ECONOMIC AND SOCIAL INDICATORS FOR THE SOUTH AUSTRALIAN NORTHERN ZONE ROCK LOBSTER FISHERY 2021/22

A Report for the Department of Primary Industries and Regions

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ABBREVIATIONS

ABS	Australian Bureau of Statistics
CPI	Consumer Price Index
CPUE	catch per unit effort
FRDC	Fisheries Research and Development Corporation
fte	full time equivalent
GRP	gross regional product
GSP	gross state product
GVP	gross value of production
ITQ	individual transferable quota
NER	net economic return
PIRSA	Department Primary Industries and Regions
R&M	repairs and maintenance
RBA	Reserve Bank of Australia
SA	South Australia
SARDI	South Australian Research and Development Institute
TACC	total allowable commercial catch

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EXECUTIVE SUMMARY

The objective of this report is to present a set of economic and social performance indicators for the Northern Zone Rock Lobster (NZRL) Fishery for 2021/22 as well as to develop a consistent time series of economic and social information to aid management of the fishery in future years. The economic and social indicators detailed in this report are summarised below.

This analysis was carried out for the 2021/22 financial year. In November 2020, trade disputes between China and Australia resulted in an unofficial ban on Rock Lobster exports into China. With processors not being able to move Rock Lobster to China, the domestic market was flooded, and prices dropped significantly. The ongoing trade disputes with China, accounting for up to 95 per cent of Rock Lobster exports in previous years, has had a significant impact on the performance of the NZRL Fishery. Whilst these disputes show signs of improving and the fishery has diversified their exports, the unofficial ban remains and continues to impact the NZRL Fishery.

Economic Performance Indicators

Specific strategies and performance indicators relating to economic and social objectives outlined in the management plan (PIRSA 2020) are detailed in Table ES-1. These performance indicators are presented against the reference points, also outlined in the management plan, and the five-year trend in results. A summary of key economic indicators is presented in Table ES-2.

Table ES-1 SA NZRL Fishery performance indicators and trends

Performance indicator	Reference points	Change between 2017/18 and 2021/22
Economic Indicator reports	Economic indicators report is published regularly	Reports published annually between 2017/18 and 2021/22
Price information is available regularly	As above	As above
Catch and effort information is available	As above	As above
Net economic return (NER)	Economic rent (net economic return) is > zero in 90% of years covered in this management plan	Reference point reached Real NER was negative in 2020/21 (-$5.2m) and 2021/22 (-$2.5m). This management plan came into effect in 2020, meaning two thirds of years covered in this management plan were less than zero.
Licence fee % of Gross Value of Product (GVP)	Commercial licence fees less than 10% of GVP in at least 3 years of the past five	Reference point not reached Fees/GVP was 13.8% in 2020/21 and 11.8% in 2021/22 but was below 10% in the three years prior to 2020/21.

Table ES-2 Summary of key economic indicators, 2017/18 to 2021/22 [a]

Indicator	2017/18	2018/19	2019/20	2020/21	2021/22
Catch	308t	294t	228t	251t	291t
GVP	$27.3m	$28.1m	$20.2m	$12.4m	$13.4m
Fee/licence	$26,726	$26,801	$27,353	$27,032	$25,070
Fee/GVP	6.2%	6.0%	8.5%	13.8%	11.8%
Return on fishing gear and equip	67.4%	90.8%	17.4%	-10.2%	-0.9%
Return on total capital	9.1%	11.2%	2.2%	-1.9%	-0.2%
Licence Value	$3.0m	$3.1m	$3.9m	$2.4m	$2.4m
Gross state product	$47.0m	$52.6m	$39.3m	$25.2m	$27.5m
Employment	295 fte	355 fte	301 fte	268 fte	239 fte
Economic Rent	$9.9m	$13.0m	$2.0m	-$5.2m	-$2.5m
Economic Rent/GVP	36.4%	46.2%	9.7%	-41.7%	-18.9%

[a] Dollar values in this table are in real 2021/22 dollars.

Catch and Gross Value of Production

Total catch in the NZRL Fishery was 291t in 2021/22, just below the total allowable commercial catch (TACC) of 296t. This was an increase in catch from the year prior (251t in 2021/21) but was significantly lower than the decades prior (595t in 2002/03). By-catch of Octopus in 2021/22 was 12t and this is excluded from the catch reported in Table ES-2.

Real value of catch in the SA NZRL Fishery was $13.4 million in 2021/22, an 8 per cent increase from that in 2020/21 ($12.4m). Despite this increase, the real value of catch is notably lower than in the previous decade. Since 2002/03, the real value has fluctuated but decreased overall (71 per cent), as a result of a fall in catch and overall decline in real price.

Between 2002/03 and 2021/22 the nominal average price of Northern Zone Rock Lobster increased by 45 per cent. However, this was equivalent to a 9 per cent decrease in real terms. In 2021/22, the real price of Northern Zone Rock Lobster ($45.95/kg) was 7 per cent lower than the previous year ($49.34/kg) and 52 per cent below the peak average annual real price in 2018/19 ($95.65/kg).

Management Costs

Licence fees as a percentage of GVP have generally followed an increasing trend from 2002/03 (4.3 per cent) to 2021/22 (11.8 per cent). The average management fee per licence increased in real terms from $18,597 in 2002/03 to $25,070 in 2021/22.

There were three main factors that contributed to the trends observed from 2002/03 to 2021/22. First, aggregate licence fees increased in real terms by approximately 23 per cent, at a time when the management services had to increase to accommodate the change to a quota system. Second, the catch in 2021/22 was 51 per cent below that achieved in 2002/03, while the price was 9 per cent lower in real terms (resulting in the value of catch falling by 55 per cent in real terms). Third, the number of licences fell by 9 per cent (from 69 to 63) between 2002/03 and 2021/22.

As the Northern Zone Rock Lobster Fishery remains impacted by the disruption to the Chinese market, fishers will receive a temporary 50 per cent licence fee waiver for the 2022/23 fishing season.

Financial Performance Indicators

Over the period between 2002/03 and 2021/22, the average real income per boat declined from $429,000 to $289,000, despite some year-to-year fluctuations.

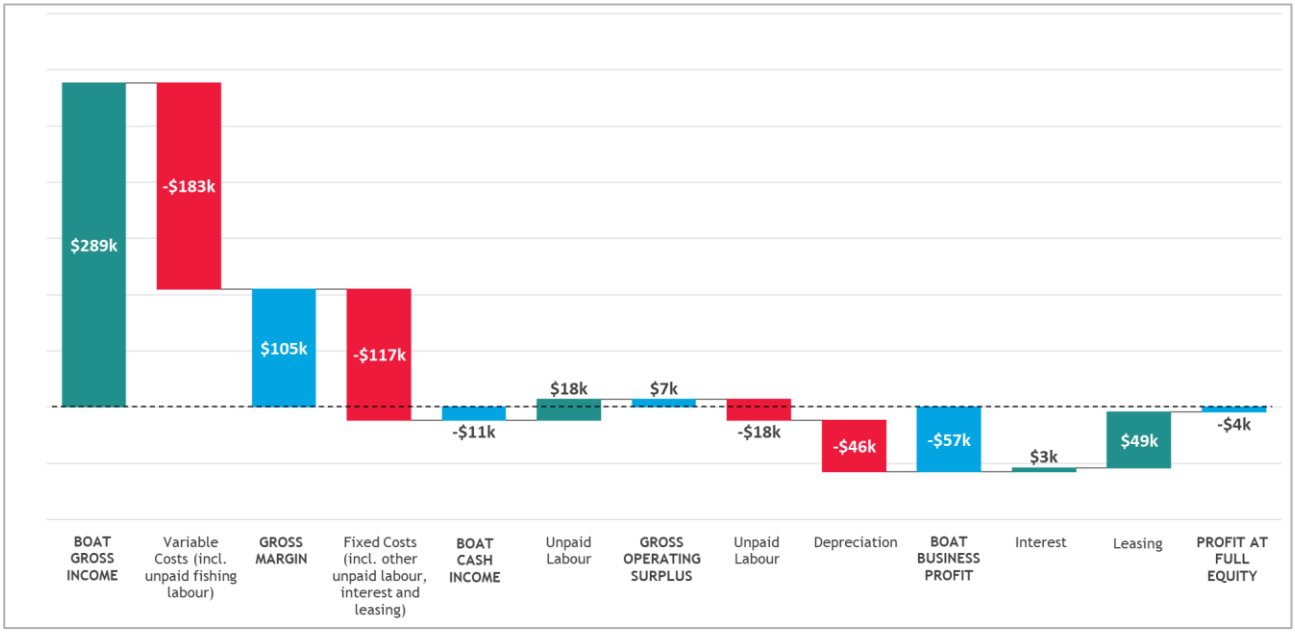
As a result of the rise in gross income per pot lift and the slight decline in variable costs, average gross margin per pot lift increased from $12 in 2020/21 to $21 in 2021/22.

Between 2002/03 and 2021/22, the average price of NZ Rock Lobster decreased by approximately 9 per cent in real terms. The average costs of catching Rock Lobster declined overall between 2002/03 and 2021/22 by 4 per cent. The average costs in 2019/20 increased significantly which was caused primarily by the COVID-19 pandemic and associated international market closures, forcing fishers to postpone fishing to the cooler, less efficient months. This has since been reversed with a 35 per cent decrease in average costs between 2019/20 and 2021/22.

Changes in each of the profitability measures for the fishery were closely related to the average income earned. Profitability fluctuated between 2002/03 and 2018/19 but generally followed an increasing trend. Since 2018/19, profitability has declined notably, despite a slight recovery in 2021/22. Boat level financial performance is illustrated in Figure ES-1 for 2021/22.

The rate of return to boat capital (i.e. fishing gear and equipment) for all boats was lower (-0.9 per cent in 2021/22) than the rate of return to total capital, estimated to average -0.2 per cent in 2021/22. This was an improvement on the 2020/21 estimates of -10.2 per cent and of -1.9 per cent.

Figure ES-1 Summary of boat level financial performance in the NZRL Fishery, 2021/22



Contribution to South Australian Economy

The change in total output and gross state product (GSP) contributions are closely related to changes in price and fishery GVP. In 2021/22, the fishery's contribution to GSP was estimated to be $27.5 million, significantly below the $51.9 million contribution of 2002/03 ($32.5 million in nominal terms).

There has been an overall decline in the employment contribution of the fishery since 2002/03 (decreasing from 525 fte in 2002/03 to 239 fte in 2021/22). This was due to a decrease in the number of active boats in the fishery, a decline in the total number of licences and a recent reduction in fishing activity resulting from international market closures.

Of the estimated 239 fte jobs supported by the industry, there was 71 in fishing, 38 in downstream activities and a further 130 suported through indirect economic activity.

Net Economic Return (NER)

Net economic return (NER) is the return from a fishery after all costs have been met. It is equal to fishing revenue less fishing costs (cost of labour, capital including depreciation, materials and an allowance for "normal" profit). NER is maximised when economic efficiency is maximised.

In 2002/03, estimated NER in the fishery was -$9.3 million. It then followed an overall increasing trend until 2018/19 when it reached $13.0 million. The increase in NER since 2002/03 was attributable to a combination of a reduction in labour, capital and operating costs. In other words, the rising trend in NER was largely due to significant improvements in economic efficiency, ultimately the aim of a quota management system. NER has been lower since 2019/20 and was -$2.5 million in 2021/22. This recent decrease is attributable to the loss in gross income associated with trade disputes between China and Australia leading to an unofficial ban on Rock Lobster exports and the associated fall in price.

NER represents a return to the value of licences in the fishery. The return to the aggregate value of licences in the fishery increased between 2002/03 and 2021/22 but has decreased notably since 2018/19.

1. INTRODUCTION

Under the *Fisheries Management Act 2007*, all the major fisheries in South Australia (SA) operate in accordance with fishery management plans that determine the primary management objectives of the fishery. Economic performance indicators are a feature of these plans and annual reports on them are required for the Minister for the Department of Primary Industries and Regions to meet the obligations of Section 7 of the Fisheries Management Act 2007.

This report is the twenty-fifth annual economic indicators report for the SA Northern Zone Rock Lobster (NZRL) Fishery. The objective of this report, *Economic Indicators for the South Australian Northern Zone Rock Lobster Fishery 2021/22*, is to provide an update of the fishery's most recent economic performance based on the sixth licence holder survey undertaken in 2020.

This analysis was carried out for the 2021/22 financial year. In November 2020, trade disputes between China and Australia resulted in an unofficial ban on Rock Lobster exports into China. For the NZRL Fishery, these effects are summarised in Section 4.1.2. Whilst these disputes show signs of improving, the unofficial ban remains.

The aim of all the studies is to present a set of economic performance indicators for the fishery as well as to develop a consistent time series of economic information to aid management of the fishery in future years. The economic indicators detailed in this report include:

- gross value of production (GVP) (catch and price)
- the cost of management of the fishery
- factors affecting costs in the fishery
- financial performance indicators (income, costs, profit, and return to capital)
- economic contribution of the fishery, both local and state
- net economic return
- external factors that influence the economic condition of the fishery
- Rock Lobster exports (quantity and value).

For purposes of comparison, summary economic indicators for all South Australian commercial fisheries, up to 2020/21, are presented in Appendix 3.

In 2015, 2018 and 2020, the economic indicators survey of commercial fisheries was extended to include the collection of social indicators. The results of the social indicators component of the survey are detailed in BDO EconSearch (2022a).

2. METHOD OF ANALYSIS AND DEFINITION OF TERMS

2.1. Survey of Licence Holders, 2019/20

The questionnaire for the 2020 survey of licences holders was based on previous economic indicator surveys. The questionnaire was drafted and subsequently modified after consultation with the South Australian Northern Zone Rock Lobster Fishermen's Association.

In September 2020 all licence holders in the fishery were sent an introductory letter and a copy of the survey. Licence holders were then contacted and a number of methods were used to undertake the surveys including, telephone interviews, face-to-face interviews, by post and online.

The completed responses from licence holders in the fishery represented 63 per cent of the total fishery quota, covering 24 of the 38 active licences. This survey response rate was similar to that of the previous survey (undertaken in 2018) where the survey response rate was 66 per cent of the total fishery quota, covering 29 of the 44 active licences.

Of the 38 active licence holders in the fishery, 14 did not provide a response to the survey as they: could not be contacted, were too busy, or were not interested in participating.

2.2. Updating the Indicators, 2021/22

The 2020/21 economic indicators for the SA NZRL Fishery were derived using a range of primary and secondary data and survey-based 2019/20 indicators. The same method was utilised for 2021/22 with the following information used to adjust 2020/21 indicators to reflect fisheries' performance in 2021/22.

- SARDI data were used to reflect changes in catch and its value between 2020/21 and 2021/22. Catch and value data were used to estimate the average total boat income in the fisheries.
- Information on change in fishing effort (number of days fished) between 2020/21 and 2021/22 was used to adjust the cost of inputs that were assumed to vary with fishing effort. These inputs included fuel, repairs and maintenance, ice and provisions.
- The consumer price index (CPI) for Adelaide and components of the CPI were used to adjust the cost of inputs to reflect local levels of inflation (ABS 2022a).

2.3. Definition of Terms[1]

Beach price: refers to the price received by commercial fishers at the "port level" for their catch, and is generally expressed in terms of $/kg. Some processing costs are included in the beach price, as some processing occurs on the boat. Other processing costs 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 Capital: includes capital items that are required by the licence holder to earn the boat income. It includes boat hull, engine, electronics and other permanent fixtures and tender boats. Other capital items

[1] Where possible definitions have been kept consistent with those used by Brown (1997) in ABARE's *Australian Fisheries Surveys Report*.

such as motor vehicles, sheds, cold-rooms, and jetty/moorings can be included to the extent that they are used in the fishing business. The fishing licence/permit value is included in total boat capital.

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. Where a commercial fishery operates under full cost recovery, licence fees will be set to cover the cost of managing the fishery or at least the commercial sector's share of the resource.

In fisheries where there is full cost recovery, it can be assumed that the cost of providing these management services to the commercial sector will be equal to the gross receipts from licence fees in the fishery. With information on licence fee receipts, GVP, catch and the number of commercial fishers in the fishery, the following indicators can be readily calculated:

- aggregate licence fee receipts for the fishery ($)
- licence fee/GVP (%)
- licence fee/catch ($/kg)
- licence fee/licence holder ($/licence holder).

Depreciation: Depreciation refers to the annual reduction in the value of boat capital due to general wear and tear or the reduction in value of an item over time.

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 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 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. Profit at Full Equity represents the profitability of an individual licence holder, assuming the licence holder has full

equity in the operation, i.e. there is no outstanding debt associated with the investment in boat 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 *Boat Capital* multiplied by *100*. This measure is expressed in percentage terms and is calculated for an individual licence holder. 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 licence holders, 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
- licence 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 licence holder 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.).

3. ECONOMIC INDICATORS FOR THE SA NORTHERN ZONE ROCK LOBSTER FISHERY

3.1. Economic Objectives of the SA Northern Zone Rock Lobster Fishery

According to the *Management Plan for the South Australian Commercial Northern Zone Rock Lobster Fishery* (PIRSA 2020), management of the fishery has five key goals:

1. Northern Rock Lobster stocks in South Australia are sustainable
2. Northern Zone Rock Lobster Fishery businesses operate efficiently and are viable
3. South Australian Rock Lobster Fishery minimises impacts on the ecosystem
4. Economic and social benefits of the South Australian Rock Lobster Fishery are equitably distributed
5. Management of the fishery is cost effective and participatory.

In order to achieve these goals the management plan sets out specific biological, ecological, social and economic objectives for the fishery. The economic objectives of the NZRL Fishery and related performance indicators, as described in the management plan for the fishery, are summarised in Table 3-1. These performance indicators are presented in the following sections.

Table 3-1 Economic and social objectives of the SA NZRL Fishery

Goal	Objectives	Strategies	Performance indicators	Trigger points
2. Northern Zone Rock Lobster Fishery businesses operate viably	2c: There is sufficient economic information to make informed management decisions	2c: Maintain a flow of economic benefit from the fishery to the broader community	Economic performance reports Price information is available regularly Catch and effort information is available	Economic performance reports for fishery published regularly
4. Economic and social benefits of the South Australian Rock Lobster Fishery are equitably distributed	4a: Economic and social benefits from the fishery flow to the broader community and are maintained	4a(i) Develop and implement management arrangements that allow commercial operators to maximise operational flexibility, economic efficiency, value and returns 4a(ii) Communicate the sustainability and economic outcomes of the fishery to the wider community. 4a(iii) Where there is demonstrable, and measureable disruption to fishing operations that are not related to stock abundance, and fish stocks are classified as 'sustainable' that emergency arrangements for management of the fishery may be considered	Economic Rent (net economic return)	Economic rent (net economic return) is > zero in 90% of years covered in this management plan
5. Management of the fishery is cost effective and participatory	5a: Promote cost effective and efficient management of the fishery, in line with government's cost recovery policy	5a(i) Develop and implement management arrangements that are effective at achieving management objectives whilst minimising costs	Licence fee% of Gross Value of Product (GVP)	Commercial licence fees less than 10% of GVP in at least 3 years of the past five.

Indicators reported in economic reports.

Trigger points that can be calculated from reported economic indicators

Source: PIRSA 2021

3.2. Catch and Gross Value of Production

Catch and value of catch in the SA NZRL Fishery and overall for Rock Lobster in SA are presented in Table 3-2 and Figure 3-1. Total catch in the NZRL Fishery was 291t in 2021/22, just below the total allowable commercial catch (TACC) of 296t (Table 3-3). This was an increase in catch from the year prior (251t in 2021/21) but was significantly lower than the decade prior (595t in 2002/03). By-catch of Octopus in 2021/22 was 12t and this is excluded from the catch reported in Table 3-2.

Table 3-2 Catch and value of catch of the SA NZRL Fishery [a] and combined South Australian Rock Lobster Fisheries, 2002/03 to 2021/22

Year	Northern Zone			South Australia		
	Catch (tonnes)	Nominal Value of Catch ($m)	Real Value of Catch (2021/22 $m)	Catch (tonnes)	Nominal Value of Catch ($m)	Real Value of Catch (2021/22 $m)
2002/03	595	18.8	30.0	2,361	82.7	131.8
2003/04	504	12.0	18.7	2,400	61.4	95.0
2004/05	446	11.6	17.6	2,343	66.0	100.1
2005/06	476	15.4	22.5	2,365	81.2	118.5
2006/07	492	18.0	25.8	2,532	97.7	139.1
2007/08	459	15.9	21.9	2,411	92.2	125.8
2008/09	403	19.3	26.1	1,925	105.4	141.5
2009/10	310	15.1	19.9	1,642	86.4	112.9
2010/11	313	14.3	18.1	1,695	82.4	102.9
2011/12	307	16.9	21.2	1,636	96.7	120.1
2012/13	325	15.6	19.1	1,630	87.1	106.1
2013/14	331	19.6	23.3	1,622	108.8	128.8
2014/15	321	22.5	26.4	1,559	125.0	145.9
2015/16	347	24.9	29.0	1,591	138.2	160.5
2016/17	320	20.3	23.2	1,558	120.9	137.7
2017/18	308	24.4	27.3	1,554	122.8	137.0
2018/19	294	25.5	28.1	1,539	136.5	150.2
2019/20	228	18.5	20.2	1,431	122.5	133.4
2020/21	251	11.6	12.4	1,526	83.4	88.2
2021/22	291	13.4	13.4	1,619	79.8	79.2

[a] Rock Lobster only and does not include Octopus catch taken by NZRL licence holders.

Source: SARDI Aquatic Sciences

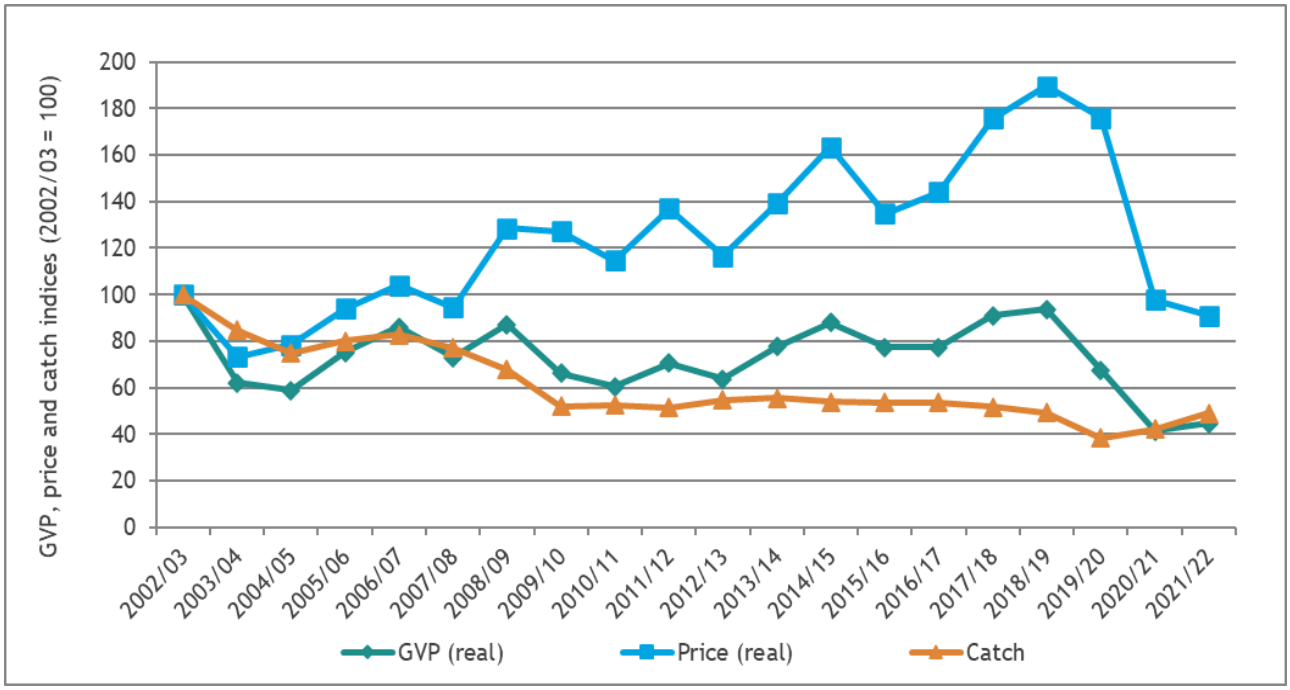
Real value of catch in the SA NZRL Fishery was $13.4 million in 2021/22, an 8 per cent increase from that in 2020/21 ($12.4m). Despite this increase, the real value of catch is notably lower than in the previous decade. Since 2002/03, the real value has fluctuated but decreased overall (55 per cent), as a result of a fall in catch as well as an overall decline in real price (Figure 3-1).

Table 3-3 TACC in the SA NZRL Fishery, 2003/04 to 2021/22

Year	Total Allowable Commercial Catch (t)
2003/04	625
2004/05	520
2005/06	520
2006/07	520
2007/08	520
2008/09	470
2009/10	310
2010/11	310
2011/12	310
2012/13	345
2013/14	345
2014/15	323
2015/16	360
2016/17	360
2017/18	310
2018/19	296
2019/20	296
2020/21	324
2021/22	296

Source: Linnane et al. 2021 and previous editions and PIRSA, pers. comm.

Figure 3-1 GVP, price and catch indices for the SA NZRL Fishery [a]

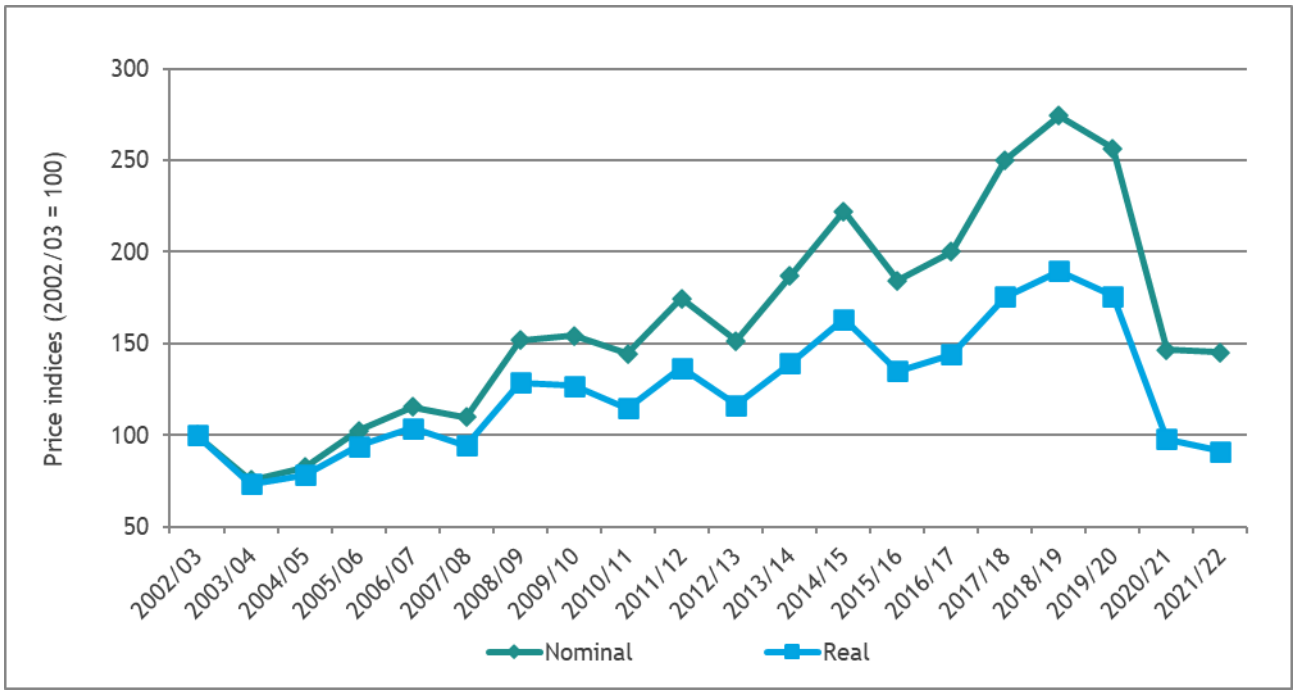


[a] 2001/02 is the reference year against which all other years are compared.

Source: SARDI Aquatic Sciences

Nominal and real price of catch in the SA NZRL Fishery between 2002/03 and 2021/22 are presented in Figure 3-2. Real price decreased by 7 per cent between 2020/21 and 2021/22 and was 9 per cent lower in 2021/22 than in 2002/03 (45 per cent higher in nominal terms). Long-run trends in total catch, value of catch and price are described in Section 5.

Figure 3-2 Price indices for the SA NZRL Fishery [a]



[a] Nominal price refers to the beach price in the current year's dollars. Real price is the nominal price adjusted for the purchasing power of money. The Adelaide CPI (consumer price index) has been used to make this adjustment (ABS 2022a). It enables meaningful comparisons of prices to be made between years.

Source: SARDI Aquatic Sciences

3.3. Summary of Factors Affecting Costs in the SA Northern Zone Rock Lobster Fishery

The information in Table 3-4 was used to adjust the 2020/21 financial performance indicators to reflect the costs incurred in the fishery in 2021/22. The following data were used and adjustments made.

- Information from SARDI on the change in fishing effort (total days fished) was used to adjust costs that vary depending on the amount of time spent fishing. These costs include the cost of fuel, repairs and maintenance and provisions.
- The ABS Transportation Index for Adelaide was used to adjust the cost of fuel.
- Interest charges were adjusted in accordance with the Reserve Bank of Australia indicator lending rate (i.e. weighted average interest rate for small businesses with outstanding credit).
- The CPI for Adelaide was used to adjust other costs. Other costs associated with operating in the fishery include, legal and accounting costs, office and administration, telephone expenses and other incidental costs.
- The Wage Price index was used to adjust the cost of labour.

Table 3-4 Factors affecting costs in the SA NZRL Fishery, 2020/21 to 2021/22

	2020/21	2021/22	Change
Total Days Fished [a]	3,396	3,077	-9.4%
Price of Fuel – Transportation Index [b]	105.7	119.7	13.2%
Price of Bait (c/kg) [a]	0.69	0.78	12.7%
Interest Charges (%/annum) [c]	6.5%	6.6%	1.4%
CPI Adelaide [d]	117.8	125.3	6.4%
Wage Price Index [e]	136.4	139.3	2.1%

[a] SARDI Aquatic Sciences
[b] Transportation index (component of CPI) for Adelaide (ABS 2022a)
[c] RBA indicator lending rate for small business (RBA 2022b)
[d] Consumer price index (CPI) for Adelaide (ABS 2022a)
[e] Wage price index for SA (ABS 2022b)

3.4. Cost of Management

South Australian commercial fisheries operate under full cost recovery. Accordingly, licence fees are set to cover the cost of managing the fishery. Management services required to manage the fishery include:

- annual reports on biological and economic indicators
- policy and management services
- regulatory/legislation and licensing services
- compliance services
- directorate services
- observer services (specifically observer coverage)
- research services (including the FRDC levy).

For the purpose of this analysis, the cost of providing these management services has been assumed to be equal to the gross receipts from licence fees in the fishery (PIRSA, pers. comm.)[2]. Table 3-5 shows licence fee receipts for the SA NZRL Fishery for the period 2002/03 to 2022/23. Licence fee values shown are in real 2021/22 dollars.

Table 3-5 shows that aggregate licence fees decreased by 7 per cent between 2020/21 and 2021/22. GVP in the fishery increased slightly, therefore decreasing licence fees as a proportion of GVP from 13.8 per cent in 2020/21 to 11.8 per cent in 2021/22. Licence fees per kilogram decreased for the second consecutive year from $6.78/kg in 2020/21 to $5.43/kg in 2021/22 as a result of an increase in catch and slight decrease in fees.

[2] It is worth noting that the gross receipts from licence fees exclude some known subsidy of the fishery such as FRDC and CRC leverage of research funding. However, in order to enable tracking of performance across years, subsidies have been omitted.

The surrender of one licence in 2014/15, the removal of four licences in 2014/15[3] and commencement of electronic reporting trials in 2016/17 resulted in an increase in aggregate licence fees and an increase in fees per licence between 2013/14 and 2016/17. However, this decreased in 2021/22, the lowest level of aggregate licence fees since 2013/14 (Table 3-5).

Table 3-5 Costs of management in the SA NZRL Fishery, 2002/03 to 2022/23 [a]

	Licence Fees	GVP	Fees/GVP	Catch	Fee/Catch	No. Licences	Fee/Licence[b]
	($,000)	($,000)	(%)	(t)	($/kg)	(no.)	($/licence)
2002/03	1,283	30,015	4.3%	595	$2.16	69	$18,597
2003/04	1,594	18,657	8.5%	504	$3.16	69	$23,102
2004/05	1,631	17,640	9.2%	446	$3.66	69	$23,635
2005/06	1,589	22,538	7.0%	476	$3.34	69	$23,024
2006/07	1,670	25,798	6.5%	492	$3.39	68	$24,561
2007/08	1,613	21,869	7.4%	459	$3.51	68	$23,724
2008/09	1,512	26,140	5.8%	403	$3.75	68	$22,231
2009/10	1,531	19,876	7.7%	310	$4.94	68	$22,518
2010/11	1,492	18,106	8.2%	313	$4.77	68	$21,945
2011/12	1,333	21,193	6.3%	307	$4.34	68	$19,599
2012/13	1,514	19,087	7.9%	325	$4.66	68	$22,267
2013/14	1,767	23,257	7.6%	331	$5.34	68	$25,988
2014/15	1,671	26,433	6.3%	321	$5.21	63	$26,521
2015/16	1,659	29,022	5.7%	347	$4.78	63	$26,326
2016/17	1,728	23,244	7.4%	320	$5.40	63	$27,436
2017/18	1,684	27,274	6.2%	308	$5.47	63	$26,726
2018/19	1,688	28,120	6.0%	294	$5.74	63	$26,801
2019/20	1,723	20,234	8.5%	228	$7.56	63	$27,353
2020/21	1,703	12,384	13.8%	251	$6.78	63	$27,032
2021/22	1,579	13,371	11.8%	291	$5.43	63	$25,070
2022/23[c]	801	n.a.	-	n.a.	-	63	$12,712

[a] This table presents management costs in real 2021/22 dollars. Nominal management costs are presented in Appendix 5.

[b] The fee per licence holder comprises the NZRL unit fee and the NZRL base fee.

[c] 2022/23 values have not been adjusted for CPI.

Source: PIRSA Fisheries and Aquaculture and SARDI Aquatic Sciences

[3] Four licences were removed through the Marine Parks: Commercial Fisheries Voluntary Catch/Effort Reduction Program, to account for areas that were closed to fishing following implementation of marine park sanctuary zones in October 2014. The management costs related to these removed licences have not been included in the aggregate licence fee reported in Table 3-4.

3.5. Financial Performance Indicators

The major measures of financial performance of the surveyed boats in the SA NZRL Fishery for the years 2019/20 to 2021/22 are shown in Table 3-6. Estimates for 2019/20 to 2021/22 are based on the most recent survey conducted during October 2020. Financial performance estimates for 2002/03 to 2018/19 are provided in Appendix 4. Financial performance estimates for the years 2019/20 to 2021/22 are also provided as an average per pot lift in Table 3-7.

As a result of the large sample size it was possible to divide the survey responses into four groups (quartiles) according to rate of return to capital. The first quartile comprises the 25 per cent of boats with the lowest rate of return and fourth quartile includes the 25 per cent with the highest rate of return to capital. The financial performance measures for 'return to capital' quartiles for 2021/22 are provided in Table 3-8.

In addition, the survey responses were divided into two groups according to the number of licensed pots held. The first group includes those licence holders with 80 pots or fewer (50 per cent of survey respondents) and the second group includes licence holders with more than 80 pots (50 per cent of survey respondents). The financial performance estimates for the pot groups for 2021/22 are provided in Table 3-9 as an average per boat and in Table 3-10 as an average per pot.

The survey responses were also divided into two groups according to the amount of quota operated per licence. The first group includes those licence holders operating less than 5.5 tonnes of quota (50 per cent of survey respondents) and the second group includes licence holders with 5.5 tonnes or more of quota (50 per cent of survey respondents). The financial performance estimates for the quota groups for 2021/22 are provided in Table 3-11 as an average per boat and in Table 3-12 as an average per kilogram.

Income

Total gross income per boat was almost $289,000 in 2021/22, a 15 per cent increase from 2020/21 (almost $251,000), however, a fall of 27 per cent from 2019/20 ($398,000) (Table 3-6). The rise in income between 2020/21 and 2021/22 was driven by a 16 per cent increase in catch (from 251t in 2020/21 to $291t in 2021/22). This offset the slight decrease in price (down 1 per cent from 2020/21). Average gross income per pot lift was $58.51 in 2021/22 up from $50.82 in 2020/21 due mainly to the rise in GVP resulting from the increase in catch (Table 3-7).

In 2021/22, the average gross income for boats in the first quartile was approximately 42 per cent below the average, while in the fourth quartile, average gross income was approximately 66 per cent above the average (Table 3-8).

Gross income per boat was approximately 76 per cent greater for boats working 80 or more pots when compared with those working less than 80 pots (Table 3-9). However, gross income per pot was 10 per cent lower for boats working 80 or more pots when compared with those working less than 80 pots (Table 3-10).

Table 3-6 Financial performance in the SA NZRL Fishery, 2019/20 to 2021/22 (average per licence) [a]

		2019/20		2020/21		2021/22	
		Average per Boat	Share of TBCC[b]	Average per Boat	Share of TBCC[b]	Average per Boat	Share of TBCC[b]
(1)	**Total Boat Gross Income**	**$397,882**		**$250,721**		**$288,635**	
	Variable Costs						
	Fuel	$25,375	8%	$24,264	8%	$24,886	8%
	Repairs & Maintenance [c]	$17,267	5%	$17,104	6%	$16,484	5%
	Bait/Ice	$13,667	4%	$12,856	4%	$13,453	4%
	Provisions	$6,218	2%	$6,159	2%	$5,936	2%
	Labour - paid	$116,093	35%	$113,626	38%	$105,141	35%
(2)	Labour - unpaid [d]	$15,657	5%	$15,902	5%	$14,180	5%
	Other	$3,483	1%	$3,581	1%	$3,325	1%
(3)	**Total Variable Costs**	**$197,759**	**60%**	**$193,492**	**64%**	**$183,406**	**61%**
	Fixed Costs						
	Licence Fee	$26,059	8%	$26,786	9%	$26,114	9%
	Insurance	$7,258	2%	$7,461	2%	$7,936	3%
(4)	Interest	$3,863	1%	$3,411	1%	$3,458	1%
(5)	Labour - unpaid [d]	$3,910	1%	$3,971	1%	$4,055	1%
(6)	Leasing	$68,065	21%	$42,890	14%	$49,376	16%
	Legal & Accounting	$4,092	1%	$4,206	1%	$4,474	1%
	Telephone etc.	$1,004	0%	$1,032	0%	$1,098	0%
	Slipping & Mooring	$5,667	2%	$5,825	2%	$6,196	2%
	Travel	$1,554	0%	$1,598	1%	$1,699	1%
	Office & Admin	$11,119	3%	$11,429	4%	$12,157	4%
(7)	**Total Fixed Costs**	**$132,590**	**40%**	**$108,609**	**36%**	**$116,563**	**39%**
(8)	**Total Boat Cash Costs (3+7)**	**$330,349**	**100%**	**$302,101**	**100%**	**$299,968**	**100%**
	Boat Gross Margin (1-3)	**$200,123**		**$57,230**		**$105,229**	
(9)	**Total Unpaid Labour (2+5)**	**$19,566**		**$19,872**		**$18,235**	
	Gross Operating Surplus (1-8+9)	**$87,100**		**-$31,507**		**$6,901**	
(10)	**Boat Cash Income (1-8)**	**$67,533**		**-$51,380**		**-$11,334**	
(11)	**Depreciation**	**$48,461**		**$47,587**		**$45,935**	
(12)	**Boat Business Profit (10-11)**	**$19,073**		**-$98,967**		**-$57,269**	
(13)	**Profit at Full Equity (12+4+6)**	**$91,000**		**-$52,666**		**-$4,435**	
	Boat Capital						
(14)	Fishing Gear & Equip	$523,938		$514,497		$496,636	
	Licence Value	$3,527,500		$2,241,825		$2,358,202	
(15)	**Total Boat Capital**	**$4,051,438**		**$2,756,322**		**$2,854,838**	
	Rate of Return on Fishing Gear & Equip (13/14*100)	**17.4%**		**-10.2%**		**-0.9%**	
	Rate of Return on Total Boat Capital (13/15*100)	**2.2%**		**-1.9%**		**-0.2%**	

[a] Financial performance estimates for 2019/20 to 2021/22 are based on the 2020 licence holder survey. All figures are in nominal terms.
[b] Total boat cash costs.
[c] Repairs and maintenance costs have been classified as a variable cost although it is noted that some of these costs may be fixed (e.g. regulated maintenance).
[d] Unpaid labour was divided between variable (time spent fishing and on repairs and maintenance) and fixed (management and administrative duties) based on survey responses.

Source: BDO EconSearch analysis

Table 3-7 Financial performance in the SA NZRL Fishery, 2019/20 to 2021/22 (average per pot lift) [a]

		2019/20		2020/21		2021/22	
		Average per Pot Lift	Share of TBCC[b]	Average per Pot Lift	Share of TBCC[b]	Average per Pot Lift	Share of TBCC[b]
(1)	**Total Boat Gross Income**	**$80.65**		**$50.82**		**$58.51**	
	Variable Costs						
	Fuel	$5.14	8%	$4.92	8%	$5.04	8%
	Repairs & Maintenance [c]	$3.50	5%	$3.47	6%	$3.34	5%
	Bait/Ice	$2.77	4%	$2.61	4%	$2.73	4%
	Provisions	$1.26	2%	$1.25	2%	$1.20	2%
	Labour - paid	$23.53	35%	$23.03	38%	$21.31	35%
(2)	Labour - unpaid [d]	$3.17	5%	$3.22	5%	$2.87	5%
	Other	$0.71	1%	$0.73	1%	$0.67	1%
(3)	**Total Variable Costs**	**$40.09**	**60%**	**$39.22**	**64%**	**$37.18**	**61%**
	Fixed Costs						
	Licence Fee	$5.28	8%	$5.43	9%	$5.29	9%
	Insurance	$1.47	2%	$1.51	2%	$1.61	3%
(4)	Interest	$0.78	1%	$0.69	1%	$0.70	1%
(5)	Labour - unpaid [d]	$0.79	1%	$0.80	1%	$0.82	1%
(6)	Leasing	$13.80	21%	$8.69	14%	$10.01	16%
	Legal & Accounting	$0.83	1%	$0.85	1%	$0.91	1%
	Telephone etc.	$0.20	0%	$0.21	0%	$0.22	0%
	Slipping & Mooring	$1.15	2%	$1.18	2%	$1.26	2%
	Travel	$0.32	0%	$0.32	1%	$0.34	1%
	Office & Admin	$2.25	3%	$2.32	4%	$2.46	4%
(7)	**Total Fixed Costs**	**$26.88**	**40%**	**$22.02**	**36%**	**$23.63**	**39%**
(8)	**Total Boat Cash Costs (3+7)**	**$66.96**	**100%**	**$61.24**	**100%**	**$60.81**	**100%**
	Boat Gross Margin (1-3)	**$40.57**		**$11.60**		**$21.33**	
(9)	**Total Unpaid Labour (2+5)**	**$3.97**		**$4.03**		**$3.70**	
	Gross Operating Surplus (1-8+9)	**$17.66**		**-$6.39**		**$1.40**	
(10)	**Boat Cash Income (1-8)**	**$13.69**		**-$10.42**		**-$2.30**	
(11)	**Depreciation**	**$9.82**		**$9.65**		**$9.31**	
(12)	**Boat Business Profit (10-11)**	**$3.87**		**-$20.06**		**-$11.61**	
(13)	**Profit at Full Equity (12+4+6)**	**$18.45**		**-$10.68**		**-$0.90**	
	Boat Capital						
(14)	Fishing Gear & Equip	$106.21		$104.29		$100.67	
	Licence Value	$715.06		$454.44		$478.03	
(15)	**Total Boat Capital**	**$821.27**		**$558.73**		**$578.70**	
	Rate of Return on Fishing Gear & Equip (13/14*100)	**17.4%**		**-10.2%**		**-0.9%**	
	Rate of Return on Total Boat Capital (13/15*100)	**2.2%**		**-1.9%**		**-0.2%**	

[a-d] See footnotes from Table 3-6.

Source: BDO EconSearch analysis

Table 3-8 Financial performance in the SA NZRL Fishery by return to capital quartile, 2021/22 (average per boat)

		Average per boat				
		Lowest 25%	Second Quartile	Third Quartile	Highest 25%	All Boats
(1)	**Total Boat Gross Income**	**$166,106**	**$152,236**	**$357,392**	**$478,806**	**$288,635**
	Variable Costs					
	Fuel	$17,863	$12,539	$29,094	$40,046	$24,886
	Repairs & Maintenance [a]	$18,234	$9,038	$12,782	$25,882	$16,484
	Bait/Ice	$10,196	$7,113	$17,090	$19,414	$13,453
	Provisions	$3,991	$3,858	$6,777	$9,117	$5,936
	Labour - paid	$75,964	$66,835	$124,267	$153,499	$105,141
(2)	Labour - unpaid [b]	$1,993	$10,588	$16,918	$27,220	$14,180
	Other	$3,287	$2,752	$2,914	$4,349	$3,325
(3)	**Total Variable Costs**	**$131,528**	**$112,723**	**$209,844**	**$279,527**	**$183,406**
	Fixed Costs					
	Licence Fee	$28,423	$27,765	$27,837	$20,432	$26,114
	Insurance	$7,260	$6,862	$8,577	$9,045	$7,936
(4)	Interest	$4,774	$2,611	$5,739	$706	$3,458
(5)	Labour - unpaid [b]	$3,411	$1,199	$3,142	$8,469	$4,055
(6)	Leasing	$43,967	$47,826	$20,191	$85,520	$49,376
	Legal & Accounting	$5,948	$5,623	$2,314	$4,009	$4,474
	Telephone etc.	$1,367	$510	$875	$1,640	$1,098
	Slipping & Mooring	$5,571	$5,180	$5,922	$8,109	$6,196
	Travel	$651	$625	$1,822	$3,699	$1,699
	Office & Admin	$24,114	$8,259	$6,979	$9,275	$12,157
(7)	**Total Fixed Costs**	**$125,487**	**$106,461**	**$83,399**	**$150,905**	**$116,563**
(8)	**Total Boat Cash Costs (3+7)**	**$257,015**	**$219,184**	**$293,243**	**$430,432**	**$299,968**
	Boat Gross Margin (1-3)	**$34,578**	**$39,513**	**$147,548**	**$199,279**	**$105,229**
(9)	**Total Unpaid Labour (2+5)**	**$5,405**	**$11,787**	**$20,060**	**$35,688**	**$18,235**
	Gross Operating Surplus (1-8+9)	**-$85,505**	**-$55,161**	**$84,209**	**$84,062**	**$6,901**
(10)	**Boat Cash Income (1-8)**	**-$90,909**	**-$66,948**	**$64,149**	**$48,374**	**-$11,334**
(11)	**Depreciation**	**$40,578**	**$43,967**	**$41,637**	**$51,905**	**$45,935**
(12)	**Boat Business Profit (10-11)**	**-$131,487**	**-$110,916**	**$22,513**	**-$3,531**	**-$57,269**
(13)	**Profit at Full Equity (12+4+6)**	**-$82,746**	**-$60,478**	**$48,443**	**$82,695**	**-$4,435**
	Boat Capital					
(14)	Fishing Gear & Equip	$243,128	$350,466	$584,600	$808,349	$496,636
	Licence Value	$2,685,093	$2,805,235	$2,664,422	$1,619,674	$2,358,202
(15)	**Total Boat Capital**	**$2,928,221**	**$3,155,701**	**$3,249,021**	**$2,428,024**	**$2,854,838**
	Rate of Return on Fishing Gear & Equip (13/14*100)	**-34.0%**	**-17.3%**	**8.3%**	**10.2%**	**-0.9%**
	Rate of Return on Total Boat Capital (13/15*100)	**-2.8%**	**-1.9%**	**1.5%**	**3.4%**	**-0.2%**

[a] Repairs and maintenance costs have been classified as a variable cost although it is noted that some of these costs may be fixed (e.g. regulated maintenance).

[b] Unpaid labour was divided between variable (time spent fishing and on repairs and maintenance) and fixed (management and administrative duties) based on survey responses.

Source: BDO EconSearch analysis

Table 3-9 Financial performance in the SA NZRL Fishery by number of pots, 2021/22 (average per boat)

		Average per boat		
		Less than 80 pots	80 or more pots	All Boats
(1)	**Total Boat Gross Income**	**$209,455**	**$367,815**	**$288,635**
	Variable Costs			
	Fuel	$19,591	$30,180	$24,886
	Repairs & Maintenance [a]	$14,596	$18,372	$16,484
	Bait/Ice	$10,653	$16,254	$13,453
	Provisions	$4,069	$7,803	$5,936
	Labour - paid	$72,503	$137,780	$105,141
(2)	Labour – unpaid [b]	$15,151	$13,209	$14,180
	Other	$2,204	$4,446	$3,325
(3)	**Total Variable Costs**	**$138,767**	**$228,045**	**$183,406**
	Fixed Costs			
	Licence Fee	$26,604	$25,625	$26,114
	Insurance	$6,842	$9,030	$7,936
(4)	Interest	$5,426	$1,489	$3,458
(5)	Labour - unpaid [b]	$2,958	$5,152	$4,055
(6)	Leasing	$46,314	$52,438	$49,376
	Legal & Accounting	$4,743	$4,204	$4,474
	Telephone etc.	$875	$1,321	$1,098
	Slipping & Mooring	$4,640	$7,751	$6,196
	Travel	$795	$2,603	$1,699
	Office & Admin	$14,928	$9,386	$12,157
(7)	**Total Fixed Costs**	**$114,125**	**$119,001**	**$116,563**
(8)	**Total Boat Cash Costs (3+7)**	**$252,892**	**$347,045**	**$299,968**
	Boat Gross Margin (1-3)	**$70,689**	**$139,770**	**$105,229**
(9)	**Total Unpaid Labour (2+5)**	**$18,109**	**$18,361**	**$18,235**
	Gross Operating Surplus (1-8+9)	**-$25,327**	**$39,130**	**$6,901**
(10)	**Boat Cash Income (1-8)**	**-$43,436**	**$20,769**	**-$11,334**
(11)	**Depreciation**	**$33,892**	**$55,152**	**$45,935**
(12)	**Boat Business Profit (10-11)**	**-$77,328**	**-$34,382**	**-$57,269**
(13)	**Profit at Full Equity (12+4+6)**	**-$25,588**	**$19,545**	**-$4,435**
	Boat Capital			
(14)	Fishing Gear & Equip	$256,435	$736,837	$496,636
	Licence Value	$1,593,918	$3,122,487	$2,358,202
(15)	**Total Boat Capital**	**$1,850,353**	**$3,859,324**	**$2,854,838**
	Rate of Return on Fishing Gear & Equip (13/14*100)	**-10.0%**	**2.7%**	**-0.9%**
	Rate of Return on Total Boat Capital (13/15*100)	**-1.4%**	**0.5%**	**-0.2%**
	Average Number of Pots [c]	**47**	**92**	**69**

[a-b] See footnotes from Table 3-6.

[c] Average number of pots owned and leased by licence holders in each quartile.

Source: BDO EconSearch analysis

Table 3-10 Financial performance in the SA NZRL Fishery by number of pots, 2021/22 (average per pot) [a]

		Average per pot		
		Less than 80 pots	80 or more pots	All Boats
(1)	**Total Boat Gross Income**	**$4,480**	**$4,016**	**$4,173**
	Variable Costs			
	Fuel	$419	$330	$360
	Repairs & Maintenance [b]	$312	$201	$238
	Bait/Ice	$228	$177	$195
	Provisions	$87	$85	$86
	Labour - paid	$1,551	$1,504	$1,520
(2)	Labour – unpaid [c]	$324	$144	$205
	Other	$47	$49	$48
(3)	**Total Variable Costs**	**$2,968**	**$2,490**	**$2,652**
	Fixed Costs			
	Licence Fee	$569	$280	$378
	Insurance	$146	$99	$115
(4)	Interest	$116	$16	$50
(5)	Labour - unpaid [c]	$63	$56	$59
(6)	Leasing	$991	$573	$714
	Legal & Accounting	$101	$46	$65
	Telephone etc.	$19	$14	$16
	Slipping & Mooring	$99	$85	$90
	Travel	$17	$28	$25
	Office & Admin	$319	$102	$176
(7)	**Total Fixed Costs**	**$2,441**	**$1,299**	**$1,685**
(8)	**Total Boat Cash Costs (3+7)**	**$5,409**	**$3,789**	**$4,337**
	Boat Gross Margin (1-3)	**$1,512**	**$1,526**	**$1,521**
(9)	**Total Unpaid Labour (2+5)**	**$387**	**$200**	**$264**
	Gross Operating Surplus (1-8+9)	**-$542**	**$427**	**$100**
(10)	**Boat Cash Income (1-8)**	**-$929**	**$227**	**-$164**
(11)	**Depreciation**	**$725**	**$602**	**$664**
(12)	**Boat Business Profit (10-11)**	**-$1,654**	**-$375**	**-$828**
(13)	**Profit at Full Equity (12+4+6)**	**-$547**	**$213**	**-$64**
	Boat Capital			
(14)	Fishing Gear & Equip	$5,485	$8,046	$7,180
	Licence Value	$34,094	$34,094	$34,094
(15)	**Total Boat Capital**	**$39,580**	**$42,140**	**$41,275**

[a] Calculated based on the average number of pots owned and leased by licence holders in each group.
[b] Repairs and maintenance costs have been classified as a variable cost although it is noted that some of these costs may be fixed (e.g. regulated maintenance).
[c] Unpaid labour was divided between variable (time spent fishing and on repairs and maintenance) and fixed (management and administrative duties) based on survey responses.

Source: BDO EconSearch analysis

Table 3-11 Financial performance in the SA NZRL Fishery by tonnes of quota, 2021/22 (average per boat)

		Average per boat		
		Less than 5.5 Tonnes of Quota	5.5 Tonnes of Quota or More	All Boats
(1)	**Total Boat Gross Income**	**$149,910**	**$427,360**	**$288,635**
	Variable Costs			
	Fuel	$14,547	$35,224	$24,886
	Repairs & Maintenance [a]	$11,488	$21,480	$16,484
	Bait/Ice	$7,793	$19,114	$13,453
	Provisions	$3,672	$8,200	$5,936
	Labour - paid	$61,187	$149,096	$105,141
(2)	Labour – unpaid [b]	$6,987	$21,373	$14,180
	Other	$2,872	$3,779	$3,325
(3)	**Total Variable Costs**	**$108,546**	**$258,265**	**$183,406**
	Fixed Costs			
	Licence Fee	$25,505	$26,724	$26,114
	Insurance	$6,023	$9,849	$7,936
(4)	Interest	$5,073	$1,843	$3,458
(5)	Labour - unpaid [b]	$1,359	$6,751	$4,055
(6)	Leasing	$51,640	$47,113	$49,376
	Legal & Accounting	$5,212	$3,736	$4,474
	Telephone etc.	$374	$1,822	$1,098
	Slipping & Mooring	$4,920	$7,471	$6,196
	Travel	$1,002	$2,396	$1,699
	Office & Admin	$8,464	$15,849	$12,157
(7)	**Total Fixed Costs**	**$109,572**	**$123,554**	**$116,563**
(8)	**Total Boat Cash Costs (3+7)**	**$218,117**	**$381,820**	**$299,968**
	Boat Gross Margin (1-3)	**$41,364**	**$169,095**	**$105,229**
(9)	**Total Unpaid Labour (2+5)**	**$8,346**	**$28,124**	**$18,235**
	Gross Operating Surplus (1-8+9)	**-$59,862**	**$73,664**	**$6,901**
(10)	**Boat Cash Income (1-8)**	**-$68,208**	**$45,540**	**-$11,334**
(11)	**Depreciation**	**$39,755**	**$49,288**	**$45,935**
(12)	**Boat Business Profit (10-11)**	**-$107,963**	**-$3,748**	**-$57,269**
(13)	**Profit at Full Equity (12+4+6)**	**-$51,251**	**$45,208**	**-$4,435**
	Boat Capital			
(14)	Fishing Gear & Equip	$265,324	$727,948	$496,636
	Licence Value	$1,804,167	$2,912,238	$2,358,202
(15)	**Total Boat Capital**	**$2,069,491**	**$3,640,186**	**$2,854,838**
	Rate of Return on Fishing Gear & Equip (13/14*100)	**-19.3%**	**6.2%**	**-0.9%**
	Rate of Return on Total Boat Capital (13/15*100)	**-2.5%**	**1.2%**	**-0.2%**
	Average Number of Kilograms of quota per licence [c]	**2,813**	**9,058**	**5,935**

[a-b] See footnotes from Table 3-6.
[c] Average tonnes of quota owned and leased by licence holders.

Source: BDO EconSearch analysis

Table 3-12 Financial performance in the SA NZRL Fishery by tonnes of quota, 2021/22 (average per kilogram) [a]

		Average per kilogram		
		Less than 5.5 Tonnes of Quota	5.5 Tonnes of Quota or More	All Boats
(1)	**Total Boat Gross Income**	**$53**	**$47**	**$49**
	Variable Costs			
	Fuel	$5	$4	$4
	Repairs & Maintenance [b]	$4	$2	$3
	Bait/Ice	$3	$2	$2
	Provisions	$1.31	$1	$1
	Labour - paid	$21.75	$16.46	$17.71
(2)	Labour – unpaid [c]	$2	$2	$2
	Other	$1	$0	$1
(3)	**Total Variable Costs**	**$39**	**$29**	**$31**
	Fixed Costs			
	Licence Fee	$9	$3	$4
	Insurance	$2	$1	$1
(4)	Interest	$2	$0	$1
(5)	Labour - unpaid [c]	$0	$1	$1
(6)	Leasing	$18	$5	$8
	Legal & Accounting	$2	$0	$1
	Telephone etc.	$0	$0	$0
	Slipping & Mooring	$2	$1	$1
	Travel	$0	$0	$0
	Office & Admin	$3	$2	$2
(7)	**Total Fixed Costs**	**$39**	**$14**	**$20**
(8)	**Total Boat Cash Costs (3+7)**	**$78**	**$42**	**$51**
	Boat Gross Margin (1-3)	**$15**	**$19**	**$18**
(9)	**Total Unpaid Labour (2+5)**	**$3**	**$3**	**$3**
	Gross Operating Surplus (1-8+9)	**-$21**	**$8**	**$1**
(10)	**Boat Cash Income (1-8)**	**-$24**	**$5**	**-$2**
(11)	**Depreciation**	**$14**	**$5**	**$8**
(12)	**Boat Business Profit (10-11)**	**-$38**	**$0**	**-$10**
(13)	**Profit at Full Equity (12+4+6)**	**-$18**	**$5**	**-$1**
	Boat Capital			
(14)	Fishing Gear & Equip	$94	$80	$84
	Licence Value	$641	$322	$397
(15)	**Total Boat Capital**	**$736**	**$402**	**$481**

[a] Calculated based on the average tonnes of quota owned and leased by licence holders in each group.
[b] Repairs and maintenance costs have been classified as a variable cost although it is noted that some of these costs may be fixed (e.g. regulated maintenance).
[c] Unpaid labour was divided between variable (time spent fishing and on repairs and maintenance) and fixed (management and administrative duties) based on survey responses.

Source: BDO EconSearch analysis

Costs

Total costs are separated into variable and fixed costs in Table 3-6. Variable costs (61 per cent of total boat cash costs in 2021/22) represented a significantly greater proportion of total boat cash costs than fixed costs (39 per cent). Variable costs as a proportion of total boat cash costs decreased slightly in 2021/22 (from 64 per cent in 2020/21).

Average total boat cash costs decreased by 1 per cent between 2020/21 and 2021/22, a result of a 5 per cent fall in variable costs and despite a 7 per cent rise in fixed costs (Table 3-6). Total average cash costs per pot lift remained the same as 2020/21 (around $61) however, were down 9 per cent from 2019/20 (around $67) (Table 3-6).

In 2021/22, for the fishery as a whole, around 41 per cent of the total boat cash costs were attributable to labour costs (both paid and imputed), by far the biggest cost item. Imputed unpaid labour ($18,000 in 2021/22) was divided into variable (fishing and repairs and maintenance) ($14,000) and fixed (management and administration) ($4,000) components based on the 2020 licence holder survey. Labour costs declined overall from 2020/21 with both total unpaid labour and paid labour decreasing (8 per cent and 7 per cent, respectively) (Table 3-6).

Cash income and profit

The separation of variable and fixed costs from total cash costs enables the calculation of boat gross margin (total boat income less total boat variable costs) as a basic measure of profit (assuming that capital has no alternative use and that as fishing activity varies there is no change in capital or fixed costs). There was a significant increase in boat gross margin in 2021/22 (approximately $105,000) compared to previous year ($57,000), due to the rise in gross boat income (driven by an increase in GVP) (Table 3-6). Similarly, average boat gross margin per pot lift increased from $12 in 2020/21 to around $21 in 2021/22 due to the rise in average income per pot lifts (Table 3-7).

Gross operating surplus (GOS) was calculated excluding imputed wages for operator and family members. The average GOS of all boats in 2021/22 was estimated to be almost $7,000, a significant improvement from 2020/21 (around -$32,000). Boat cash income is measured as gross operating surplus with imputed wages (unpaid labour) included as cash costs. The estimated average boat cash income in 2021/22 was approximately -$11,000 per boat, whilst negative it is an improvement from -$51,000 in 2020/21 (Table 3-6).

Gross operating surplus and boat business profit give an indication of the capacity of the operator to remain in the fishery in the short to medium term. Average boat business profit was estimated to be approximately -$57,000 per boat in 2021/22, up from around -$99,000 in 2020/21 (Table 3-6). In 2021/22, the average boat business profit for boats in the first quartile was -$131,000 while boats in the fourth quartile made a significantly lower loss of -$4,000 (Table 3-8).

Profit at full equity is a measure of the profitability of an individual licence holder, assuming the licence holder has full equity in the operation (including ownership of any leased quota). It is a useful absolute measure of the economic performance of fishing firms. Average profit at full equity per boat across all categories in 2021/22 (-$4,000) was significantly more than the previous year (-$53,000) however, notably lower than the year before ($91,000 in 2019/20) (Table 3-6).

Profit at full equity was positively correlated with the amount of quota held on a per-boat and per-pot basis. In 2021/22 the average profit at full equity for licence holders with 5.5 tonnes of quota or more (approximately $45,000) was greater than that for licence holders with less than 5.5 tonnes of quota

(-$51,000) (Table 3-11 and Table 3-12). This suggests that under the current conditions there appears to be an economy of scale in this fishery, providing an economic incentive for individual operators to expand quota holdings.

Return to capital

There are a number of interpretations of the concept of rate of return to total capital. For the purpose of this analysis it is appropriate to consider the capital as the investment employed by an average licence holder in the fishery. Capital includes boats, licence/quota, fishing gear, sheds, vehicles and other capital items used as part of the fishing enterprise. It does not include working capital or capital associated with other businesses operated by the licence holder. The return to total capital has been calculated as the profit at full equity as a percentage of the total capital employed.

The rate of return to boat capital (i.e. fishing gear and equipment) for all boats was lower (-0.9 per cent in 2021/22) than the rate of return to total capital, estimated to average -0.2 per cent in 2021/22. This was an improvement on the 2020/21 estimate of -10.2 per cent and of -1.9 per cent in 2020/21 (Table 3-6).

The rate of return to total capital is calculated using the profit at full equity and the average investment in all capital (i.e. fishing gear and equipment and licence/quota value). The average profit at full equity per boat in the first quartile was around -$83,000, compared to approximately $83,000 in the fourth quartile. This difference is due to significantly lower average gross income in the first quartile compared to the fourth quartile (188% higher in the fourth quartile) but with total cash costs only 67 per cent higher. In 2021/22, the average rate of return to total capital was -2.8 per cent in the first quartile and 3.4 per cent in the fourth quartile (Table 3-8).

Licence holders operating with less than 80 pots earned an average rate of return to total capital of -1.4 per cent, whereas the rate of return was higher (0.5 per cent) for licence holders with 80 or more pots (Table 3-9).

Licence values

The value of licences represents a significant proportion of the capital used by each licence holder in the fishery. It is worth noting that the value of these licences would ideally be revealed through an active market with transparent and open reporting of trades. As this is not available, the survey of licence holders provided an alternative method of valuing licences. In 2021/22, the average licence value per boat was estimated to be almost $2.4 million per boat for all boats (the equivalent of around $34,000 per pot), a slight increase on the 2020/21 estimate of $2.2 million (Table 3-6 and Table 3-10).

Licence values are determined by both current earning capacity and expectations about future earnings. In 2021/22, the aggregate value of licences was estimated to be $125.9 million (3,694 pots with an average value of approximately $34,000).

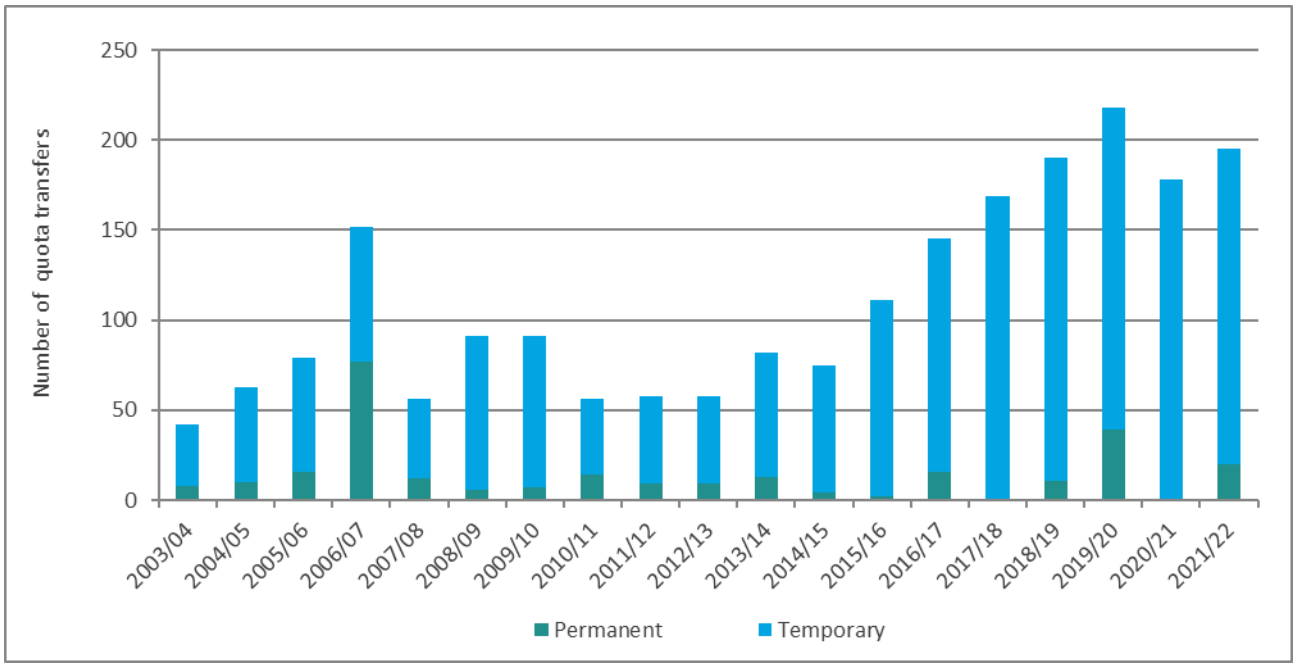
Quota was first introduced in the fishery in October 2003 for the 2003/04 season. In 2015/16 with the introduction of Inner and Outer Regions, new quota units were issued for inner and outer regions on a one for one basis with the previous zonal quota units. There are now 58,545 inner region plus 58,545 outer region quota units.

In 2021/22, there were 195 quota transfers between licence holders, ranging from only a small number of units to full licence allocations (PIRSA Fisheries licensing section). The relatively high number of quota transfers, and the wide variation in the amount of quota transferred seems to indicate that the flexibility in the quota management system is allowing fishers to adjust their fishing effort. The number of transfers

between licence holders and total number of quota units transferred over the period 2003/04 to 2021/22 are detailed in Figure 3-3 and Figure 3-4, respectively. Some of the increase in the number of quota transfers and number of quota units transferred since 2015/16 is due to the doubling of the number of quota units with the introduction of inner and outer quota regions, as described above.

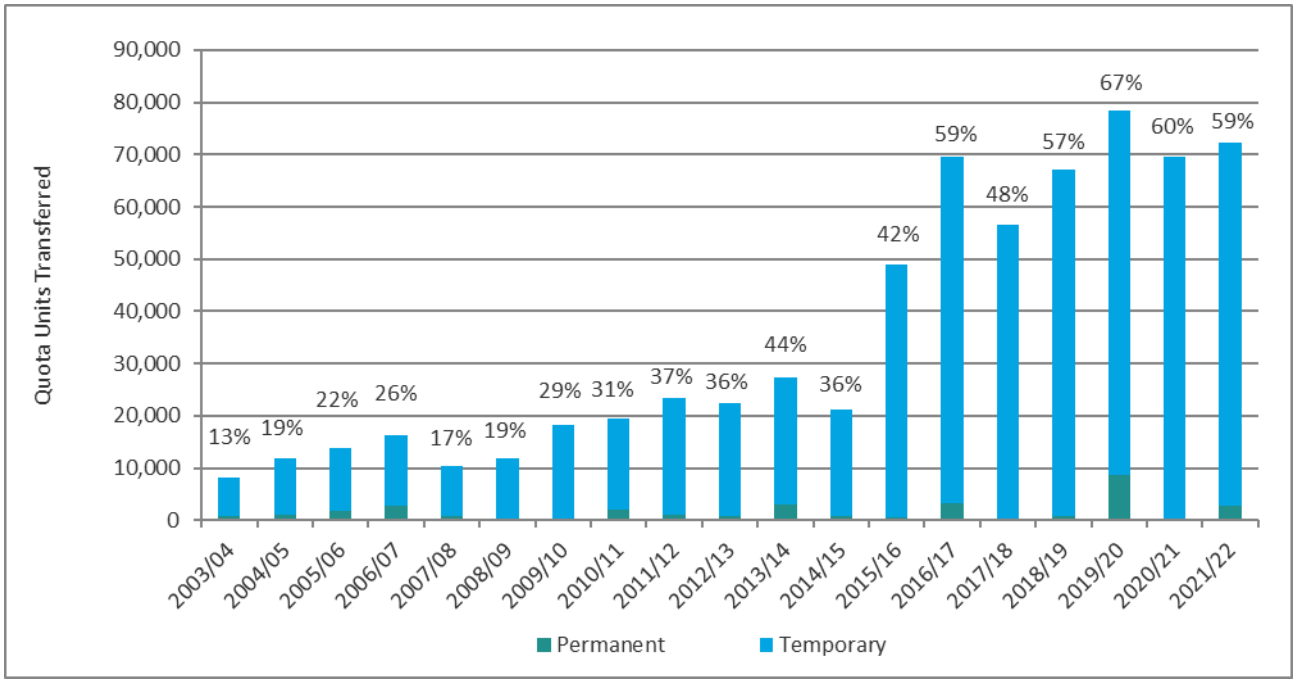
The number of temporary unit transfers as a fraction of the total quota units in the fishery has increased from 15 per cent in 2007/08 to 60 per cent in 2021/22 (Figure 3-4). The fact that temporary or leasing transfers are increasing rapidly suggests a social transition away from owner operators towards lease fishers.

Figure 3-3 Number of quota transfers, 2003/04 to 2021/22



Source: PIRSA Fisheries Licensing Section

Figure 3-4 Number of quota units transferred and percentage of total quota units [a], 2003/04 [b] to 2021/22



[a] There were 58,545 Inner Region quota units and 58,545 Outer Region quota units in the NZRL Fishery in total in 2021/22, prior to 2015/16 there were 58,545 zonal quota units in total.

[b] The quota management system was introduced in 2003/04.

Source: PIRSA Fisheries Licensing Section

3.6. State and Regional Economic Contribution

Estimates of the economic contribution of the SA NZRL fishing industry in the South Australian economy in 2021/22 are outlined below.

Estimates of the direct economic contribution of the SA NZRL Fishery are consistent with the method employed in PIRSA's Value-added ScoreCard, 2021/22. The following stages in the marketing chain have, therefore, been included in the quantifiable economic contribution:

- the landed beach value of production
- downstream contributions, including the:
  - net value of local (state and regional) processing
  - value of local transport services at all stages of the marketing chain
  - net value of local retail and food service (e.g. hotels & restaurants) trade.

Each of these activities generates flow-on effects to other sectors through purchases of inputs and the employment of labour. These flow-on effects have been estimated using input-output analysis. Input-output analysis is widely used in economic impact analysis and is a practical method for measuring economic contributions at regional and state levels.

Economic contributions at the state and regional levels were based on models for the state as a whole and for the Eyre and Western State Government region, prepared for the Department of Premier and Cabinet (BDO EconSearch 2022b).

In order to compile a representative cost structure for the fishing sector, costs per licence were derived from data provided by operators in the fishery in the financial survey and updated as described earlier. On an item-by-item basis, the expenditures were allocated between those occurring in the Eyre and Western region, those occurring in South Australia and those goods and services imported from outside the state.

Estimates of the net value of local (i.e. regional and state) processing margins and retail and food service trade margins were derived from PIRSA's value-added ScoreCard (Seafood Scorecard, 2021/22) (PIRSA, pers. comm.). Estimates of the net value of local transport margins and capital expenditure per licence holder were derived from the survey of licence holders.

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 contribution to 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.

3.6.1. Economic contributions at the state and regional levels

Estimates of the economic contribution generated in 2021/22 by the SA NZRL fishing industry in South Australia and the Eyre and Western region are outlined in Table 3-13 and Table 3-14, respectively.

For each measure of economic activity, the total contributions at the state level are greater than the sum of the regional level contributions. This is to be expected, as the regional contribution is simply a component, albeit a significant one, of the total state contribution.

The direct contribution measures fishing and downstream activities (i.e. processing, transport, retail/food services and capital expenditure). The flow-on contribution measures the economic effects in other sectors of the economy (trade, manufacturing, etc.) generated by the fishing industry activities, that is, the multiplier effects.

Table 3-13 The economic contribution of the SA NZRL fishing industry in SA, 2021/22

Sector	Output		Employment [a]		Household Income		Contribution to GSP	
	($m)	%	(fte jobs)	%	($m)	%	($m)	%
Direct effects								
Fishing [b]	13.5	27%	71	30%	5.8	32%	7.7	28%
Processing	0.8	2%	2	1%	0.1	1%	0.3	1%
Transport	1.8	4%	8	3%	0.6	4%	0.8	3%
Retail	2.6	5%	19	8%	1.1	6%	1.5	5%
Food services	0.7	1%	7	3%	0.3	2%	0.4	1%
Capital expenditure [c]	0.4	1%	2	1%	0.1	1%	0.2	1%
Total Direct [d]	*19.8*	*40%*	*109*	*46%*	*8.1*	*45%*	*10.8*	*39%*
Flow-on effects								
Trade	3.6	7%	22	9%	1.5	8%	2.1	8%
Manufacturing	3.4	7%	9	4%	0.6	4%	1.0	4%
Business Services	5.4	11%	33	14%	2.6	14%	2.9	11%
Transport	1.9	4%	7	3%	0.5	3%	0.8	3%
Other Sectors	15.2	31%	59	25%	4.6	26%	9.8	36%
Total Flow-on [d]	*29.3*	60%	*130*	54%	*9.8*	55%	*16.7*	61%
Total [d]	**49.1**	**100%**	**239**	**100%**	**17.8**	**100%**	**27.5**	**100%**
Total/Direct	2.5	-	2.2	-	2.2	-	2.5	-
Total/Tonne	$162,200	-	0.8	-	$58,800	-	$90,700	-

[a] Full-time equivalent jobs. Direct employment in the fishing sector was comprised of 56 full-time and 17 part-time jobs, that is, 73 jobs in aggregate, which was estimated to be equal to 71 fte jobs.

[b] The direct fishing contribution includes Octopus caught by NZRL Fishery licences holders ($0.1m).

[c] Capital expenditure includes fishing related expenditure (boats, fishing gear and equipment, sheds and buildings, motor vehicles and other equipment) and processing relating expenditure (sheds, buildings and freezers).

[d] Totals may not sum due to rounding.

Source: BDO EconSearch analysis

Table 3-14 The economic contribution of the SA NZRL fishing industry in the Eyre and Western region, 2021/22

Sector	Output		Employment [a]		Household Income		Contribution to GSP	
	($m)	%	(fte jobs)	%	($m)	%	($m)	%
Direct effects								
Fishing [b]	13.5	49%	71	52%	5.8	56%	7.4	48%
Processing	0.8	3%	2	2%	0.1	1%	0.3	2%
Transport	0.4	1%	2	1%	0.1	1%	0.2	1%
Retail	0.4	2%	3	2%	0.2	2%	0.2	2%
Food services	0.1	0%	1	0%	0.0	0%	0.0	0%
Capital expenditure [c]	0.1	0%	1	0%	0.0	0%	0.0	0%
Total Direct [d]	*15.3*	*55%*	*79*	*58%*	*6.3*	*61%*	*8.2*	*53%*
Flow-on effects								
Trade	1.9	7%	12	9%	0.8	7%	1.1	7%
Manufacturing	0.6	2%	2	1%	0.1	1%	0.2	1%
Business Services	2.1	8%	13	9%	0.9	9%	1.1	7%
Transport	1.0	4%	3	2%	0.3	2%	0.5	3%
Other Sectors	6.8	25%	28	20%	2	19%	4	29%
Total Flow-on [d]	*12.4*	45%	*57*	42%	*4.0*	39%	*7.3*	47%
Total [d]	**27.7**	**100%**	**137**	**100%**	**10.3**	**100%**	**15.5**	**100%**
Total/Direct	1.8	-	1.7	-	1.6	-	1.9	-
Total/Tonne	$91,300	-	0.5	-	$33,900	-	$51,200	-

[a-d] See footnotes from Table 3-13.
Source: BDO EconSearch analysis

Value of output

The value of output generated directly in SA and the Eyre and Western region by NZRL fishing enterprises was $13.5 million in 2021/22 (Table 3-13 and Table 3-14), while output generated in SA by associated downstream activities (processing, transport, retail/food services and capital expenditure) summed to $6.3 million ($1.8 million in the Eyre and Western region, Table 3-14).

Flow-on effects to other sectors of the state economy added another $29.3 million in output ($12.4 million in the regional economy). The sectors most affected were the business services, trade, manufacturing and retail sectors. The total output contribution in SA (direct plus indirect) was estimated to be $49.1 million in 2021/22 ($27.7 million in the Eyre and Western region).

Employment and household income

In 2021/22, the SA NZRL Fishery was responsible for the direct employment of an estimated 71 full-time equivalents (fte) while downstream activities created employment of around 38 fte jobs state-wide (8 jobs

regionally). Flow-on business activity was estimated to generate a further 130 fte jobs state-wide (57 jobs regionally). The total employment contribution in SA was estimated to be 239 fte jobs (137 fte jobs regionally), concentrated in business services, trade and retail.

Personal income of $5.8 million was earned in the fishing sector (wages of employees and estimated drawings by owner/operators) and $2.3 million in downstream activities in SA. An additional $9.8 million was earned by wage earners in other businesses in the state as a result of fishing and associated downstream activities. The total household income contribution was $17.8 million in SA ($10.3 million in the Eyre and Western region).

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. In 2021/22, total SA NZRL Fishery related contribution to GSP in SA was $27.5 million ($15.5 million in the Eyre and Western region), $7.7 million generated by fishing directly ($7.4 million in the Eyre and Western region), $3.1 million generated by downstream activities ($0.8 million in the Eyre and Western region) and $16.7 million generated in other sectors of the state economy ($7.3 million in the Eyre and Western region).

Total contributions over time

Figure 3-5 and Figure 3-6 illustrate the total economic contribution (direct plus flow-on effects) of the fishery on the SA economy for the 20 years, 2002/03 to 2021/22. Estimates of economic contribution are expressed in 2021/22 dollars. The Adelaide Consumer Price Index was used to adjust for inflation (ABS 2022a).

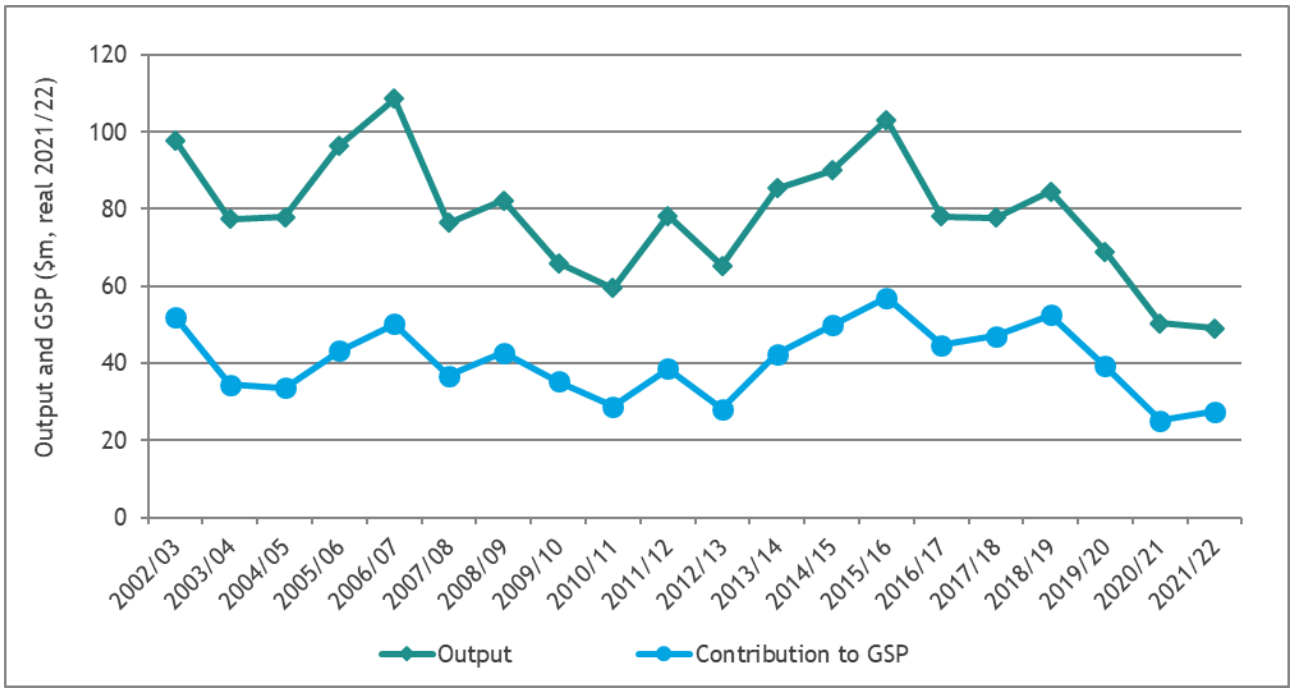
Estimates of economic contribution for 2002/03 do not include the contribution of local retail and food service trade, these effects have been included in subsequent years. As economic contribution estimates for the years 2002/03 to 2021/22 are based on different survey samples and techniques, some of the differences between years are, therefore, attributable to sampling variability.

Care should be taken when using value of output as a measure of economic contribution as it includes elements of double counting. Contribution to GSP is the preferred measure of net contribution to the SA economy.

Despite fluctuations, there has been an overall decrease in the output and GSP contribution of the fishery between 2002/03 and 2021/22, as illustrated in Figure 3-5. This decrease can be attributed to the significant decline in the value of catch over the period, and more recently trade disputes between Australia and China leading to an unofficial ban on Rock Lobster exports into China.

The total employment contribution has decreased overall since 2002/03 (Figure 3-6). We would expect a slight decrease in employment due to the reduction in the total number of licence holders in the fishery (direct employment) and productivity improvements across all related industries.

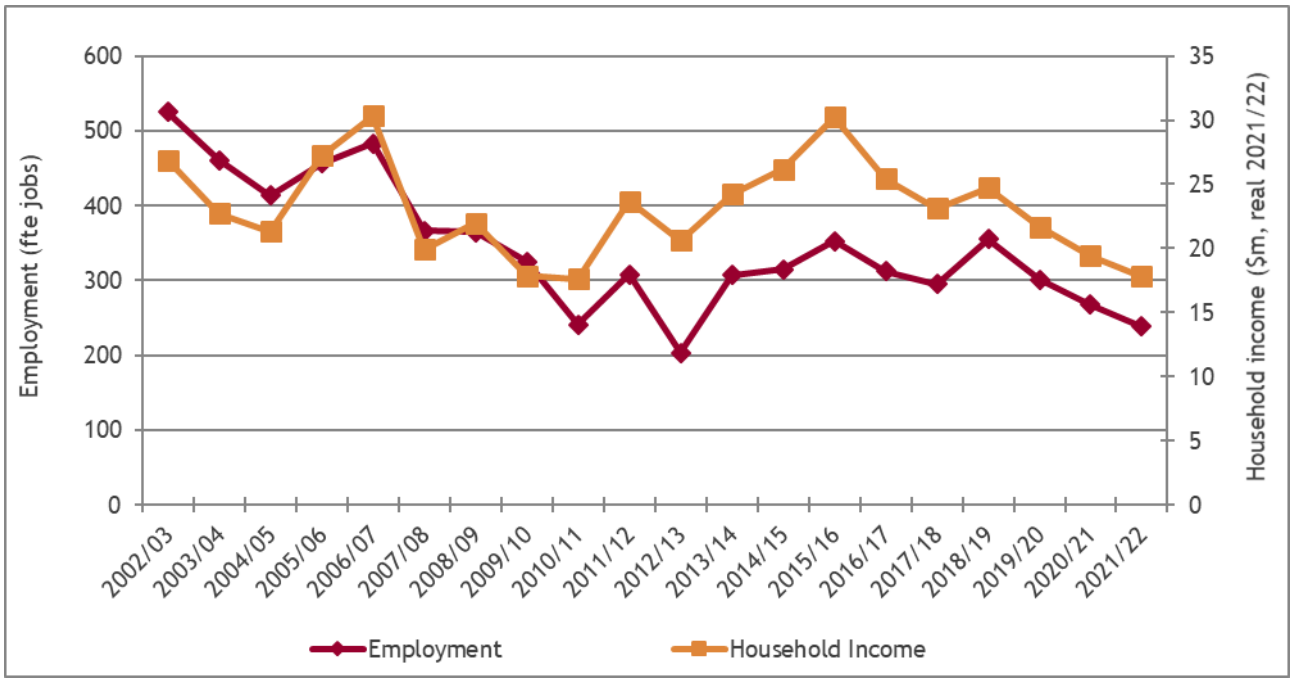
Figure 3-5 Total gross state product and output contribution of the SA NZRL fishing industry in SA, 2002/03 to 2021/22 [a]



[a] Monetary values have been converted to 2021/22 dollars using the Adelaide CPI (ABS 2022a and previous editions).

Source: BDO EconSearch (2022a) and BDO EconSearch analysis

Figure 3-6 Total employment and household income contribution of the SA NZRL fishing industry in SA, 2002/03 to 2021/22 [a]



[a] See footnote from Figure 3-5.

Source: BDO EconSearch (2022a) and BDO EconSearch analysis

3.7. Net Economic Return

Net economic return (NER) is the return from a fishery after all costs have been met. It is equal to fishing revenue less fishing costs (cost of labour, capital including depreciation, materials and an allowance for "normal" profit). NER is maximised when economic efficiency is maximised. NER[4] can also be defined as the difference between the price of a good produced using a natural resource and the unit cost of turning that natural resource into the good. It is worth noting that zero NER is the usual situation for firms in a market without limited or restricted entry and that this rent is the income received by ownership of a licence. In this case the natural resource is the SA NZRL Fishery and the good produced is the landed Rock Lobster.

The unit costs or long-term costs all need to be covered if the licence holder is to remain in the fishery. These long-term costs include direct operating costs such as fuel, labour (including the opportunity cost of a self-employed fisher's own labour), ice, overheads such as administration and licences and the cost of capital invested in the boat and gear (excluding licence). Capital cost includes depreciation and the opportunity cost of the capital applied to the fishery. The opportunity cost is equivalent to what the fisher's investment could have earned in the next best alternative use.

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 the long term (10 year) real rate of return on government (treasury) bonds of 5 per cent has been used and a risk premium of 5 per cent has been applied. It is important to keep in mind that rates applied have a strong influence on estimated rent and is subjective.

What remains after the value of these inputs (labour, capital, materials, and services) has been netted out is the value of the natural resource itself. The NER generated in the SA NZRL Fishery over the period 2002/03 to 2021/22 is outlined in Table 3-15.

It is important to note that not all fishers will experience the benefit of high rents because it often flows to quota owners rather than fishers as a result of lease payments. When a NER is generated in a fishery and there are transferable licences, the rent represents a return to the value of the licences. The 2021/22 aggregate value of licences was estimated to be $125.9 million (63 licences with an average value of approximately $2.4m). An annual NER of -$2.5 million represents a return of -2.0 per cent to the aggregate value of the licences in fishery.

[4] Net economic return or economic rent is comprised of three types of rent: entrepreneurial rent, quasi-rent and resource rent. As in any business some operators are more skilful than others and will therefore earn more profit. These profits, which are one component of economic rent, are *entrepreneurial rents*. In the short-term fishers may earn large surpluses over costs, which may provide prima facie evidence of substantial resource rents. However, there are some circumstances where such surpluses can occur but they are not true rents. These are referred to as *quasi-rents*. One example is where a fishery is developing or recovering and there may be under-investment in the fishery. Another example is where there is a short-term but unsustainable increase in price due to, for example, exchange rate fluctuations. However, some profits will be obtained because the natural resource being used (i.e. the fishery) has a value. These profits are described as *resource rents* and are also a component of economic rent.

Table 3-15 Net economic return (NER) [a] in the SA Commercial SA Northern Zone Rock Lobster Fishery, 2002/03 to 2021/22 ($'000) [b]

	Gross Income	Less Labour	Less Cash Costs	Less Depreciation	Less Opportunity Cost of Capital (@10%)	NER
2002/03	30,015	11,932	13,081	7,282	6,976	**-9,257**
2003/04	18,657	7,762	13,698	7,128	6,829	**-16,759**
2004/05	17,640	7,582	11,206	4,397	3,421	**-8,966**
2005/06	22,538	9,715	10,807	4,461	3,471	**-5,915**
2006/07	25,769	11,354	10,516	4,532	3,525	**-4,157**
2007/08	21,869	7,912	11,959	3,662	3,672	**-5,336**
2008/09	26,129	9,826	11,165	3,247	3,255	**-1,364**
2009/10	19,876	7,683	8,196	2,843	2,851	**-1,697**
2010/11	18,106	5,474	8,782	2,586	1,885	**-619**
2011/12	21,193	6,624	6,169	2,727	1,987	**3,687**
2012/13	19,067	5,852	6,816	2,404	1,752	**2,243**
2013/14	23,318	6,545	6,488	2,073	1,865	**6,347**
2014/15	26,561	6,945	6,814	2,085	1,876	**8,843**
2015/16	29,132	7,860	7,312	1,949	1,753	**10,257**
2016/17	23,426	8,030	6,125	2,351	1,872	**5,048**
2017/18	27,318	7,501	5,979	2,173	1,730	**9,934**
2018/19	28,178	6,165	5,403	2,018	1,607	**12,986**
2019/20	20,307	6,924	6,266	2,473	2,674	**1,970**
2020/21	12,449	6,629	6,073	2,363	2,555	**-5,170**
2021/22	13,474	5,759	5,777	2,144	2,318	**-2,525**

[a] Adjusted for sample bias.

[b] This table presents NER in real 2021/22 dollars using the Adelaide CPI (ABS 2022a). Nominal NER is presented in Appendix 5.

Source: BDO EconSearch analysis

4. OTHER INDICATORS

4.1. External Factors Influencing the Economic Contribution of the Northern Zone Rock Lobster Fishery

There are a number of factors in 2021/22 that have impacted on the economic performance of the fishery. Most of these are likely to continue to affect economic outcomes in the future.

4.1.1. Stock assessment

The priority of the management of the fishery is to ensure the sustainability of Rock Lobster stock in SA. In order to achieve this, biological indicators have been developed with targets and reference points used as a benchmark of performance against objectives. Reference points can be used to trigger a management response when required (PIRSA 2014). Full details of the stock assessments can be found in Linnane et al. (2021).

4.1.2. Export markets

The volume and value of Rock Lobster exports from SA have decreased significantly since 2002/03 (72 per cent decrease in volume and 57 per cent decrease in nominal value). However, these data only include exports direct from SA and not product that is shipped interstate and then exported (i.e. more product seems to be shipped via Melbourne or Sydney rather than directly from Adelaide). China, Hong Kong and Vietnam are the main export destinations for SA Rock Lobster exports, as outlined in Section 4.2.

In November 2020, trade disputes between China and Australia resulted in an unofficial ban on Rock Lobster exports into China, historically the largest market for Northern Rock Lobster and the market where the best prices could be achieved. With processors not being able to move Rock Lobster to China, the domestic market was flooded and prices dropped significantly. The ongoing trade disputes with China, accounting for up to 95 per cent of Rock Lobster exports in previous years, has had a significant impact on the performance of the NZRL Fishery.

Factors that will continue to impact exports to these markets include ongoing trade disputes between China and Australia, the value of the Australian dollar (Section 4.1.3), economic growth rates in China and surrounding Asian regions, import tariffs and competition from lower-cost alternative product (Rock Lobster from South Africa and tropical Rock Lobster from Cuba and Vietnam), and the prices within other Australian states due to the co-integration of the Rock Lobster market.

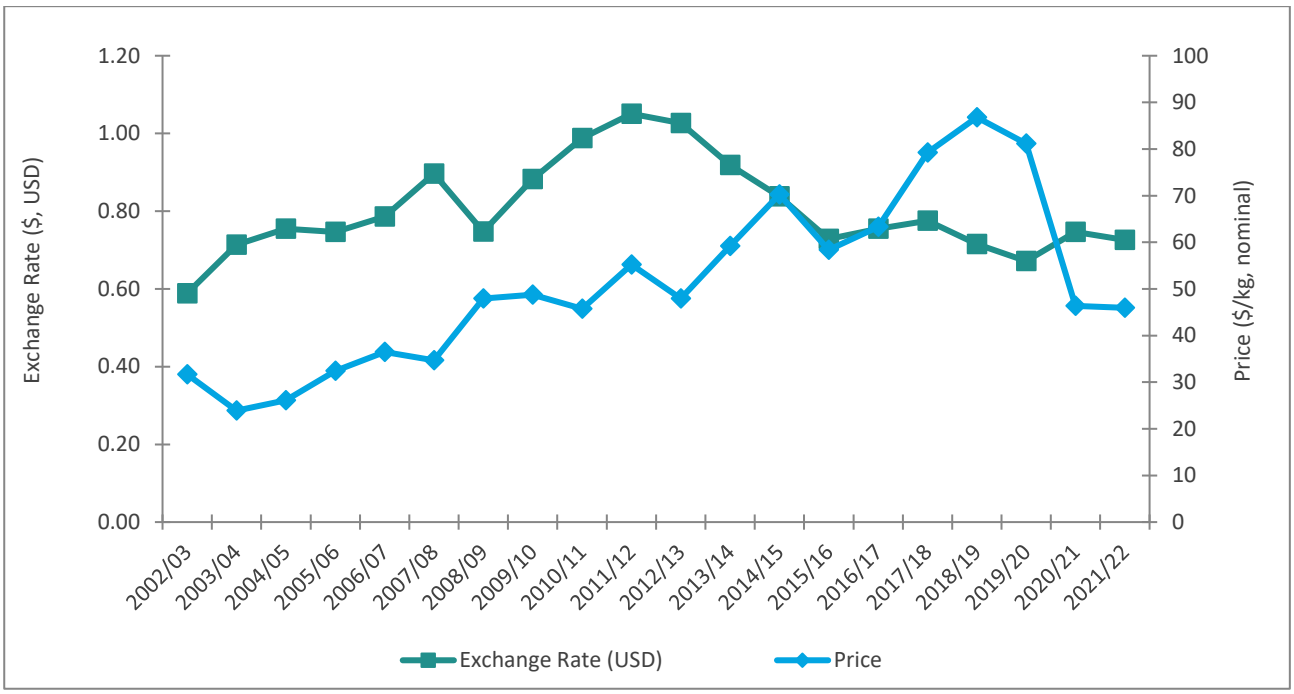
4.1.3. Exchange rates

A significant proportion of the South Australian Rock Lobster catch is exported overseas. Accordingly, the value of the Australian dollar can have a significant impact on the economic performance of the fishery as it influences the cost of Australian exports overseas. Significant changes in the value of the Australian dollar (AUD) have the potential to influence the demand for Australian Rock Lobster exports. The Australian dollar appreciated against the US dollar (USD) between 2002/03 and 2012/13 with the dollar reaching parity in 2011/12 and 2012/13. Since then, the Australian dollar has depreciated against the US dollar (USD).

Historically, the most significant export destination for South Australian Rock Lobster has been Hong Kong (Figure 4-6 and Figure 4-7). As the Hong Kong Dollar (HKD) is pegged to the USD, the relationship between the USD and AUD can be expected to affect the price of Rock Lobster. The average exchange rate in 2021/22 was US $0.73, down slightly from the average for the previous year (US $0.75). The relationship between

the average price in the NZRL Fishery and the exchange rate between 2002/03 and 2021/22 is illustrated in Figure 4-1.

Figure 4-1 Exchange rate (USD) and average price for SA NZRL, 2002/03 to 2021/22



Source: SARDI Aquatic Sciences and RBA (2022a)

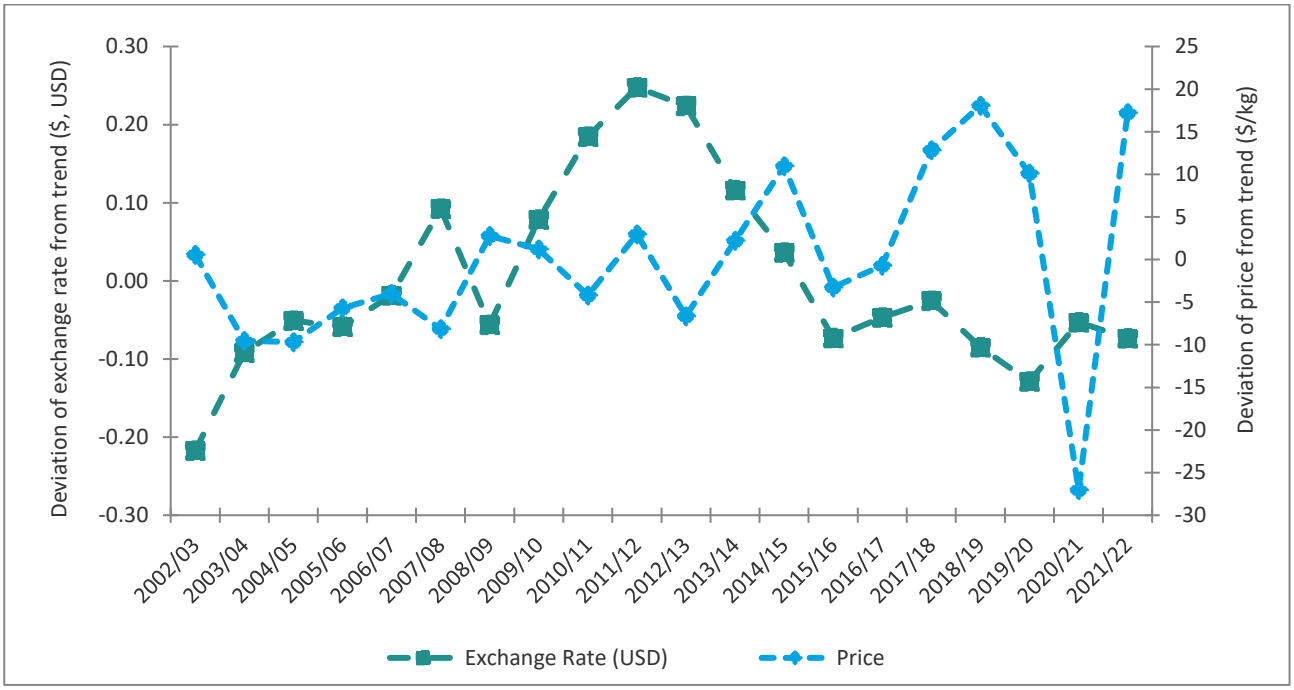
A widely used measure of the relationship between two variables, such as price and exchange rate, is the coefficient of correlation. The coefficient of correlation can range in value from +1.0 for a positive perfect correlation to -1.0 for a perfect inverse correlation. The coefficient of correlation between the USD and AUD exchange rate and price is 0.00[5]. This indicates that there is no correlation between the two variables that covers the whole period of analysis, although year to year movements can be observed (Figure 4-1). This implies, price growth for Rock Lobster over the whole period has been from market changes rather than exchange rate volatility.

De-trending the exchange rate and price data removes the long-run increasing trends, clear in Figure 4-1, and reveals the relationship between the variables in terms of short-run changes. The de-trended data are illustrated with dashed lines in Figure 4-2 for the years 2002/03 to 2021/22. The coefficient of correlation between the de-trended price and exchange rate is -0.11 over this period, indicating a slight inverse correlation between price and exchange only over the short-term.

In the long-run, price trends seen in the NZRL Fishery are not simply a function of exchange rate but shifts in the market supply and demand. Numerous factors have contributed to dynamics of this market over the time period shown, including tariff barriers, increasing affluence, and changes in the supply of products. However, short-run fluctuations in price can be explained, in part, by short-run fluctuations in the exchange rate.

[5] Because the HKD is pegged to the USD, the coefficient of correlation between the (HKD) exchange rate and the price for SA Rock Lobster for the period 2002/03 to 2021/22 is similar (0.01).

Figure 4-2 De-trended exchange rate (USD) and average price for SA NZRL, 2002/03 to 2021/22



Source: SARDI Aquatic Sciences and RBA (2022a)

4.2. Rock Lobster Exports from SA

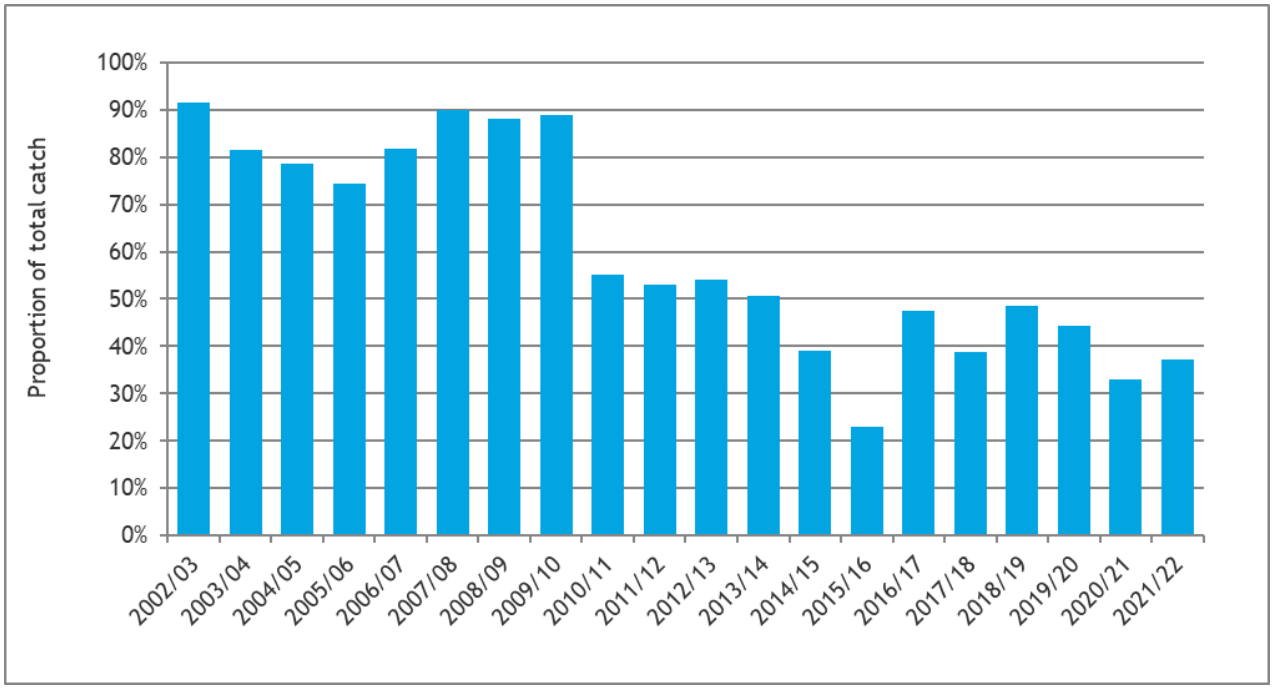
Rock Lobster Exports from SA in Figure 4-3 to Figure 4-7 and the associated data in Appendix 2 provide a historical breakdown of total international exports of Rock Lobster directly from SA, by category and country of destination, for the period 2002/03 to 2021/22[6].

As a proportion of total Rock Lobster catch, Rock Lobster exports from SA declined between 2002/03 (92 per cent) and 2005/06 (74 per cent) but increased between 2005/06 and 2007/08 (90 per cent). Since 2007/08, the proportion of catch exported has decreased significantly, with only 37 per cent of the catch exported directly from SA in 2021/22. The increase in exports between 2015/16 and 2016/17 could be attributed to the Chinese free trade agreement (Figure 4-3).

Anecdotal evidence suggests that Rock Lobster processors have been increasing sales to domestic markets in order to provide additional financial security which may account for some of the drop in the proportion of Rock Lobster exported. As the data only includes product exported directly from SA, it is also possible that the decrease in exports has been caused by a change in export pathways (i.e. product being shipped overseas via Victoria and NSW). The decline in 2020/21 and 2021/22 is also attributable to the trade disputes between Australia and China leading to an unofficial ban on Rock Lobster exports into China. Whilst trade disputes between Australia and China show signs of improvement, the unofficial ban remains. The increase in the quantity of exports in 2021/22 (19 per cent increase from 2020/21) and decrease in the value of exports in 2021/22 (3 per cent decrease from 2020/21) is most likely attributable to another change in export pathways since Vietnam and Hong Kong are once again crucial export destinations.

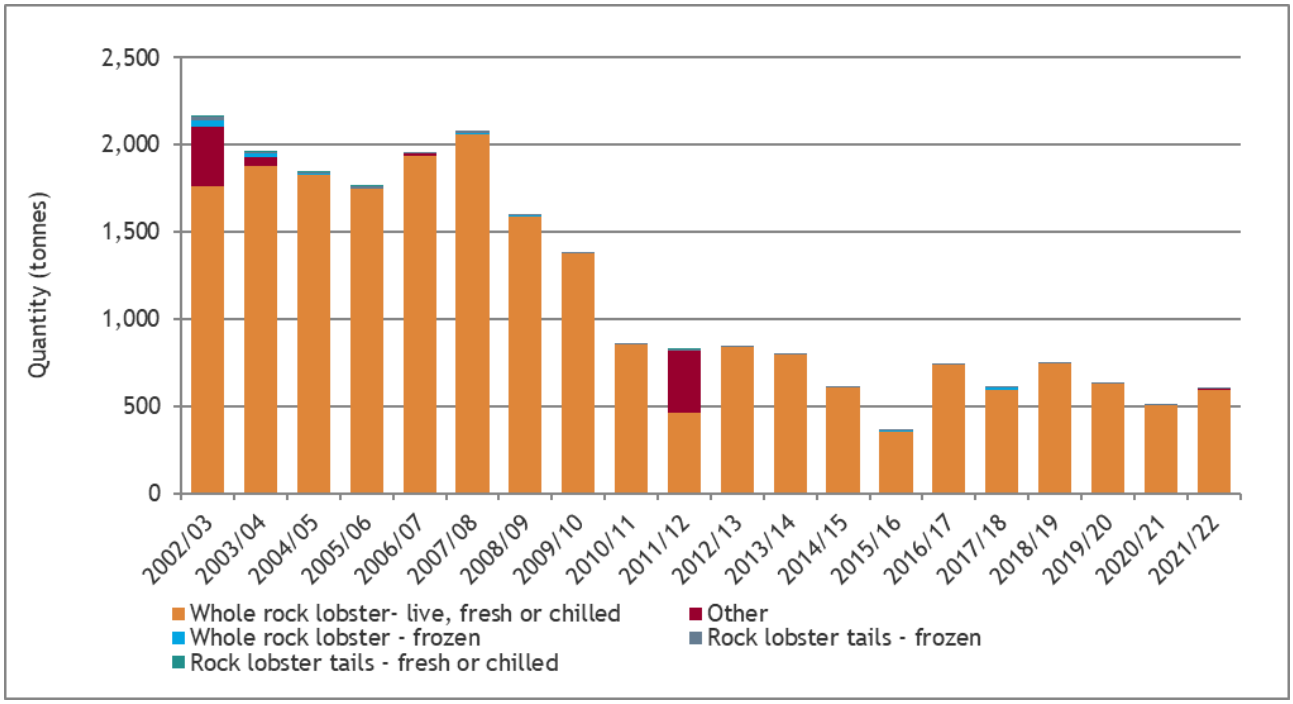
[6] That is, exports from the Northern and Southern Zone Rock Lobster fisheries in aggregate. These data only include exports direct from SA, not product that is shipped interstate and then exported. They could also include product that is shipped from interstate and exported from SA.

Figure 4-3 Rock Lobster exports from SA as a proportion of total catch, 2002/03 to 2021/22



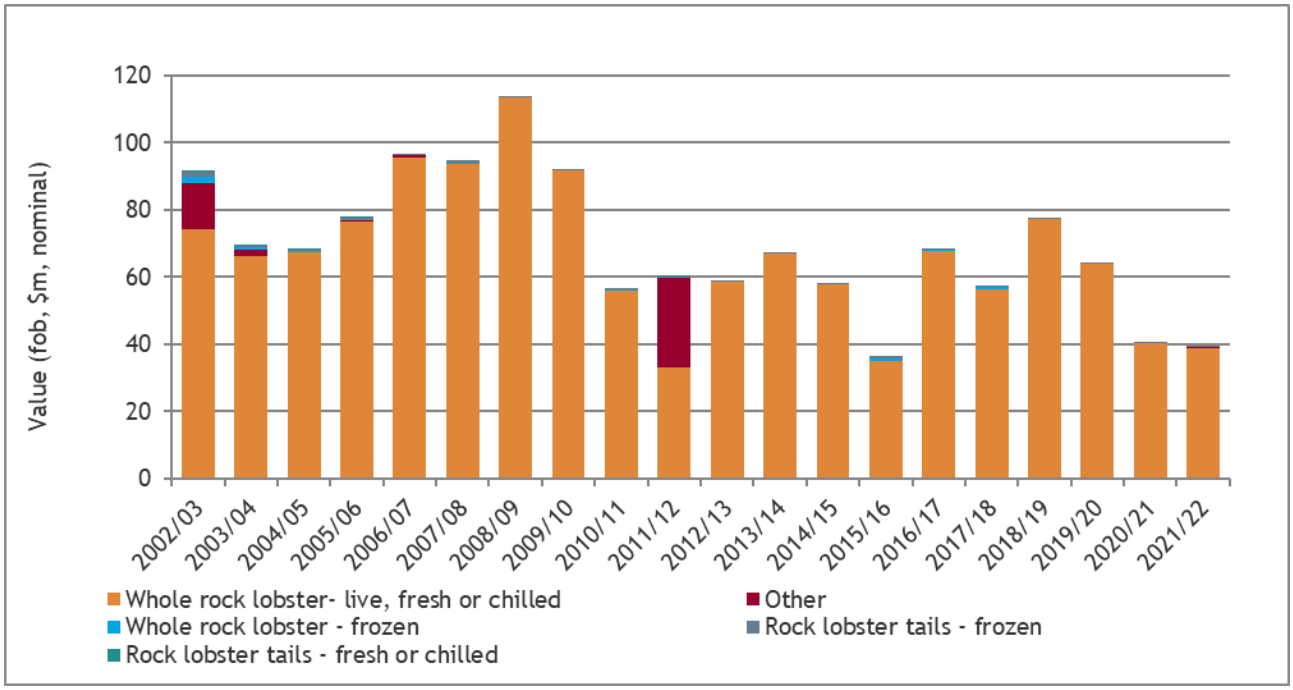
Source: Appendix Table 2-1, Appendix Table 2-2 and Table 3-2

Figure 4-4 Rock Lobster exports from SA, quantity (t) by category, 2002/03 to 2021/22



Source: Appendix Table 2-1 and Appendix Table 2-2

Figure 4-5 Rock Lobster exports from SA, value ($m fob) by category, 2002/03 to 2021/22



Source: Appendix Table 2-3 and Appendix Table 2-4

Between 2002/03 and 2005/06, the volume of Rock Lobster exports decreased by 19 per cent, before increasing by 18 per cent to reach a peak of 2,077t in 2007/08. Since 2007/08, the total quantity of exports of Rock Lobster has decreased significantly, primarily the result of a reduction in catch. After reaching a low of 505t in 2020/21, export quantity increased by 19 per cent in 2021/22 (602t).

Between 2002/03 and 2004/05, the value of Rock Lobster exports decreased by 25 per cent before increasing by 67 per cent through to 2008/09 where it reached a peak of $114 million. Since then, the total value of Rock Lobster export from SA has fallen significantly. In 2021/22 the total value of Rock Lobster exports was $39 million, down 57 percent since 2002/03 (Figure 4-5 and Figure 4-7).

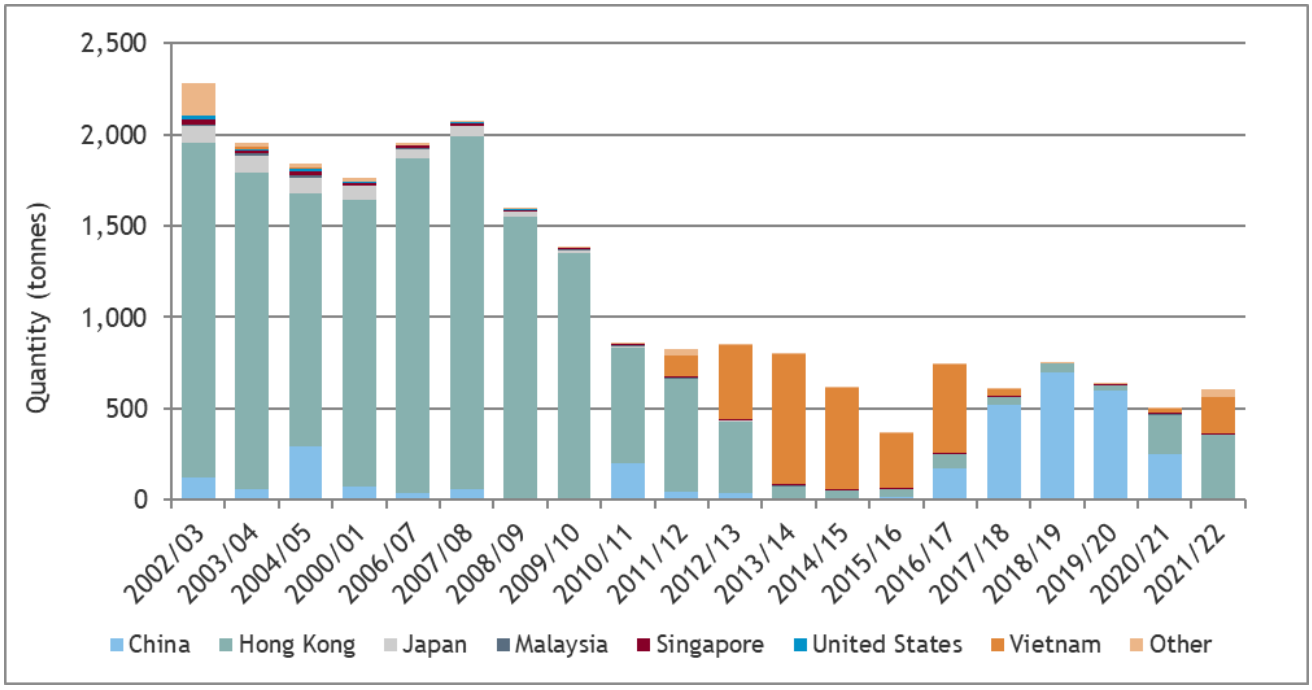
Whole Rock Lobster (live, fresh or chilled) was the most significant category of export in all years reported, accounting for almost all of total exports by quantity and by value over the period of analysis (Figure 4-4 and Figure 4-5). For a full breakdown of exports by category refer to Appendix Table 2-1 to Appendix Table 2-4.

The most significant export destination over the period 2002/03 to 2011/12 was Hong Kong, accounting for an average of 87 per cent of the total quantity and the total value of exports of Rock Lobster over this period (Figure 4-6 and Figure 4-7).

In recent years Vietnam and China have become important export destinations for Rock Lobster with the exports from SA to Vietnam rising significantly since 2010/11 and those to China increasing significantly from 2016/17 to 2019/20. After reaching a high of 95 per cent of exports of SA Rock Lobster going to China in 2019/20, markets have since diversified as a result of ongoing trade disputes between China and Australia, with China now only accounting for 1 per cent of exports of SA Rock Lobster in 2021/22. Hong Kong and Vietnam have once again become important export destinations rising 53 per cent and 32 per cent, respectively, since 2019/20.

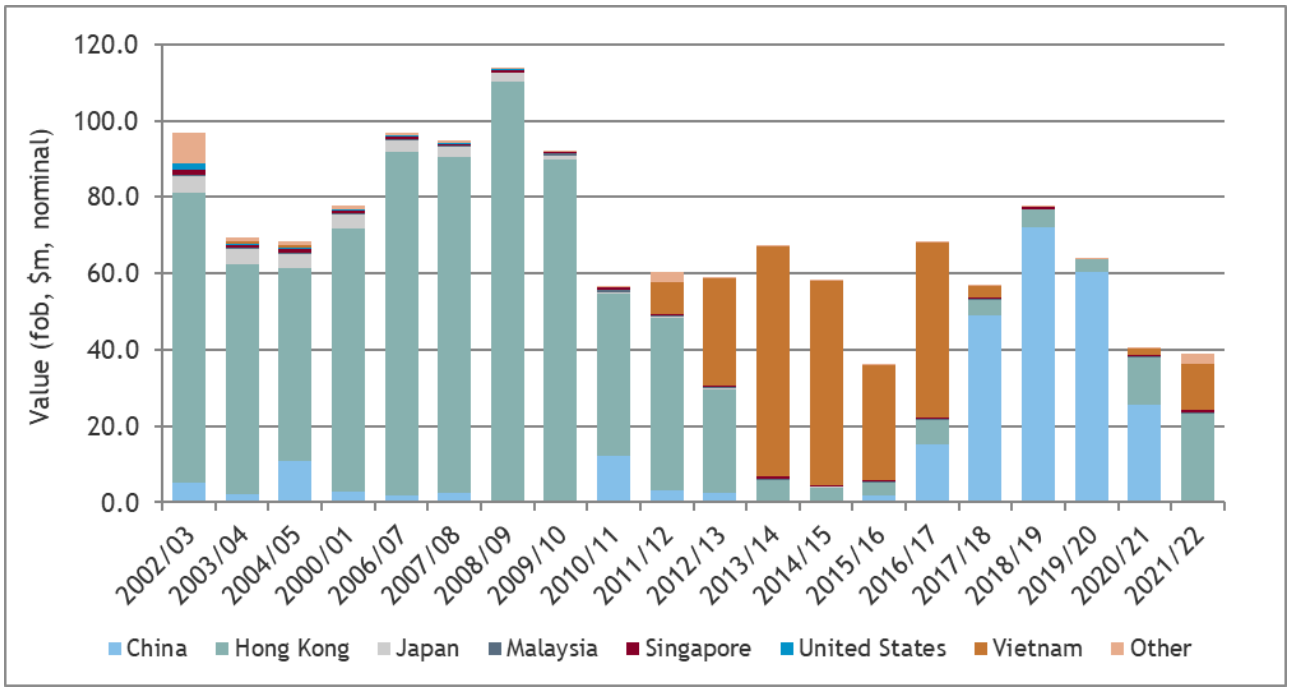
This is reflected to some extent in Figure 4-6 and Figure 4-7, although as some SA product is shipped interstate before being exported overseas, the final destination of all SA Rock Lobster is unknown. For a full breakdown of exports by country of destination refer to and Appendix Table 2-5 and Appendix Table 2-8.

Figure 4-6 Rock Lobster exports from SA, quantity (t) by country of destination, 2002/03 to 2021/22



Source: Appendix Table 2-5 and Appendix Table 2-6

Figure 4-7 Rock Lobster exports from SA, value ($m fob) by country of destination, 2002/03 to 2021/22



Source: Appendix Table 2-7 and Appendix Table 2-8

4.3. Contribution to community

The operation of the SA NZRL Fishery (and the employment the fishery generates and the households it maintains) either directly or indirectly contributes to keeping families in regional communities. As a part of the 2020 survey, licence holders were asked to provide information relating to the ways in which they contribute to their local community. Their responses are summarised in BDO EconSearch (2022a).

4.4. Social Indicators

In 2014, 2018 and 2020, the economic indicators survey of commercial fisheries was extended to include the collection of social indicators. The results of the social indicators component of the survey are detailed in BDO EconSearch (2022a).

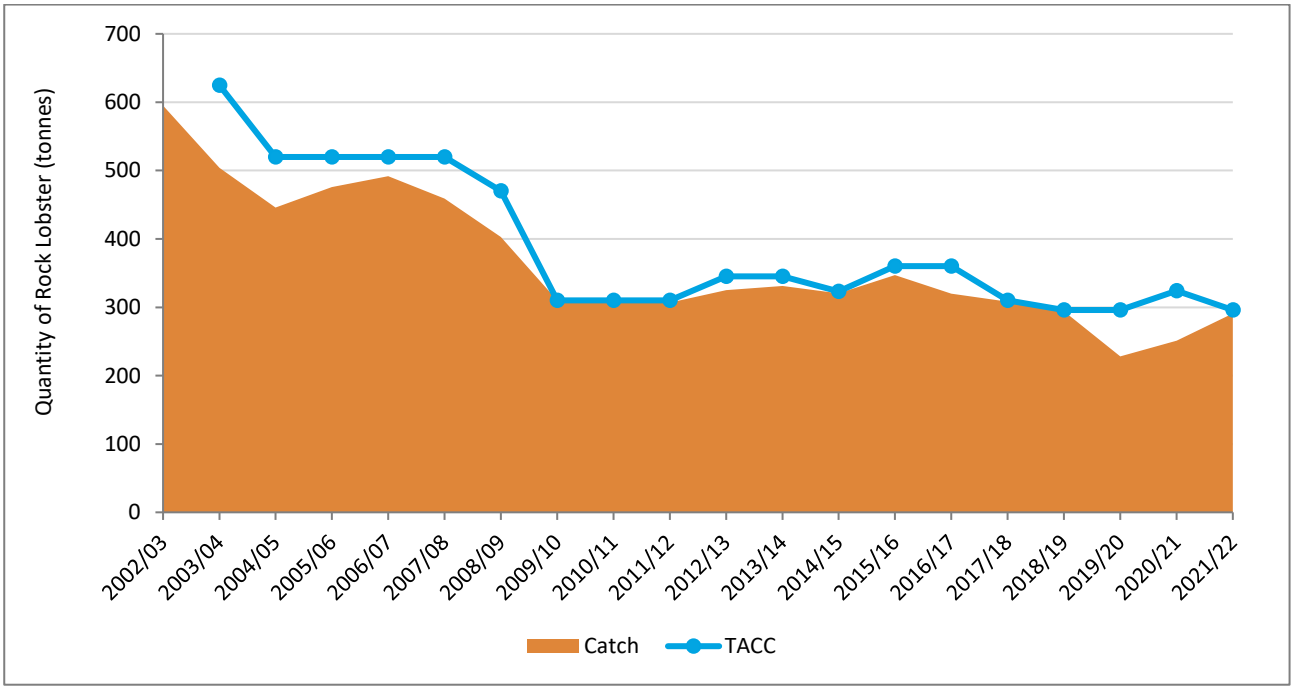
5. ECONOMIC TRENDS IN THE FISHERY

5.1. Catch and Gross Value of Production

The data in Figure 5-1 illustrate the level of catch for the fishery for the last 20 years. In the period up to 2009/10 catch levels followed a declining trend. This period included the introduction of a quota management system (in 2003/04) and subsequent decreases of the TACC. The quota management system, initially setting the TACC at 625t, did not constrain total catch until 2009/10 when a TACC of 310t was set. The TACC was subsequently increased to 345t between 2012/13 and 2013/14 but catch only increased to 325t then 331t over this period. The TACC was reduced to 323t in 2014/15 to account for the voluntary buyout of four licences and the surrendering of one further licence. The total catch of Rock Lobster was recorded as 321t in 2014/15. The TACC was increased to 360t in 2015/16 resulting in an increase in catch of 8 per cent, to 347t. Total catch fell to 320t in 2016/17. The TACC reduced once again to 310t in 2017/18 which resulted in total catch of 308t. The TACC was further reduced to 296t in 2018/19 and 2019/20, resulting in catch of 294t in 2018/19.

Catch decreased again in 2019/20 as a result of international market closures during early 2020, resulting fishing in the NZRL Fishery coming to a halt during its peak harvest and sales period. Catch increased in 2020/21 (251t) and 2021/22 (291t), to be just shy of the TACC for the fishery (Figure 5-1). Octopus bycatch of 12t was taken in 2021/22.

Figure 5-1 Rock Lobster catch and TACC in the SA NZRL Fishery, 2002/03 to 2021/22



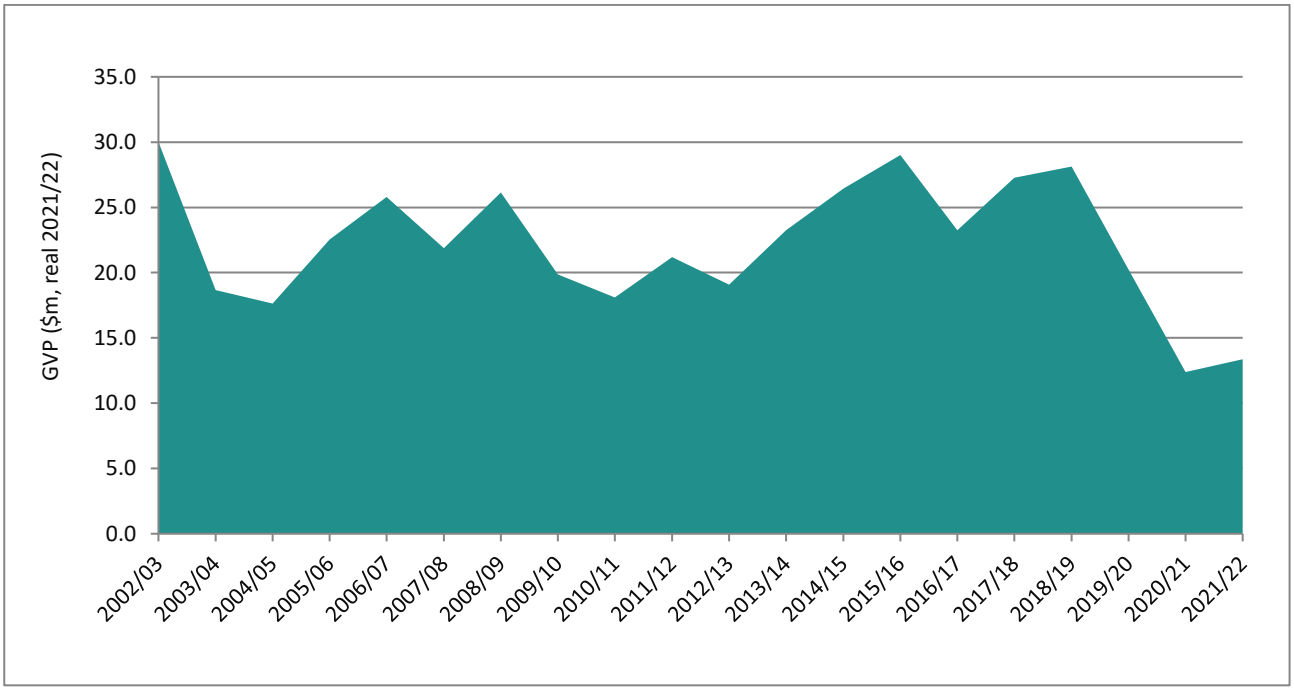
Source: Table 3-2 and Table 3-3

Real value of catch in the SA NZRL Fishery decreased between 2002/03 to 2021/22 as illustrated in Figure 5-2. Until 2009/10, GVP was impacted by fluctuations in both price and level of catch. This period included a sharp decline between 2001/02 and 2004/05 and a period of fluctuating GVP between 2004/05 to 2018/19.

In the years since 2019/20, GVP has declined sharply, only to improve slightly in 2021/22 (increased 8 per cent from 2020/21).

Trends in price over the last 20 years are illustrated in Section 3.2 in Figure 3-1 and nominal and real price of catch in the SA NZRL Fishery between 2002/03 and 2021/22 are presented in Figure 3-2. Real price decreased by 7 per cent between 2020/21 and 2021/22 and was 9 per cent lower in 2021/22 than in 2002/03 (45 per cent higher in nominal terms). Long-run trends in total catch, value of catch and price are described in Section 5.

Figure 5-2 SA NZRL Fishery GVP, 2002/03 to 2021/22 [a]



[a] Estimates of GVP are expressed in real 2021/22 dollars.

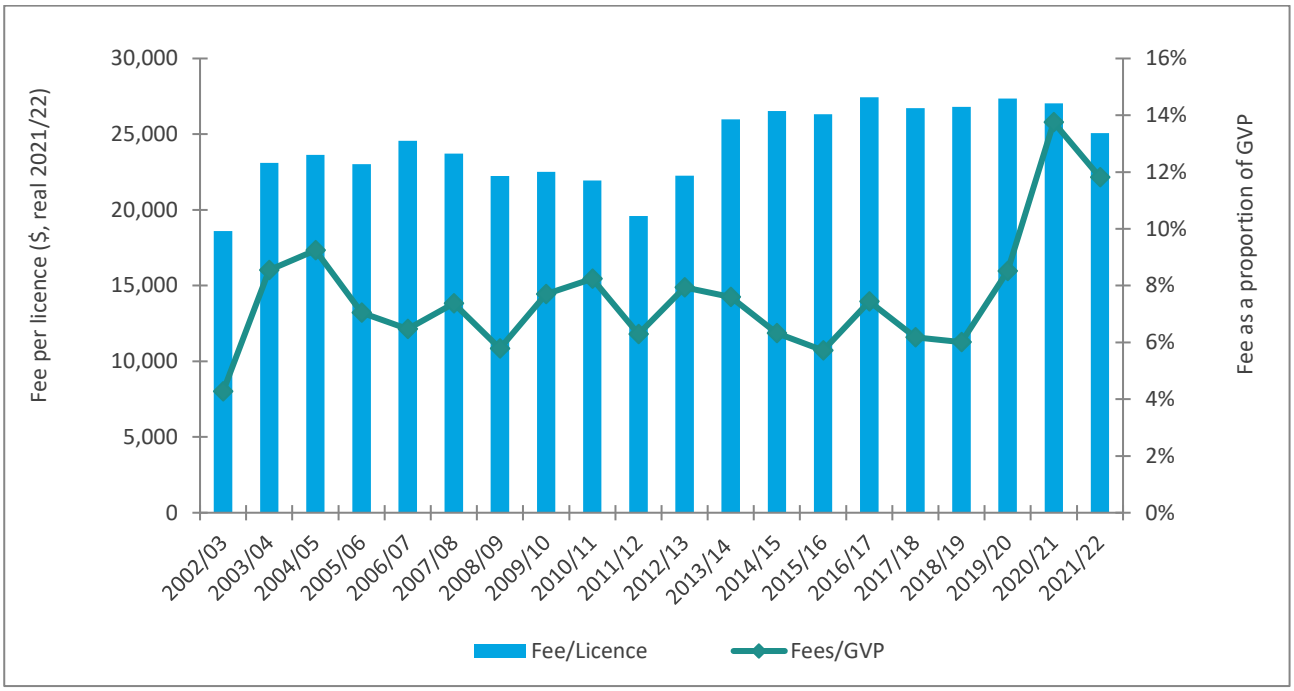
Source: Table 3-2

5.2. Management Costs

The average management fee per licence and the licence fee as a proportion of GVP are illustrated in Figure 5-3. Since 2002/03, the following trends have emerged.

- Licence fees as a percentage of gross value of production (GVP) followed an increasing trend between 2002/03 (4.3 per cent) and 2021/22 (11.8 per cent) despite the estimate in 2021/22 being a slight decline from 2020/21 (13.8 per cent).
- The licence fees per kilogram of landed lobster increased significantly between 2002/03 and 2021/22 from $2.16/kg to $5.43/kg, reflecting the significantly lower catch.
- The fee per licence has increased from almost $19,000 in 2002/03 to $25,000 in 2021/22, reflecting a reduction in the number of licences and an increase in licence fees.

Figure 5-3 Management fee per licence and as a proportion of GVP, SA NZRL Fishery, 2002/03 to 2021/22 [a]



[a] Estimates of the fee per licence are expressed in real 2021/22 dollars.

Source: Table 3-5

There were three main factors that contributed to the trends observed from 2002/03 to 2021/22. First, aggregate licence fees increased in real terms by approximately 23 per cent, at a time when the management services had to increase to accommodate the change to a quota system. Second, the catch in 2021/22 was 51 per cent below that achieved in 2002/03, while the price was 9 per cent lower in real terms (resulting in the value of catch falling by 55 per cent in real terms). Third, the number of licences fell by 9 per cent (from 69 to 63) between 2002/03 and 2021/22.

As the Northern Zone Rock Lobster Fishery remains impacted by the disruption to the Chinese market, fishers will receive a temporary 50 per cent licence fee waiver for the 2022/23 fishing season.

5.3. Exchange Rate

A proportion of the South Australian Rock Lobster catch is exported overseas (37 per cent in 2021/22) and so the value of the Australian Dollar can have an impact on the economic performance of the fishery. As explained in Section 4.1.3, an inverse relationship between the exchange rate and price is not evident in the data in the long run (Figure 4-1), but year-to-year fluctuations in the exchange rate do appear to lead to fluctuations in price (Figure 4-2).

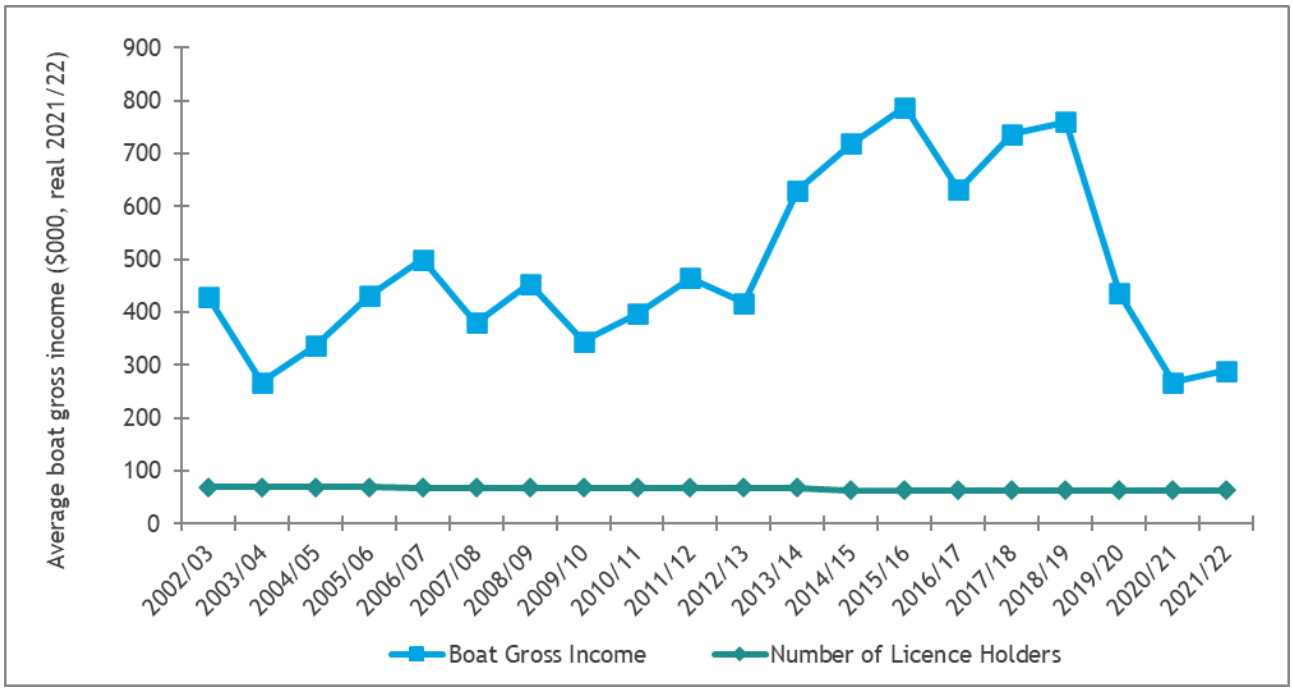
5.4. Financial Performance Indicators

Average income

Average income and total number of licences in the fishery for the period 2002/03 to 2021/22 are illustrated in Figure 5-4. In real terms, average boat income decreased by 33 per cent across this period. The decrease in real boat income can be explained by the decrease in catch (51 per cent over the last 20 years) (Figure

5-1), and a decrease in real price of 9 per cent. The rise in income in 2021/22 was caused primarily by an increase in catch (16 per cent up from 2020/21) resulting from export diversification. Trade disputes between Australia and China lead to an unofficial ban on exports, therefore the Australian market had to adapt.

Figure 5-4 Average income per licence holder in the SA NZRL Fishery, 2002/03 to 2021/22 [a]



[a] Estimates of the boat gross income are expressed in real 2021/22 dollars.

Source: Table 3-5 and Table 3-6 and Appendix 4

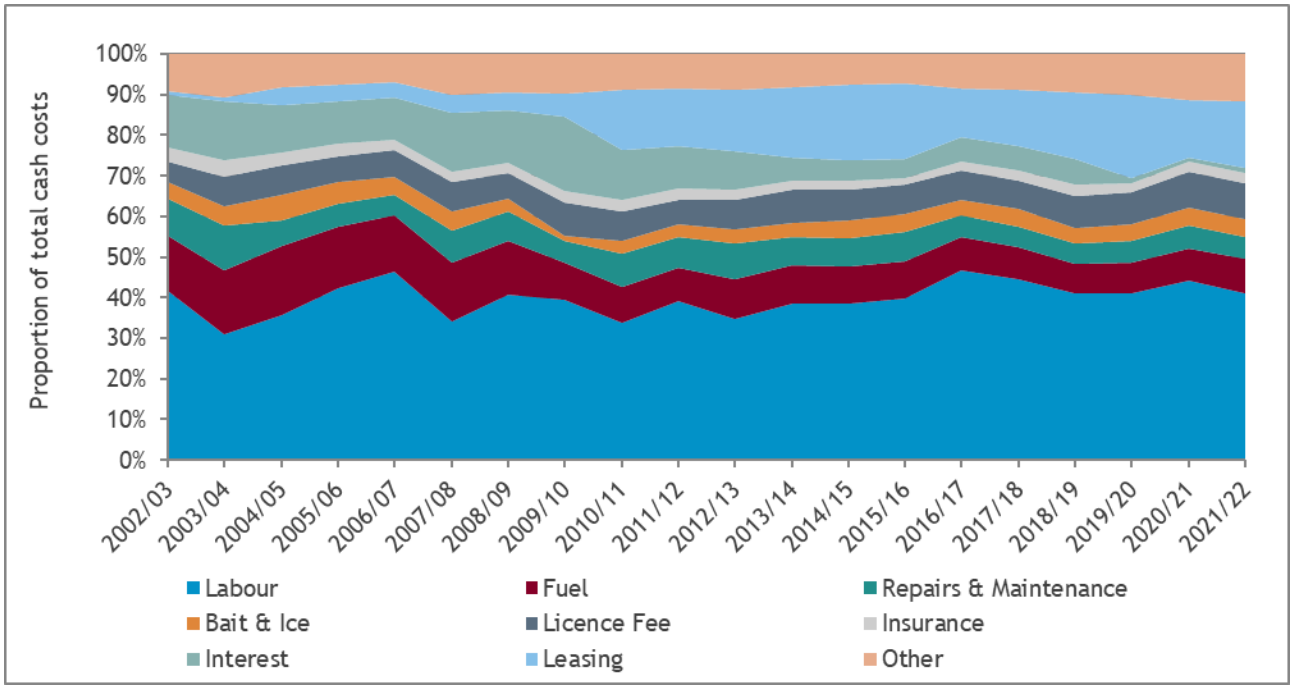
Operating cost trends

A breakdown of major cost items as a proportion of total cash costs is illustrated in Figure 5-5. In each year of the analysis labour costs accounted for the largest share of total cash costs. The labour costs are comprised of payments to licence owners and crew as well as an imputed wage to those licence owners and other family members who are not paid a wage directly by the business. Other significant cash costs were fuel, repairs and maintenance and licence fees. Additionally, since 2003/04, there has been a significant increase in leasing costs.

The cash costs detailed in Figure 5-5 can be categorised as either variable or fixed costs. Total variable costs and total fixed costs are illustrated in Figure 5-6 on an average per boat basis. Total variable costs have fluctuated between years, but decreased from 2015/16 to the lowest in the 20 year period in 2021/22.

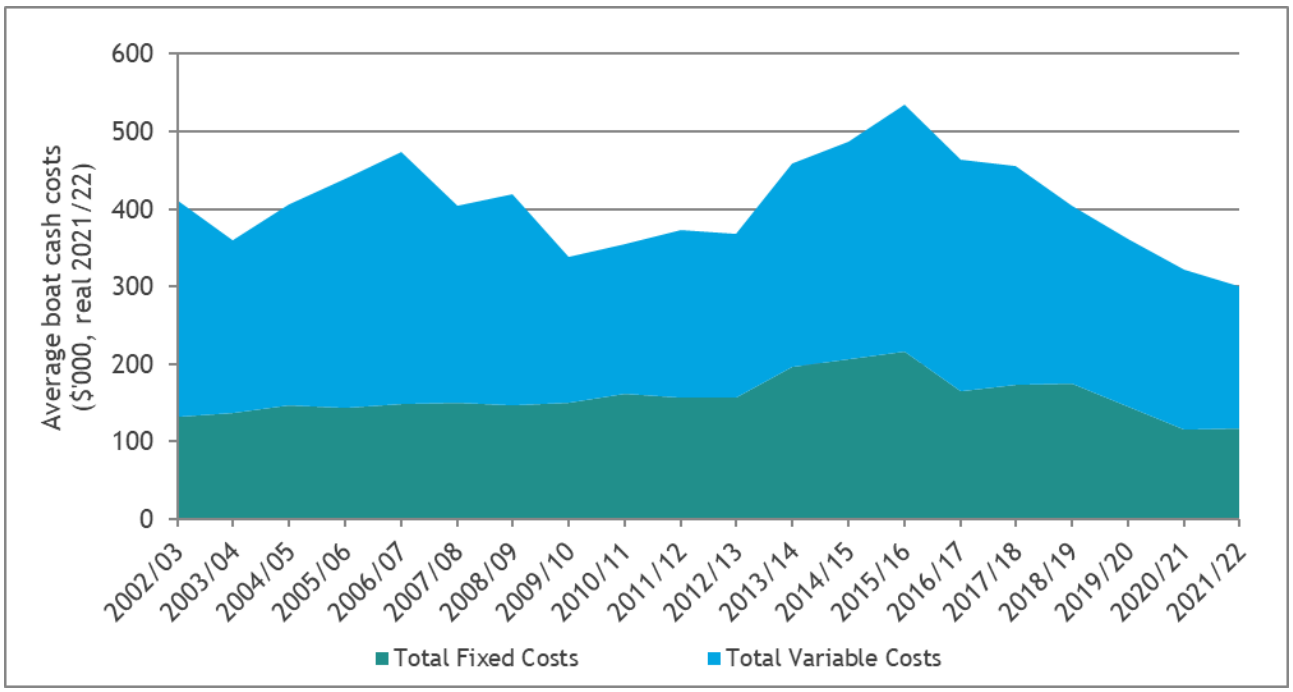
Total fixed costs have fluctuated much less from year to year and followed an increasing trend over time, however, fell in 2020/21 and remained the same level in 2021/22. (Figure 5-6).

Figure 5-5 Cost shares in the SA NZRL Fishery, 2002/03 to 2021/22



Source: Table 3-6 and Appendix 4

Figure 5-6 Average total costs in the SA NZRL Fishery 2002/03 to 2021/22 [a]



[a] Estimates are expressed in real 2021/22 dollars.

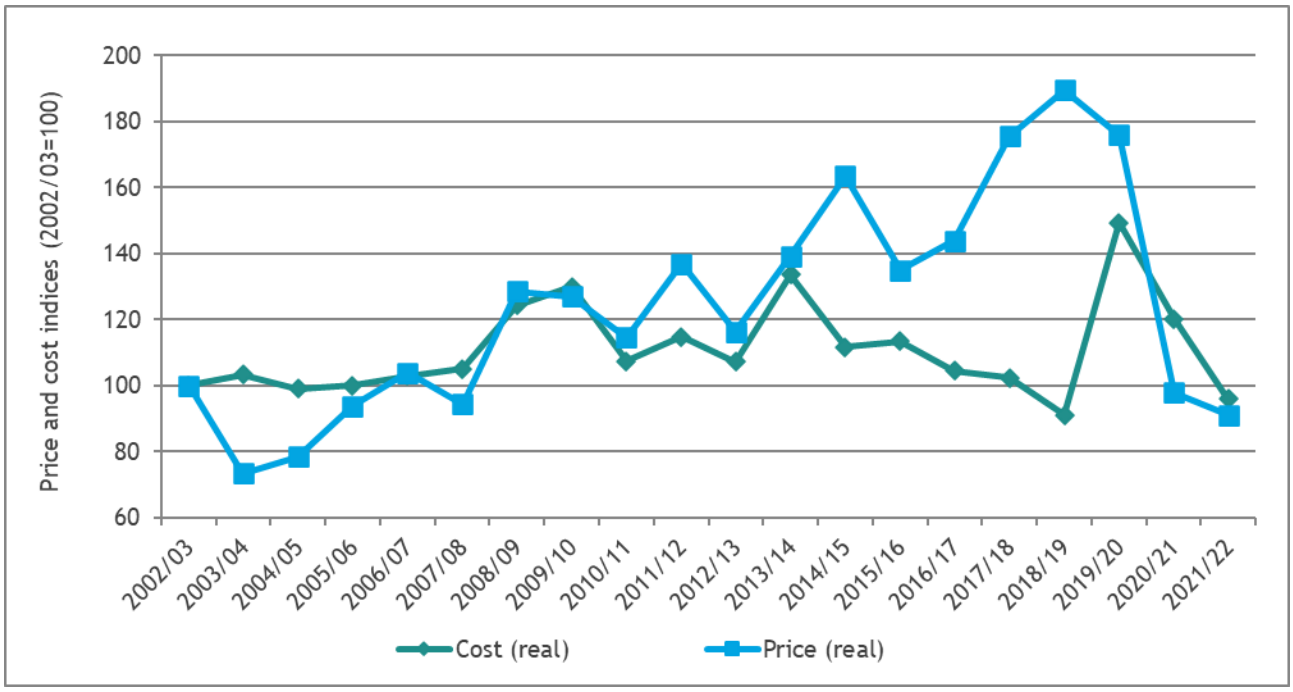
Source: Table 3-6 and Appendix 4

Cost price squeeze

Real price and cost indices for the SA NZRL Fishery for the years 2002/03 to 2021/22 are summarised in Figure 5-7. These indicators are derived from the average price and average cost per kilogram of catch. Individual Transferrable Quotas (ITQ) fisheries are intended to reduce the cost-price squeeze and create divergence in the trends of these values. This is through constraining catch so that cost per kilogram of catch decreases.

Between 2002/03 and 2021/22, the average price of NZ Rock Lobster decreased by approximately 9 per cent in real terms. The average costs of catching Rock Lobster declined overall between 2002/03 and 2021/22 by 4 per cent (Figure 5-7). Note that cost in these analyses includes deprecation of capital and labour, including the unpaid labour involved with fishing and on-shore activities. The average costs in 2019/20 increased significantly which was caused primarily by the COVID-19 pandemic and associated international market closures, forcing fishers to postpone fishing to the cooler, less efficient months. This has since been reversed in 2021/22 with a 35 per cent decrease in average costs from 2019/20.

Figure 5-7 Average boat price and cost indices for the SA NZRL Fishery, 2002/03 to 2021/22 [a,b]



[a] Estimates of average costs and price are expressed in real 2021/22 terms.

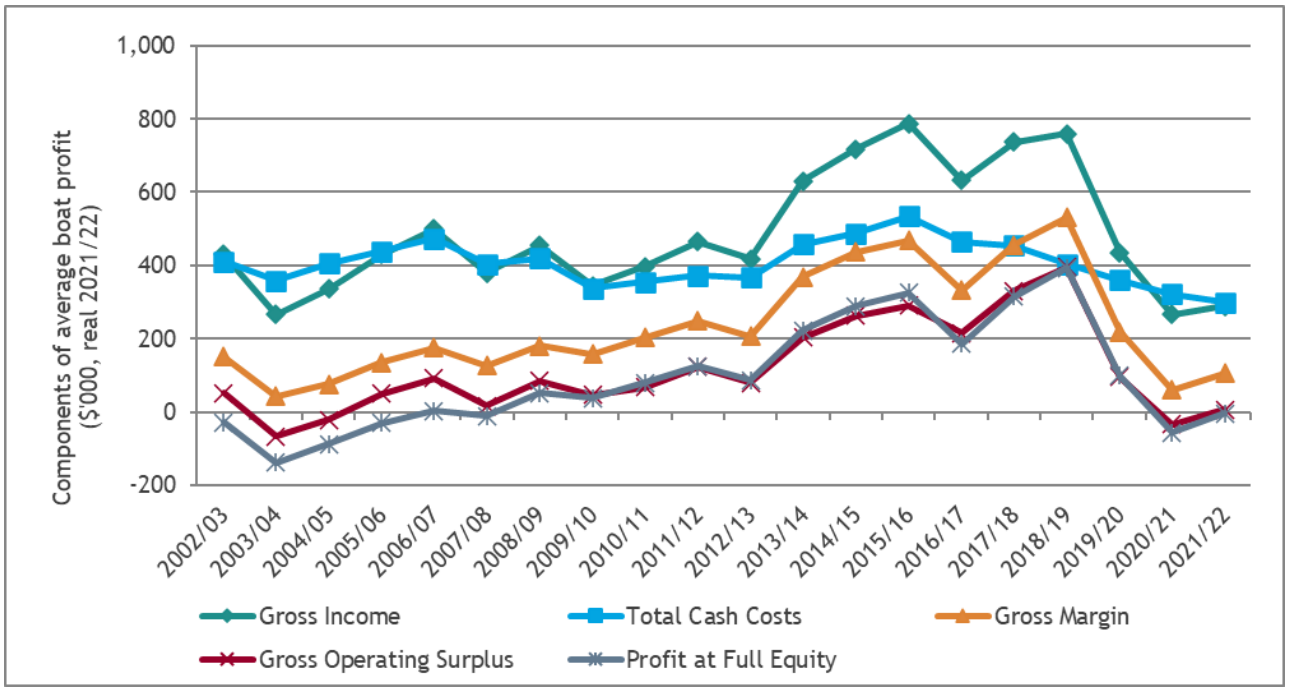
[b] Note, cost estimates include the opportunity cost of unpaid labour.

Source: Figure 3-1, Table 3-6 and Appendix 4

Profitability

Selected measures of profitability for the average active boat in the NZRL Fishery are summarised in Figure 5-8 for the years 2002/03 to 2021/22. Changes in each of the profitability measures for the fishery were closely related to the average income earned. Profitability fluctuated between 2002/03 and 2018/19 but generally followed an increasing trend. Since 2018/19, profitability has declined notably, despite a slight recovery in 2021/22.

Figure 5-8 Selected financial performance indicators, average per boat in the SA NZRL Fishery, 2002/03 to 2021/22 [a]



[a] Estimates are expressed in real 2021/22 dollars.

Source: Table 3 6 and Appendix 4

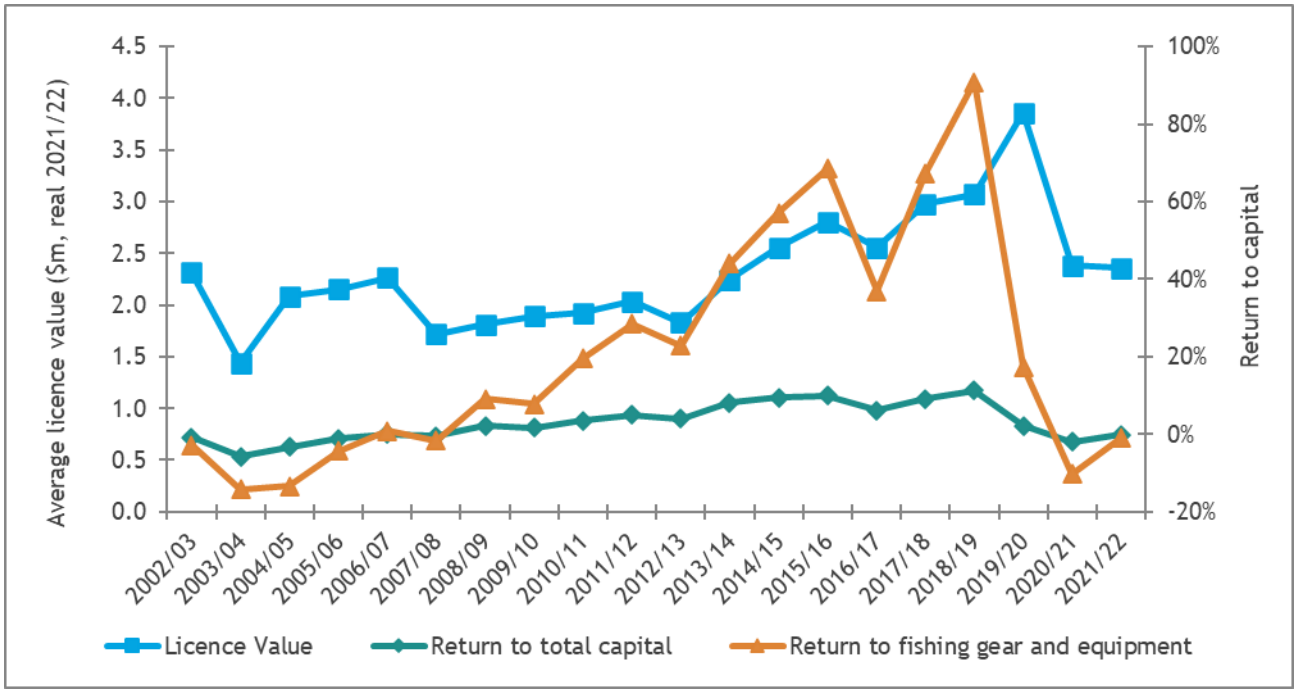
Return to capital

Estimates of the average licence value and the rate of return to total capital are illustrated in Figure 5-9. Capital includes boats, licence/quota, fishing gear, sheds, vehicles and other capital items used as part of the fishing enterprise. The rate of return to total capital is calculated to be profit at full equity as a percentage of total capital employed.

Despite fluctuations, the estimated rate of return to total capital for the fishery improved overall between 2002/03 (-0.9 per cent) and 2021/22 (-0.2 per cent). However, as depicted in Figure 5-8, these represent low points in return throughout the last two decades.

The rate of return to fishing gear and equipment also improved, from -2.9 per cent in 2002/03 to -0.9 per cent in 2021/22. With return to fishing gear and equipment positive from 2009/10 to 2019/20, the estimate in 2021/22 is notably lower than the average for the 20 year period (Figure 5-9).

Figure 5-9 Return to Capital in the SA NZRL Fishery, 2002/03 to 2021/22 [a]



[a] Estimates of licence value are expressed in real 2021/22 dollars.

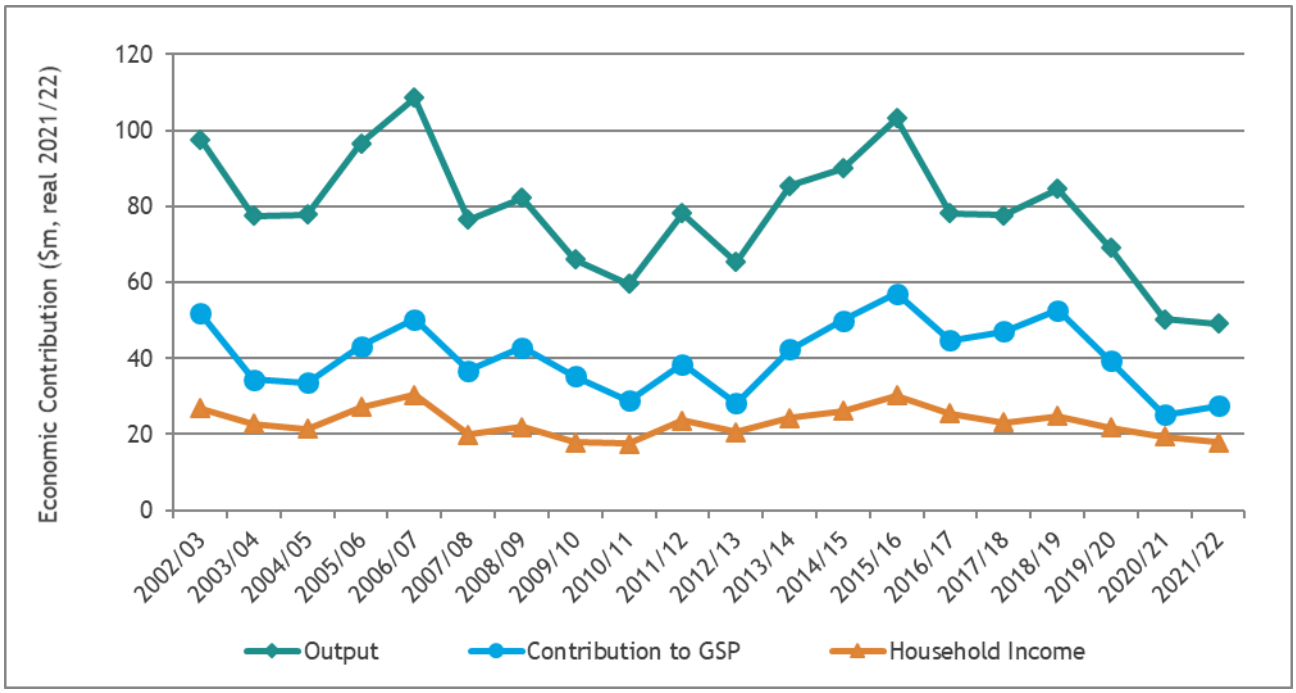
Source: Table 3 6 and Appendix 4

5.5. Contribution to SA Economy

Figure 5-10 and Figure 5-11 illustrate the total economic contribution of the fishery on the SA economy for the past 20 years, 2002/03 to 2021/22. Total economic contribution refers to the direct fishing industry contributions (fishing, processing, etc.) and the indirect contributions on other sectors of the economy.

The change in total output and GSP contributions are closely related to changes in price and fishery GVP (Figure 5-10). There has been an overall decline in direct employment contribution of the fishery since 2002/03, as illustrated in Figure 5-11.). This was due to a decrease in the number of active boats in the fishery, a decline in the total number of licences and a recent reduction in fishing activity resulting from international market closures.

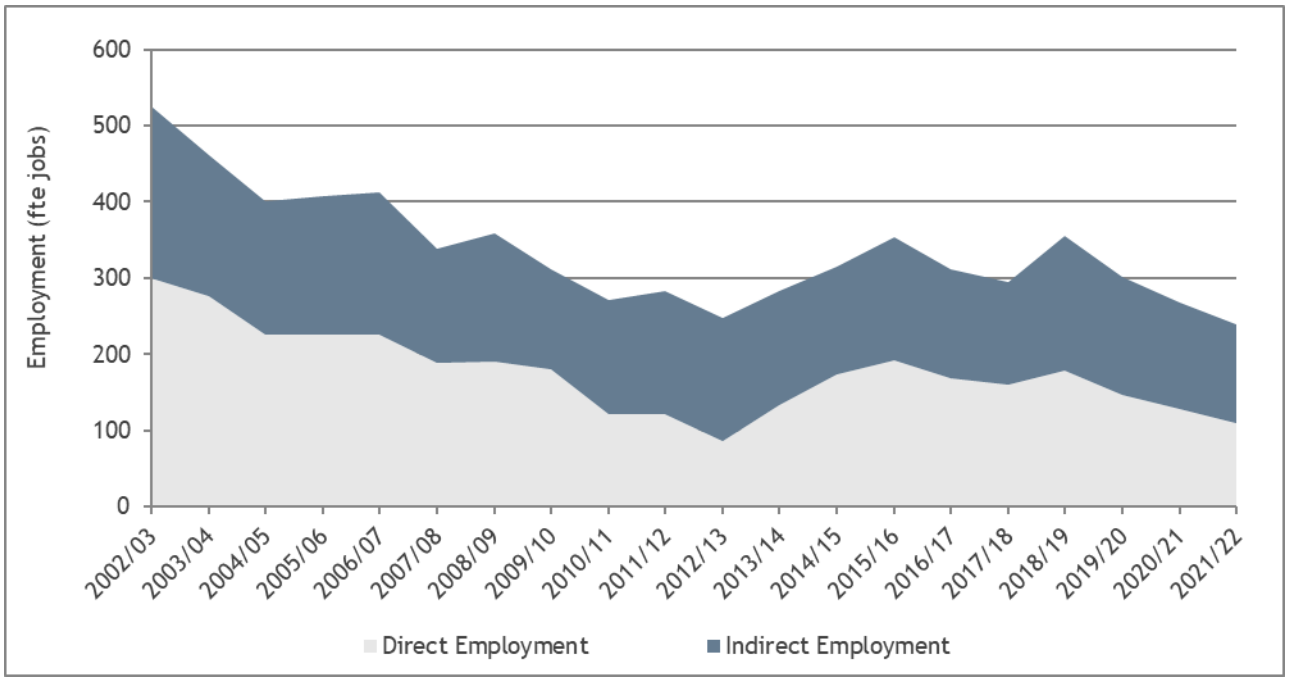
Figure 5-10 Total gross state product, output and household income contribution of the SA NZRL Fishery on the SA economy, 2002/03 to 2021/22 [a]



[a] Estimates of output, GSP and household income are expressed in real 2021/22 terms.

Source: Figure 3-5 and EconSearch (2022a)

Figure 5-11 Total direct and indirect employment contribution of the SA NZRL Fishery on the SA economy, 2002/03 to 2021/22



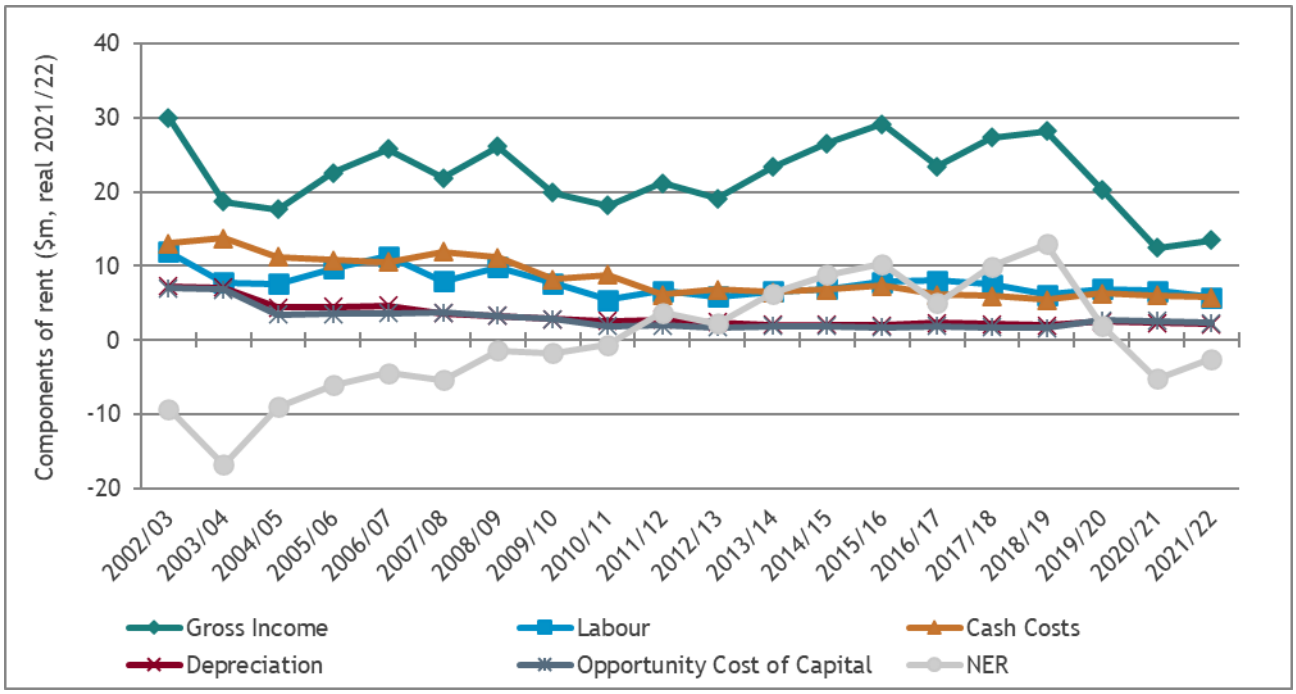
Source: Figure 3-6 and EconSearch (2022a)

5.6. Net Economic Return

Net economic return (NER) is the return from a fishery after all costs have been met. It is equal to fishing revenue less fishing costs (cost of labour, capital including depreciation, materials and an allowance for "normal" profit). NER is maximised when economic efficiency is maximised. In this case the natural resource is the NZRL Fishery and the good produced is the landed Rock Lobster.

Estimates of the NER generated in the SA NZRL Fishery are summarised in Figure 5-12 for the period 2002/03 to 2021/22. In 2002/03, estimated NER in the fishery was -$9.3 million. It then followed an overall increasing trend until 2018/19 when it reached $13.0 million. The increase in NER since 2002/03 was attributable to a combination of a reduction in labour, capital and operating costs. In other words, the rising trend in NER was largely due to significant improvements in economic efficiency, ultimately the aim of a quota management system. NER has been lower since 2019/20 and was -$2.5 million in 2021/22. This recent decrease is attributable to the loss in gross income associated with trade disputes between China and Australia leading to an unofficial ban on Rock Lobster exports and the associated fall in price (Figure 5-12).

Figure 5-12 NER in the SA NZRL Fishery, 2002/03 to 2021/22 ($'000) [a]

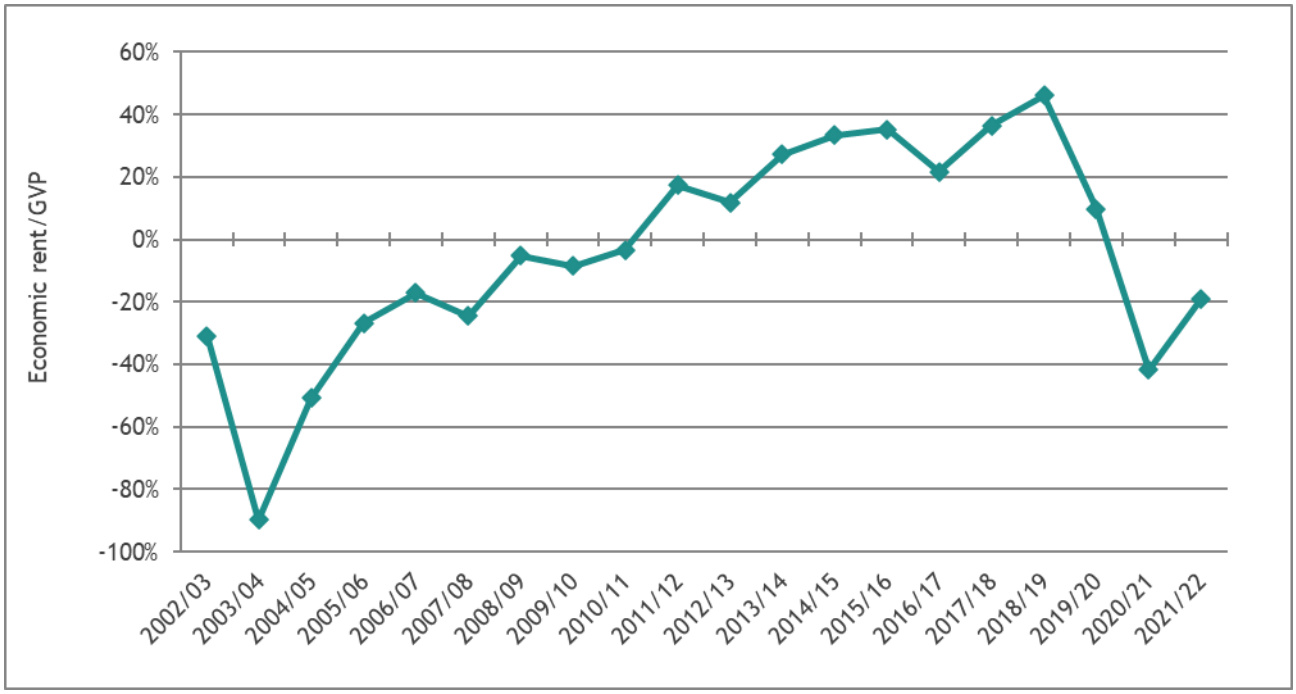


[a] Estimates are expressed in real 2021/22 terms.

Source: Table 3-15

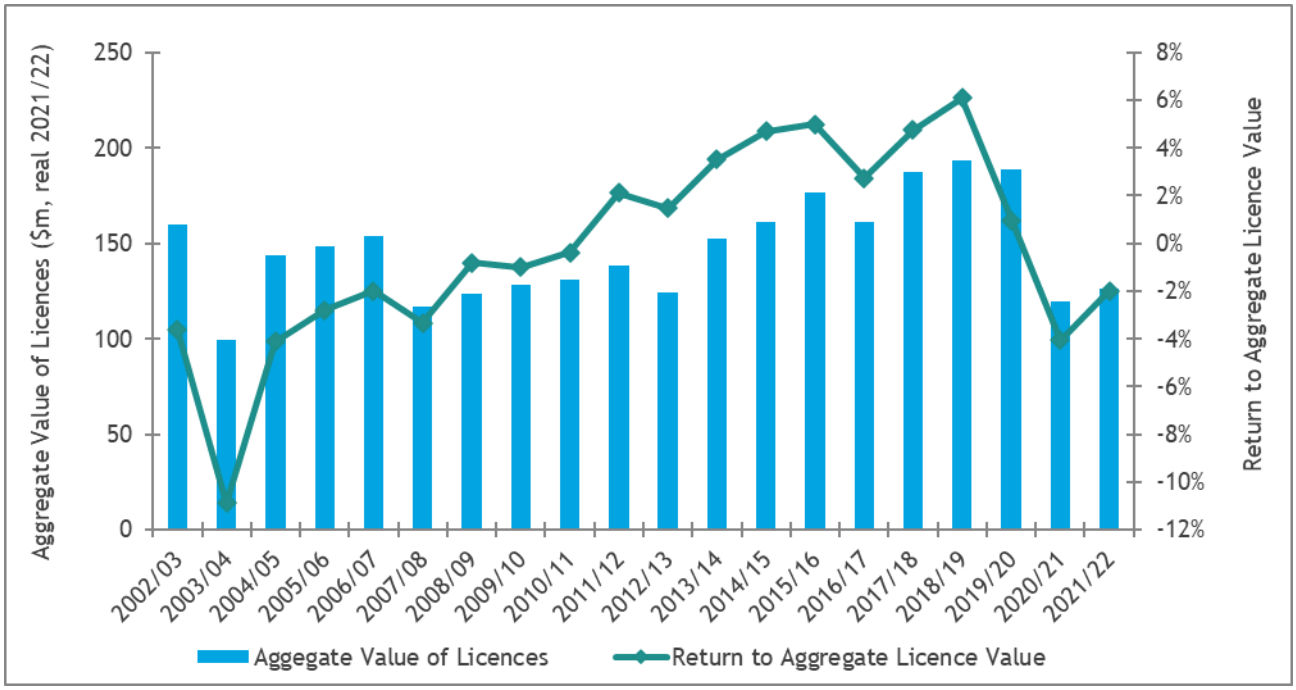
NER expressed as a percentage of GVP is a useful indicator for analysing a fishery over time and for comparing different fisheries. NER expressed as a percentage of GVP has improved overall and was estimated to be -19 per cent in 2021/22 (Figure 5-13). NER represents a return to the value of licences in the fishery. The aggregate value of licences in the NZRL Fishery and the return to capital value of the fishery are illustrated in Figure 5-14. The return to the aggregate value of licences in the fishery fluctuated between 2002/03 and 2021/22 but has decreased notably since 2018/19.

Figure 5-13 NER as a proportion of GVP in the SA NZRL Fishery, 2002/03 to 2021/22



Source: Table 3-2 and Table 3-15

Figure 5-14 Aggregate value of licences and return to capital in the SA NZRL Fishery, 2002/03 to 2021/22 [a]



[a] Estimates of the aggregate licence value are expressed in real 2021/22 dollars.

Source: Table 3-6 and Table 3-15

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RBA 2022b, *Exchange Rates – Daily Statistics*.

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 Economic Contribution of the SA Northern Zone Rock Lobster Fishery, 2020/21

Appendix Table 1-1 The economic contribution of the SA Northern Zone Rock Lobster fishing industry on the South Australian economy, 2020/21 [d]

Sector	Output		Employment [a]		Household Income		Contribution to GSP	
	($m)	%	(fte jobs)	%	($m)	%	($m)	%
Direct effects								
Fishing [b]	11.7	25%	89	33%	6.2	34%	3.8	16%
Processing	0.8	2%	2	1%	0.1	1%	0.3	1%
Transport	1.6	3%	7	3%	0.5	3%	0.7	3%
Retail	2.6	5%	21	8%	1.1	6%	1.5	6%
Food services	0.7	1%	7	3%	0.3	2%	0.4	2%
Capital expenditure [c]	0.4	1%	2	1%	0.1	1%	0.2	1%
Total Direct [d]	*17.8*	*38%*	*129*	*48%*	*8.5*	*46%*	*6.8*	*29%*
Flow-on effects								
Trade	3.7	8%	24	9%	1.5	8%	2.1	9%
Manufacturing	3.4	7%	10	4%	0.6	3%	1.0	4%
Business Services	5.3	11%	35	13%	2.5	14%	2.9	12%
Transport	1.9	4%	7	3%	0.5	3%	0.8	3%
Other Sectors	15.4	32%	63	24%	4.6	25%	10.0	42%
Total Flow-on [d]	*29.5*	62%	*139*	52%	*9.8*	54%	*16.8*	71%
Total [d]	**47.3**	**100%**	**268**	**100%**	**18.3**	**100%**	**23.7**	**100%**
Total/Direct	2.7	-	2.1	-	2.2	-	3.5	-
Total/Tonne	$182,500	-	1.0	-	$70,400	-	$91,300	-

[a] Full-time equivalent jobs. Direct employment in the fishing sector was comprised of 70 full-time and 22 part-time jobs, that is, 91 jobs in aggregate, which was estimated to be equal to 89 fte jobs.

[b] The direct fishing contribution includes Octopus caught by NZRL Fishery licences holders ($0.06m).

[c] Capital expenditure includes fishing related expenditure (boats, fishing gear and equipment, sheds and buildings, motor vehicles and other equipment) and processing relating expenditure (sheds, buildings and freezers).

[d] Totals may not sum due to rounding.

Source: BDO EconSearch analysis

Appendix Table 1-2 The economic contribution of the SA NZRL fishing industry in the Eyre and Western Region, 2020/21 [d]

Sector	Output		Employment [a]		Household Income		Contribution to GRP	
	($m)	%	(fte jobs)	%	($m)	%	($m)	%
Direct effects								
Fishing [b]	11.7	45%	89	56%	6.2	58%	3.8	32%
Processing	0.8	3%	2	1%	0.1	1%	0.3	2%
Transport	0.3	1%	2	1%	0.1	1%	0.1	1%
Retail	0.4	2%	4	2%	0.2	2%	0.3	2%
Food services	0.1	0%	1	0%	0.0	0%	0.0	0%
Capital expenditure [c]	0.1	1%	1	0%	0.0	0%	0.1	0%
Total Direct [d]	*13.4*	*52%*	*98*	*61%*	*6.7*	*62%*	*4.6*	*38%*
Flow-on effects								
Trade	1.9	7%	13	8%	0.8	7%	1.1	9%
Manufacturing	0.6	2%	2	1%	0.1	1%	0.2	2%
Business Services	2.0	8%	13	8%	0.9	8%	1.1	9%
Transport	1.0	4%	4	2%	0.3	2%	0.5	4%
Other Sectors	7.0	27%	30	19%	2	18%	5	38%
Total Flow-on [d]	*12.6*	48%	*62*	39%	*4.1*	38%	*7.5*	62%
Total [d]	**26.0**	**100%**	**160**	**100%**	**10.8**	**100%**	**12.1**	**100%**
Total/Direct	1.9	-	1.6	-	1.6	-	2.6	-
Total/Tonne	$100,400	-	0.6	-	$41,600	-	$46,500	-

[a] Full-time equivalent jobs. Direct employment in the fishing sector was comprised of 70 full-time and 22 part-time jobs, that is, 91 jobs in aggregate, which was estimated to be equal to 89 fte jobs.

[b] The direct fishing contribution includes Octopus caught by NZRL Fishery licences holders ($0.06m).

[c] Capital expenditure includes fishing related expenditure (boats, fishing gear and equipment, sheds and buildings, motor vehicles and other equipment) and processing relating expenditure (sheds, buildings and freezers).

[d] Totals may not sum due to rounding.

Source: BDO EconSearch analysis

APPENDIX 2 Rock Lobster Exports from SA

Appendix Table 2-1 Rock Lobster exports from South Australia, quantity (kg) by category, 2002/03 to 2011/12

Category	Year									
	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Whole Rock Lobster- live, fresh or chilled	1,763,339	1,877,960	1,828,341	1,743,730	1,937,308	2,061,812	1,589,478	1,374,720	851,138	462,279
Rock lobster tails - frozen	18,879	3,264	5,044	9,592	6,734	12,506	4,129	2,709	4,007	3,666
Other	379,217	76,738	10,732	6,247	9,965	2,850	2,215	2,189	1,410	355,833
Total	2,161,435	1,957,962	1,844,117	1,759,569	1,954,007	2,077,168	1,595,822	1,379,618	856,555	821,778

Source: Australian Bureau of Statistics (by request)

Appendix Table 2-2 Rock Lobster exports from South Australia, quantity (kg) by category, 2012/13 to 2021/22

Category	Year									
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Whole Rock Lobster- live, fresh or chilled	840,809	795,273	607,737	349,340	738,377	594,454	745,039	630,318	504,375	594,988
Rock lobster tails - frozen	2,731	1,453	1,387	3,598	1,457	798	400	232	63	24
Other	106	957	0	11,417	941	8,883	3,004	1,468	308	6,893
Total	843,646	797,683	609,124	364,355	740,775	604,135	748,443	632,018	504,746	601,905

Source: Australian Bureau of Statistics (by request)

Appendix Table 2-3 Rock Lobster exports from South Australia, value ($'000 fob) by category, 2002/03 to 2011/12

Category	Year									
	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Whole Rock Lobster- live, fresh or chilled	74.2	66.4	67.4	76.6	95.6	93.8	113.3	91.6	56.1	33.1
Rock lobster tails - frozen	1.5	0.2	0.3	0.8	0.5	0.7	0.4	0.2	0.4	0.3
Other	15.8	2.7	0.6	0.3	0.5	0.2	0.2	0.1	0.0	26.8
Total	**91.5**	**69.3**	**68.3**	**77.7**	**96.7**	**94.7**	**113.8**	**92.0**	**56.5**	**60.2**

Source: Australian Bureau of Statistics (by request)

Appendix Table 2-4 Rock Lobster exports from South Australia, value ($'000 fob) by category, 2012/13 to 2020/21

Category	Year									
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Whole Rock Lobster- live, fresh or chilled	58.5	66.8	57.9	34.8	67.9	56.4	77.1	63.8	40.4	38.6
Rock lobster tails - frozen	0.3	0.2	0.2	0.5	0.2	0.1	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	1.1	0.1	0.6	0.2	0.0	0.0	0.4
Total	**58.8**	**67.0**	**58.1**	**36.3**	**68.1**	**57.1**	**77.4**	**63.9**	**40.4**	**39.1**

Source: Australian Bureau of Statistics (by request)

Appendix Table 2-5 Rock Lobster exports from South Australia, quantity (kg) by country of destination, 2002/03 to 2011/12

Country of Destination	Year									
	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
China	124,844	55,805	292,265	70,230	35,193	56,250	2,946	113	199,839	44,565
Hong Kong	1,833,031	1,732,694	1,387,463	1,574,584	1,832,744	1,932,782	1,543,665	1,348,669	631,809	617,644
Japan	89,617	96,529	82,453	74,861	54,075	55,550	28,255	14,976	4,471	3,061
Malaysia	8,244	10,041	12,229	4,016	5,389	5,865	4,696	7,623	9,977	4,367
Singapore	26,885	19,502	26,109	11,951	10,292	12,414	8,605	5,567	9,304	4,079
United States	22,023	5,979	9,111	7,358	5,117	2,441	4,123	1,614	590	1,175
Vietnam	0	13,843	13,184	58	0	76	0	0	0	112,062
Other	179,232	23,569	21,303	16,514	11,197	11,790	3,532	1,056	565	34,825
Total	**2,283,876**	**1,957,962**	**1,844,117**	**1,759,572**	**1,954,007**	**2,077,168**	**1,595,822**	**1,379,618**	**856,555**	**821,778**

Source: Australian Bureau of Statistics (by request)

Appendix Table 2-6 Rock Lobster exports from South Australia, quantity (kg) by country of destination, 2012/13 to 2021/22

Country of Destination	Year									
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
China	34,948	2,730	425	17,397	170,734	518,230	699,503	598,901	249,968	6,611
Hong Kong	395,757	71,095	47,969	39,206	77,637	42,456	44,743	29,623	216,431	347,585
Japan	1,980	1,405	1,200	675	1,320	285	140	0	0	0
Malaysia	3,720	3,574	2,014	1,657	1,970	762	152	242	535	2,460
Singapore	6,770	6,674	4,088	3,862	5,243	5,020	3,370	1,832	7,859	9,515
United States	731	0	12	0	0	0	0	0	754	127
Vietnam	399,175	712,067	553,312	298,379	482,445	35,463	38	1,400	24,954	194,433
Other	565	138	104	3,179	1,426	1,868	497	20	4,245	41,174
Total	**843,646**	**797,683**	**609,124**	**364,355**	**740,775**	**604,084**	**748,443**	**632,018**	**504,746**	**601,905**

Source: Australian Bureau of Statistics (by request)

Appendix Table 2-7 Rock Lobster exports from South Australia, value ($m fob) by country of destination, 2002/03 to 2011/12

Country of Destination	Year									
	2002/03	2003/04	2004/05	2000/01	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
China	5.2	2.0	10.8	2.9	1.8	2.5	0.2	0.0	12.1	3.2
Hong Kong	75.9	60.4	50.7	68.9	90.0	87.9	110.0	89.7	42.7	45.3
Japan	4.5	4.0	3.4	3.6	3.1	2.8	2.3	1.2	0.4	0.3
Malaysia	0.4	0.3	0.5	0.2	0.3	0.3	0.3	0.5	0.6	0.3
Singapore	1.2	0.7	1.0	0.7	0.5	0.6	0.5	0.4	0.6	0.3
United States	1.7	0.3	0.5	0.5	0.4	0.1	0.2	0.1	0.0	0.1
Vietnam	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	8.1
Other	7.8	0.9	0.9	0.8	0.7	0.6	0.3	0.1	0.0	2.6
Total	**96.7**	**69.3**	**68.3**	**77.7**	**96.7**	**94.7**	**113.8**	**92.0**	**56.5**	**60.2**

Source: Australian Bureau of Statistics (by request)

Appendix Table 2-8 Rock Lobster exports from South Australia, value ($m fob) by country of destination, 2012/13 to 2021/22

Country of Destination	Year									
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
China	2.3	0.2	0.0	1.7	15.2	48.9	72.1	60.4	25.5	0.4
Hong Kong	27.4	5.5	3.9	3.5	6.4	4.2	4.8	3.2	12.6	22.9
Japan	0.3	0.2	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0
Malaysia	0.2	0.3	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.2
Singapore	0.5	0.6	0.4	0.4	0.5	0.5	0.4	0.2	0.5	0.6
United States	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vietnam	28.0	60.2	53.5	30.2	45.6	3.1	0.0	0.0	1.5	12.3
Other	0.0	0.0	0.0	0.3	0.1	0.2	0.1	0.0	0.2	2.7
Total	**58.8**	**67.0**	**58.1**	**36.3**	**68.1**	**57.1**	**77.4**	**63.9**	**40.4**	**39.1**

Source: Australian Bureau of Statistics (by request)

APPENDIX 3 Summary Economic Indicators for SA Commercial Fisheries

Appendix Table 3-1 Commercial fisheries catch, South Australia, 2001/02 to 2020/21 (tonnes)

Year	Abalone	GSV Prawns [a]	SG Prawns [a]	Sth'n Zone Rock Lobster [a]	Nth'n Zone Rock Lobster [a]	Blue Crabs	Lakes and Coorong [b]	Sardines	Marine Scalefish	Misc [c]	Total SA Fisheries [d]
2001/02	850	322	2,309	1,717	675	481	1,640	12,165	4,801	-	24,960
2002/03	890	232	1,508	1,766	595	515	1,979	21,741	4,243	-	33,469
2003/04	879	172	1,958	1,896	504	559	2,180	33,160	4,221	-	45,529
2004/05	902	213	1,960	1,897	446	584	2,277	56,952	3,857	-	69,089
2005/06	896	175	1,891	1,889	476	600	2,440	28,626	3,234	-	40,227
2006/07	883	209	2,024	1,895	492	617	2,443	30,355	2,855	-	41,773
2007/08	889	229	2,088	1,850	459	625	2,146	29,692	2,925	28	40,931
2008/09	837	273	1,915	1,407	403	604	2,023	27,850	2,998	28	38,338
2009/10	855	250	2,445	1,243	310	539	1,916	36,573	3,330	24	47,485
2010/11	815	178	2,115	1,244	313	591	1,681	33,220	3,068	24	43,249
2011/12	822	125	1,840	1,242	307	611	1,641	36,962	3,208	25	46,783
2012/13	875	0	1,881	1,234	325	511	1,811	35,065	2,603	28	44,333
2013/14	661	0	1,805	1,247	331	571	1,852	33,197	2,302	22	41,988
2014/15	744	249	1,848	1,238	321	576	1,598	36,020	2,582	22	45,198
2015/16	625	218	2,357	1,244	347	625	1,646	41,103	2,550	21	50,736
2016/17	743	225	2,205	1,238	320	627	1,847	39,745	2,519	22	49,491
2017/18	700	237	2,197	1,246	308	603	1,873	43,293	2,303	22	52,782
2018/19	658	212	2,121	1,245	294	616	1,861	40,041	2,099	22	49,169
2019/20	509	133	1,743	1,203	226	620	1,978	39,889	2,130	17	48,448
2020/21	493	110	1,837	1,275	251	592	1,926	38,024	1,689	18	46,215

[a] Excludes retained by-catch of Octopus and Southern Calamari.

[b] The River fishery was closed from July 2003. There are 6 River fishery licences with access to non-native species and their production is included in this table.

[c] Prior to 2007/08 catch from the Miscellaneous Fishery was included in the Marine Scalefish Fishery.

[d] Excludes retained by-catch of Octopus and Southern Calamari (49t of Octopus, 4t of Bugs and 45t of Southern Calamari in 2020/21) from the Rock Lobster and Prawn Fisheries. Excludes catch from Charter Boat Fishery, aquaculture and south east non-trawl and deep water trawl Commonwealth Fisheries.

Source: BDO EconSearch (2022b)

Appendix Table 3-2 Commercial fisheries gross value of production, South Australia, 2001/02 to 2020/21 ($m)

Year	Abalone	GSV Prawns [a]	SG Prawns [a]	Sth'n Zone Rock Lobster [a]	Nth'n Zone Rock Lobster [a]	Blue Crabs	Lakes and Coorong [b]	Sardines	Marine Scalefish	Misc [c]	Charter Boat	Total SA Fisheries [d]
2001/02	52	9	60	99	39	4	7	13	19	-	-	302
2002/03	52	6	40	92	27	5	6	26	21	-	-	276
2003/04	44	4	56	69	17	5	8	32	23	-	-	258
2004/05	46	5	44	75	16	5	8	39	21	-	-	258
2005/06	45	4	45	87	20	7	8	21	17	-	6	260
2006/07	41	4	51	103	23	7	9	24	19	-	6	288
2007/08	39	4	40	94	20	7	9	20	20	1	5	259
2008/09	40	4	36	105	24	6	10	22	21	1	5	275
2009/10	33	3	33	84	18	5	7	27	23	1	6	241
2010/11	32	2	35	77	16	5	8	22	22	1	5	226
2011/12	33	2	28	90	19	6	9	23	23	1	6	240
2012/13	33	0	30	79	17	6	10	23	24	1	6	230
2013/14	24	0	30	96	21	6	10	21	22	1	5	236
2014/15	27	4	31	108	24	6	8	28	24	1	4	265
2015/16	23	4	41	119	26	8	9	27	22	2	4	286
2016/17	29	5	41	104	21	8	10	25	23	2	4	270
2017/18	28	5	44	100	25	8	12	27	23	2	3	276
2018/19	29	4	41	111	26	9	13	26	21	2	3	284
2019/20	22	2	23	104	18	9	13	27	20	1	2	240
2020/21	18	2	36	71	12	8	14	24	19	1	3	209

[a] Excludes retained by-catch of Octopus and Southern Calamari.

[b] The River fishery was closed from July 2003. There are 6 River fishery licences with access to non-native species and their production is included in this table.

[c] Prior to 2007/08 catch from the Miscellaneous Fishery was included in the Marine Scalefish Fishery.

[d] Excludes retained by-catch of Octopus, Southern Calamari and bugs ($433,000 of Octopus, $791,000 of Southern Calamari and $66,000 of Bugs in 2020/21) from the Rock Lobster and Prawn Fisheries. Excludes catch of aquaculture and south east non-trawl, tuna, deep water trawl Commonwealth Fisheries. All values are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022b)

Appendix Table 3-3 Cost of management in South Australian commercial fisheries, 2020/21

	Licence Fees	GVP	Fees/ GVP	Catch [a]	Fees/ Catch	Licence Holders	Fees/ Licence
	($'000)	($'000)	(%)	(t)	($/kg)	(no.)	($/licence)
Abalone	2,431	18,337	13.3%	493	$4.93	34	$71,505
Charter Boats [b]	180	2,907	6.2%	12,077	$14.87	82	$2,191
GSV Prawns	410	2,093	19.6%	110	$3.73	10	$40,991
SG Prawns [c]	1,055	35,653	3.0%	1,837	$0.57	39	$27,049
Sth'n Zone Rock Lobster	3,444	71,299	4.8%	1,275	$2.70	180	$19,131
Nth'n Zone Rock Lobster	1,601	11,643	13.8%	251	$6.38	63	$25,414
Blue Crabs	320	8,410	3.8%	592	$0.54	9	$35,565
Lakes and Coorong	704	13,721	5.1%	1,926	$0.37	36	$19,562
Marine Scalefish [d]	1,973	19,103	10.3%	1,689	$1.17	305	$6,469
Miscellaneous	119	1,484	8.0%	18	$6.60	15	$7,916
Sardines	893	23,955	3.7%	38,024	$0.02	14	$63,769
Total SA	**13,129**	**208,604**	**6.3%**	**46,215**	**$0.28**	**787**	**$16,683**

[a] Total catch for the Charter Boat Fishery is the total number of clients rather than total volume of catch and has therefore been excluded from the total catch for all SA commercial fisheries.

[b] Management costs for the Charter Boat Fishery are reported per client rather than per kg of catch.

[c] Excludes West Coast Prawn Fishery.

[d] Licence fees include access/entitlement fees paid by rock lobster and Lakes and Coorong licence holders. Number of licence holders and average fee per licence holder relates only to Marine Scalefish licence holders and excludes access/entitlement holders from other fisheries.

Source: BDO EconSearch (2022b)

Appendix Table 3-4 Financial performance in South Australian commercial fisheries, 2020/21, (average per boat) [a]

		Abalone	Charter Boats	GSV Prawns	SG Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs [a]	Marine Scalefish	Sardine	Lakes and Coorong
(1)	**Total Boat Gross Income**	**585,788**	**95,682**	**418,600**	**858,836**	**440,222**	**250,721**	**8,409,508**	**122,224**	**1,726,433**	**517,480**
	Variable Costs										
	Fuel	15,214	16,015	60,732	80,931	24,940	24,264	530,977	13,025	108,435	16,878
	Repairs &	24,130	17,007	41,471	97,439	35,796	17,104	438,956	8,151	130,409	12,430
	Bait/Ice	527	3,525	0	5,001	14,584	13,170	134,934	2,411	1,591	1,542
	Provisions	3,806	854	2,477	4,605	1,067	6,159	29,862	980	1,385	610
	Labour - paid	185,740	6,185	212,626	361,846	158,999	113,626	2,462,702	12,639	432,268	66,979
(2)	Labour - unpaid	1,342	13,126	9,867	2,001	7,280	15,902	9,604	18,510	2,801	14,746
	Other	3,593	2,967	37,985	367	1,312	3,581	1,781	1,568	427	1,123
(3)	**Total Variable Costs**	**234,353**	**59,679**	**365,158**	**552,190**	**243,978**	**193,805**	**3,608,815**	**57,283**	**677,316**	**114,309**
	Fixed Costs										
	Licence Fee	72,620	4,185	81,983	27,634	23,122	26,786	343,300	5,769	68,666	16,136
	Insurance	8,283	4,179	9,796	20,831	8,734	7,461	198,233	3,036	39,123	5,302
(4)	Interest	18,080	1,141	4,154	38,018	12,378	3,411	388,980	4,239	86,292	4,012
(5)	Labour - unpaid	13,418	17,493	23,796	3,419	10,693	3,971	127,993	5,041	24,916	9,522
(6)	Leasing	0	0	0	5,365	4,452	42,432	320,184	0	0	7,111
	Legal & Accounting	9,191	2,030	6,579	4,872	6,764	4,206	26,823	2,292	5,872	4,537
	Telephone etc.	2,451	1,296	1,805	2,995	2,518	1,032	5,696	1,266	1,098	1,911
	Slipping & Mooring	1,271	2,193	20,061	21,804	6,383	5,825	70,083	1,629	7,704	276
	Travel	5,482	659	0	570	1,363	1,598	3,561	594	883	927
	Office & Admin	6,229	7,027	3,869	30,556	6,869	11,429	144,778	7,369	17,988	8,919
(7)	**Total Fixed Costs**	**137,025**	**40,203**	**152,042**	**156,062**	**83,275**	**108,151**	**1,629,632**	**31,234**	**252,542**	**58,654**
(8)	**Total Boat Cash Costs (3 + 7)**	**371,377**	**99,882**	**517,201**	**708,252**	**327,254**	**301,957**	**5,238,447**	**88,517**	**929,858**	**172,962**
	Boat Gross Margin (1 - 3)	**351,435**	**36,003**	**53,442**	**306,646**	**196,243**	**56,916**	**4,800,692**	**64,941**	**1,049,117**	**403,171**
(9)	**Total Unpaid Labour (2 + 5)**	**14,760**	**30,618**	**33,662**	**5,420**	**17,973**	**19,872**	**137,597**	**23,550**	**27,717**	**24,268**
	Gross Operating Surplus (1- 8+ 9)	**229,170**	**26,418**	**-64,938**	**156,004**	**130,942**	**-31,363**	**3,308,657**	**57,258**	**824,292**	**368,786**
(10)	**Boat Cash Income (1 - 8)**	**214,411**	**-4,200**	**-98,601**	**150,584**	**112,968**	**-51,235**	**3,171,061**	**33,707**	**796,575**	**344,518**
(11)	**Depreciation**	**53,300**	**22,687**	**73,852**	**110,310**	**41,973**	**47,587**	**740,508**	**19,848**	**328,118**	**54,278**
(12)	**Boat Business Profit (10 - 11)**	**161,111**	**-26,887**	**-172,453**	**40,274**	**70,995**	**-98,823**	**2,430,552**	**13,859**	**468,457**	**290,239**
(13)	**Profit at Full Equity (12 + 4 + 6)**	**179,191**	**-25,746**	**-168,299**	**83,656**	**87,825**	**-52,980**	**3,139,717**	**18,097**	**554,748**	**301,363**
	Boat Capital										
(14)	Fishing Gear &	**369,703**	**273,514**	**1,136,412**	**1,435,546**	**512,056**	**514,497**	**8,036,811**	**150,058**	**3,132,734**	**432,446**
	Licence Value	**6,326,294**	**7,750**	**2,000,000**	**4,198,095**	**5,257,050**	**2,296,864**	**47,285,237**	**226,097**	**6,076,511**	**1,469,734**
(15)	**Total Boat Capital**	**6,695,997**	**281,264**	**3,136,412**	**5,633,641**	**5,769,107**	**2,811,360**	**55,322,048**	**376,155**	**9,209,245**	**1,902,180**
	Rate of Return on Fishing Gear & Equip (13 / 14 * 100)	**48.5%**	**-9.4%**	**-14.8%**	**6%**	**17%**	**-10.3%**	**39.1%**	**12.1%**	**17.7%**	**69.7%**
	Rate of Return on Total Boat Capital (13 / 15 * 100)	**2.7%**	**-9.2%**	**-5.4%**	**1.5%**	**1.5%**	**-1.9%**	**5.7%**	**4.8%**	**6.0%**	**15.8%**

[a] Estimates of financial performance for the blue crab fishery have been presented on a whole of fishery basis.

[b] Excludes aquaculture and Commonwealth fisheries including; the Southern Eastern Scalefish and Shark fishery, Southern Bluefin Tuna fishery, Great Australian Bight fishery, Western Skipjack fishery, the Western Tuna and Billfish fishery.

Source: BDO EconSearch (2022b)

Appendix Table 3-5 Costs as a percentage of total cash costs in South Australian commerical fisheries, 2020/21 [a]

	Abalone	Charter Boats	Gulf St Vincent Prawns	Spencer Gulf Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs	Marine Scalefish	Sardines	Lakes and Coorong
Variable Costs										
Fuel	4%	16%	12%	11%	8%	8%	10%	15%	12%	10%
R&M	6%	17%	8%	14%	11%	6%	8%	9%	14%	7%
Bait/Ice	0%	4%	0%	1%	4%	4%	3%	3%	0%	1%
Provisions	1%	1%	0%	1%	0%	2%	1%	1%	0%	0%
Labour - paid	50%	6%	41%	51%	49%	38%	47%	14%	46%	39%
Labour - unpaid	0%	13%	2%	0%	2%	5%	0%	21%	0%	9%
Other	1%	3%	7%	0%	0%	1%	0%	2%	0%	1%
Fixed Costs										
Licence Fee	20%	4%	16%	4%	7%	9%	7%	7%	7%	9%
Insurance	2%	4%	2%	3%	3%	2%	4%	3%	4%	3%
Interest	5%	1%	1%	5%	4%	1%	7%	5%	9%	2%
Labour - unpaid	4%	18%	5%	0%	3%	1%	2%	6%	3%	6%
Leasing	0%	2%	0%	1%	1%	14%	6%	0%	0%	4%
Legal & Accounting	2%	1%	1%	1%	2%	1%	1%	3%	1%	3%
Telephone etc.	1%	2%	0%	0%	1%	0%	0%	1%	0%	1%
Slipping & Mooring	0%	1%	4%	3%	2%	2%	1%	2%	1%	0%
Travel	1%	7%	0%	0%	0%	1%	0%	1%	0%	1%
Office & Admin	2%	40%	1%	4%	2%	4%	3%	8%	2%	5%
Total Variable Costs	**63%**	**60%**	**71%**	**78%**	**75%**	**64%**	**69%**	**65%**	**73%**	**66%**
Total Fixed Costs	**37%**	**40%**	**29%**	**22%**	**25%**	**36%**	**31%**	**35%**	**27%**	**34%**
Total Cash Costs	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

[a] Excludes aquaculture and Commonwealth fisheries including; the Southern Eastern Scalefish and Shark fishery, Southern Bluefin Tuna fishery, Great Australian Bight fishery, Western Skipjack fishery, the Western Tuna and Billfish fishery.

Source: Derived from BDO EconSearch (2022b)

Appendix Table 3-6 Economic contributions of South Australian commercial fisheries, 2020/21 [a,b]

	Abalone	Charter Boats	Gulf St Vincent Prawn	SG Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs	Marine Scalefish	Sardines	Lakes and Coorong	All Fisheries
Output ($m)											
Direct											
Fishing	18.3	2.9	2.1	35.7	71.7	11.7	8.4	19.1	24.0	13.7	207.6
Downstream	15.2	5.7	2.2	35.9	29.8	6.1	7.5	8.7	2.2	6.6	119.9
All other sectors	56.9	14.4	7.3	91.4	125.3	29.5	18.4	57.3	22.1	19.5	442.3
Total	**90.5**	**23.0**	**11.6**	**163.0**	**226.8**	**47.3**	**34.4**	**85.1**	**48.3**	**39.8**	**769.8**
Total/Direct	2.7	2.7	2.7	2.3	2.2	2.7	2.2	3.1	1.8	2.0	2.4
Total/Tonne ($)	$183,500	$1,900	$105,600	$88,700	$172,300	$182,500	$58,000	$50,300	$1,200	$24,900	$16,000
Contribution to GSP ($m)											
Direct											
Fishing	13.9	1.2	0.9	24.3	51.1	3.8	6.5	7.9	18.7	11.3	139.6
Downstream	13.8	2.8	1.3	20.6	14.8	3.0	3.8	4.2	1.1	3.2	68.6
All other sectors	18.1	8.1	4.1	50.9	71.5	16.8	10.4	32.8	12.5	11.1	236.4
Total	**45.9**	**12.1**	**6.3**	**95.9**	**137.4**	**23.7**	**20.8**	**44.8**	**32.3**	**25.5**	**444.6**
Total/Direct	1.7	3.1	2.9	2.1	2.1	3.5	2.0	3.7	1.6	11.1	2.1
Total/Tonne ($)	$93,000	$1,000	$56,900	$52,100	$104,400	$91,300	$35,000	$26,500	$800	$26	$9,200
Employment (fte jobs)											
Direct											
Fishing	51	32	18	116	327	89	29	211	82	109	1,064
Downstream	125	29	19	305	194	39	58	55	13	40	876
All other sectors	148	68	33	413	584	139	82	274	104	88	1,934
Total	**323**	**128**	**70**	**834**	**1,105**	**268**	**169**	**540**	**199**	**238**	**3,874**
Total/Direct	1.8	2.1	1.9	2.0	2.1	2.1	2.0	2.0	2.1	1.6	2.0
Total/Tonne	0.7	0.0	0.6	0.5	0.8	1.0	0.3	0.3	0.0	0.1	0.1
Household Income ($m)											
Direct											
Fishing	6.8	0.6	1.2	14.3	28.0	6.2	2.6	8.7	6.4	3.3	78.2
Downstream	6.6	1.6	0.9	15.1	11.0	2.2	2.7	3.0	0.8	2.3	46.1
All other sectors	10.4	4.9	2.4	28.5	41.2	9.8	5.9	19.8	7.2	6.5	136.4
Total	**23.8**	**7.1**	**4.5**	**57.9**	**80.1**	**18.3**	**11.2**	**31.5**	**14.3**	**12.0**	**260.7**
Total/Direct	1.8	3.2	2.1	2.0	2.1	2.2	2.1	2.7	2.0	2.2	2.1
Total/Tonne ($)	$48,200	$500	$41,100	$31,500	$60,800	$70,400	$18,800	$18,600	$300	$7,500	$5,400

[a] Excludes aquaculture and Commonwealth fisheries including; the Southern Eastern Scalefish and Shark fishery, Southern Bluefin Tuna fishery, Great Australian Bight fishery, Western Skipjack fishery, the Western Tuna and Billfish fishery.

[b] Downstream activities include net value of processing, transport services and retail/food services trade.

Source: BDO EconSearch (2022b)

Appendix Table 3-7 NER in South Australian commercial fisheries [a], 2020/21 ($m)

	Abalone	GSV Prawns	SGWC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs	Marine Scalefish	Sardines	Lakes and Coorong	**All Fisheries[a]**
Gross Income	18.3	2.1	35.7	71.7	11.7	8.4	19.1	24.0	13.7	204.6
Less Labour	6.3	1.2	15.0	28.8	6.2	2.6	5.7	6.4	2.4	74.6
Less Materials & Services	4.8	1.3	12.1	21.7	5.7	1.9	9.0	5.3	2.1	64.0
Less Depreciation	1.7	0.4	4.5	6.8	2.2	0.7	3.1	4.6	1.4	25.4
Less Opportunity Cost of Capital (@10%)	1.2	0.6	5.8	8.3	2.4	0.8	2.3	4.3	1.1	27.0
NER	**4**	**-1**	**-2**	**6**	**-5**	**2**	**-1**	**3**	**7**	**14**
NER/GVP	24%	-64%	-5%	8%	-42%	28%	-5%	14%	49%	5%

[a] Excludes Charter Boat Fishery, aquaculture and Commonwealth fisheries including; the Southern Eastern Scalefish and Shark fishery, Southern Bluefin Tuna fishery, Great Australian Bight fishery, Western Skipjack fishery, the Western Tuna and Billfish fishery.

Source: BDO EconSearch (2022b)

APPENDIX 4 Financial Performance, 2002/03 – 2018/19

Appendix Table 4-1 Financial performance in the SA NZRL Fishery, 2002/03 to 2004/05 (average per boat) [a]

		2002/03		2003/04		2004/05	
		Average per Boat	Share of TBCC [b]	Average per Boat	Share of TBCC [b]	Average per Boat	Share of TBCC [b]
(1)	**Total Boat Gross Income**	**$269,377**		**$172,345**		**$222,293**	
	Variable Costs						
	Fuel	$35,025	14%	$36,964	16%	$45,445	17%
	Repairs & Maintenance [c]	$23,946	9%	$25,607	11%	$17,466	7%
	Bait/Ice	$10,233	4%	$11,021	5%	$16,750	6%
	Provisions	$3,636	1%	$3,888	2%	$4,609	2%
	Labour - paid	$86,190	33%	$55,143	24%	$63,406	24%
(2)	Labour - unpaid [d]	$12,045	5%	$7,706	3%	$19,077	7%
	Other	$3,537	1%	$3,643	2%	$5,052	2%
(3)	**Total Variable Costs**	**$174,612**	**68%**	**$143,973**	**62%**	**$171,806**	**64%**
	Fixed Costs						
	Licence Fee	$12,690	5%	$16,225	7%	$19,382	7%
	Insurance	$9,317	4%	$9,598	4%	$8,439	3%
(4)	Interest	$32,901	13%	$33,755	15%	$31,500	12%
(5)	Labour - unpaid [d]	$8,850	3%	$8,850	4%	$13,065	5%
(6)	Leasing	$2,494	1%	$2,569	1%	$11,870	4%
	Legal & Accounting	$4,323	2%	$4,454	2%	$2,738	1%
	Telephone etc.	$2,792	1%	$2,876	1%	$2,421	1%
	Slipping & Mooring	$3,566	1%	$3,673	2%	$2,410	1%
	Travel	$1,697	1%	$1,748	1%	$1,048	0%
	Office & Admin	$4,146	2%	$4,270	2%	$3,583	1%
(7)	**Total Fixed Costs**	**$82,775**	**32%**	**$88,018**	**38%**	**$96,456**	**36%**
(8)	**Total Boat Cash Costs (3+7)**	**$257,387**	**100%**	**$231,992**	**100%**	**$268,262**	**100%**
	Boat Gross Margin (1-3)	**$94,765**		**$28,372**		**$50,488**	
(9)	**Total Unpaid Labour (2+5)**	**$20,895**		**$16,556**		**$32,142**	
	Gross Operating Surplus (1-8+9)	**$32,885**		**-$43,090**		**-$13,827**	
(10)	**Boat Cash Income (1-8)**	**$11,990**		**-$59,646**		**-$45,968**	
(11)	**Depreciation**	**$65,355**		**$65,843**		**$55,412**	
(12)	**Boat Business Profit (10-11)**	**-$53,365**		**-$125,489**		**-$101,380**	
(13)	**Profit at Full Equity (12+4+6)**	**-$17,970**		**-$89,165**		**-$58,010**	
	Boat Capital						
(14)	Fishing Gear & Equip	$626,123		$630,795		$431,090	
	Licence Value	$1,453,068		$929,661		$1,374,153	
(15)	**Total Boat Capital**	**$2,079,192**		**$1,560,457**		**$1,805,243**	
	Rate of Return on Fishing Gear & Equip (13/14*100)	**-2.9%**		**-14.1%**		**-13.5%**	
	Rate of Return on Total Boat Capital (13/15*100)	**-0.9%**		**-5.7%**		**-3.2%**	

[a] Estimates of financial performance for the years 2002/03 and 2003/04 are based on the 2001 licence holder survey and those estimates for 2004/05 are based on the 2006 licence holder survey. All figures are presented in nominal terms.

[b-d] See Table 3-6 footnotes.

Source: BDO EconSearch (2022a)

Appendix Table 4-2 Financial performance in the SA NZRL Fishery, 2005/06 to 2007/08 (average per boat) [a]

		2005/06		2006/07		2007/08	
		Average per Boat	Share of TBCC [b]	Average per Boat	Share of TBCC [b]	Average per Boat	Share of TBCC [b]
(1)	**Total Boat Gross Income**	**$294,654**		**$347,827**		**$276,790**	
	Variable Costs						
	Fuel	$45,355	15%	$44,870	14%	$42,855	15%
	Repairs & Maintenance [c]	$16,983	6%	$16,864	5%	$23,574	8%
	Bait/Ice	$15,877	5%	$14,829	5%	$13,963	5%
	Provisions	$4,482	1%	$4,450	1%	$11,421	4%
	Labour - paid	$87,213	29%	$106,978	32%	$70,574	24%
(2)	Labour - unpaid [d]	$26,240	9%	$32,186	10%	$22,005	7%
	Other	$5,245	2%	$5,335	2%	$976	0%
(3)	**Total Variable Costs**	**$201,395**	**67%**	**$225,511**	**68%**	**$185,368**	**63%**
	Fixed Costs						
	Licence Fee	$19,588	7%	$21,261	6%	$20,752	7%
	Insurance	$8,761	3%	$8,911	3%	$7,427	3%
(4)	Interest	$31,889	11%	$34,222	10%	$42,709	15%
(5)	Labour - unpaid [d]	$13,557	5%	$14,087	4%	$7,566	3%
(6)	Leasing	$12,323	4%	$12,535	4%	$13,445	5%
	Legal & Accounting	$2,842	1%	$2,891	1%	$4,066	1%
	Telephone etc.	$2,514	1%	$2,557	1%	$3,080	1%
	Slipping & Mooring	$2,503	1%	$2,545	1%	$1,714	1%
	Travel	$1,088	0%	$1,107	0%	$3,741	1%
	Office & Admin	$3,720	1%	$3,784	1%	$4,350	1%
(7)	**Total Fixed Costs**	**$98,786**	**33%**	**$103,901**	**32%**	**$108,850**	**37%**
(8)	**Total Boat Cash Costs (3+7)**	**$300,180**	**100%**	**$329,412**	**100%**	**$294,218**	**100%**
	Boat Gross Margin (1-3)	**$93,259**		**$122,316**		**$91,422**	
(9)	**Total Unpaid Labour (2+5)**	**$39,797**		**$46,273**		**$29,570**	
	Gross Operating Surplus (1-8+9)	**$34,270**		**$64,688**		**$12,142**	
(10)	**Boat Cash Income (1-8)**	**-$5,527**		**$18,415**		**-$17,428**	
(11)	**Depreciation**	**$58,323**		**$61,166**		**$46,342**	
(12)	**Boat Business Profit (10-11)**	**-$63,850**		**-$42,751**		**-$63,770**	
(13)	**Profit at Full Equity (12+4+6)**	**-$19,638**		**$4,006**		**-$7,616**	
	Boat Capital						
(14)	Fishing Gear & Equip	$453,741		$475,857		$464,695	
	Licence Value	$1,472,307		$1,577,472		$1,252,714	
(15)	**Total Boat Capital**	**$1,926,048**		**$2,053,329**		**$1,717,409**	
	Rate of Return on Fishing Gear & Equip (13/14*100)	**-4.3%**		**0.8%**		**-1.6%**	
	Rate of Return on Total Boat Capital (13/15*100)	**-1.0%**		**0.2%**		**-0.4%**	

[a] Estimates of financial performance for 2005/06 and 2006/07 are based on the 2006 licence holders survey and estimates for 2007/08 are based on the 2009 licence holder survey. All figures are presented in nominal terms.

[b-d] See Table 3-6 footnotes.

Source: BDO EconSearch (2022a)

Appendix Table 4-3 Financial performance in the SA NZRL Fishery, 2008/09 to 2010/11 (average per boat) [a]

		2008/09		2009/10		2010/11	
		Average per Boat	Share of TBCC [b]	Average per Boat	Share of TBCC [b]	Average per Boat	Share of TBCC [b]
(1)	**Total Boat Gross Income**	**$335,778**		**$262,581**		**$313,318**	
	Variable Costs						
	Fuel	$40,877	13%	$23,602	9%	$24,783	9%
	Repairs & Maintenance [c]	$23,088	7%	$13,654	5%	$22,782	8%
	Bait/Ice	$9,166	3%	$3,333	1%	$9,335	3%
	Provisions	$11,185	4%	$6,615	3%	$2,840	1%
	Labour - paid	$88,984	29%	$71,534	28%	$74,325	26%
(2)	Labour - unpaid [d]	$27,745	9%	$22,304	9%	$15,174	5%
	Other	$992	0%	$1,019	0%	$3,379	1%
(3)	**Total Variable Costs**	**$202,035**	**65%**	**$142,061**	**55%**	**$152,618**	**54%**
	Fixed Costs						
	Licence Fee	$19,744	6%	$20,559	8%	$20,524	7%
	Insurance	$7,546	2%	$7,755	3%	$7,872	3%
(4)	Interest	$40,552	13%	$46,807	18%	$33,909	12%
(5)	Labour - unpaid [d]	$9,539	3%	$7,669	3%	$5,217	2%
(6)	Leasing	$13,662	4%	$14,039	5%	$41,807	15%
	Legal & Accounting	$4,132	1%	$4,246	2%	$2,910	1%
	Telephone etc.	$3,130	1%	$3,216	1%	$3,086	1%
	Slipping & Mooring	$1,742	1%	$1,790	1%	$3,114	1%
	Travel	$3,801	1%	$3,906	2%	$1,012	0%
	Office & Admin	$4,420	1%	$4,542	2%	$8,517	3%
(7)	**Total Fixed Costs**	**$108,268**	**35%**	**$114,529**	**45%**	**$127,968**	**46%**
(8)	**Total Boat Cash Costs (3+7)**	**$310,303**	**100%**	**$256,590**	**100%**	**$280,586**	**100%**
	Boat Gross Margin (1-3)	**$133,743**		**$120,520**		**$160,700**	
(9)	**Total Unpaid Labour (2+5)**	**$37,284**		**$29,973**		**$20,391**	
	Gross Operating Surplus (1-8+9)	**$62,759**		**$35,964**		**$53,122**	
(10)	**Boat Cash Income (1-8)**	**$25,475**		**$5,992**		**$32,731**	
(11)	**Depreciation**	**$41,721**		**$37,560**		**$44,743**	
(12)	**Boat Business Profit (10-11)**	**-$16,246**		**-$31,568**		**-$12,011**	
(13)	**Profit at Full Equity (12+4+6)**	**$37,968**		**$29,278**		**$63,705**	
	Boat Capital						
(14)	Fishing Gear & Equip	$418,352		$376,632		$326,133	
	Licence Value	$1,342,194		$1,438,065		$1,519,670	
(15)	**Total Boat Capital**	**$1,760,546**		**$1,814,696**		**$1,845,804**	
	Rate of Return on Fishing Gear & Equip (13/14*100)	**9.1%**		**7.8%**		**19.5%**	
	Rate of Return on Total Boat Capital (13/15*100)	**2.2%**		**1.6%**		**3.5%**	

[a] Estimates of financial performance for 2008/09 and 2009/10 are based on the 2009 licence holder survey and estimates for 2010/11 are based on the 2012 licence holder survey. All figures are presented in nominal terms.

[b-d] See Table 3-6 footnotes.

Source: BDO EconSearch (2022a)

Appendix Table 4-4 Financial performance in the SA NZRL Fishery, 2011/12 to 2013/14 (average per boat) [a]

		2011/12		2012/13		2013/14	
		Average per Boat	Share of TBCC [b]	Average per Boat	Share of TBCC [b]	Average per Boat	Share of TBCC [b]
(1)	**Total Boat Gross Income**	**$371,180**		**$340,935**		**$530,825**	
	Variable Costs						
	Fuel	$25,202	8%	$29,164	10%	$35,687	9%
	Repairs & Maintenance [c]	$22,474	8%	$26,629	9%	$27,100	7%
	Bait/Ice	$8,823	3%	$10,180	3%	$14,009	4%
	Provisions	$2,802	1%	$3,320	1%	$4,525	1%
	Labour - paid	$87,828	31%	$80,672	27%	$121,771	32%
(2)	Labour - unpaid [d]	$15,445	6%	$18,339	6%	$13,296	3%
	Other	$3,420	1%	$3,512	1%	$4,000	1%
(3)	**Total Variable Costs**	**$165,994**	**58%**	**$171,815**	**57%**	**$220,388**	**57%**
	Fixed Costs						
	Licence Fee	$18,552	6%	$21,519	7%	$31,577	8%
	Insurance	$7,967	3%	$8,182	3%	$8,162	2%
(4)	Interest	$31,184	10%	$28,156	9%	$22,392	6%
(5)	Labour - unpaid [d]	$5,443	2%	$5,626	2%	$13,932	4%
(6)	Leasing	$49,528	14%	$45,492	15%	$66,895	17%
	Legal & Accounting	$2,945	1%	$3,024	1%	$4,758	1%
	Telephone etc.	$3,123	1%	$3,208	1%	$2,033	1%
	Slipping & Mooring	$3,152	1%	$3,237	1%	$5,078	1%
	Travel	$1,025	0%	$1,052	0%	$2,467	1%
	Office & Admin	$8,621	3%	$8,853	3%	$8,295	2%
(7)	**Total Fixed Costs**	**$131,540**	**42%**	**$128,350**	**43%**	**$165,589**	**43%**
(8)	**Total Boat Cash Costs (3+7)**	**$297,534**	**100%**	**$300,165**	**100%**	**$385,977**	**100%**
	Boat Gross Margin (1-3)	**$198,894**		**$169,119**		**$310,437**	
(9)	**Total Unpaid Labour (2+5)**	**$24,974**		**$23,965**		**$27,229**	
	Gross Operating Surplus (1-8+9)	**$98,634**		**$64,735**		**$172,077**	
(10)	**Boat Cash Income (1-8)**	**$73,660**		**$40,770**		**$144,848**	
(11)	**Depreciation**	**$47,752**		**$42,979**		**$47,191**	
(12)	**Boat Business Profit (10-11)**	**$25,908**		**-$2,209**		**$97,657**	
(13)	**Profit at Full Equity (12+4+6)**	**$99,382**		**$71,440**		**$186,944**	
	Boat Capital						
(14)	Fishing Gear & Equip	$348,072		$313,275		$424,607	
	Licence Value	$1,628,218		$1,495,544		$1,888,698	
(15)	**Total Boat Capital**	**$1,976,290**		**$1,808,818**		**$2,313,306**	
	Rate of Return on Fishing Gear & Equip (13/14*100)	**28.6%**		**22.8%**		**44.0%**	
	Rate of Return on Total Boat Capital (13/15*100)	**5.0%**		**3.9%**		**8.1%**	

[a] Estimates of financial performance for 2011/12 and 2012/13 are based on the 2012 licence holder survey and estimates for 2013/14 are based on the 2015 licence holder survey. All figures are presented in nominal terms.

[b-d] See Table 3-6 footnotes.

Source: BDO EconSearch (2022a)

Appendix Table 4-5 Financial performance in the SA NZRL Fishery, 2014/15 to 2016/17 (average per boat) [a]

		2014/15		2015/16		2016/17	
		Average per Boat	Share of TBCC [b]	Average per Boat	Share of TBCC [b]	Average per Boat	Share of TBCC [b]
(1)	**Total Boat Gross Income**	**$612,106**		**$675,751**		**$550,426**	
	Variable Costs						
	Fuel	$37,753	9%	$42,263	9%	$33,245	8%
	Repairs & Maintenance [c]	$29,023	7%	$32,702	7%	$22,437	6%
	Bait/Ice	$18,212	4%	$20,387	4%	$15,493	4%
	Provisions	$4,846	1%	$5,460	1%	$5,621	1%
	Labour - paid	$132,115	32%	$151,213	33%	$145,842	36%
(2)	Labour - unpaid [d]	$13,636	3%	$16,511	4%	$35,586	9%
	Other	$4,049	1%	$4,827	1%	$2,399	1%
(3)	**Total Variable Costs**	**$239,634**	**58%**	**$273,364**	**60%**	**$260,623**	**64%**
	Fixed Costs						
	Licence Fee	$31,966	8%	$32,594	7%	$28,277	7%
	Insurance	$8,262	2%	$8,316	2%	$9,685	2%
(4)	Interest	$21,188	5%	$20,947	5%	$24,050	6%
(5)	Labour - unpaid [d]	$14,288	3%	$14,609	3%	$7,241	2%
(6)	Leasing	$77,138	19%	$85,159	19%	$48,033	12%
	Legal & Accounting	$4,817	1%	$4,849	1%	$4,150	1%
	Telephone etc.	$2,058	0%	$2,072	0%	$1,857	0%
	Slipping & Mooring	$5,140	1%	$5,174	1%	$5,671	1%
	Travel	$2,497	1%	$2,513	1%	$5,079	1%
	Office & Admin	$8,398	2%	$8,453	2%	$10,012	2%
(7)	**Total Fixed Costs**	**$175,753**	**42%**	**$184,685**	**40%**	**$144,054**	**36%**
(8)	**Total Boat Cash Costs (3+7)**	**$415,387**	**100%**	**$458,050**	**100%**	**$404,677**	**100%**
	Boat Gross Margin (1-3)	**$372,472**		**$402,386**		**$289,803**	
(9)	**Total Unpaid Labour (2+5)**	**$27,924**		**$31,120**		**$42,827**	
	Gross Operating Surplus (1-8+9)	**$224,644**		**$248,821**		**$188,575**	
(10)	**Boat Cash Income (1-8)**	**$196,719**		**$217,701**		**$145,748**	
(11)	**Depreciation**	**$48,041**		**$45,203**		**$55,244**	
(12)	**Boat Business Profit (10-11)**	**$148,679**		**$172,498**		**$90,505**	
(13)	**Profit at Full Equity (12+4+6)**	**$247,005**		**$278,604**		**$162,588**	
	Boat Capital						
(14)	Fishing Gear & Equip	$432,251		$406,721		$439,877	
	Licence Value	$2,177,899		$2,404,349		$2,226,310	
(15)	**Total Boat Capital**	**$2,610,150**		**$2,811,069**		**$2,666,187**	
	Rate of Return on Fishing Gear & Equip (13/14*100)	**57.1%**		**68.5%**		**37.0%**	
	Rate of Return on Total Boat Capital (13/15*100)	**9.5%**		**9.9%**		**6.1%**	

[a] Estimates of financial performance for 2014/15 and 2015/16 are based on the 2015 licence holder survey and those for 2016/17 are based on the 2018 licence holder survey. All figures are presented in nominal terms.

[b-d] See Table 3-6 footnotes.

Source: BDO EconSearch (2022a)

Appendix Table 4-6 Financial performance in the SA NZRL Fishery, 2017/18 and 2018/19 (average per boat) [a]

		2017/18		2018/19	
		Average per Boat	Share of TBCC [b]	Average per Boat	Share of TBCC [b]
(1)	**Total Boat Gross Income**	**$658,909**		**$689,368**	
	Variable Costs				
	Fuel	$31,868	8%	$26,831	7%
	Repairs & Maintenance [c]	$21,231	5%	$17,689	5%
	Bait/Ice	$16,879	4%	$13,961	4%
	Provisions	$5,319	1%	$4,431	1%
	Labour - paid	$137,212	34%	$115,171	31%
(2)	Labour - unpaid [d]	$36,322	9%	$28,102	8%
	Other	$2,463	1%	$1,892	1%
(3)	**Total Variable Costs**	**$251,293**	**62%**	**$208,078**	**57%**
	Fixed Costs				
	Licence Fee	$29,028	7%	$29,413	8%
	Insurance	$9,942	2%	$10,084	3%
(4)	Interest	$24,050	6%	$23,772	6%
(5)	Labour - unpaid [d]	$7,390	2%	$7,552	2%
(6)	Leasing	$57,499	14%	$60,157	16%
	Legal & Accounting	$4,260	1%	$4,321	1%
	Telephone etc.	$1,906	0%	$1,934	1%
	Slipping & Mooring	$5,822	1%	$5,905	2%
	Travel	$5,213	1%	$5,288	1%
	Office & Admin	$10,278	3%	$10,424	3%
(7)	**Total Fixed Costs**	**$155,390**	**38%**	**$158,850**	**43%**
(8)	**Total Boat Cash Costs (3+7)**	**$406,683**	**100%**	**$366,928**	**100%**
	Boat Gross Margin (1-3)	**$407,616**		**$481,290**	
(9)	**Total Unpaid Labour (2+5)**	**$43,712**		**$35,654**	
	Gross Operating Surplus (1-8+9)	**$295,938**		**$358,094**	
(10)	**Boat Cash Income (1-8)**	**$252,226**		**$322,440**	
(11)	**Depreciation**	**$52,420**		**$49,362**	
(12)	**Boat Business Profit (10-11)**	**$199,806**		**$273,078**	
(13)	**Profit at Full Equity (12+4+6)**	**$281,356**		**$357,007**	
	Boat Capital				
(14)	Fishing Gear & Equip	$417,392		$393,047	
	Licence Value	$2,665,094		$2,788,292	
(15)	**Total Boat Capital**	**$3,082,486**		**$3,181,339**	
	Rate of Return on Fishing Gear & Equip (13/14*100)	**67.4%**		**90.8%**	
	Rate of Return on Total Boat Capital (13/15*100)	**9.1%**		**11.2%**	

[a] Estimates of financial performance for 2017/18 and 2018/19 are based on the 2018 licence holder survey. All figures are presented in nominal terms.

[b-d] See Table 3-6 footnotes.

Source: BDO EconSearch (2022a)

APPENDIX 5 Nominal Licence Fees and Net Economic Return

Appendix Table 5-1 Costs of management in the SA Northern Zone Rock Lobster Fishery, 2002/03 to 2022/23 [a]

	Licence Fees	Gross Value of Production	Fees/GVP	Catch	Fee/Catch	No. Licences	Fee/Licence
	($,000)	($,000)	(%)	(t)	($/kg)	(no.)	($/licence)
2002/03	805	18,828	4.3%	595	$1.35	69	$11,666
2003/04	1,029	12,046	8.5%	504	$2.04	69	$14,916
2004/05	1,076	11,643	9.2%	446	$2.41	69	$15,600
2005/06	1,088	15,433	7.0%	476	$2.29	69	$15,766
2006/07	1,164	17,974	6.5%	492	$2.37	68	$17,112
2007/08	1,175	15,935	7.4%	459	$2.56	68	$17,287
2008/09	1,118	19,339	5.8%	403	$2.78	68	$16,447
2009/10	1,165	15,117	7.7%	310	$3.76	68	$17,126
2010/11	1,179	14,306	8.2%	313	$3.77	68	$17,339
2011/12	1,066	16,948	6.3%	307	$3.47	68	$15,673
2012/13	1,236	15,583	7.9%	325	$3.80	68	$18,180
2013/14	1,488	19,582	7.6%	331	$4.50	68	$21,881
2014/15	1,424	22,530	6.3%	321	$4.44	63	$22,606
2015/16	1,506	24,899	6.0%	347	$4.34	63	$23,911
2016/17	1,506	20,257	7.4%	320	$4.71	63	$23,911
2017/18	1,506	24,401	6.2%	308	$4.89	63	$23,911
2018/19	1,532	25,517	6.0%	294	$5.21	63	$24,320
2019/20	1,576	18,506	8.5%	228	$6.91	63	$25,017
2020/21	1,601	11,643	13.8%	251	$6.38	63	$25,414
2021/22	1,579	13,371	11.8%	291	$5.43	63	$25,070
2022/23	801	n.a.	-	n.a.	-	63	$12,712

[a] Values are in nominal terms.

Source: PIRSA Fisheries and SARDI Aquatic Sciences

Appendix Table 5-2 Net economic return (NER) [a] in the SA Northern Zone Rock Lobster Fishery, 2002/03 to 2021/22 ($'000)

	Gross Income	Less Labour	Less Cash Costs	Less Depreciation	Less Opportunity Cost of Capital (@10%)	NER
2002/03	18,828	7,485	8,206	4,568	4,376	**-5,807**
2003/04	12,046	5,011	8,844	4,602	4,409	**-10,821**
2004/05	11,643	5,004	7,396	2,902	2,258	**-5,918**
2005/06	15,433	6,652	7,400	3,055	2,377	**-4,051**
2006/07	17,954	7,910	7,327	3,157	2,456	**-2,897**
2007/08	15,935	5,765	8,714	2,668	2,675	**-3,888**
2008/09	19,331	7,269	8,260	2,402	2,408	**-1,009**
2009/10	15,117	5,844	6,233	2,162	2,168	**-1,291**
2010/11	14,306	4,325	6,939	2,043	1,489	**-489**
2011/12	16,948	5,297	4,933	2,180	1,589	**1,018**
2012/13	15,567	4,778	5,565	1,962	1,430	**1,832**
2013/14	19,633	5,511	5,463	1,745	1,570	**5,344**
2014/15	22,640	5,919	5,808	1,777	1,599	**7,537**
2015/16	24,994	6,744	6,273	1,672	1,504	**8,800**
2016/17	20,416	6,998	5,338	2,049	1,632	**4,399**
2017/18	24,440	6,711	5,349	1,944	1,548	**8,888**
2018/19	25,570	5,594	4,902	1,831	1,458	**11,784**
2019/20	18,573	6,333	5,731	2,262	2,446	**1,802**
2020/21	11,704	6,232	5,709	2,221	2,402	**-4,860**
2021/22	13,474	5,759	5,777	2,144	2,318	**-2,525**

[a] Adjusted for sample bias. Values are in nominal terms.

Source: BDO EconSearch analysis

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