrosis Virus (IHHNV), Yellow Head Virus (YHV) and Taura Syndrome Virus (TSV). If this could not be proven, then the prawns should be highly processed or cooked. This resulted in exports of PNG prawns to Australia ceasing. The interim measures were confirmed by findings of an Import Risk Analysis (IRA) in October 2009.<sup>49</sup> In 2009 PNG did undertake some prawn testing to try and demonstrate freedom (see Appendix L for test results detail) however a comprehensive programme was not completed or follow up verification visits sought from Australian authorities.

Current Biosecurity Import Conditions system (BICON) conditions<sup>50</sup> for whole or partially peeled uncooked prawns into Australia are that they can only be imported from countries or zones that are free from all of the following disease agents:

- White Spot Syndrome Virus (WSSV)
- Yellowhead Virus (YHV)
- Taura Syndrome Virus (TSV).

Until PNG were to gain recognition as being free of these disease agents any imports of whole frozen prawns from PNG will be subject to mandatory on-arrival virus batch testing. This is not considered to be an acceptable basis on which to look to establish commercial exports.

Prawns processed to remove head and shell (prawn tails) are able to be imported into Australia. However, this would require substantial investment on the part of PNG companies. This product would compete directly with the Asian farmed prawn, which is developing rapidly and efficiently with production of the Vietnamese industry for example expected to increase to 60-100 tonnes a hectare compared with 15 tonnes in Australia. This would mean that such processed PNG product may not be price competitive.

An investment to develop PNG prawn processing capacity would entail PNG industry to consider following steps:

- Assess if it is worth exporting to Australia.
- Build a factory or processing area that would pass and biosecurity Australia audit.
- Ensure that the vessels would pass biosecurity Australia audit
- Buy equipment from Thailand or China for processing prawns to biosecurity Australia's requirements.
- Find an organization that will set up and train PNG operators in processing techniques.
- Develop quality assurance program and train staff in QA.

At this stage, it is considered worthy of first investigating the potential to re-establish market access to Australia for whole prawns.

Since original writing of this report, Australia announced on 9 January 2017, a six-month ban on imports of uncooked prawns and uncooked prawn meat (with some exceptions, such as product sourced from New Caledonia). This follows a reported outbreak of White Spot Disease of prawns in Australia. This will make seeking market access challenging, at least in the short-term view.

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<sup>49</sup> Biosecurity Australia (2009) Generic Import Risk Analysis Report for Prawns and Prawn Products. Biosecurity Australia, Canberra, Australia.

<sup>50</sup> <https://bicon.agriculture.gov.au/BiconWeb4.0>

Details of the ban are given under:

<https://bicon.agriculture.gov.au/BiconWeb4.0/ViewElement/Element/Alert?elementPk=566619>

## Commercial Requirements – Sustainability

### *MSC certification*



Figure 3. MSC logo

Achieving certification of the Gulf of Papua (GOP) wild caught prawn fishery to the MSC Fisheries Standard is almost a prerequisite for products such as prawn and tuna to enter the Australian market<sup>51</sup>. The consultant is of the opinion that without MSC certification then any marketing of PNG prawns will be affected. The long-term objective should be to show that all PNG marine commodities are sustainable.

Contact with MSC's Bill Holden, Senior Fisheries Manager - Oceania & SE Asia.<sup>52</sup> Indicated that he recommended the PNG prawn fishery undertakes a pre-assessment exercise using a conformity assessment body<sup>53</sup> or using a consultant to complete it using the MSC template.<sup>54</sup> Suggested potential providers were:

Duncan Souter [dsouter@mragasiapacific.com.au](mailto:dsouter@mragasiapacific.com.au)

Duncan Leadbitter [dleadbitter@fishmatter.com.au](mailto:dleadbitter@fishmatter.com.au)

Richard Banks [richard@consult-poseidon.com](mailto:richard@consult-poseidon.com)

Peter J Trott [ptrott@fishlistic.com](mailto:ptrott@fishlistic.com)

### *World Wildlife - Australia*

Once MSC certification and market access are in place, WWF can be approached to assist in the development of marketing in the Australian market. Because of the size of the export potential a partner like WWF will be required to access the markets to assist with image in the market and acceptance by consumers.



Figure 4. WWF logo

## 3.7 Recommendations

PNG prawn exporters wish to explore alternative markets for their product outside of Japan. The Australian market offers an opportunity for PNG prawn exports and was an export destination until 2007 when quarantine changes meant a loss of access for PNG. Currently PNG does not have access for whole prawns, and this will require disease surveys and a technical market submission to address.

<sup>51</sup> Appendix G

<sup>52</sup> Bill Holden <Bill.Holden@msc.org> Thursday, 18 August 2016 1:04 PM

<sup>53</sup> <http://www.accreditation-services.com/archives/standards/msc>

<sup>54</sup> <https://www.msc.org/documents/scheme-documents/forms-and-templates/msc-pre-assessment-reporting-template-v2.0/view>

Alternatively, processed prawns (tails) would have access but economics of developing processing to meet Australian standards would require close examination given the competition in this market sector from Asian sourced product. Acceptance of PNG prawns by Australian consumers would be strengthened by seeking sustainability certification.

Since original writing of this report Australia has announced on 9 January 2017, a six-month ban on imports of uncooked prawns and uncooked prawn meat (with some exceptions, such as product sourced from New Caledonia). This follows a reported outbreak of White Spot Disease of prawns in Australia. This will make seeking market access challenging, at least in the short-term view.

Should PNG wish to develop prawn exports to Australia the following recommendations are made:

**Develop a market access submission to Australia for whole prawns:** PNG authorities (NAQIA) should contact Australia's DAWR to confirm necessary steps and timescales for submission of an appropriate market access submission for whole frozen prawns to Australia, which will include conducting an appropriately structured programme of testing to demonstrate freedom from:

- White Spot Syndrome Virus (WSSV)
- Yellowhead Virus (YHV)
- Taura Syndrome Virus (TSV).

**Develop testing capacity for prawn viruses:** Discussions are held between NAQIA and NFA to agree on potential capacity development needs so that prawn disease agents can be tested in PNG.<sup>55</sup>

**Obtain MSC certification for prawn fleet:** Employ a suitable conformity assessment body or consultant to do a MSC pre-assessment which will inform the industry as to any potential areas of improvement necessary to improve before proceeding to a certification assessment.

**Develop a marketing plan for prawn exports to Australia:** The prawn business in Papua New Guinea is the second largest seafood business. The potential for increase in fleet size and the development bycatch marketing and added fish trawl business needs to be realized and promoted. With the addition of MSC, a value-added factory and endorsement of sustainability a detailed marketing plan needs to be developed. The assistance of PHAMA, Pacific Island Trade and Invest and WWF should be encouraged and stakeholders' agencies kept in the loop on development of a 'green light' for PNG prawn exports to Australia. An example of the type of marketing arrangements and considerations involved, following completion all prerequisite requirements such as MSC and biosecurity clearance<sup>56</sup>, is provided in Appendix H.

**Promote development of a Prawn Industry Association:** To promote cooperation the prawn fishery should form an Association. This association should be an affiliate of The Fishing Industry Association (PNG) Inc. For promotional and marketing purposes the association's name should reflect the fact that the fishery is natural, wild, is sustainable and totally owned by local business.

**Memorandum of cooperation with DAWR:** Although not specific to prawns it is also recommended that PNG consider negotiating a memorandum of understanding for cooperation with Australia between NAQIA and DAWR. The agreement could consider assistance in trade facilitation and enhance co-operation and working relationships in the areas of information sharing, capacity building, market access, biosecurity, sustainable natural resources, industry development and research and development.

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<sup>55</sup> Aquina personal comm.

<sup>56</sup> Appendix G

## 4.0 Barramundi

### 4.1 The fishery



**Figure 5. Barramundi**

Barramundi, (*Lates calcarifer*) is a large anadromous species that is prized for its flesh throughout the Australasian region and in PNG occurs along the southern coast in estuarine and mangrove fringed rivers west of Port Moresby.

Barramundi fishing has previously been an important economic activity in the Fly River and the adjacent coastal region of Papua New Guinea's Western Province. Barramundi has also been an important food source in the region. The commercial barramundi fishery was established in the late 1960s and early 1970s, with processing and distribution centres set up in the province. By 1969 there were a number of commercial operations established<sup>57</sup> A Daru-based artisanal coastal fishery was using gill nets to target mainly adult barramundi that were migrating to breeding grounds west of Daru near Sigabaduru village during September–January (late dry season – early wet season). Gill nets are highly selective. Fish that are smaller than the target size are able swim through the net, while larger fish do not get caught in the mesh. The size of the fish caught therefore depends on the mesh size.

Refrigerated fishing vessels were operating with their own gill nets and also bought catch from artisanal fishers. Village-based freezers of five tonnes capacity had been set up at selected villages in the middle Fly River and the Fly River mouth regions. These freezers were operated by village cooperatives that sold their catch to the Daru wholesalers or the refrigerated boats. By the mid-1980s, the total catch of the commercial fishery had reached around 200–300 tonnes/year, caught mainly in the Daru area. However, the annual catch of the Daru-based fishery declined significantly in the early 1990s, to as low as 4 tonnes/year. This decline led to the closure of much of the commercial fishery.

Following the decline in the total catch and the subsequent collapse of the commercial fishery, the Australian Centre for International Agricultural Research (ACIAR) provided funding for research project FIS/1998/024 on 'The biology, socioeconomics and management of the Barramundi fishery in the Fly River and adjacent coast of Papua New Guinea'. The ultimate objective of the project was to develop a draft 'barramundi fishery management plan' for PNG that was acceptable to all stakeholders.<sup>58</sup> The fishery is now operating under a management plan.<sup>59</sup>

#### The Management Plan

The objectives of the NFA Barramundi Management Plan are to protect the barramundi stock in the management area from depletion or stock decline and to ensure sustainable fisheries development practices for the participation and benefit of traditional resource users. A management arrangement has been outlined and this notes that the barramundi fishery will be managed through the formation of a Barramundi Management Advisory Committee (BMAC). This committee shall advise the Managing Director or the National Fisheries Board on the management of the fishery and shall comprise representatives of NFA, fishing industry, aquaculture, recreational fishing, Ok Tedi

<sup>57</sup> Blaber S. 2003. FIS/1998/024. ACIAR: Canberra.

<sup>58</sup>[http://aciarc.gov.au/files/node\\_export/the\\_biology\\_socioeconomics\\_and\\_management\\_of\\_the\\_14741.pdf](http://aciarc.gov.au/files/node_export/the_biology_socioeconomics_and_management_of_the_14741.pdf)

<sup>59</sup> NFA Barramundi Fishery Management Plan 10/May/2004

Foundation, local resource owners, and the Western Province Administration. A final paragraph specifies that a BMAC shall not include any elected political office holders from the national and provincial government or person nominated for such office.

A Total Allowable Catch (TAC) shall be set at 260 per annum (whole weight) for the areas in the sea and estuarine areas between the boundaries of coastal mainland Irian Jaya/PNG border to the border of Western and Gulf Provinces, and Rivers and Lakes: the waters of the rivers and lakes of Western Province.

If the catch from the Coastal Fishery exceeds 60% of the TAC in any one year, then the TAC shall be subject to review. NFA will close the fishery as soon as the TAC is reached.

## 4.2 The markets

Barramundi was once the fourth most valuable export commercial fishery in Papua New Guinea (PNG), with total catches exceeding 200 tonnes/year. In the early 1990's however, the unregulated commercial operations collapsed because catches had plummeted and by 2000 was down to 23.5 tonnes valued at around Kina402 000; export in 2001 was 21.5 tonnes valued at around Kina353 000; 2002 was 31.5 tonnes valued at about Kina600 000 while the 2003 export was 10.6 tonnes valued at around Kina230 000<sup>60, 61</sup>.

Although the commercial fishery has virtually ceased, the fish nevertheless remains important economically for artisanal fishers in PNG's Western Province. In a recent visit to Daru Island by the consultant, Maru Marine Ltd Quality Control officer Jennifer Pamuan indicated that barramundi catches were still extremely poor.<sup>62</sup>

The main market for barramundi remains local with markets in the mines and cities. According to local sources<sup>63</sup> the local demand is not satisfied and there is need for a seafood market where barramundi fillets can be purchased.

There is an Australian export market for barramundi skins for leather and according to the manager (Efran Adie)<sup>64</sup> of the barramundi hatchery in Daru, large numbers of skins are dumped at sea when processing occurs at Daru.



Figure 6. Purse made from barramundi skin

## 4.3 Recommendations

Noting the previous collapse of the fishery, the fragility of the stock and its importance to the local diet it is recommended there should be no export development work of wild caught barramundi from PNG.

The barramundi skin currently produced as a by-product from existing small scale processing at Daru Island has potential value as an export as either a finished leather product or raw leather. Support for facilitating sales of this product should be undertaken. As an initial step the consultant has linked management of Daru Island based processors with a potential Australian based importer. Contact below:

Gary Polygerinos

60 NFA data

61 <http://www.fao.org/fti/oldsite/FCP/en/PNG/profile.htm>

62 Stone, August 2016, Personal information.

63 Ian Middleton, United Seafoods and NFA staff.

64 efran.adie@gmail.com

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Aquaculture of barramundi has a strong future as shown by the success of the Asian farmed barramundi in the Australian market. As aquaculture based production of barramundi in PNG increases to levels that may exceed domestic demand there may be potential to assist with technical aspects of processing and marketing for the Australian market where fresh, skinless fillets have a ready market.

## 5.0 The ornate tropical rock lobster

### 5.1 The fishery



**Figures 7 and 8. Ornate tropical rock lobster**

The ornate tropical rock lobster (*Panulirus ornatus*) also known as tropical rock lobster, is distributed across the Torres Strait between Australia and Papua New Guinea (PNG) and supports important commercial and traditional fisheries to the indigenous fishers of the Torres Strait Islands and the adjacent coastal villages of PNG. The annual value of the catch from this fishery was about \$A15 million in 2005 and provides a major source of income for Torres Strait traditional inhabitants on both sides of the border.

Most commercial fishing for tropical rock lobster occurs on the northern Warrior Reefs (Silver, Wapa & Kokope Reefs) of Torres Strait Protected Zone. The lobster fishery forms part of the same stock shared with Australia. The fishery provides a major source of income for inhabitants of Daru and the surrounding coastal villages.



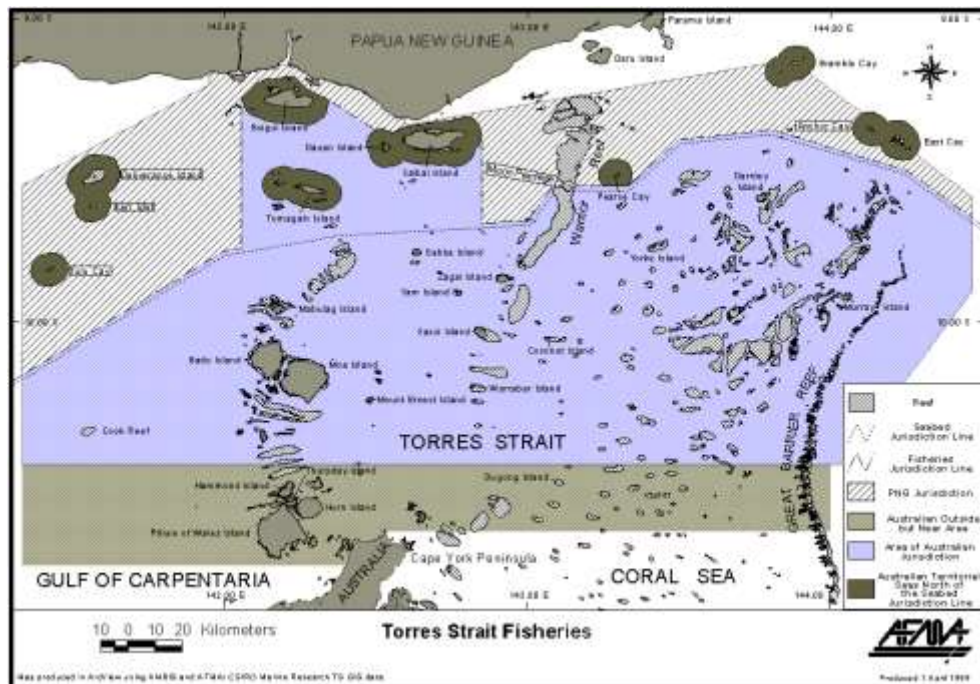


Figure 9. Map showing area of the Torres Strait Tropical Rock Lobster Fishery, including areas of PNG jurisdiction but excluding PNG areas outside but near the Torres Strait Protected Zone.<sup>65</sup>

The lobster fishery in the Torres Strait is one of the six fisheries managed under Article 22 of the Torres Strait Treaty, which was ratified between Papua New Guinea (PNG) and Australia in 1985. The Treaty's main objective is to preserve the fishery for traditional inhabitants of Torres Strait. There is limited entry for non-traditional inhabitants and expansion is strictly reserved for traditional inhabitants. A limit of 7 licensed freezer vessels is allowed to operate in the fishery at any one time. A catch sharing agreement with Australia allows PNG divers to catch 25 % share from Australian side of the Torres Strait Protected Zone. To conserve the breeding populations, a ban on trawling for lobsters in both Australia and PNG waters was imposed in 1984.

There are four main companies that operate seven vessels that freeze product at sea; each of these vessels supports a number of dinghies. More than 90% of the fishing occurs at three reefs: Silver, Wapa and Kokope, with some fishing at Gimini, Parama and the fringing reefs of Daru. Divers operate year-round with no significant seasonal cycle to effort. There are currently over 500 divers involved in the fishery. Many of these are shore based artisanal fishermen and operate from dinghies with onboard motors. Shore-based divers return their catch to one of two processors on Daru.

### Management Plan<sup>66</sup>

The Tropical Rock Lobster Fishery is managed nationally, which includes Article 22 and 23 of the TSPZ Treaty Arrangement between PNG and Australia.

The NFA Torres Strait and Western Province tropical rock lobster fishery management plan applies to the tropical rock lobster fishery in the Torres Strait Protected Zone (TSPZ) under the jurisdiction of the State of Papua New Guinea, Western Province and the Gulf of Papua and includes all fishing and activities associated with the catching, transshipping, processing, storage, buying, selling and exporting of tropical rock lobster products. It also includes free diving; hookah gear; SCUBA; trawling; and day or night (in light of a torch or any other sources of light) and catching by hand, scoop net and spear.

The objectives of the management plan are to manage the fishery to ensure that the stock size will be maintained annually at a level that will give maximum sustainable economic yield. The plan must also ensure that the development of the tropical rock lobster fishery benefits the traditional users,

<sup>65</sup> <https://www.environment.gov.au/system/files/pages/f4ae5c17-95eb-4396-9197-fbf7fe21bcfd/files/ts-trl-2013-annual-report.pdf>

<sup>66</sup> <http://www.fisheries.gov.pg/PolicyandRegulation/ManagementPlans/tabid/87/Default.aspx>



particularly the traditional inhabitants of the TSPZ, maximise the opportunities for traditional inhabitants to participate by implementing policies that include managing the fishery as a dive fishery and to manage the fishery with a precautionary approach.

## 5.2 Export market for rock lobster

The National Fisheries Authority (NFA) and National Agriculture Quarantine & Inspection Authority (NAQIA) of PNG signed Memorandum of Understanding (MoU) on the 22nd of May 2012 to facilitate trade of live tropical lobster for export. The signing of this MoU delineates working arrangements and responsibilities of the two agencies and in effect describes a pathway for effective management of risks associated with exporting of processed marine products and live aquatic animals.

The MoU recognises that NAQIA is the competent authority in PNG, through the Office of the Chief Veterinary Officer, for the World Organisation for Animal Health (OIE), responsible for sanitary standards for terrestrial and aquatic animal health as it relates to the World Trade Organisation Sanitary and Phytosanitary Standards (WTO SPS) Agreement. The MoU then, for regulatory inspection and certification of fish and fishery products for export, specified that NAQIA be delegated the responsibility for inspection and sanitary certification of fresh, chilled, canned, dried or otherwise processed seafood and marine products for export including live fish and cultured fishery products. The MoU has thus specifically delegated NFA the responsibility for inspection and sanitary certification of live tropical lobster and this paved the way for the trade of live lobster from the Torres Strait Protected Zone (TSPZ) in Daru into the Australian market.

In June of 2010, Biosecurity Australia conducted an evaluation of the NFA biosecurity controls to support PNG's submission seeking Australian market access for live tropical rock lobsters, (*Panulirus ornatus*). The study followed the approval granted by the Australian Government Department of the Environment, Water, Heritage and the Arts to enable importation of live tropical rock lobster into Australia, based on the proposal submitted in 2009.<sup>67</sup>

## 5.3 Export facility at Daru

The consultant visited Maru Marine Ltd on Daru Island. The operation is well run with ongoing quality verification. The processing factory wholesales and retails lobster tails, live lobsters, barramundi fillets and silver jewfish fillets and prawns. Here, the tropical rock lobster is hand-caught by divers. Live lobster arrives at the plant either by mothership or in individual fibreglass "banana boats". Lobster are tagged by individual fishermen with coloured ribbon and kept alive at sea in plastic containers that have been supplied by the Australian buyer. On shipping day lobsters are wrapped in moist paper and packed in cardboard cartons with two 1" holes punched in each end of the carton. Shipment to Cairns is three times a week but on the day of our visit the charter plane arrived three times, taking frozen lobster tails as well as live product.

The charter planes are based in Cairns and are chartered by MG Kailis Group. The company's tropical rock lobster business is located in Cairns, North Queensland and is Australia's largest producer of tropical rock lobster. MG Kailis' seafood operation spans the globe. The company catches prawns in the Exmouth Gulf, fish from Australia's North-West and operates the only hand-caught tropical rock lobster fishery in the Torres Strait. In addition, MG Kailis has been a pioneer in aquaculture, working closely with companies in Malaysia, Thailand and Vietnam to breed and raise commercial quantities of Black Tiger prawns. The trading division is one of Australia's largest importers and exporters of seafood, sourced from sustainable fisheries around the world. Live PNG lobster is delivered directly from the Cairns export facility to international markets, predominantly Asia. Here, (*Panulirus ornatus*) is highly sought after for sashimi-style cuisine thanks to its taste and striking appearance. PNG live lobster is marketed under the Warrior Reef Brand. The MG Kailis Group also supplies premium quality frozen North Australian and PNG lobster tails and lobster heads to the international market with a major focus on the USA.<sup>68</sup>

The QC discussed Maru Marine's need for ongoing training in factory sanitation, seafood handling and HACCP. Communication with Jeff Kinch, Principle of the National Fisheries College (NFC), explained

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<sup>67</sup><http://www.fisheries.gov.pg/FisheriesAuthority/NewsandMedia/MediaReleases/TradeofLiveTropicalLobsterfinalised/tabid/301/Default.aspx>

<sup>68</sup> <http://www.mgkailisseafood.com.au/TropicalRockLobster.aspx>

“they have done plenty of training for Maru Marine and that NFC does training of Seafood Handling, Hygiene and HACCP and suggested that the QC should put in a request to the school”.

## 5.4 Recommendations

The lobster fishery appears to be managed well by the fisheries community of Daru. The unique situation involving cargo charter flights from Australia and the apparent satisfaction of operators leaves the consultant with the impression that the current live lobster trade is lucrative and well served with no specific need for assistance.

Accordingly, the only recommendation that can be made is for frozen tails, which are currently a by-product from live catch wastage and from prawn fishing industry and generally are sold locally. If a processing facility is built in Port Moresby (see recommendation under finfish section) then the lobster tails can be value-added and sold locally in Port Moresby or potentially exported to Australian or US markets.

## 6.0 Mud crab

### 6.1 The fishery

Mud crabs comprise a valuable component of small-scale coastal fisheries in the western Pacific region including Papua New Guinea (PNG) where (*Scylla serrata*) and (*S. aramamosain*) form important subsistence and artisanal fisheries.

In the Melanesian region, mud crab fisheries are generally based on digging crabs from burrows using sticks in inter-tidal mangrove areas. Crab pots are simple and easy to make and an efficient method of capture, however are open to poaching by other fishers.

#### Management

The Wildlife Conservation Society (WCS) PNG program has conducted research on the local mud crab fishery across northern New Ireland Province since 2012. Their report ‘Ecological and economic assessment of the mud crab fishery in Northern New Ireland Province, Papua New Guinea’<sup>69</sup> is very relevant to crab fishery elsewhere in PNG.

Throughout the broader south-east Asian region, there has been a general trend of increasing exploitation leading to decreased landings and smaller crab sizes over recent decades, illustrating the need for more effective management of this resource. While long term population health data are not available for any mud crab fisheries in PNG, rapid human population growth and increasing levels of fisheries development suggest increasing levels of fishing pressure on mud crabs are likely. This highlights the need for assessment and monitoring of mud crab stocks to inform management initiatives and avoid stock collapses. Reported wide scale intra-specific variation in life history parameters of mud crabs also suggests that site based research is required for effective local management.

The two mud crab surveys conducted by WCS at the Kavieng market produced a valuable time series dataset enabling a detailed understanding of the local mud crab fishery at a sub-regional, mangrove and community level.<sup>70</sup> They were confident that the results generated from data collected at the market was broadly representative of biological, social and economic dimensions of the northern New Ireland fishery. The report warned that current trends urge caution to safeguard this important fishery from overexploitation. There is no PNG mud crab management plan in place.

### 6.2 Market for mud crabs

#### Local

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69 results of a survey undertaken at the Kavieng market, New Ireland province. Sven Frijlink and Mildred Kelokelo, Wildlife Conservation Society, Papua New Guinea programme

70 Frijlink.S., Kelokelo.M. (2015).

Crab fishery is a small but increasing fishery in PNG. At present, crab is an important subsistence fishery to the coastal communities along the estuarine mangrove habitats.

About 29.3 of crabs were exported out from 1994 to 2001 with a total cumulative value of Kina 0.353 million. Most crabs were exported out of East New Britain, Milne Bay, National Capital District, New Ireland, and Western Provinces. They are either exported live, frozen or cooked.<sup>71</sup>

The Kavieng market has been studied by the Wildlife Conservation Society. While some crabs were sold directly to restaurants and resorts, and were therefore not canvassed by this project, anecdotal reports indicate that the majority of crabs harvested in the region are sold through the Kavieng market. Estimates made by the team suggest that around 28 000 crabs (~20 tonnes) are sold through the Kavieng market annually. At an average selling price of Kina11.55, this equated to around Kina323 000 per year. Comparative estimates between two surveys suggest that mud crab sales by numbers and weight have increased by around 35% and 21% respectively since 2012/13. In financial terms, sales have increased by 57% due to a combination of increased volumes and higher prices. In fact, in only two years, prices per kilogram had increased by 30%, despite an increase in production. The reasons for this price increase are not entirely clear but likely reflect growing levels of disposable income from various sectors of the community such as expatriates (including a fast growing Chinese population), the hospitality industry, workers from nearby mining industries and a growing transient population of PNG nationals. The large increase in demand and production has provided additional livelihood opportunities for harvesters and sellers.

### Australia

The largest sellers through the Sydney Fish Market were mud crabs, at nearly AU\$10 million, followed by snapper, blue swimmer crab, farmed black tiger prawn and eastern rock lobster.

Mud crabs are a delicacy in Australia and are usually sold alive. They are not generally available in fresh seafood shops or restaurants but are sold in niche markets. The Sydney Seafood Market is the major conduit between fishers and wholesalers/retailers in Australia. The Melbourne market is significant although not as important. Brisbane and the South East Queensland (which includes the Gold Coast and the Sunshine Coast) is a large but diverse market. Outside these capital cities, the closer the retail outlet is to sub-tropical and tropical fishery ports where crabs are landed the more likely it is that mud crabs are on sale. The exception to this are specialised seafood shops and restaurants in tourism areas and high-income suburbs in any of the capital cities.<sup>72</sup>

Visits made to the Sydney and Melbourne markets showed there is a substantial and increasing market for live crabs in these cities. Prices at the Sydney Fish Market for live mud crab are AU\$70 per/kg. Currently import of live crabs into Australia is prohibited.

The market for frozen crab is not well documented and the market will not accept them at this stage. Malcolm McLaughlin of the Melbourne Seafood Centre suggested that a trial shipment of frozen crab could be sent to the auction to test acceptance. This would be dependent on private sector interest as any current export out of PNG at present is focused on the lucrative live crab market in Asia.

The following are import conditions published on the Biosecurity Import Conditions system (BICON) for Seafood (Crustaceans —Live Mudcrab) for human consumption Effective: 24 Aug 2016.

#### Import Conditions for Mud Crab

- a. Department of Agriculture import permit is not required.
- b. Conditions of Administration  
Documents must be provided with each consignment which:
  - Identify the consignment e.g. entry number;
  - Identify all goods being imported as part of this consignment e.g. invoice or waybill or importer's manifest;
  - Describe the goods being imported (where not clear).

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<sup>71</sup> <http://www.fisheries.gov.pg/FisheriesIndustry/OtherFisheries/tabid/111/Default.aspx>

<sup>72</sup> Taking female mud crabs (*Scylla serrata*) : assessment of risks and benefits / I W Brown

- c. Only dead crustaceans are permitted entry. All consignments must be clean and free from extraneous material such as plant materials, snails or oysters or other non-permitted material.
- d. All other consignments (e.g. fresh chilled crustaceans with shell) must be inspected to verify that there are no live crustaceans in the consignment and to ensure freedom from contamination by extraneous materials. If the consignment is found to contain non-viable crustaceans and no extraneous material, the consignment may be released from biosecurity control. If live crustaceans are found, the entire consignment must be directed to an approved arrangement site for freezing or other treatment that will kill the crustaceans prior to release from biosecurity control.
- e. Once biosecurity requirements have been met, all imported food must also comply with the Imported Food Control Act 1992.
- f. Under the Biosecurity Charges Imposition (General) Regulation 2016 and Chapter 9, Part 2 of the Biosecurity Regulation 2016, fees are payable to the Department of Agriculture and Water Resources for all services. Detail on how the department applies fees and levies may be found in the charging guidelines.
- g. Non-commodity information requirements for imported cargo also apply; please refer to the BICON case Non-Commodity Cargo Clearance.

IFN 17-15 - Tests applied to surveillance food. Testing of seafood

The department is currently reviewing the antimicrobial testing of imported seafood. Once completed, a further Imported Food Notice will be published to advise of any changes.

### 6.3 Recommendations

As live crab cannot be shipped into Australia there is no market available for PNG mud crab at present.

There is a possibility that frozen crab could be accepted in Melbourne and a trial shipment could be sent to the Melbourne markets to test market acceptance if adequate private sector interest in PNG ready exporters can be confirmed as any current export out of PNG at present is focused on the lucrative live crab market in Asia.

## 7.0 Fresh tuna

### 7.1 The fishery

The global tuna industry is undergoing a paradigm shift due to increased production competition, technological innovation and changes in consumer demand. There is a trend among Japanese buyers toward frozen loins rather than fresh tuna, due to better storage life. This preference means that freezing and supply chain improvement technologies are increasingly critical to the market demand. Processing companies in Fiji have already taken this on board with albacore tuna and PNG exporters should study this experience.

The PNG supply of sashimi tuna to world markets is at an all-time low. This was a result of a major downturn in the fishing industry beginning in 2004 caused by both external and internal factors such as increased fuel prices, static fish prices, and a long period of low fish availability that afflicted the industry. Continued disruption to Port Moresby wharf conditions and infrastructure and with business decline and cessation of processing in Port Moresby fresh tuna exports ground to a halt.

There are now signs of the industry returning with Fair Well Fishing (PNG) Co Ltd. re-developing its fresh tuna exports to Japan focusing on Grade A yellowfin and bigeye tuna. A new factory now under construction on the Port Moresby Wharf will be operational by the end of 2016.<sup>73</sup> Once this factory is operational Fair Well is aiming to export Grade B tuna to Australia, which it understands to be positive potential market for them and a market which is continuing to expand. PHAMA could assist Fair Well

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<sup>73</sup> Francis Houji and Heather Lee Personal communication.

with development of a HACCP plan and training in associated quality assurance documentation (GMP and SSOPs).

There are no significant market access barriers for import of Finfish (Tuna or Thunnus) into Australia. As long as the fish is head and gutted then a Department of Agriculture and Water Resources import permit is not required.

Because of the general uncertainty of the credentials of importers it is strongly suggested that tuna exporters deal with the Sydney Fish Market for their initial shipments and for an introduction to the Australian markets as well as Australian buyers at the markets. The auction system ensures that quality fish will attract good buyers and as the PNG company's reputation develops so will the prices received for their fish. The Sydney Fish market indicated that there is a willingness to look at supply of fish from PNG as the Australian supply is mature while the market is developing rapidly.

Some suggested industry contacts at the Sydney Fish Market are given below:

Mark Boulter  
Technical and Sustainability Manager  
Direct: +61 2 9004 1128  
Mobile: +61 (0) 405 437 458  
[markb@sydneyfishmarket.com.au](mailto:markb@sydneyfishmarket.com.au)

Andrew Shelly  
Sales Development Executive  
Direct: +61 2 9004 1137  
Mobile+61 (0) 423 440 238  
[Andrews@sydneyfishmarket.com.au](mailto:Andrews@sydneyfishmarket.com.au)  
Erik Poole  
PNG Citizen and contact at market  
Ph 61 2 9004 1107  
[erikp@sydneyfishmarket.com.au](mailto:erikp@sydneyfishmarket.com.au)

Erik Poole was born in PNG and has a special feeling for the PNG fishery he has recently visited PNG with a view to encouraging fish exports to Sydney.

## 7.2 Recommendations

There appears to be reasonable market potential for fresh tuna to the Australian market and interested exporters may benefit from assistance in developing their quality assurance systems. Trial shipments will need to be conducted to test pricing and market acceptance.

**Assist interested exporters develop quality assurance systems:** The PNG company Fair Well, is aiming to export Grade B tuna to Australia. PHAMA could assist Fair Well with development of a HACCP plan and training in associated quality assurance documentation (GMP and SSOPs).

**Conduct trial shipments:** Interested tuna exporters conduct trial shipments to the Sydney Fish Market for an introduction to the Australian markets as well as Australian buyers at the markets. Suggested industry contacts at the Sydney Fish Market have been provided in the report.

## 8.0 Other marine finfish

### 8.1 The fishery

Apart from fresh tuna, marine finfish has three categories (excludes barramundi which is an euryhaline fish)

- Reef Fish and Inshore pelagics
- Trawl Fish
- Prawn trawling finfish catch

#### The Reef Fishery and inshore pelagics

In Papua New Guinea and especially the Torres Strait area the finfish fishery is a multi-species fishery targeting a range of reef fish and mackerel species. The reef hand line fishery focuses primarily on the

high value coral trout species (*Plectropomus* spp. and *Variola* spp.), barramundi cod (*Cromileptes altivelis*), mixed reef fish (*Lutjanus* spp. and *Lethrinus* spp.), and numerous species of rock cod (*Epinephelus* spp.). Up to 100 species of fish may be taken and sold as “reef fish”. The mackerel fishery primarily targets the narrow-barred Spanish mackerel (*Scomberomorus commerson*), but may also take School Mackerel (*Scomberomorus queenslandicus*), Grey Mackerel (*Scomberomorus semifasciatus*), spotted mackerel (*Scomberomorus munroi*), and shark mackerel (*Grammatorcynus bicarinatus*).

Reef fish are generally taken by handlines rigged with a single hook and sinker and Spanish mackerel are fished by trolling. Fishing generally occurs from either a primary or tender boat.

### Trawl Fishery

United Seafoods is about to begin trawling for fish in the ‘Dogleg’ area of the fishing zone of PNG western province. An exploratory fishing catch by their vessel in April 2016 unloaded a total catch of 118 tonnes, 73 tonnes of which were exported as Individually Quick Frozen (IQF) to Korea including 36 tonnes croaker, jack mackerel, john snapper, rock cod, Spanish mackerel and triple tail species; and 35 tonnes of black pomfret, croaker, file fish, grunt, grunter bream, jack mackerel, jewfish, job fish, john snapper puffer, red eyed snapper, rock cod, surgeon, emperor, eel, squid and shrimp. The remaining 45 tonnes of lower quality fish were sold locally including grunter bream, grey mackerel, trevally, grunter, lizard, spade, red snapper, jack mackerel, jew fish, cat fish, halibut, red big eye, sand fish, john snapper, anchovy, ribbon fish, pony, jogi, dart fish, sea pike, goat fish, moon fish, thread fish, cobia.

The operation of illegal foreign fishing vessels in Papua New Guinea waters, particularly in the ‘Dogleg’ area to the west of the Papuan Gulf, has been a serious issue for Papua New Guinea, especially given its limited capacity to monitor, let alone control, its extensive territorial waters.<sup>74</sup> It is apparent that the ‘Dogleg’ area is a rich resource area that was/is being fished illegally with reckless abandon.



Figure 10. Map showing location of the ‘Dogleg’

### Prawn trawling finfish bycatch

Retained catch composition (Table 5, made up of retained catch, not counting the discarded catch). The total catch composition per vessel comprises almost 90 percent bycatch and 10 percent prawns.<sup>75</sup> From the total bycatch, 20 percent makes up the larger finfish (which the company retains), while the remainder makes up the juvenile and smaller size fish, which are normally discarded or taken by the resource owners. Estimate of total retained bycatch by the nine vessels of the prawn fleet is 270 tonnes annually.

<sup>74</sup> <http://www.regionalsecurity.org.au/Resources/Files/Vol8No4May.pdf>

<sup>75</sup> [www.rebyc-cti.org/.../51-papua-new-guinea-national-report-on-bycatch-management...](http://www.rebyc-cti.org/.../51-papua-new-guinea-national-report-on-bycatch-management...)

Table 5. Annual retained bycatch for 2015-16 from One Trawler in PNG Prawn Fishery.

Voyage No	Dates	Fish (kg)
1	9.2-28.2.15	4,030.0
2	30.3-12.4.15	1,126.0
2F	12.4-22.4.15	3,422.0
3	24.4-15.5.15	2,806.0
4	19.5-29.5.16	1,159.0
5	6.6-17.6.15	1,049.0
6	17.6-6.7.15	3,270.0
7	9.7-31.7.15	1836.00
8	8.9-02.10.15	3626.00
9	23.10-12.11.15	458.00
10	19.11-09.12.15	5553.00
11	23.12-13.01.16	1,703
	<b><u>TOTAL</u></b>	<b>30,038.0</b>

## 8.2 The East Coast Australian market for finfish

The amount of seafood (edible and non-edible) produced in Australia has remained relatively stable over the last two decades at around 230 000 tonnes per year. Australia differs from many other developed countries in that a significant proportion of Australian product, which could otherwise supply the domestic market, is sold to export markets. The Papua New Guinea live tropical rock lobster from Daru that is exported to Australia is promptly re-exported to Asian Markets. Australian fisheries exports are dominated by high-value products—such as rock lobster, premium tuna species and abalone—while imports largely consist of lower value products—such as canned fish, frozen fillets, and farm raised prawns and tropical fish species. It has been estimated that around 70 per cent of the edible seafood Australians consume (by weight) is imported, predominantly from Asia. Imported products, from Thailand, New Zealand, Vietnam and China, meet Australian consumers' demand for low-cost seafood products. With such a long coastline and a relatively small population, people often question why Australia imports so much of its seafood.<sup>76</sup>

It is estimated that Australians consumed around 345 000 tonnes of edible seafood products in 2012–13. By volume, imported seafood accounted for around 66 per cent of this consumption.<sup>77</sup>

In Australia, frozen and thawed basa (catfish) fillets from farms in Vietnam are now the most commonly and widely eaten import. The low cost, white boneless flesh and neutral flavour of basa makes it attractive to a large cross section of the Australian community. A barramundi fillet, on the other hand, fills a niche for the adventurous Australian who wants to eat fish once a week but is disturbed by the basa experience. The Australian market for A grade tuna is poor but PNG B grade fillets can fill a growing desire to eat sashimi, sushi and tuna on the barbi.

The vast majority of fresh imported whole fish comes from New Zealand, as do a large proportion of frozen fish fillets. While New Zealand's waters are only around half the size of Australia's, its fishing grounds are much more productive. A large proportion of the New Zealand's catch is white-fleshed fish species familiar to Australian consumers, such as snapper and blue grenadier (hoki). New Zealand's history of sustainable fisheries management, its close trade relationship with Australia and proximity also contribute to the attractiveness and availability of products from New Zealand.

<http://www.agriculture.gov.au/fisheries/aus-seafood-trade76>

<http://www.agriculture.gov.au/SiteCollectionDocuments/fisheries/aus-seafood-trade.pdf77>



Australia's fisheries are managed sustainably and for optimum yield, but they provide limited opportunities for increasing catch. Looking forward, it is clear that there are limits to the growth of Australia's wild capture fisheries. The new immigrants to Australia have come mainly from Asia and now make up 18% of the population of both Sydney and Melbourne. The understanding of the value and culinary delights of the varied tropical species by these new Australians is creating a new demand for tropical species that could be potentially met by PNG suppliers.

### **Sydney Seafood Market**

The Sydney Seafood market offers the PNG fish exporter a means to develop an Australian presence and with little fear of being taken advantage of. The market has vast experience with importing seafood and its process is straightforward. In Appendix A, a list of industry contacts at the various Australian markets is provided for potential exporters to use. An indication of current prices obtained for comparable species is also provided in Appendix K.

### **Melbourne Seafood Centre**

Melbourne is at the southernmost end of the eastern Australian coastline. This brings into range a group of fish species and a market that is quite different to the northern states.

In February 2013, the Melbourne Seafood Centre celebrated its first anniversary, with an estimated \$120 million worth of fresh and frozen seafood traded in the first year, around 15,000 tonnes of product. There are 11 wholesalers trading at the new centre and 280 buyers registered to trade at the centre, which operates on a private treaty system between buyers and individual wholesalers, rather than an open auction system. Fish delivered to the centre are offered for sale between 4am and 7am, seven days a week. There are no retail sales or processing onsite, and the products traded include some interstate and international seafood. The market for tropical species is increasing due to the substantial increase of Asian immigrants to Melbourne. One of the largest wholesalers at the centre is McLaughlin Consolidated Fisherman Ltd (Andrew McLaughlin is in the industry contacts list in Appendix A).

Overall it would appear that there is strong and increasing market demand in Australia for finfish and tropical species. NZ and Asian countries are currently supplying the market. PNG will need to invest in appropriate processing facilities to ensure quality of product to meet market needs.

## **8.3 Development of a Port Moresby-based value-added factory**

The objective of having control over PNG seafood export quality is emphasised by the Fisheries Research and Development Corporation (FRDC) of Australia which noted that the overall quality, packing, size grading and branding of imported seafood into Australia is very good and can surpass locally produced products. Some Sydney seafood businesses readily pay more for imported Asian or New Zealand seafood than the Australian produce because of better seafood quality or size grading. Some Australian fishers and fish farmers ship their raw seafood to China, Thailand or elsewhere for processing and then re-import the processed product for sale in Australia to take advantage of the lower cost reliable processing expertise available overseas<sup>78</sup>.

Much of the seafood that is landed in Port Moresby by the prawn trawlers is in a whole form and is exported or sold locally as such. Prawns are exported to Japan; prawn bycatch fish is sold locally while exploratory trawl fish catch is exported to Korea or sold locally. Barramundi from the Western Province is sent to Port Moresby where it is sold to hotels or to local seafood eaters and mud crabs are sold locally or exported live to Asia.

Taking this into account it is important to note that there are no factories that process seafood in Port Moresby that would stand up to Australian official scrutiny. If the exporters of Port Moresby want to develop their tuna or finfish markets and potentially processed prawns, they need to process their products professionally to a quality standard that is equal to or surpasses those of Asia. Because of the small size of individual export companies in Port Moresby it is suggested that a processing factory

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78 [www.frdc.com.au/.../Factsheets/Factsheet\\_Imported\\_Seafood](http://www.frdc.com.au/.../Factsheets/Factsheet_Imported_Seafood) [https://www.google.co.nz/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8http://webcache.googleusercontent.com/search?q=cache:OfTHsXhiu8wJ:www.frdc.com.au/knowledge/Factsheets/Factsheet\\_Imported\\_Seafood\\_in\\_Australia.pdf+&cd=1&hl=en&ct=clnk&gl=nz](https://www.google.co.nz/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8http://webcache.googleusercontent.com/search?q=cache:OfTHsXhiu8wJ:www.frdc.com.au/knowledge/Factsheets/Factsheet_Imported_Seafood_in_Australia.pdf+&cd=1&hl=en&ct=clnk&gl=nz)



be built on the wharf in Port Moresby that is owned by government (NFA) and leased to the FIA for utilization by the individual companies or sub-associations. The factory should have state of the art buildings and facilities which will have modern simple prawn processing equipment, fish processing equipment, packing machines and equipment for export and for local sales. Provision should be made for a small laboratory, which can test for histamine and general bacteria.

Discussions with prawn companies, trawl company, fresh tuna exporters, local fish suppliers as well as barramundi farm developers<sup>79</sup> indicate that a factory designed to EU and Australian processing standards would be essential for development of a seafood centre that would be efficient and help with the image (see appendices for more detail on suggested marketing of PNG products) of PNG seafood.

Such a processing facility would enable PNG seafood businesses to provide a quality seafood product that is produced to international standards and would be accepted by any importing country. Local markets would be also able to purchase product from the centre that is increasingly being sought after by discerning residents and tourist hotels and restaurants.

To determine if such a facility should be progressed further discussion is required between industry and NFA.

**Recommendation:** That establishment of a Port Moresby based processing facility for seafood is considered by NFA and Industry. If there is sufficient interest a feasibility study should be conducted for the proposed facility to determine its design considerations, operations, costs and potential management arrangements.

## 9.0 The New Zealand market

### 9.1 Introduction

Seafood, one of the country's top export earners, continues to show strong growth with exports reaching a record high of NZ\$1.713 billion in the year to end March 2016.

Seafood New Zealand Chief Executive Tim Pankhurst says "This is an 11.4 per cent increase on the previous year and an NZ\$80 million increase on the previous high of NZ\$1.63 billion for the 2015 calendar year. "Month on month growth of 18 percent in January over the previous year was even higher at 23 percent in March"<sup>80</sup>

The strongest value growth is from exports of frozen finfish with rock lobster, orange roughy, fish meal and mussels also returning increased prices.

China accounts for nearly one third of total seafood export value. The average per kilo value for highly prized lobsters is up 6 percent this year. The China demand, particularly around its new year, has cemented rock lobster as New Zealand's most lucrative export species, returning NZ\$305 million in 2015. Mussels came next at NZ\$224 million, followed by hoki at NZ\$209 million and then, in order of value, jack mackerel, orange roughy, ling, salmon, squid and paua.

Australia's main supplier of fish is New Zealand, which operates under the same food standards authority as Australia, (FSANZ - Food Standards Australia New Zealand) although imports from there are still subject to AQIS inspections and testing.

In 2011, New Zealand became one of only two countries to achieve a top ranking in a review of international fisheries management systems, and in a second study was ranked first among 53 major fishing nations for managing marine resources.

New Zealand's marine fisheries waters (Exclusive Economic Zone and territorial sea) measures 4.4m km<sup>2</sup>, and is the world's fifth largest EEZ, making it an ocean territory 'superpower'. New Zealand earns NZ\$1.71 billion in seafood exports each year. 289,911 tonnes of seafood were exported in 2015. 659,552 tonnes of seafood are harvested from New Zealand's waters each year. The seafood industry supports up to 20,000 jobs.

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<sup>79</sup> Ian Middleton, CEO, OK Tedi Development Foundation

<sup>80</sup> <http://www.scoop.co.nz/stories/BU1605/S00189/seafood-exports-reach-record-high.htm>

New Zealand's massive production base and market characteristics mean that the only seafood that has a viable market in New Zealand are those which are not caught or are only seasonally caught in New Zealand.

## 9.2 Tuna

### 9.2.1 Canned tuna

Consumers of canned tuna in New Zealand appear to be behind Greenpeace efforts to promote sustainable tuna fishing in the Pacific by announcing that 'New Zealand's five big tuna brands have committed to phase out a destructive tuna fishing method that kills sharks, turtles and baby tuna'. This makes New Zealand the third country, behind the UK and Australia, to take steps to change to more sustainably caught tuna. This is good news for the Pacific tuna fishery with its current efforts to improve sustainability.

In 2013 Greenpeace launched a report providing a blueprint for Pacific Island governments and regional bodies to promote a more sustainable and locally owned and operated tuna fishery in the region. The report - titled Transforming Tuna Fisheries in Pacific Island Countries: An Alternative Model of Development – makes detailed recommendations for how to develop smaller-scale and locally owned fisheries that will maximise economic returns, create local jobs and better protect countries' precious tuna reserves for the long term.

The canned tuna now sold in New Zealand Supermarkets largely pole and line caught tuna with an increasing amount of FAD-free purse seine fish. The pole and line fish appears to take on the blueprint suggested by Greenpeace but unfortunately the only pole and line fishery in the tropical Pacific at present is the small Solomon Island fishery owned by Tri Marine. Most pole and line caught fish come from Indonesia or the Maldives.

A recent paper from the International Pole & Line Foundation (IPNLF), reported that the main pole and line fisheries of the world have or are achieving MSC certification which means supply of pole and line caught fish can grow to supply the sustainable concerned tuna market. However, the pole and line fishery is limited and general supply of sustainably caught tuna can realistically only be supplied by MSC certified purse seine fishing methods.<sup>81</sup>

Sealord (a major NZ seafood fisher/processor) appear to have recognized this shortfall with pole and line caught fish and are the first label in New Zealand to sign WWF's Western Central Pacific Tuna Conservation Pledge. In 2013, they announced they would no longer source tuna that had been caught with the use of Fish Aggregating Devices in order to meet their target of reducing non-tuna bycatch to below 1%. And they also announced that they do not support increases in pole and line fisheries, which result in depletion of coastal small pelagics that support artisanal food fishers even though this has been certified by MSC.

Greenpeace on the other hand announced 'when shopping for canned tuna, buy pole-and line-caught skipjack, as skipjack stocks are much healthier than many other types of tuna. Next best is FAD-free purse seine skipjack'.

New Zealand's consumers desire is for Pacific countries to control their own fishery from ocean to plate and to satisfy a number of models and directives<sup>82</sup>, so New Zealand labels will have to source product from the MSC certified Pacific Island fisheries involving canneries in PNG utilizing PNA fish be it, pole and line or purse seine. This should create an opportunity for PNG canned tuna.

**Recommendation:** PNG canners have an opportunity to attract NZ labels to support Pacific Island fishers and canners. It is recommended that to develop this opportunity a well-constructed marketing approach (including use of social media) by PNG is required utilizing the FFA/SPC Roadmap, the Greenpeace concept of localizing the pacific tuna fishery from ocean to plate, and the WWF business model to assist chosen businesses transform to responsibly sourced seafood and fish oil products (see Appendix G).

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<sup>81</sup> <http://www.ipnlf.org/perch/resources/ipnlfinfofish0116.pdf>

<sup>82</sup> Greenpeace model -FFA/SPC Regional Roadmap Key Tuna Fisheries Goals and Indicators, WWF's support for MSC

## 9.2.2 Fresh tuna and longline bycatch

The fishery in NZ does not supply the fish that the Fiji or PNG fishery produces. The New Zealand market for fresh longline caught tuna and bycatch of tropical fish species is developing steadily. The current main suppliers of these fish are the Fijian and Tahitian longline tuna fisheries. Tahiti supplies principally albacore tuna while the Fiji fishery supplies fresh yellowfin tuna bigeye tuna albacore tuna, striped marlin, blue marlin, mahi, and opah<sup>83</sup>. Indicative NZ market prices for these species are given below.

**Table 6. Wholesale prices for Fiji fish from Gourmet Seafood NZ**

Product (Ex Fiji Islands)	Price (\$NZ/kg)
Albacore tuna, whole loin	29.45
Albacore tuna, steaks S&B	31.45
Albacore tuna Sashimi block	106.36
Bigeye or Yellowfin tuna whole loin	35.45
Bigeye or Yellowfin tuna steaks S&B	76.90
Bigeye or Yellowfin 500gm portion	36.46
Blue or Striped Marlin whole loin	27.54
Blue or Striped Marlin Steaks S&B	28.69
Mahi Mahi whole loin	26.45

Currently there are no market access barriers to the import of PNG marine fish into NZ. However, MPI's Biosecurity Science and Risk Assessment (Animals and Aquatic) Team is currently drafting three Import Risk Analyses (IRA): for finfish, crustaceans, and molluscs. Once these IRAs are finalised a new Import Health Standard for aquatic animal products will be drafted. MPI was unable to give a definitive timeframe as to when the new IHS will be released for public consultation; mid 2017 is a rough estimate.

General information on importing seafood into New Zealand is available: <https://www.mpi.govt.nz/importing/food/seafood/><sup>84</sup>

**Recommendation:** The market in NZ for fresh tropical pelagic fish is developing rapidly, prices are also robust and PNG suppliers should look carefully at this market. There is a distinct possibility of providing longline B-grade tuna and by catch to the New Zealand Market. Interested export ready businesses should contact the two companies below for initial introduction to the New Zealand Market and trial shipments be considered.

Solander Gourmet Seafood  
PO Box 5041  
Port Nelson  
Nelson, South Island 7043  
New Zealand  
NZ Freephone: 0800 555 548 Email: [seafood@solander.com](mailto:seafood@solander.com)

Auckland Fish Market  
info@afm.co.nz  
<https://www.afm.co.nz/#>  
tel:+64 9 303 0262

<sup>83</sup> Solander Group of companies (<http://www.gourmetseafood.co.nz/>)

<sup>84</sup> MPI personal Communication 21/09/2016

### 9.2.3 Prawns

There is no prawn fishery in New Zealand. New Zealanders are not big prawn consumers like the Australians. Supermarkets such as New World and Countdown sell frozen prawns, processed and imported from Australia and Asia. The Asian prawns are farm raised and of excellent quality and retail at NZ\$24/kg. It would be difficult for PNG to compete with imported farm raised Asian prawns.

As of now, dead prawns of marine and freshwater origin can be imported into New Zealand from anywhere in the world in any form under Clause 6.6 of the *Import Health Standard For The Importation Of Marine Fisheries Products For Human Consumption From All Countries* (FISMARIC.ALL - <https://www.mpi.govt.nz/document-vault/1779>)

No import permit is required. No zoosanitary certification is required.

**Recommendation:** It would be difficult for PNG prawns to compete on price with other sources for the NZ market. PNG prawn industry would be better to explore market access to Australia.

### 9.2.4 Barramundi

Refer to the recommendations for barramundi export to Australia regarding the limitations of barramundi catch resource.

An additional disadvantage for barramundi in New Zealand is there is a substantial local white fish catch which fully satisfies the local demand. It is a difficult exercise to get the average New Zealander to eat any white fish but snapper, which are found in large quantities in surrounding coastal waters and any fish market. A new species introduced into this fish type market mix would take some significant marketing effort. New Zealand has access to the Asian farmed barramundi but it does not appear on supermarket shelves.

**Recommendation:** Market opportunities for Barramundi are limited in NZ. Any potential PNG barramundi exporter should look at the Australian market before attempting the unknown.

### 9.2.5 Rock lobster

New Zealand has its own rock lobster fishery. There are nine rock lobster fisheries management areas around New Zealand and commercial landings fluctuate at about 2,500 tonnes each season. Rock lobster is one of the New Zealand seafood industry's biggest exports, generating \$221 million in revenue each year. More than 95% of exports are of live animals, primarily to Hong Kong and other Asian markets where their strong red colouration, size and shape are highly valued. Maintaining quality from harvest to market is vital in ensuring customer satisfaction and for earning a premium for New Zealand rock lobster exports.

**Recommendation:** There is no opportunity seen for this product in New Zealand at this stage. The frozen lobster tail market is well catered for with what is perceived to be a superior local product. PNG should maintain its export business to Australia and on to international markets such as China.

### 9.2.6 Mud crab

The live crab market in New Zealand (principally in Auckland) is developing rapidly with a consumer base that can afford high-end exotic crustaceans. There is potential for PNG to supply this market although pricing competitiveness with Australian products and technical feasibility of the airfreight linkages would require confirmation. Also market access issues will need resolution.

Live mud crab from PNG is not currently permitted in New Zealand. The New Zealand Ministry of Primary Industries (MPI) is developing an Import Risk Analysis (IRA) for live mud crab from Fiji and are expecting the draft IRA to be ready late 2016, after which it will be internally consulted and then sent for review by external experts. Once the review has been completed an Import Health Standard (IHS) will be developed. The IRA will be published on MPI website when the draft IHS is circulated for public consultation.<sup>85</sup> An overview of the IHS development process is available here:

<https://www.mpi.govt.nz/importing/overview/import-health-standards/requesting-a-new-ihs/>

In response to questions as to the possibility of PNG mud crab entering New Zealand MPI suggested that the PNG Competent Authority submit an application requesting development of an IHS for wild,

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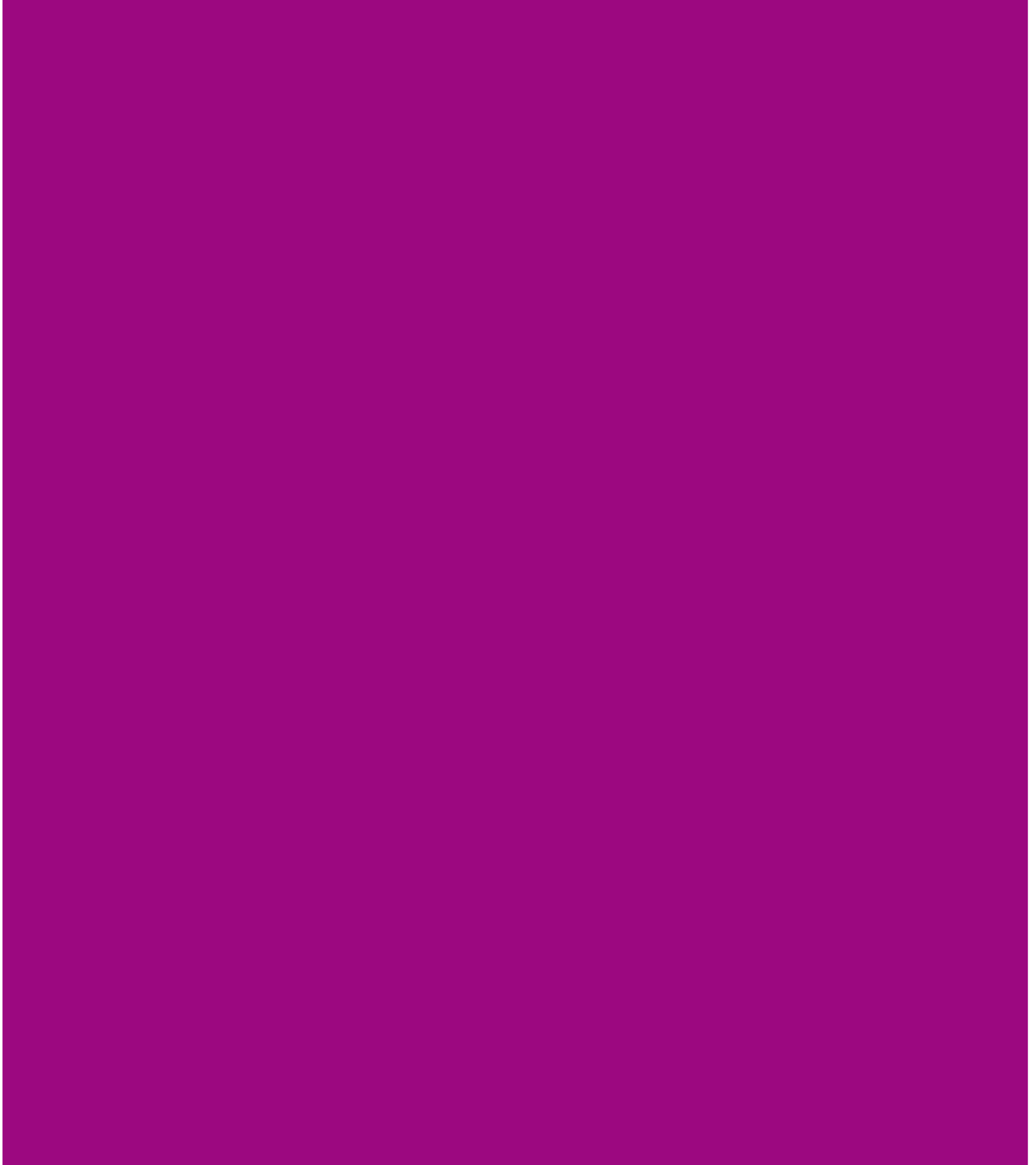
<sup>85</sup> MPI personal Communication 19/09/2016

live mud crab from that country. The application will be subjected to a prioritisation process. If the application is accepted then MPI might consider including wild live mud crab from PNG in the IRA that is currently being drafted for live mud crab from Fiji. That way the PNG Competent Authority will have a head start. The application form is available here: <https://www.mpi.govt.nz/document-vault/1549>

The suggested MPI contact point is Nasser Ahmed, Senior Adviser (Animal Imports), Animal Imports Team.

**Recommendation:** The NZ market has potential for live crab exports from PNG however market access needs to be gained. Pricing competitiveness will need confirmation. It is recommended that PNG apply to MPI for inclusion in the pending IRA by MPI on live mud crab from other PICS such as Fiji. PNG Industry will need to undertake analysis to determine if live crab exports will represent a profitable outcome. PNG exporters could approach Solander Gourmet Seafoods and Auckland Fish Market for market introduction possibly in collaboration with PT&I's Auckland office.

# Appendix A



## Appendix A CONTACTS

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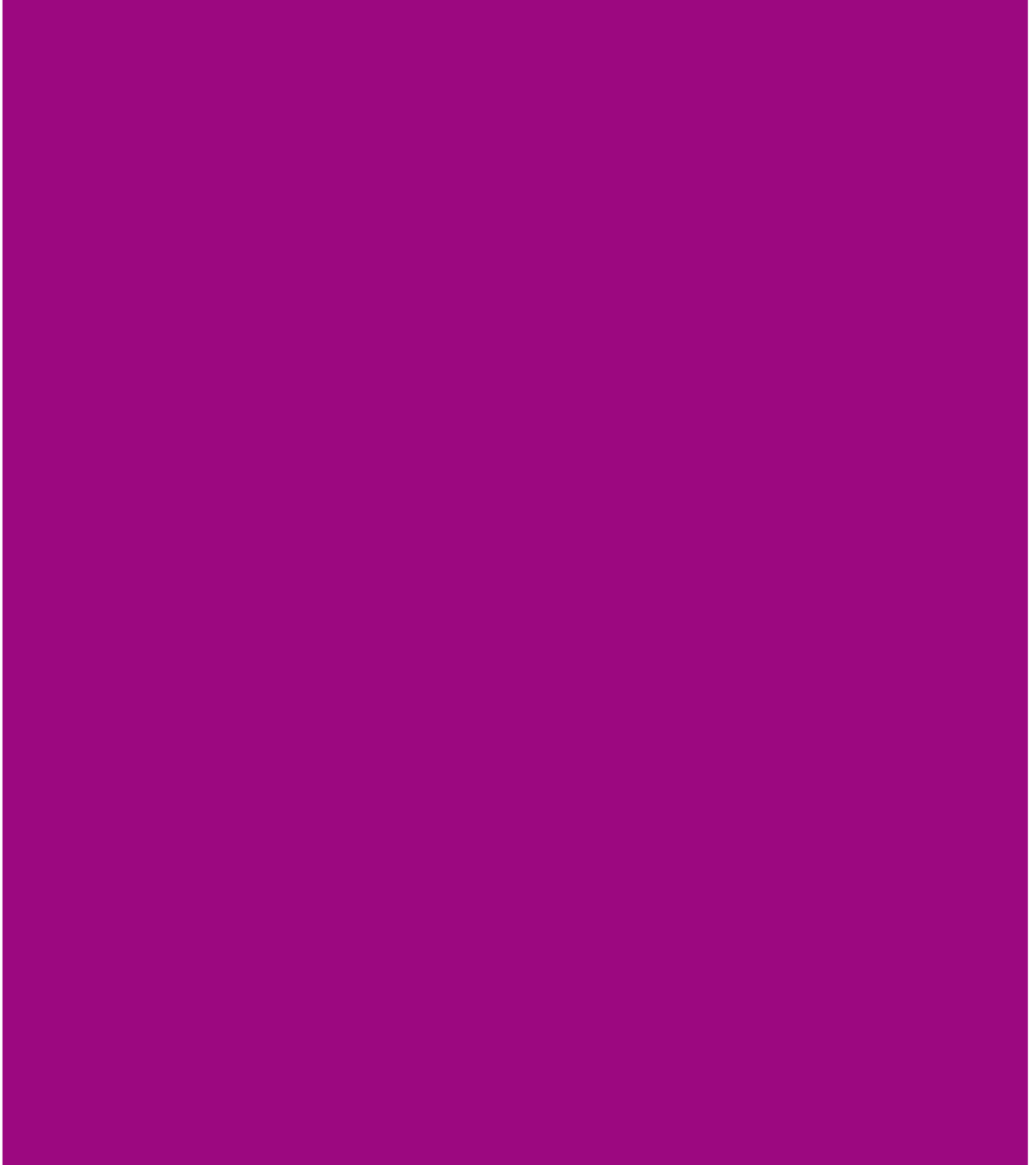
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# Appendix B



## Appendix B THE CANNED TUNA BRANDS OF AUSTRALIA

The Australian market is dominated by two brands (John West and Sirena) and there are several other notable brands as well as the private label segment of Australia's two major supermarket chains.

- **John West**



John West is the brand leader with around 40 % market share and the brand is owned by Simplot Australia, a subsidiary of a large US seafood, meat and vegetable food manufacturer that diversified into the Australian market in 1995. Simplot Australia is a member of the Supplier Ethical Data Exchange (SEDEX)<sup>1</sup> The family owned company focused on Bringing Earth's Resources to Life in a sustainable way so that Australians can always eat well. This desire has seen Simplot build long-term partnerships with Australian farmers and supply chain, invest in Australians, and commit to the long-term sustainability of earth's natural resources. Simplot had beginnings as a one man farming operation, founded in 1929 by J.R. (Jack) Simplot in Boise, Idaho. Since then the J.R. Simplot Company has grown to become a multinational agricultural business with annual sales of more than \$US 5 billion. The Simplot Australia story began in 1995 when the J.R. Simplot Company expanded into Australia, acquiring iconic brands like Birds Eye, Leggo's, Chiko and Edgell. Simplot has continued to grow with the addition of brands like John West, Lean Cuisine, and Quorn.

- **Sirena**



Sirena is the second largest brand with around 20% market share. Sirena is owned by Valcorp Fine Foods, an Italian family-owned company that first established a business in Australia in 1954 to import fine foods from Italy for the Italian community. Both John West and Sirena tuna is manufactured in Thailand. In 2015 Sirena successfully transitioned to 100% 'pole and line', well ahead of its 2016 schedule. A Sirena support locally owned fisheries and development initiatives and has good regulations in place to avoid illegal and unregulated fishing. It also has excellent traceability. According to Greenpeace<sup>2</sup>, Sirena continues to rely on less sustainable yellowfin and tonggol tuna while labelling is very poor as Sirena fails to disclose what species of tuna is contained in the tin.

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<sup>1</sup> SOURCE John West Australia

<sup>2</sup> <http://www.greenpeace.org/australia/en/what-we-do/oceans/Take-action/canned-tuna-guide/>

- **Greenseas**



**Greenseas** (Heinz), is a brand of shelf-stable fish products owned by the [H. J. Heinz Company](#) founded in 1869, Based in [Pittsburgh, Pennsylvania](#)

Greenseas was the first big brand to make the positive commitment to stop using destructive fish aggregating devices (FADs) by 2016 but according to Greenpeace, it has since then failed to provide evidence that it is sticking to these commitments. Greenseas continues to source 100% skipjack tuna from the Western Central Pacific Ocean and has previously provided financial support to improve Pacific fisheries science and conservation measures. This year Greenseas has fallen behind its competitors due to lack of commitment and lack of traceability. Greenseas process 100% skipjack tuna from the Western Central Pacific Ocean and publicly supports marine reserves and does not source from the Pacific Commons. Greenseas website notes that the brand offers valuable support for Pacific fisheries scientists and conservation groups<sup>3</sup>. Greenseas conservation partners are the Oceanic Fisheries Programme (OFP), Opération Cétacés, the Coral Reef Alliance (CORAL) and the Derwent Estuary Program. Their research and other conservation activities help to preserve marine biodiversity in Australia and around the region. Greenseas raised \$100,000 for conservation partners through their Friends of the Sea online game. Greenseas is trying to improve their credibility by.<sup>4</sup>

- Including more information on the can so consumers can make an informed choice about species, fishing methods and the area of catching
- Including more information on their websites (including this one) about tuna fishing and sustainability
- Working with suppliers on ways to improve the traceability of their products
- Providing financial support to the SPC-OFP who conduct scientific assessments and provide advice to all those involved in tuna sustainability across the WCPO
- Publishing a commitment to source sustainably caught tuna, including details about where they source their tuna, how it is caught and how they label it

- **Safcol**



<sup>3</sup> <http://www.greenseas.com.au/Conservation-Partners>

<sup>4</sup> <http://www.tuna.com.au/>

The South Australian Fishermen Co-Operative Limited (S.A.F.C.O.L.) was founded in 1945 by a group of South Australian Fishermen to sell their catch- the first of its kind in Australia. This connection with the craft and the catch has been constant throughout their history. Today, Safcol continues to manage the thriving South Australian Fish Market and is a diversified consumer products group, marketing its products across the Australian Retail Market in supermarkets and other speciality stores. Almost exclusively using pole and line caught tuna, Safcol has maintained its commitments to 100% 'pole and line' and FAD-free skipjack tuna so all its tuna sold in supermarkets is fished using responsible methods. They do not operate "mother ships" that operate as floating freezers. This is difficult to understand as if the catch is 100% pole and line the tuna must have been caught using FADs most of the time. Small pole and line vessels rely on FADS for a good percentage of their catch and although sustainable fishing it is still not FAD free fishing. This label is directed at purse seine fishing and should not include pole and line fishing.<sup>5</sup>

Safcol services a wider market than most other suppliers of quality seafood: Australia, New Zealand, Singapore, Hong Kong, China, Thailand, Malaysia, Greece, the Middle East, Slovenia, Chile, Canada and the USA. Safcol has built a loyal following of discerning customers. They continually develop new products and meet government standards in all markets.

Safcol indicates catch is delivered direct to their canning and processing plants and that the Earth Island Institute certifies their wild tuna catch "Dolphin Safe".

Greenpeace reports that Safcol could improve its equity policy and invest in better traceability.

- **Sole Mare**



Sole Mare has offered premium quality chunk-style tuna, flavoured tuna and tuna meals for almost 20 years. Today, Sole Mare has extended its expertise in canned seafood to new mackerel, anchovies and pickled seafood options. Sole Mare is a 100% Australian-owned brand that is steeped in European heritage and artisan tradition. We combine with care the finest of our sea and land produce to create seafood products like no other. Sole Mare seafood is preserved in the most authentic Mediterranean style, conserving its natural texture. Our succulent Sole Mare products will enrich an array of dishes from light salads to rich pastas and more.<sup>6</sup>

Recently Sole Mare has made a dramatic shift to responsible fishing methods. Its new range, launching early 2015, is 100% 'pole and line'. It has also made commitments to internal and third party audits, commencing in 2015. Its product range is still based entirely on yellowfin tuna and it is still developing its sustainability policy and information disclosure. Now 100% 'pole and line'.

<sup>5</sup> Personal experience in Maldives, Indonesia and Fiji.

<sup>6</sup> <http://www.solemare.com.au/aboutus/>

- **ALDI's brand, Portview:**



According to Aldi's website <sup>7</sup>ALDI takes corporate responsibility seriously and is committed to offering a range of sustainable seafood choices to their customers. ALDI reports that they have traced their entire canned tuna range from where it was caught, through their supply chain and into their stores. Each canned tuna product has the Food and Agriculture Organization of the United Nations (FAO) catchment area printed on its lid, enabling the public to trace where their tuna was caught.

By the end of 2016, ALDI reports their entire canned tuna range will be sourced using a combination of the available sustainable options including Pole & Line caught and FAD Free (Fish Aggregating Devices) methods.

Yellowfin tuna is currently a part of their product range. All of their Yellowfin tuna range is sourced from catch in the Western and Central Pacific Ocean (WCPO) where the current biomass exceeds the biomass MSY (Maximum Sustainable Yield).

- **The private label segment of Australia's two major supermarket chains:**

- Coles



- Woolworths is also very competitive.

The Australian canned tuna market is characterised by a very diversified product range including

- Standard tuna (e.g. chunks in brine, water, olive oil),
- Flavoured tuna (e.g.
  - chilli,
  - cracked pepper and
  - lemon) and
- Value-added products (e.g.
  - tuna and rice,
  - tuna pasta salad,
  - ready-to-go tuna lunch kits,
  - tuna slices/filletts).

Canned tuna is typically available in three sizes:

<sup>7</sup> <https://www.aldi.com.au/en/about-aldi/aldi-initiatives/trace-your-tuna/>

- 95g snack pack,
- 180g standard pack and
- 425g family pack;
- pouches are also available.

Packaging innovations have also been introduced including

- no drain tuna,
- easy-pull can lids,
- lithographed cans<sup>8</sup> and
- multi-packs (i.e. 3-4 cans in a cardboard sleeve).

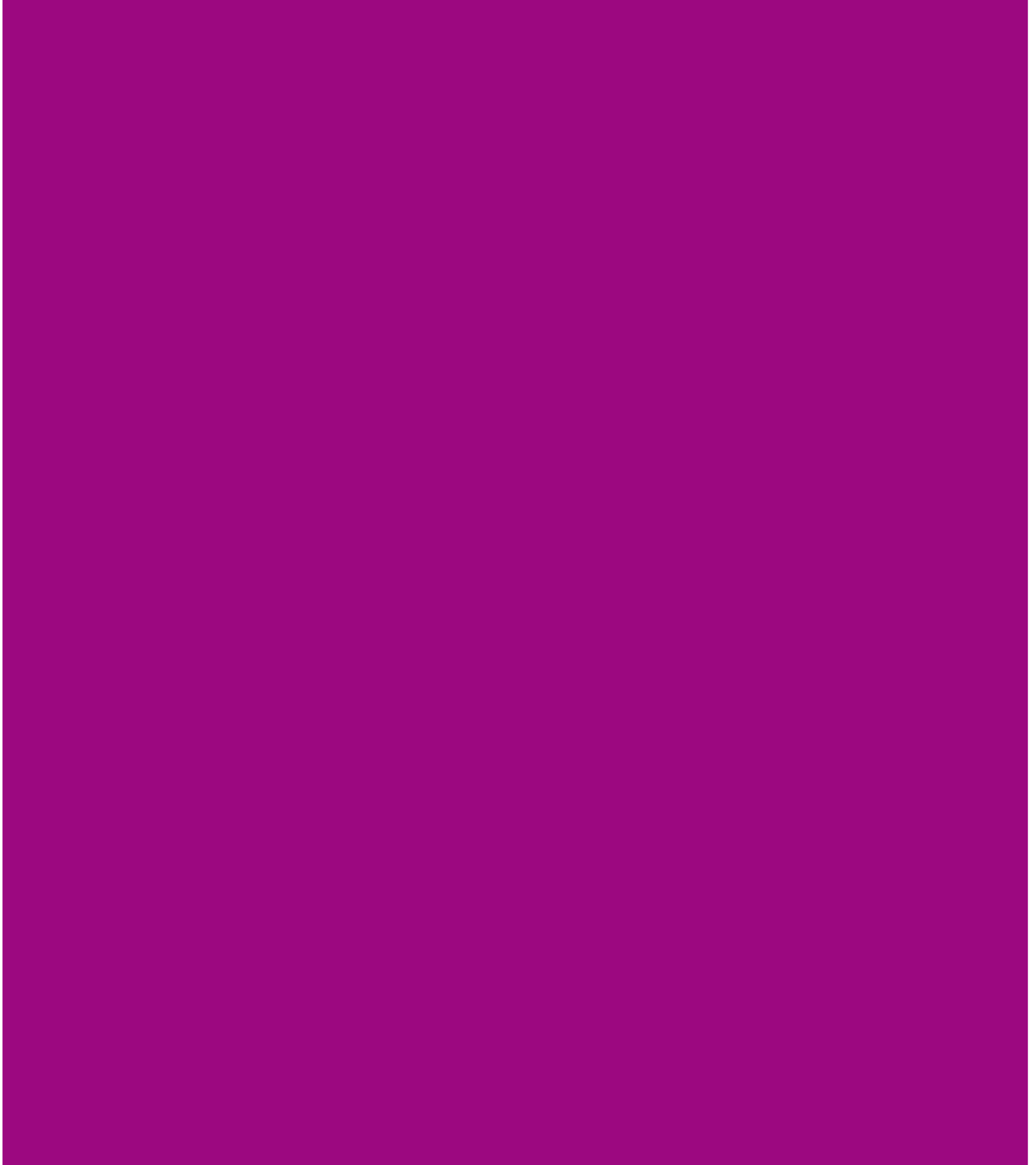
The most popular market segment is the

- 95g snack-pack range (for flavoured tuna), accounting for around 60% of total canned tuna sales, while
- 180g standard packs account for around 35% of sales.
- Value-added products are an emerging market, currently accounting for around 6% of sales, but this segment is growing.
- 95g cans of flavoured John West were retailing in supermarkets for AU\$2.00/can (US\$1.63) and
- Sirena tuna \$2.50/can (US\$2.03) respectively.
- ALDI's Portview 95g range was retailing for AU\$1.09/can (US\$0.88).

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<sup>8</sup> Lithography refers to cans where background colours, text and logos are printed directly onto the can vs. traditional 'bright' cans which are plain steel-plate cans that printed paper labels are attached to.

# Appendix C



## Appendix C NEW INVESTMENTS AND EXPANSION

- **Madang**

Much of the new investment in fisheries has been in anticipation of the Pacific Marine Industrial Zone (PMIZ) in Madang. On 24 November 2015 Papua New Guinea's Prime Minister Peter O'Neill launched the construction phase of the PMIZ project in Madang Province. The US\$235 million project, which would establish up to ten canneries and other port facilities on the Madang Lagoon, has been delayed for years due to legal, environmental and landowner issues. However the prime minister recently recommitted his government to the PMIZ, construction of which will be carried out by China Shenyang International Technical Economic Corporation.<sup>1</sup> In April 2016 Government told China Shenyang International Corporation (PNG) to start work on phase one of the US\$95 million (Kina296 million) PMIZ project. Phase One is due to be completed within 33 months.<sup>2</sup>

- **Lae**

There is also significant investment activity in Lae, at the Malahang Industrial Centre, where Thai Union of Thailand, Century Canning of the Philippines, and Frabelle have set up a joint venture, Majestic Seafood Limited. Their US\$25 million plant will process 350 tonnes per day. About 80% of its canned tuna will be exported to the European Union and the remainder sent to the United States, Japan and other markets such as Fiji.

Frabelle has also expanded its cannery operations, Frabelle has invested in plant equipment that now enables it to raw pack fish, and then cook it in the cans, rather than cooking it twice—before and after canning—as was previously the case. This has increased their capacity by 20 metric tonnes. The quality will improve in terms of flavour retention versus the other process of pre-cooking,<sup>3</sup> Frabelle exports most of its canned output to Europe, but Melinda<sup>3</sup> says there is still room for growth in the domestic market. Frabelle caters to EU market. Melinda feels PNG is young in the canned fish industry. And that there is a boom coming soon and this is resulting in the need for alternative markets such as Australia. EU has been low volume from individual canners as strong competition for German market by SE Asian packers.

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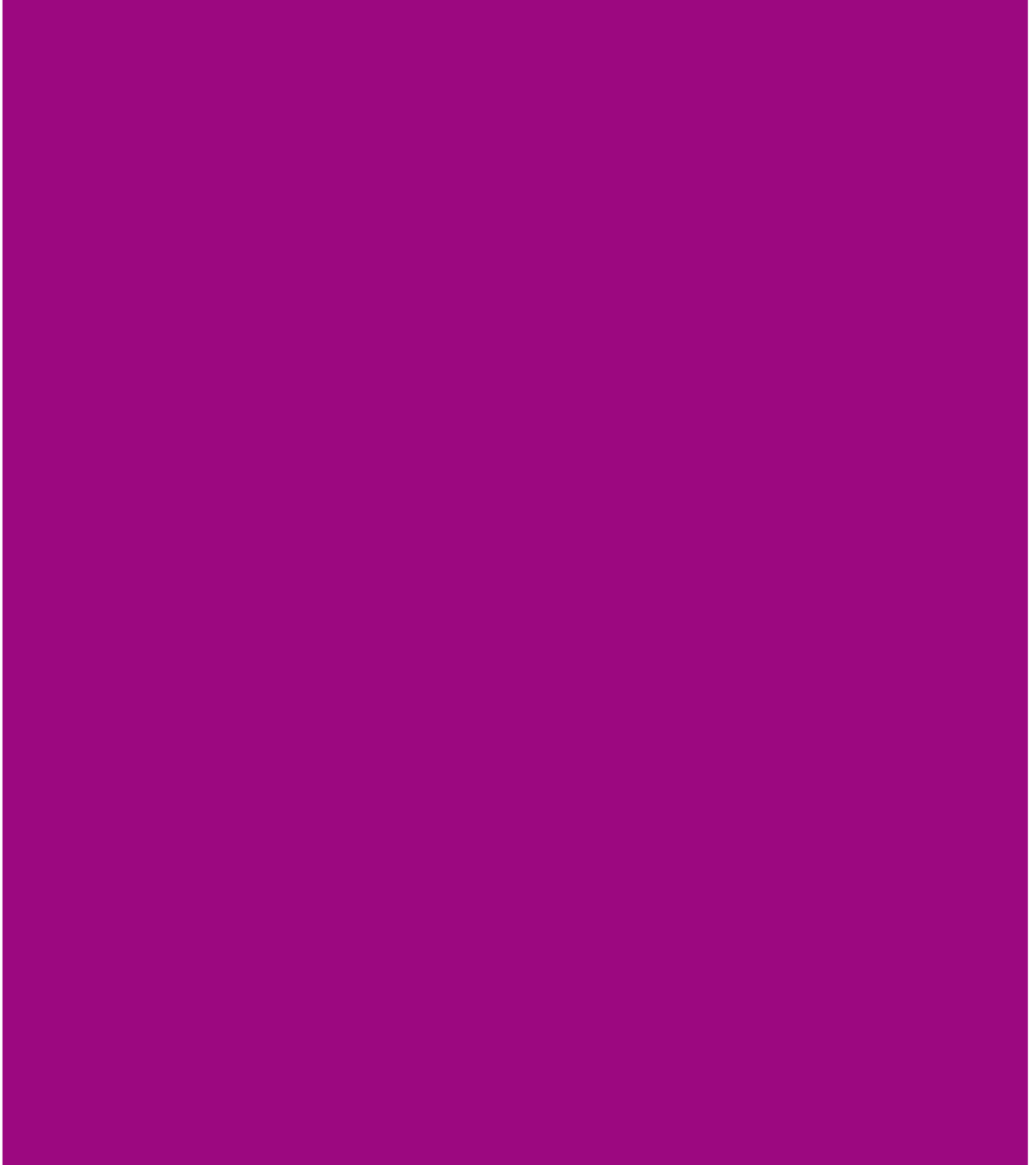
1 <http://www.radionz.co.nz/international/pacific-news/290440/png-pm-to-launch-pmiz-construction-in-madang>

2 13 Apr 2016 by Business Advantage PNG

3 Melinda "Mel" Ragudos General manager Cannery personal communication



# Appendix D

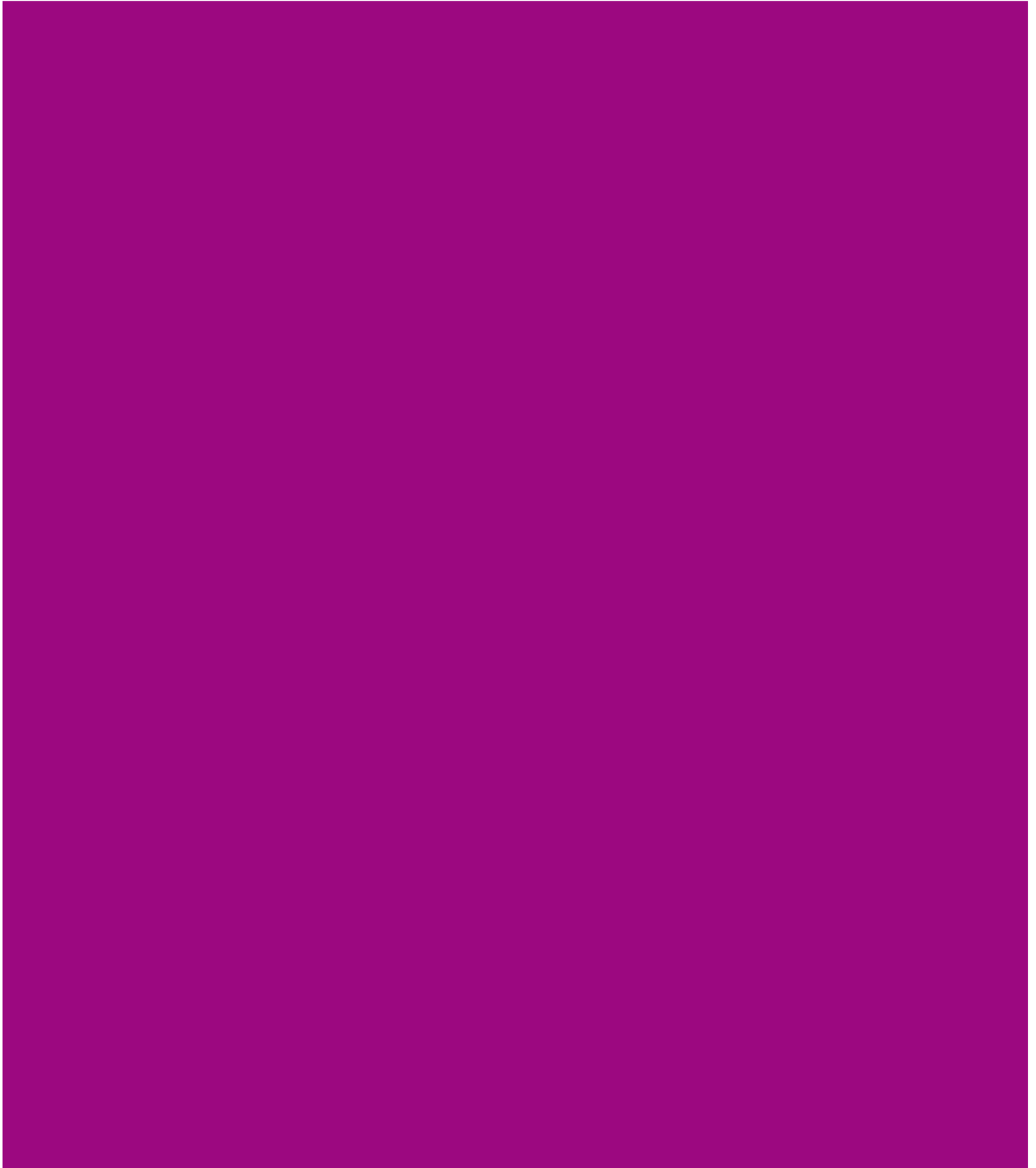


## Appendix D MOU WITH QUEENSLAND

In June 2004 the Papua New Guinea National Fisheries Authority and the Queensland State of Australia through its Department of Primary Industry and Fisheries signed a Memorandum of Understanding (MoU) to enhance co-operation and working relationships in the areas of information sharing, capacity building, market access, biosecurity, sustainable natural resources, industry development and research and development. With the MoU in place PNG aimed to increase exports of fish and fishery products into the Australian seafood market. This MoU was designed to enable PNG to seek the necessary assistance for the fishing industry to better appreciate Australian quarantine standards and in that process be able to access the Australian market<sup>1</sup>.

As part of the initial development of the MoU, the NFA held discussions with Mrs Aivu Tauvasa, Commissioner of the Pacific Trade Commission in Sydney, on the possibility of promoting PNG seafood in the Sydney fish market. Commissioner Tauvasa had indicated that the Commission Office could become the link between the Sydney Seafood Industry, NFA and the PNG Fishing Industry. NFA was to explore this opportunity further but it appears no substantive work has been undertaken to progress this.

# Appendix E



## Appendix E MSC AND PACIFICAL PARTNERSHIP EXAMPLES

### McDonalds Spain

Pacifical has welcomed the decision taken by McDonald's Spain to include its Marine Stewardship Council (MSC) certified skipjack tuna on its national menu as part of the chain's global commitment to sustainable fishing practices. Representatives of the Spanish branch announced that by January 2016, more than 490 restaurants will be offering MSC certified tuna in their "Tuna Mediterranean Salad".

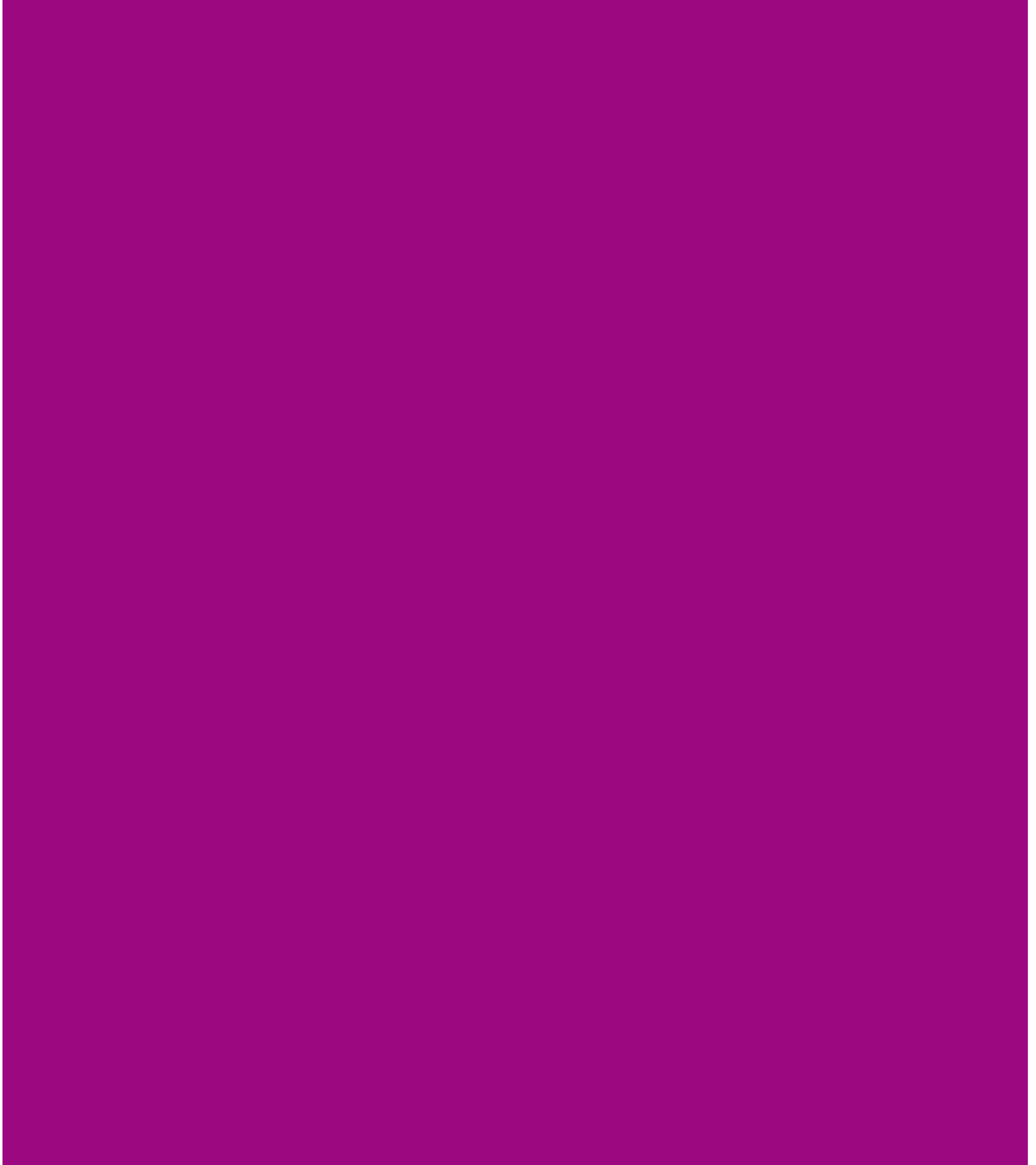
### Bumble Bee Seafoods WCPF, PNA, MSC, Pacifical

SAN DIEGO--([BUSINESS WIRE](#)) April 13, 2016--Bumble Bee Seafoods, North America's premium seafood company, has signed an agreement with Pacifical to purchase and promote MSC (Marine Stewardship Council) certified tuna coming from eight member countries of the Parties to the Nauru Agreement (PNA) in the Western Central Pacific Ocean. Those eight countries set up the Pacifical organization in 2011 to promote and actively trade sustainably caught skipjack and yellowfin tuna to consumers around the world. As part of the business agreement, Pacifical will provide Bumble Bee with 100% traceability to all MSC certified products. This will include tracing product to vessel name, captain name, fishing method and catching period.

Chris Lischewski, Bumble Bee president and CEO was reported to say "We know people want to purchase sustainable products and we also know they want to know where their food is coming from. This partnership further demonstrates our commitment to sustainability, transparency and delivering high-quality, safe and nutritious seafood to consumers."



# Appendix F



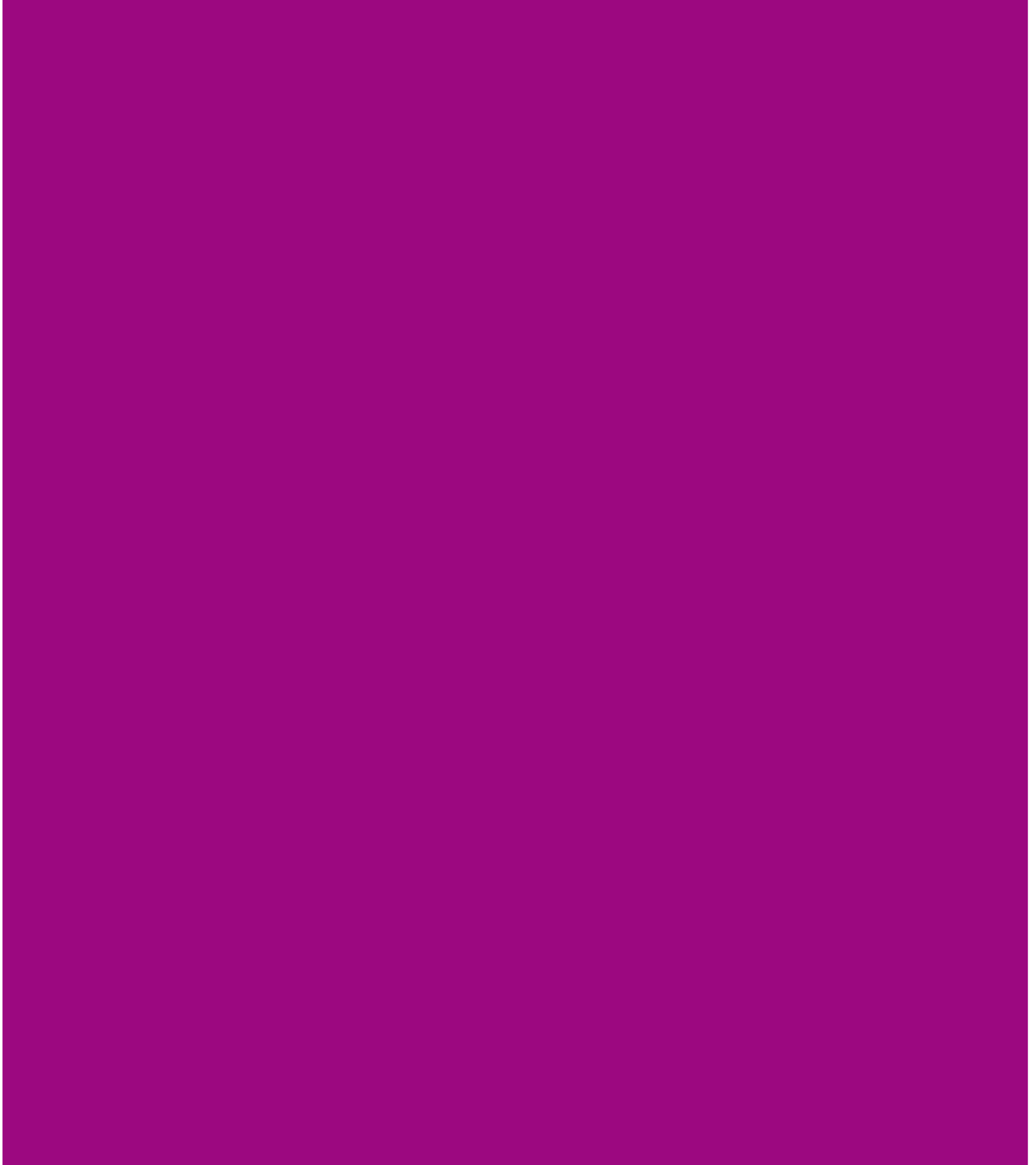
## Appendix F TRI MARINE PNA, MSC, PACIFICAL AND THE AUSTRALIAN MARKET

PNA's Tuna Market Intelligence,<sup>2</sup> reports:

Tri Marine says its own Marine Stewardship Council Certification status, proving its tuna is caught sustainably, will augur well for sales of the Parties to Nauru Agreement/ Pacific brand. Tri Marine has achieved MSC certification of two fisheries. One is for skipjack and yellowfin caught by US flag purse seiners operating out of American Samoa fishing in the Western and Central Pacific Fisheries Commission Convention area. The other is for Solomon Island flag purse seiners and pole and line boats catching yellowfin and skipjack within Solomon Islands archipelagic waters and Exclusive Economic Zone. Tri Marine Internationals Managing Director Phil Roberts said they had been working closely with PNA/Pacifical to supply PNA MSC skipjack to a major Australian brand John West: "This marked the first major MSC contract for Pacifical and Tri Marine is proud to have partnered with Pacifical and the brand concerned on this exciting project. With the PNA fishery being the most sizeable source of MSC certified skipjack/yellowfin in the world, we are confident that this will be a catalyst for much more MSC business for Pacifical." Roberts said it will be business as usual in terms of its relationship with PNA: "Tri Marine's client vessels will continue to operate under PNA's MSC certification and supply the volumes required as demand continues to increase. In addition to their partnership with PNA, their own MSC fisheries certification expands MSC certification to now cover a larger proportion of the fishing grounds for their US and Solomon Islands' fishing fleets, which are not included in the PNA assessment, including Solomon Islands archipelagic waters, US territorial waters, and the waters of other non-PNA member countries.



# Appendix G



## Appendix G REGIONAL ROADMAP KEY FISHERIES GOALS AND INDICATORS

A sustainable resource is a prerequisite to sustainable development. Within three years, there will be agreed Target Reference Points for the four key tuna species. Within 10 years, the status of each species will be clearly moving towards these targets. In particular, the overfishing of bigeye tuna will have been removed and the stock will be rebuilding.

Impacts of fishing on bycatch such as sharks, turtles and seabirds will have been significantly reduced. Management measures will not be undermined by Illegal, Unreported and Unregulated fishing (IUU).

Prioritise the supply of raw materials to processors in the region. Development of domestic tuna processing has always struggled against low-cost economies in Asia; but those operations are not viable without massive supplies of tuna from our region. The region will move to mandatory offloading of part of the catch of access vessels and increased transshipment fees (in a harmonised way).

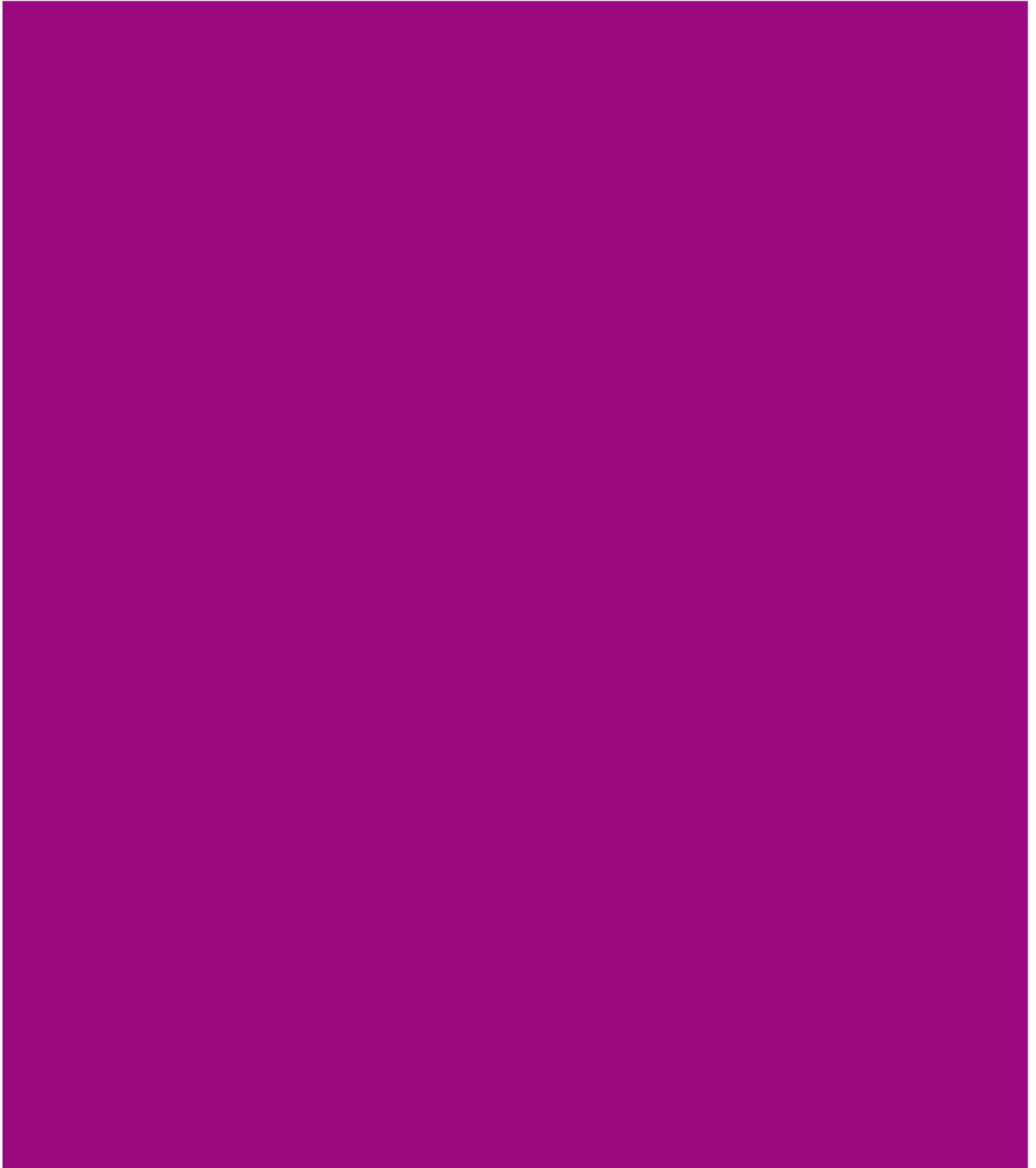
Establish high standards for employment in the fishing and processing industry

Development of a tuna industry should not compromise the health, safety and well being of Pacific Islanders. Uniform minimum standards and a renewed emphasis on training will help to avoid countries being played off against each other.

Establish regional processing hubs in partnership between countries. The diversity of opportunities for processing and the need for economies of scale will be addressed by developing 'processing hubs' in two or three countries that can receive the fish from other FFA waters and provide benefits through employment and ownership.



# Appendix H



## Appendix H MARKET MANAGEMENT AND PROMOTION

As a follow-up to the PHAMA study a marketing and presentation package should be developed for each fishery. This should include:

### Marketing Manual

- Brief description of each fishery
  - Overhead PowerPoint presentations of each individual company
  - HACCP or Quality Manuals for each company facility
  - External audit reports for each company
  - EU certification for each company (Europe market only)
  - Promotional literature, such as posters, brochures, recipes cards, and species cards.
  - Maps and charts of areas covered by the companies
- These items will be put together for each factory and will be called the “**Marketing Manual**”.

### Participation in Trade Shows

The PNG seafood export marketing capacity has no apparent limits on the growth that might be achieved, however, they do not yet have the sophisticated promotional imagery and established sales organizations needed to rapidly connect buyer to seller in the international market place. This can be achieved in part by attending **trade shows**. It is suggested that the Fine Food Fares be attended for introductory booth development concepts and for development of the PNG image in the Australian market.

Seafood Trade shows of importance:

- Brussels Seafood Show
- Boston Seafood Show
- West Coast Seafood Show
- Fine Food Fare – Australia
- Japan FoodEX
- Asian Seafood Show
- New Zealand Seafood show

### Imagery

A generic campaign at trade shows promoting PNG seafood is envisioned and based on the following:

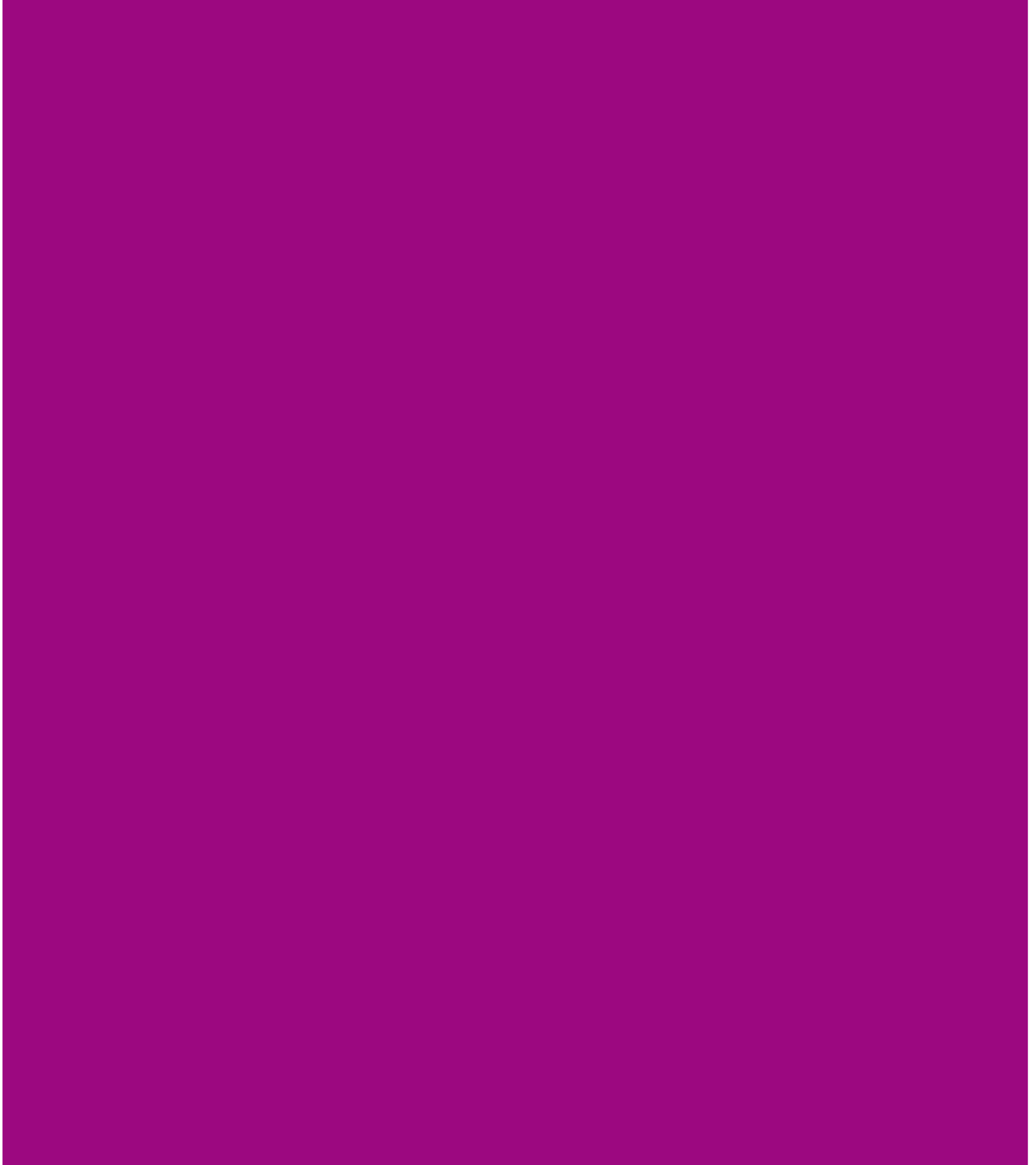
- Organize a PNG Seafood Pavilion at selected seafood and trade shows in accordance with industry needs and resources. Initially Fine Food Fair Australia.
- **The Pavilion** would be set up to reflect the beauty of the tropics with tropical flowers, exotic artwork and traditional image.
- “**Product Modules**”. Individual companies would display their products in the pavilion as “Product Modules”.
- **Logo and wordmark**: Develop, utilize and publicize the logo and wordmark identities of PNG seafood.
- **Promotional literature**: Develop and distribute useful and affordable literature such as posters, brochures and recipe cards, in both printed and electronic form, for generic and company use.
- **Advertising**: Plan, design and run advertisements in seafood and consumer media such as magazines, news, radio and television as needs dictate and resources allow.

- **Promotional events:** Design and conduct regional, national and international promotional events to enhance the image of PNG's seafood. "The PNG Seafood Show".
- **Public relations activities:** Design and conduct regional, national and international promotional PR activities (such as sending press releases) that cause PNG seafood to be featured in editorials, media such as newspapers, magazines and television.
- **Direct-mail promotions and lead responses:** Conduct promotions of specific products at critical times and respond to magazine advertising leads by direct mail.
- **Lead tracking database:** Record, organize, and distribute collect leads to PNG seafood.
- **Photo and promotional equipment library:** Develop and maintain a library of PNG seafood photography, display equipment and video clips, useful in promotions by industry companies and distributors. Additionally, the photos will be useful for loan to journalists writing about seafood.

#### **Additional Items**

Website

# Appendix I



## Appendix I MELBOURNE SEAFOOD CENTRE, SEAFOOD AGENT

Dear Supplier,

As a new supplier to our company, we wish to inform you of our operations.

McLaughlin Consolidated Fishermen Ltd is now the largest agent in the Melbourne Wholesale Fish Market.

The McLaughlin family has been in the Melbourne Wholesale Fish Market for over 40 years, and together with its fishing industry partners, Consolfish, operate 7 stalls in the Melbourne Wholesale Fish Market. Also, we have an export factory nearby in Footscray. Not only do we sell fresh fish, but also frozen lines and our own frozen products. This means that we have many options for the best marketing plan for your fish; we can sell, export, or process to ensure your fish receives the top market prices available.

Regular contact with our suppliers and customers is important to us, and we would like to hear any comments or suggestions you may have to offer. If you can suggest any initiatives that would assist with the marketing of your fish, we would be more than happy to discuss them with you. We believe that we have become the trendsetters in the market, and your input will help us to retain this position. We are also anxious to hear of any problems or criticisms that you may have.

This Company is driven by a Board that consists of 50% fishermen and 50% McLaughlin family, with an independent chairperson, Murray Rogers AM, ex Kelloggs (Exec. Chairman), Australian Wheat Board (Managing Director) and widely respected in the food industry. The fishermen Directors are elected to the Board by the fishermen shareholders.

We have enclosed a list of our Managers and staff and their contacts details for your convenience, a set of sending instructions and also enclosed a sheet for your details, which we need you to complete and return to us. Please do this even if you are already a supplier to us, so that we can ensure that our records are up to date.

If you are ever unhappy with us, please tell us, if you are happy, tell your friends. We are here to help.

We look forward to a long and prosperous business relationship together.

Andrew McLaughlin

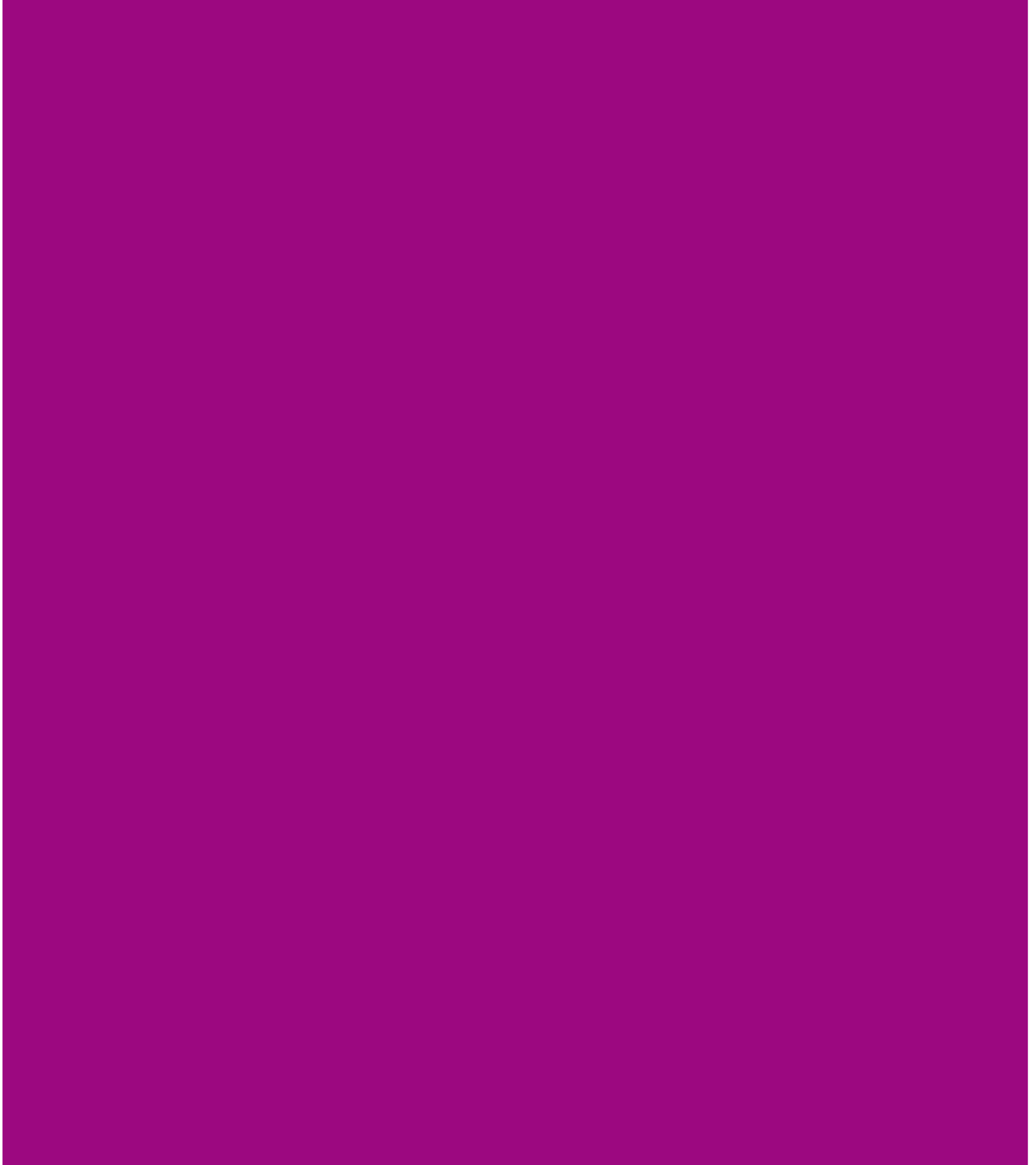
Managing Director

### Company Contacts

Telephone	Office	03 9689 3033
Facsimile	Office	03 9687 5304
Andrew McLaughlin	Managing Director	0410 553 606
Nathan White	Chief Operations Manager	0417 331 917
David Juricevich	Sales Manager - Seafood Processing	0419 883 280
Vince Beatie	Foreman	0408 386 909
Fiona Woo	Fresh Seafood Payments Manager	03 9689 3033
Mark Sita	Office Manager	03 9689 3033
Email	admin@mclaughlins.net.au	
Mail	McLaughlin Consolidated Fishermen Ltd.	

Stall1, 133 Kensington Road,  
West Melbourne, Vic, 3003.

# Appendix J



## Appendix J SYDNEY SEAFOOD MARKET IMPORT CONDITIONS

### Sydney Seafood Market consigning from overseas

#### 1. PRODUCT MAY BE PACKED IN:

- Two layers of plastic inside an approved container (foam box or waxed carton)
- Chill fish to between -1°C and 5°C and add sufficient ice to keep product cold until sold.

#### 2. LABEL CONTAINERS ON SHORT END WITH:

- Suppliers name and SFM code number
- Species
- Net weight of fish
- Size (Small, Medium, Large, Extra Large)
- Processing method (e.g.. GU=Gutted, GH=Headed/Gutted, GG=Gilled/Gutted, FI=Fillets)

Labels are 12.5 cm wide by 10 cm

We can supply your own customised bar-coded labels at \$9.90 (including GST) per 100 labels. Phone+ 61 2 9004 1100, Fax +61 2 9004 1171, or Email [labels@sydneyfishmarket.com.au](mailto:labels@sydneyfishmarket.com.au) to order.

#### 3. IMPORT DOCUMENT REQUIREMENTS

Australian Quarantine & Inspection Service (AQIS) regulations require that finfish imported with the heads on (from countries other than New Zealand) must be covered by a special import permit. Please check with SFM before consigning any fish, as SFM may not carry an Import Permit for your country of export. Failure to do so may result in the consignment being delayed by AQIS and/or Australian Customs.

If your country of export is New Zealand, SFM is able to co-ordinate the Import clearances for your product through Australian Customs and AQIS. For all other exporters, please contact SFM to ascertain if we can clear your shipments.

Should SFM be able to obtain clearances on your behalf, we will require a full set of import documents (Air Waybill, pro forma invoice, certificate as to country of origin, and any relevant health certificates) emailed or faxed to SFM as early as possible on the day the product is to arrive in Sydney. A detailed packing list is also very useful. If the documents are not received by 2:00pm Sydney time we cannot guarantee obtaining the necessary clearances before Customs and AQIS offices close.

The documents should be emailed to [intreceivals@sydneyfishmarket.com.au](mailto:intreceivals@sydneyfishmarket.com.au) or faxed to: +61 2 9004 1171

For all shipments received from New Zealand, SFM covers the cost of obtaining clearances, but AQIS charges for any laboratory tests that may be required will be deducted from the supplier's account. For ALL OTHER countries, ANY charges incurred by SFM will be deducted from the supplier.

#### 4. PREPARE MANIFEST WITH FULL DETAILS OF CONSIGNMENT:

- Supplier name and SFM account number
- Date consigned and transport details
- Total number of boxes
- Full details of species and weight in each box including size and processing

Give a copy of manifest to transport company with consignment. Fax (if possible) to SFM on +61 2 9004 1171.

#### 5. MARKET OPEN TO RECEIVE PRODUCT

From 1.00pm Sunday and from 3.00pm Monday – Thursday afternoons – open all night.



## 6. WHAT SYDNEY FISH MARKET CHARGES FOR ITS SERVICES:

### Margin rates:

- Fish and mollusc 9%  
(Charged to suppliers who supply a minimum of \$200,000 gross in each financial year)
- Crustacea (prawns, crabs, lobsters) 7½%  
(Charged to suppliers who supply a minimum of \$200,000 gross in each financial year)
- Fish and mollusc 11%  
(Charged to suppliers who supply less than \$200,000 gross in each financial year)
- Crustacea (prawns, crabs, lobsters) 9.5%  
(Charged to suppliers who supply less than \$200,000 gross in each financial year)

### Airport Collections:

- Airport Pickup - 15.5 cents per kilogram (Net weight, charged by SFM)
- Airport Terminal Fee - Amount varies depending on Terminal operator handling your product (this fee is invoiced to SFM and recovered from the supplier)
- Import Clearance Fees (e.g. Customs, Quarantine)

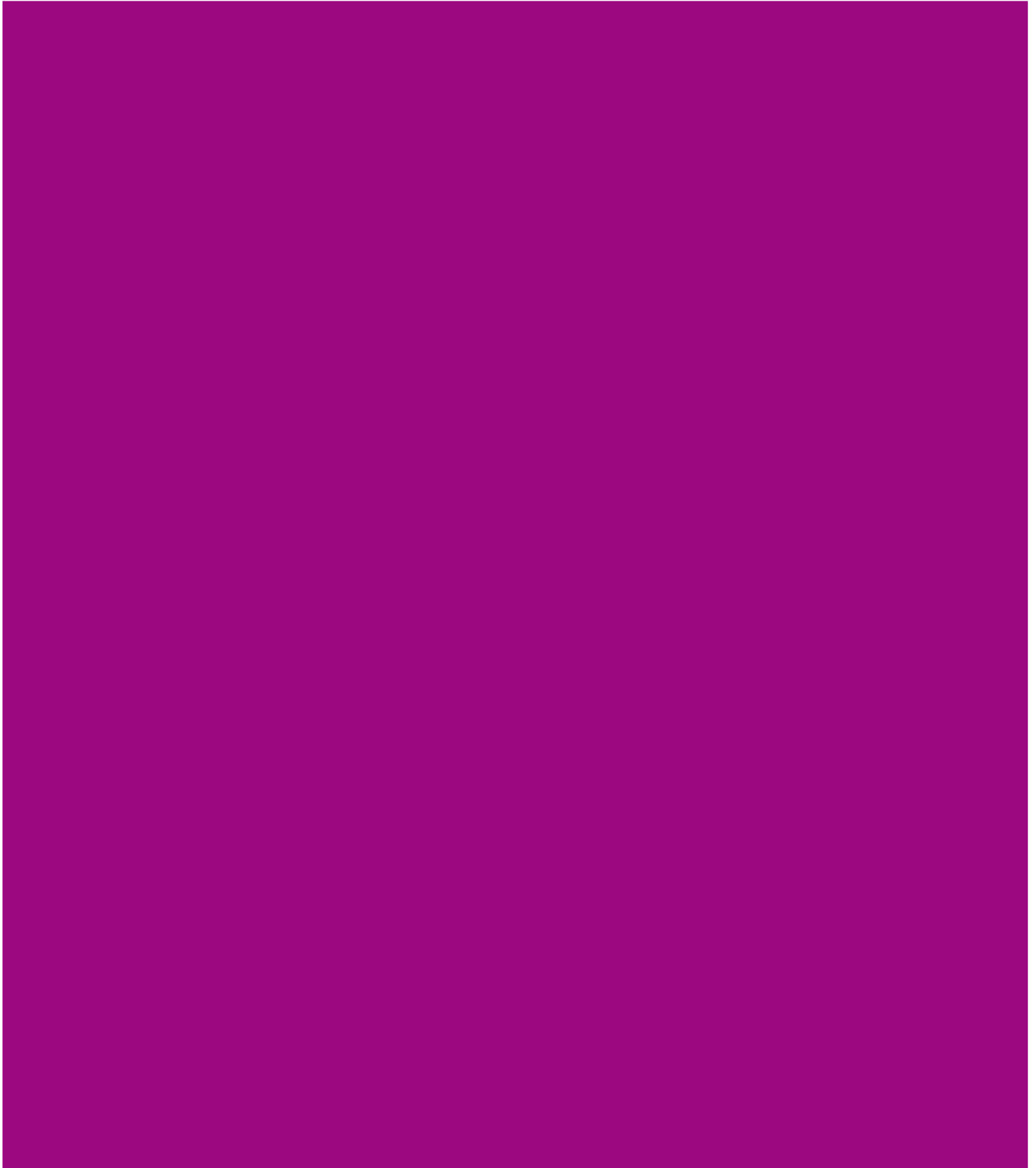
### Supply of labels

We can supply your own customised bar-coded labels at \$9.90 (including GST) per 100 labels.

Phone +61 2 9004 1100, Fax +61 2 9004 1177, or Email [labels@sydneyfishmarket.com.au](mailto:labels@sydneyfishmarket.com.au) to order.



# Appendix K



## Appendix K SYDNEY SEAFOOD MARKET AUCTION PRICES (AUD, OCT 2016)

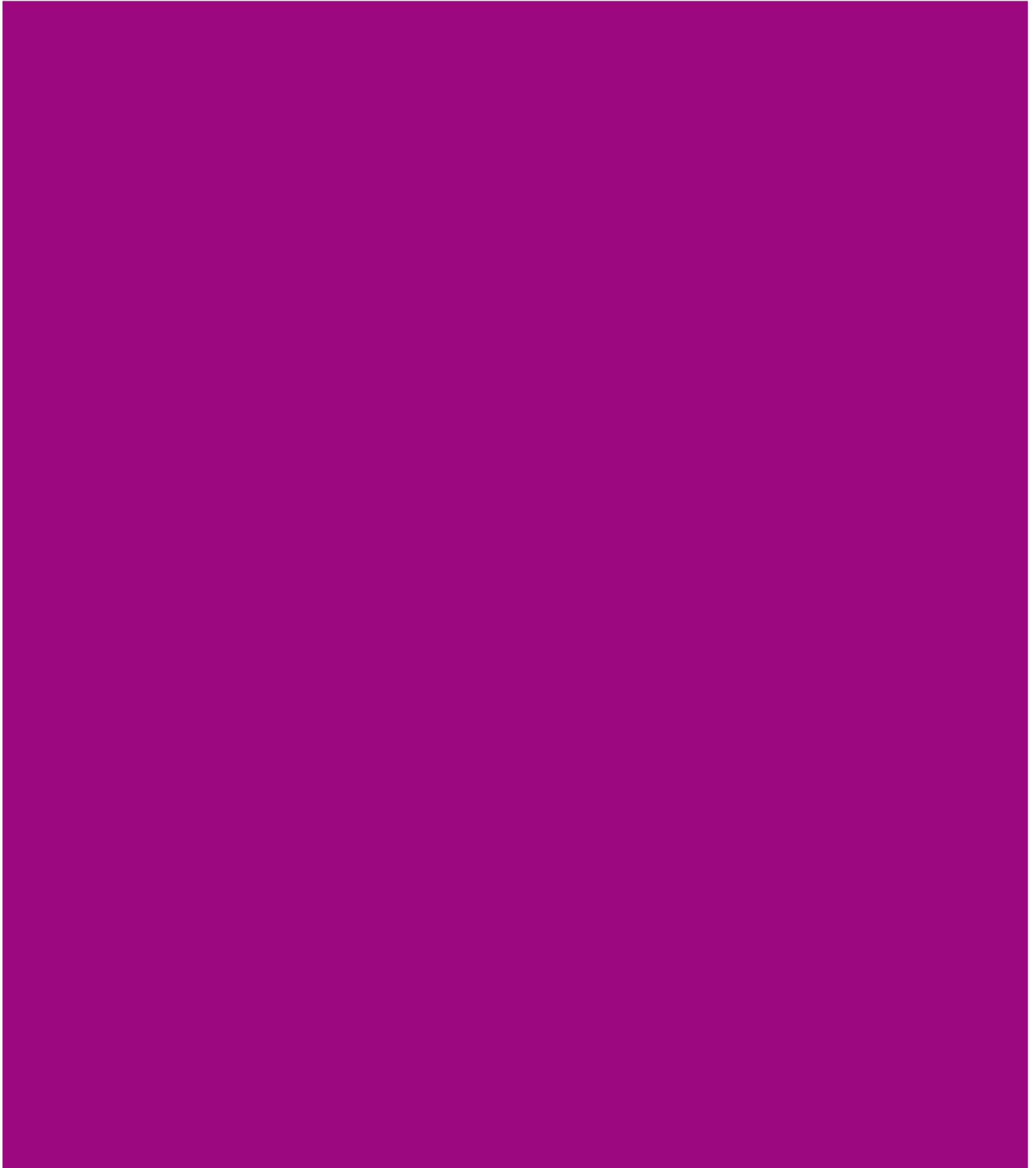
### TIER #1 SPECIES - Attracting consistent strong demand and viewed as and achieving premium pricing returns

TIER #1 SPECIES		PRICE RANGE		
SFM IDENTIFIED	SPECIES	LOWS	HIGHS	SIZE / GRADING / FORM COMMENT
CORAL TROUT	<i>Plectropomus leopardus</i>	\$ 25.00	\$ 35.00	Best returns for fish graded 600/800, 800/1.2kg, 1-2kg
* Importers should note market preference and premium returns for brighter red and orange coloured fish. Closely related species such as <i>Plectropomus maeulatus</i> , <i>Plectropomus areolatu</i> , <i>Plectropomus oligacanthus</i> , <i>Plectropomus laevis</i> & <i>Variola albbimarginata</i> are also highly regarded and can achieve slightly lower average returns				
RED EMPEROR	<i>Lutjanus sebae</i>	\$ 10.00	\$ 13.00	Best returns for fish graded 800-1.2kg, 1-2kg, 2-3kg. Fish with bright colour preferred
GOLDBAND SNAPPER	<i>Pristipomidis multidentis</i>	\$ 8.00	\$ 11.00	Fish of 1.5kg and over achieving best returns for filleting purposes
SPANISH MACKEREL	<i>Scomberomorus commerson</i>	\$ 12.00	\$ 20.00	Prices quoted include those for H&G product supplied which is common
GREY MACKEREL	<i>Scomberomorus semifactasciatus</i>	\$ 11.00	\$ 18.00	Prices quoted include those for H&G product supplied which is common
SPOTTED MACKEREL	<i>Scomberomorus munroi</i>	\$ 8.00	\$ 14.00	Fish mostly in the 2-4kg range
SCHOOL MACKEREL	<i>Scomberomorus queenslandicus</i>	\$ 8.00	\$ 14.00	Fish mostly in the 2-4kg range
KINGTHREADFIN	<i>Polyducttylus macrohir</i>	\$ 8.00	\$ 12.00	Larger fish between 4-8kg achieve better returns
<b>TIER #2 SPECIES - Popular with SFM buyers but in periods of strong supply auction returns at the lower price range</b>				
SADDLETAIL SNAPPER	<i>Lutjanus malaborious</i>	\$ 4.00	\$ 7.00	Much sort after for retail fillets. Whole fish above 1kg preferred
CRIMSON SNAPPER	<i>Lutjanus erythropterus</i>	\$ 4.00	\$ 7.00	Much sort after for retail fillets. Whole fish above 1kg preferred
GOLDEN SNAPPER	<i>Lutjanus johnii</i>	\$ 7.00	\$ 10.00	Fish 1-2kg preferred
SPANGLED EMPEROR	<i>Lethrinus nebulosus</i>	\$ 8.00	\$ 12.00	Fish 1-2kg preferred
RED THROAT EMPEROR	<i>Lethrinus miniatus</i>	\$ 7.00	\$ 10.00	Fish 700-1.2kg common and preferred
RED SPOT EMPEROR	<i>Lethrinus lentjan</i>	\$ 7.00	\$ 10.00	Fish 700-1.2kg common and preferred
YELLOW SPOT ROCK COD	<i>Epinephelus areolatus</i>	\$ 8.00	\$ 11.00	Graded as small 500/750g and 1-2kg
GOLD SPOT ROCK COD	<i>Epinephelus coioides</i>	\$ 8.00	\$ 12.00	Demand for fish in the 2-4kg range but fish up to 10-15kg attract good returns

In addition, there is a large group of cods and groupers that attract strong buyer interest -

**CORAL ROCK COD, (*Cephalopholis miniata*) TOMATO ROCK COD, (*Cephalopolis sonnerati*) RADIANT ROCK COD, (*Epinephelus radiatus*) COMET GROUPER, (*Epinephelus morrhau*) BANDED GROUPER, (*Epinephelus amblycephalus*)**

# Appendix L



## Appendix L PRAWN VIRUS TESTING RESULTS FOR PNG

In 2009 in response to the changes in Australian import requirements and findings of the IRA issued in 2009 that whole prawns should only be imported from countries free of White Spot Syndrome Virus (WSSV), Yellowhead Virus (YHV) and Taura Syndrome Virus (TSV) PNG's NFA undertook some screening testing for these viruses in PNG prawn stocks.

PNG's Audit and Certification Unit sent frozen samples of prawn species from various locations in the Gulf of Papua to the Virology Laboratory of the Elizabeth Macarthur Agriculture Institute in NSW for testing. A letter dated 30<sup>th</sup> April 2009 to Dr. P. D. Kirkland, Senior Principle Research Scientist, Virology Laboratory requested: 'The Papua New Guinea National Fisheries Authority (PNGNFA) is the body deemed by the PNG Government as the competent authority to oversee functions of export of seafood to international markets. Due to public quarantine alert by AQIS on white spot virus (WSSV), PNGNFA is taking steps towards establishing informative database for all our local prawn exporters. Although some of these companies do not export directly to Australia, we would like to collect sufficient data to know the status of our local companies in relation to WSSV'.

The lab did not test for Taura Syndrome Virus (TSV).

The prawns were obtained from Fishing Vessel: FV Ipali, now owned by Tatiduh Seafoods, and caught in the following locations: Lelefiru, Kerema, Wamai, Silo, Cape Kopura, and Miaru.

**Table1. Prawn sampling reference, Dec 2009**

Report Number: <b>M09-11641-F-V2</b>	Job Manager: Carollyne Sewell
Date Issued: <b>4 Dec 2009 Final Report</b>	Owner: NFA
<b>Your Ref:</b> N09012452 DME	Job Type: Crustacean
<b>Our Ref:</b> M09-11641	Property: Prawn
<b>Prev. Ref:</b>	Date Sent: 24 Nov 2009
<b>Laboratory Enquiries:</b> 1800 675 623	Date Received: 24 Nov 2009
<b>Invoice Enquiries:</b> 1300 720 773	

**Table 2. Summary of prawn virology tests, November 2009 (For samples received: 4 X 13 bags frozen prawns, AQIS # N09012452 DME Quarantine Entry Permit number: IP09013454).**

Sample No.	Sample ID	Sample Desc	WSSV Real Time PCR	IHNNV Real Time PCR	YHV Real Time
1-13	SI-09-(1-13)-B BAG 01-13	Frozen Banana Prawn 01-13	Negative	Negative	Negative
14 - 26	SI-09-(1-13)T BAG 01-13	Frozen Tiger Prawn 01-13	Negative	Positive	Negative
27-39	SI-09-(1-13)E BAG 01-13	Frozen Endeavour Prawn 01-13	Negative	Negative	Negative

Initially NFA had anticipated sending one shipment made up of four batches of 52 pools in the month of July and another 52 pools in the month of October for the year 2009, so the set time period would be only two months. All samples fitted together in two packages and sent on 20 Nov 2009.

The total cost for analysis alone at one time was calculated as follows \$80 x 52 pools = \$4,160. However, actual cost was AUD \$11,743.68. NFA did not incur any cost for sampling itself because they arranged with the licensed operators and explained the sampling plan for them to collect our samples whilst on fishing trip.

These costs for one sampling exercise may possible have terminated the exercise.

An ACIAR programme<sup>3</sup> undertook to determine whether prawns sampled from natural populations in the participating countries carry any of the major prawn viruses: WSSV, IHNV, YHV, GAV, TSV, MBV, and HPV<sup>4</sup>

The PCR testing indicated presence or absence of the seven viruses in PIC *P. monodon* stocks from PNG and Solomon Islands. Table 2 shows results for the three viruses White Spot Syndrome Virus (WSSV) Yellowhead Virus (YHV) Taura Syndrome Virus (TSV) for PNG. The virus testing was the most comprehensive for PNG and the results are valuable in describing what is and is not present in the country.

**Table 3. Summary of results of prawn's virus testing on *P. monodon* sent from PNG.**

<b>Virus</b>	<b>PNG</b>
<i>Number of samples / pools for testing</i>	<i>20 / 7</i>
White Spot Syndrome Virus (WSSV)	Negative
Yellow Head Virus (YHV)	Negative
Taura Syndrome Virus (TSV)	Negative

Unfortunately, the testing stopped there and no verification or audit sought from Australia by NFA to show that PNG prawn fishery was indeed free of the risk pathogens.

1 NEWSLETTER OF THE NATIONAL FISHERIES AUTHORITY ISSUE No. 4 July - August, 2004

2 Issue 41, July 4, 2016

3 Feasibility of establishing specific pathogen free stocks of shrimp in the Pacific (MS0805)

4 Mini-project MS0805 – Feasibility of establishing specific pathogen free stocks of shrimp in the Pacific