



**ECONOMIC AND SOCIAL INDICATORS
FOR THE QUEENSLAND SPANNER
CRAB FISHERY, 2017/18 AND
2018/19**

A report to Fisheries Queensland

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GLOSSARY

Beach Price: refers to the unimproved price received by commercial fishers when landing their catch at the beach, wharf or port (also referred to as wharf price and comparable to farm gate price), and is generally expressed in terms of \$/kg or \$/unit. Processing margins are not included in the beach price as processing operations are assumed to occur further along the value chain. The use of beach prices also removes the effect of transfer pricing by the firm if it is vertically integrated into the value chain.

Boat Business Profit: is defined as *GOS less Depreciation less Owner-operator and Unpaid Family Labour*. Boat Business Profit represents a more complete picture of the actual financial status of an individual firm, compared with GOS, which represents the cash in-cash out situation only.

Boat Cash Income: is defined as Gross Operating Surplus less imputed wages for owner- operator and unpaid family labour.

Boat Gross Margin: is defined as *Total Boat Income less Total Boat Variable Costs*. This is a basic measure of profit which assumes that capital has no alternative use and that as fishing activity (days fished) varies there is no change in capital or fixed costs.

Cost of Management Services: in a commercial fishery management services will generally include biological monitoring and reporting; policy, regulation and legislation development; compliance and enforcement services; licensing services; and research.

Days Fished: refers to the number of days fished at the 'boat mark' level, or at a business level where there is no boat mark. For example, a business with two boat marks that fished on 200 days each through the year has 400 days fished.

Depreciation: Depreciation refers to the annual reduction in the value of working capital due to general wear and tear or the reduction in value of an item over time. Note this is a measure of economic depreciation not accounting depreciation¹.

Gross Operating Surplus (GOS): is defined as *Total Boat Income less Total Boat Cash Costs* and is expressed in current dollar terms. GOS may be used interchangeably with the term Gross Boat Profit. A GOS value of zero represents a breakeven position for the business, where TBCC equals Total Boat Cash Receipts (TBCR). If GOS is a negative value the firm is operating at a cash loss and if positive the firm is making a cash profit. GOS does not include a value for owner/operator wages, unpaid family work, or depreciation.

Gross Value of Production (GVP): refers to the value of the total annual catch for individual fisheries, fishing sectors or the fishing industry as a whole, and is measured in dollar terms. GVP, generally reported on an annual basis, is the quantity of catch for the year multiplied by the average monthly landed beach prices.

Owner-operator and Unpaid Family Labour: in many fishing businesses there is a component of labour that does not draw a direct wage or salary from the business. This will generally include owner/operator labour and often also include some unpaid family labour. The value of this labour needs to be accounted for which involves imputing a labour cost based on the amount of time and equivalent wages rate. In the above calculations this labour cost can be included simply as another cost so that Gross Operating Surplus takes account of this cost. Alternatively, it can be deducted from GOS to give a separate indicator called Boat

¹ Accounting depreciation allocates the cost of an asset over its useful life.

Cash Income. Owner-operator and unpaid family labour is separated into variable labour (fishing and repairs and maintenance) and overhead labour (management and administration).

Profit at Full Equity: is calculated as *Boat Business Profit* plus *rent, interest and lease* payments less *depreciation associated with leased capital*. Profit at Full Equity represents the profitability of an individual fishing business, assuming the business has full equity in the operation, i.e. there is no outstanding debt associated with the investment in working capital. Profit at Full Equity is a useful absolute measure of the economic performance of fishing firms.

Rate of Return to Capital: is calculated as *Profit at Full Equity* divided by *Working Capital* multiplied by *100*. This measure is expressed in percentage terms and is calculated for an individual fishing business. It refers to the economic return to the total investment in capital items, and is a useful relative measure of the performance of individual firms. Rate of return to capital is useful to compare the performance of various fishing businesses, and to compare the performance of other types of operators, and with other industries.

Total Boat Cash Costs (TBCC): defined as *Total Boat Variable Costs* plus *Total Boat Fixed Costs*

Total Boat Fixed Costs: are costs that remain fixed regardless of the level of catch or the amount of time spent fishing. As such these costs, measured in current dollar terms, are likely to remain relatively constant from one year to the next. Examples of fixed cost include:

- insurance
- administrative and industry fees
- office & business administration (communication, stationery, accountancy fees)
- interest on loan repayments and overdraft
- leasing.

Total Boat Income (TBI): refers to the cash receipts received by an individual firm and is expressed in dollar terms. Total boat income is calculated as catch (kg) multiplied by 'beach price' (\$/kg). Total boat income is the contribution of an individual fishing business to the GVP of a fishing sector or fishery.

Total Boat Variable Costs: are costs which are dependent upon the level of catch or, more commonly, the amount of time spent fishing. As catch or fishing time increases, variable costs also increase. Variable costs are measured in current dollar terms and include the following individual cost items:

- fuel, oil and grease for the boat (net of diesel fuel rebate)
- bait
- ice
- provisions
- crew payments
- fishing equipment, purchase and repairs (nets, lines, etc.)
- repairs & maintenance: ongoing (slipping, painting, overhaul motor).

Working Capital: includes capital items that are required by the fishing business to earn the boat income². It includes boat hull, engine, electronics and other permanent fixtures and tender boats. Other capital items such as motor vehicles, sheds, cold-rooms, and jetty/moorings are included to the extent that they are used in the fishing business. The value of capital utilised by the business (including fishing endorsement) is included in total working capital whether the business owns or leases it.

² Working capital should not be confused with financial capital which is money provided by lenders for a price (interest)).

ABBREVIATIONS

ABS	Australian Bureau of Statistics
CPI	Consumer Price Index
fte	full time equivalent
GRP	gross regional product
GSP	gross state product
GVP	gross value of production
R&M	repairs and maintenance
RBA	Reserve Bank of Australia

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EXECUTIVE SUMMARY

The principal aim of this study is to present a set of economic performance indicators for the Spanner Crab Fishery as well as to develop a method to create a consistent time series of economic information to aid management in future years. Data on some social indicators were also collected and are presented. For the purpose of this report, the Spanner Crab Fishery is managed through total allowable commercial catch with individual transferrable quotas issued to endorsed businesses (C2 and C3 symbols) and regulated by Fisheries Queensland on the East Coast of Queensland. A summary of key economic indicators is presented in Table ES-1.

Table ES-1 Summary of key economic indicators, 2017/18 and 2018/19

Indicator	2017/18	2018/19
Catch	1,005t	846t
Gross value of production (beach price)	\$9.3m	\$8.0m
Export value	\$0.3m	\$0.3m
Active businesses	45 businesses	36 businesses
Management cost/gross value of production	13.9%	17.5%
Return on total capital	5.5%	4.7%
Active endorsement value per active business	\$733,471	\$1,282,023
Gross state product (direct + flow-on)	\$16.0m	\$13.2m
Employment (direct + flow-on)	156 fte jobs	123 fte jobs
Net Economic Return	\$0.0m	\$0.3m
Net Economic Return/gross value of production	0.1%	4.3%

Overview of Approach

Businesses that operate in a commercial fishery in Queensland tend to operate in multiple fisheries. For this reason, a business level modelling approach was used rather than an aggregate or fishery level approach. This involved the following steps:

1. Collect administrative business level data
2. Collect fishery level data
3. Survey fishing businesses
4. Impute non-surveyed businesses at the business level for 2018/19
5. Attribute operating costs and capital value to the relevant fisheries
6. Calculate indicators for each fishery
7. Backcast to 2017/18 at a business level and re-calculate indicators.

Across all fisheries, a total of 268 usable survey responses were received from fishing businesses between September and December in 2019. In the Spanner Crab Fishery, a total of 9 responses were received that were used for economic indicators. This represents 20 per cent of active businesses in 2018/19 and at least 11 per cent in each region with active businesses. Nineteen per cent of quota units in 2018/19 were included in the survey sample. A total of 9 responses were received that were used to calculate social indicators.

The confidentiality of responses was made clear to respondents including that no individual response would be identifiable in reporting or provided to Fisheries Queensland and that any statistic published would be based on at least five responses.

Catch, Gross Value of Production and Exports

The total catch in the Spanner Crab Fishery decreased from 1,005t in 2017/18 to 846t in 2018/19, a decline of 16 per cent. Consequently, Spanner Crab Fishery GVP declined between 2017/18 (\$9.3m) and 2018/19 (\$8.0m). The value of international exports by commercial fishing businesses accounted for a small proportion of GVP in both years (\$0.3m in both 2017/18 and 2018/19).

Prices and First Market Destinations

The average price for the Spanner Crab Fishery was estimated to be \$9.30/kg in 2017/18 and \$9.40/kg in 2018/19. The most significant first market destination for spanner crab in 2017/18 and 2018/19 was Queensland (97 per cent in 2017/18 and 96 per cent in 2018/19). A small proportion of catch was exported internationally (3 per cent in both 2017/18 and 2018/19) and interstate (less than 1 per cent in both 2017/18 and 2018/19). It is important to note that market destinations for catch were sourced from survey data and may not include the final destination of the catch.

Management Costs

Estimated total Fisheries Queensland management costs for the Spanner Crab Fishery were \$1.3m in 2017/18 and \$1.4m in 2018/19. This represented 13.9 per cent of GVP in 2017/18 and 17.5 per cent in 2018/19.

Business Financial Indicators

In 2018/19, the average business's activity in the Spanner Crab Fishery generated a positive gross operating surplus (\$73,000), boat business profit (\$37,000) and profit at full equity (\$72,000), leading to a return on investment of 4.7 per cent including endorsement value (5.5 per cent in 2017/18). This means the average business earned enough income to cover its cash costs (including leasing), the imputed cost of unpaid labour used to operate the business and the cost of capital depreciation in both years.

Return on investment including endorsement value varied across regions in 2018/19 from 5.6 per cent in Wide Bay Burnett to 2.4 per cent in Fitzroy. Wide Bay Burnett had the highest profitability and was characterised by higher catch rates and higher costs relative to the other regions. The average financial position of businesses in all regions is similar to the fishery on the whole. That is, businesses earn a positive gross operating surplus and a positive profit at full equity as gross income fully covers cash costs, the imputed cost of labour and depreciation.

Economic Contribution

In 2018/19, the Spanner Crab Fishery contributed an estimated \$13.2m in gross state product (GSP) and 123 full-time equivalent jobs to the Queensland economy. This contribution included \$6.8m in GSP (68 fte jobs) from fishing activity, \$0.1m in GSP (2 fte jobs) from capital expenditure by fishing businesses, \$0.8m in GSP (9 fte jobs) from associated processing and \$5.5m (45 fte jobs) from flow-on effects in other sectors of the Queensland economy (primarily retail trade and personal and other services).

Net Economic Return

Net economic return is defined as the long-run profit from a fishery after all costs have been met.

Determining the opportunity cost of capital involves an assessment of the degree of financial risk involved in the activity. Commercial fishing operations in Australia are not risk free. Returns can be impacted both

positively and negatively by factors such as natural events, changes in market conditions, disease, and management regulations. For this analysis a range of opportunity cost rates from 7 to 15 per cent has been used.

Net economic return was estimated to be in the range of \$0.40m to -\$0.63m in 2017/18 and \$0.62m to -\$0.12m in 2018/19.

Social Indicators

Social indicators and demographic information were collected for the Spanner Crab Fishery.

Respondents to the business survey were mostly over 55 years of age, business owners and living in Queensland. The median time involved in commercial fishing was 30 years and median time as a licence owner 25 years. Most have a highest level of education of year 10 or equivalent. On average, fishers earn almost 90 per cent of their personal income from commercial fishing. Too few responses were received to publish the other common industries of employment for Spanner Crab fishers.

Most respondents indicated that they think commercial fishing is financially risky and that they feel insecure in their job. Around half feel unable to cope with changing regulations. Almost all respondents feel they understand fishery management arrangements but that management is making it more difficult to run their business and all said that it is has become more difficult to 'have a say' in management.

Overall, fishers indicated that they are satisfied with the lifestyle of being a commercial fisher. They also indicated that they are generally satisfied with life as a whole. Fishers indicated that they have strong ties to their community and that their community treats them fairly and respects their occupation. Fishers also identified that fishing is stressful and has physical costs to their wellbeing. Around half said that fishing has negative mental health impacts on them. Most fishers would not encourage young people to choose a fishing career and do not feel positive about the future of fishing in their region.

Future Opportunities

There is value in collecting this economic information annually. Access to current information about the economic state of an industry provides management and industry the information to respond to changing economic situations. This is especially important during times when industries experience significant change and the economic impacts of those changes need to be understood. Annual collection of economic information is current practice in the Queensland aquaculture industry producing the aquaculture production summary series which commenced in 2005. Regular economic reporting is also current practice in some other states and territories around Australia. For example, annual economic indicators have been reported for commercial fisheries in South Australia for more than 20 years (BDO EconSearch 2019a). This provides a valuable and current time series of economic information that the fisheries can draw upon, either from the point of view of fisheries management or from industry.

1. INTRODUCTION

The principal aim of this report is to present a set of economic indicators for the Spanner Crab Fishery as well as to develop a method to create a consistent time series of economic information to aid management in future years. Data on social indicators and demographic information were also collected.

The Queensland Sustainable Fisheries Strategy 2017-2027 (SFS) sets out a comprehensive reform plan for the next 10 years. Within the SFS there are a number of actions which will improve the management of Queensland fisheries. With respect to actions relating to fisheries monitoring, the SFS requires Fisheries Queensland to deliver a practical and cost-effective system to collect data on economic indicators from Queensland's professional fishers (i.e. commercial fishers and charter operators) and directly related stakeholders (e.g. fish processors, wholesalers, community groups). These economic indicators will be used by Fisheries Queensland to better understand the economics of each fishery and of the different types of fishers (e.g. level of activity, region of activity, mode of fishing) within each fishery.

Through the SFS, harvest strategies are being developed for the major fisheries. Within these harvest strategies, these economic and social indicators will be used to inform management decisions and to monitor progress towards desired targets. It is important that the indicators meet this requirement and provide appropriate baseline data.

The Queensland (QLD) fishing industry is diverse. Like many other industries, there are specialists that have a specific focus and more flexible businesses that change between activities depending on markets and circumstances. Some fishing businesses target only one species with one type of equipment, while others target a narrow range of different species according to season or price (e.g. trawlers choosing to target either prawns or scallops). Then there are businesses with a wider range of target species, such as those trawling for prawns, but sometimes line fishing for mackerel or snapper, using quite different equipment for each.

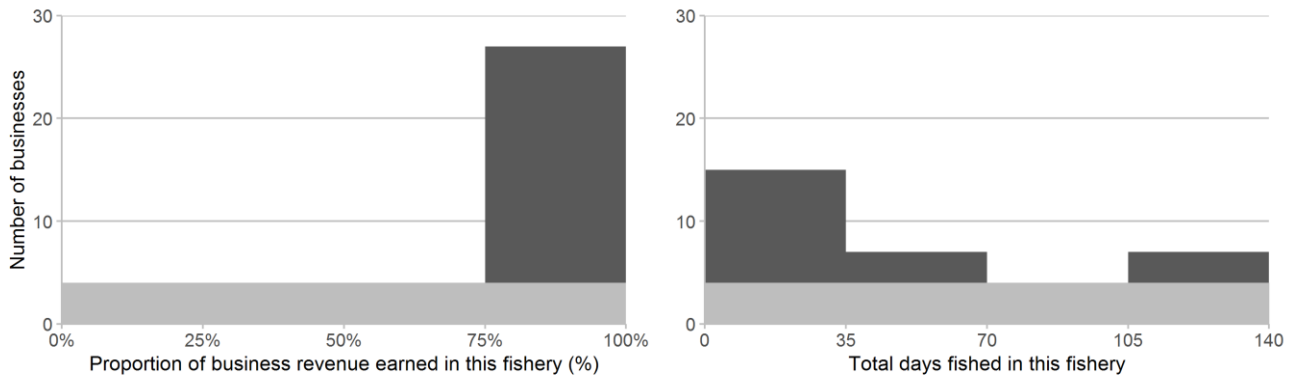
Considering the diverse nature of QLD fisheries, management decision making involves a complex mix of biological, economic and social considerations. There is a need to identify and explore cost-effective and efficient ways to incorporate economic and social information in harvest strategies and decision-making processes.

1.1. Fishery Background

For the purpose of this report, the Spanner Crab Fishery is managed through total allowable commercial catch with individual transferrable quotas issued to endorsed businesses (C2 and C3 symbols) and regulated by Fisheries Queensland on the East Coast of Queensland. Commercial spanner-crabbers are required to use dillies. Most of the Queensland catch is taken in deep oceanic waters south of Yeppoon. The total number of licences with access to the Spanner Crab Fishery are 370 using symbols C2 and C3 but not all licences are active in a particular year. There were 45 active businesses in 2017/18 and 36 in 2018/19. The difference between the total number of licences and active businesses is a result of the majority of quota being owned or leased by active businesses.

The Spanner Crab Fishery is specialised in that, on average, the businesses with activity in this fishery earn the majority of their revenue in this fishery (84 per cent) (i.e. only 16 per cent of revenue is earned in other fisheries). Figure 1-1 shows that the fishery is comprised almost entirely of full-time boats. The figure also shows the majority of businesses with activity in this fishery fished 70 days or less.

Figure 1-1 Revenue share of businesses^a in the Spanner Crab Fishery



^a Each visible bar in the above graphs represents at least 5 businesses for confidentiality reasons. The light grey band along the horizontal axis covers the area between 0 and 4 businesses to ensure confidentiality. The limits of the horizontal axis are set to show visible columns which means there may be businesses with greater days fished than the maximum axis values.

Source: 2019 Survey and Fisheries Queensland

1.2. Report Structure

Provided in Section 2 of this report is the method of analysis and a description of the survey of fishing businesses.

Indicators are presented in Sections 3 and 4 for the 2017/18 and 2018/19 financial years and include:

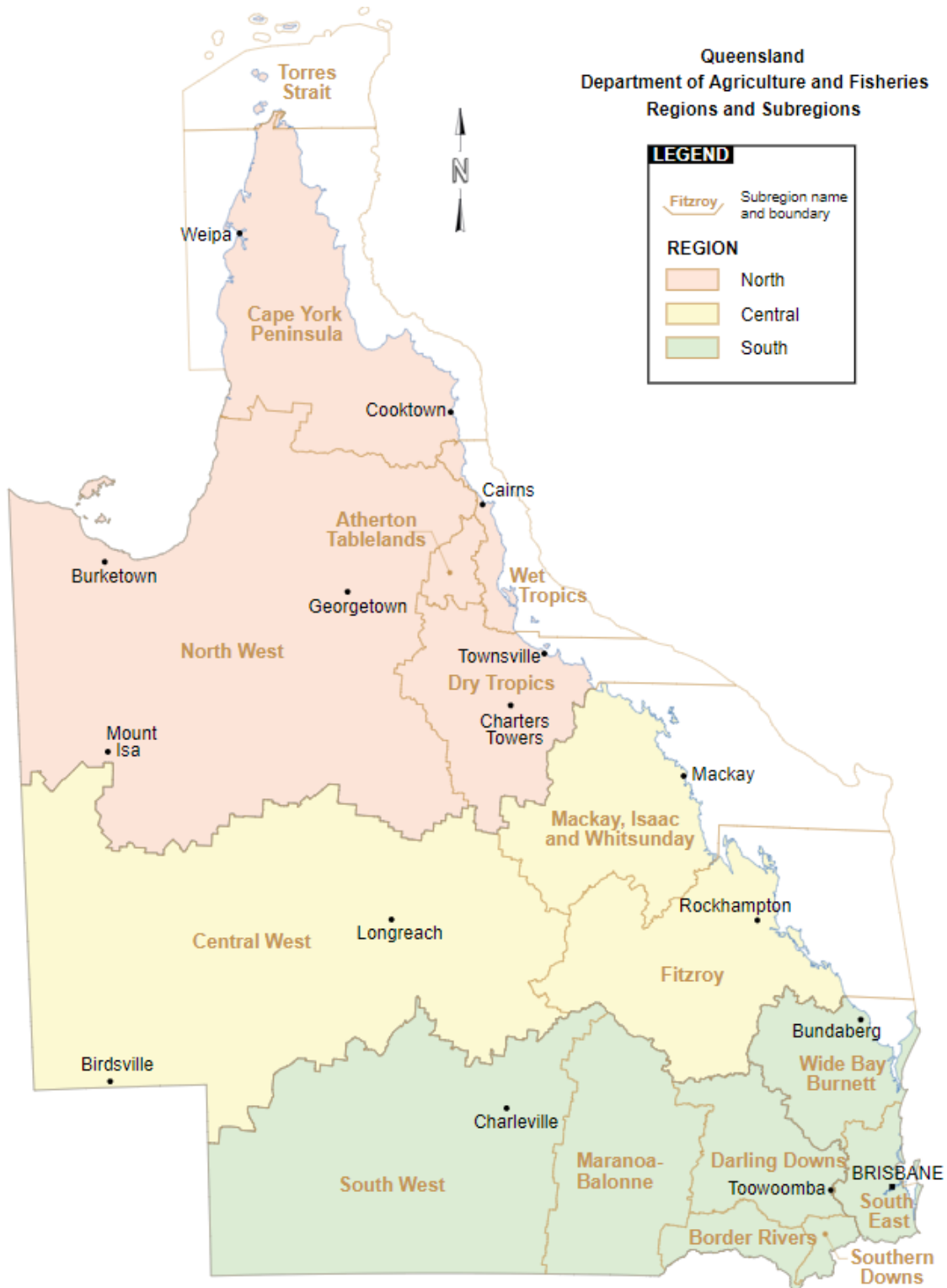
- fishery gross value of production (at beach price)
- species prices (beach price)
- the cost of management of the fishery
- business financial indicators (income, costs, profit and return on investment)
- fishery net economic return
- economic contribution of the fishery and associated processing (value and employment)
- social indicators
- demographic indicators.

Economic contribution results and business financial indicators are presented for Queensland as a whole and on a regional basis in accordance with the Department of Agriculture and Fisheries Subregion definitions (Figure 1-1). Only coastal regions are reported:

- North West
- Cape York Peninsula (includes Torres Strait)
- Wet Tropics
- Dry Tropics
- Mackay, Isaac and Whitsunday
- Fitzroy
- Wide Bay Burnett
- South East.

For purposes of comparison, summary economic indicators for all Queensland commercial fisheries are presented as appendices to this report.

Figure 1-2 Department of Agriculture and Fisheries Subregions used for reporting



Source: Business Queensland (2019)

2. METHOD OF ANALYSIS

2.1. Overview of Approach

Businesses that operate in a commercial fishery in Queensland tend to operate in multiple fisheries. This makes calculating indicators for any single fishery difficult as fishery activity is comprised of a combination of business types (full and part-time, single and multiple fishery operators). Since this research aims to develop indicators for all commercial fisheries in Queensland, a business level modelling approach was used rather than an aggregate or fishery level approach.

In a business level approach, the overall activity of each business is attributed to each fishery at the business level then total activity for each fishery is estimated by aggregating the business activities attributable to each fishery.

This involved the following steps:

1. **Collect administrative business level data:** logbook catch and effort, fishery access and quota, location of landings, fees. All were collected for 2017/18 and 2018/19. Catch data were sourced from fishing logbooks or quota reporting systems depending on which was considered most reliable by Fisheries Queensland for each species.
2. **Collect fishery level data:** cost of management for 2017/18 and 2018/19.
3. **Survey fishing businesses:** species prices and markets, operating costs, processing activity, employment (including unpaid), endorsement values/leasing costs, capital value and depreciation, social and demographic information. Data collection focused on the 2018/19 year to reduce survey burden on businesses. Data were collected respecting the confidentiality of fishing businesses and were used by BDO to produce the economic and social indicator reports. The data were not distributed outside of BDO and have not been provided to Fisheries Queensland.
4. **Impute non-surveyed businesses at the business level for 2018/19:** by taking the average of the five most similar surveyed businesses (to estimate business structure based on similar scale and efficiency businesses) then adjusting variable costs and employment using revenue and effort (to account for the individual level of catch and effort of the imputed business). Businesses were considered similar if they caught a similar quantity, in a similar number of days, in the same fisheries.
5. **Attribute operating costs and capital value to the relevant fisheries:** directly where possible (such as quota and effort units) and in proportion to revenue earned in each fishery otherwise. This implies a similar rate of return in each fishery that a business accesses under the assumption that businesses maximise return across multiple fisheries by adjusting their effort between them over time. It also implies that capital (such as a boat) can generally be used to access multiple fisheries.
6. **Calculate indicators for each fishery:**
 - a. Business financial indicators are disaggregated by region (with business activity attributed across regions based on the proportion of revenue landed in each), return on investment, days fished, and proportion of total business revenue earned in the fishery in question.
 - b. Fishery economic indicators are reported at the fishery level.

- c. Economic contribution indicators are reported for Queensland and for each of the coastal Subregions (Figure 1-2) with all business activity attributed across regions in proportion to the value of catch landed in each.
 - d. Social indicators are reported unweighted and at the fishery level for all businesses that accessed the fishery in 2017/18 and/or 2018/19.
7. **Backcast to 2017/18 at a business level and re-calculate indicators:** using administrative information on individual businesses and cost indices, then repeating steps 5 and 6 above. This was necessary as the survey focused on the 2018/19 year to reduce respondent burden.

2.2. Survey of Fishing Businesses

A survey of fishing businesses was carried out between September and December in 2019 and concluded before the COVID-19 pandemic and associated government responses impacted fishing businesses. Non-survey data used in the analysis was also from periods unaffected by COVID-19, the 2017/18 and 2018/19 financial years.

The survey involved collecting data from fishing businesses on species prices and markets, operating costs, processing activity, employment (including unpaid), endorsement values/leasing costs, capital value and depreciation, social and demographic information and focused on the 2018/19 year. The survey was implemented using a questionnaire that was developed in collaboration with Fisheries Queensland and with industry representatives. Businesses were asked to only include the amounts that were attributable to their Queensland fishing business. If exact figures were not available (e.g. from a tax return), then they were asked to provide careful estimates.

Businesses were invited to participate through multiple email and phone call invitations as well as through the endorsement of various industry groups. They were invited to respond through an online form, over the phone or through in-person interviews. Most responses were provided over the phone.

The confidentiality of responses was made clear to respondents including that no individual response would be identifiable in reporting or provided to Fisheries Queensland and that any statistic published would be based on at least five responses. This ‘five boat rule’ is commonly used to maintain confidentiality when reporting commercial fishing statistics, including by Fisheries Queensland. The matching approach used to impute non-responding business activity means that any statistic based on five or more businesses contains information from at least five surveyed businesses even if less than five surveyed businesses are included in the statistic.

Across all fisheries, a total of 268 usable³ responses were received, including 196 for economic indicators and 251 that could be used for calculating social indicators. Other respondents provided useful basic information such as prices and markets for species. The responses that could be used for calculating economic indicators represented almost one in five active businesses in 2018/19. Overall responses are summarised by fishery and region in Appendix 1.

In the Spanner Crab Fishery, a total of 9 responses were received that could be used for economic indicators. This represents 20 per cent of active businesses in 2018/19 and at least 11 per cent in each fishing region

³ All questions in the questionnaire were optional and some participants chose not to respond to some sections. Responses could only be used to estimate indicators if they were complete for the relevant section. For example, a response that included capital values but not operating costs could not be used to estimate economic indicators. However, if it included species prices and responses to demographic and social questions it could still be used to estimate species prices and social indicators.

with active businesses (Table 2-1). All 9 responses were also used to calculate social indicators. Nineteen per cent of quota units in 2018/19 were included in the survey sample. While this sample was sufficient to prepare the economic and social indicators, a larger sample would be required to further disaggregate results with confidence.

Table 2-1 **Survey sample in the Spanner Crab Fishery**

Fishing region	Active businesses (no.)		Proportion of active businesses in sample
	Population	Sample	
Fitzroy	9	1	11%
South East	33	8	24%
Wide Bay Burnett	26	5	19%
Queensland	45	9	20%

^a The sum of active businesses across the fishing regions does not equal the number of active businesses for Queensland because some businesses operate in more than one fishing region and have been counted against each.

Source: BDO EconSearch analysis

Future Opportunities

The survey of fishing businesses completed in 2019 was part of a one-off project to develop economic and social indicators but there is value in collecting this economic information annually. It will improve the ability of management and industry to respond to changing economic situations. This is especially important during times when industries undergo significant change and the economic impacts of those changes need to be understood. Annual collection of economic information is current practice in the Queensland aquaculture industry producing the aquaculture production summary series which commenced in 2005. Regular economic reporting is also current practice in some other states and territories around Australia. For example, annual economic indicators have been reported for commercial fisheries in South Australia for more than 20 years (BDO EconSearch 2019a). This provides an important time series of economic information that the fisheries can draw upon, either from the point of view of fisheries management or from industry.

2.3. Backcasting to 2017/18

The modelling procedure described in Section 2.1 was undertaken for activity in the 2018/19 financial year as this was the year focused on in the survey. Business level backcasting was used to estimate the activity of each business in 2017/18 before repeating steps 5 and 6 in Section 2.1 to calculate indicators for the 2017/18 financial year.

Backcasting involved adjusting the operating costs and employment for each business based on the difference in fishing effort and revenue between the years. Businesses that were active in 2017/18 but not 2018/19 were imputed as described in step 4 above. Further, prices of inputs were adjusted in line with changes in relevant cost indices (Table 2-2). Finally, fishing fees were calculated for 2017/18 using business level administrative data and quota leasing costs were calculated using business level quota management data and average costs from survey responses.

Table 2-2 Cost adjustments for business level backcasting to 2017/18

Adjustment	2017/18 value	2018/19 value	Adjustment amount	Cost items adjusted
National minimum wage	\$18.93/hr	\$19.49/hr	-2.9%	Unpaid labour
Wage Price Index for ordinary time hourly rates of pay excluding bonuses in public and private sectors	128.0	130.9	-2.2%	Paid labour
Automotive fuel component of CPI calculation for Brisbane	95.0	99.6	-4.6%	Fuel and lubricants
RBA Indicator Lending Rate: variable weighted-average rate on credit outstanding for businesses	5.69%	5.60%	1.6%	Interest and borrowing costs
Consumer Price Index for all groups in Brisbane	112.3	114.1	-1.6%	All other business operating costs

Source: BDO EconSearch analysis

3. ECONOMIC INDICATORS FOR THE QUEENSLAND SPANNER CRAB FISHERY

3.1. Catch, Gross Value of Production and Exports

The total catch, shown in Table 3-1, in the Spanner Crab Fishery decreased from 1,005t in 2017/18 to 846t in 2018/19, a decline of 16 per cent. Consequently, Spanner Crab Fishery GVP declined between 2017/18 (\$9.3m) and 2018/19 (\$8.0m). The value of international exports by commercial fishing businesses accounted for a small proportion of GVP in both years (\$0.3m in both 2017/18 and 2018/19) (Table 3-1).

It is important to note that the market destinations for catch relates to the transaction between the commercial fishing business and its immediate customer, which in many cases can be a wholesaler or processor. These data were sourced from survey data. Sales destinations of subsequent transactions are not considered in this report. A proportion of the catch sold locally by the commercial fishing business may be exported by businesses further down the supply chain. These reports do not try to estimate the total export value of Queensland seafood because they focus on the economics of Queensland's commercial fishing businesses and not the supply chain of Queensland seafood.

Table 3-1 Catch, GVP and export value of the Spanner Crab Fishery, 2017/18 and 2018/19

	2017/18	2018/19	Change
Catch (t)	1,005	846	-16%
GVP (\$m)	9.3	8.0	-15%
Export Value (\$m)	0.3	0.3	-4%

Source: Fisheries Queensland and 2019 survey

3.2. Prices and First Market Destinations

The average price for the Spanner Crab Fishery was estimated to be \$9.30/kg in 2017/18 and \$9.40/kg in 2018/19. Different forms of product have different prices and these vary over time however further data collection would be required to establish these prices. The most significant first market destination for spanner crab in 2017/18 and 2018/19 was Queensland (97 per cent in 2017/18 and 96 per cent in 2018/19). A small proportion of catch was exported internationally (3 per cent in both 2017/18 and 2018/19) and interstate (less than 1 per cent in both 2017/18 and 2018/19). It is important to note that market destinations for catch were sourced from survey data and may not include the final destination of the catch.

In the business survey, fishing businesses provided one average price for each species across the whole two-year period. Species prices were estimated as an average price weighted by catch of the surveyed fishers in each year. This means the difference in price between years is due to differing catch of surveyed fishers and not due to the same fishers describing a change in price between years.

3.3. Cost of Management

The costs incurred by Fisheries Queensland in managing Queensland's fisheries is not equal to the administration fees or licence fees charged by Fisheries Queensland to the fishing businesses. This section discusses the costs incurred by Fisheries Queensland and not the administration and licence fees charged by Fisheries Queensland to commercial fishing businesses.

While the total cost of managing Queensland's commercial fisheries is known, the precise cost of managing each individual fishery is difficult to determine. This comes about because the nature of managing fisheries requires considerable overlap in monitoring, assessment, management and compliance across fisheries. For example, to achieve efficiency benefits, the outputs of fishery monitoring activities have inputs into the management of several different fisheries. Therefore, allocating the costs of managing fisheries requires a subjective assessment based on the benefits derived by the individual fisheries from those activities. The costs of managing the commercial sector for each fishery were provided to BDO EconSearch by Fisheries Queensland. Costs were allocated to the fisheries based on the cost being incurred to enable the management of the fishery and then proportionally attributed to the respective sectors based on the benefits of management to the fishery. This was done for the purpose of developing economic indicators and should not be relied upon for any other purpose.

Estimated total management costs, as detailed in Table 3-2, for the Spanner Crab Fishery were \$1.3m in 2017/18 and \$1.4m in 2018/19. These costs were incurred while delivering the following services:

- annual reports fishery status
- policy and management services
- regulatory/legislation and licensing services
- compliance services
- directorate services
- extension services
- fishery monitoring and research services.

As a proportion of GVP total management costs were 13.9 per cent in 2017/18 increasing to 17.5 per cent in 2018/19 as a result of the decline in GVP and an increase in total management costs (Table 3-2).

Table 3-2 Costs of management in the Spanner Crab Fishery, 2017/18 and 2018/19

	2017/18	2018/19	Change
Management costs (\$m)	1.3	1.4	7%
GVP (\$m)	9.3	8.0	-15%
Management costs/GVP (%)	13.9%	17.5%	26%

Source: Fisheries Queensland and 2019 survey

3.4. Business Financial Indicators

The major measures of the financial performance of active businesses in the Spanner Crab Fishery for the period 2017/18 and 2018/19 are presented in Section 3.4.1. The estimates include businesses that participated in the survey and non-responding businesses modelled at the business level as described in Section 2.1. Average financial performance masks significant variation across types of businesses and their activities. To describe this variation, the same indicators are presented in Section 3.4.2 with businesses disaggregated by number of days fished in this fishery, return on investment quartile, share of revenue earned in the fishery, whole business boat value and fishing region.

3.4.1. Fishery average in 2017/18 and 2018/19

Business financial indicators are presented in Table 3-3 for average business and total activity in the Spanner Crab Fishery in 2017/18 and 2018/19. This section summarises the key points from the table.

Income

The average gross income for business activity in the Spanner Crab Fishery was estimated to be \$208,000 in 2017/18 and \$221,000 in 2018/19 (a 6 per cent increase). The total number of active businesses fell by more than total catch over the same period resulting in an increase in average gross income per business.

Costs

Total costs are separated into variable costs and fixed costs, the sum of the two is total boat cash costs. In 2018/19, variable costs represented a greater proportion (60 per cent) of total boat cash costs than did fixed costs (40 per cent). Average total boat cash costs decreased by 8 per cent between 2017/18 and 2018/19, a result of a 1 per cent fall in variable costs and an 18 per cent fall in fixed costs.

In 2018/19, for the fishery as a whole, around 44 per cent of total boat cash costs were attributable to labour costs (both paid and imputed), the biggest cost item. Imputed unpaid labour (\$20,000) was divided into variable (fishing and repairs and maintenance) (\$14,000) and fixed (management and administration) (\$5,900) components based on survey data. Other significant cash costs were leasing fees (21 per cent of total cash costs) and fuel (16 per cent).

Variable costs correlate strongly with fishing effort so the average cost of a day of effort can be calculated by dividing average variable cost by average number of days fished. A day of fishing cost approximately \$1,500 in variable costs in 2017/18 and \$1,600 in 2018/19, an increase of 2 per cent.

Cash Income and Profit

Boat gross margin is calculated as gross income less total variable costs and is a basic measure of profit. This assumes that capital has no alternative use and that, as fishing activity varies, there is no change in capital or fixed costs. Boat gross margin was \$105,000 in 2017/18 and \$119,000 in 2018/19, a 13 per cent increase due to a larger increase in gross income than variable costs.

Gross operating surplus is calculated at gross income less total boat cash costs (excluding imputed wages for operator and family members as a cost item). This measure of profit gives an indication of the capacity of the operator to remain in the fishery in the short term as unpaid labour does not affect business cash flow in the short term. Gross operating surplus was \$46,000 in 2017/18 and \$73,000 in 2018/19, an increase of approximately 56 per cent. This was due to a rise in revenue and a decline in total boat cash costs.

Boat cash income is calculated as gross income less total boat cash costs (including imputed wages). Boat cash income was around \$24,000 in 2017/18 and \$53,000 in 2018/19. Positive boat cash income suggests

that the average fishing business earned enough cash income to cover its cash costs and the imputed cost of unpaid labour used to operate the business.

Boat business profit is calculated as gross income less total boat cash costs (including imputed wages) and less depreciation. This represents a more complete picture of the actual financial status of an individual firm and their capacity to remain in the fishery in the long term as a positive boat business profit is required to pay imputed wages and replace capital at the rate it depreciates. This is the most comprehensive measure of profit for understand the financial performance of businesses that access the fishery by leasing endorsements, rather than owning them. Boat business profit was \$5,000 in 2017/18 and \$37,000 in 2018/19, meaning that sufficient cash income was earned by the average business to cover all cash costs, the imputed cost of labour and depreciation of capital in both 2017/18 and 2018/19.

Profit at full equity is a measure of the profitability of an individual fishing business, assuming the business has full equity in their operation (i.e. it excludes interest and borrowing costs as well as endorsement leasing costs). It is a useful absolute measure of the economic performance of fishing firms. Profit at full equity was \$57,000 in 2017/18 and \$72,000 in 2018/19.

Return to Capital

There are a number of interpretations of return to capital. For the purpose of this analysis it is appropriate to consider the capital employed by an average fishing business in the fishery, that is working capital for this fishery. Capital includes boats, endorsements (used for fishing rather than investing/leasing out), fishing gear, sheds, vehicles and other capital items used as part of the fishing enterprise. It does not include capital associated with non-fishing activities undertaken by the fishing business.

The average rate of return was 19.7 per cent in 2017/18 or 5.5 per cent if endorsement value is included in the value of capital. This increased to 28.3 per cent (4.7 per cent including endorsement values) in 2018/19.

Entitlement and Lease Values

The average total value of fishing endorsements (i.e. symbols C2, C3 and quota) used for fishing by active businesses was \$733,000 in 2017/18 and \$1.3 million in 2018/19. While the unit value was assumed to be the same in each year, the average number of active businesses, units owned and volume of leasing changed between years so the total values are different. On average, active businesses spent almost \$51,000 on leasing endorsements in 2017/18, decreasing to \$35,000 in 2018/19. Survey respondents suggested that the average value of a quota unit (C2) was \$34.41 and the average leasing cost per year was \$2.23 per unit across the 2017/18 to 2018/19 period.

Summary

In 2018/19, the average business's activity in the Spanner Crab Fishery generated a positive gross operating surplus (\$73,000), boat business profit (\$37,000) and profit at full equity (\$72,000), leading to a return on investment of 4.7 per cent including endorsement value (5.5 per cent in 2017/18). This means the average business earned enough income to cover its cash costs (including leasing), the imputed cost of unpaid labour used to operate the business and the cost of capital depreciation in both years.

Table 3-3 Financial performance in the Spanner Crab Fishery, 2017/18 and 2018/19

	2017/18			2018/19		
	Average per Business	Total for the Whole Fishery	Share of TBCC ^a	Average per Business	Total for the Whole Fishery	Share of TBCC ^a
Days Fished	66	2,983		65	2,328	
Catch (kg)	22,331	1,004,888		23,492	845,710	
Employment (fte)	1.9	86		1.9	68	
Employment (total)	3.4	155		3.1	111	
Prop. of Revenue Earned in this Fishery	86%	86%		84%	84%	
Active Businesses (no.)	45	45		36	36	
Sample Size (n)	9	9		8	8	
(1) Gross Income	\$207,669	\$9,345,121		\$220,937	\$7,953,748	
Variable Costs						
Fuel	\$26,931	\$1,211,878	15%	\$26,661	\$959,788	16%
Ice & Bait	\$3,746	\$168,580	2%	\$3,795	\$136,606	2%
Provisions	\$1,792	\$80,639	1%	\$1,552	\$55,862	1%
Labour - paid	\$52,502	\$2,362,576	29%	\$54,844	\$1,974,375	33%
(2) Labour - unpaid	\$16,477	\$741,461	9%	\$13,980	\$503,282	8%
Other	\$921	\$41,435	1%	\$793	\$28,530	0%
(3) Total Variable Costs	\$102,368	\$4,606,569	56%	\$101,623	\$3,658,443	60%
Fixed costs						
Licence Fee	\$1,821	\$81,939	1%	\$2,324	\$83,677	1%
Repairs & Maintenance	\$8,869	\$399,098	5%	\$9,570	\$344,514	6%
Insurance	\$4,745	\$213,537	3%	\$4,728	\$170,216	3%
(4) Interest	\$67	\$3,009	0%	\$54	\$1,941	0%
(5) Labour - unpaid	\$6,084	\$273,801	3%	\$5,921	\$213,159	4%
(6) Leasing fees	\$50,943	\$2,292,426	28%	\$34,565	\$1,244,350	21%
Legal & Accounting	\$1,588	\$71,458	1%	\$1,738	\$62,572	1%
Telephone etc.	\$672	\$30,258	0%	\$731	\$26,308	0%
Slipping & Mooring	\$4,171	\$187,689	2%	\$4,360	\$156,972	3%
Travel	\$379	\$17,072	0%	\$398	\$14,320	0%
Office & Admin	\$2,031	\$91,401	1%	\$2,168	\$78,055	1%
(7) Total Fixed Costs	\$81,371	\$3,661,690	44%	\$66,558	\$2,396,084	40%
(8) Total Boat Cash Costs (3+7)	\$183,739	\$8,268,258	100%	\$168,181	\$6,054,528	100%
Boat Gross Margin (1-3)	\$105,301	\$4,738,552		\$119,314	\$4,295,305	
(9) Total Unpaid Labour (2+5)	\$22,561	\$1,015,262		\$19,901	\$716,440	
Gross Operating Surplus (1-8+9)	\$46,492	\$2,092,125		\$72,657	\$2,615,661	
(10) Boat Cash Income (1-8)	\$23,930	\$1,076,863		\$52,756	\$1,899,221	
(11) Depreciation	\$18,922	\$851,511		\$16,070	\$578,523	
(12) Boat Business Profit (10-11)	\$5,008	\$225,352		\$36,686	\$1,320,697	
(13) Profit at Full Equity (12+4+6^b)	\$56,617	\$2,547,759		\$72,027	\$2,592,958	
Working Capital						
(14) Fishing Gear & Equip	\$287,473	\$12,936,287		\$254,108	\$9,147,892	
Licence & Quota Value	\$733,471	\$33,006,184		\$1,282,023	\$46,152,820	
(15) Total Working Capital	\$1,020,944	\$45,942,471		\$1,536,131	\$55,300,712	
Rate of Return on Fishing Gear & Equip (13/14*100)	19.7%	19.7%		28.3%	28.3%	
Rate of Return on Total Working Capital (13/15*100)	5.5%	5.5%		4.7%	4.7%	

^a Total boat cash costs.

^b Part of leasing and rent is assumed to cover depreciation of buildings and equipment so is excluded from profit at full equity.

Source: 2019 survey

3.4.2. Disaggregation of business financial indicators for 2018/19

The tables in this section present financial indicators for the fishery with the population of active businesses disaggregated across various dimensions: days fished, return on investment, share of business revenue earned in fishery, whole business boat capital value and region. Grouping businesses in different ways and comparing the financial indicators between groups provides insight into the relationships between business characteristics and financial performance.

Days Fished Quartiles

Business financial indicators are presented in Table 3-4 for the population of active businesses split into quarters of approximately equal size based on total number of days fished in this fishery in 2018/19. This provides insight into how costs and revenue differ between the most and least active businesses and shows whether economies of scale exist in the fishery.

The businesses that are most active in the fishery tend to be the most profitable. While the three most active quartiles have a positive gross margin, only the two most active quartiles have a positive return on investment. The businesses in the most active quartiles are also the most specialised with over 90 per cent of their gross income is earned in this fishery.

Return on Investment Quartiles

Business financial indicators are presented in Table 3-5 for the population of active businesses split into quarters of approximately equal size based on return on investment in 2018/19. This provides insight into the differences between the most and least profitable businesses such as cost relative to income, itemised cost amounts, capital utilised, scale of operation etc.

The top three quartiles have a positive gross operating surplus on average but only the top two quartiles have a positive return on investment (4.7 per cent including endorsement value in the second to top quartile and 9.4 per cent in the top quartile). These two quartiles are a little more specialised and significantly more active than the other two quartiles.

Share of Business Revenue Earned in Fishery

Business financial indicators are presented in Table 3-6 for the population of active businesses split into two groups (specialised and non-specialised) based on the proportion of business income earned in this fishery in 2018/19.

Return on investment including endorsement value was equal to the fishery average for both the low and high revenue share groups.

Whole Business Boat Capital Value

Business financial indicators are presented in Table 3-7 for the population of active businesses in this fishery split into quarters of approximately equal size based on the value of boat capital owned by the business and active in Queensland's commercial fisheries in 2018/19, regardless of which fisheries it was used in. This provides insight into how financial performance varies with boat size.

In 2018/19, there was no strong relationship between whole business boat capital value and return on investment.

Fishing Regions

Business financial indicators are presented in Table 3-8 by fishing region. Each business was divided into its activity in each region, then the sum of activity in each region was calculated across all businesses with the total presented in the table. This is different to the disaggregations discussed above which group together whole business activity in the fishery. Presenting results this way means that return on investment shows the return to fishing activity in each region.

Return on investment including endorsement value varied across regions in 2018/19 from 5.6 per cent in Wide Bay Burnett to 2.4 per cent in Fitzroy. Wide Bay Burnett had the highest profitability and was characterised by higher catch rates and higher costs relative to the other regions. The average financial position of businesses in all regions is similar to the fishery on the whole. That is, businesses earn a positive gross operating surplus and a positive profit at full equity as gross income fully covers cash costs, the imputed cost of labour and depreciation.

Table 3-4 Financial performance in the Spanner Crab Fishery, by number of days fished, 2018/19

	Average per Business				
	1 Quartile	2 Quartile	3 Quartile	4 Quartile	All Businesses
Days Fished	11	28	67	148	65
Catch (kg)	1,796	7,820	24,507	57,991	23,492
Employment (fte)	0.5	1.1	1.7	4.2	1.9
Employment (total)	1.3	3.1	2.6	5.4	3.1
Prop. of Revenue Earned in this Fishery	67%	86%	93%	90%	84%
Active Businesses (no.)	9	8	10	9	36
Sample Size (n)	2	0	2	4	8
(1) Gross Income	\$15,544	\$75,460	\$222,853	\$553,516	\$220,937
Variable Costs					
Fuel	\$3,981	\$11,039	\$22,685	\$67,644	\$26,661
Ice & Bait	\$557	\$1,457	\$3,045	\$9,942	\$3,795
Provisions	\$469	\$1,024	\$1,124	\$3,578	\$1,552
Labour - paid	\$2,897	\$20,537	\$46,544	\$146,507	\$54,844
(2) Labour - unpaid	\$8,358	\$15,036	\$13,911	\$18,741	\$13,980
Other	\$387	\$1,960	\$795	\$158	\$793
(3) Total Variable Costs	\$16,649	\$51,052	\$88,105	\$246,570	\$101,623
Fixed costs					
Licence Fee	\$2,155	\$1,930	\$2,356	\$2,809	\$2,324
Repairs & Maintenance	\$3,128	\$5,693	\$9,997	\$18,983	\$9,570
Insurance	\$1,848	\$3,856	\$3,629	\$9,604	\$4,728
(4) Interest	\$20	\$190	\$0	\$27	\$54
(5) Labour - unpaid	\$4,634	\$5,676	\$5,407	\$7,997	\$5,921
(6) Leasing fees	\$1,220	\$14,535	\$29,087	\$91,803	\$34,565
Legal & Accounting	\$705	\$1,035	\$1,731	\$3,404	\$1,738
Telephone etc.	\$235	\$517	\$881	\$1,250	\$731
Slipping & Mooring	\$691	\$1,966	\$2,092	\$12,678	\$4,360
Travel	\$97	\$155	\$147	\$1,193	\$398
Office & Admin	\$692	\$1,849	\$2,397	\$3,674	\$2,168
(7) Total Fixed Costs	\$15,425	\$37,402	\$57,725	\$153,422	\$66,558
(8) Total Boat Cash Costs (3+7)	\$32,074	\$88,454	\$145,830	\$399,992	\$168,181
Boat Gross Margin (1-3)	-\$1,105	\$24,407	\$134,748	\$306,946	\$119,314
(9) Total Unpaid Labour (2+5)	\$12,992	\$20,711	\$19,318	\$26,737	\$19,901
Gross Operating Surplus (1-8+9)	-\$3,537	\$7,717	\$96,341	\$180,262	\$72,657
(10) Boat Cash Income (1-8)	-\$16,530	-\$12,994	\$77,023	\$153,524	\$52,756
(11) Depreciation	\$11,949	\$22,916	\$9,990	\$20,862	\$16,070
(12) Boat Business Profit (10-11)	-\$28,479	-\$35,911	\$67,033	\$132,662	\$36,686
(13) Profit at Full Equity (12+4+6^a)	-\$27,217	-\$20,806	\$97,004	\$226,036	\$72,027
Working Capital					
(14) Fishing Gear & Equip	\$172,723	\$307,440	\$167,220	\$384,629	\$254,108
Licence Value	\$207,902	\$501,023	\$1,063,263	\$3,293,432	\$1,282,023
(15) Total Working Capital	\$380,625	\$808,464	\$1,230,482	\$3,678,061	\$1,536,131
Rate of Return on Fishing Gear & Equip (13/14*100)	-15.8%	-6.8%	58.0%	58.8%	28.3%
Rate of Return on Total Working Capital (13/15*100)	-7.2%	-2.6%	7.9%	6.1%	4.7%

^a Part of leasing and rent is assumed to cover depreciation of buildings and equipment so is excluded from profit at full equity.

Source: 2019 survey

Table 3-5 Financial performance in the Spanner Crab Fishery, by return on investment quartile, 2018/19

	Average per Business				
	1 Quartile	2 Quartile	3 Quartile	4 Quartile	All Businesses
Days Fished	26	30	91	111	65
Catch (kg)	4,702	8,254	34,536	46,476	23,492
Employment (fte)	1.0	0.9	2.5	3.2	1.9
Employment (total)	2.5	2.1	3.8	3.9	3.1
Prop. of Revenue Earned in this Fishery	83%	74%	86%	94%	84%
Active Businesses (no.)	9	9	9	9	36
Sample Size (n)	2	1	3	2	8
(1) Gross Income	\$45,015	\$67,499	\$308,720	\$462,516	\$220,937
Variable Costs					
Fuel	\$6,367	\$8,459	\$42,932	\$48,885	\$26,661
Ice & Bait	\$627	\$1,404	\$6,287	\$6,860	\$3,795
Provisions	\$545	\$573	\$2,885	\$2,203	\$1,552
Labour - paid	\$16,461	\$16,086	\$80,407	\$106,421	\$54,844
(2) Labour - unpaid	\$18,828	\$11,860	\$9,772	\$15,460	\$13,980
Other	\$1,395	\$1,125	\$101	\$548	\$793
(3) Total Variable Costs	\$44,224	\$39,508	\$142,385	\$180,377	\$101,623
Fixed costs					
Licence Fee	\$2,047	\$2,255	\$1,736	\$3,259	\$2,324
Repairs & Maintenance	\$6,079	\$6,474	\$14,705	\$11,022	\$9,570
Insurance	\$3,510	\$2,929	\$7,718	\$4,755	\$4,728
(4) Interest	\$27	\$41	\$147	\$0	\$54
(5) Labour - unpaid	\$12,271	\$5,199	\$2,329	\$3,885	\$5,921
(6) Leasing fees	\$4,142	\$10,583	\$50,994	\$72,543	\$34,565
Legal & Accounting	\$1,066	\$792	\$2,702	\$2,393	\$1,738
Telephone etc.	\$397	\$523	\$858	\$1,146	\$731
Slipping & Mooring	\$1,888	\$1,029	\$10,817	\$3,707	\$4,360
Travel	\$863	\$96	\$435	\$197	\$398
Office & Admin	\$1,595	\$1,659	\$1,867	\$3,551	\$2,168
(7) Total Fixed Costs	\$33,885	\$31,581	\$94,308	\$106,457	\$66,558
(8) Total Boat Cash Costs (3+7)	\$78,109	\$71,089	\$236,692	\$286,835	\$168,181
Boat Gross Margin (1-3)	\$791	\$27,991	\$166,335	\$282,139	\$119,314
(9) Total Unpaid Labour (2+5)	\$31,099	\$17,059	\$12,102	\$19,344	\$19,901
Gross Operating Surplus (1-8+9)	-\$1,995	\$13,469	\$84,129	\$195,026	\$72,657
(10) Boat Cash Income (1-8)	-\$33,094	-\$3,590	\$72,028	\$175,682	\$52,756
(11) Depreciation	\$23,872	\$11,975	\$17,751	\$10,682	\$16,070
(12) Boat Business Profit (10-11)	-\$56,967	-\$15,565	\$54,277	\$164,999	\$36,686
(13) Profit at Full Equity (12+4+6^a)	-\$52,602	-\$4,451	\$106,155	\$239,005	\$72,027
Working Capital					
(14) Fishing Gear & Equip	\$324,837	\$177,402	\$324,571	\$189,622	\$254,108
Licence Value	\$173,545	\$659,073	\$1,942,850	\$2,352,623	\$1,282,023
(15) Total Working Capital	\$498,382	\$836,476	\$2,267,422	\$2,542,245	\$1,536,131
Rate of Return on Fishing Gear & Equip (13/14*100)	-16.2%	-2.5%	32.7%	126.0%	28.3%
Rate of Return on Total Working Capital (13/15*100)	-10.6%	-0.5%	4.7%	9.4%	4.7%

^a Part of leasing and rent is assumed to cover depreciation of buildings and equipment so is excluded from profit at full equity.

Source: 2019 survey

Table 3-6 Financial performance in the Spanner Crab Fishery, by share of revenue earned in the fishery, 2018/19

	Average per Business		
	Low Revenue Share	High Revenue Share	All Businesses
Days Fished	55	74	65
Catch (kg)	18,449	28,535	23,492
Employment (fte)	1.3	2.5	1.9
Employment (total)	2.2	3.9	3.1
Prop. of Revenue Earned in this Fishery	68%	100%	84%
Active Businesses (no.)	18	18	36
Sample Size (n)	5	3	8
(1) Gross Income	\$171,947	\$269,928	\$220,937
Variable Costs			
Fuel	\$16,168	\$37,154	\$26,661
Ice & Bait	\$2,335	\$5,255	\$3,795
Provisions	\$1,374	\$1,730	\$1,552
Labour - paid	\$43,112	\$66,575	\$54,844
(2) Labour - unpaid	\$13,402	\$14,558	\$13,980
Other	\$989	\$596	\$793
(3) Total Variable Costs	\$77,380	\$125,867	\$101,623
Fixed costs			
Licence Fee	\$2,238	\$2,411	\$2,324
Repairs & Maintenance	\$7,819	\$11,321	\$9,570
Insurance	\$4,423	\$5,034	\$4,728
(4) Interest	\$108	\$0	\$54
(5) Labour - unpaid	\$7,152	\$4,691	\$5,921
(6) Leasing fees	\$24,585	\$44,545	\$34,565
Legal & Accounting	\$1,152	\$2,324	\$1,738
Telephone etc.	\$661	\$801	\$731
Slipping & Mooring	\$4,433	\$4,287	\$4,360
Travel	\$436	\$360	\$398
Office & Admin	\$2,333	\$2,003	\$2,168
(7) Total Fixed Costs	\$55,340	\$77,776	\$66,558
(8) Total Boat Cash Costs (3+7)	\$132,719	\$203,643	\$168,181
Boat Gross Margin (1-3)	\$94,568	\$144,060	\$119,314
(9) Total Unpaid Labour (2+5)	\$20,554	\$19,249	\$19,901
Gross Operating Surplus (1-8+9)	\$59,781	\$85,533	\$72,657
(10) Boat Cash Income (1-8)	\$39,228	\$66,284	\$52,756
(11) Depreciation	\$13,781	\$18,359	\$16,070
(12) Boat Business Profit (10-11)	\$25,447	\$47,925	\$36,686
(13) Profit at Full Equity (12+4+6^a)	\$50,981	\$93,072	\$72,027
Working Capital			
(14) Fishing Gear & Equip	\$228,454	\$279,762	\$254,108
Licence Value	\$856,250	\$1,707,795	\$1,282,023
(15) Total Working Capital	\$1,084,704	\$1,987,558	\$1,536,131
Rate of Return on Fishing Gear & Equip (13/14*100)	22.3%	33.3%	28.3%
Rate of Return on Total Working Capital (13/15*100)	4.7%	4.7%	4.7%

^a Part of leasing and rent is assumed to cover depreciation of buildings and equipment so is excluded from profit at full equity.

Source: 2019 survey

Table 3-7 Financial performance in the Spanner Crab Fishery, by boat capital quartile, 2018/19

	Average per Business				
	1 Quartile	2 Quartile	3 Quartile	4 Quartile	All Businesses
Whole business boat value (\$)	62,011	99,378	156,557	316,018	167,350
Days Fished	43	42	125	63	65
Catch (kg)	12,427	12,009	50,997	24,437	23,492
Employment (fte)	0.9	1.2	4.1	1.9	1.9
Employment (total)	1.4	2.4	5.1	3.8	3.1
Prop. of Revenue Earned in this Fishery	71%	88%	85%	91%	84%
Active Businesses (no.)	9	9	7	11	36
Sample Size (n)	4	1	0	3	8
(1) Gross Income	\$120,803	\$115,088	\$492,123	\$216,896	\$220,937
Variable Costs					
Fuel	\$9,270	\$11,672	\$67,523	\$27,150	\$26,661
Ice & Bait	\$1,892	\$671	\$10,677	\$3,527	\$3,795
Provisions	\$790	\$356	\$3,425	\$1,961	\$1,552
Labour - paid	\$24,329	\$27,178	\$116,970	\$62,911	\$54,844
(2) Labour - unpaid	\$11,847	\$9,438	\$22,845	\$13,800	\$13,980
Other	\$894	\$0	\$881	\$1,302	\$793
(3) Total Variable Costs	\$49,022	\$49,316	\$222,320	\$110,651	\$101,623
Fixed costs					
Licence Fee	\$1,841	\$2,292	\$3,270	\$2,144	\$2,324
Repairs & Maintenance	\$5,633	\$5,466	\$13,964	\$13,352	\$9,570
Insurance	\$1,949	\$2,697	\$5,649	\$8,078	\$4,728
(4) Interest	\$0	\$20	\$217	\$22	\$54
(5) Labour - unpaid	\$5,161	\$3,797	\$4,376	\$9,264	\$5,921
(6) Leasing fees	\$13,351	\$18,480	\$86,146	\$32,259	\$34,565
Legal & Accounting	\$999	\$1,088	\$2,616	\$2,316	\$1,738
Telephone etc.	\$674	\$612	\$981	\$715	\$731
Slipping & Mooring	\$799	\$625	\$5,605	\$9,539	\$4,360
Travel	\$21	\$144	\$338	\$952	\$398
Office & Admin	\$2,470	\$2,050	\$2,455	\$1,836	\$2,168
(7) Total Fixed Costs	\$32,899	\$37,272	\$125,615	\$80,476	\$66,558
(8) Total Boat Cash Costs (3+7)	\$81,921	\$86,588	\$347,936	\$191,128	\$168,181
Boat Gross Margin (1-3)	\$71,781	\$65,773	\$269,803	\$106,245	\$119,314
(9) Total Unpaid Labour (2+5)	\$17,008	\$13,235	\$27,221	\$23,064	\$19,901
Gross Operating Surplus (1-8+9)	\$55,890	\$41,736	\$171,409	\$48,833	\$72,657
(10) Boat Cash Income (1-8)	\$38,882	\$28,501	\$144,188	\$25,769	\$52,756
(11) Depreciation	\$5,820	\$10,790	\$12,327	\$31,158	\$16,070
(12) Boat Business Profit (10-11)	\$33,062	\$17,710	\$131,860	-\$5,389	\$36,686
(13) Profit at Full Equity (12+4+6^a)	\$47,408	\$36,883	\$219,195	\$27,271	\$72,027
Working Capital					
(14) Fishing Gear & Equip	\$104,603	\$164,444	\$210,244	\$477,706	\$254,108
Licence Value	\$657,394	\$726,603	\$2,807,445	\$1,276,793	\$1,282,023
(15) Total Working Capital	\$761,997	\$891,047	\$3,017,689	\$1,754,499	\$1,536,131
Rate of Return on Fishing Gear & Equip (13/14*100)	45.3%	22.4%	104.3%	5.7%	28.3%
Rate of Return on Total Working Capital (13/15*100)	6.2%	4.1%	7.3%	1.6%	4.7%

^a Part of leasing and rent is assumed to cover depreciation of buildings and equipment so is excluded from profit at full equity.

Source: 2019 survey

Table 3-8 Total financial performance in the Spanner Crab Fishery, by fishing region, 2018/19

	Whole Fishery			
	Fitzroy	Wide Bay Burnett	South East	Queensland
Days Fished	183	1,012	1,133	2,328
Catch (kg)	45,935	501,177	298,598	845,710
Catch (no.)	0	0	0	0
Employment (fte)	5	32	31	68
Employment (total)	8	47	56	111
Active Businesses (no.)	9	18	27	36
Sample Size (n)	1	4	7	8
Gross Income	\$440,023	\$4,534,472	\$2,979,253	\$7,953,748
Total Variable Costs	\$232,732	\$1,955,821	\$1,469,890	\$3,658,443
Total Fixed Costs	\$144,005	\$1,307,855	\$944,223	\$2,396,084
Total Boat Cash Costs	\$376,738	\$3,263,677	\$2,414,113	\$6,054,528
Boat Gross Margin	\$207,291	\$2,578,651	\$1,509,363	\$4,295,305
Total Unpaid Labour	\$93,059	\$235,795	\$387,587	\$716,440
Gross Operating Surplus	\$156,344	\$1,506,591	\$952,727	\$2,615,661
Boat Cash Income	\$63,285	\$1,270,796	\$565,140	\$1,899,221
Depreciation	\$38,156	\$200,818	\$339,549	\$578,523
Boat Business Profit	\$25,129	\$1,069,978	\$225,591	\$1,320,697
Profit at Full Equity	\$76,313	\$1,843,515	\$673,130	\$2,592,958
Working Capital				
Fishing Gear & Equip	\$618,852	\$3,558,504	\$4,970,536	\$9,147,892
Licence Value	\$2,546,508	\$29,478,432	\$14,127,880	\$46,152,820
Total Working Capital	\$3,165,360	\$33,036,937	\$19,098,416	\$55,300,712
Rate of Return on Fishing Gear & Equip	12.3%	51.8%	13.5%	28.3%
Rate of Return on Total Working Capital	2.4%	5.6%	3.5%	4.7%

Source: 2019 survey

3.5. State and Regional Economic Contribution

Estimates of the economic contribution of the Spanner Crab Fishery to the Queensland and regional economies in 2017/18 and 2018/19 are outlined in this section.

Contribution analysis is a descriptive analysis that traces the gross economic activity of the fishery as dollars of expenditure cycle through the regional and state economies. The analysis has utilised the detailed industry specific data reported above in combination with other regional/state data that highlight the current linkages that exist within the economy to estimate indicators such as gross regional product and employment. The analysis has been undertaken within a modelling framework known as input-output analysis, with the purpose being to determine how much direct and indirect economic activity is associated with the fishery. This is because the contribution of the fishery extends beyond the initial round of output, income and employment generated by the fishery. These indirect or flow-on effects are part of the contribution of fishing related businesses to the economy and must be added to the direct effects in order to get a full appreciation of the economic contribution of the fishery. This method was recommended by the National Fisheries and Aquaculture Industry Contributions Study (FRDC project 2017-210) (BDO EconSearch 2019b) though the estimates in the FRDC report are inaccurate as no primary survey data were used in the analysis.

The terms ‘contribution’, and ‘impact’ are often used interchangeably, particularly in the context of regional economic analysis where decision makers wish to use the results from such analyses to inform policy decisions, to facilitate industry development or support a particular business strategy. However, they distinctly different types of analysis. At the most basic level, a contribution analysis can be thought of as a ‘footprint’ or ‘snapshot’ analysis of economic activity, whereas an impact analysis can be thought of as an analysis of a change in economic activity. An economic impact analysis is an appropriate approach where an industry is generating new revenues that would otherwise not occur, keeping revenues in the region that would otherwise be lost, or being subject to changes that result in existing revenues being lost. Economic impact analysis will generally require more data than a contribution analysis and may require more sophisticated models, such as an extended input-output model or a properly specified computable general equilibrium (CGE) model, or means to estimate people’s likely behaviour in response to the change (Watson et al. 2014).

3.5.1. Measuring direct and flow-on effects

The following stages in the marketing chain have been included in the quantifiable economic contribution:

- the landed beach value of production
- net value of local processing.

Each of these activities generates flow-on effects to other sectors through purchases of inputs and the employment of labour. As noted above, these flow-on effects have been estimated using input-output analysis.

Local processing includes the first value-adding step after product is landed by fishing businesses, this may be carried out by the same fishing business that landed the product or another business. Processing activities include cleaning, filleting, cooking, smoking, freezing, packaging for retail or export, etc.

In order to compile a representative cost structure for the fishing sector, costs per boat were derived from survey data provided by operators in the fishery (for detail see Section 2). On an item-by-item basis, the

expenditures were allocated between those occurring in the fishing region, those occurring in Queensland and those goods and services imported from outside the state.

Estimates of the net value of local (i.e. regional and state) processing activity and capital expenditure per fishing business were derived from the survey of fishing businesses and regional economic models.

Economic contributions have been specified in terms of the following economic indicators:

- value of output
- employment
- household income
- contribution to gross state or regional product.

Value of output is a measure of the gross revenue of goods and services produced by commercial organisations plus gross expenditure by government agencies. This indicator needs to be used with care as it includes elements of double counting.

Employment is a measure of the number of working proprietors, managers, directors and other employees, in terms of the number of full-time equivalent jobs.

Household income is a component of Gross State Product (GSP) and Gross Regional Product (GRP) and is a measure of wages and salaries, drawings by owner operators and other payments to labour including overtime payments and income tax, but excluding payroll tax.

Contribution to GSP or GRP is a measure of the net contribution of an activity to the state/regional economy. Contribution to GSP or GRP is measured as value of output less the cost of goods and services (including imports) used in producing the output. It can also be measured as household income plus other value added (gross operating surplus and all taxes, less subsidies). It represents payments to the primary inputs of production (labour, capital and land). Using GSP or GRP as a measure of economic contribution avoids the problem of double counting that may arise from using value of output for this purpose.

3.5.2. Economic contribution to Queensland

Estimates of the economic contribution to Queensland generated in 2017/18 and 2018/19 by the Spanner Crab Fishery are outlined in Table 3-9 and Table 3-10, respectively. This section summarises the key points from these tables.

Direct contribution measures fishing and downstream activities (i.e. processing and capital expenditure). The flow-on contribution measures the economic effects in other sectors of the economy (retail and wholesale trade, manufacturing, etc.) generated by fishing and processing activities, that is, the multiplier effects. Flow-on effects are disaggregated by industry with the top 10 industries shown separately in each on the table. Capital expenditures are assumed to be the same as depreciation which may or may not be the case in a given year but is a reasonable assumption in the long-run. Economic contribution of capital expenditure should, therefore, be interpreted as a long-run average.

Value of Output

The value of output at beach price (also known as fishery GVP) generated directly in the Spanner Crab Fishery was \$9.3m in 2017/18 and \$8.0m in 2018/19 while output generated by associated downstream activities (processing and capital expenditure) summed to \$4.5m in 2017/18 and \$3.7m in 2018/19.

Flow-on effects to other sectors of the state economy added another \$12.9m in 2017/18 and \$10.3m in 2018/19. The sectors most affected were retail trade, personal and other services and professional,

scientific and technical services. The total output contribution to Queensland (direct plus flow-on) was estimated to be \$26.8m in 2017/18 and \$21.9m in 2018/19.

Employment

The Spanner Crab Fishery was responsible for the direct employment of an estimated 86 full-time equivalent (fte) jobs in 2017/18 and 68 fte jobs in 2018/19 while downstream activities supported employment of around additional 13 fte jobs in 2017/18 and 10 fte jobs in 2018/19. Flow-on business activity was estimated to support a further 57 fte jobs in 2017/18 and 45 fte jobs in 2018/19 state-wide. These jobs were concentrated in the retail trade and personal and other services sectors. The total employment contribution to Queensland was estimated to be 156 fte jobs in 2017/18 and 123 fte jobs in 2018/19.

Household Income

Personal income of \$3.4m was earned in 2017/18 in the Spanner Crab Fishery (wages of employees and estimated drawings by owner/operators) and \$2.7m was earned in 2018/19. A further \$0.6m of income was earned in 2017/18 and \$0.4m in 2018/19 in downstream activities. An additional \$3.8m in 2017/18 and \$3.1m in 2018/19 was earned by wage earners in other businesses in Queensland from the flow-on effects of fishing and associated downstream activities. The total household income contribution in Queensland was \$7.8m in 2017/18 and \$6.2m in 2018/19.

Contribution to GSP and GRP

As noted above, contribution to GSP or GRP is measured as value of output less the cost of goods and services (including imports) used in producing the output. Total Spanner Crab Fishery related contribution to GSP in Queensland was \$16.0m in 2017/18 and \$13.2m in 2018/19, with \$8.0m in 2017/18 and \$6.8m in 2018/19 generated by fishing directly, \$1.2m in 2017/18 and \$0.9m in 2018/19 generated by downstream activities and \$6.9m in 2017/18 and \$5.5m in 2018/19 supported in other sectors of the state economy.

Table 3-9 Economic contribution of the Spanner Crab Fishery to Queensland, 2017/18

Sector	Output (\$m)	GSP (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Direct effects					
Fishing	9.3	8.0	3.4	86	155
Processing	4.0	0.9	0.4	10	10
CAPEX	0.5	0.2	0.2	3	3
Total Direct	13.8	9.1	3.9	99	168
Flow-on effects					
Retail Trade	0.9	0.5	0.4	8	10
Personal & Other Serv	0.7	0.4	0.4	6	6
Admin Support Serv	0.5	0.3	0.3	5	5
Prof Scientific Tech Serv	0.8	0.5	0.4	5	4
Health & Community Serv	0.5	0.3	0.3	4	5
Food & Beverage Services	0.4	0.2	0.2	4	5
Education & Training	0.4	0.3	0.2	4	4
Wholesale Trade	0.6	0.4	0.3	3	3
Insurance & Other Fin Serv	0.7	0.3	0.2	3	2
Road Transport	0.5	0.2	0.2	2	2
Other Sectors	6.9	3.5	1.0	14	13
Total Flow-on	12.9	6.9	3.8	57	59
Total	26.8	16.0	7.8	156	226
<i>Total/Direct</i>	<i>1.9</i>	<i>1.8</i>	<i>2.0</i>	<i>1.6</i>	<i>1.4</i>

Source: BDO EconSearch analysis

Table 3-10 Economic contribution of the Spanner Crab Fishery to Queensland, 2018/19

Sector	Output (\$m)	GSP (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Direct effects					
Fishing	8.0	6.8	2.7	68	111
Processing	3.3	0.8	0.3	9	8
CAPEX	0.3	0.1	0.1	2	2
Total Direct	11.6	7.7	3.1	78	121
Flow-on effects					
Retail Trade	0.7	0.4	0.3	7	8
Personal & Other Serv	0.6	0.3	0.3	5	5
Prof Scientific Tech Serv	0.7	0.4	0.4	4	4
Admin Support Serv	0.4	0.2	0.2	4	4
Health & Community Serv	0.4	0.3	0.2	3	4
Food & Beverage Services	0.3	0.2	0.1	3	4
Education & Training	0.3	0.2	0.2	3	3
Wholesale Trade	0.5	0.3	0.2	3	2
Insurance & Other Fin Serv	0.6	0.3	0.2	2	2
Road Transport	0.4	0.2	0.1	1	1
Other Sectors	5.5	2.7	0.8	11	10
Total Flow-on	10.3	5.5	3.1	45	46
Total	21.9	13.2	6.2	123	167
<i>Total/Direct</i>	<i>1.9</i>	<i>1.7</i>	<i>2.0</i>	<i>1.6</i>	<i>1.4</i>

Source: BDO EconSearch analysis

3.5.3. Regional economic contributions

Direct economic contribution of fishing activity by fishing region is detailed in Table 3-11 (2017/18) and Table 3-12 (2018/19). This includes fishing activity only and excludes downstream and flow-on activity. The regions appear in the table in order of the magnitude of economic contribution to fte employment.

On the following pages (Table 3-13 to Table 3-14), estimates of the economic contribution of the Spanner Crab Fishery to each fishing region with 5 or greater active businesses and a significant economic contribution are presented in detail for the 2018/19 year. Estimates presented in the tables can be interpreted in the same way as those presented at the state level (see Section 3.5.2).

Table 3-11 Direct economic contribution of fishing activity in the Spanner Crab Fishery to regions, 2017/18

	Output (\$m)	GSP (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Queensland	9.3	8.0	3.4	86	155
South East	6.2	5.4	2.4	64	123
Wide Bay Burnett	2.9	2.4	0.8	19	28
Fitzroy	0.2	0.2	0.1	2	4

Source: BDO EconSearch analysis

Table 3-12 Direct economic contribution of fishing activity in the Spanner Crab Fishery to regions, 2018/19

	Output (\$m)	GSP (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Queensland	8.0	6.8	2.7	68	111
South East	5.5	4.8	2.0	51	87
Wide Bay Burnett	2.0	1.6	0.6	12	17
Fitzroy	0.4	0.4	0.2	4	6

Source: BDO EconSearch analysis

Table 3-13 Economic contribution of the Spanner Crab Fishery to Wide Bay Burnett, 2018/19

Sector	Output (\$m)	GSP (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Direct effects					
Fishing	2.0	1.6	0.6	12	17
Processing	0.7	0.2	0.1	1	1
CAPEX	0.0	0.0	0.0	0	0
Total Direct	2.7	1.8	0.6	14	19
Flow-on effects					
Retail Trade	0.1	0.1	0.1	1	1
Personal & Other Serv	0.1	0.1	0.1	1	1
Health & Community Serv	0.1	0.0	0.0	1	1
Prof Scientific Tech Serv	0.1	0.0	0.0	1	1
Food & Beverage Services	0.1	0.0	0.0	1	1
Admin Support Serv	0.0	0.0	0.0	0	0
Wholesale Trade	0.1	0.0	0.0	0	0
Education & Training	0.0	0.0	0.0	0	0
Road Transport	0.1	0.0	0.0	0	0
Rental Hiring Real Estate	0.1	0.0	0.0	0	0
Other Sectors	0.7	0.4	0.1	2	1
Total Flow-on	1.5	0.8	0.4	7	7
Total	4.2	2.6	1.1	21	26
<i>Total/Direct</i>	<i>1.5</i>	<i>1.4</i>	<i>1.7</i>	<i>1.5</i>	<i>1.4</i>

Source: BDO EconSearch Analysis

Table 3-14 Economic contribution of the Spanner Crab Fishery to South East, 2018/19

Sector	Output (\$m)	GSP (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Direct effects					
Fishing	5.5	4.8	2.0	51	87
Processing	2.6	0.6	0.3	7	7
CAPEX	0.3	0.1	0.1	1	1
Total Direct	8.5	5.5	2.3	59	95
Flow-on effects					
Retail Trade	0.5	0.3	0.2	5	5
Personal & Other Serv	0.4	0.2	0.2	3	4
Admin Support Serv	0.3	0.2	0.2	3	3
Prof Scientific Tech Serv	0.5	0.3	0.3	3	3
Health & Community Serv	0.2	0.2	0.2	2	2
Wholesale Trade	0.4	0.2	0.2	2	2
Education & Training	0.2	0.1	0.1	2	2
Food & Beverage Services	0.2	0.1	0.1	2	3
Insurance & Other Fin Serv	0.5	0.2	0.1	2	2
Road Transport	0.3	0.1	0.1	1	1
Other Sectors	3.4	1.7	0.5	7	6
Total Flow-on	6.8	3.7	2.1	31	32
Total	15.3	9.2	4.5	91	127
<i>Total/Direct</i>	<i>1.8</i>	<i>1.7</i>	<i>1.9</i>	<i>1.5</i>	<i>1.3</i>

Source: BDO EconSearch Analysis

3.6. Net Economic Return

Net economic return⁴ is the long-run profit from a fishery after all costs have been met, including fuel, crew costs, repairs, the opportunity cost of family and owner labour, fishery management costs, depreciation and the opportunity cost of capital (excluding endorsement) (Bath et al. 2018).

These unit costs or long-term costs all need to be covered if the fishing business is to remain viable in the fishery. The opportunity cost of capital is equivalent to what the fisher's investment could have earned in the next most similar alternative use considering risk and skills required. What remains after the value of these inputs (labour, capital, materials and services) has been netted out is the return to the value of the natural resource itself.

Commercial fishing operations in Australia are not risk free (see Figure 4-8). Returns can be impacted both positively and negatively by factors such as natural events, changes in market conditions, disease, and management regulations. Determining the opportunity cost of capital involves an assessment of the degree of financial risk involved in the activity. For a risk-free operation, an appropriate opportunity cost of capital might be the long-term real rate of return on government bonds. The greater the risks involved, the greater is the necessary return on capital to justify the investment in that particular activity.

For this analysis an opportunity cost of capital of 10 per cent has been used (Table 3-15) with sensitivity analysis at 7 and 15 per cent (Table 3-16). The lower-bound is consistent with ABARES Australian fisheries economic indicator reporting for commonwealth managed fisheries (Bath et al. 2018). Commonwealth managed fisheries are generally larger and characterised by larger businesses with less overall variation than state managed inshore fisheries. This is why the 7 per cent used by ABARES is used as a lower-bound in this analysis. The upper-bound of 15 per cent represents a reasonable estimate for what an investor might expect when buying into a commercial fishery in Queensland, given the variability and risk involved in this type of fishing business. Assuming an opportunity cost of capital of 10 per cent, net economic return generated in the Spanner Crab Fishery was estimated to be \$0.01m in 2017/18 and \$0.34m in 2018/19 (Table 3-15). The sensitivity analysis shows that, with the varying assumptions about opportunity cost of capital, net economic return was likely in the range of \$0.40m to -\$0.63m in 2017/18 and \$0.62m to -\$0.12m in 2018/19 (Table 3-16).

Table 3-15 Net Economic Return in the Spanner Crab Fishery, 2017/18 and 2018/19, using a 10% p.a. opportunity cost of capital.

	2017/18	2018/19	Change
GVP (\$m)	9.35	7.95	-15%
Less Labour Cost (\$m)	3.38	2.69	-20%
Less Materials & Services (\$m)	2.51	2.03	-19%
Less Depreciation (\$m)	0.85	0.58	-32%
Less Opportunity Cost of Capital (10%) (\$m)	1.29	0.91	-29%
Less Management Cost (\$m)	1.30	1.39	7%
Net Economic Return (\$m)	0.01	0.34	2789%

Source: BDO EconSearch analysis

⁴ Also commonly referred to as economic rent.

Table 3-16 Sensitivity analysis of opportunity cost of capital on Net Economic Return in the Spanner Crab Fishery, 2017/18 and 2018/19

Opportunity Cost of Capital (%)	2017/18			2018/19		
	7%	10%	15%	7%	10%	15%
Less Opportunity Cost of Capital (\$m)	0.91	1.29	1.94	0.64	0.91	1.37
Net Economic Return (\$m)	0.40	0.01	-0.63	0.62	0.34	-0.12

Source: BDO EconSearch analysis

4. SOCIAL AND DEMOGRAPHIC INDICATORS

Fisheries Queensland compiled a list of social and demographic indicators to be included in the survey of fishing businesses and presented in this report. BDO EconSearch collected the data and the results for the social indicators are presented below.

Respondents to the business survey were mostly over 55 years of age, business owners and living in Queensland. The median time involved in commercial fishing was 30 years and median time as a licence owner 25 years. Most have a highest level of education of year 10 or equivalent. On average, fishers earn almost 90 per cent of their personal income from commercial fishing. Too few responses were received to publish the other common industries of employment for Spanner Crab fishers.

Most respondents indicated that they think commercial fishing is financially risky and that they feel insecure in their job. Around half feel unable to cope with changing regulations. Almost all respondents feel they understand fishery management arrangements but that management is making it more difficult to run their business and all said that it is has become more difficult to 'have a say' in management.

Overall, fishers indicated that they are satisfied with the lifestyle of being a commercial fisher. They also indicated that they are generally satisfied with life as a whole. Fishers indicated that they have strong ties to their community and that their community treats them fairly and respects their occupation. Fishers also identified that fishing is stressful and has physical costs to their wellbeing. Around half said that fishing has negative mental health impacts on them. Most fishers would not encourage young people to choose a fishing career and do not feel positive about the future of fishing in their region.

4.1. Demographic Indicators

Figure 4-1 Age

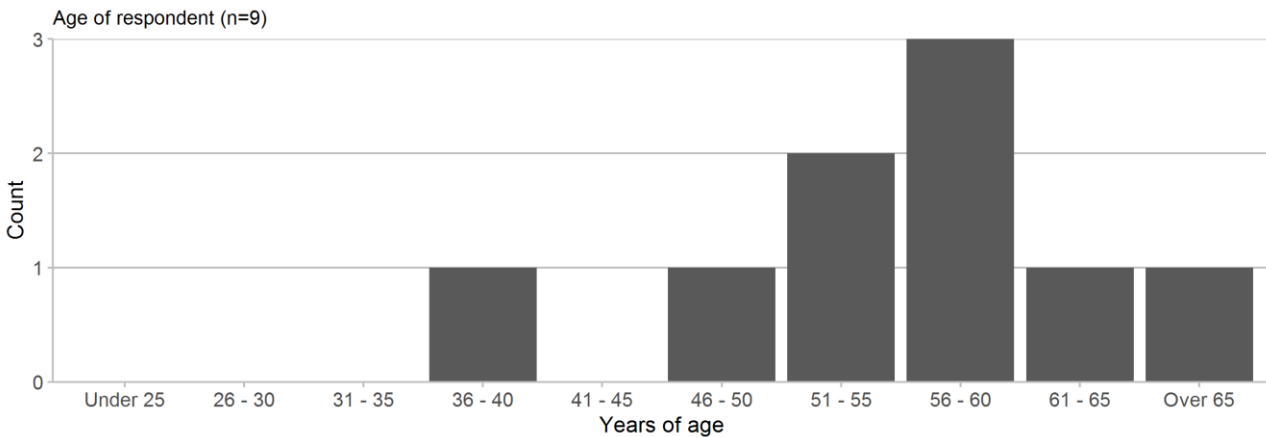


Figure 4-2 Business role, place of residence and Indigenous status

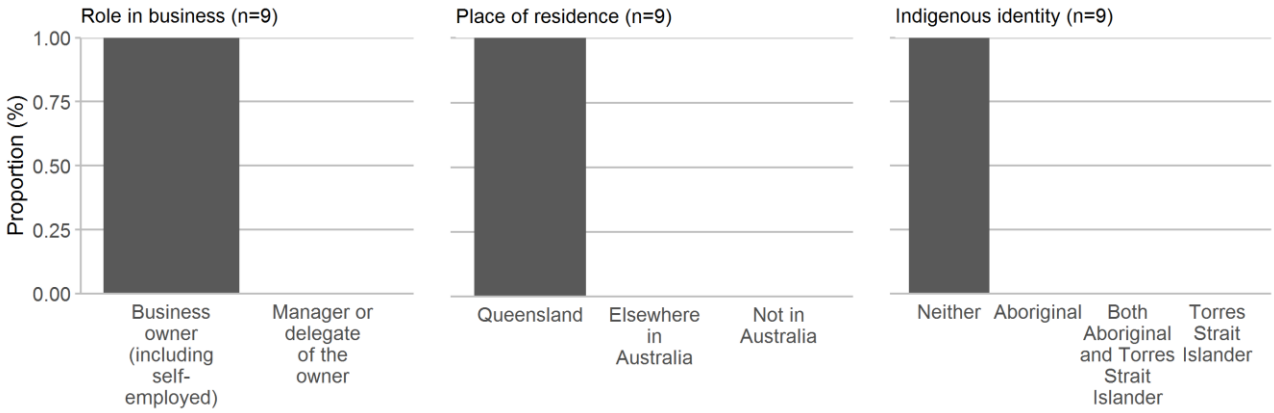


Figure 4-3 Years as licence owner, in commercial fishing and lived in local community

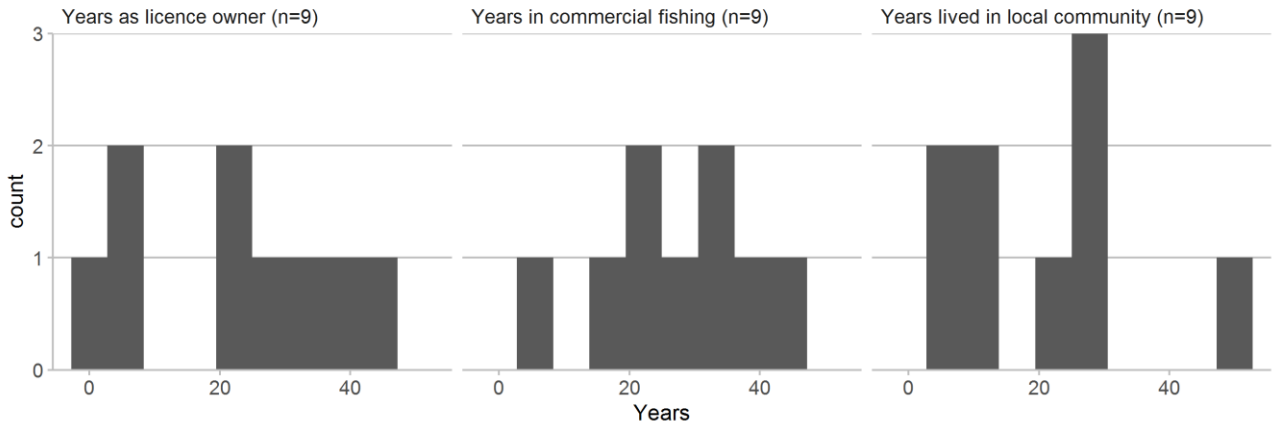


Figure 4-4 Highest education attained

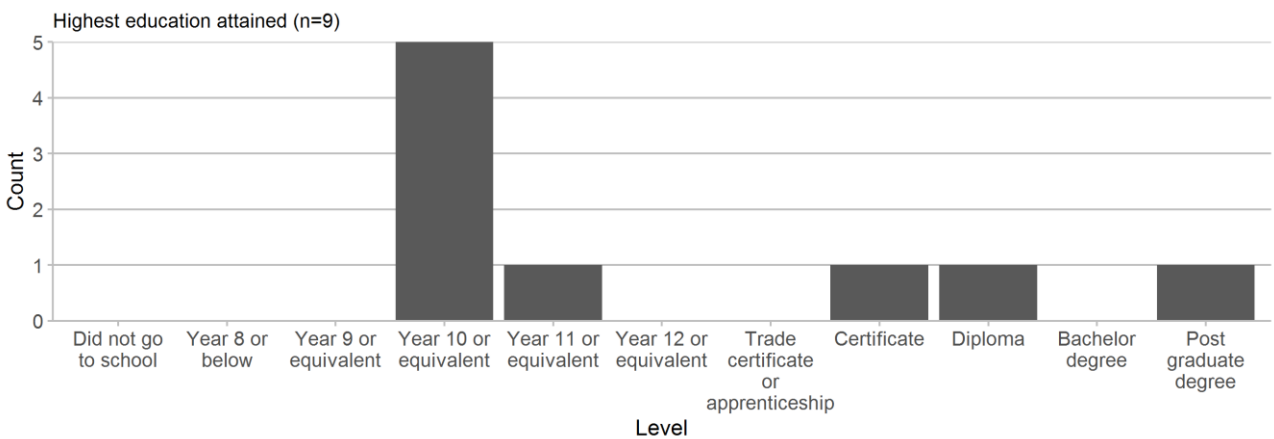


Figure 4-5 Primary income from commercial fishing

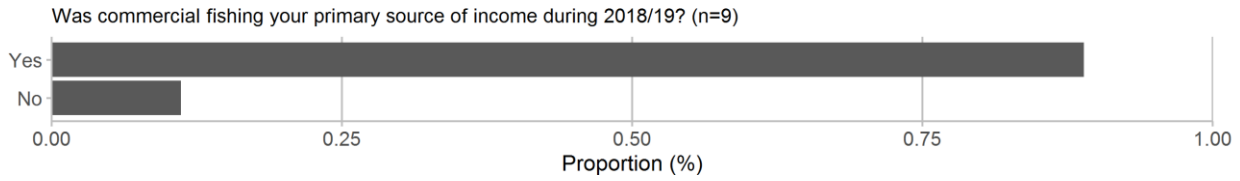


Figure 4-6 Split of workload

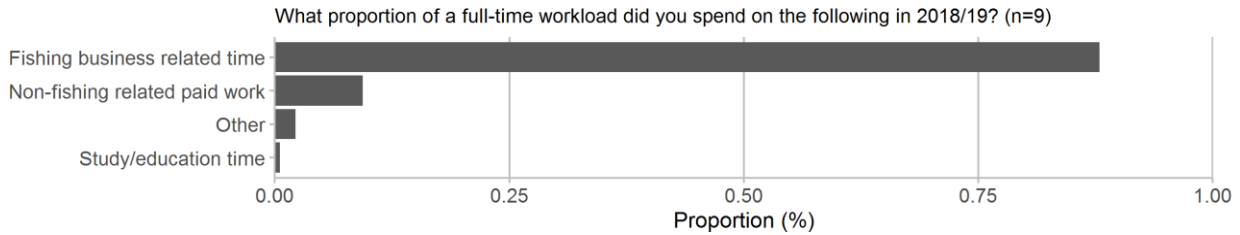
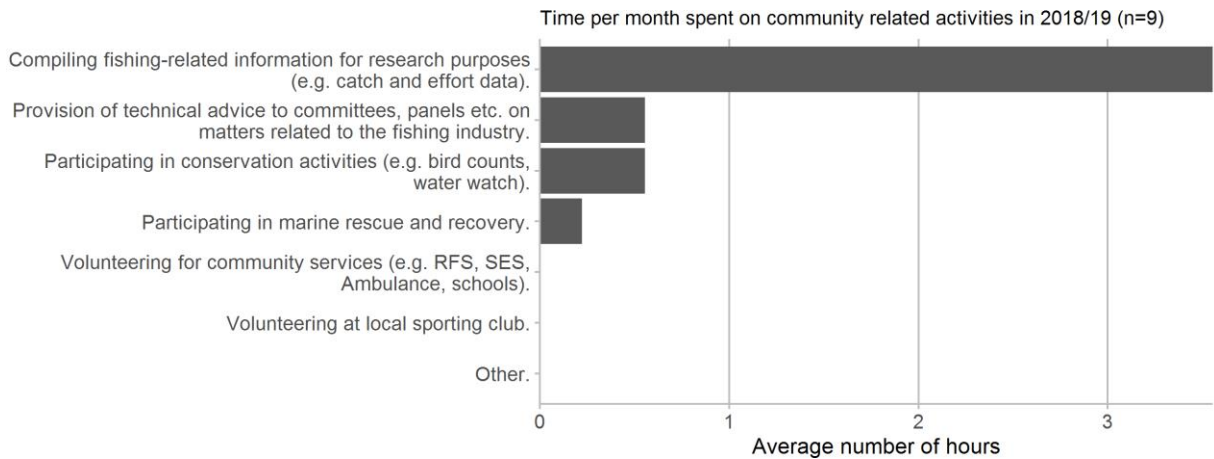


Figure 4-7 Community involvement



4.2. Fisheries Management

A set of questions about fisheries management and its effect on the fisher’s business were asked in the survey. The answers are presented in the charts below with questions/statements appearing in order of the strength of the average response.

Figure 4-8 Perceptions of fishery management (a)

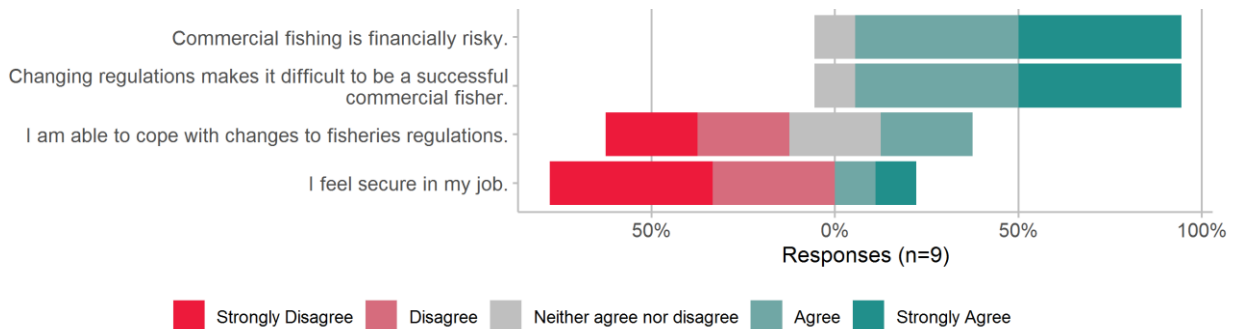
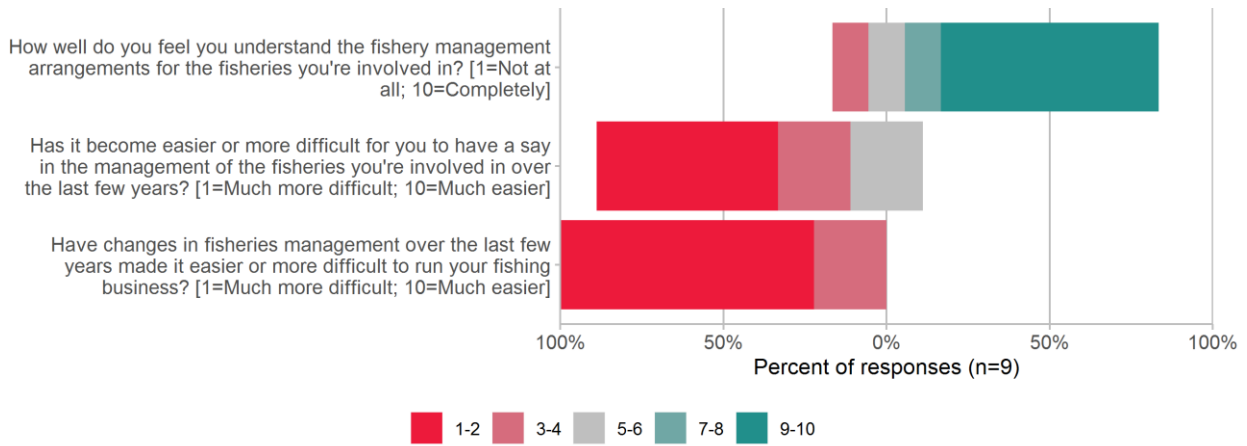


Figure 4-9 Perceptions of fishery management (b)



4.3. Fisher Wellbeing

While commercial fishers aim to receive a monetary benefit from engaging in commercial fishing activities, many also value the lifestyle and other benefits that come with the job. The survey asked fishers about their satisfaction with the lifestyle of being a commercial fisher and its benefits and costs, their connection to the community as a commercial fisher, their personal wellbeing and stewardship. Statements/questions are presented in the charts in this section in order of the strength of the response.

Figure 4-10 Satisfaction with lifestyle

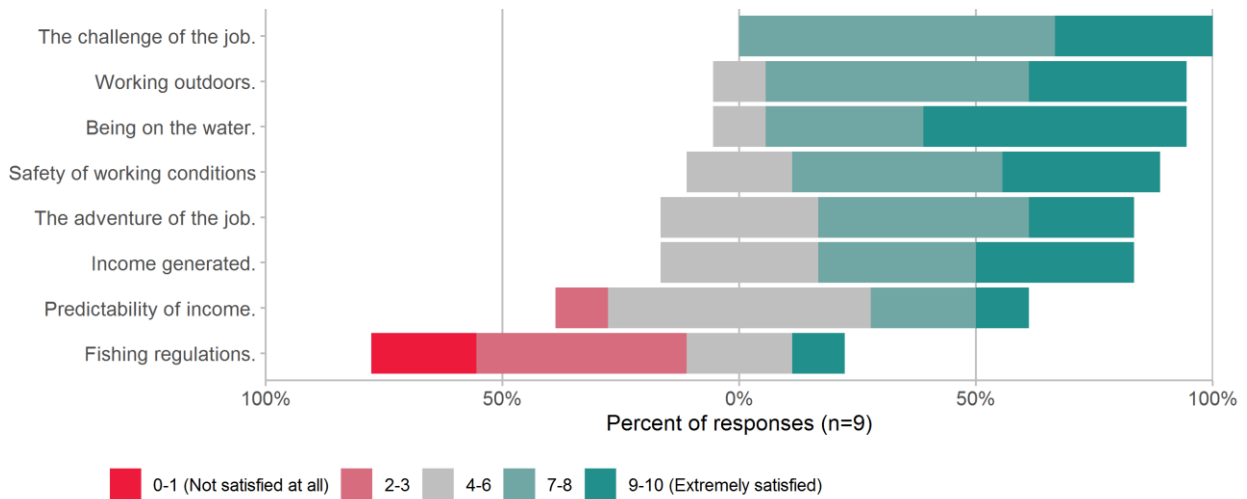


Figure 4-11 Wellbeing benefits of commercial fishing

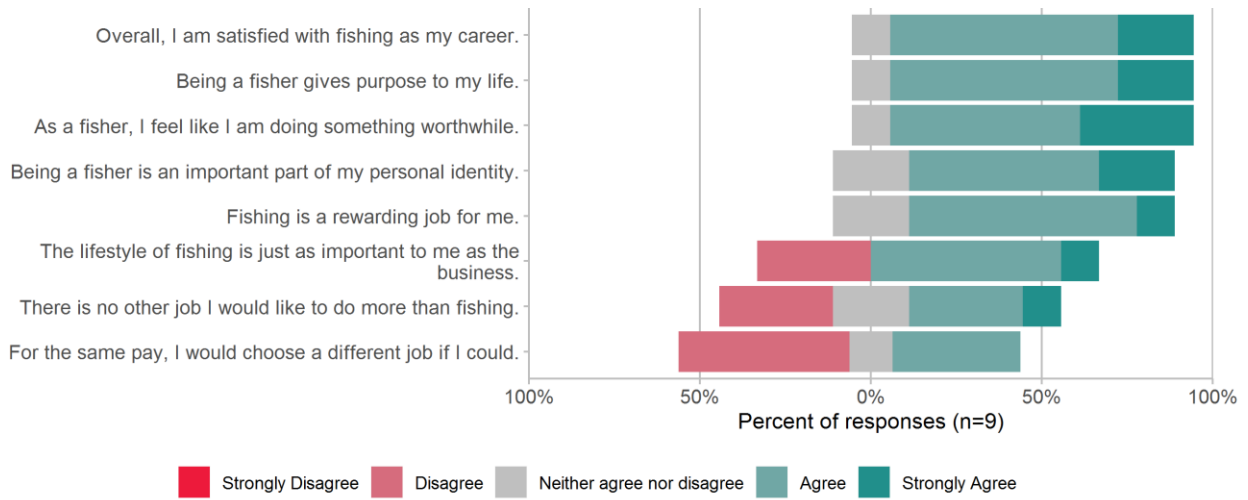


Figure 4-12 Wellbeing costs of commercial fishing

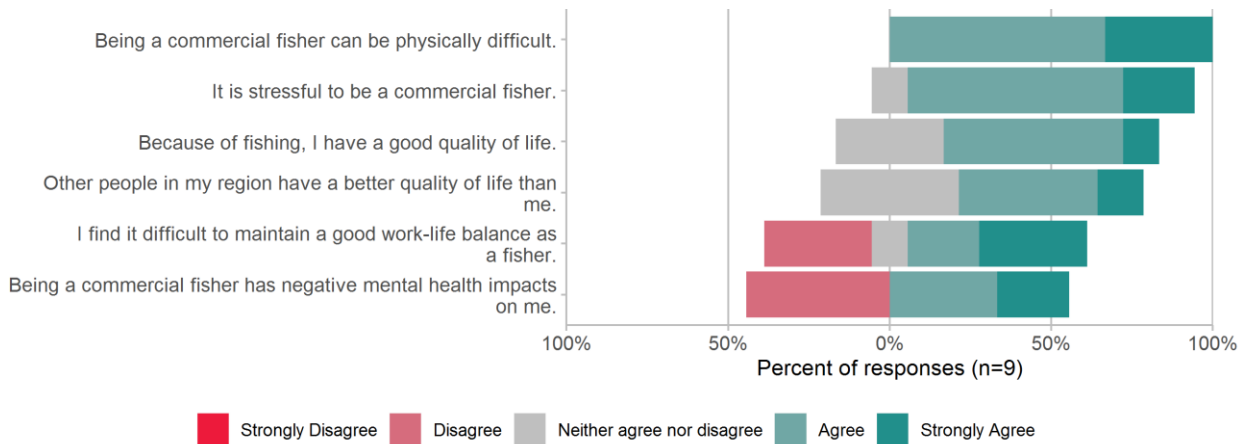


Figure 4-13 Connection to community

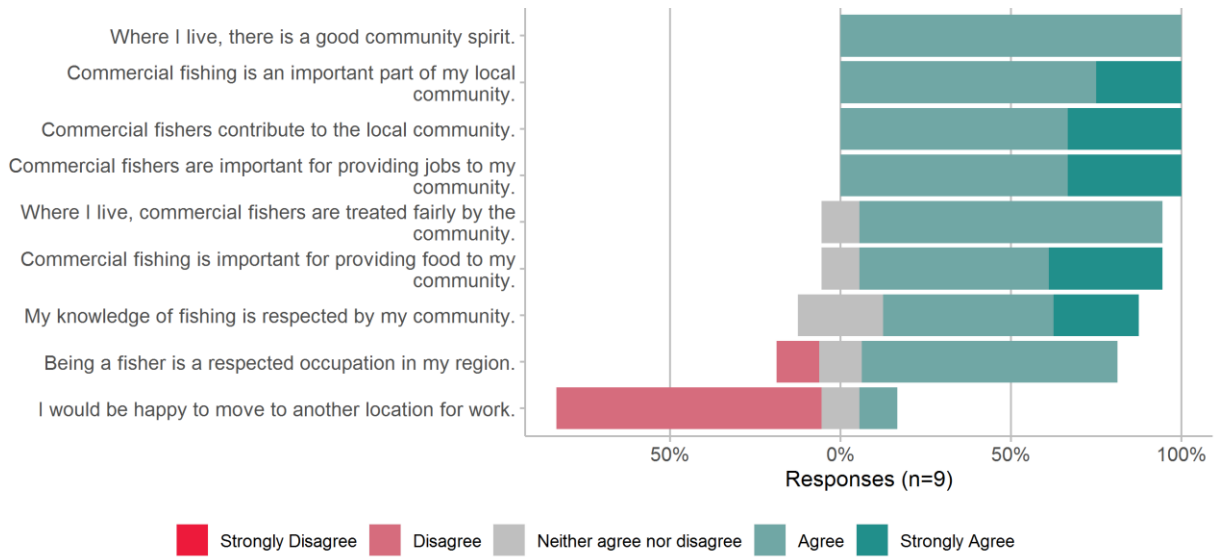


Figure 4-14 Personal wellbeing

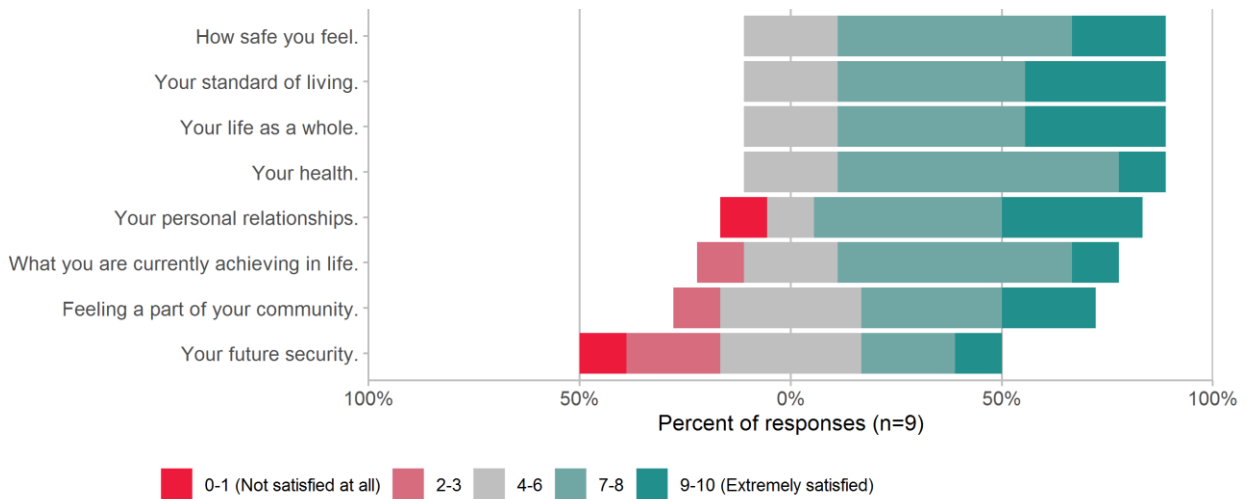
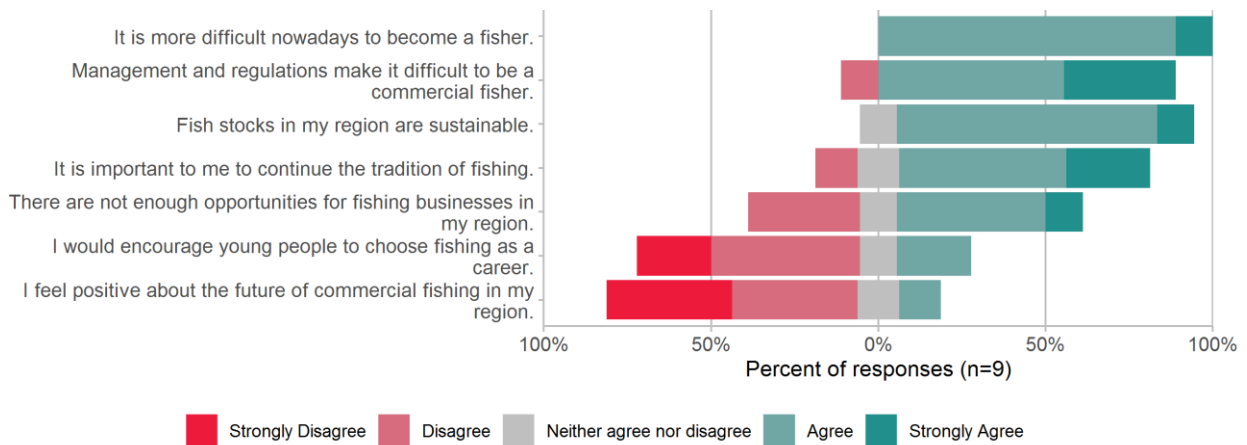


Figure 4-15 Stewardship



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Disclaimer

The assignment is a consulting engagement as outlined in the ‘Framework for Assurance Engagements’, issued by the Auditing and Assurances Standards Board, Section 17. Consulting engagements employ an assurance practitioner’s technical skills, education, observations, experiences and knowledge of the consulting process. The consulting process is an analytical process that typically involves some combination of activities relating to: objective-setting, fact-finding, definition of problems or opportunities, evaluation of alternatives, development of recommendations including actions, communication of results, and sometimes implementation and follow-up.

The nature and scope of work has been determined by agreement between BDO and the Client. This consulting engagement does not meet the definition of an assurance engagement as defined in the ‘Framework for Assurance Engagements’, issued by the Auditing and Assurances Standards Board, Section 10.

Except as otherwise noted in this report, we have not performed any testing on the information provided to confirm its completeness and accuracy. Accordingly, we do not express such an audit opinion and readers of the report should draw their own conclusions from the results of the review, based on the scope, agreed-upon procedures carried out and findings.

APPENDIX 1 Summary Economic Indicators for all Queensland Commercial Fisheries, 2017/18

Appendix Table 1-1 Commercial fisheries gross value of production, catch and export value, Queensland, 2017/18 (\$m)

Fishery	Catch		GVP (\$m)	Export Value (\$m)
	tonnes (t)	number ('000)		
Blue Swimmer Crab	309	0	3.7	0.0
Coral Harvest and Marine Aquarium Fishery	16	451	12.0	9.7
Coral Reef Fin Fish	1,452	0	33.4	8.0
East Coast Inshore Fin Fish	3,226	0	20.6	0.5
East Coast Trawl	6,969	0	109.8	1.0
Gulf of Carpentaria Inshore Fishery	2,037	0	22.6	0.0
Moreton Bay Commercial Other	1,386	494	12.2	0.3
Moreton Bay Commercial Trawl	698	0	7.7	0.0
Mud Crab East Coast	890	0	26.0	0.2
Mud Crab Gulf of Carpentaria	146	0	4.7	0.0
Other Harvest Fishery	439	1,692	13.6	11.8
Rocky Reef Fin Fish	127	0	1.4	0.0
Spanner Crab	1,005	0	9.3	0.3
East Coast Spanish Mackerel	315	0	3.9	0.0
Queensland	16,929	2,143	261.1	31.4

Source: BDO EconSearch analysis

Appendix Table 1-2 Cost of management in Queensland commercial fisheries, 2017/18

Fishery	GVP (\$m)	Management cost (\$m)	Proportion of GVP (%)
Blue Swimmer Crab	3.7	1.4	38%
Coral Harvest and Marine Aquarium Fishery	12.0	1.0	9%
Coral Reef Fin Fish	33.4	1.6	5%
East Coast Inshore Fin Fish	20.6	3.3	16%
East Coast Trawl	109.8	1.8	2%
Gulf of Carpentaria Inshore Fishery	22.6	1.3	6%
Moreton Bay Commercial Other	12.2	1.1	9%
Moreton Bay Commercial Trawl	7.7	1.2	16%
Mud Crab East Coast	26.0	1.9	7%
Mud Crab Gulf of Carpentaria	4.7	1.0	21%
Other Harvest Fishery	13.6	2.3	17%
Rocky Reef Fin Fish	1.4	1.0	67%
Spanner Crab	9.3	1.3	14%
East Coast Spanish Mackerel	3.9	1.1	28%
Queensland	261.1	21.3	8%

Source: BDO EconSearch analysis

Appendix Table 1-3 Net economic return in Queensland commercial fisheries, 2017/18 (\$m)

Fishery	Labour Cost (\$m)	Materials & Services (\$m)	Depreciation (\$m)	Opp. Cost of Capital (10%) (\$m)	Management Cost (\$m)	GVP (\$m)	Net Economic Return (\$m)
Blue Swimmer Crab	1.0	1.7	0.4	0.6	1.4	3.7	-1.4
Coral Harvest and Marine Aquarium Fishery	1.9	6.0	0.7	1.3	1.0	12.0	0.9
Coral Reef Fin Fish	14.0	14.1	2.4	3.8	1.6	33.4	-2.5
East Coast Inshore Fin Fish	5.3	6.6	1.8	2.5	3.3	20.6	1.1
East Coast Trawl	40.4	60.4	11.0	20.6	1.8	109.8	-24.4
Gulf of Carpentaria Inshore Fishery	6.3	8.4	1.2	2.9	1.3	22.6	2.5
Moreton Bay Commercial Other	4.1	5.3	1.4	2.1	1.1	12.2	-1.7
Moreton Bay Commercial Trawl	2.8	6.0	1.4	2.2	1.2	7.7	-6.0
Mud Crab East Coast	6.8	9.8	1.6	2.5	1.9	26.0	3.4
Mud Crab Gulf of Carpentaria	1.1	1.0	0.2	0.3	1.0	4.7	1.2
Other Harvest Fishery	4.1	3.8	1.1	1.7	2.3	13.6	0.7
Rocky Reef Fin Fish	0.9	0.8	0.4	0.7	1.0	1.4	-2.4
Spanner Crab	3.4	2.5	0.9	1.3	1.3	9.3	0.0
East Coast Spanish Mackerel	1.6	1.3	0.4	0.7	1.1	3.9	-1.2
Queensland	86.8	116.5	22.1	38.8	21.3	261.1	-24.4

Source: BDO EconSearch analysis

Appendix Table 1-4 Economic contributions of Queensland commercial fisheries to Queensland, 2017/18

Sector	Output (\$m)	GSP (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Direct effects					
Fishing	261.1	191.3	86.8	1,885	3,560
Processing	121.8	28.6	12.4	318	299
CAPEX	13.1	5.9	4.3	68	70
Total Direct	395.9	225.8	103.5	2,271	3,929
Flow-on effects					
Personal & Other Serv	38.3	21.8	19.6	313	323
Retail Trade	29.4	17.7	12.8	272	317
Admin Support Serv	14.8	9.8	9.5	160	163
Prof Scientific Tech Serv	27.1	14.9	14.3	154	143
Health & Community Serv	14.4	9.9	9.5	126	140
Food & Beverage Services	12.4	6.6	4.9	122	160
Education & Training	12.1	8.3	7.5	113	118
Wholesale Trade	20.3	11.4	8.9	111	97
Insurance & Other Fin Serv	24.3	11.4	7.2	87	82
Road Transport	16.8	7.2	5.7	61	51
Other Sectors	217.3	108.5	30.9	440	411
Total Flow-on	427.2	227.4	130.9	1,959	2,004
Total	823.1	453.3	234.3	4,229	5,933
<i>Total/Direct</i>	<i>2.0</i>	<i>2.0</i>	<i>2.3</i>	<i>1.9</i>	<i>1.5</i>

Source: BDO EconSearch analysis

Appendix Table 1-5 Direct economic contributions of Queensland commercial fisheries to the fishing regions, 2017/18

	Output (\$m)	GSP (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Queensland	261.1	191.3	86.8	1,885	3,560
South East	72.7	52.9	26.3	595	1,217
Fitzroy	38.8	26.7	12.8	264	430
Wet Tropics	31.7	22.8	10.9	258	468
Wide Bay Burnett	30.6	23.3	11.1	230	437
Cape York Peninsula	43.5	33.0	12.1	226	436
Mackay, Isaac and Whitsunday	22.5	16.1	6.8	151	283
Dry Tropics	13.6	9.9	4.5	94	150
North West	7.7	6.6	2.2	68	138

Source: BDO EconSearch analysis

Appendix Table 1-6 Direct economic contributions of fishing activity in Queensland commercial fisheries by fishery, 2017/18

Fishery	Output (\$m)	GSP (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Blue Swimmer Crab	3.7	3.1	1.0	28	83
Coral Harvest and Marine Aquarium Fishery	12.0	7.0	1.9	48	104
Coral Reef Fin Fish	33.4	23.1	14.0	300	551
East Coast Inshore Fin Fish	20.6	18.3	5.3	126	333
East Coast Trawl	109.8	68.6	40.4	770	1,134
Gulf of Carpentaria Inshore Fishery	22.6	17.9	6.3	153	291
Moreton Bay Commercial Other	12.2	10.8	4.1	110	315
Moreton Bay Commercial Trawl	7.7	4.4	2.8	76	161
Mud Crab East Coast	26.0	23.4	6.8	183	359
Mud Crab Gulf of Carpentaria	4.7	4.4	1.1	20	82
Other Harvest Fishery	13.6	12.3	4.1	110	328
Rocky Reef Fin Fish	1.4	1.3	0.9	21	55
Spanner Crab	9.3	8.0	3.4	86	155
East Coast Spanish Mackerel	3.9	4.0	1.6	39	84
Queensland	261.1	191.3	86.8	1,885	3,560

Source: BDO EconSearch analysis

Appendix Table 1-7 Total economic contributions of fishing activity in Queensland commercial fisheries by fishery, 2017/18

Fishery	Output (\$m)	GSP (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Blue Swimmer Crab	17.1	8.5	4.0	78	132
Coral Harvest and Marine Aquarium Fishery	27.4	15.3	7.1	126	183
Coral Reef Fin Fish	90.7	52.4	30.6	556	813
East Coast Inshore Fin Fish	68.2	38.7	16.6	312	519
East Coast Trawl	352.7	186.2	107.4	1,816	2,197
Gulf of Carpentaria Inshore Fishery	66.3	37.7	17.3	331	470
Moreton Bay Commercial Other	49.8	26.8	12.9	256	460
Moreton Bay Commercial Trawl	31.5	15.4	9.1	174	260
Mud Crab East Coast	79.8	47.0	19.6	393	570
Mud Crab Gulf of Carpentaria	14.8	8.5	3.2	57	119
Other Harvest Fishery	34.0	22.3	9.9	200	420
Rocky Reef Fin Fish	6.4	3.7	2.3	42	77
Spanner Crab	26.8	16.0	7.8	156	226
East Coast Spanish Mackerel	11.0	7.5	3.6	70	115
Queensland	823.1	453.3	234.3	4,229	5,933

Source: BDO EconSearch analysis

Appendix Table 1-8 Financial performance in Queensland commercial fisheries, 2017/18, average per business (a)

	Blue Swimmer Crab	Coral Harvest and Marine Aquarium Fishery	Coral Reef Fin Fish	East Coast Inshore Fin Fish	East Coast Trawl	Gulf of Carpentaria Inshore Fishery	Moreton Bay Commercial Other	Moreton Bay Commercial Trawl
Days Fished	64	41	43	44	115	98	73	53
Catch (t)	3,025	420	5,715	6,375	21,709	25,785	7,143	7,840
Catch (no.)	0	12,192	0	0	0	0	2,546	0
Employment (fte)	0.3	1.3	1.2	0.2	2.4	1.9	0.6	0.9
Employment (total)	0.8	2.8	2.2	0.7	3.5	3.7	1.6	1.8
Prop. of Revenue Earned in this Fishery	33%	98%	59%	35%	91%	90%	61%	68%
Active Businesses (no.)	102	37	254	506	321	79	194	89
Sample Size (n)	22	13	37	82	40	14	36	12
Gross Income	\$36,211	\$322,989	\$131,660	\$40,792	\$342,197	\$285,542	\$63,110	\$86,775
Total Variable Costs	\$20,050	\$165,832	\$81,544	\$16,673	\$200,925	\$135,762	\$35,038	\$62,377
Total Fixed Costs	\$8,345	\$59,399	\$43,956	\$8,885	\$120,133	\$56,446	\$16,748	\$40,386
Total Boat Cash Costs	\$28,395	\$225,231	\$125,500	\$25,558	\$321,058	\$192,208	\$51,786	\$102,763
Boat Gross Margin	\$16,161	\$157,157	\$50,117	\$24,119	\$141,273	\$149,781	\$28,073	\$24,398
Total Unpaid Labour	\$8,357	\$22,633	\$11,725	\$7,545	\$35,170	\$35,116	\$16,848	\$18,819
Gross Operating Surplus	\$16,173	\$120,391	\$17,885	\$22,779	\$56,309	\$128,450	\$28,172	\$2,831
Boat Cash Income	\$7,816	\$97,758	\$6,160	\$15,234	\$21,139	\$93,335	\$11,324	-\$15,988
Depreciation	\$3,758	\$19,333	\$9,365	\$3,479	\$34,408	\$15,529	\$7,146	\$16,278
Boat Business Profit	\$4,058	\$78,425	-\$3,205	\$11,756	-\$13,269	\$77,805	\$4,178	-\$32,267
Profit at Full Equity	\$5,196	\$86,727	\$10,417	\$13,103	-\$9,599	\$81,538	\$6,883	-\$29,594
Working Capital								
Fishing Gear & Equip	\$58,369	\$359,843	\$151,454	\$49,523	\$641,072	\$365,352	\$108,219	\$244,965
Licence Value	\$23,518	\$517,351	\$113,550	\$43,825	\$131,592	\$322,634	\$71,096	\$38,300
Total Working Capital	\$81,886	\$877,194	\$265,004	\$93,347	\$772,664	\$687,986	\$179,315	\$283,265
Rate of Return on Fishing Gear & Equip	8.9%	24.1%	6.9%	26.5%	-1.5%	22.3%	6.4%	-12.1%
Rate of Return on Total Working Capital	6.3%	9.9%	3.9%	14.0%	-1.2%	11.9%	3.8%	-10.4%

Source: BDO EconSearch analysis

Appendix Table 1-9 Financial performance in Queensland commercial fisheries, 2017/18, average per business (b)

	Mud Crab East Coast	Mud Crab Gulf of Carpentaria	Other Harvest Fishery	Rocky Reef Fin Fish	Spanner Crab	East Coast Spanish Mackerel	Queensland
Days Fished	124	108	93	14	66	24	109
Catch (t)	3,180	4,158	7,199	462	22,331	1,757	14,785
Catch (no.)	0	0	27,733	0	0	0	1,871
Employment (fte)	0.7	0.6	1.8	0.1	1.9	0.2	1.6
Employment (total)	1.3	2.3	5.4	0.2	3.4	0.5	3.1
Prop. of Revenue Earned in this Fishery	66%	47%	95%	13%	86%	28%	100%
Active Businesses (no.)	280	35	61	274	45	179	1,145
Sample Size (n)	50	5	9	44	9	31	177
Gross Income	\$92,798	\$134,181	\$222,773	\$5,224	\$207,669	\$21,677	\$227,996
Total Variable Costs	\$42,737	\$48,159	\$85,503	\$4,060	\$102,368	\$10,678	\$121,441
Total Fixed Costs	\$20,735	\$12,842	\$56,937	\$2,968	\$81,371	\$7,668	\$67,517
Total Boat Cash Costs	\$63,472	\$61,001	\$142,440	\$7,028	\$183,739	\$18,346	\$188,958
Boat Gross Margin	\$50,060	\$86,022	\$137,270	\$1,164	\$105,301	\$10,999	\$106,555
Total Unpaid Labour	\$21,662	\$16,547	\$39,272	\$2,441	\$22,561	\$7,337	\$30,207
Gross Operating Surplus	\$50,987	\$89,727	\$119,605	\$638	\$46,492	\$10,668	\$69,244
Boat Cash Income	\$29,325	\$73,180	\$80,333	-\$1,803	\$23,930	\$3,332	\$39,038
Depreciation	\$5,880	\$5,657	\$17,473	\$1,612	\$18,922	\$2,301	\$19,323
Boat Business Profit	\$23,445	\$67,523	\$62,860	-\$3,415	\$5,008	\$1,031	\$19,715
Profit at Full Equity	\$26,994	\$69,002	\$74,401	-\$2,963	\$56,617	\$2,410	\$28,868
Working							
Fishing Gear & Equip	\$88,099	\$82,205	\$274,560	\$24,573	\$287,473	\$37,176	\$338,916
Licence Value	\$51,127	\$40,096	\$435,408	\$4,676	\$733,471	\$31,137	\$194,259
Total Working Capital	\$139,226	\$122,301	\$709,968	\$29,249	\$1,020,944	\$68,312	\$533,175
Rate of Return on Fishing Gear & Equip	30.6%	83.9%	27.1%	-12.1%	19.7%	6.5%	8.5%
Rate of Return on Total Working Capital	19.4%	56.4%	10.5%	-10.1%	5.5%	3.5%	5.4%

Source: BDO EconSearch analysis

APPENDIX 2 Summary Economic Indicators for all Queensland Commercial Fisheries, 2018/19

Appendix Table 2-1 Commercial fisheries gross value of production, catch and export value, Queensland, 2018/19 (\$m)

Fishery	Catch		GVP (\$m)	Export Value (\$m)
	tonnes (t)	number ('000)		
Blue Swimmer Crab	186	0	2.2	0.0
Coral Harvest and Marine Aquarium Fishery	11	602	16.8	13.7
Coral Reef Fin Fish	1,290	0	30.4	7.1
East Coast Inshore Fin Fish	2,920	0	19.1	0.4
East Coast Trawl	6,122	0	99.3	1.0
Gulf of Carpentaria Inshore Fishery	1,776	0	19.5	0.0
Moreton Bay Commercial Other	1,102	481	9.7	0.2
Moreton Bay Commercial Trawl	513	0	5.8	0.0
Mud Crab East Coast	772	0	22.6	0.2
Mud Crab Gulf of Carpentaria	141	0	4.4	0.0
Other Harvest Fishery	428	1,635	12.9	10.9
Rocky Reef Fin Fish	109	0	1.1	0.0
Spanner Crab	846	0	8.0	0.3
East Coast Spanish Mackerel	285	0	3.4	0.0
Queensland	14,885	2,238	239.6	33.5

Source: BDO EconSearch analysis

Appendix Table 2-2 Cost of management in Queensland commercial fisheries, 2018/19

Fishery	GVP (\$m)	Management cost (\$m)	Proportion of GVP (%)
Blue Swimmer Crab	2.2	1.4	63%
Coral Harvest and Marine Aquarium Fishery	16.8	1.1	7%
Coral Reef Fin Fish	30.4	1.6	5%
East Coast Inshore Fin Fish	19.1	3.5	18%
East Coast Trawl	99.3	1.9	2%
Gulf of Carpentaria Inshore Fishery	19.5	1.4	7%
Moreton Bay Commercial Other	9.7	1.1	11%
Moreton Bay Commercial Trawl	5.8	1.3	23%
Mud Crab East Coast	22.6	1.9	8%
Mud Crab Gulf of Carpentaria	4.4	1.1	25%
Other Harvest Fishery	12.9	2.6	20%
Rocky Reef Fin Fish	1.1	0.9	84%
Spanner Crab	8.0	1.4	18%
East Coast Spanish Mackerel	3.4	1.1	32%
Queensland	239.6	22.3	9%

Source: BDO EconSearch analysis

Appendix Table 2-3 Net economic return in Queensland commercial fisheries, 2018/19 (\$m)

Fishery	Labour Cost (\$m)	Materials & Services (\$m)	Depreciation (\$m)	Opp. Cost of Capital (10%) (\$m)	Management Cost (\$m)	GVP (\$m)	Net Economic Return (\$m)
Blue Swimmer Crab	0.8	1.4	0.3	0.5	1.4	2.2	-2.2
Coral Harvest and Marine Aquarium Fishery	2.5	7.4	0.6	1.2	1.1	16.8	4.0
Coral Reef Fin Fish	13.0	14.2	2.1	3.6	1.6	30.4	-4.2
East Coast Inshore Fin Fish	5.5	6.7	1.9	2.7	3.5	19.1	-1.3
East Coast Trawl	37.9	60.8	10.4	19.8	1.9	99.3	-31.5
Gulf of Carpentaria Inshore Fishery	4.8	7.1	0.8	2.3	1.4	19.5	3.1
Moreton Bay Commercial Other	3.5	4.5	1.2	1.8	1.1	9.7	-2.4
Moreton Bay Commercial Trawl	2.0	5.1	1.0	1.5	1.3	5.8	-5.2
Mud Crab East Coast	6.4	10.0	1.7	2.5	1.9	22.6	0.1
Mud Crab Gulf of Carpentaria	1.1	1.3	0.2	0.4	1.1	4.4	0.3
Other Harvest Fishery	4.1	3.8	1.0	1.6	2.6	12.9	-0.3
Rocky Reef Fin Fish	0.7	0.7	0.4	0.7	0.9	1.1	-2.4
Spanner Crab	2.7	2.0	0.6	0.9	1.4	8.0	0.3
East Coast Spanish Mackerel	1.5	1.4	0.4	0.7	1.1	3.4	-1.6
Queensland	81.1	116.8	20.7	36.9	22.3	239.6	-38.2

Source: BDO EconSearch analysis

Appendix Table 2-4 Economic contributions of Queensland commercial fisheries to Queensland, 2018/19

Sector	Output (\$m)	GSP (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Direct effects					
Fishing	239.6	166.4	81.1	1,801	3,336
Processing	103.4	24.3	10.5	270	254
CAPEX	12.1	5.4	4.0	63	64
Total Direct	355.2	196.2	95.6	2,133	3,654
Flow-on effects					
Personal & Other Serv	37.7	21.5	19.3	305	315
Retail Trade	28.0	16.9	12.2	257	300
Admin Support Serv	14.6	9.5	9.2	152	154
Prof Scientific Tech Serv	25.7	14.1	13.6	146	136
Health & Community Serv	13.6	9.4	8.9	117	131
Food & Beverage Services	11.7	6.2	4.7	115	150
Education & Training	11.5	7.9	7.1	105	110
Wholesale Trade	19.1	10.7	8.3	103	90
Insurance & Other Fin Serv	23.3	10.9	6.9	83	78
Road Transport	15.7	6.7	5.3	56	47
Other Sectors	206.5	103.1	29.5	415	388
Total Flow-on	407.3	216.9	125.2	1,855	1,898
Total	762.5	413.1	220.8	3,988	5,552
<i>Total/Direct</i>	<i>2.1</i>	<i>2.1</i>	<i>2.3</i>	<i>1.9</i>	<i>1.5</i>

Source: BDO EconSearch analysis

Appendix Table 2-5 Direct economic contributions of Queensland commercial fisheries to the fishing regions, 2018/19

	Output (\$m)	GSP (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Queensland	239.6	166.4	81.1	1,801	3,336
South East	61.9	42.7	23.2	533	1,049
Fitzroy	40.2	25.5	13.6	285	447
Wet Tropics	32.2	22.1	10.6	267	479
Cape York Peninsula	39.0	28.4	11.0	213	416
Wide Bay Burnett	26.0	19.2	9.7	207	396
Mackay, Isaac and Whitsunday	22.1	15.3	6.9	151	295
Dry Tropics	11.4	7.7	4.2	91	143
North West	6.9	5.6	1.8	55	110

Source: BDO EconSearch analysis

Appendix Table 2-6 Direct economic contributions of fishing activity in Queensland commercial fisheries by fishery, 2018/19

Fishery	Output (\$m)	GSP (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Blue Swimmer Crab	2.2	1.7	0.8	24	70
Coral Harvest and Marine Aquarium Fishery	16.8	10.5	2.5	58	121
Coral Reef Fin Fish	30.4	19.6	13.0	297	538
East Coast Inshore Fin Fish	19.1	16.6	5.5	128	335
East Coast Trawl	99.3	57.1	37.9	745	1,048
Gulf of Carpentaria Inshore Fishery	19.5	15.0	4.8	120	209
Moreton Bay Commercial Other	9.7	8.3	3.5	95	277
Moreton Bay Commercial Trawl	5.8	2.8	2.0	57	109
Mud Crab East Coast	22.6	19.5	6.4	178	360
Mud Crab Gulf of Carpentaria	4.4	3.8	1.1	25	103
Other Harvest Fishery	12.9	11.5	4.1	105	316
Rocky Reef Fin Fish	1.1	1.0	0.7	18	48
Spanner Crab	8.0	6.8	2.7	68	111
East Coast Spanish Mackerel	3.4	3.3	1.5	36	76
Queensland	239.6	166.4	81.1	1,801	3,336

Source: BDO EconSearch analysis

Appendix Table 2-7 Total economic contributions of fishing activity in Queensland commercial fisheries by fishery, 2018/19

Fishery	Output (\$m)	GSP (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Blue Swimmer Crab	11.4	5.6	2.9	58	104
Coral Harvest and Marine Aquarium Fishery	35.4	20.4	8.7	151	216
Coral Reef Fin Fish	85.3	47.8	29.0	540	787
East Coast Inshore Fin Fish	65.4	36.9	16.8	311	518
East Coast Trawl	329.8	169.5	102.1	1,734	2,055
Gulf of Carpentaria Inshore Fishery	56.0	31.4	14.0	267	357
Moreton Bay Commercial Other	40.7	21.7	10.9	215	397
Moreton Bay Commercial Trawl	24.1	11.4	6.9	132	186
Mud Crab East Coast	72.3	41.7	18.6	374	557
Mud Crab Gulf of Carpentaria	14.6	8.1	3.4	63	141
Other Harvest Fishery	32.9	21.4	9.9	194	407
Rocky Reef Fin Fish	5.3	3.0	1.9	36	66
Spanner Crab	21.9	13.2	6.2	123	167
East Coast Spanish Mackerel	10.4	6.7	3.4	66	107
Queensland	762.5	413.1	220.8	3,988	5,552

Source: BDO EconSearch analysis

Appendix Table 2-8 Financial performance in Queensland commercial fisheries, 2018/19, average per business (a)

	Blue Swimmer Crab	Coral Harvest and Marine Aquarium Fishery	Coral Reef Fin Fish	East Coast Inshore Fin Fish	East Coast Trawl	Gulf of Carpentaria Inshore Fishery	Moreton Bay Commercial Other	Moreton Bay Commercial Trawl
Days Fished	61	53	43	44	115	85	70	49
Catch (t)	2,089	320	5,351	6,135	20,614	27,318	6,444	7,121
Catch (no.)	0	17,718	0	0	0	0	2,815	0
Employment (fte)	0.3	1.7	1.2	0.3	2.5	1.8	0.6	0.8
Employment (total)	0.8	3.6	2.2	0.7	3.5	3.2	1.6	1.5
Prop. of Revenue Earned in this Fishery	35%	99%	56%	39%	92%	82%	61%	66%
Active Businesses (no.)	89	34	241	476	297	65	171	72
Sample Size (n)	21	15	45	90	42	13	32	13
Gross Income	\$25,093	\$494,383	\$125,979	\$40,074	\$334,320	\$299,912	\$56,452	\$80,419
Total Variable Costs	\$17,290	\$236,551	\$83,244	\$17,738	\$209,980	\$130,503	\$33,396	\$59,776
Total Fixed Costs	\$9,422	\$67,281	\$44,381	\$10,460	\$129,541	\$59,965	\$17,030	\$42,911
Total Boat Cash Costs	\$26,713	\$303,833	\$127,625	\$28,198	\$339,521	\$190,469	\$50,426	\$102,688
Boat Gross Margin	\$7,802	\$257,832	\$42,735	\$22,336	\$124,339	\$169,409	\$23,056	\$20,643
Total Unpaid Labour	\$8,131	\$22,074	\$11,238	\$8,241	\$35,521	\$29,126	\$16,422	\$17,386
Gross Operating Surplus	\$6,511	\$212,624	\$9,592	\$20,117	\$30,319	\$138,569	\$22,448	-\$4,882
Boat Cash Income	-\$1,620	\$190,550	-\$1,646	\$11,875	-\$5,201	\$109,443	\$6,026	-\$22,269
Depreciation	\$3,750	\$18,601	\$8,894	\$4,025	\$35,091	\$12,870	\$6,958	\$13,364
Boat Business Profit	-\$5,370	\$171,949	-\$10,540	\$7,850	-\$40,292	\$96,573	-\$931	-\$35,633
Profit at Full Equity	-\$4,001	\$184,062	\$2,398	\$9,396	-\$36,491	\$100,400	\$1,449	-\$32,686
Working Capital								
Fishing Gear & Equip	\$59,420	\$363,776	\$147,934	\$56,774	\$667,499	\$348,726	\$103,576	\$214,992
Licence Value	\$27,623	\$610,294	\$251,515	\$48,839	\$158,370	\$377,594	\$75,162	\$37,157
Total Working Capital	\$87,043	\$974,070	\$399,450	\$105,612	\$825,868	\$726,320	\$178,738	\$252,149
Rate of Return on Fishing Gear & Equip	-6.7%	50.6%	1.6%	16.5%	-5.5%	28.8%	1.4%	-15.2%
Rate of Return on Total Working Capital	-4.6%	18.9%	0.6%	8.9%	-4.4%	13.8%	0.8%	-13.0%

Source: BDO EconSearch analysis

Appendix Table 2-9 Financial performance in Queensland commercial fisheries, 2018/19, average per business (b)

	Mud Crab East Coast	Mud Crab Gulf of Carpentaria	Other Harvest Fishery	Rocky Reef Fin Fish	Spanner Crab	East Coast Spanish Mackerel	Queensland
Days Fished	112	111	97	13	65	23	104
Catch (t)	2,727	4,136	7,651	421	23,492	1,664	13,581
Catch (no.)	0	0	29,200	0	0	0	2,042
Employment (fte)	0.6	0.7	1.9	0.1	1.9	0.2	1.6
Employment (total)	1.3	3.0	5.6	0.2	3.1	0.4	3.0
Prop. of Revenue Earned in this Fishery	69%	63%	98%	13%	84%	28%	100%
Active Businesses (no.)	283	34	56	258	36	171	1,096
Sample Size (n)	58	7	8	48	8	31	196
Gross Income	\$79,811	\$128,133	\$230,356	\$4,314	\$220,937	\$20,143	\$218,631
Total Variable Costs	\$40,584	\$55,328	\$94,520	\$3,413	\$101,623	\$10,155	\$122,143
Total Fixed Costs	\$21,941	\$19,397	\$59,214	\$2,899	\$66,558	\$8,618	\$69,320
Total Boat Cash Costs	\$62,525	\$74,725	\$153,734	\$6,313	\$168,181	\$18,773	\$191,463
Boat Gross Margin	\$39,227	\$72,805	\$135,836	\$900	\$119,314	\$9,988	\$96,488
Total Unpaid Labour	\$20,601	\$17,674	\$40,875	\$2,142	\$19,901	\$6,626	\$28,896
Gross Operating Surplus	\$37,887	\$71,082	\$117,498	\$143	\$72,657	\$7,996	\$56,064
Boat Cash Income	\$17,286	\$53,408	\$76,622	-\$1,999	\$52,756	\$1,370	\$27,168
Depreciation	\$5,914	\$6,550	\$18,681	\$1,656	\$16,070	\$2,508	\$18,851
Boat Business Profit	\$11,372	\$46,858	\$57,942	-\$3,655	\$36,686	-\$1,138	\$8,316
Profit at Full Equity	\$15,072	\$49,252	\$67,288	-\$3,249	\$72,027	\$293	\$16,563
Working Capital							
Fishing Gear & Equip	\$88,760	\$103,288	\$293,936	\$25,478	\$254,108	\$40,633	\$336,686
Licence Value	\$44,841	\$42,119	\$724,287	\$6,181	\$1,282,023	\$40,315	\$262,750
Total Working Capital	\$133,601	\$145,407	\$1,018,223	\$31,659	\$1,536,131	\$80,948	\$599,436
Rate of Return on Fishing Gear & Equip	17.0%	47.7%	22.9%	-12.8%	28.3%	0.7%	4.9%
Rate of Return on Total Working Capital	11.3%	33.9%	6.6%	-10.3%	4.7%	0.4%	2.8%

Source: BDO EconSearch analysis

APPENDIX 3 Summary of Survey Sample for all Fisheries, 2017/18 and 2018/19

Appendix Table 3-1 Survey representativeness of active businesses in 2017/18, by fishery

Fishery	Active businesses (no.)		Proportion of active businesses in sample
	Population	Sample	
Blue Swimmer Crab	102	22	22%
Coral Harvest and Marine Aquarium Fishery	37	13	35%
Coral Reef Fin Fish	254	37	15%
East Coast Inshore Fin Fish	506	82	16%
East Coast Trawl	321	40	12%
Gulf of Carpentaria Inshore Fishery	79	14	18%
Moreton Bay Commercial Other	194	36	19%
Moreton Bay Commercial Trawl	89	12	13%
Mud Crab East Coast	280	50	18%
Mud Crab Gulf of Carpentaria	35	5	14%
Other Harvest Fishery	61	9	15%
Rocky Reef Fin Fish	274	44	16%
Spanner Crab	45	9	20%
East Coast Spanish Mackerel	179	31	17%
Queensland	1,145	177	15%

Source: 2019 survey

Appendix Table 3-2 Survey representativeness of active businesses in 2017/18, by fishing region

Region	Active businesses (no.)		Proportion of active businesses in sample
	Population	Sample	
Cape York Peninsula	165	25	15%
Dry Tropics	149	24	16%
Fitzroy	285	54	19%
Mackay, Isaac and Whitsunday	228	46	20%
North West	62	14	23%
South East	424	62	15%
Wet Tropics	260	33	13%
Wide Bay Burnett	339	59	17%
Queensland	1,145	177	15%

Source: 2019 survey

Appendix Table 3-3 Survey representativeness of active businesses in 2018/19, by fishery

Fishery	Active businesses (no.)		Proportion of active businesses in sample
	Population	Sample	
Blue Swimmer Crab	89	21	24%
Coral Harvest and Marine Aquarium Fishery	34	15	44%
Coral Reef Fin Fish	241	45	19%
East Coast Inshore Fin Fish	476	90	19%
East Coast Trawl	297	42	14%
Gulf of Carpentaria Inshore Fishery	65	13	20%
Moreton Bay Commercial Other	171	32	19%
Moreton Bay Commercial Trawl	72	13	18%
Mud Crab East Coast	283	58	20%
Mud Crab Gulf of Carpentaria	34	7	21%
Other Harvest Fishery	56	8	14%
Rocky Reef Fin Fish	258	48	19%
Spanner Crab	36	8	22%
East Coast Spanish Mackerel	171	31	18%
Queensland	1,096	196	18%

Source: 2019 survey

Appendix Table 3-4 Survey representativeness of active businesses in 2018/19, by fishing region

Region	Active businesses (no.)		Proportion of active businesses in sample
	Population	Sample	
Cape York Peninsula	153	29	19%
Dry Tropics	154	30	19%
Fitzroy	287	55	19%
Mackay, Isaac and Whitsunday	235	54	23%
North West	52	15	29%
South East	386	66	17%
Wet Tropics	254	31	12%
Wide Bay Burnett	325	59	18%
Queensland	1,096	196	18%

Source: 2019 survey