ECONOMIC INDICATORS FOR THE COMMERCIAL FISHERIES OF SOUTH AUSTRALIA SUMMARY REPORT 2020/21

A Report for the Department of Primary Industries and Regions

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Prepared by

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ABBREVIATIONS

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABS	Australian Bureau of Statistics
CCSBT	Commission for the Conservation of Southern Bluefin Tuna
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 of Primary Industries and Regions
R&M	repairs and maintenance
RBA	Reserve Bank of Australia
SA	South Australia
SARDI	South Australian Research and Development Institute
SBT	Southern Bluefin Tuna
TAC	total allowable catch
TACC	total allowable commercial catch

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1. INTRODUCTION

1.1. Background

For 24 years, 1997/98 to 2020/21, BDO EconSearch has prepared economic and social indicators for each of South Australia's commercial fisheries. These indicators have been prepared on the basis of licence holder surveys (usually conducted in each fishery every 3 years), SARDI catch and effort and GVP data, PIRSA cost of management and quota transfer data and many other primary and secondary sources.

To broadly classify different types of economic indicators it is useful to recognise those that have meaning *for individual licence holders* and the indicators that are pertinent *fishery wide*.

The fishing business or boat level indicators generally relate to some measure of business profitability. These indicators include average boat income, fixed costs, variable costs, gross operating surplus, profit at full equity and return on investment.

The fishery wide indicators, by contrast, are concerned with costs and revenues at the broader industry and, in some cases, economy wide level. These indicators include gross value of production (GVP), beach price, cost of management services, contribution to the state's economy in terms of gross state product (GSP) and employment, and economic rent.

This report provides a summary of the boat level and industry wide indicators that have been collected, calculated and estimated over the last 20 years.

1.2. Report Format

Section 2 notes the primary objectives of fisheries management in South Australia and explains how economic considerations are fundamental to the principles of ecologically sustainable development.

Section 3 sets out the five broad areas into which the economic indicators are categorised for reporting purposes, namely:

- catch and GVP
- management costs
- financial indicators (boat level)
  - operating income
  - operating costs
  - profitability
- contribution to the SA economy
- net economic return.

Section 4 provides annual trend data for indicators that, although outside the control of the commercial sector, have a significant bearing on fishery performance. These indicators are:

- fuel prices
- interest rates
- wage rates
- prices for other inputs

- exchange rates.

Sections 5 to 14 present the 20 year economic trends for each fishery in terms of the indicators spelt out in Section 3. Each section is prefaced by a summary of the management objectives for the fishery, highlighting the economic performance indicators and trigger points explicit in the management plan for the fishery. Economic trends are reported for each South Australian commercial fishery, namely:

- Abalone Fishery (Section 5)
- Blue Crab Fishery (Section 6)
- Charter Boat Fishery (Section 7)
- Lakes and Coorong Fishery (Section 8)
- Marine Scalefish Fishery (Section 9)
- Northern Zone Rock Lobster Fishery (Section 10)
- Sardine Fishery (Section 11)
- Spencer Gulf Prawn Fishery (Section 12)
- Gulf St Vincent Prawn Fishery (Section 13)
- Southern Zone Rock Lobster Fishery (Section 14)

Section 15 is presented in a format similar to Sections 5 to 14, providing aggregate data for all commercial fisheries over the 20-year period, 2001/02 to 2020/21.

2. OBJECTIVES OF FISHERIES MANAGEMENT IN SA

The primary objective of the *Fisheries Management Act 2007* and, accordingly, of the fisheries management in South Australia (SA) is to protect, manage, use and develop South Australia's aquatic resources in a manner that is consistent with the principles of ecologically sustainable development. PIRSA Fisheries is the management agency for SA commercial fisheries and is, therefore, responsible for achieving and reporting the objectives of the *Fisheries Management Act 2007*.

Ecologically Sustainable Development (ESD) involves "Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased" (Commonwealth of Australia, 1992).

Decision-making and management to achieve ESD requires consideration of short and long-term economic, social and environmental implications. For fisheries, implementing ESD requires consideration of the effect of management decisions on the target species and rest of the ecosystem, on the economic health of the fishery (such as the profits of commercial fishers) and community satisfaction (Fletcher, et al., 2002).

Fisheries management plans are developed periodically for each SA commercial fishery. These plans set out the management objectives and strategies for achieving these objectives including performance indicators and trigger points for review or action.

Management plans are prepared to assist in decision-making by Government in managing South Australia's commercial fisheries in an ecologically sustainable and economically efficient manner, while maximising returns to the community.

In each of the following sections that relate to individual fisheries (Sections 5 to 14), the performance indicators and trigger points set out in the management plans are, where available, detailed with comment on the reported indicator value and instances where trigger points have been reached.

3. MEASURING PERFORMANCE AGAINST FISHERIES MANAGEMENT OBJECTIVES

Economic indicators reported for individual fisheries are categorised into five broad areas, namely:

- catch and GVP
- management costs
- financial indicators (boat level)
  - operating income
  - operating costs
  - profitability
- contribution to the SA economy
- net economic return

The methods and assumptions used in calculating the economic indicators are summarised in the following sections. Detailed definition of each of the economic indicators reported for individual fisheries is provided in Appendix 1.

3.1. Catch and GVP

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. Changes in GVP are, therefore, the result of changes in catch and/or price.

Calculation of GVP is the basis for preparing a number of other measures reported in the financial and economic analyses of a fishery.

3.2. Management Costs

South Australian commercial fisheries operate under full cost recovery. Accordingly, licence fees are set to cover the cost of managing 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).

These measures are reported over time and changes can be compared to specific targets set out in individual management plans. Calculation of the licence fee as a proportion of total fishery GVP allows for comparison between fisheries.

3.3. Financial Performance Indicators

A number of the individual fishery management plans set out targets and objectives relating to operating costs and financial performance indicators. Financial performance indicators measure costs and revenues at a fishery, boat or business level.

Financial performance indicators have been prepared and monitored over time to track the average performance and profitability of licence holders in a fishery. Financial performance estimates reported in Sections 5 to 14 for the years 2001/02 to 2020/21 are based on different survey samples. Some of the difference between years is, therefore, attributable to sampling variability.

3.3.1. Operating income

Total Boat Income is the cash receipts received by the individual boat or business and is calculated as catch multiplied by beach price. While total boat income isn't a measure of the economic health of a fishery in itself, it is necessary to calculate income in order to determine profitability measures.

3.3.2. Operating costs

Variable costs are costs that are dependent on the level of catch or the amount of time spent fishing. As catch or fishing time increases, variable costs increase. For some fisheries it is useful to monitor changes in individual cost items over time. However, the primary purpose of calculating variable costs is to calculate profitability measures. Separation of variable costs from fixed costs enables the calculation of gross margin.

Fixed costs are costs that remain fixed regardless of the level of catch or amount of time spent fishing. These costs are likely to remain relatively constant, when measured in current dollar terms, from year to year. Fixed costs are used in the calculation of various profitability measures.

The labour costs reported for each fishery 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. Imputed unpaid labour is divided into variable (fishing and repairs and maintenance) and fixed (management and administration) components based on the licence holder surveys.

3.3.3. Profitability

One basic measure of financial performance is profit. Profit is a function of the value of fish caught and the cost of obtaining the fish. There are a number of measures of profitability that could be used to measure a fishery's financial performance, including:

- boat gross margin
- gross operating surplus
- boat business profit
- profit at full equity.

Boat gross margin is a basic measure of profit that assumes capital has no alternate use and that as fishing activity varies there is no change in capital or fixed costs. 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. 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. It is a useful absolute measure of the economic performance of fishing firms.

Profits of commercial fishers are a key indicator of the economic health of a fishery. Maintaining the economic health of fisheries is one of the objectives of ESD as set out in the *Fisheries Management Act 2007*.

3.3.4. Return to capital

There are a number of interpretations of the concept of return to capital. For each fishery, capital is considered to be the investment employed by licence holders 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 rate of return to total capital is calculated to be profit at full equity as a percentage of total capital employed.

The value of licences represents a significant proportion of the total capital employed by licence holders in each fishery. The reported licence values for 2001/02 to 2020/21 represent licence holders' estimates of the value of their licences based on survey responses. In some fisheries there was a high degree of variability in the licence holders' estimates of licence value.

3.4. State and Regional Economic Contribution

Economic contributions at the state and regional levels are based on input-output models prepared for the Department of Premier and Cabinet.

In order to compile a representative cost structure for the fishing sector, costs per boat were derived from data provided by operators in the fisheries in the most recent licence holder survey. On an item-by-item basis, the expenditures were allocated between those occurring in the fishing 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, 2018/19). Estimates of 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 impact avoids the problem of double counting that may arise from using value of output for this purpose.

3.5. Net Economic Return

Net economic return 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). Net economic return is maximised when economic efficiency is maximised. Net economic return can also be defined as the difference between the price of a good produced using a natural resource and the unit costs of turning that natural resource into the good.

The unit costs or long term costs all need to be covered if the licence holder is to remain viable in a 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. 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.

Commercial fishing operations in Australia are not risk free. Returns can be impacted both positively and negatively by factors such as natural events, changes in market conditions, disease, and management regulations. 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.

4. FACTORS THAT INFLUENCE THE ECONOMIC CONDITION OF FISHERIES

There are a number of factors that, although outside control of the commercial sector, can influence the economic condition of commercial fisheries and fishing businesses. These indicators include:

- fuel prices
- interest rates
- wage rates
- prices for other inputs
- exchange rates.

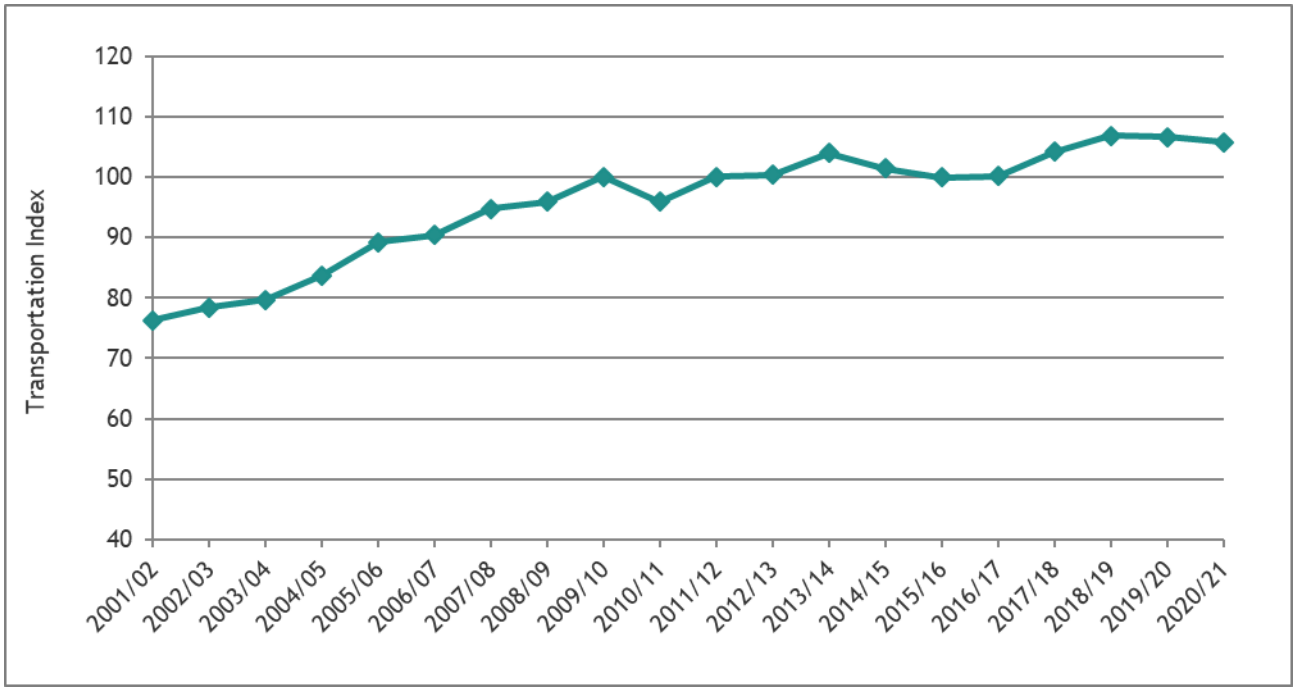
Trends and changes in these factors over the period 2001/02 to 2020/21 are summarised in the following sections.

4.1. Fuel Prices

For most commercial fisheries, fuel is a significant cost. Accordingly, changes in the price of fuel can have a significant impact on profitability of fishing enterprises. The transportation index for Adelaide over the period 2001/01 to 2020/21 is illustrated in Figure 4-1. The transportation index provides an indication of the changes in the cost of fuel between years rather than the actual price of fuel.

The transportation index followed an increasing trend over the 20 years. The average cost of transport (largely determined by fuel) increased by 39 per cent between 2001/02 to 2020/21 (Figure 4-1).

Figure 4-1 Transportation index for Adelaide, 2001/02 to 2020/21



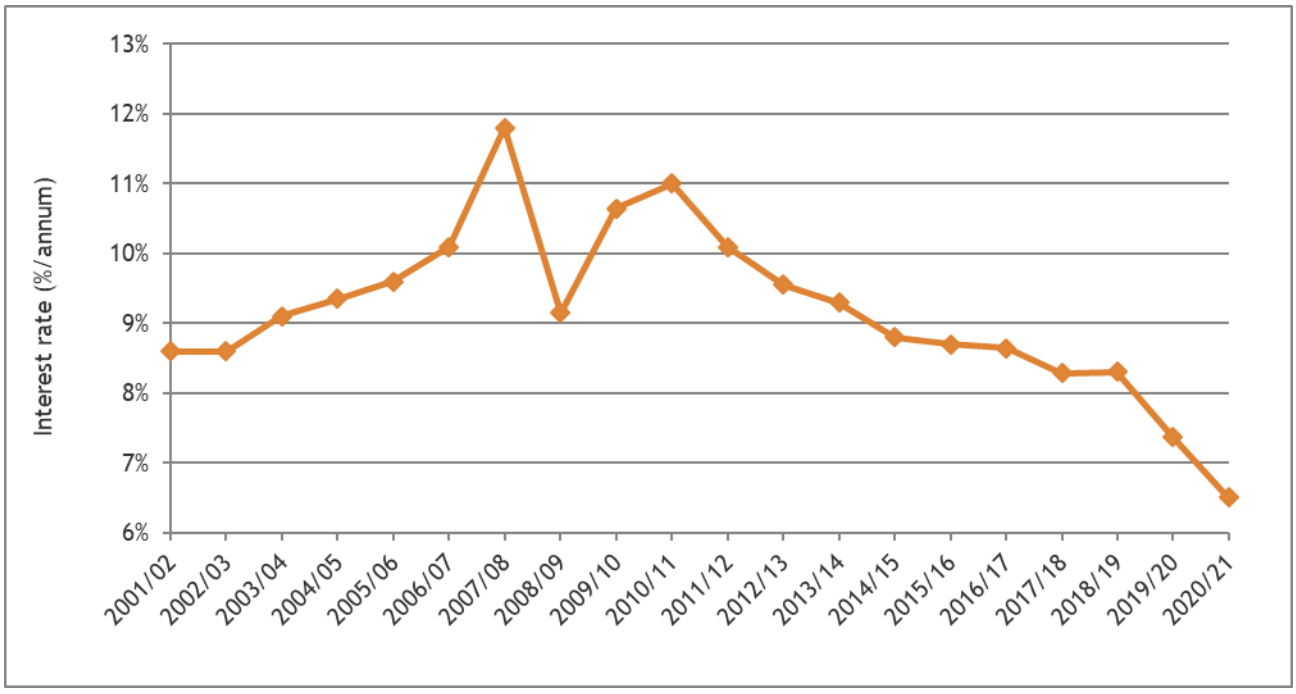
Source: Australian Bureau of Statistics (2021a)

4.2. Interest Rates

Interest payments are also significant for some commercial fishing businesses in SA. The cost of borrowing to finance the purchase of fishing licences, quota, vessels, gear and equipment is influenced by changes in interest rates. The RBA indicator lending rate for small business is illustrated in Figure 4-2 for the period 2001/02 to 2020/21.

Interest rates for small businesses generally increased between 2001/02 and 2007/08, but have declined since (Figure 4-2). An increase in interest rates has the effect of increasing the overhead costs of a fishing business.

Figure 4-2 Interest rates for Adelaide, 2001/02 to 2020/21



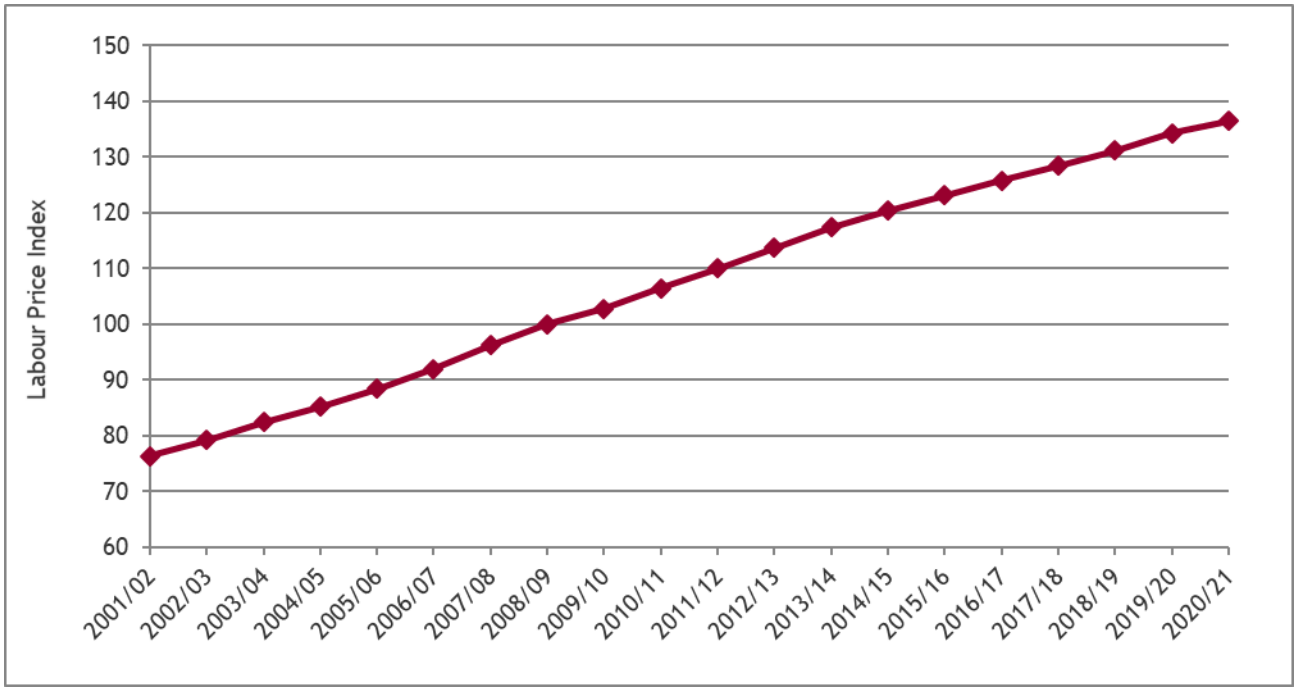
Source: Reserve Bank of Australia (2021a)

4.3. Wage Rates

Wages for a skipper, crew and management/administrative support are a significant cost for a large number of commercial fishing licence holders in SA. In order to attract quality employees to the industry the wages offered need to be competitive with other industries. The SA labour price index is illustrated in Figure 4-3 for the period 2001/02 to 2020/21.

The cost of labour increased steadily over the entire 20-year period (Figure 4-3). For those fisheries that do not pay the skipper and crew on a shares basis an increase in the cost of labour results in an increase in fishing costs and a decrease in the profitability of the fishing business.

Figure 4-3 SA labour price index, 2001/02 to 2020/21



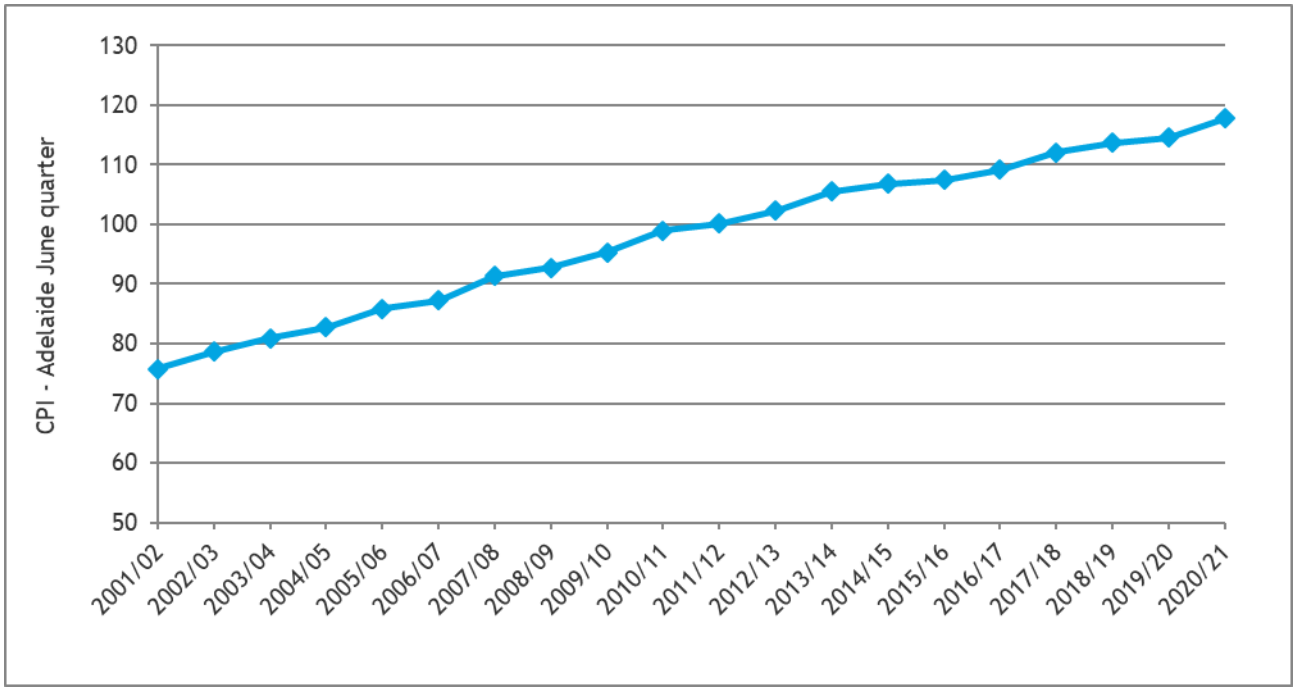
Source: Australian Bureau of Statistics (2021b)

4.4. Prices for Inputs

In addition to labour and fuel, fishing businesses purchase a large number of other inputs, the prices of which are likely to vary over time. The consumer price index (CPI) highlights changes in the general price level. The CPI for Adelaide is illustrated in Figure 4-4 for the period 2001/02 to 2020/21.

The CPI for Adelaide increased steadily over the 20-year period from 2001/02 to 2020/21 (Figure 4-4). An increasing CPI highlights a general increase in the cost of inputs for fishing.

Figure 4-4 Consumer price index for Adelaide, 2001/02 to 2020/21



Source: Australian Bureau of Statistics (2021a)

4.5. Exchange Rates

The price received for exported catch, the price for competing import products and the cost of purchasing imported inputs are influenced by the value of Australian dollar relative to the currency of trading partners. Changes in the value of the Australian dollar relative to the United States dollar and Japanese yen are illustrated in Figure 4-5.

An appreciation of the Australian dollar, relative to trading partners, generally results in a decline in the price received for exported products. This will impact on export orientated fisheries such as Abalone, Rock Lobster and, to a lesser extent, Prawns.

Currency appreciation also has the effect of reducing the domestic price of imported goods. A reduction in price of imported goods is beneficial if those goods are inputs to fishing activities, e.g. boat engines and equipment.

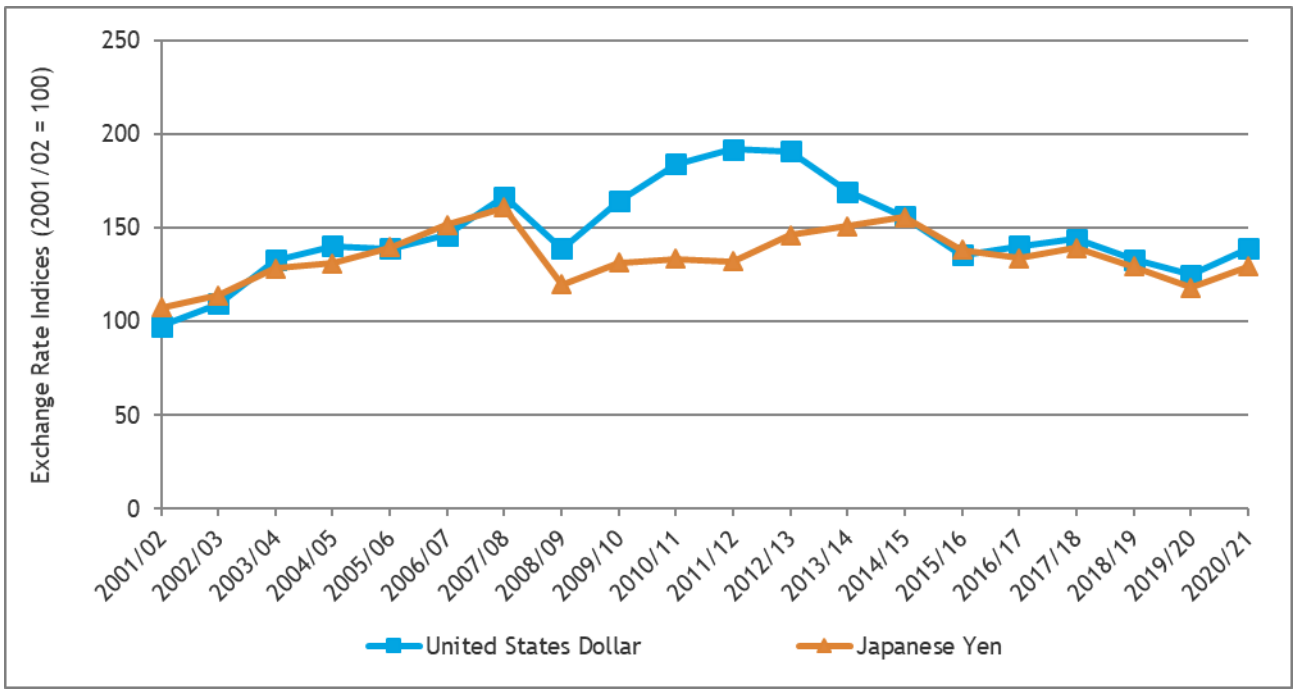
However, an appreciation of the Australian dollar generally has the effect of reducing the price of competing imported seafood products. This is particularly problematic for sectors such as the Prawn fisheries which face strong competition from imported aquaculture product.

A depreciation of the Australian dollar generally has the opposite effect. The price received for exported products increases and the price for imported imports and competing products will also rise.

There has been incremental growth in the value of the Australian dollar against the Japanese Yen between 2001/02 and 2020/21 despite falls in 2008/09, 2015/16 to 2016/17 and 2018/19 to 2019/20. The trend of the Australian dollar against the US dollar, while following a similar path, has been slightly more volatile. Though experiencing the same incremental growth (and significant fall in 2008/09) the currency appreciated strongly between 2008/09 and 2012/13 before its subsequent depreciation from 2013/14 to 2015/16. It

again appreciated in value in 2016/17 and 2017/18 before declining in 2018/19 and 2019/20, and appreciated again in 2020/21 (Figure 4-5).

Figure 4-5 Exchange rate indices, 2001/02 to 2020/21



Source: Reserve Bank of Australia (2021a)

5. ABALONE FISHERY

5.1. Economic Objective of the Abalone Fishery

According to the Management Plan for the South Australian Commercial Abalone Fishery (PIRSA 2021a), management of the fishery has a number of biological, economic, environmental and social objectives.

In order to achieve these objectives, the management plan sets out specific biological, ecological, social and economic objectives for the fishery. There are four key goals for the South Australian Commercial Abalone Fishery:

1. Ensure the abalone resource is sustainably harvested
2. Optimum use and equitable distribution of the abalone resource to the benefit of the community
3. Minimise impacts on the ecosystem
4. Cost effective and participative management of the fishery

The economic and social objectives of the fishery, as described by the management plan, are summarised in Table 5-1. These performance indicators are presented in the following sections.

A report on economic indicators for the Abalone fishery is prepared annually to assist in measuring the performance of the fishery against management objectives. The economic indicators for the fishery, most recently reported in BDO EconSearch (2022a), are summarised under the following headings:

- catch and gross value of production (GVP) (Section 5.2)
- management costs (Section 5.3)
- boat level financial performance indicators (Section 5.4)
  - average income
  - operating costs
  - cost-price squeeze
  - profitability
  - return on investment
- contribution to the SA economy (Section 5.5)
  - GSP
  - household income
  - employment
- net economic return (Section 5.6).

Indicators are reported in the following sections for the period 2001/02 to 2020/21. It should be noted that economic indicators are based on different survey samples and techniques. Some of the differences between years are, therefore, attributable to sampling variability.

Table 5-1 Economic and social objectives of the SA Abalone Fishery

Goal	Objectives	Strategies	Performance indicators	Reference/trigger points
2. Optimum use and equitable distribution of the abalone resource to the benefit of the community	2b. Maintain a flow of economic benefit from the fishery to the South Australian community	2bi. Develop and implement management arrangements that allow commercial operators to maximise operational flexibility, economic efficiency and returns 2bii. Communicate sustainability and economic outcomes of the fishery to the broader community	Gross Value of Product (GVP) Gross Operating Surplus (GOS) Profit at full equity Licence value Value of quota units Economic rent (net economic return) Return on capital	Economic indicators are monitored annually A decline in economic rent (net economic return) over three consecutive years
4. Enable effective and participative management of the fishery	4a. Promote cost-effective and efficient management of the fishery, in line with the governments cost recovery policy	4ai. Develop and implement management arrangements that are effective at achieving management objectives whilst minimising costs 4aii. Determine and discuss the real costs of management, research and compliance for the fishery on an annual basis 4aiii. Recover licence fees from commercial licence holders, sufficient to cover the attributed costs of management, research and compliance of fishery and report in accordance with cost-recovery policy	Fee per licence holder Licence fees as a proportion of total cash costs	

Indicators reported in economic reports.

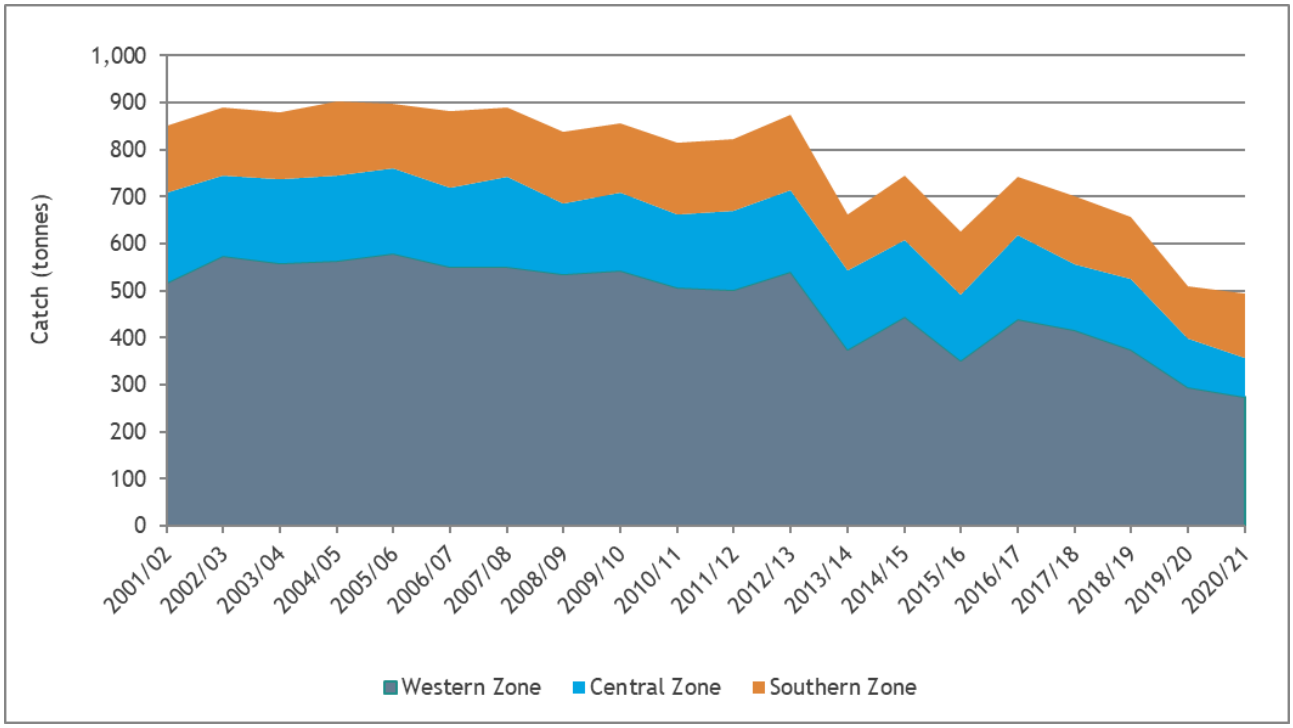
Trigger points that can be calculated from reported economic indicators

Source: PIRSA 2021a

5.2. Catch and Gross Value of Production

The data shown in Figure 5-1 indicate that the total catch of Abalone from SA remained relatively steady between 2001/02 and 2012/13. This can be credited to the stable performance of all three Abalone Zones. The catch decreased below 700 tonnes in 2013/14, began to recover in 2014/15 before falling once again in 2015/16. Part of the fall in catch in 2015/16 was the result of licence holders in the Western Zone voluntarily withholding harvesting quota due to concerns about the harvest control rule and in part a result of a delay in catch towards the end on the 2016 calendar year in the Central Zone. Total catch recovered once again in 2016/17 only to fall again continuously for the past four years and reach a low of 493t in 2020/21. This sharp decline in catch is a 23 per cent decrease on the previous year, and a 34 per cent decrease on the last peak in 2016/17.

Figure 5-1 Total catch from the SA Abalone Fishery, 2001/02 to 2020/21

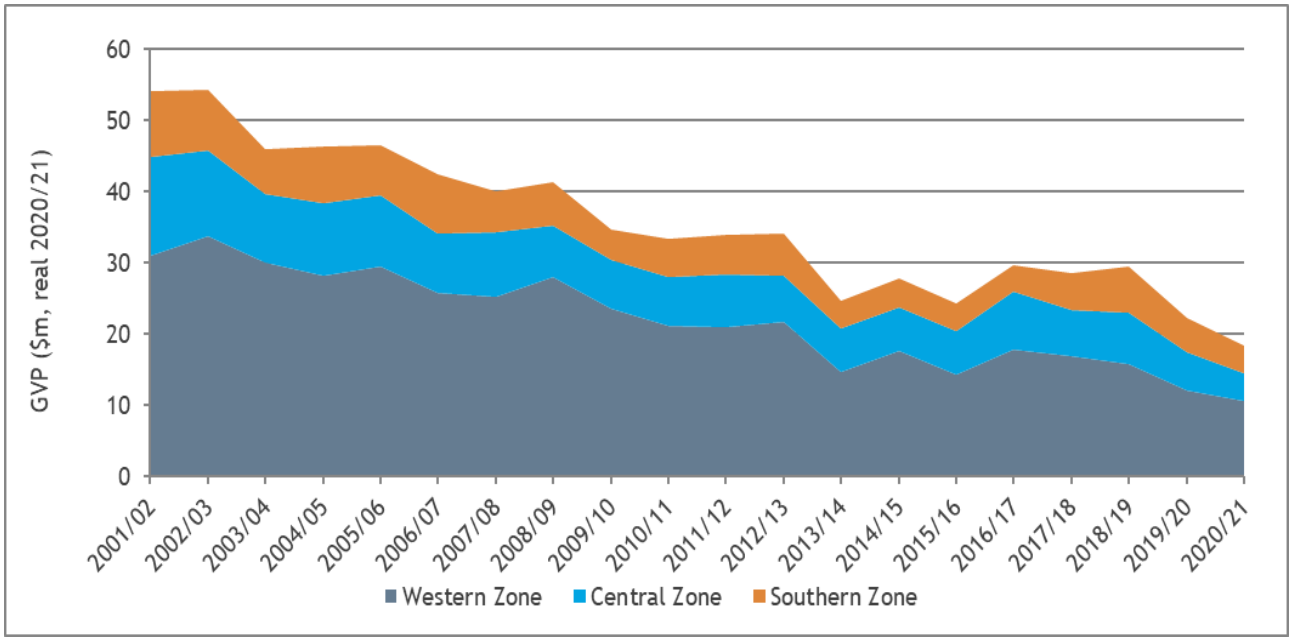


Source: BDO EconSearch (2022a)

The total GVP for the SA Abalone Fishery for the period 2001/02 to 2020/21 is illustrated in Figure 5-2. The value of the catch in each zone began a steady decline in 2001/02 and continued over the remainder of the period, leading to an overall decrease in real value of catch of 66 per cent. This was due to a decrease in real price (42 per cent) and volume of catch (42 per cent) over the same period. The real price of South Australian Abalone (in 2020/21 dollars) declined from $63.63/kg in 2001/02 to $37.19/kg in 2020/21.

The average price of Abalone in 2020/21 in the Central Zone ($46.96/kg) was higher than the Western Zone ($38.56/kg) and the Southern Zone ($28.41/kg). Greenlip Abalone generally commands a higher price than Blacklip, the Central Zone is a primarily a Greenlip Fishery, Western Zone a half-and-half and Southern Zone is usually primarily a Blacklip Fishery.

Figure 5-2 SA Abalone Fishery gross value of production, 2001/02 to 2020/21 [a]

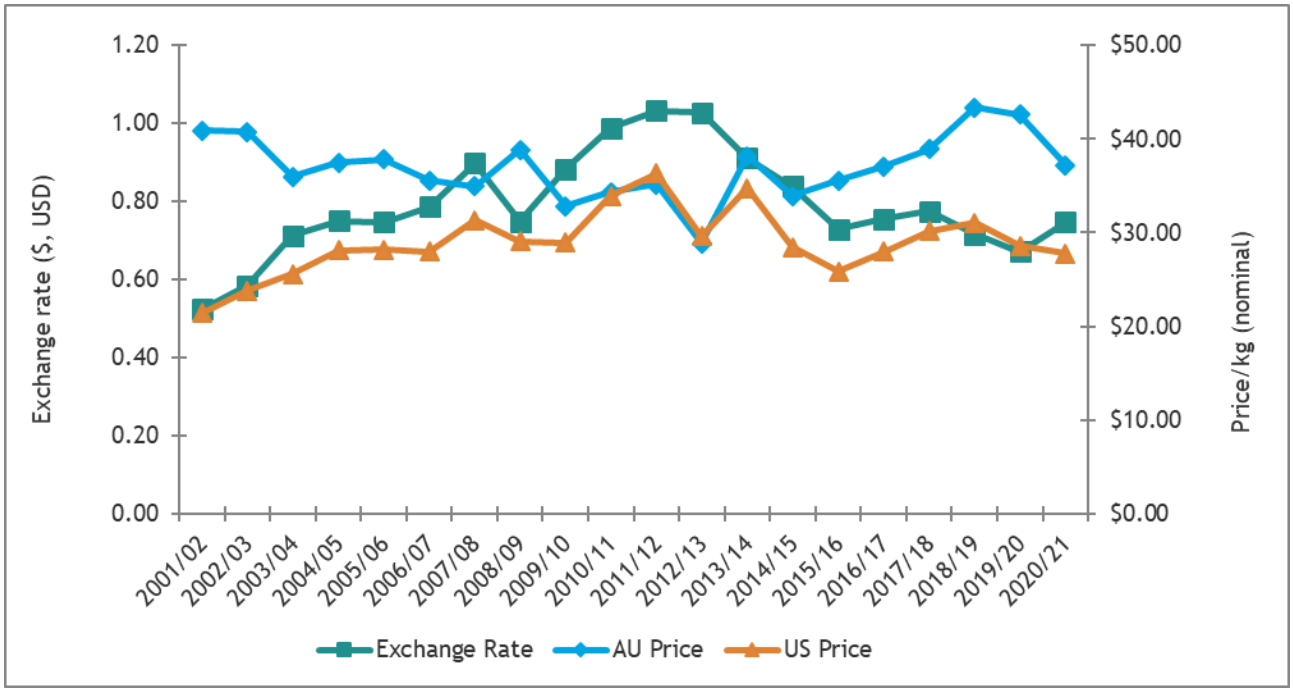


[a] Estimates of GVP are expressed in real 2020/21 terms.

Source: BDO EconSearch (2022a)

Most Abalone caught in South Australia is exported overseas. The value of the Australian dollar can have a significant impact on the economic performance of the fishery since the Australian dollar influences the price of Australian exports overseas. The relationship between the price of Abalone and the exchange rate over the past 20 years can be observed in Figure 5-3. There is a moderate inverse relationship between the price of Abalone and the USD and HKD. Thus, when the Australian dollar depreciates, the average price received by SA Abalone fishers tends to increase. While this relationship is not expected to hold in each individual year, it does hold over the longer periods as evidenced by the relative trends in Figure 5-3. Between 2012/13 and 2015/16, the exchange rate depreciated significantly but price only increased marginally in these years. The relationship here suggests that price can be expected to rise if the exchange rate trend continues.

Figure 5-3 Exchange rate (USD) and average price for SA Abalone, 2001/02 to 2020/21



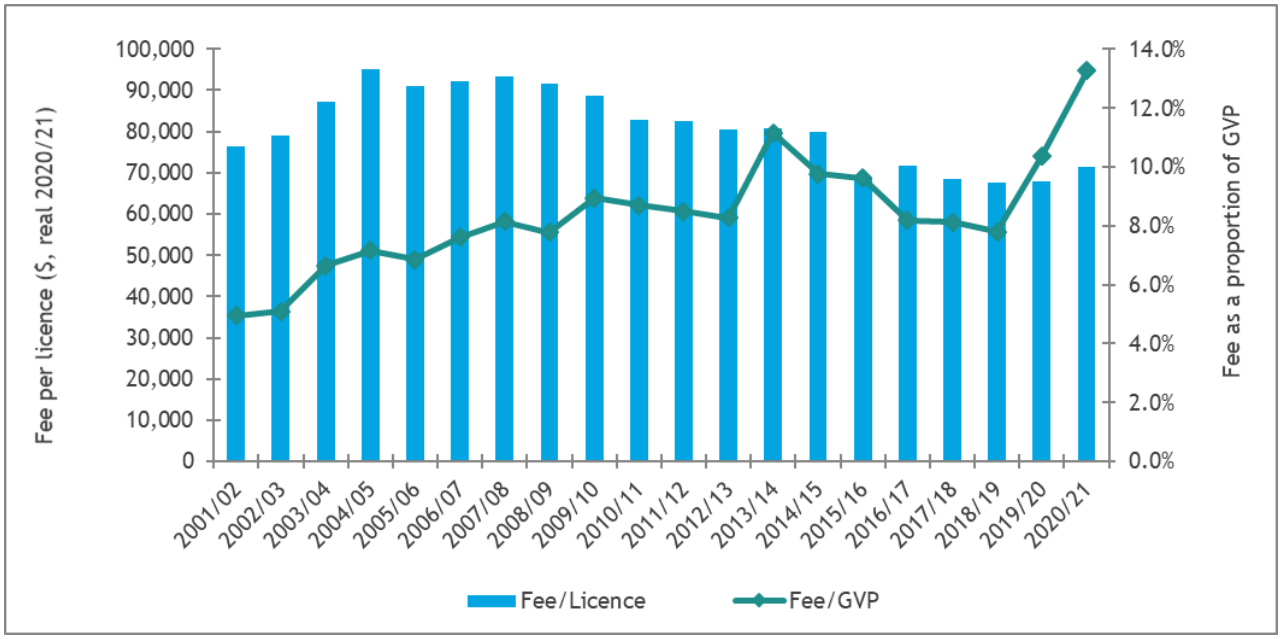
Source: BDO EconSearch (2022a)

5.3. Management Costs

The average management fee per Abalone licence and the licence fee as a proportion of GVP are illustrated in Figure 5-4. Licence fees as a percentage of GVP followed an increasing trend between 2001/02 and 2020/21, from 4.9 per cent to 13.3 per cent. Over the period from 2001/02 to 2013/14, and again in 2019/20 and 2020/21, GVP declined. This resulted in a significant increase in the proportion of licence fee to GVP. While there have been minor fluctuations in aggregate management fees, there were no significant changes in its components (compliance, stock assessment and others) between 2001/02 and 2020/21.

One of the objectives of management of the fishery is full cost recovery (Table 5-1). To achieve this objective, licence fees are set at a level sufficient to recover the costs of managing the fishery that are attributable to the commercial sector. PIRSA Fisheries and Aquaculture and industry associations are involved in annual negotiations in relation to the proposed compliance and research programs and associated costs. Fees per licence followed an increasing trend between 2001/02 and 2004/05 before decreasing until 2015/16 and have been stable since (Figure 5-4).

Figure 5-4 Management fee per licence holder and as a proportion of gross value of production in the SA Abalone Fishery, 2001/02 to 2020/21[a]



[a] Estimates of the fee per licence holder are expressed in real 2020/21 terms.

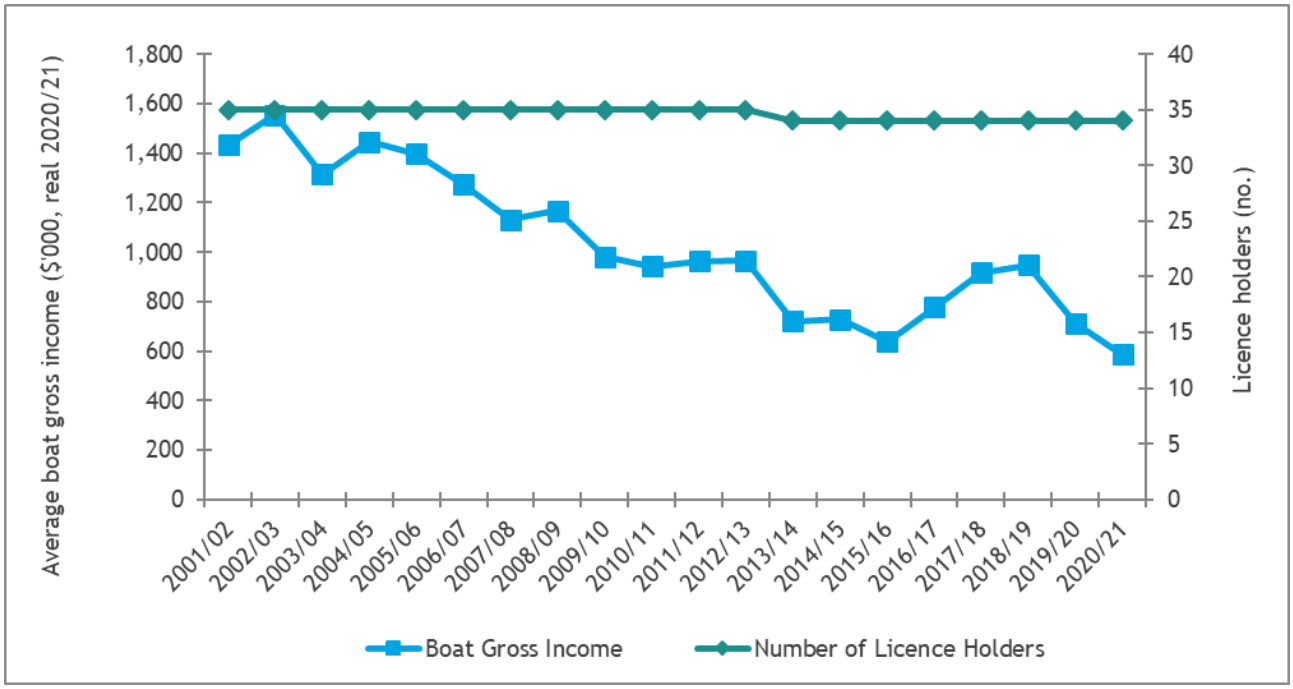
Source: BDO EconSearch (2022a)

5.4. Financial Performance

5.4.1. Average Income

Average real income and total number of licences in the fishery for the period 2001/02 to 2020/21 is illustrated in Figure 5-5. In 2013/14, the total number of licences was reduced by one in the Western Zone through the Commercial Fisheries Voluntary Catch/Effort Reduction Program to mitigate any potential biological or economic effects from the redistribution of commercial fishing effort on establishment of marine parks in the state. The Southern and Central Zones licence numbers remained unchanged over the same period. Average real income per licence followed a steady decreasing trend, with small fluctuations, from 2001/02 to 2015/16. Over the following three years from 2016/17 to 2018/19, average boat gross income began to slowly recover before falling sharply again in 2019/20 and 2020/21. Over the 20 year period average boat gross income declined by 66 per cent, including an 18 per cent drop between 2019/20 and 2020/21. The decreasing trends follow the overall decrease in GVP in the fishery over the same periods (Figure 5-2).

Figure 5-5 Average real income per licence holder in the SA Abalone Fishery, 2001/02 to 2020/21[a]



[a] Estimates of average boat gross income are expressed in real 2020/21 terms.

Source: BDO EconSearch (2022a)

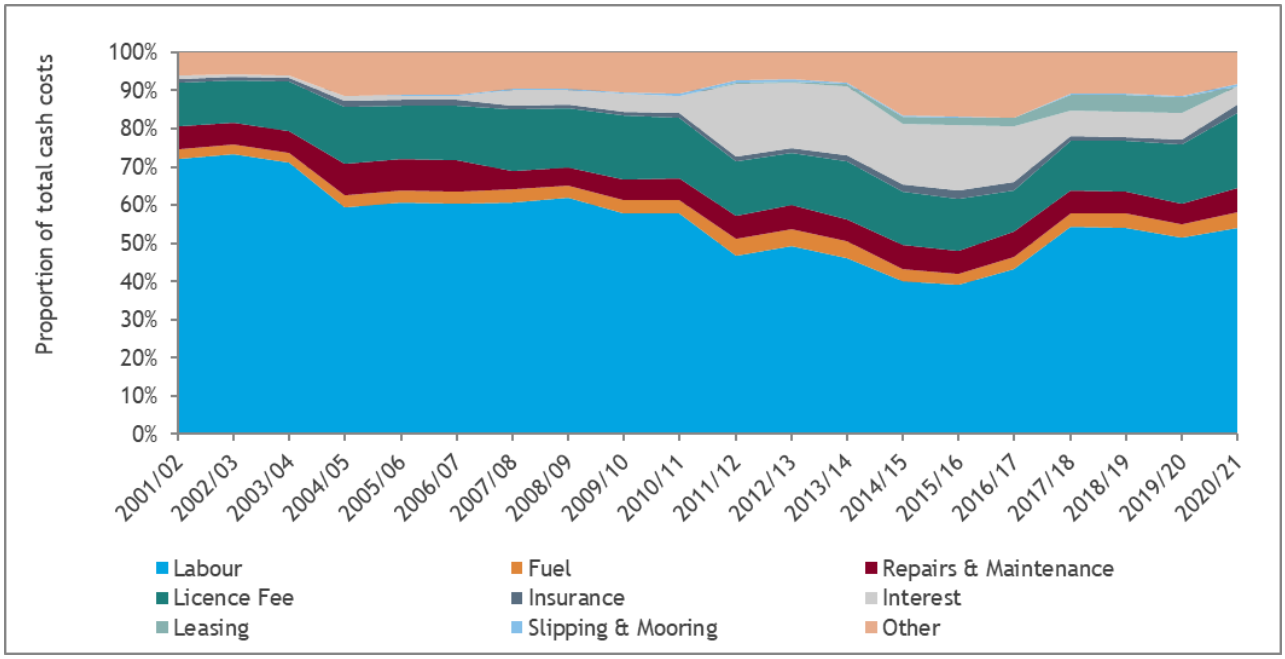
5.4.2. Operating costs trends

A breakdown of major cost items as a proportion of total cash costs is illustrated in Figure 5-6. Labour costs accounted for the largest share of total cash costs since 2001/02, although the share has decreased over time, from 74 per cent in 2001/02 to 54 per cent in 2020/21. 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. Despite the decreasing trend, labour costs have been higher over the past four years, and only fell slightly in 2019/20. The first influence is a result of GVP recovering, and as most labour is paid as a percentage of GVP this leads to an increase in labour costs. Another reasons for the increase in labour costs could be due to a change in the survey sample. The 2016 survey has comparatively low estimates of labour costs when considering the figures provided in the 2013, 2018 and 2021 surveys.

Other significant cash costs were licence fees, repairs and maintenance, and interest (Figure 5-6). Interest payments were around 1 per cent of operating costs between 2001/02 and 2006/07 then peaked around 19 per cent in 2013/14. By 2020/21 interest payments had fallen to just 5 per cent of total cash costs.

The cash costs detailed in Figure 5-6 can be categorised as either variable or fixed costs and are illustrated in Figure 5-7 on an average per boat basis. Total variable costs fluctuated between years but generally followed a decreasing trend over the period 2001/02 to 2015/16 and then begins an increasing trend in to 2018/19, before declining into 2020/21. This decrease in variable costs is also likely attributable to the reduced number of days fished throughout 2019/20 and 2020/21, which resulted in less money spent on the resources required for a day of fishing. Total fixed costs have fluctuated much less from year to until and have followed a slight increasing trend from 2001/02 to 2011/12 where it began a slow decrease into 2020/21 (Figure 5-7).

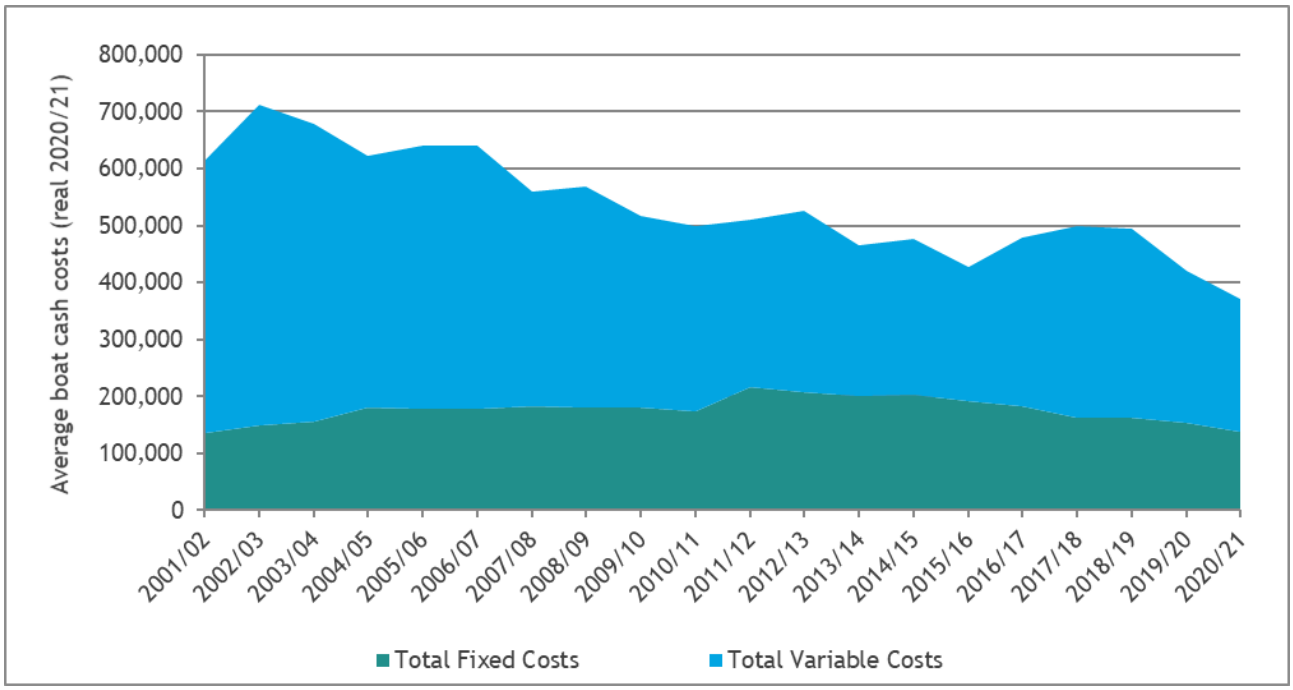
Figure 5-6 Cost shares in the SA Abalone Fishery, 2001/02 to 2020/21[a]



[a] Financial performance estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Source: BDO EconSearch (2022a)

Figure 5-7 Average total costs in the SA Abalone Fishery 2001/02 to 2020/21[a]



[a] Estimates of average costs are expressed in real 2020/21 terms.

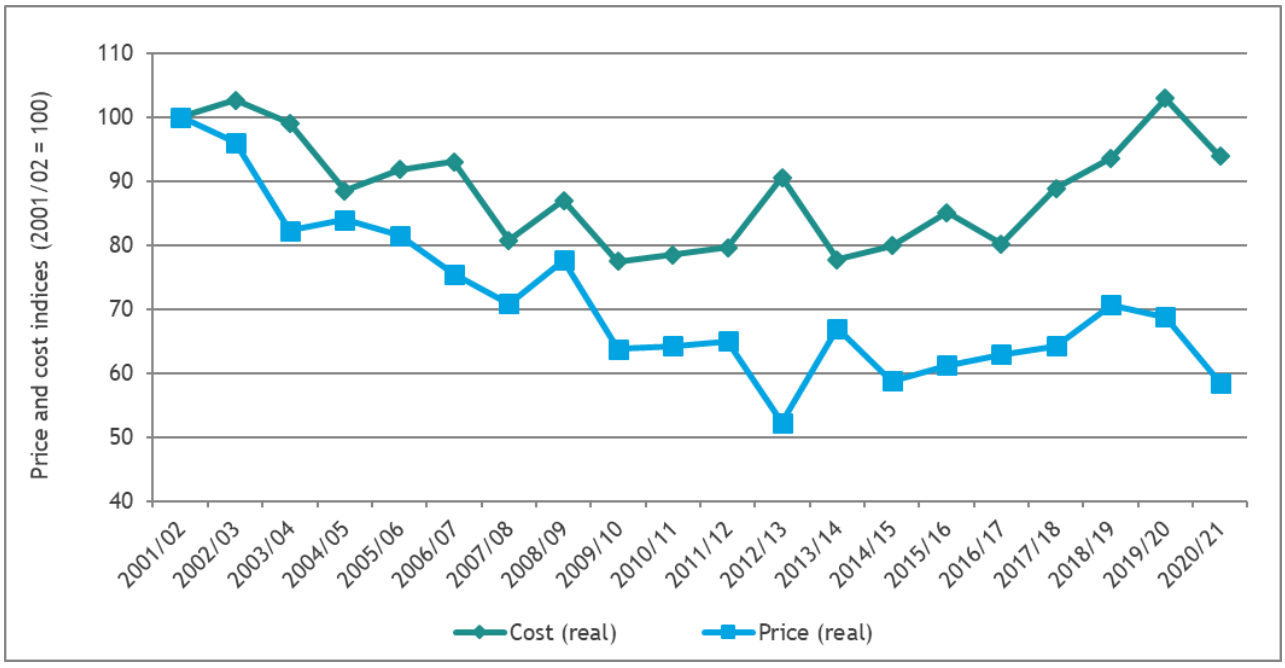
Source: BDO EconSearch (2022a)

5.4.3. Costs price squeeze

Real price and cost indices (in 2020/21 dollars) for the SA Abalone Fishery for the years 2001/02 to 2020/21 are summarised in Figure 5-8. These indicators are derived from the average price and average cost per kilogram of catch. After peaking in 2001/02 at $63.63/kg in real terms, the average price followed a downward trend with some fluctuations, to 2012/13 where it began a gradual increase to 2018/19. However, average price fell marginally in 2019/20 before falling significantly in 2020/21. Overall, between 2001/02 and 2020/21, average price decreased by 42 per cent in real terms to $37.19 per kilogram (Figure 5-8).

The average costs of catching Abalone fluctuated between years but slowly fell from 2001/02 until 2009/10 after which time average costs began to generally increase despite a decline in 2020/21. The real average cost per kilogram for catching Abalone was $25.61 in 2020/21, a decrease from $28.08 in 2019/20 which was the highest value for the 20 year period (Figure 5-8).

Figure 5-8 Price and cost indicies for the SA Abalone Fishery, 2001/02 to 2020/21[a]



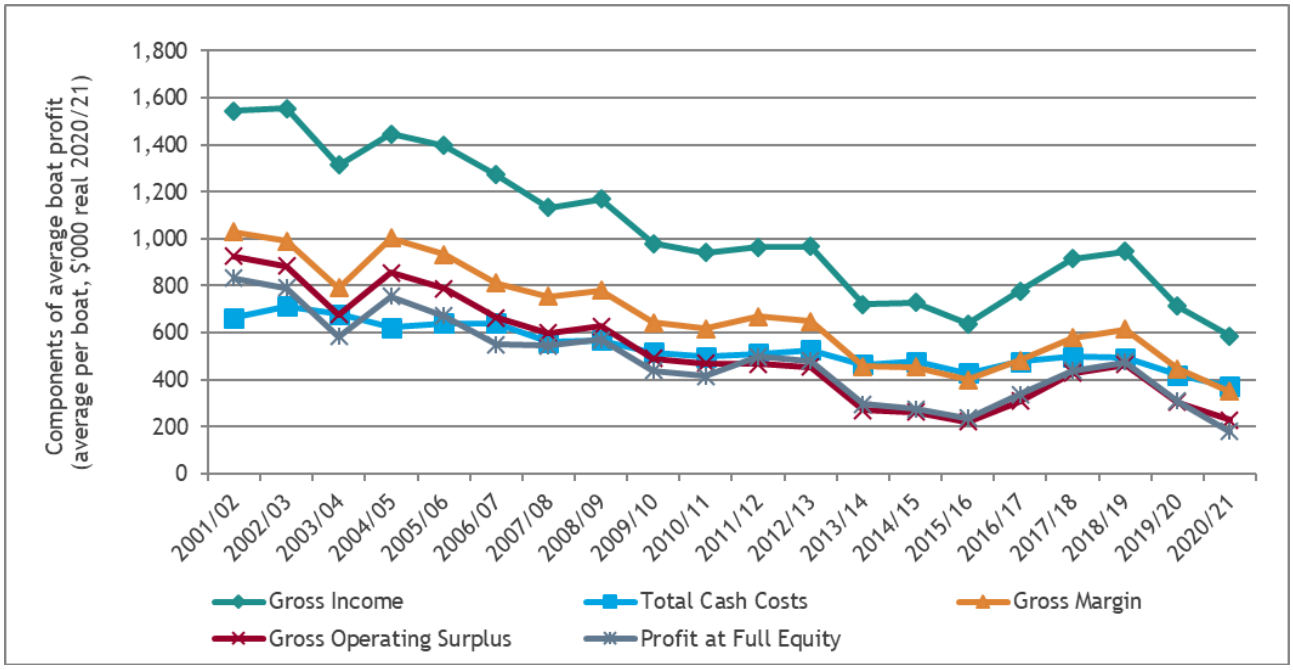
[a] Estimates of price and cost are expressed in real 2020/21 terms indexed against 2001/02.

Source: BDO EconSearch (2022a)

5.4.4. Profitability

Selected measures of profitability for the SA Abalone Fishery are summarised in Figure 5-9 for the years 2001/02 to 2020/21. Changes in each of the profitability measures for the fishery were closely related to the average income earned. Profitability measures generally followed a downward trend between 2001/02 and 2015/16 due largely to a decrease in average income driven by a decline in average product price over the period and a decline in catch. Between 2016/17 and 2018/19 profitability measures began to recover and saw numbers close to those last seen in 2012/13 (Figure 5-9). These measures dropped once again in 2019/20 and 2020/21 to continue the downward trend, which was mostly attributable to the fall in catch in 2019/20 and the decline in price in 2020/21.

Figure 5-9 Average income and profit per boat in the SA Abalone Fishery, 2001/02 to 2020/21[a]



[a] Estimates of income and profitability measures are expressed in real 2020/21 terms.

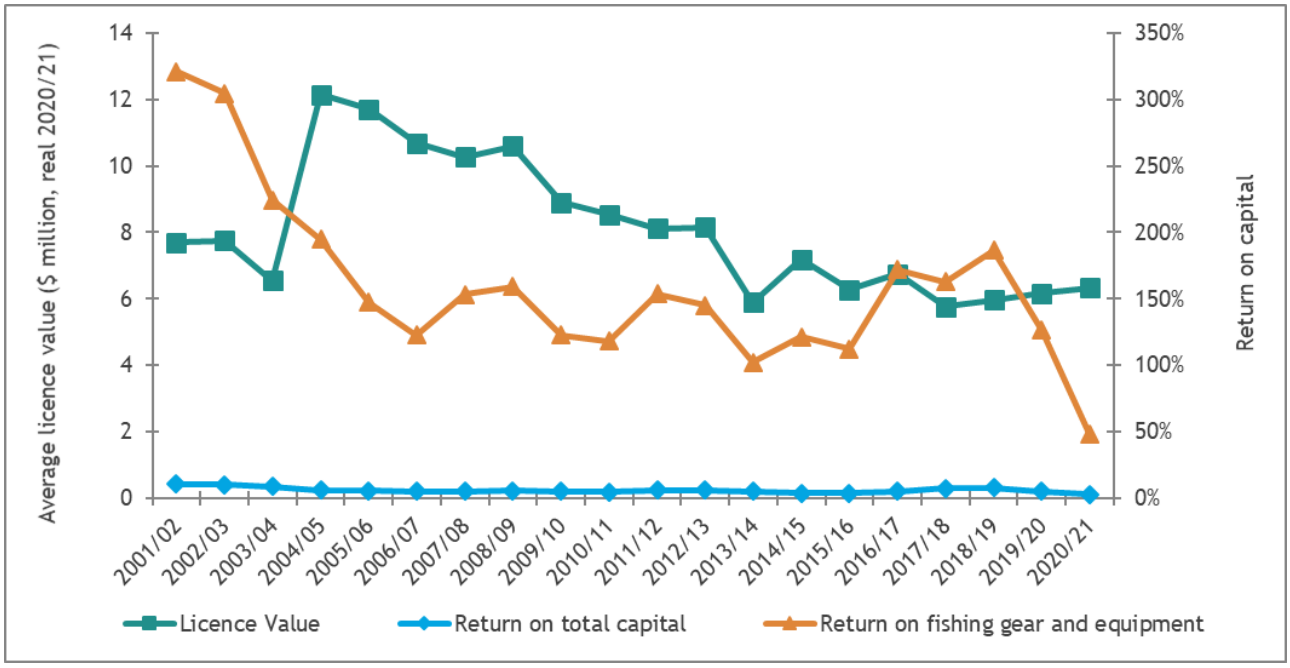
Source: BDO EconSearch (2022a)

5.4.5. Return to capital

Estimates of the average licence value and the rate of return to total capital are illustrated in Figure 5-10. 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.

The estimated rate of return to total capital for the fishery was fairly consistent with a gradual downward trend, with minor fluctuations, over the 20-year period (Figure 5-9 and Figure 5-10). The return to total capital reported here is equivalent to rental yield on licences and is not a measure of the profitability of the aggregate industry (i.e. the rate of return to fishing gear and equipment). Return on fishing gear and equipment declined rapidly between 2002/03 and 2004/05 then decreased more slowly, with some fluctuations, through to 2015/16. This measure increased in 2016/17 through to 2018/19 but then experienced a sharp decrease in 2019/20 before declining to a 20 year low in 2020/21. The profitability of the fishery is still evident in the estimated return on fishing gear and equipment in 2020/21 of 48.5 per cent, despite the fact that it fell significantly from 126 per cent in 2019/20. The decline between 2019/20 and 2020/21 is attributable to the increase in fishing gear and equipment capital (56 per cent) and decrease in profit at full equity (40 per cent). The increase in the investment of capital observed in the 2021 survey is likely due, in part, to the historically consistent high profitability of the Abalone Fishery allowing licence holders to reinvest their profits. It is also likely that some of this increase is due to sample variability.

Figure 5-10 Return on capital in the SA Abalone Fishery, 2001/02 to 2020/21[a]



[a] Estimates of average costs are expressed in real 2020/21 terms.

Source: BDO EconSearch (2022a)

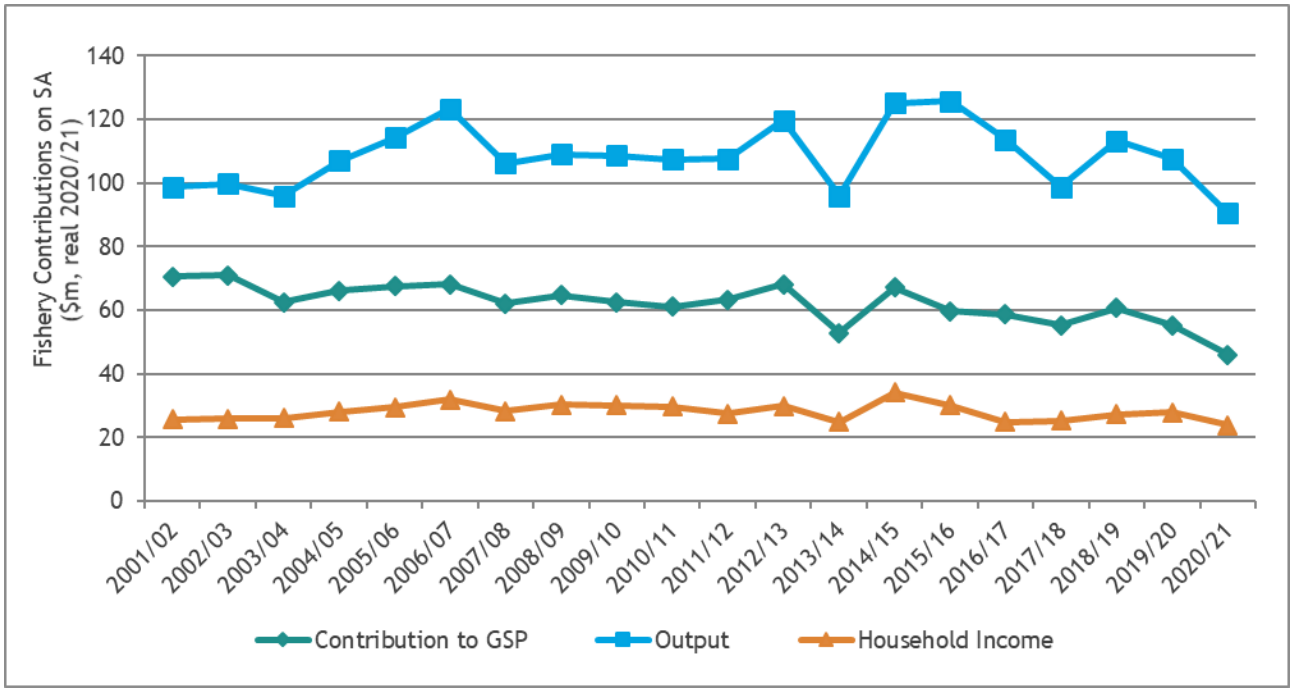
5.5. Contribution to SA Economy

Figure 5-11 and Figure 5-12 illustrate the total economic contribution [1] of the fishery on the SA economy for the 20 years, 2001/02 to 2020/21. 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, explaining the noticeable decline in these during 2020/21 (Figure 5-11). Employment (direct and indirect) increased overall between 2001/02 to 2018/19, and fell during 2019/20 and 2020/21 due to decreased fishing days and shut downs throughout COVID-19 pandemic (Figure 5-12). Between 2001/02 and 2020/21, there were fluctuations in GSP contributions, output, household income and employment but no clear trend. Contribution to GSP had the largest decrease of these indicators of around 35 per cent over the 20-year period. Overall, this is likely due to the decrease in total value of catch.

[1] Estimates of economic contribution for the period 2000/01 to 2002/03 do not include the contribution of local retail and food service trade; these effects have been included in subsequent years.

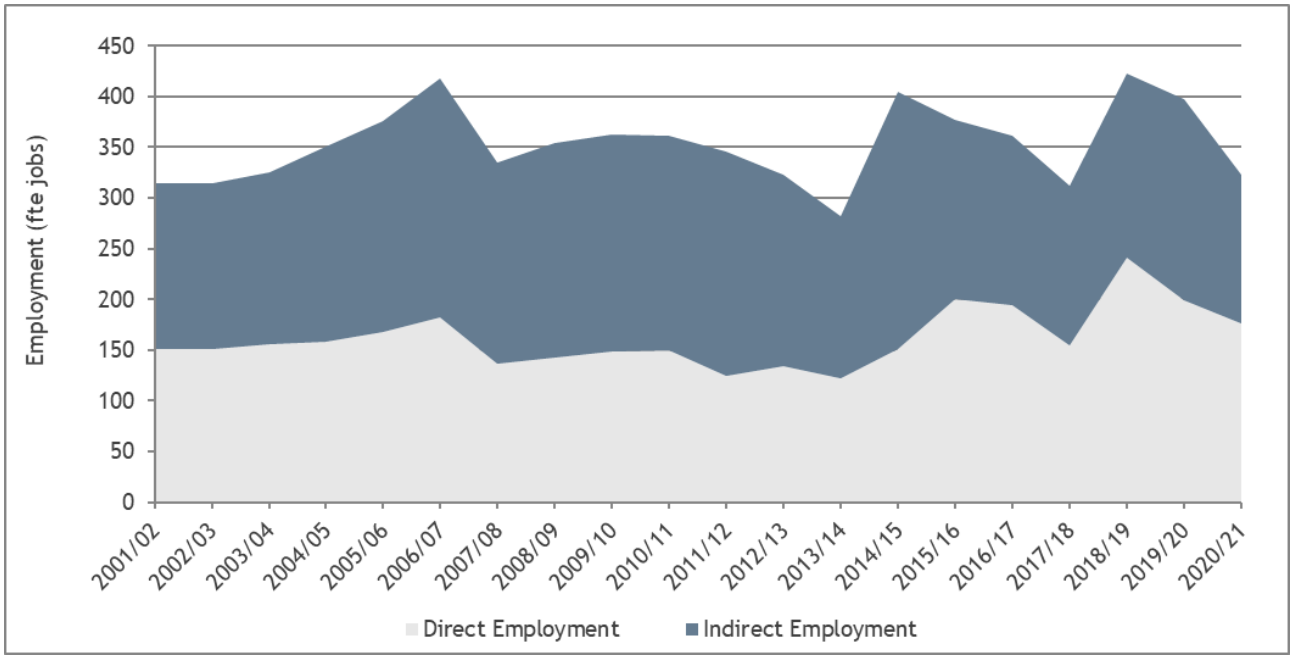
Figure 5-11 Total gross state product, output and household income contribution of the SA Abalone Fishery on the SA economy, 2001/02 to 2020/21[a,b]



[a] Estimates of output, GSP and household income are expressed in real 2020/21 terms.

Source: BDO EconSearch (2022a)

Figure 5-12 Total direct and indirect employment contribution of the SA Abalone Fishery on the SA economy, 2001/02 to 2020/21

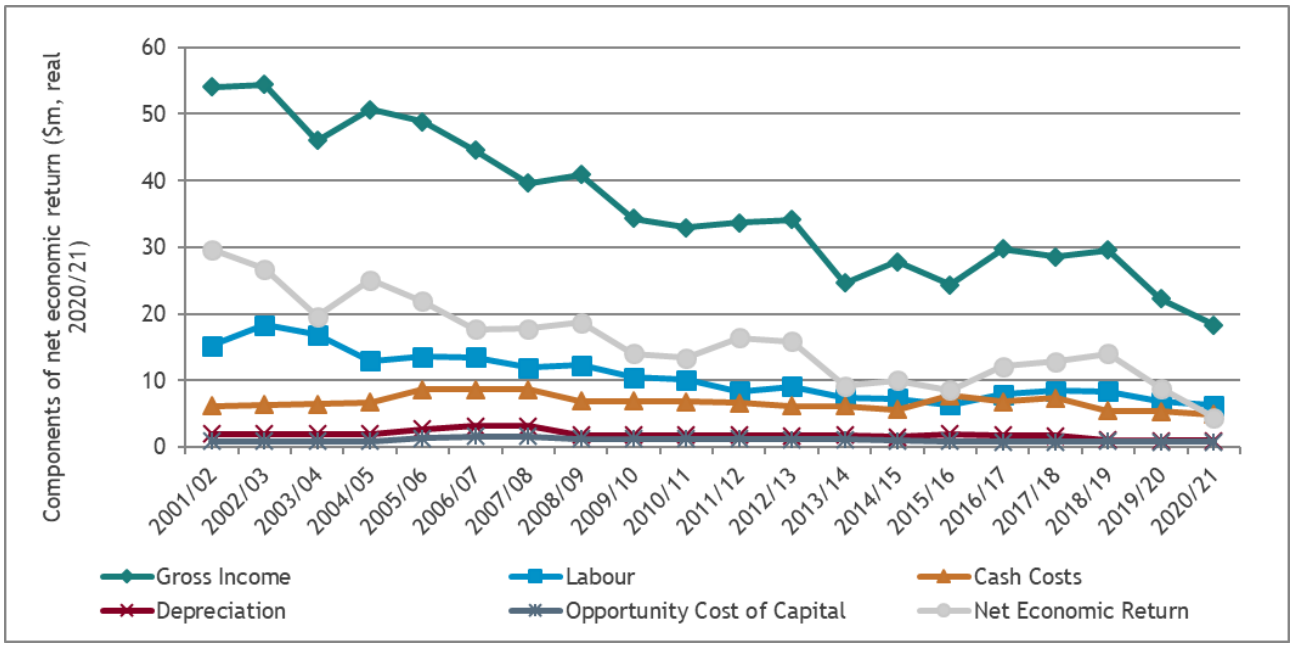


Source: BDO EconSearch (2022a)

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. Estimates of the NER generated in the Abalone fishery are summarised in Figure 5-13 for the period 2001/02 to 2020/21. The NER generated in the SA Abalone Fishery followed a downward trend, with some fluctuations, between 2001/02 and 2015/16 when it began recovering into 2018/19 before falling sharply again in 2019/20 and 2020/21. Real NER decreased by 85 per cent over the period, falling to a 20 year minimum of $4.5 million in 2020/21.

Figure 5-13 Net economic return in the SA Abalone Fishery, 2001/02 to 2020/21[a]



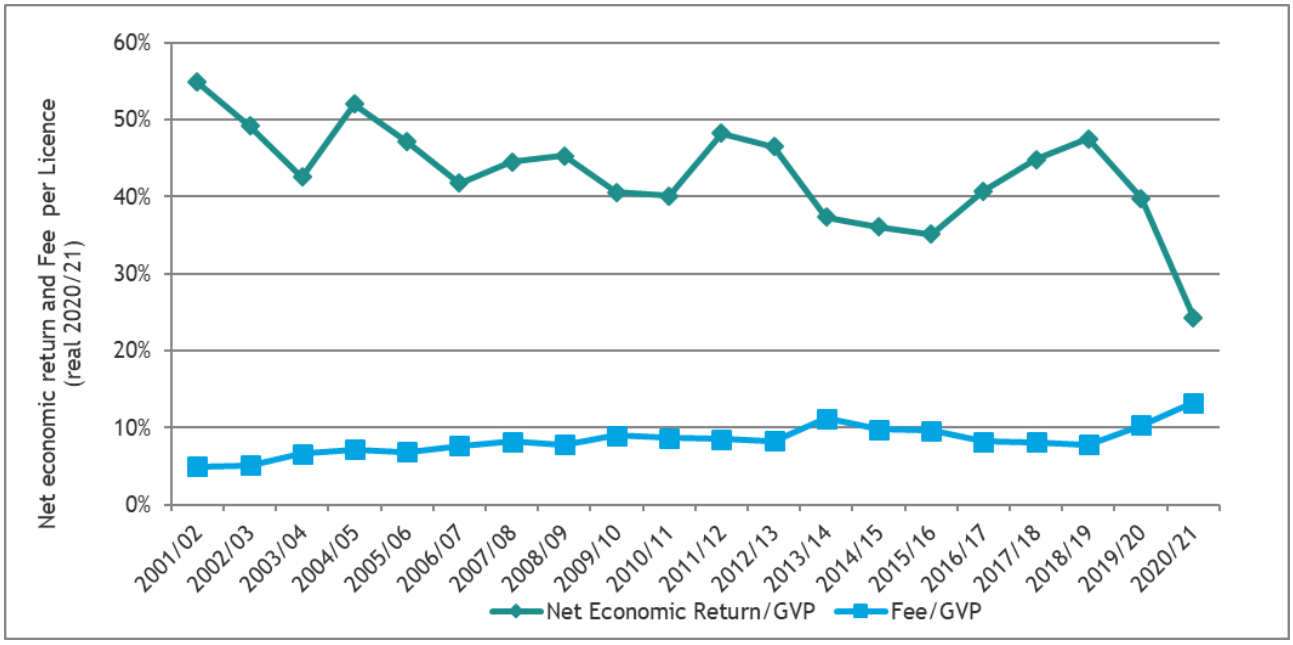
[a] All indicators are expressed in real 2020/21 terms.

Source: BDO EconSearch (2022a)

NER expressed as a percentage of GVP is a useful indicator for analysing a fishery over time and for comparing different fisheries. This indicator is illustrated in Figure 5-14 and shows an overall downward trend, with some fluctuations, between 2001/02 to 2015/16, then increasing to 2018/19, and falling again in 2019/20 and 2020/21. In 2020/21, rent as a percentage of GVP was 24 per cent, the lowest value for the 20 year period but still significantly higher than other SA fisheries.

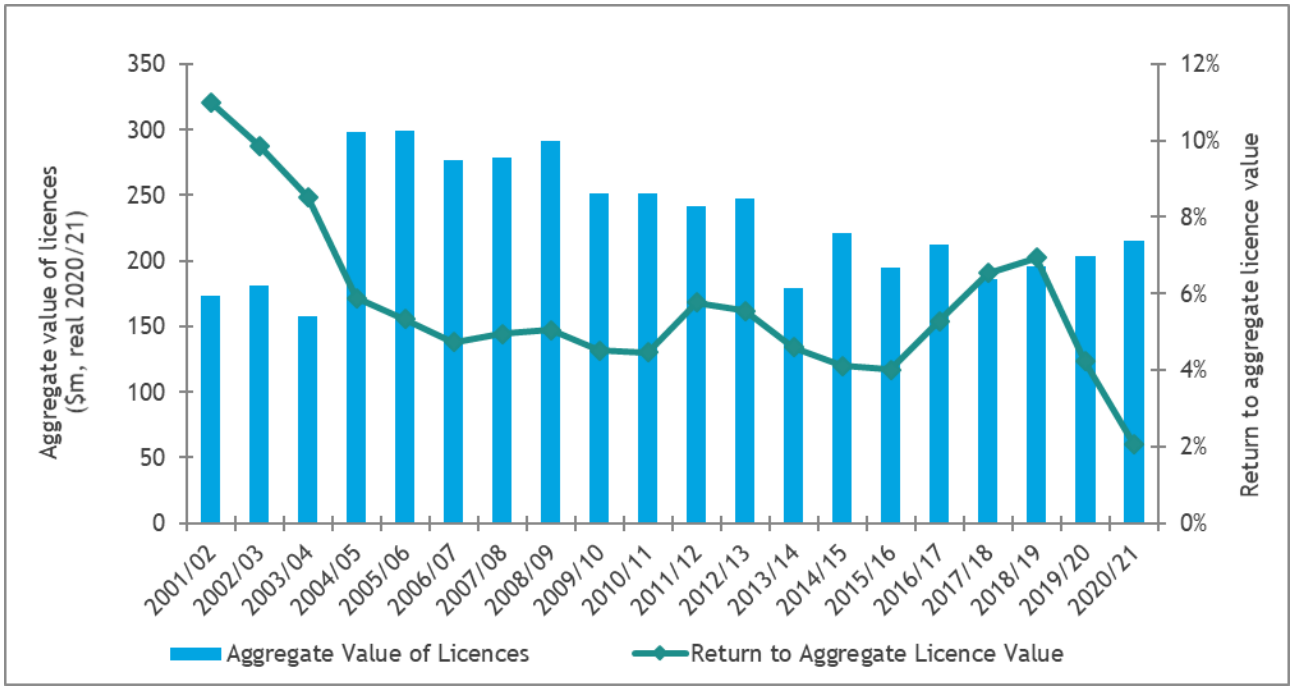
Net economic return represents a return to the value of licences in the fishery. The aggregate value of licences in the Abalone fishery and the return to the aggregate value of licences in the fishery are illustrated in Figure 5-15. The return to the aggregate value of licences in the fishery followed a downward trend between 2002/03 and 2015/16 where it began increasing through to 2018/19 before decreasing sharply in 2019/10 and 2020/21. The aggregate value of licences increased sharply in 2004/05 then followed a slow downward trend until 2017/18 before increasing slightly for the last 3 years (Figure 5-15).

Figure 5-14 Net economic return and licence fee as proportions of GVP in the SA Abalone Fishery, 2001/02 to 2020/21



Source: BDO EconSearch (2022a)

Figure 5-15 Aggregate value of licences and return to aggregate licence value in the SA Abalone Fishery, 2001/02 to 2020/21[a]



[a] The value of licences represents licence holders' estimates of the value of their fishing licence derived from survey responses. Estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Source: BDO EconSearch (2022a)

6. BLUE CRAB FISHERY

6.1. Economic Objective of the Blue Crab Fishery

Management of the BCF is undertaken to achieve the following objectives (PIRSA 2020a):

1. Ensure the Blue Swimmer Crab resource is harvested within ecologically sustainable limits.
2. Allocate access to Blue Swimmer Crab resources to achieve optimum utilisation and equitable distribution to the benefit of the community.
3. Minimise impacts on the ecosystem.
4. Cost effective and participative management of the fishery.

In order to achieve these aims the management plan sets out specific biological, ecological, social and economic objectives for the fishery. The economic objectives of the Commercial Blue Crab Fishery and related performance indicators, as described in the management plan for the fishery, are summarised in Table 6-1.

A report on economic indicators for the Blue Crab Fishery is prepared annually to assist in measuring the performance of the fishery against management objectives. The economic indicators for the fishery, most recently reported in BDO EconSearch (2022b), are reported under the following headings:

- catch and gross value of production (GVP) (Section 6.2)
- management costs (Section 6.3)
- boat level financial performance indicators (Section 6.4)
  - average income
  - operating costs
  - cost-price squeeze
  - profitability
  - return on investment
- contribution to the SA economy (Section 6.5)
  - GSP
  - household income
  - employment
- net economic return (Section Figure 6-6).

The Blue Crab Fishery (BCF) comprises two zones, the Spencer Gulf and Gulf St Vincent fishing zones. An annual Total Allowable Commercial Catch (TACC) or quota is determined for the fishery for the 12-month period from 1 July to 30 June, with separate quota units allocated for each fishing zone. Almost all of the TACC (99 per cent) is allocated among the BCF licence holders (also referred to as 'pot fishers'), with the remainder allocated to some Marine Scalefish Fishery (MSF) licence holders.

Blue Crab may also be taken from State waters within three nautical miles of the coast west of longitude 135°E. This 'West Coast' region is not subject to quota management arrangements and is fished by MSF licence holders (Noell et al. 2015). The catch is not subject to the same management conditions as the catch which is taken in the gulfs and, as such, has been excluded from this report but included in the Marine Scalefish Fishery Economic Indicators report (BDO EconSearch 2022e).

Table 6-1 Economic objectives of the SA Commercial Blue Crab Fishery

Goal	Objective	Management Strategies	Performance Indicator
Goal 2: Allocate access to Blue Swimmer Crab resources to achieve optimum utilisation and equitable distribution to the benefit of the community.	2b. Maintain a flow of economic benefit from the fishery to the broader community.	Economic indicators are monitored and reported annually.	Economic indicators are monitored and reported annually: • Gross Value of Production (GVP) • Total economic impact • Total gross state product • Level of full-time equivalent employment provided by the fishery
Goal 4: Cost effective and participative management of the fishery.	4a. Provide cost-effective and efficient management of the fishery, in line with government's cost recovery policy.	Develop and implement management arrangements that are effective at achieving management objectives and optimising costs.	Economic indicators are monitored and reported annually: • Fee per licence holder • Licence fees as a proportion of GVP • Licence fees as a proportion of total cash costs

Indicators reported in Economic reports.

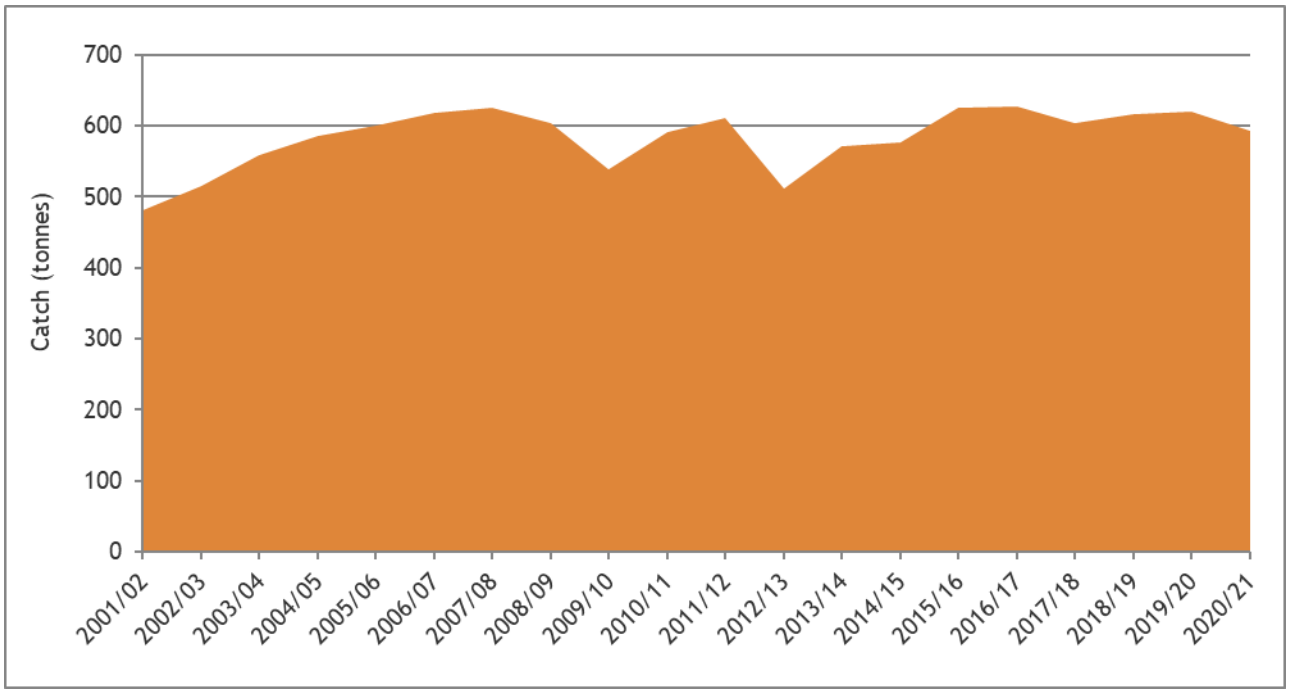
Source: PIRSA 2020a

6.2. Catch and Gross Value of Production

Figure 6-1 indicates that, despite fluctuations, the total catch of Blue Crabs in SA has increased over the period 2001/02 (481) to 2020/21 (592t). The total GVP for the BCF for the 20 year period 2001/02 to 2020/21 is illustrated in Figure 6-2. The real value of catch in the fishery increased significantly over the 20 years, from $4.6 million in 2001/02 to $8.4 million in 2020/21. The increase in GVP is a result of both an increase in catch (23 per cent increase) and price (48 per cent real increase) (Figure 6-3).

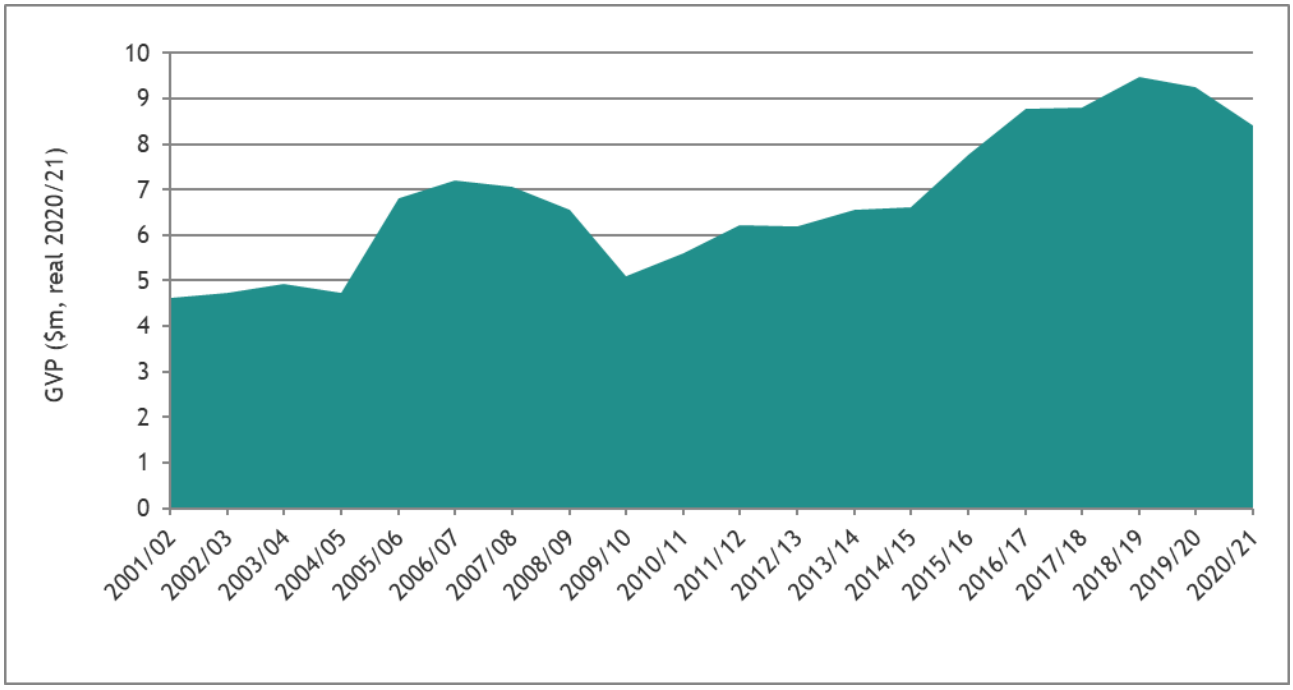
The nominal price of Blue Crabs fluctuated between 2001/02 to 2020/21 but followed an increasing trend overall. The 130 per cent increase in nominal price over the period 2001/02 to 2020/21 is equivalent to a 48 per cent rise in the real price (that is the nominal price adjusted for inflation) (Figure 6-4).

Figure 6-1 SA Commercial Blue Crab Fishery catch, 2001/02 to 2020/21



Source: BDO EconSearch (2022b)

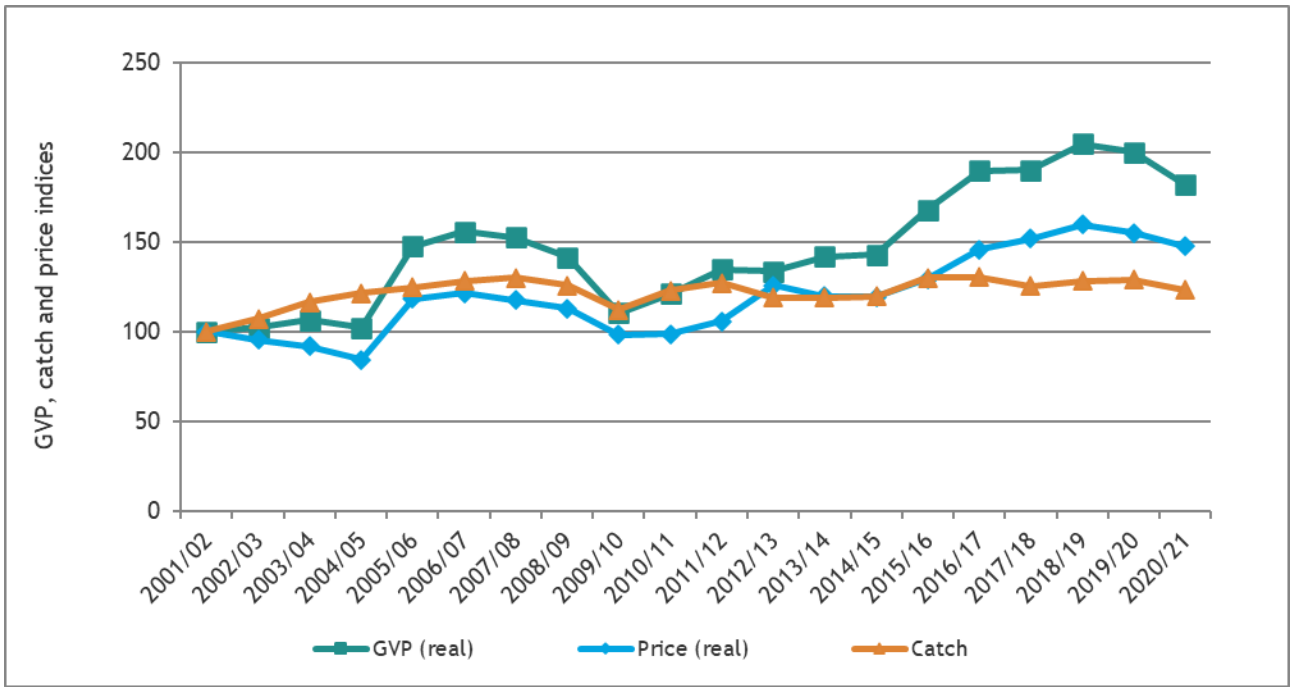
Figure 6-2 SA Commercial Blue Crab Fishery GVP, 2001/02 to 2020/21[a]



[a] Estimates of GVP are expressed in real 2020/21 terms.

Source: BDO EconSearch (2022b)

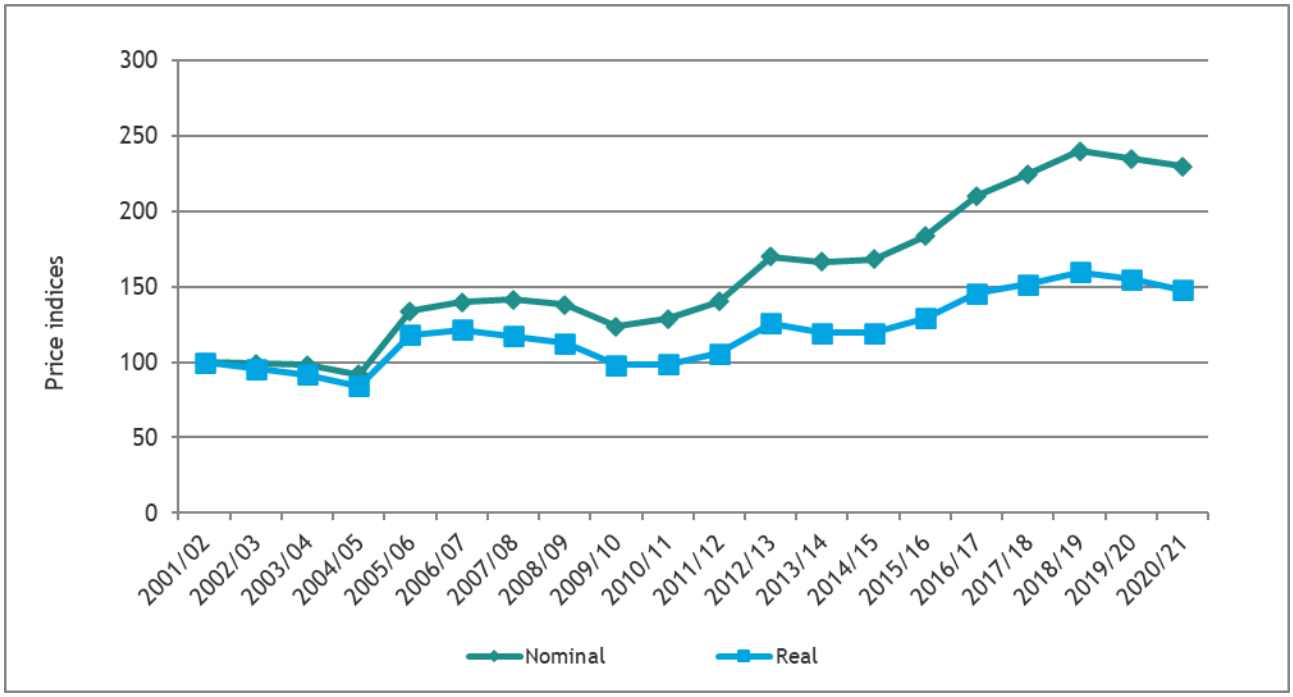
Figure 6-3 GVP and catch indices for the SA Commercial Blue Crab fishery[a]



[a] Excludes catch of Blue Crabs from the West Coast by Marine Scalefish licence holders. SARDI estimates of GVP for 2012/13 to 2020/21 have been re-valued to reflect price differentials between Adelaide and interstate markets.

Source: BDO EconSearch (2022b)

Figure 6-4 Price Indices for the SA Commercial Blue Crab Fishery[a]



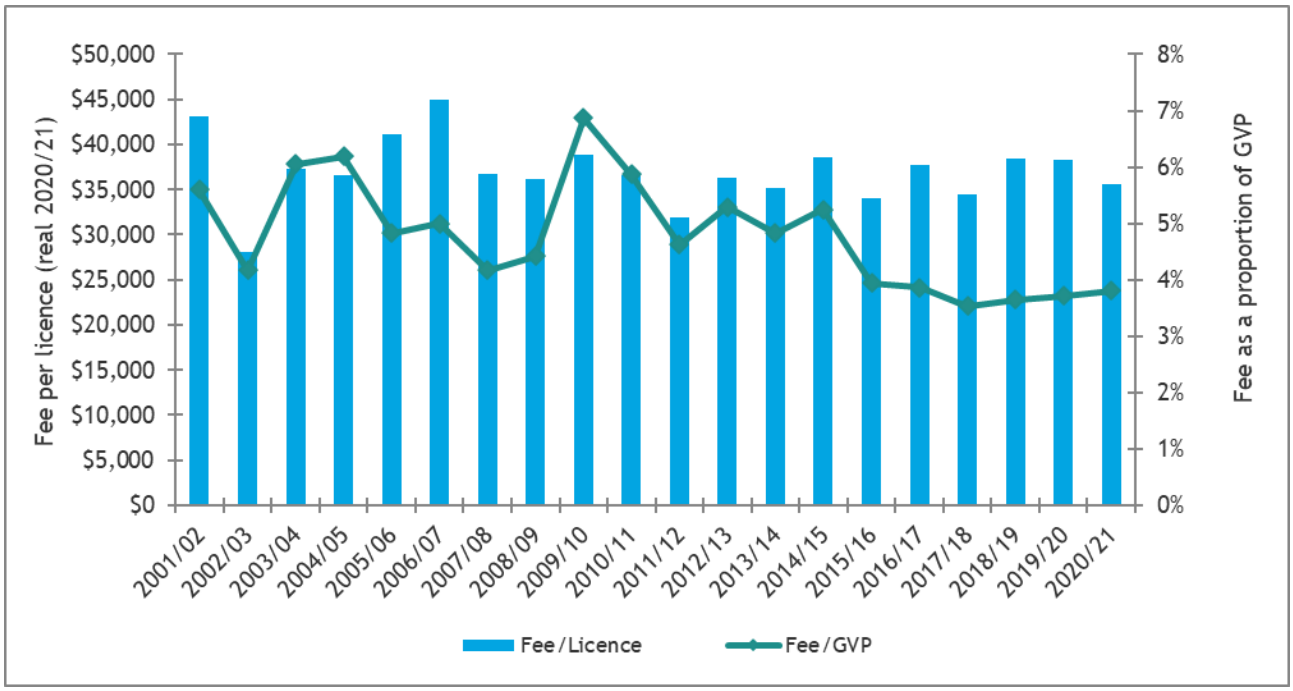
[a] Nominal price refers to the beach price in the current year's dollars. Real price is the nominal price adjusted for the purchasing power of money. The CPI (consumer price index) for Adelaide has been used to make this adjustment (ABS 2021a). It enables meaningful comparisons of prices to be made between years.

Source: BDO EconSearch (2022b)

6.3. Management Costs

The average management fee per licence and the licence fee as a proportion of GVP are illustrated in Figure 6-5. Licence fees as a percentage of GVP fluctuated over the 20 years but generally followed a declining trend. From 2001/02 to 2020/21 licence fees as a percentage of GVP fell from 5.6 per cent in 2001/02 to 3.8 per cent in 2020/21. This change was a result of an increase in fishery GVP despite an increase in the total cost of management of the fishery. Average real management fees per licence was $43,176 in 2001/02, decreased across the 20 years to be $35,565 in 2020/21, a result of an increase in the number of licences from 6 to 9, despite an increase in real aggregate licence fees.

Figure 6-5 Management fee per licence holder and as a proportion of GVP, SA Commercial Blue Crab Fishery, 2001/02 to 2020/21[a,b]



[a] Estimates of the fee per licence holder are expressed in real 2020/21 terms.

[b] Excludes catch of Blue Crabs from the West Coast by Marine Scalefish licence holders.

Source: BDO EconSearch (2022b)

6.4. Financial Performance

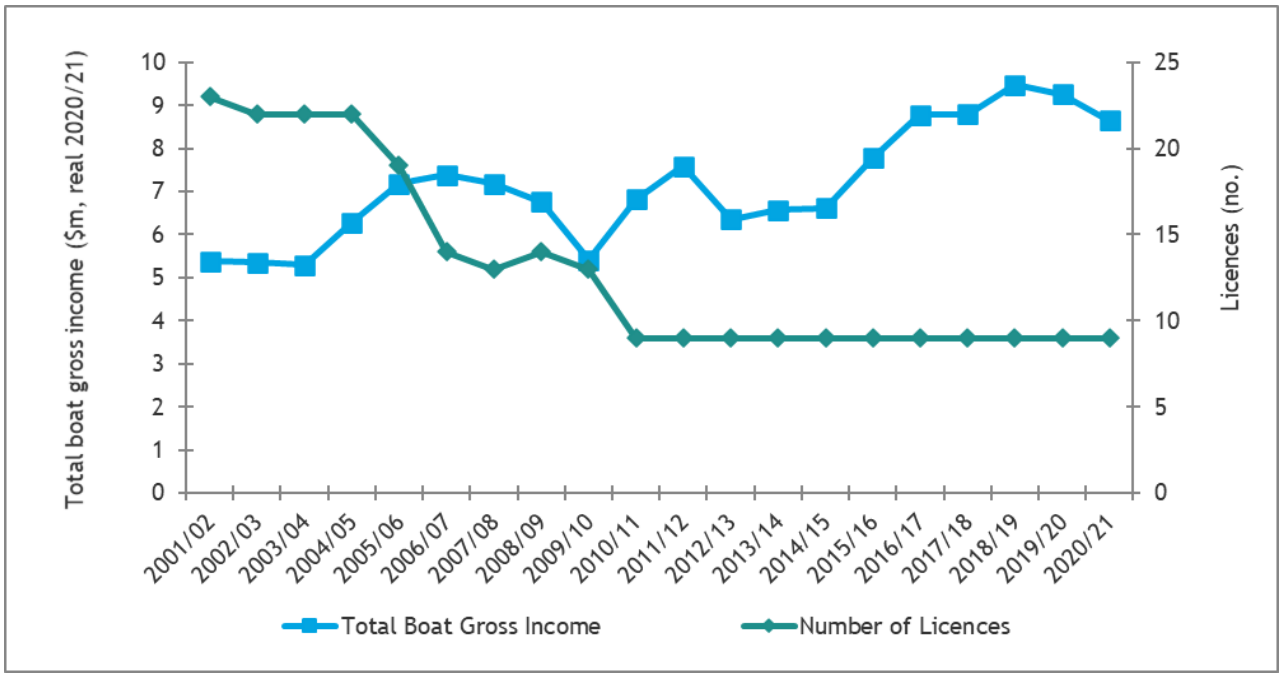
6.4.1. Average Income

Total income and total number of licences in the fishery for the period 2001/02 to 2020/21 are illustrated in Figure 6-6. The total number of licences in the fishery (including line licences) declined steadily, from 23 in 2001/02 to 9 in 2010/11, the result of licence amalgamations and buybacks. The total real fishery income (GVP) increased over the same period reflecting an increase in both catch and price in the fishery but fell in 2019/20 and 2020/21 as a result of a fall price due to the COVID-19 pandemic.

6.4.2. Operating costs trends

A breakdown of major cost items as a proportion of total cash costs is illustrated in Figure 6-7. 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 are fuel, repairs and maintenance, interest charges and leasing (Figure 6-7).

Figure 6-6 Fishery income and number of licences in the SA Commercial Blue Crab Fishery, 2001/02 to 2020/21[a,b]

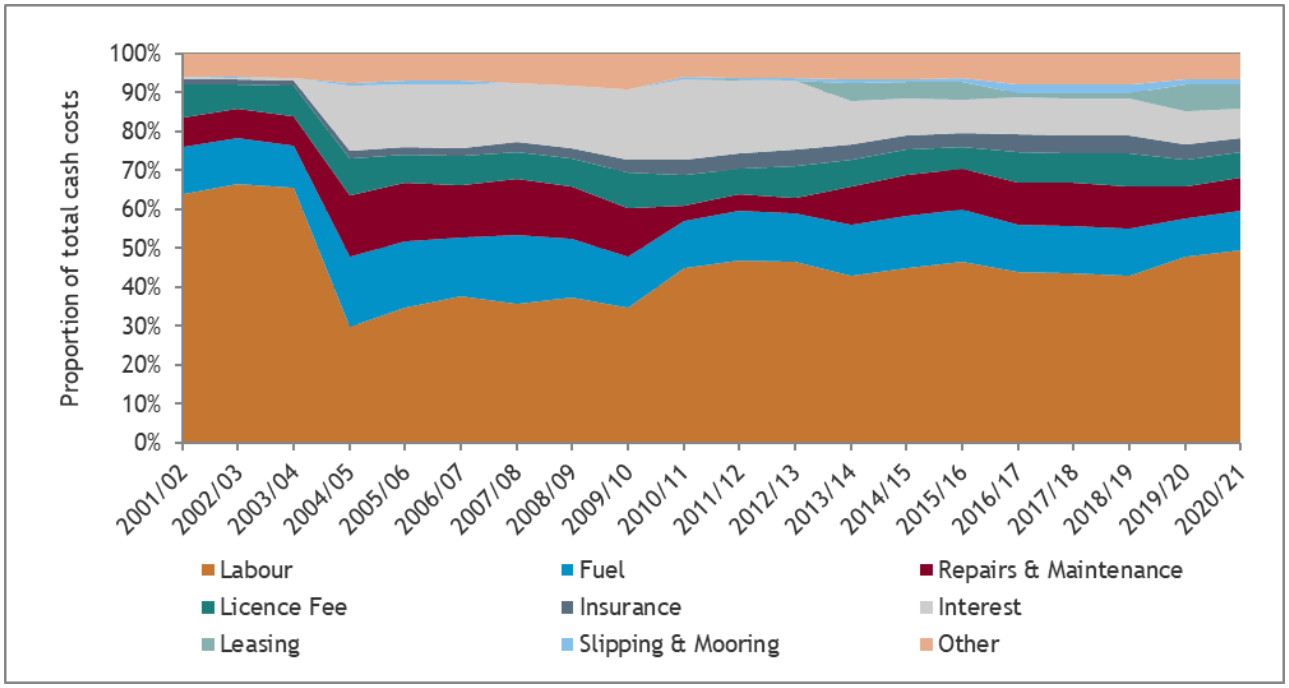


[a] Estimates of total boat gross income are expressed in real 2020/21 terms.

[b] Estimates from 2010/11 onwards relate to the pot sector only.

Source: BDO EconSearch (2022b)

Figure 6-7 Cost shares in the SA Commercial Blue Crab Fishery, 2001/02 to 2020/21[a,b]



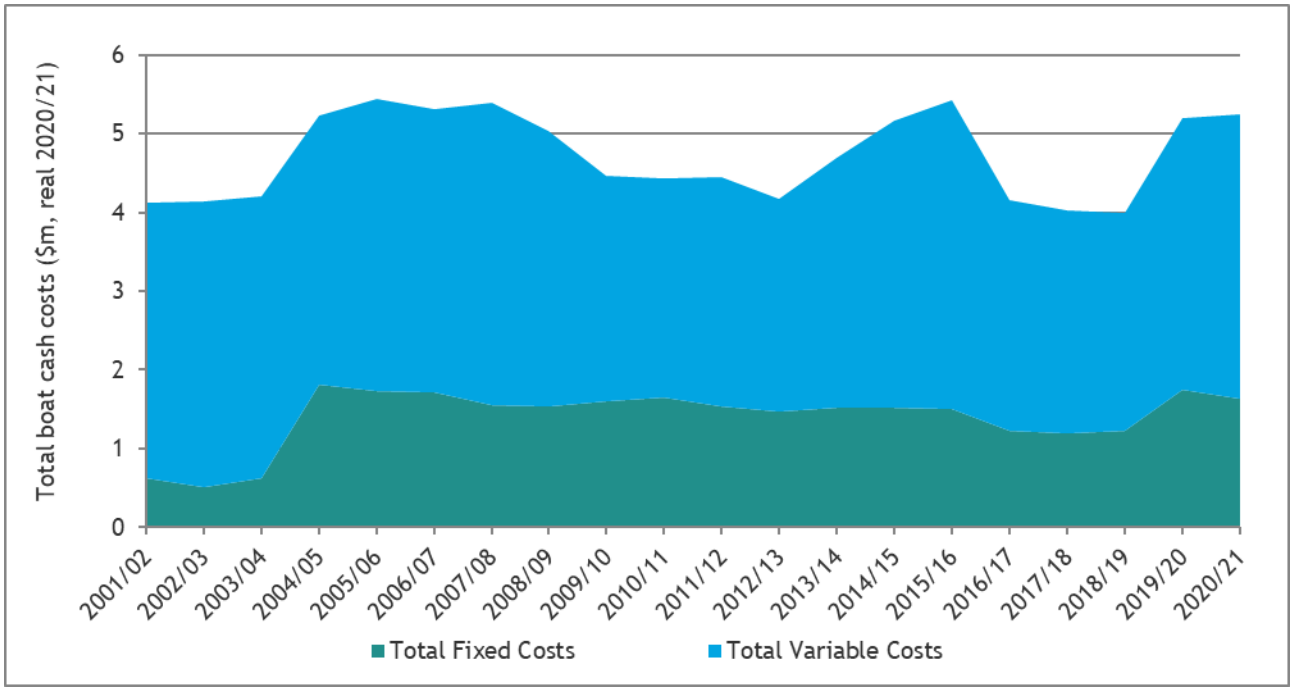
[a] Financial performance estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

[b] Estimates from 2010/11 onwards relate to the pot sector only.

Source: BDO EconSearch (2022b)

The cash costs detailed in Figure 6-7 can be categorised as either variable or fixed costs and are illustrated in Figure 6-8. Total variable costs have fluctuated between years but generally followed an increasing trend over the period 2001/02 to 2020/21. As would be expected, total fixed costs have fluctuated much less from year to year, although increased significantly in 2004/05 reflecting the higher interest charges arising from increased borrowings for new boats and quota and again in 2019/20 as a result of the effects of COVID-19 through fishery and market closures driving up costs and driving down efficiency.

Figure 6-8 Total costs in the SA Commercial Blue Crab Fishery, 2001/02 to 2020/21[a,b]



[a] Estimates of total costs are expressed in real 2020/21 terms.

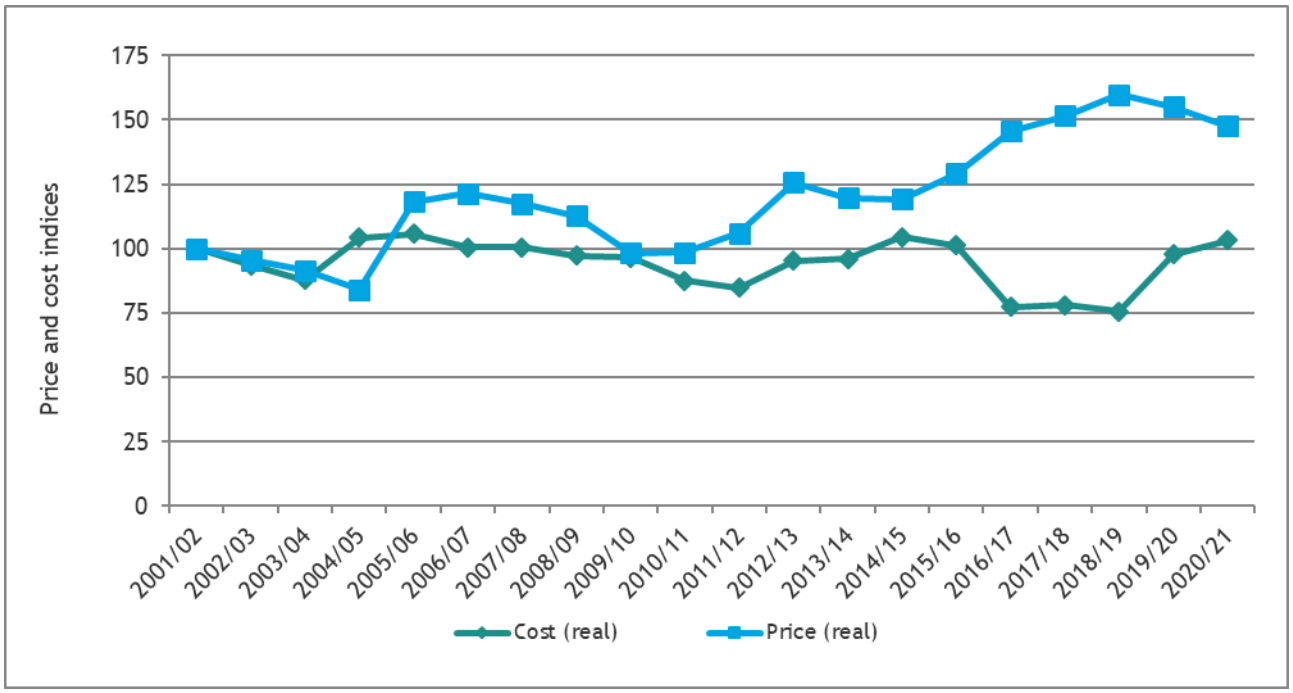
[b] Estimates from 2010/11 onwards relate to the pot sector only.

Source: BDO EconSearch (2022b)

6.4.3. Costs price squeeze

Real price and cost indices (in 2020/21 dollars) for the BCF for the years 2001/02 to 2020/21 are summarised in Figure 6-9. These indicators are derived from the average price and average cost per kilogram of catch. Overall, between 2001/02 to 2020/21, the average price of Blue Crabs increased by 48 per cent in real terms. The average costs of catching Blue Crabs has fluctuated over the same period. In 2020/21, average cash costs per kilogram were 3 per cent higher, in real terms, than in 2001/02 (Figure 6-9).

Figure 6-9 Price and cost indices for the SA Commercial Blue Crab Fishery, 2001/02 to 2020/21 (2001/02 = 100)[a,b]



[a] Estimates of average price and cost are expressed in real 2020/21 terms indexed against 2001/02.

[b] Estimates from 2010/11 onwards relate to the pot sector only.

Source: BDO EconSearch (2022b)

6.4.4. Profitability

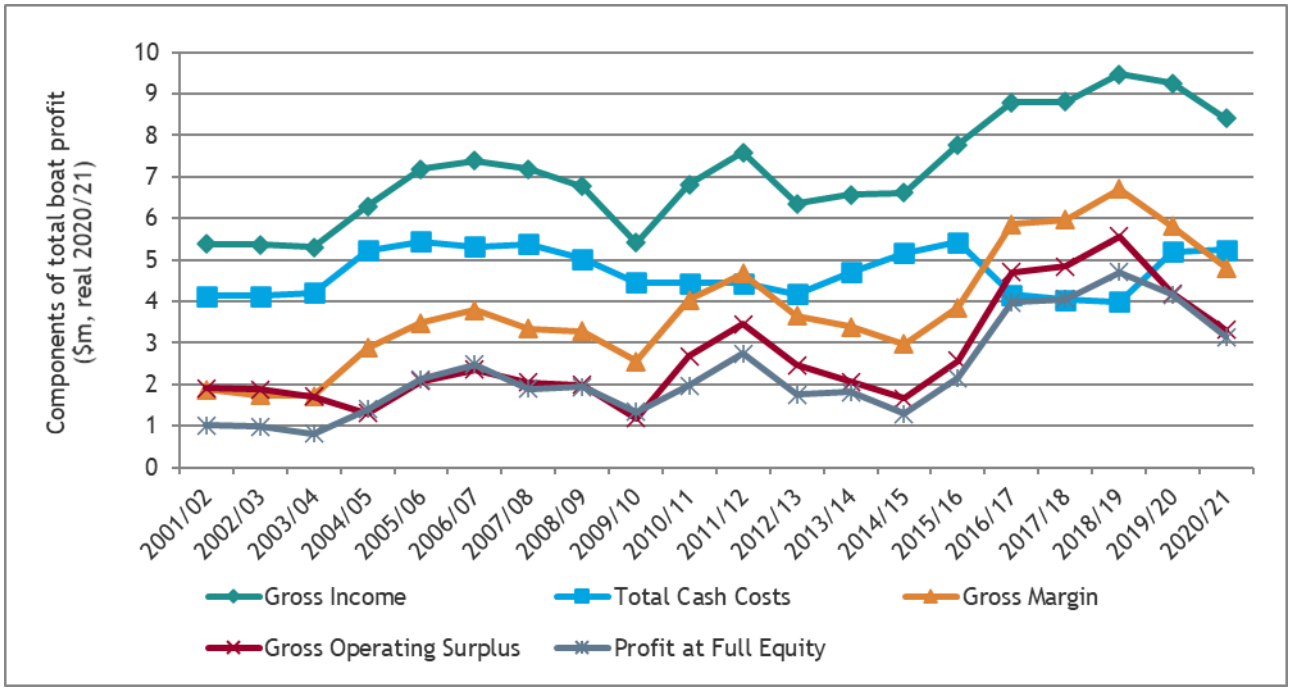
Selected measures of profitability for the BCF are summarised in Figure 6-10 for the years 2001/02 to 2020/21. Changes in each of the profitability measures for the fishery were closely related to the total gross income earned. Overall profits increased between 2001/02 and 2020/21, principally the result of an increase in fishery income and improved fishing productivity but fell in 2019/20 and 2020/21 as a result of a fall in price, attributable to the COVID-19 pandemic, and an increase in direct labour costs (Figure 6-10).

6.4.5. Return to capital

Estimates of the total value of licences and the rate of return to capital are illustrated in Figure 6-11. Total capital includes boats, licence/quota, fishing gear, sheds, vehicles and other capital items used as part of the fishing enterprise. Return to total capital is calculated to be profit at full equity as a percentage of both total capital employed and total capital excluding licence/quota.

Despite fluctuations, the estimated rate of return to total capital for the fishery has decreased overall between 2001/02 (10.5 per cent) and 2020/21 (5.7 per cent). While it was increasing in recent years, the sharp fall in 2019/20 and 2020/21 was caused by an increase in direct labour costs partly attributable to the COVID-19 pandemic, a slight dip in price and a significant increase in estimated licence value (quota units). The rate of return to fishing gear and equipment (excluding licence value) followed an increasing trend until 2018/19 despite seeing significant falls in in 2019/20 and 2020/21, from 71 per cent in 2018/19 to 39.1 per cent in 2020/21 (Figure 6-11). This reflects the slower rate of increase in the value of fishing gear and equipment within the fishery relative to profitability.

Figure 6-10 Income and profit in the SA Commercial Blue Crab Fishery, 2001/02 to 2020/21[a,b]

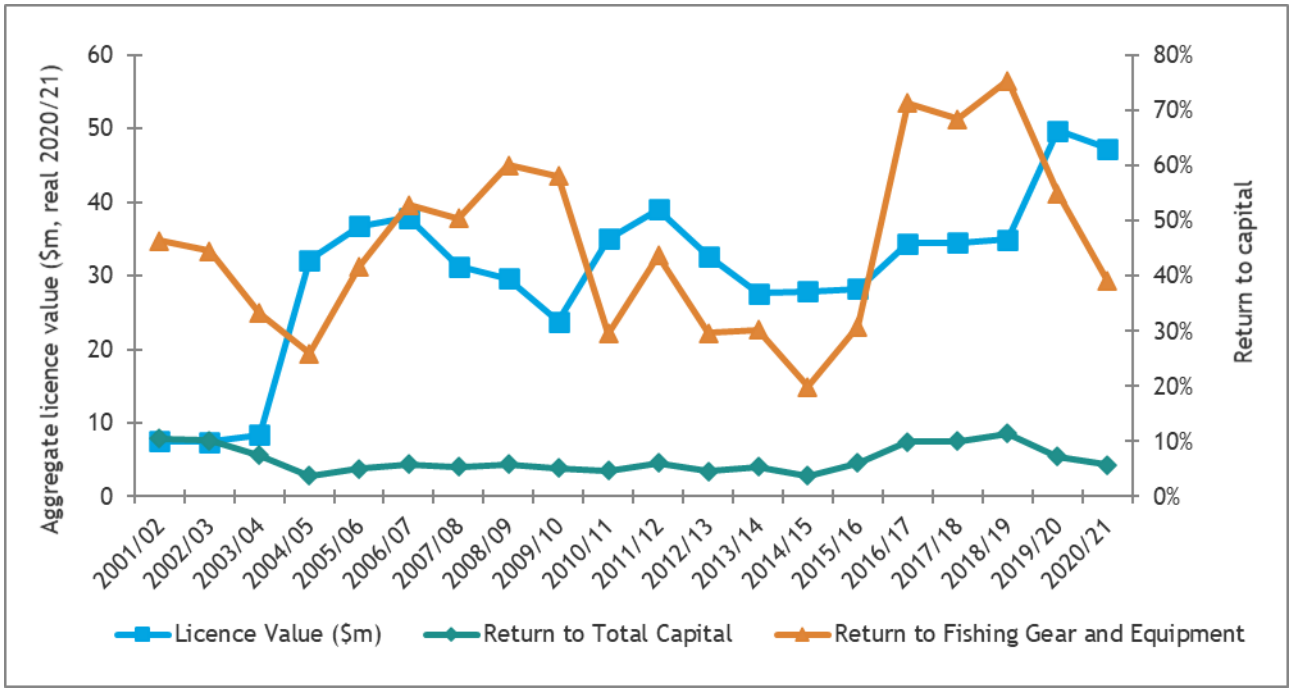


[a] Estimates of income and profitability measures are expressed in real 2020/21 terms.

[b] Estimates from 2010/11 onwards relate to the pot sector only.

Source: BDO EconSearch (2022b)

Figure 6-11 Return to capital in the SA Commercial Blue Crab Fishery, 2001/02 to 2020/21[a,b]



[a] Estimates of income and profitability measures are expressed in real 2020/21 terms.

[b] Estimates from 2010/11 onwards relate to the pot sector only.

Source: BDO EconSearch (2022b)

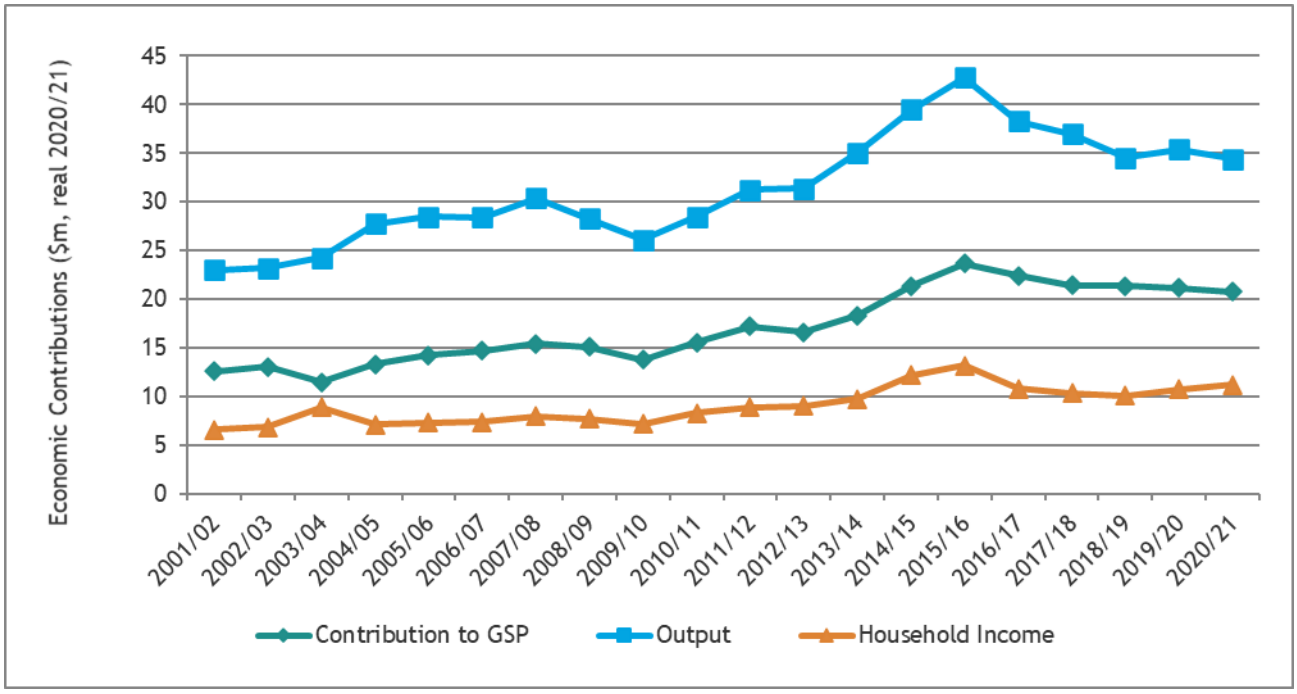
6.5. Contribution to SA Economy

Figure 6-12 and Figure 6-13 illustrate the total economic contribution of the fishery on the SA economy for the 20 years, 2001/02 to 2020/21. Total economic contribution refers to the direct fishing industry contributions (fishing, processing, etc.) and the indirect contributions on other sectors of the economy.

The indicators from 2004/05 and 2013/14 have been revised to incorporate year-to-year revisions in the margin earned by downstream enterprises associated with the BCF, namely the processing, retail and food service sectors. While this has revised upwards the estimates previously reported in figures in Blue Crab Fishery Economic Indicator reports (BDO EconSearch 2022b), there has been no revision of the estimated direct contribution generated by Blue Crab fishing across this period.

The change in total output and GSP contributions are closely related to changes in price and fishery GVP. Output, household income and contribution to GSP all followed an increasing trend between 2001/02 to 2020/21. The slight decrease in total output and household income witnessed from 2019/20 to 2020/21 is likely to be attributable to the fall in gross income, despite an increase in costs (Figure 6-13). Total employment contribution of the fishery has increased, with fluctuations, between 2001/02 to 2020/21 (Figure 6-13). This can be attributed to the increased activity of associated downstream sectors (processing, retail trade and food service sectors). This increase was slightly offset by a reduction in the total number of licence holders in the fishery (direct employment) and productivity improvements across all related industries.

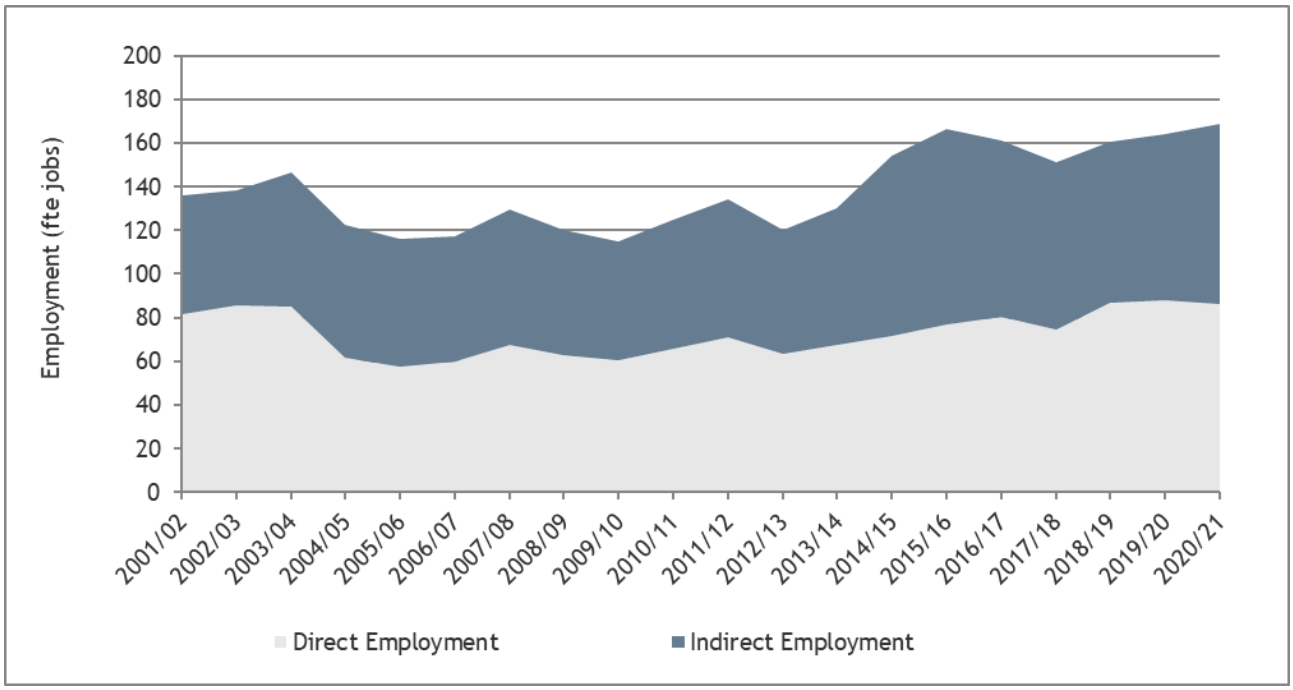
Figure 6-12 Total gross state product, output and household income contribution of the SA Commercial Blue Crab Fishery on the SA economy, 2001/02 to 2020/21 [a]



[a] Estimates of output, GSP and household income are expressed in real 2020/21 terms.

Source: BDO EconSearch (2022b)

Figure 6-13 Total direct and indirect employment contribution of the SA Commercial Blue Crab Fishery on the SA economy, 2001/02 to 2020/21



Source: BDO EconSearch (2022b)

6.6. Net Economic Return

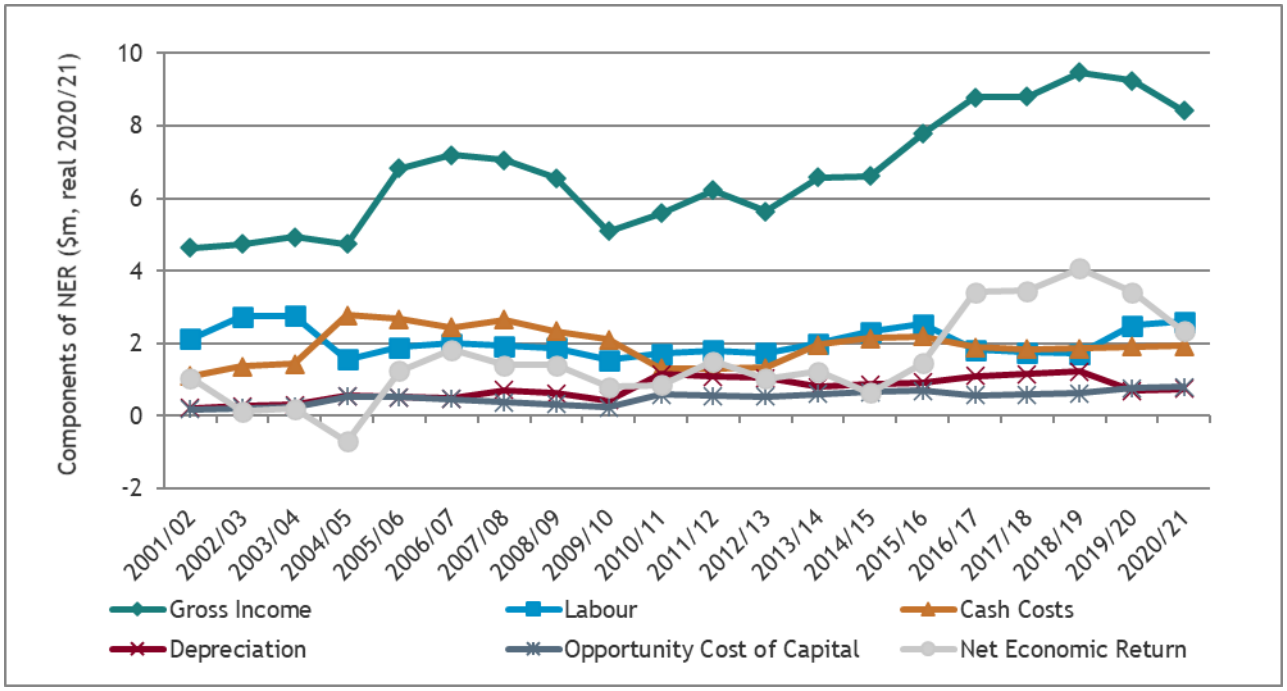
NER is the return from a fishery after all costs have been met. It is equal to fishing revenue less fishing costs (cost of labour, capital including depreciation, materials and an allowance for "normal" profit). NER is maximised when economic efficiency is maximised. Estimates of the NER generated in the SA BCF are summarised in Figure 6-14 for the period 2001/02 to 2020/21.

The NER increased from $0.3 million in 2001/02 to $2.3 million in 2020/21, mainly due to the increases in catch and price and, hence income, while holding costs relatively steady (Figure 6-14). Fluctuations in NER during this period can be attributed to fluctuating income, fluctuating cash costs, higher depreciation and a higher opportunity cost of capital (due to increased investment in fishing gear and equipment).

NER expressed as a percentage of GVP is a useful indicator for analysing a fishery over time and for comparing different fisheries. This measure increased overall from 2001/02 (10 per cent) to 2020/21 (28 per cent), despite declining to -15 per cent in 2004/05 (Figure 6-15). The SA BCF has the one of the highest rent as a percentage of GVP of all commercial fisheries in South Australia.

NER represents a return to the value of licences (quota units) in the fishery. The aggregate value of licences in the SA BCF and the return to the aggregate value of licences in the fishery are illustrated in Figure 6-16. The return on aggregate value of licences peaked in 2001/02 and then fell significantly in 2002/03 as a result of a rise in licence value and drop in NER. Between 2004/05 and 2018/19 the return to the aggregate value of licences has followed an increasing trend resulting from the significant increase in the rent over the period. In 2019/20 and 2020/21 this ratio dipped significantly as a result of a fall in NER and an increase in the estimated value of licences (quota units) in 2019/20, despite a slight fall in 2020/21 (Figure 6-16).

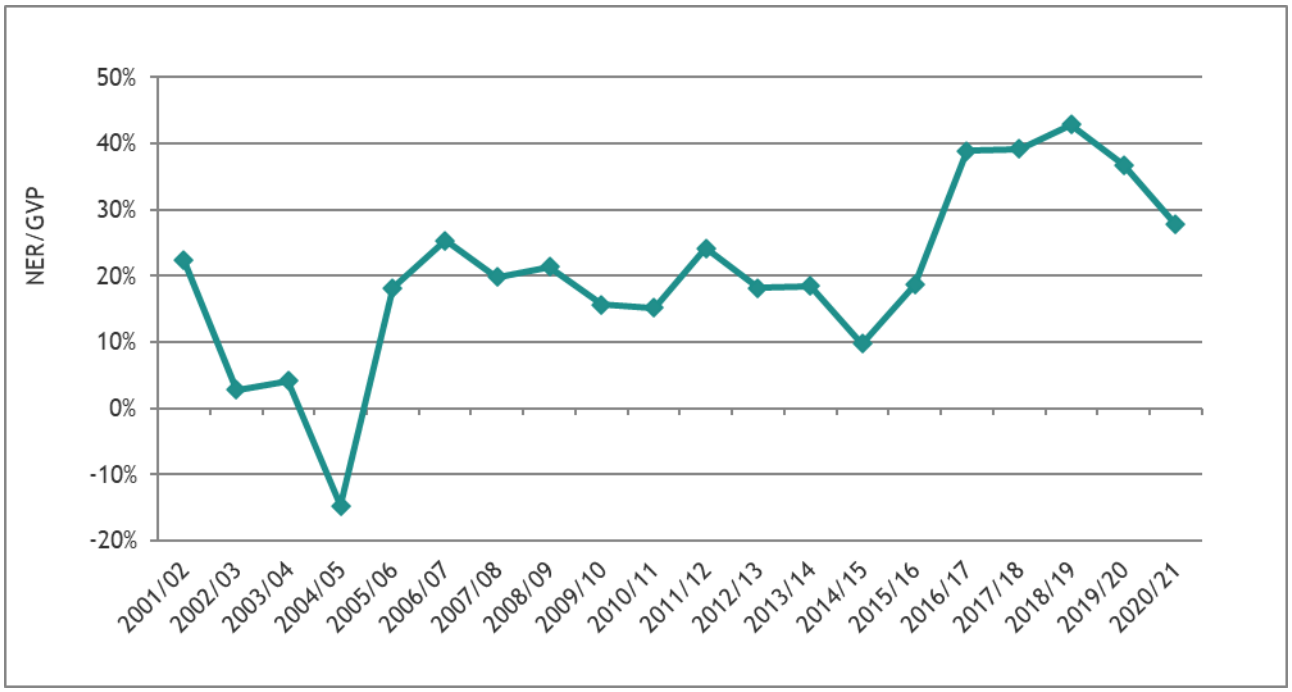
Figure 6-14 Net economic return in the SA Commercial Blue Crab Fishery, 2001/02 to 2020/21 ($'000)[a]



[a] All indicators are expressed in real 2020/21 terms.

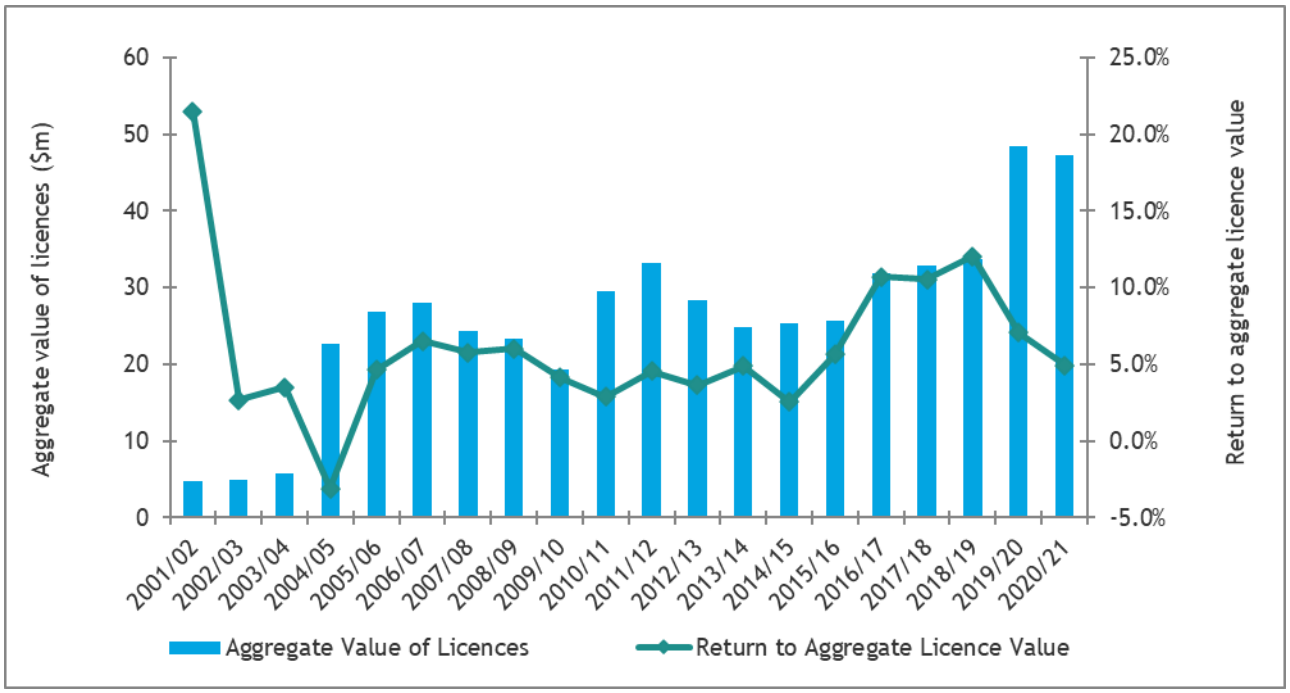
Source: BDO EconSearch (2022b)

Figure 6-15 Net economic return as a proportion of GVP in the SA Commercial Blue Crab Fishery, 2001/02 to 2020/21



Source: BDO EconSearch (2022b)

Figure 6-16 Aggregate value of licences and return to aggregate licence value in the SA Commercial Blue Crab Fishery, 2001/02 to 2020/21[a]



[a] The value of licences represents licence holders' estimates of the value of their fishing licence derived from survey responses. Estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Source: BDO EconSearch (2022b)

7. CHARTER BOAT FISHERY

7.1. Economic Objective of the Charter Boat Fishery

The Management Plan for the South Australian Charter Boat Fishery (PIRSA 2019) sets out four goals, namely:

1. Charter Boat Fishery resources harvested within ecologically sustainable limits
2. Optimum utilisation and equitable distribution of the Charter Boat Fishery resources for the benefit of the community
3. Fishery impacts on the ecosystem are minimised
4. Cost-effective, efficient and participative management of the fishery.

In order to achieve these goals the management plan sets out specific biological, ecological, social and economic objectives for the fishery. Specific strategies and performance indicators relating to the economic objectives outlined in the management plan are detailed in Table 7-1. These performance indicators and others are presented in the following sections.

A report on economic indicators for the Charter Boat fishery is prepared annually to assist in measuring the performance of the fishery against management objectives. The economic indicators for the fishery, reported in BDO EconSearch (2022c), are reported under these headings:

- catch and gross value of production (GVP) (Section 7.2)
- management costs (Section 7.3)
- boat level financial performance indicators (Section 7.4)
  - average income
  - operating costs
  - profitability
  - return on investment
- contribution to the SA economy (Section 7.5)
  - output
  - GSP
  - household income
  - employment

Indicators relating to catch and effort and management are reported for 2005/06 onwards[2]. Indicators relating to the financial performance of the fishery are reported for 2009/10 to 2020/21[3].

[2] Year the fishery was first licenced.

[3] Boat level financial performance indicators were not prepared prior to 2009/10.

Table 7-1 Economic and social objectives of the SA Charter Boat Fishery

Goal	Objective	Strategies	Performance Indicator	Description	Trigger Reference Point
Goal 2 Optimum utilisation and equitable distribution of Charter Boat Fishery resources.	2b. Allocation framework and management arrangements provide for development of the Charter Boat Fishery.	2b(i). Regulatory reform is undertaken to allow for more flexibility in business operation and management arrangements within established sustainable catch limits Work with relevant organisations to explore strategies that support sustainable growth in tourism-related activities associated with the sector	Economic performance of Charter Boat Fishery.	Management framework enables changes / increases in fishing activities within the established allocated share The management plan provides processes for managing within existing shares and adjusting allocations, if required.	Economic indicators not monitored annually
Goal 4 Cost-effective and participative management of the fishery.	4a. Cost-effective and efficient management of the fishery, in line with government's cost recovery policy.	4a(i). Develop and implement management arrangements that are effective at achieving management objectives and optimising costs.	Fee per licence holder.	Licence fees include the costs of management, compliance and research. A breakdown of major cost items as a proportion of total boat cash costs.	Licence fee increases by more than CPI.
	4d. Compliance with management arrangements.	4d(ii). Develop and implement management arrangements that are clear and uncomplicated so	Industry understand management arrangements.	Achieving sustainable management of fisheries requires fishers to comply with regulations regarding	Licence holders indicate they do not understand management arrangements, as reported

Goal	Objective	Strategies	Performance Indicator	Description	Trigger Reference Point
		as to promote voluntary compliance and assist with successful enforcement.		fishing activities, and to be responsible for their fishing activities. A key objective of fisheries management is therefore to ensure fishers are aware of their social responsibilities and are motivated to comply with these.	in the BDO EconSearch reports for the fishery.

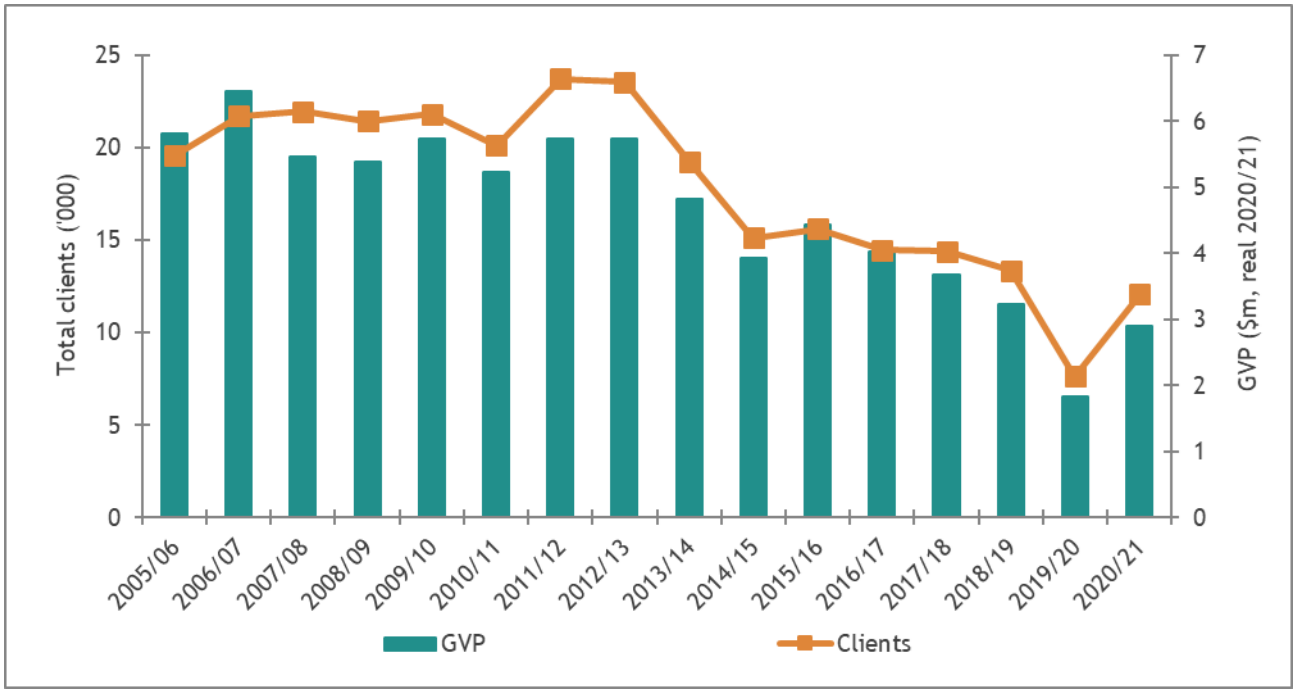
Source: PIRSA 2019

7.2. Clients and Gross Value of Production

Figure 7-1 illustrates that the total number of clients in the fishery decreased between 2005/06 and 2020/21, from 19,540 clients in 2005/06 to 12,077 clients in 2020/21 (38 per cent decline). Together with a 19 per cent decline in the real price per client over the same period, real GVP for the fishery decreased by 50 per cent between 2005/06 ($5.8 million) and 2020/21 ($2.9 million). This is also highlighted in Figure 7-2 where catch, GVP and price indices for the fishery for 2005/06 to 2020/21 are illustrated. The downward trend in GVP in Figure 7-1 can be explained by a number of issues impacting the Charter Boat Fishery including the annual December Snapper state-wide closure, spatial spawning closures, changes in boat limits and, in 2019/20 and 2020/21, the three year ban on Snapper fishing and COVID-19 related effects.

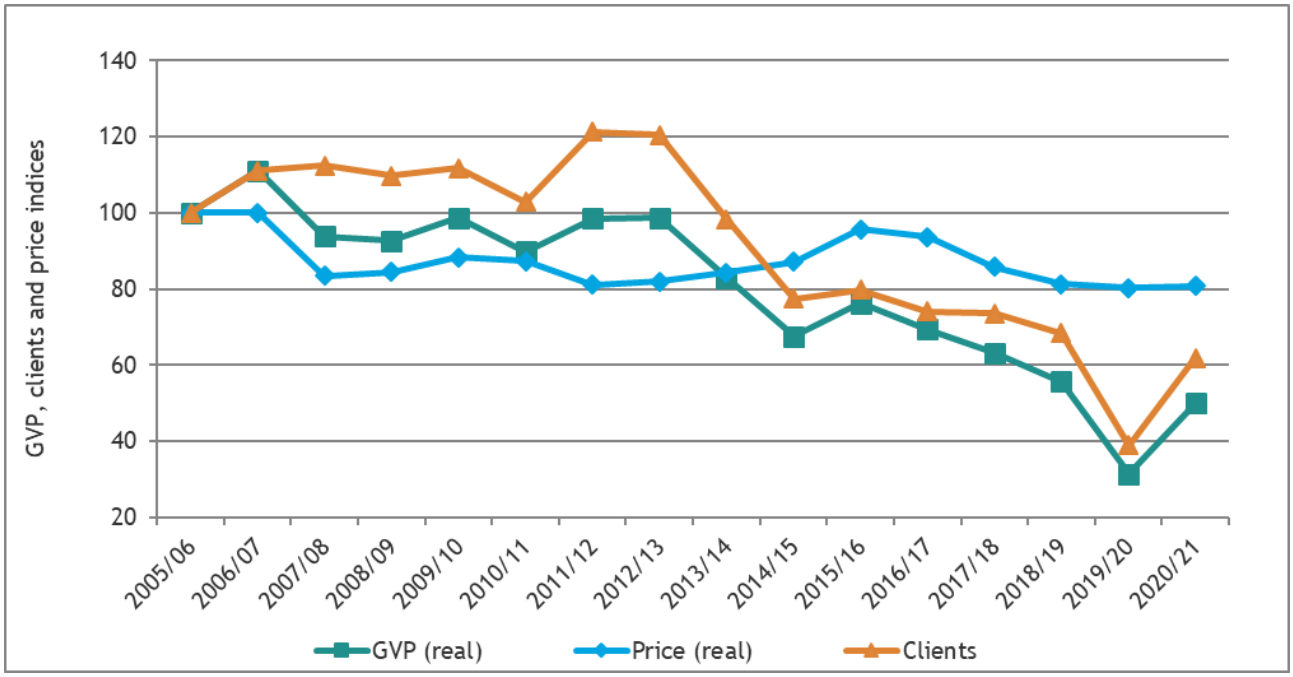
Figure 7-3 shows that between 2005/06 and 2020/21 the 11 per cent increase in nominal average price per client was equivalent to a 19 per cent decline in real price.

Figure 7-1 SA Charter Boat Fishery clients and GVP, 2005/06 to 2020/21



Source: BDO EconSearch (2022c)

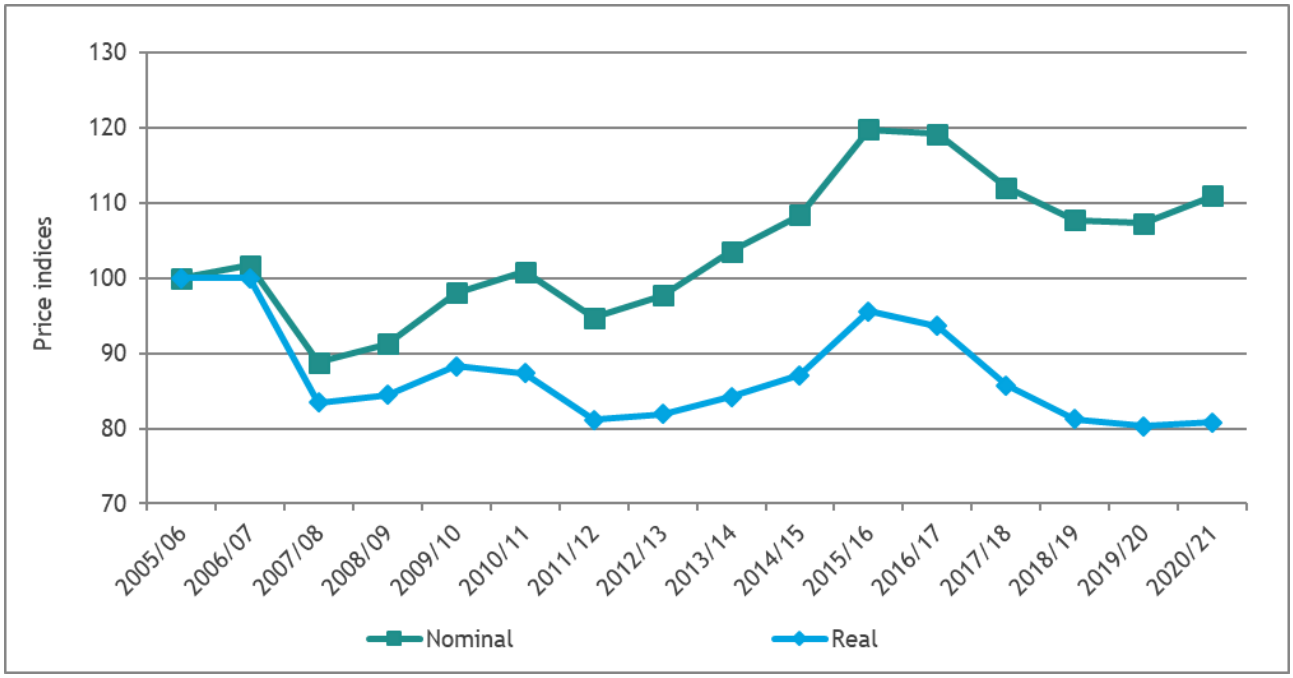
Figure 7-2 GVP, clients and price indices for the SA Charter Boat Fishery[a]



[a] Estimates are expressed in real dollars.

Source: BDO EconSearch (2022c)

Figure 7-3 Price indices for the Charter Boat Fishery[a]



[a] Nominal price refers to the price in the current year's dollars. Real price is the nominal price adjusted for the purchasing power of money. The CPI (consumer price index) has been used to make this adjustment (ABS 2021a). It enables meaningful comparisons of prices to be made between years.

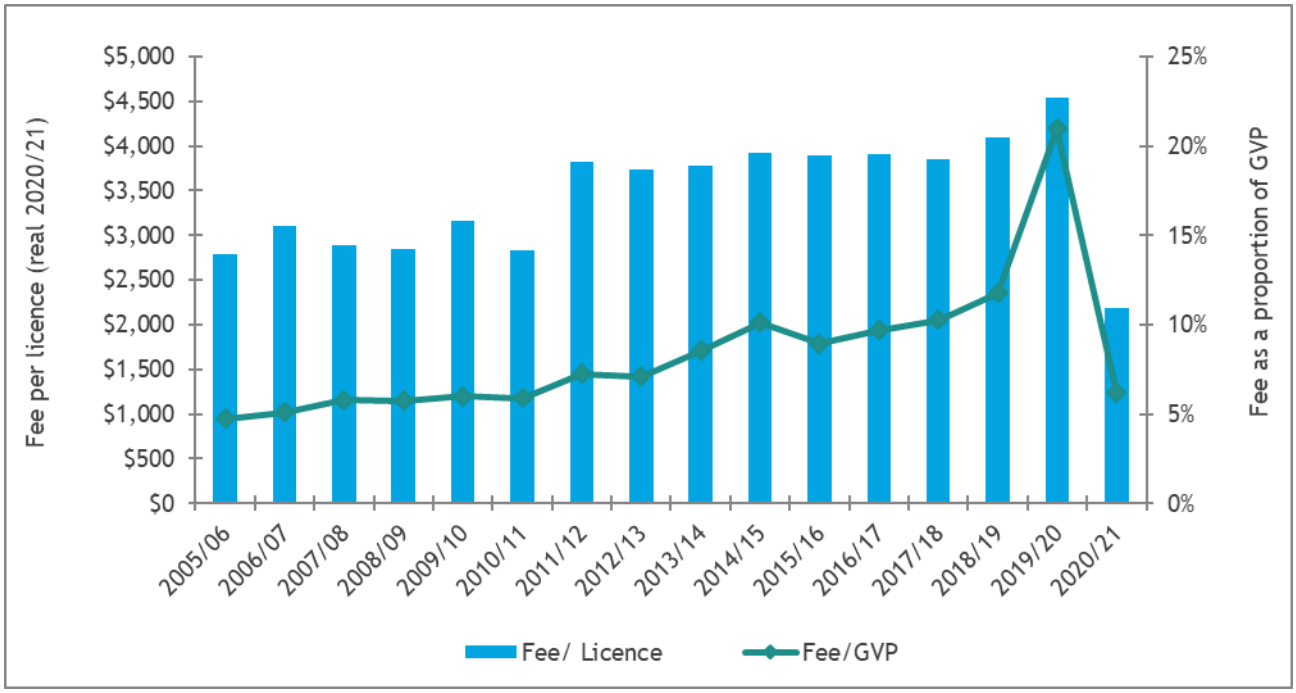
Source: BDO EconSearch (2022c)

7.3. Management Costs

The average management fee per licence holder and licence fees as a proportion of GVP are illustrated in Figure 7-4. Licence fees as a percentage of GVP followed an increasing trend between 2005/06 and 2019/20, from 4.7 per cent in 2005/06 to 20.9 per cent in 2019/20. This is the result of a reduction in GVP and an increase in aggregate fees, in real terms. In 2020/21 there was a sharp decline in licence fees as a percentage of GVP, which fell to 6.2 per cent. This sharp decrease is due to fees being waived by Government to aid operators who have been significantly impacted as a result of the COVID-19 pandemic.

The average management cost per licence holder increased from $2,785 in 2005/06 to $4,541 in 2019/20, in real terms (Figure 7-4). This rise is a result of both an increase in the real cost of management and reduction in the number of licences over the period. The average management cost per licence holder sharply decreased to $2,191 in 2020/21, this was a result of the waived fees mentioned above.

Figure 7-4 Management fee per licence holder and as a proportion of GVP, SA Charter Boat Fishery, 2005/06 to 2020/21[a]



[a] Estimates are expressed in real 2020/21 dollars.

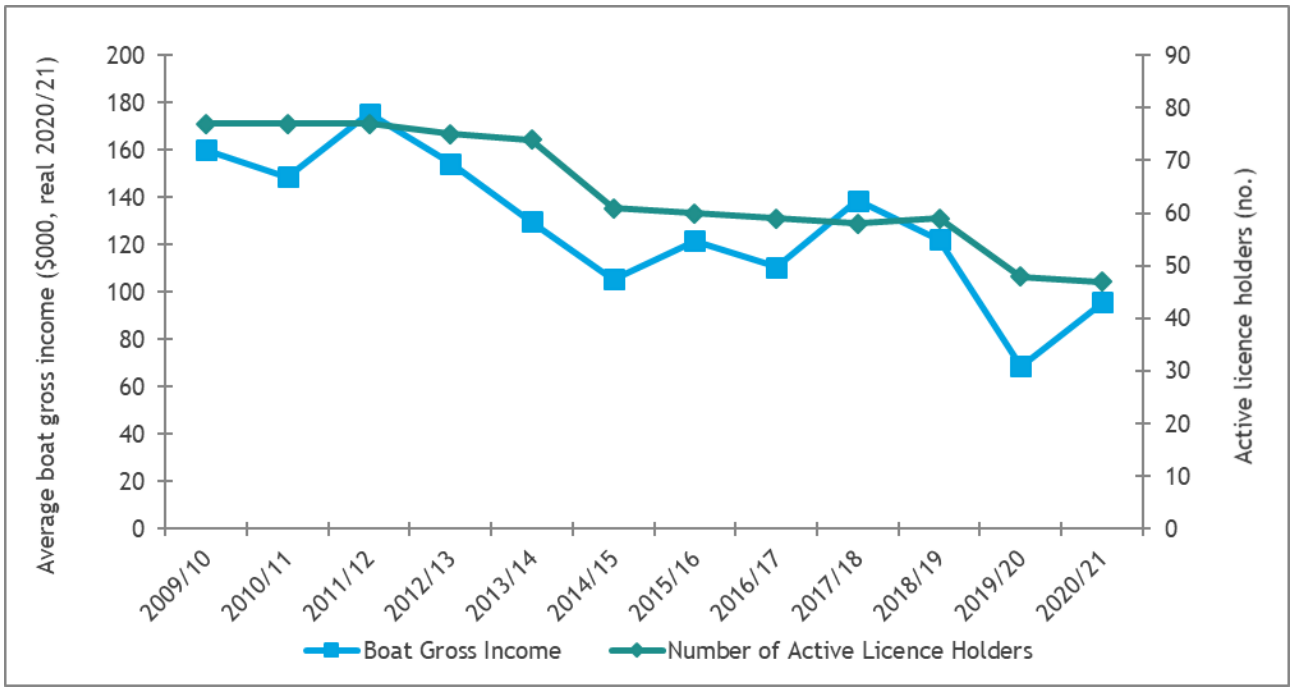
Source: BDO EconSearch (2022c)

7.4. Financial Performance

7.4.1. Average Income

Average income and total number of licences in the fishery for the period 2009/10[4] to 2020/21 are illustrated in Figure 7-5. The total number of active licence holders in the fishery declined from 77 in 2009/10 to 47 by the end of 2020/21. Despite this decrease and as a result of a reduction in fishery GVP, the average income per boat in the fishery has decreased from approximately $160,000 in 2009/10 to $96,000 in 2020/21 (real 2020/21 dollars) (Figure 7-5).

Figure 7-5 Average income per active licence holder in the SA Charter Boat Fishery, 2009/10 to 2020/21[a]



[a] Estimates of average boat gross income are expressed in real 2020/21 dollars indexed against 2009/10.

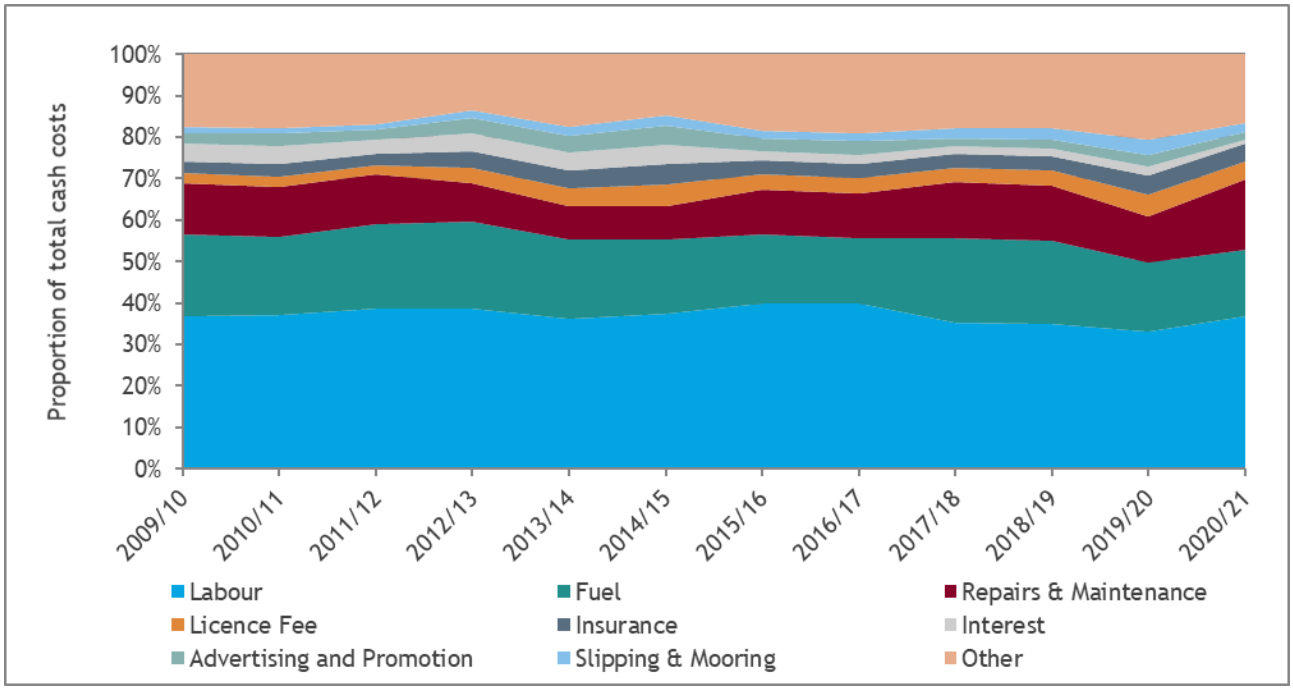
Source: BDO EconSearch (2022c)

7.4.2. Operating costs trends

A breakdown of major cost items as a proportion of total cash costs is illustrated in Figure 7-6. Labour costs accounted for the largest share of total cash costs across the period 2009/10 to 2020/21. 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 over the period were fuel and repairs and maintenance (Figure 7-6).

[4] Financial performance indicators are only reported from 2009/10 onwards from when economic indicators for the Charter Boat Fishery were first reported.

Figure 7-6 Cost shares in the SA Charter Boat Fishery, 2009/10 to 2020/21[a]



[a] Financial performance estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

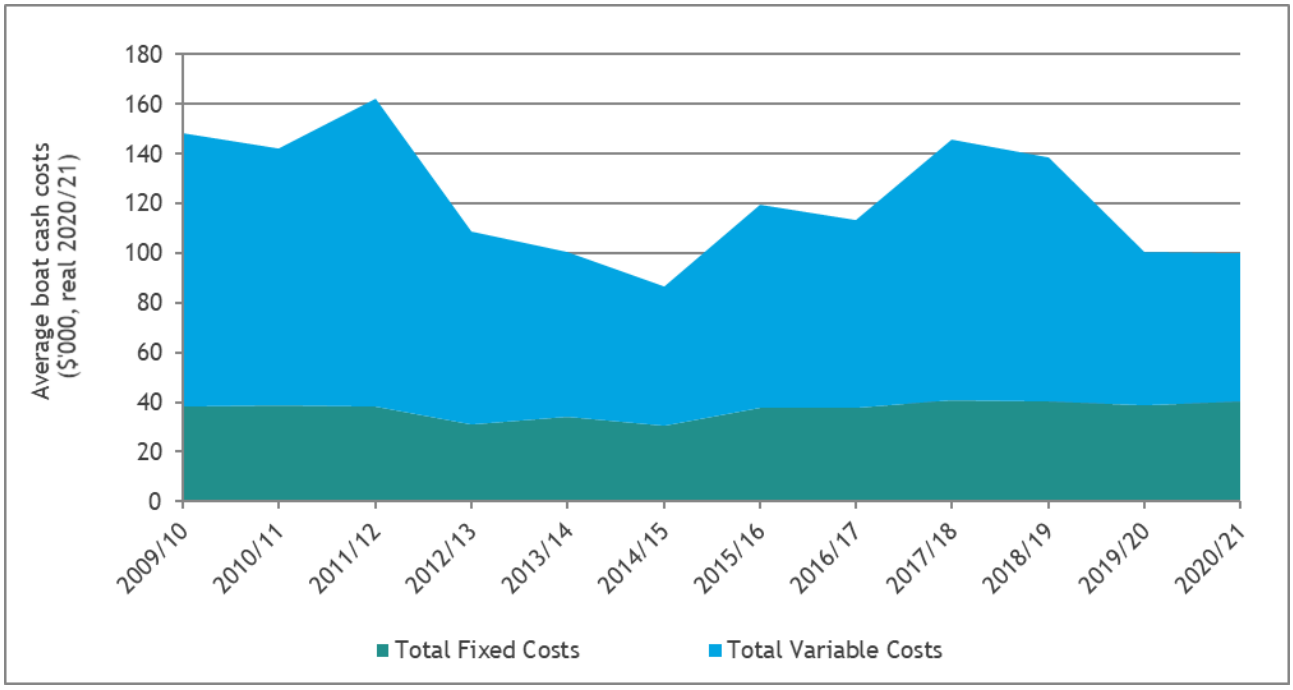
Source: BDO EconSearch (2022c)

The cash costs detailed in Figure 7-6 can be categorised as either variable or fixed costs and are illustrated in Figure 7-7 on an average per boat basis. Total variable costs have fluctuated between years but generally followed a declining trend over the period 2009/10 to 2014/15. Variable costs then increased into 2018/19 before declining significantly in 2019/20 and remaining low in 2020/21. As would be expected, total fixed costs have fluctuated much less from year to year but have also followed a slight decreasing trend over the period 2009/10 to 2014/15 and have followed an increasing trend thereafter (Figure 7-7). The decline in average total costs per boat between 2011/12 and 2012/13 and the increase between 2014/15 to 2018/19 is due, in part, to a change in the composition of the survey samples.

7.4.3. Costs price squeeze

Price and cost indices for the years 2009/10 to 2020/21 are summarised in Figure 7-8. These indicators were derived from the average price and average cost per client. Between 2009/10 and 2020/21 the average price per client decreased by approximately 8 per cent in real terms. The average cost of operating charter boats followed a rising trend over the same period, increasing by 22 per cent in real terms despite a sharp drop in 2020/21 (Figure 7-8). The cost per client increased significantly in 2019/20 as a result of the pandemic, and then returned to trend in 2020/21. The sharp decrease in 2020/21 is due to the increase in the number of clients between 2019/20 and 2020/21 (59 percent). In comparison, total boat cash costs only increased by 2 per cent between 2019/20 and 2020/21.

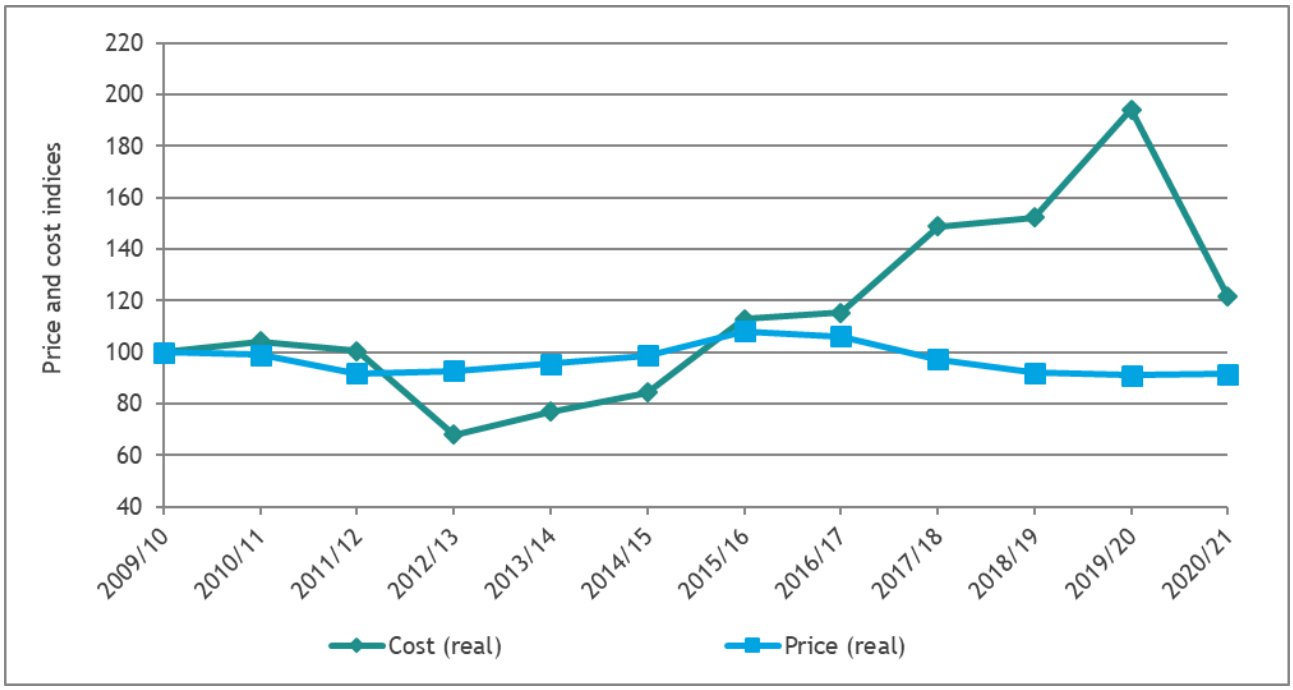
Figure 7-7 Average total costs in the SA Charter Boat Fishery 2009/10 to 2020/21[a]



[a] Estimates of average costs are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022c)

Figure 7-8 Price and cost indices for the SA Charter Boat Fishery[a]



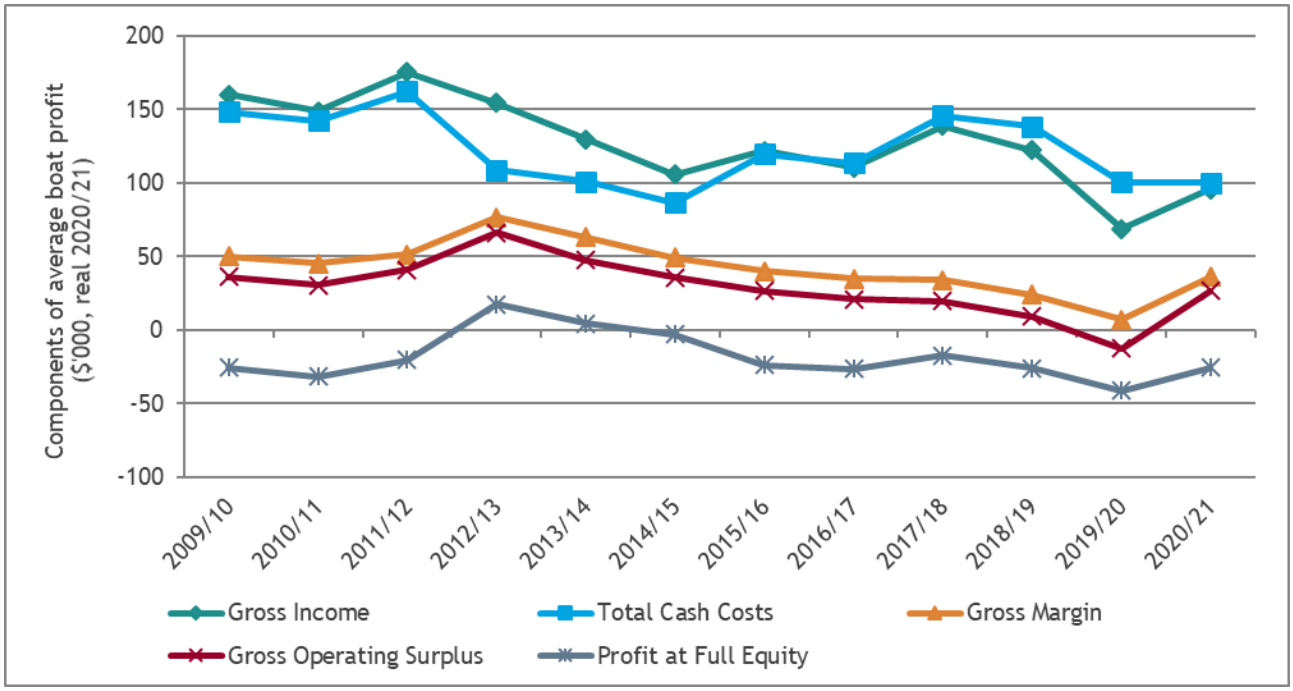
[a] Estimates of price and cost are expressed in real dollars.

Source: BDO EconSearch (2022c)

7.4.4. Profitability

Selected measures of profitability are summarised in Figure 7-9 for the years 2009/10 to 2020/21. Changes in each of the profitability measures for the fishery were closely related to the average income earned and costs incurred. Profitability measures followed an increasing trend between 2009/10 and 2012/13 but declined over the seven years to 2020/21 with fluctuations (Figure 7-9).

Figure 7-9 Average income and profit per boat in the SA Charter Boat Fishery, 2009/10 to 2020/21[a]



[a] Estimates of income and profitability measures are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022c)

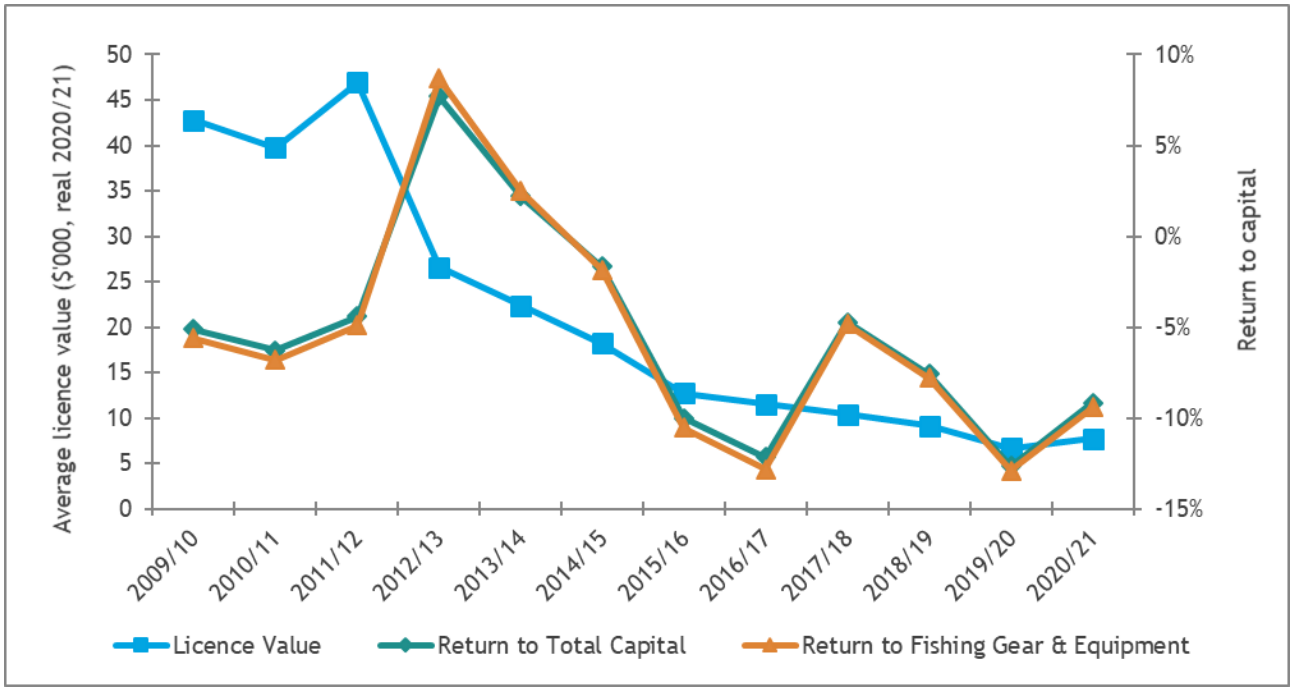
7.4.5. Return to capital

Estimates of the average licence value and the rate of return to capital are illustrated Figure 7-10. Total capital includes boats, licence/quota, fishing gear, sheds, vehicles and other capital items used as part of the fishing enterprise. Return to total capital is calculated to be profit at full equity as a percentage of both total capital employed and total capital excluding the licence value.

Overall, the rate of return to total capital for the fishery increased between 2009/10 and 2012/13 but declined steeply in the four years to 2016/17 where it saw a sharp increase in 2017/18 but decreased again until 2019/20. This recent rise in 2020/21 is likely attributable to a combination of bouncing back from the impacts of COVID-19 and sampling variation. The average value of licences in the fishery increased between 2009/10 and 2011/12 but has declined considerably since (Figure 7-10).

The Charter Boat Fishery has restricted access with no new licences currently being issued (PIRSA 2019) but the fact that these Charter Boat licences have any value is unusual. These licences have historically provided the holder with the opportunity to create negative profit at full equity and, as indicated by the large number of unused licences, these licences are not scarce. As there is a large number of inactive licences, it is likely that the small licence value is needed to encourage holders to sell to a willing buyer.

Figure 7-10 Return to capital in the SA Charter Boat Fishery, 2009/10 to 2020/21



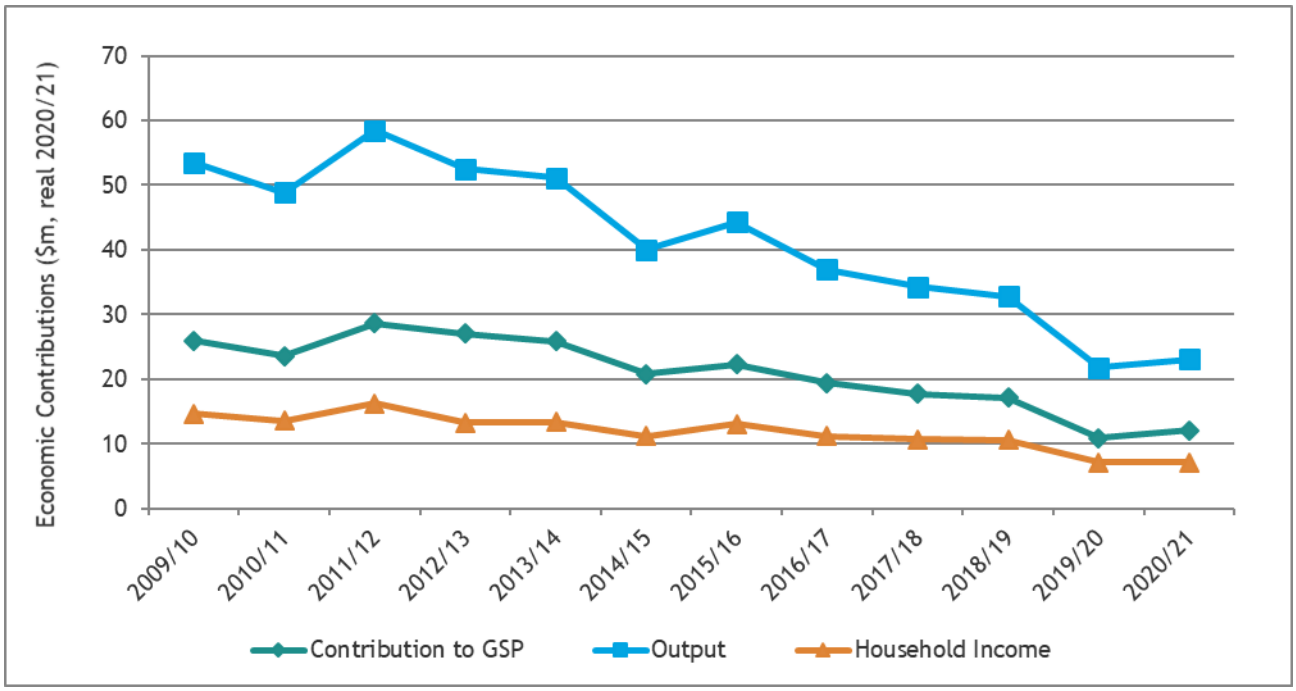
Source: BDO EconSearch (2022c)

7.5. Contribution to SA Economy

Figure 7-11 and Figure 7-12 illustrate the total economic contribution of the fishery on the SA economy between 2009/10 to 2020/21. Total economic contribution refers to the direct fishing industry contributions (Charter Boat fishing and other visitor expenditure) and the indirect contributions of these activities on other sectors of the economy.

The change in total output and GSP contributions are closely related to changes in fishery GVP. Output, household income, contribution to GSP and employment all followed a declining trend in the fishery between 2009/10 and 2020/21, despite a small increase in 2020/21, as illustrated in Figure 7-11 and Figure 7-12. The significant decrease in employment between 2011/12 and 2012/13 can, in part, be attributed to sampling variation in the 2012/13 survey (i.e. more responses from smaller businesses employing fewer people). The decrease of contributions from 2012/13 to 2020/21 can be explained by the reduced GVP of the fishery.

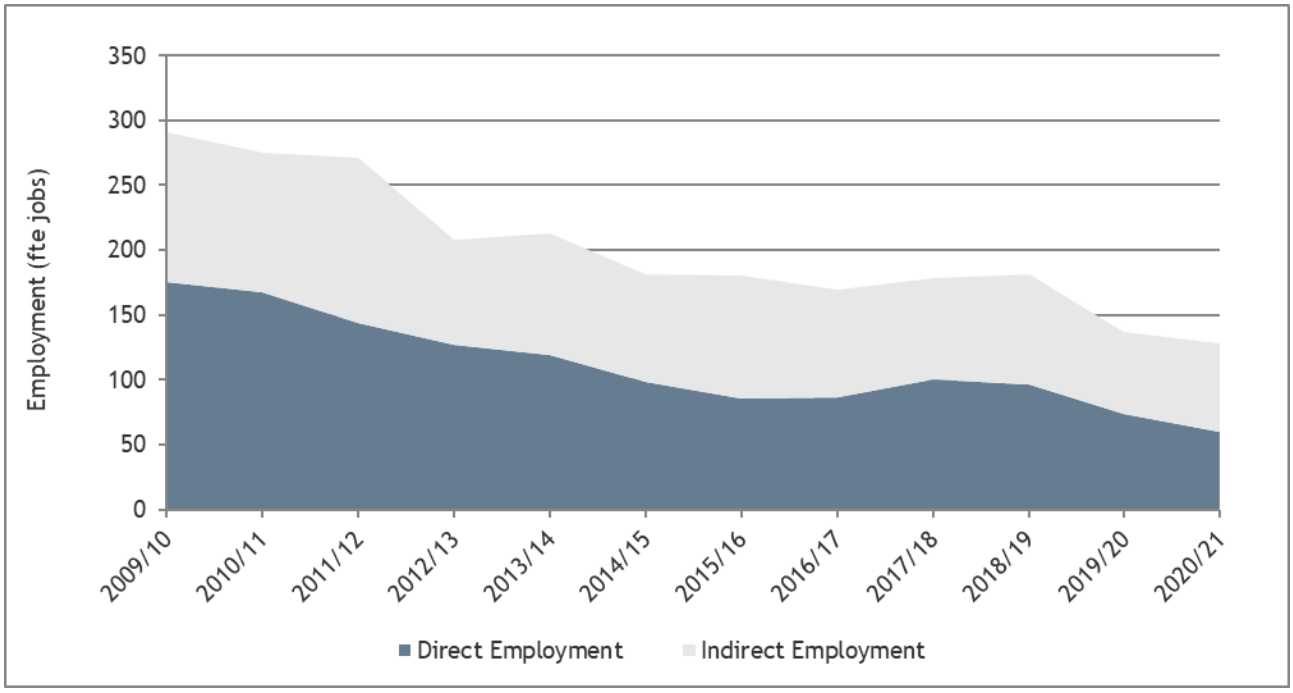
Figure 7-11 Total gross state product, output and household income contribution of the SA Charter Boat Fishery on the SA economy, 2009/10 to 2020/21[a]



[a] Estimates of output, GSP and household income are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022c)

Figure 7-12 Total direct and indirect employment contribution of the SA Charter Boat Fishery on the SA economy, 2009/10 to 2020/21



Source: BDO EconSearch (2022c)

8. LAKES AND COORONG FISHERY

8.1. Economic Objective of the Lakes and Coorong Fishery

The Management Plan for the South Australian Commercial Lakes and Coorong Fishery (PIRSA 2016) sets out a number of goals, namely:

1. Ensure the Lakes and Coorong Fishery resources are harvested within ecologically sustainable limits
2. Optimum utilisation and equitable distribution of the Lakes and Coorong Fishery resources
3. Minimise impacts on the ecosystem
4. Cost effective and participative management of the fishery.

Selected economic and social objectives of the management plan, developed to assist in achieving the goals of the fishery, are as follows:

- Manage allocated shares to deliver optimum utilisation and equitable distribution in accordance with the Governments allocation policy
- Increase the flow of social and economic benefit from the fishery to the broader community
- Improve economic efficiencies and financial returns within the constraints of sustainability imperatives
- Improve measures of economic and social value of the Lakes and Coorong Fishery
- Provide cost-effective and efficient management of the fishery.

Specific strategies and performance indicators relating to the economic objectives outlined in the management plan are detailed in Table 8-1.

Over the last 20 years an annual report on economic indicators for the Lakes and Coorong fishery has been prepared. The economic indicators contained in these reports, most recently reported in EconSearch (2022d), can assist in measuring the performance of the fishery against management objectives. The economic indicators for the fishery are summarised under the following headings:

- catch and gross value of production (GVP) (Section 8.2)
- management costs (Section 8.3)
- boat level financial performance indicators (Section 8.4)
  - average income
  - operating costs
  - cost-price squeeze
  - profitability
  - return on investment
- contribution to the SA economy (Section 8.5)
  - GSP
  - household income
  - employment
- net economic return (Section 8.6).

Indicators relating to the financial performance for the fishery are reported for the period 2001/02 to 2020/21. It should be noted that economic indicators are based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Table 8-1 Economic and social objectives of the Lakes and Coorong Fishery

Goal	Objective	Strategies	Performance Indicators	Description	Triggers / Reference Points
Goal 2 Optimum utilisation and equitable distribution of Lakes and Coorong Fishery resources	2b. Increase the flow of economic and social benefit from the fishery to the broader community	2b(i). Positively influence the fishery's socio-economic benefits for the broader community 2b(ii). Communicate information about ESD outcomes of the fishery to the broader community in a timely and publicly assessable manner 2b(iii). Develop and maintain positive relationships with the regional communities in the area of the fishery 2b(iv). Industry to maintain adherence to existing occupational health, safety and welfare requirements and procedures	Contribution of fisheries to the local economic and social activity Proportion of direct and indirect employment in a region dependant on fishing Demonstrate availability of Lakes and Coorong Fishery information through website, correspondence, media releases, licence holder letters, Fishcare volunteer program, industry publications and compliance officers	The Economic Indicators report provides detailed regional information on the economic performance including data on employment and expenditure Community support activities include non-paid work such as attendance of meetings, conservation activities and community service volunteering At the review of the plan, consider potential impacts the fishery may have on Aboriginal cultural practices (in particular Aboriginal cultural fishing) and traditional knowledge systems (specifically traditional fishing	A downward trend in employment, expenditure and community support activities over a three year period

Goal	Objective	Strategies	Performance Indicators	Description	Triggers / Reference Points
		2b(v). Consider the fishery roles in Aboriginal cultural practices (in particular Aboriginal cultural fishing) and traditional knowledge systems (specifically traditional fishing knowledge) as information becomes available	Level of community support activities	knowledge) and incorporated into the plan, where appropriate. This may include: · Identifying 'sea country' relevant for this fishery · Support for cultural practices included in management considerations	
	2c. Improve economic efficiencies and financial returns within the constraints of sustainability imperatives	2c(i). Develop and implement management arrangements that allow commercial operators to maximise operational flexibility, economic efficiency, value and returns 2c(ii). Provide opportunities for diversification and developmental fishing 2d(i). Undertake periodic economic and social surveys of the commercial fishery to assess performance against a set of economic and social indicators	Key economic indicators: operating surplus, profit at full equity and rate of return on total boat capital Licence value Product value		A declining trend in economic indicators and licence value over a three year period

Goal	Objective	Strategies	Performance Indicators	Description	Triggers / Reference Points
	2d. Monitor the economic and social performance of the fishery and ensure the collection of economic and social fishery data	2d(ii). Review and update the research and monitoring plan regularly 2d(iii). Develop appropriate indicators of social performance of the fishery	Delivery of annual economic reports assessing economic performance of the fishery from periodic economic surveys Social fishery surveys undertaken periodically and reported when data is available	Economic indicator reports are currently prepared annually. Steps are being taken to provide indicators associated with key target species Social indicator data to be collected with the economic survey data (to minimise survey costs) and reported when data is available, in consultation with industry	Economic and social data not collected on an annual basis
	2f. Provide flexible opportunities to ensure fishers can maintain or enhance their livelihood	2f(i). When implementing management changes, where possible ensure that the management framework does not unnecessarily reduce the ability of fishers to successfully run a business	Provision of a livelihood opportunity: How is the ability of fishers to access livelihood changing Perception of flexibility: fishers believe fisheries management processes are flexible enough to allow them to adapt to changing conditions	Management enables adequate and secure access to fish stocks that is flexible to deal with stock fluctuations The regulatory framework does not unnecessarily reduce ability to successfully run a business	The proportion of fishers who think fisheries management is flexible is >50% and this has remained stable or is increasing overtime The proportion of fishers who think fisheries management is flexible enough is decreasing over time
		2f(ii). When implementing management changes where possible enable adequate and			The proportion of fishers who think fisheries management is flexible enough is decreasing

Goal	Objective	Strategies	Performance Indicators	Description	Triggers / Reference Points
		secure access to fish stocks that is flexible			over time or is <50% and stable or decreasing
	2g. Ensure equitable treatment and access for fishers	2g(i). Decision making processes develop and use clear principles, incorporating consideration of equity principles	Level of fisher perceived equity/fairness of the processes and outcomes of fisheries management	A majority of fishers perceive allocation, gear restrictions, access to areas, and decision-making processes, as equitable	<50% of fishers believe they are treated unfairly on any of the four dimensions of equity measured (gear restrictions, access, allocation and decision-making processes) >50% of fishers believe they are treated unfairly on any one of the four dimensions of equity measured, or <50% believe this, but the proportion feeling they are treated unfairly is increasing
		2g(ii). Consultation process designed and undertaken for input of different fishers and stakeholders			>50% of fishers believe they are treated unfairly on more than one of the four dimensions of equity measured, and this proportion is increasing
Goal 4 Cost-effective and participative	4c. Ensure transparency of decision-making process by	4c(i). Documentation of fisheries management decisions will be accessible to all stakeholders	Documentation of fisheries management decision-making process	Fishers understand how fisheries management decisions are made, and feel that the reasoning behind decisions as well as the	The process by which fisheries management decisions will be made is clearly documented and accessible to all stakeholders; and this documented process has

Goal	Objective	Strategies	Performance Indicators	Description	Triggers / Reference Points
management of the fishery	management bodies			process are consistent and clearly communicated	been followed in all decision-making during the past 12 months The process of decision-making by fisheries managers is documented, but not easily accessible to stakeholders; or the documented process is not always being followed There is little or no documentation and communication of decision-making processes by fisheries managers, and/or no consistent process used to make management decisions
	4d. Stakeholders have a high level of trust in the management of fisheries	4d(i). Open and transparent discussions on management decisions	The level of fishers trust / confidence in PIRSA Fisheries and Aquaculture	Stakeholders indicate a high level of trust in the both the process of fisheries management, and the outcomes of this management	The proportion of fishers indicating they don't trust the fisheries management agency is <50%, and stable or continuing to decline The proportion of fishers indicating they don't trust the

Goal	Objective	Strategies	Performance Indicators	Description	Triggers / Reference Points
					fisheries management agency is >50%, but declining The proportion of fishers indicating they don't trust the fisheries management agency is >50% and stable or increasing, or is <50% but increasing over time
	4e. Maximise stewardship of fisheries resources	4e(i). Where possible simplify and standardise the regulatory rules, to ensure the rules are easier to comply with, easier to enforce and that fisheries management will be more efficient 4e(ii). Ensure any management changes (and reasoning) are communicated with fishers 4e(iii). PIRSA/industry collaborating to promote fishery stewardship 4e(iv). Strengthen links with licence holders through improved communication 4e(v). Support the use of external accreditation processes to underpin	Improve community understanding and recognition of the high level of fishery management and regulation	The number of infringements changing over time Proportion of fishers who believe that, overall, most fishers comply with fishing rules (fisher survey) Extent fishers accurately understand regulations (fisher survey) Fishers find it easy to comply with fishing rules and regulations (fishery survey)	>80% of fishers agree that it is easy to comply with fishing rules and regulations Between 60-80% of fishers agree that it is easy to comply, or if >80% agree but there is a decline over time in the proportion who agree There is ongoing decline in the proportion of fishers who agree with the statement, or <60% agree with it

Goal	Objective	Strategies	Performance Indicators	Description	Triggers / Reference Points
		the integrity of management processes			
	4f. Maximise the fishers cultural, recreational and lifestyle benefits (including health benefits) of fishing	4f(i). When implementing management changes, where possible ensure that the management framework does not unnecessarily impact on their cultural, community and lifestyle benefits	Level of satisfaction fishers are achieving with the cultural, community, recreational and lifestyle benefits important to them from fishing	Identification of the extent to which different benefits are important to or desired by fishers and which of these benefits are being achieved	>50% of fishers indicate they are satisfied with their ability to achieve the benefits they find highly important from fishing 50% of fishers indicate they are satisfied with their ability to achieve the benefits they find highly important from fishing, but this percentage is growing over time, suggesting that there is positive change but continuing action is needed A declining proportion of fishers are indicating they are satisfied with their ability to achieve the benefits they find highly important from, or <50% are satisfied and there is no change in satisfaction

Goal	Objective	Strategies	Performance Indicators	Description	Triggers / Reference Points
	4g. Facilitate and support the cohesion and connectedness of fishers with their regional communities through fisheries management	4g(i). Identifying dates when fishers need to be able to participate in community activities or when placing restrictions on fishing may be considered culturally inappropriate	Level of recognition of key social and community needs in fisheries management processes	Fisheries management plans include strategies to ensure fishers are able to take part in their communities, while still also being involved in fisheries management decision-making as appropriate	This indicator is being met if: issues are being actively identified, addressed in management processes, and signed off by concerned parties There is need to consider further management action if: no issues are being identified, or some issues are identified but not addressed in management processes There is an urgent need for management action if: no issues known or unknown are being identified or addressed
	4h. Maximise community trust in fisheries agencies to manage fisheries	4h(i). Fishcare volunteers to provide information at public at events about the management of the fishery	Level of fisheries management agency involvement in community education/outreach activities	Stakeholders indicate a high level of trust in the both the process of fisheries management, and the outcomes of this management	Education and training opportunities are being provided (whether directly or indirectly), and the number is remaining stable or increasing over time

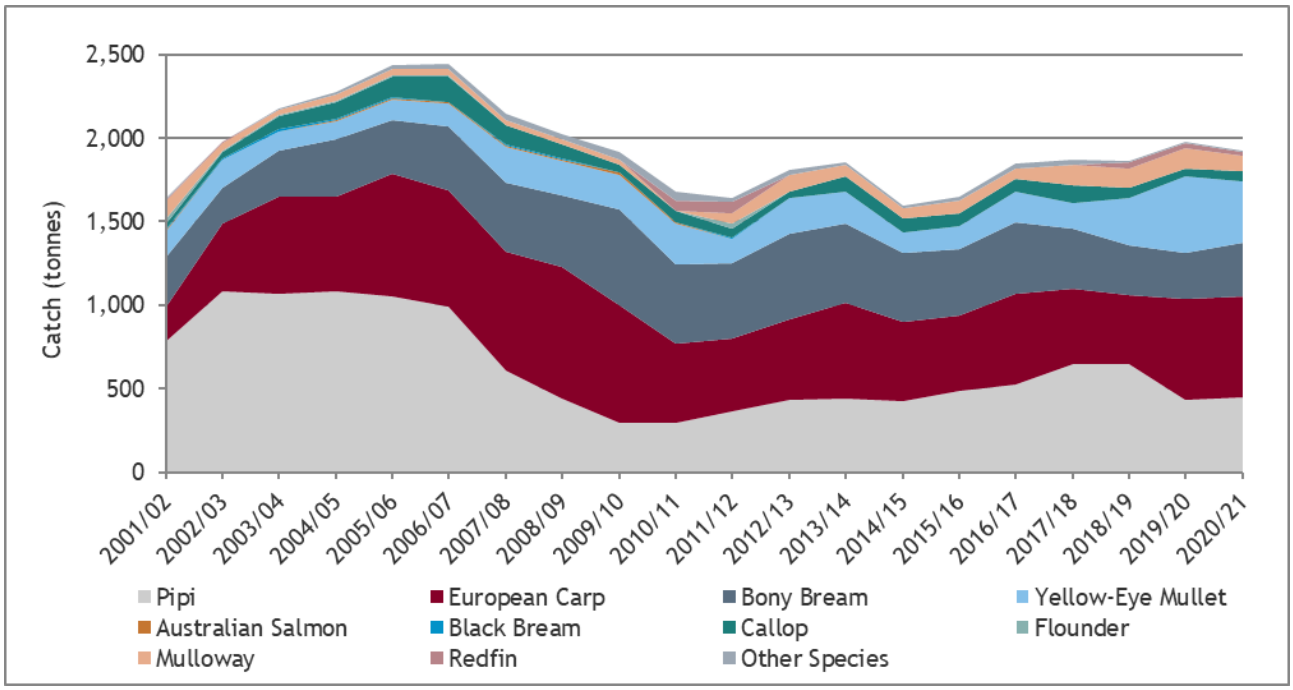
Goal	Objective	Strategies	Performance Indicators	Description	Triggers / Reference Points
		4h(ii). Develop appropriate material for community to understand decision-making process			Education and training opportunities are being provided, and the number is falling over time No education and training opportunities are being provided
	4i. Ensure fisheries management contributes to the maintenance of cultural and heritage values related to fishing activities	4i(i). Identify cultural and heritage values	Number of cultural and heritage values associated with fishing are identified and managed as part of fisheries management	Cultural and heritage values are clearly identified and understood by fisheries managers, and the ways in which fisheries management impacts these values is documented in the management plan together with strategies for maintaining these values, or minimising negative effects	Fisheries management identifies cultural and heritage values, and consults with two or more external stakeholders to help identify these values (e.g. local experts) Fisheries management identifies cultural and heritage values, but primarily based on their own knowledge with little or no consultation with other groups Fisheries management doesn't identify cultural and heritage values at all

Source: PIRSA 2016

8.2. Catch and Gross Value of Production

The data shown in Figure 8-1 indicate that total catch in the fishery followed an increasing trend between 2001/02 and 2006/07. Total catch declined until 2011/12 from whence it increased once again returning to a similar catch level in 2020/21 as in 2001/02. Total catch was reduced in 2014/15 primarily due to a decrease in catch of Yellow-Eye Mullet, European Carp, Bony Bream and Mulloway. There was a slight increase in total catch in 2015/16 to 2018/19 mainly due to the increase in Pipi quota. Increased catch in 2019/20 was a result of an increase in catch of European Carp and Yellow-Eye Mullet and despite a reduction in the Pipi TACC. Total catch in 2020/21 decreased slightly due to a reduction in catch of Yellow-Eye Mullet.

Figure 8-1 Lakes and Coorong Fishery catch (tonnes), 2001/02 to 2020/21

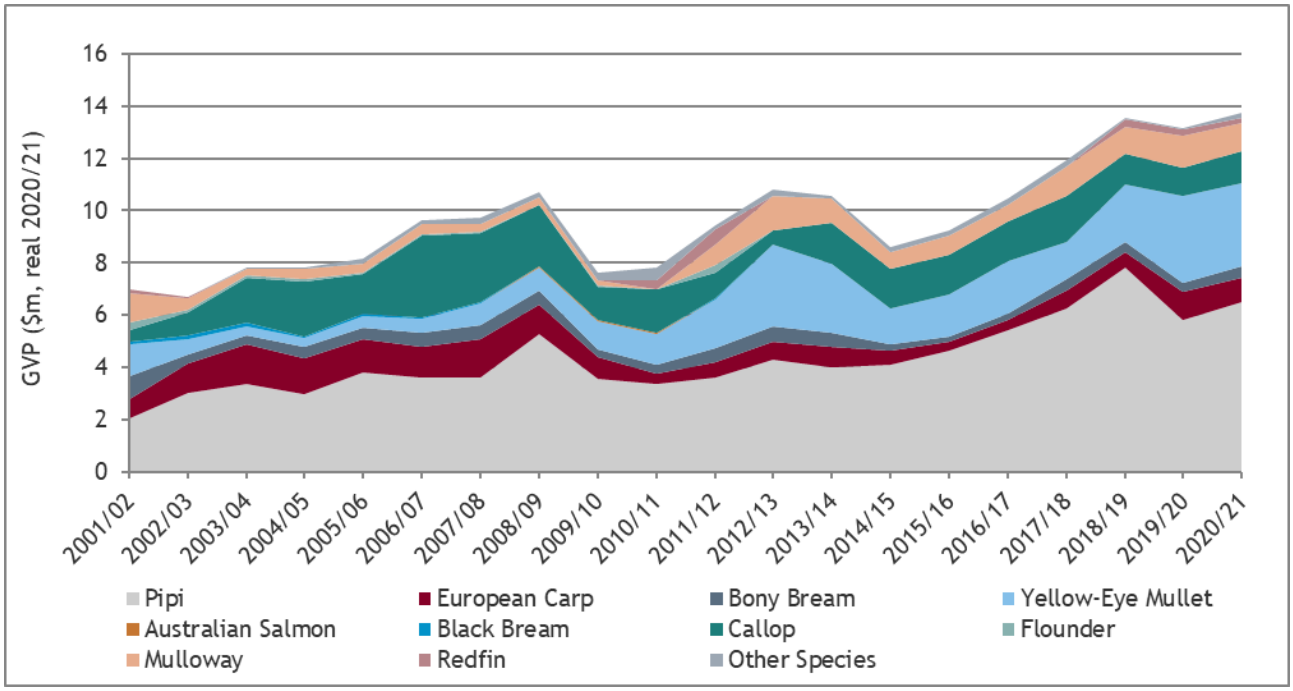


Source: BDO EconSearch (2022d)

The GVP for the Lakes and Coorong Fishery for the period 2001/02 to 2020/21 is illustrated in Figure 8-2. One of the performance indicators associated with the achievement of the economic objectives of the management plan is the trend in fishery GVP (Table 8-1). After a sharp fall in 2009/10, the value of catch in the Lakes and Coorong Fishery increased through to 2012/13 due to an increase in price. Value of catch decreased between 2012/13 and 2014/15 mainly due to a decrease in price. The value of catch increased in 2015/16 to 2020/21 as a result of an increase in both catch and price (Figure 8-2).

Another performance indicator related to achieving the economic objectives of the management plan is the market prices for key species (Table 8-1). The average annual price for key Lakes and Coorong Fishery species is illustrated in (Figure 8-3). The average price of most key species has fluctuated but generally followed an increasing trend in real terms (Figure 8-3).

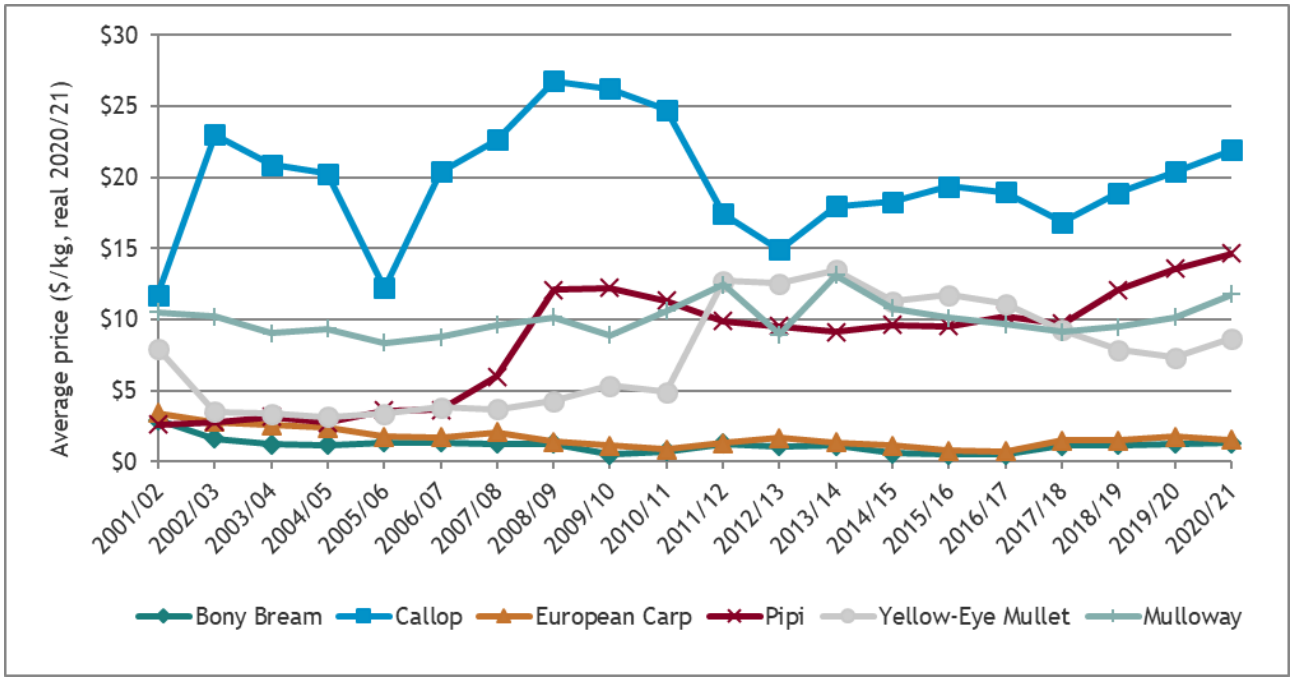
Figure 8-2 Lakes and Coorong Fishery GVP, 2001/02 to 2020/21[a]



[a] Values have been converted to real 2020/21 dollars.

Source: BDO EconSearch (2022d)

Figure 8-3 Average price for Lakes and Coorong Fishery species, 2001/02 to 2020/21[a]

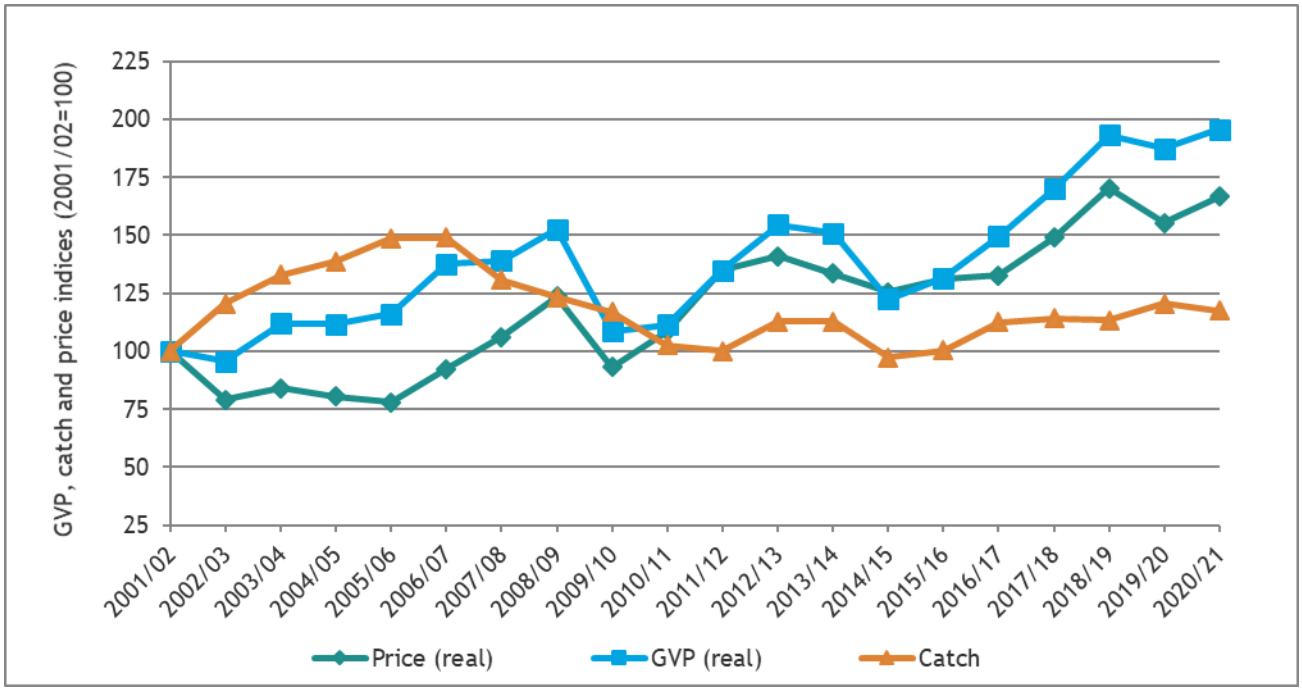


[a] Value of Mulloway was not published separately in 2010/11. For the purposes of presentation of this graph, the value of Mulloway for this year was calculated as an average value.

Source: BDO EconSearch (2022d)

Catch, GVP and price indices for the fishery for 2001/02 to 2020/21 are illustrated in Figure 8-4. Despite falls in 2002/03, 2009/10, 2014/15 and 2019/20 the real value of the Lakes and Coorong Fishery followed an increasing trend over the 20 year period.

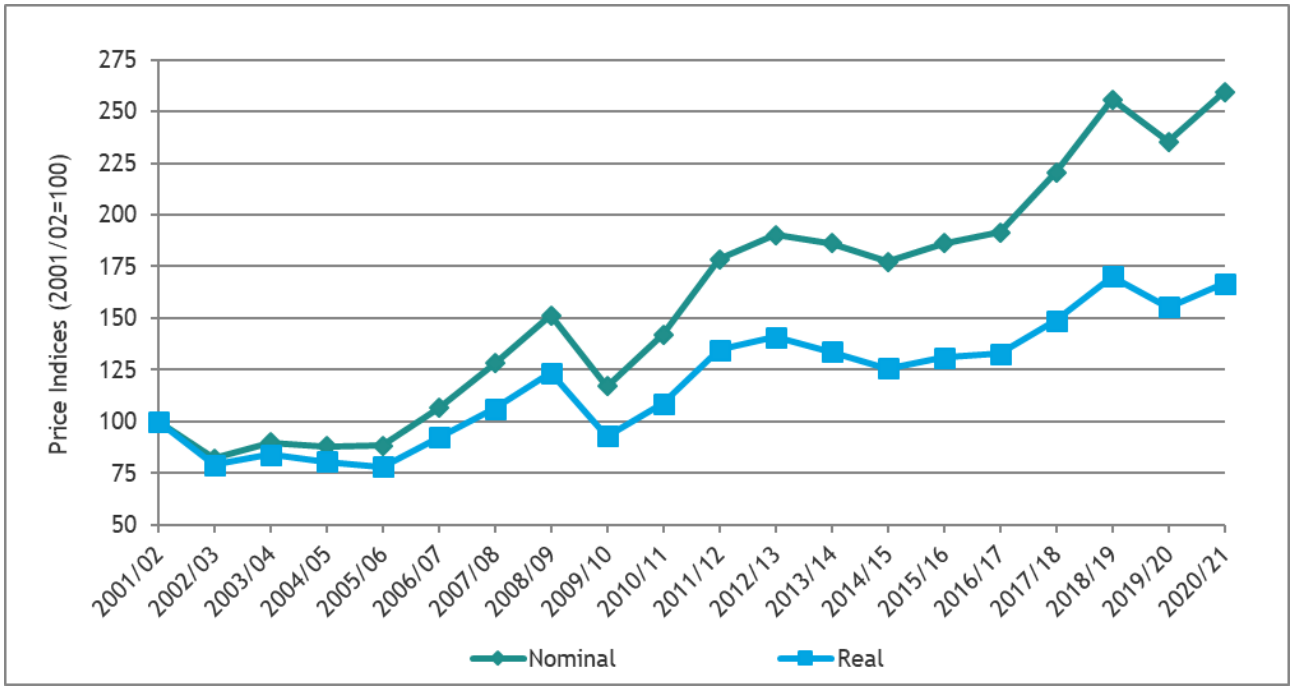
Figure 8-4 GVP and catch indices for the Lakes and Coorong Fishery



Source: BDO EconSearch (2022d)

Figure 8-5 shows that between 2001/02 and 2020/21 the 160 per cent increase in nominal average price of Lakes and Coorong Fishery species was equivalent to a 67 per cent rise in real price. The average price of Lakes and Coorong Fishery species is calculated as total fishery GVP divided by total volume of catch, in other words an average price weighted by catch. This is a way of condensing prices for all species into a single annual value.

Figure 8-5 Price Indices for the Lakes and Coorong 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 CPI (consumer price index) has been used to make this adjustment (ABS 2021a). It enables meaningful comparisons of prices to be made between years.

Source: BDO EconSearch (2022d)

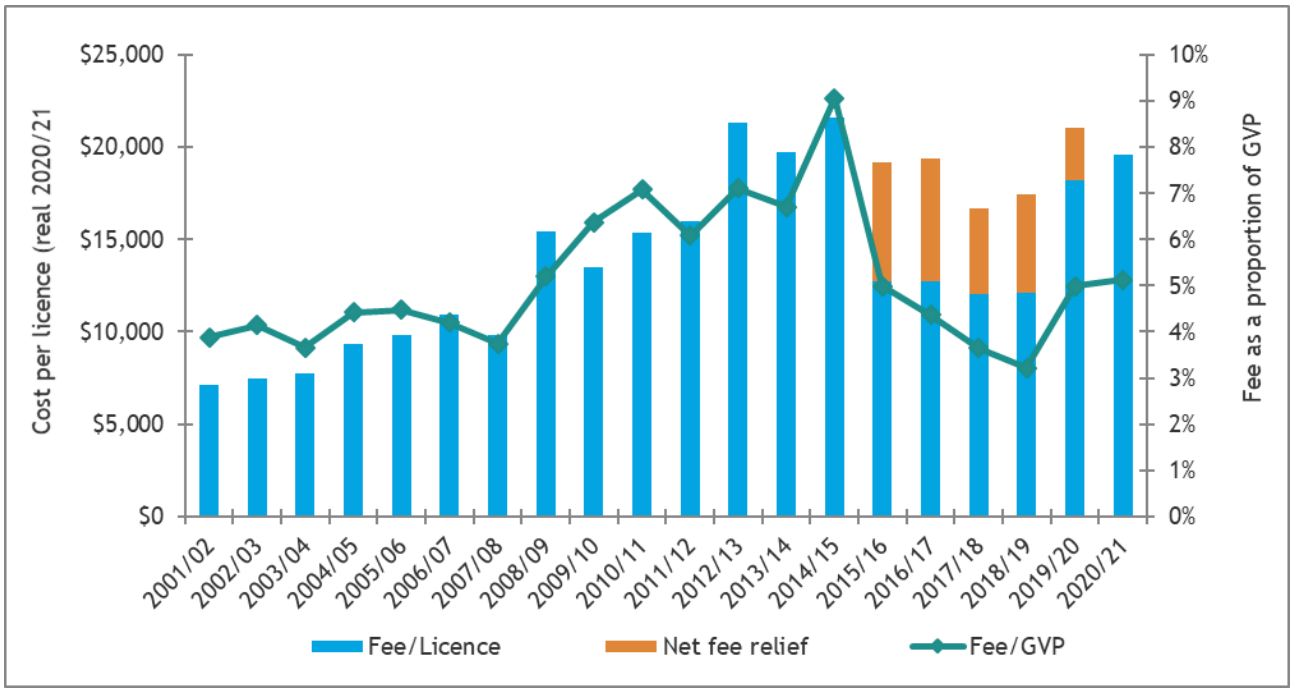
8.3. Management Costs

The average management fee per licence holder and the licence fee as a proportion of GVP are illustrated in Figure 8-6. Licence fees as a percentage of GVP fluctuated between 2001/02 to 2014/15 but overall followed an increasing trend. Since 2007/08 the cost of managing the fishery has increased at a greater rate than the increase in total fishery GVP. As a result, the increase in management fees as a proportion of GVP has been relatively large. There was a decline between 2015/16 to 2018/19 due to the net fee relief and an increase in GVP before it rose again in 2019/20 and 2020/21 due to the removal of net fee relief (Figure 8-6).

The average real (2020/21 dollars) licence fee per licence holder increased from $7,150 in 2001/02 to $15,433 in 2008/09, reflecting a decrease in the number of licence holders (from 37 to 36) and an increase in total management costs (Figure 8-6). Between 2008/09 and 2014/15 average management fees increased to $21,570 principally due to the introduction of the Pipi quota system. The average licence fee per licence holder was lower between 2015/16 ($12,762) to 2018/19 ($12,076) as a result of the net fee relief. The indicator then increased to $18,192 in 2019/20 and $19,562 in 2020/21 due to decreased net fee relief.

A portion of the total management cost since 2002/03 has been the PIRSA initiative to support industry associations to develop their capacity to effectively participate in the fisheries management process, to support industry based research and development initiatives, and to support the MSC certification process.

Figure 8-6 Management fee per licence holder and as a proportion of GVP, Lakes and Coorong Fishery, 2001/02 to 2020/21[a]



[a] Estimates of the average fee per licence holder are expressed in real 2020/21 dollars.

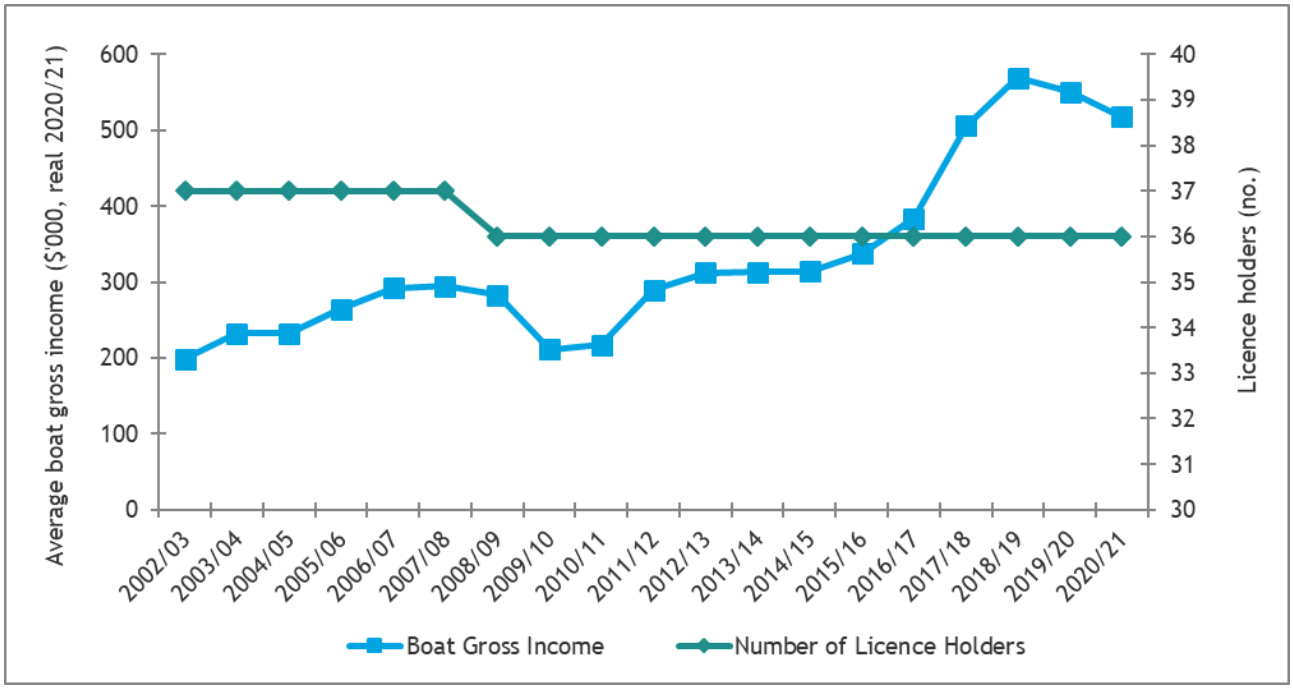
Source: BDO EconSearch (2022d)

8.4. Financial Performance

8.4.1. Average Income

The average income per licence holder and total number of licence holders in the fishery for the period 2002/03 to 2020/21 is illustrated in Figure 8-7. One of the performance indicators associated with the achievement of the economic objectives outlined in the management plan for the fishery is the trend in the number of licence holders in the fishery (Table 8-1). The total number of licence holders decreased marginally (from 37 to 36) over the period 2002/03 to 2020/21. Accordingly, changes in the average income per licence holder closely relate to the total GVP for the fishery. The average real income per licence holder increased from approximately $199,000 in 2002/03 to almost $295,000 in 2007/08. Average income fell to $212,000 in 2009/10 but has since recovered and was $517,000 in 2020/21 (Figure 8-7).

Figure 8-7 Average income per licence holder in the Lakes and Coorong Fishery, 2002/03 to 2020/21[a]



[a] Estimates of average boat gross income are expressed in real 2020/21 dollars.

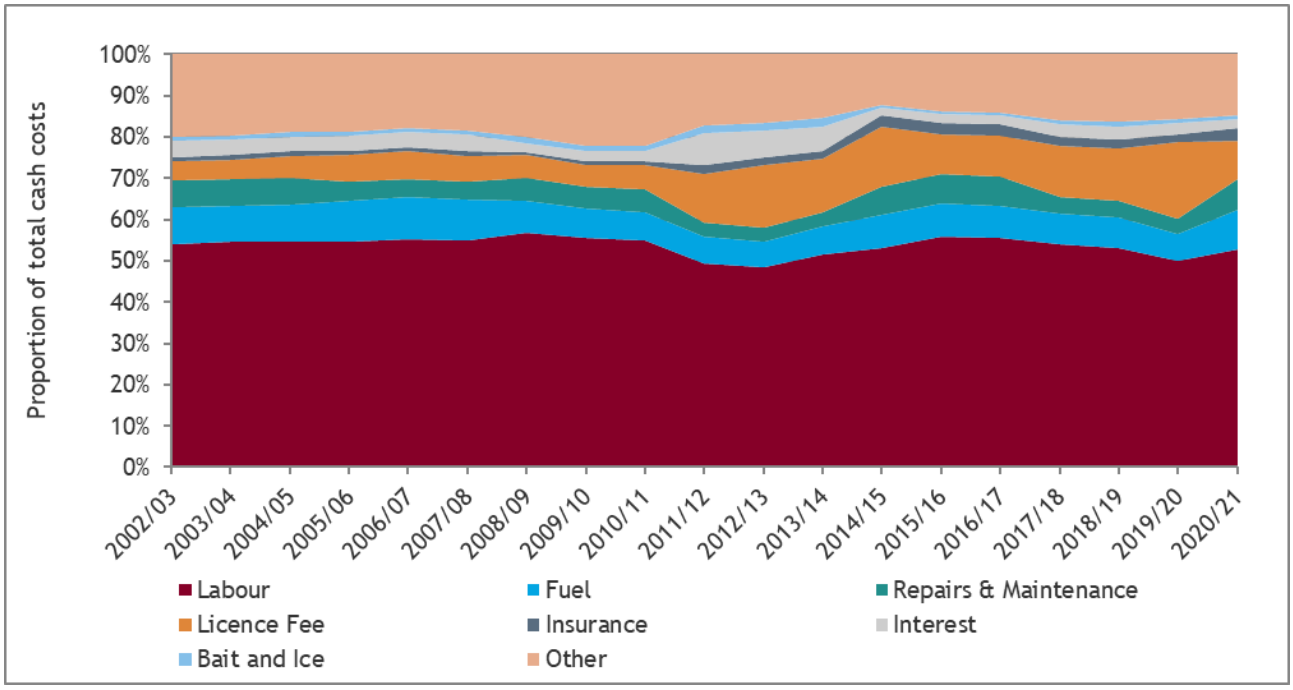
Source: BDO EconSearch (2022d)

8.4.2. Operating costs trends

A breakdown of major cost items as a proportion of total cash costs is illustrated in Figure 8-8. . 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 licence fees, fuel and repairs and maintenance. There was a large increase in licence fees as a proportion of total cash costs between 2010/11 and 2019/20 which coincides with the increasing aggregate management costs to cover the Pipi quota system. Debt levels for land-based infrastructure such as fish processing and depuration for pipis also increased over that time which was reflected in higher interest payments. In 2020/21 fuel, repairs & maintenance, and insurance as a proportion of total cash costs increased notably, while licence fees as a proportion of total cash costs decreased (Figure 8-8).

The cash costs detailed in Figure 8-8 can be categorised as either variable or fixed costs and are illustrated in Figure 8-9 on an average per boat basis. Total fixed costs have generally followed an increasing trend over the period 2002/03 to 2020/21. Fixed costs have risen considerably mainly as a result of an increase in licence fees and interest until 2019/20. Total variable costs increased between 2002/03 to 2008/09 before decreasing until 2018/19. Total variable costs increased marginally in 2019/20 and then increased more notably in 2020/21. Variable and fixed costs increased in 2020/21 primarily due to increases in variable labour, repairs and maintenance, fuel and insurance.

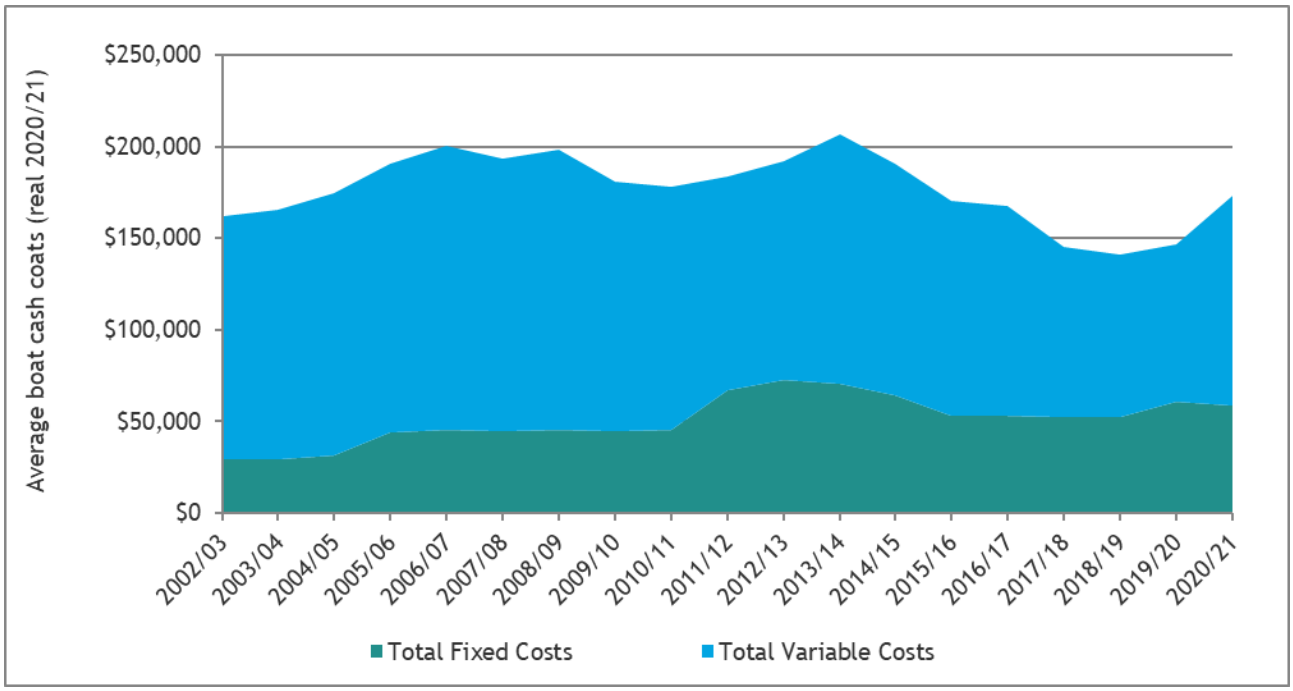
Figure 8-8 Cost shares in the Lakes and Coorong Fishery, 2002/03 to 2020/21[a]



[a] Financial performance estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Source: BDO EconSearch (2022d)

Figure 8-9 Average total costs in the Lakes and Coorong Fishery, 2002/03 to 2020/21[a]



[a] Estimates of average costs are expressed in real 2020/21 dollars.

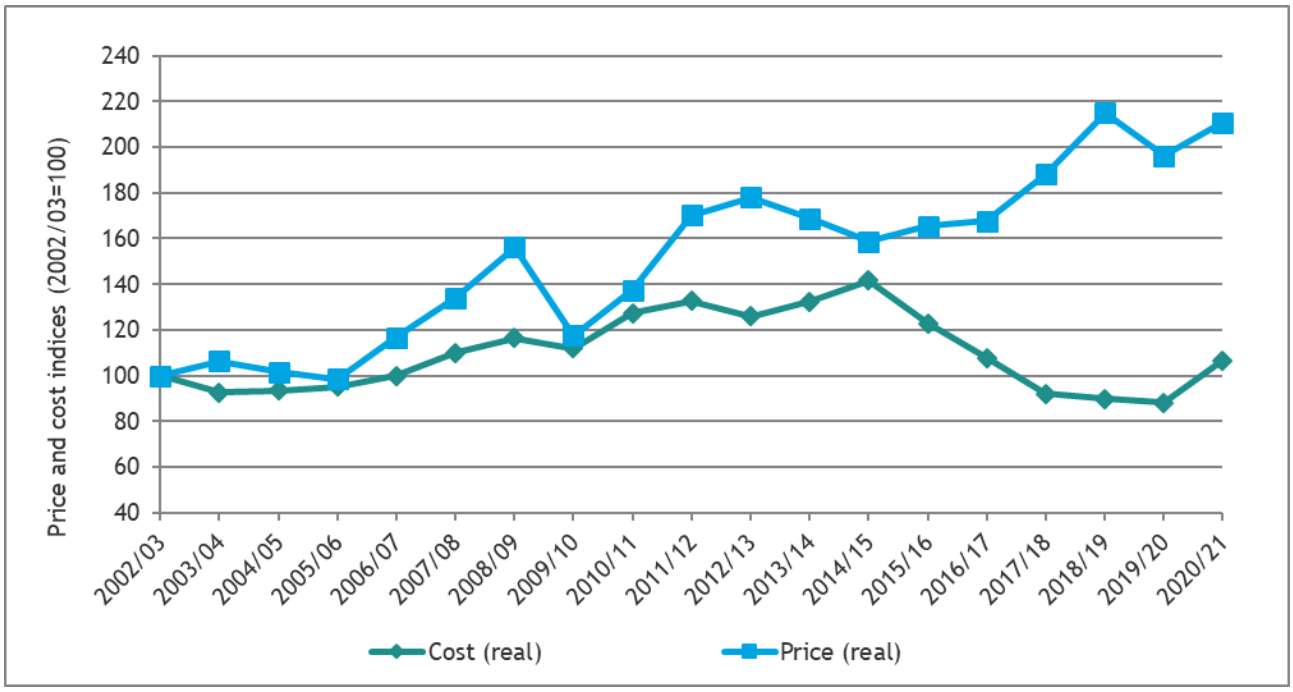
Source: BDO EconSearch (2022d)

8.4.3. Costs price squeeze

Real price and cost indices for the Lakes and Coorong Fishery for the years 2002/03 to 2020/21 are summarised in Figure 8-10. These indicators are derived from the average price and average cost per kilogram of catch, in real terms.

Between 2002/03 and 2020/21 the average price of Lakes and Coorong Fishery species increased by approximately 111 per cent in real terms (Figure 8-10). The average cost of catching Lakes and Coorong Fishery species followed an increasing trend between 2002/03 and 2014/15 but a declining trend until 2019/20. In 2020/21 the average cost of catching Lakes and Coorong Fishery species increased, resulting in the overall average cost per kilogram increasing between 2002/03 and 2020/21 by approximately 7 per cent in real terms (Figure 8-10).

Figure 8-10 Price and cost indices for the Lakes and Coorong Fishery, 2002/03 to 2020/21[a]



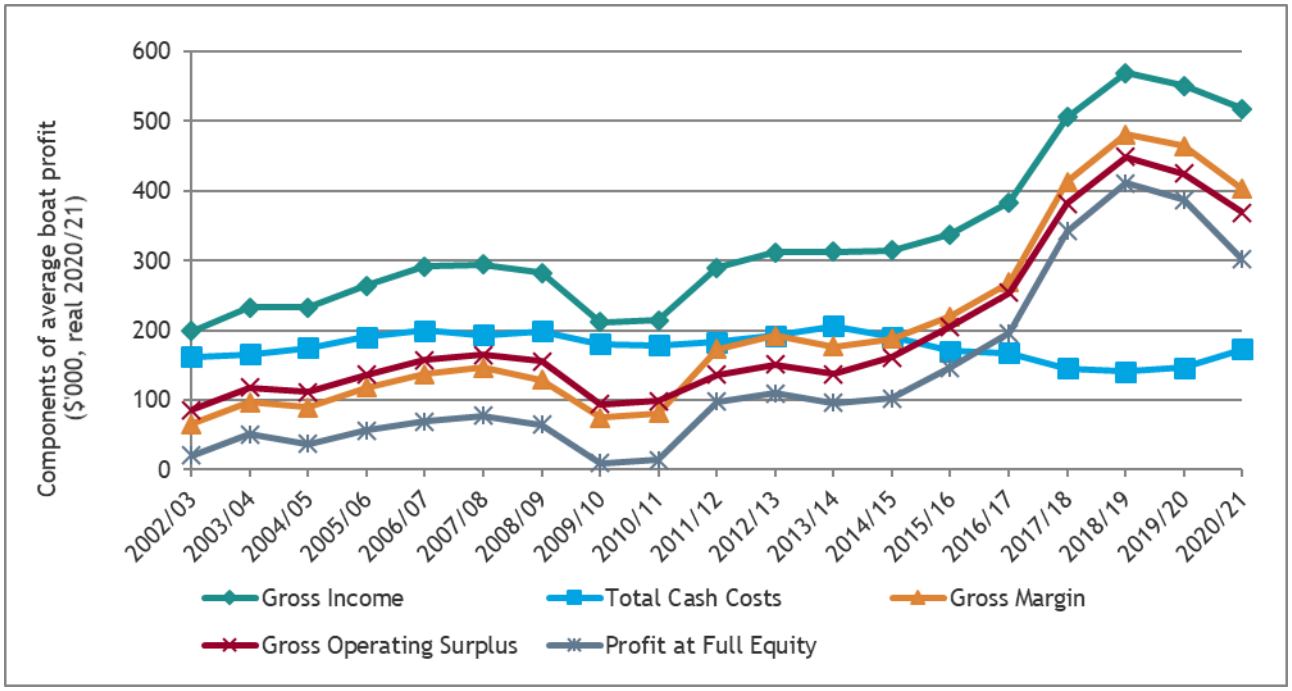
[a] Estimates of price and cost indices are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022d)

8.4.4. Profitability

Selected measures of profitability for the Lakes and Coorong Fishery are summarised in Figure 8-11 for the years 2002/03 to 2020/21. Changes in each of the profitability measures for the fishery were closely related to the average income earned. Profits have generally increased over the period of analysis, despite a sharp fall in income and in profitability in 2009/10 and 2010/11. From 2011/12 to 2018/19 these measures increased significantly, but fell marginally in 2019/20 and 2020/21 due to decreased income (Figure 8-11).

Figure 8-11 Average income and profit per boat in the Lakes and Coorong Fishery, 2002/03 to 2020/21[a]



[a] Estimates of income and profitability measures are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022d)

8.4.5. Return to capital

Estimates of the average licence value and the rate of return to capital are illustrated in Figure 8-12. Total capital includes boats, licence/quota, fishing gear, sheds, vehicles and other capital items used as part of the fishing enterprise. Return to capital is calculated to be profit at full equity as a percentage of both total capital employed and total capital excluding licence/quota.

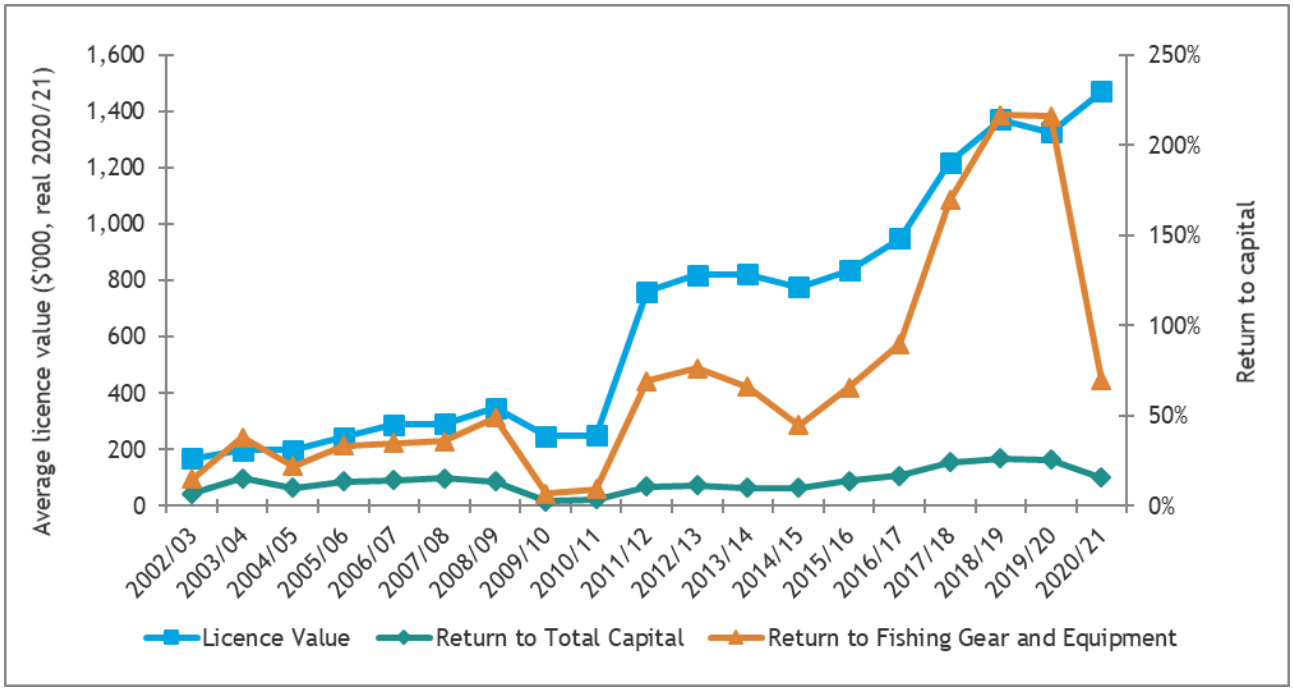
The average licence value increased sharply between 2010/11 and 2011/12. This increase was driven primarily by the large increase in the value of Pipi quota since the previous survey in 2008/09. This in turn was likely to have been driven by the introduction of a quota system for Pipis (2007/08) and an increasing ability to sell Pipis for human consumption, at a higher price than traditionally received when sold predominantly for bait. The high average licence value for the survey sample was also due in part to the over representation of Pipi quota within the survey[5].

Another performance indicator related to achieving the economic objectives of the management plan for the fishery is the trend in the annual return to capital in the commercial fishery (Table 8-1). The average return on fishing gear and equipment and on total capital generally followed an increasing trend between 2002/03 and 2020/21, despite significant falls in 2009/10, 2014/15, and 2020/21 (Figure 8-12). This decrease in 2020/21 is mainly attributable to the significant increase in total fishing gear and equipment capital value (148 per cent), and an increase in licence value (14 per cent), between 2019/20 and 2020/21. The substantial increase in the investment of capital for Pipi fishers observed in the 2021 survey is likely due to

[5] The participants in the 2016 Economic indicators survey owned 68 per cent of the Pipi quota, but represented only 50 per cent of the licence holders in the fishery. If this survey bias is taken into account, the average licence value for the fishery is just over $414,000. Estimates of the average value of a 25 net licence with no Pipi quota were around $87,000.

the high profitability of the Lakes and Coorong Fishery in recent years. The recent increase in investment for net fishers is likely due to the replacement of capital required as a result of the damage caused by Long-nosed fur seals.

Figure 8-12 Return to capital in the Lakes and Coorong Fishery, 2002/03 to 2020/21



Source: BDO EconSearch (2022d)

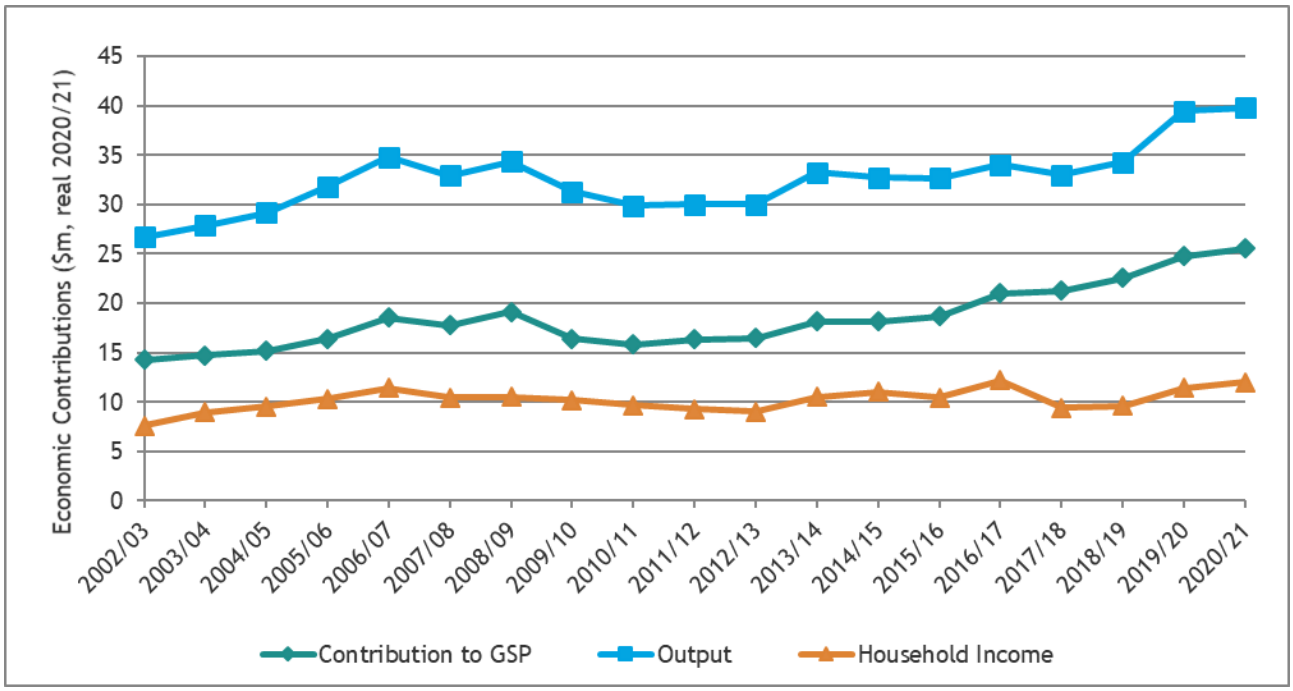
8.5. Contribution to SA Economy

Figure 8-13 and Figure 8-14 illustrate the total economic contribution of the fishery on the SA economy for the 19 years, 2002/03 to 2020/21. 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 8-13). Employment decreased between 2006/07 and 2012/13 as illustrated in Figure 8-14. This was due to both a decrease in reported overall employment between the 2010 and 2013 surveys, affecting direct employment, and the slight reduction in reported expenditure by fishing businesses reducing the flow on employment effects in other sectors of the economy. Reported employment in the 2016, 2018 and 2021 surveys was higher than in 2013 which explains the increase in direct employment between 2014/15 and 2020/21. This may be due, in part, to sampling variability (Figure 8-14).

One of the performance indicators for the fishery is the trend in annual total economic contribution of the commercial fishery (Table 8-1). GSP, output and household income followed an increasing trend between 2002/03 and 2020/21 despite fluctuations (Figure 8-13).

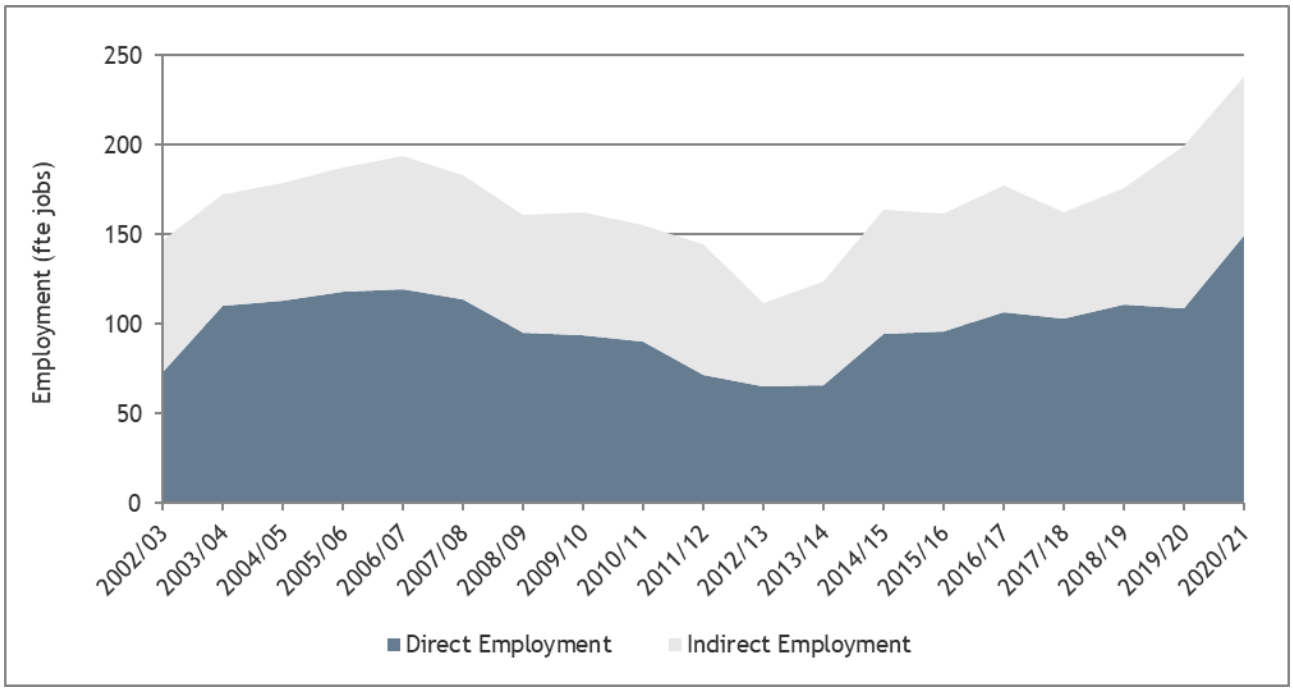
Figure 8-13 Total gross state product, output and household income contribution of the Lakes and Coorong Fishery on the SA economy, 2002/03 to 2020/21[a]



[a] Estimates of output, GSP and household income are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022d)

Figure 8-14 Total direct and indirect employment contribution of the Lakes and Coorong Fishery on the SA economy, 2002/03 to 2020/21

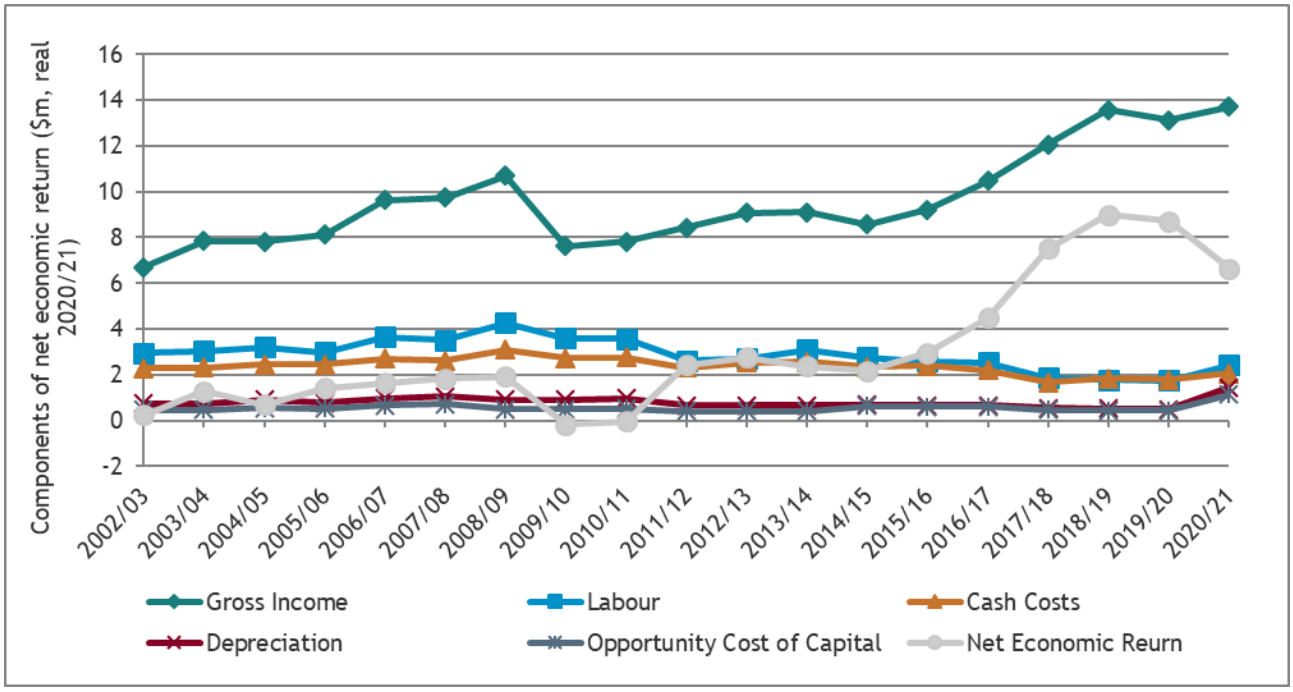


Source: BDO EconSearch (2022d)

8.6. Net Economic Return

Net economic return is defined as the difference between the price of a good produced using a natural resource and the unit costs of turning that natural resource into the good, including the opportunity cost of capital. In this case the natural resource is the Lakes and Coorong Fishery and the good produced is the landed fish. Estimates of the real net economic return generated in the Lakes and Coorong Fishery are summarised in Figure 8-15 for the period 2002/03 to 2020/21.

Figure 8-15 Net economic return in the Lakes and Coorong Fishery, 2002/03 to 2020/21 ($'000)[a]



[a] All indicators are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022d)

Despite fluctuations, real net economic return has increased from $234,000 in 2002/03 to around $6.7 million in 2020/21 (Figure 8-15). The low net economic return in 2009/10 (-$164,000) and 2010/11 (-$27,000) was a result of the fall in fishery income resulting from particularly adverse environmental conditions (low water and high salinity). This is an interesting example of net economic return in a fishery. Positive rent is normally generated by decisions of government (e.g. controls on catch). This fishery has increased rent mainly through entrepreneurial efforts on seeking new markets and prices.

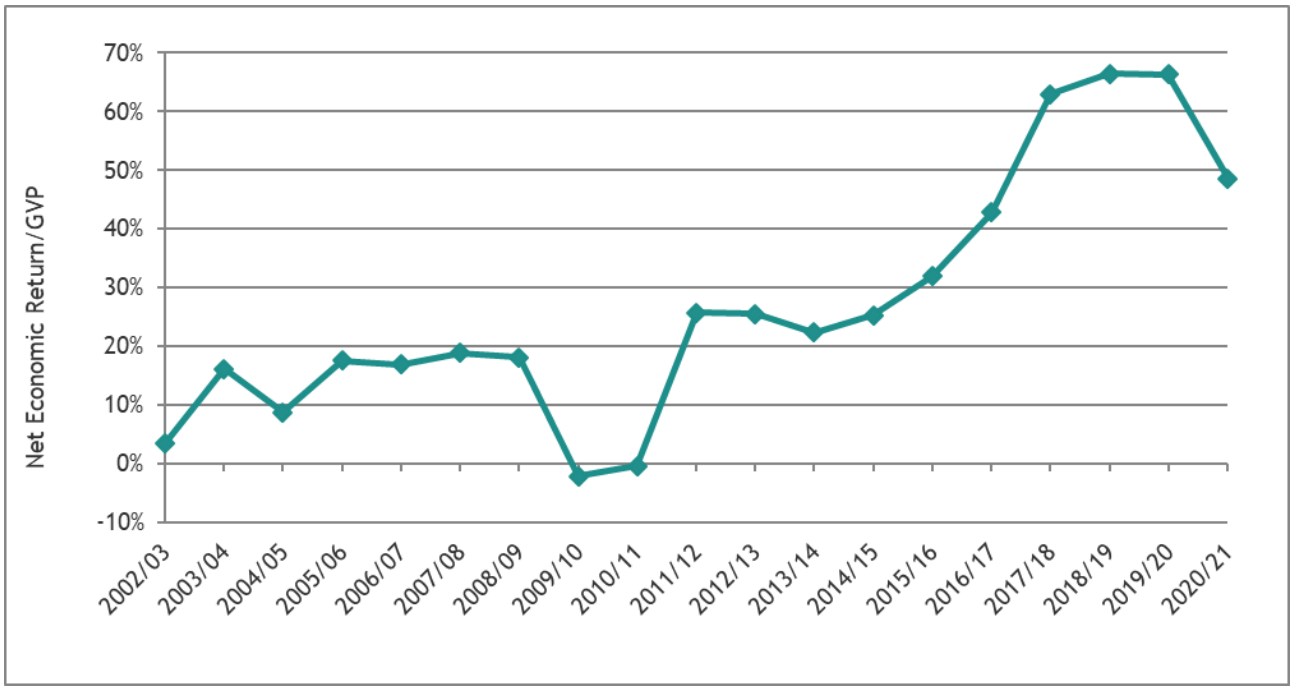
Between 2019/20 and 2020/21, the decrease in net economic return is mainly a result of increased depreciation (193 per cent) an opportunity cost of capital (168 per cent). As explained earlier in the report, total investment in capital rose significantly across the fishery in 2020/21. Therefore, the depreciation and opportunity cost also increased in 2020/21. Although these two factors had a negative impact on net economic return in 2020/21, it is expected that the additional investment in capital will result in higher revenue and therefore increased net economic return in upcoming years.

Net economic return expressed as a percentage of GVP is a useful indicator for analysing the economic efficiency of a fishery over time and for comparing different fisheries. This indicator is illustrated in Figure 8-16 and shows an overall increase between 2002/03 and 2020/21 despite a significant fall in 2009/10 and

2020/21. The Lakes and Coorong Fishery had the highest rent/GVP ratio of all SA commercial fisheries in 2020/21 (49 per cent) (Figure 14-15).

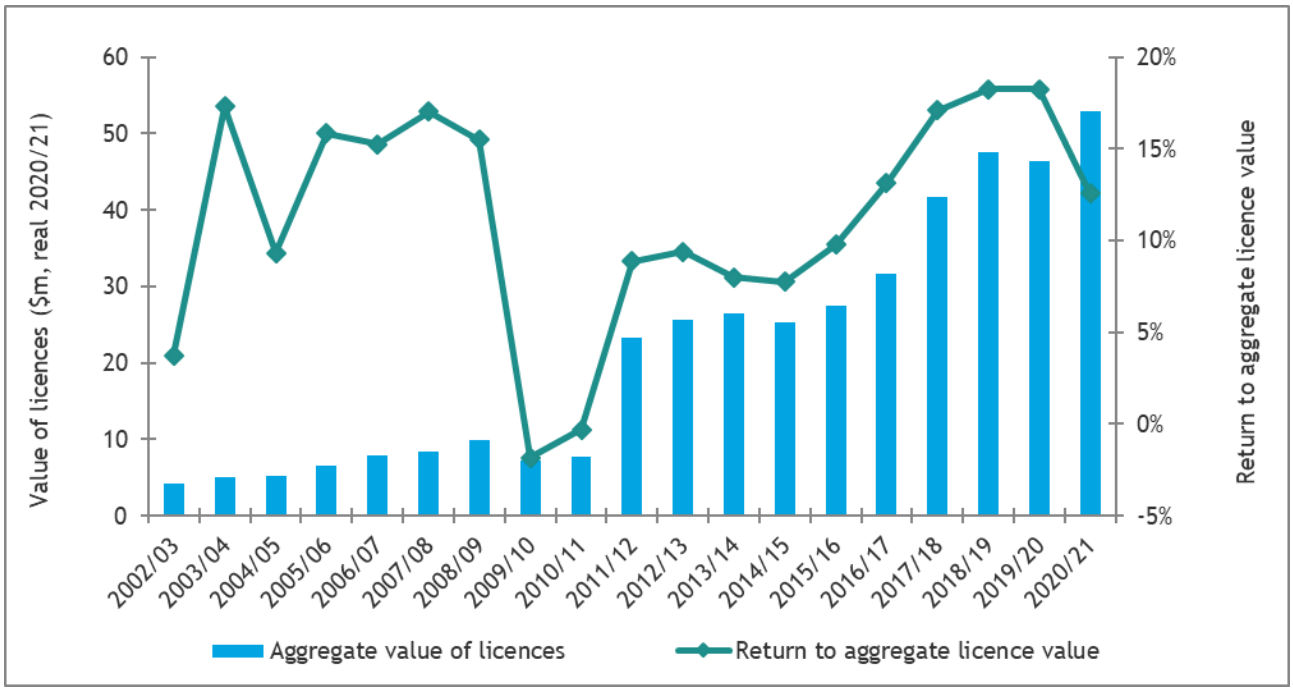
Net economic return represents a return to the value of licences in the fishery. The aggregate value of licences in the Lakes and Coorong Fishery and the aggregate value of licences in the fishery are illustrated in Figure 8-16. The return to the aggregate value of licences in the fishery increased over the period from 4 per cent in 2002/03 to 13 per cent in 2020/21, primarily as the result of an increase in GVP (Figure 8-16).

Figure 8-16 Net economic return as a proportion of GVP in the Lakes and Coorong Fishery, 2002/03 to 2020/21



Source: BDO EconSearch (2022d)

Figure 8-17 Aggregate value of licences and return to aggregate licence value in the Lakes and Coorong Fishery, 2002/03 to 2020/21[a]



[a] The value of licences represents licence holders' estimates of the value of their fishing licence derived from survey responses. Estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Source: BDO EconSearch (2022d)

9. MARINE SCALEFISH FISHERY

9.1. Economic Objective of the Marine Scalefish Fishery

According to the management plan for the Marine Scalefish Fishery (PIRSA 2013), management of the fishery has four key goals:

1. Ensure the Marine Scalefish Fishery resources are harvested within ecologically sustainable limits.
2. Optimum utilisation and equitable distribution of the Marine Scalefish Fishery resources.
3. Minimise impacts on the ecosystem.
4. Cost effective and participative management of the Marine Scalefish Fishery.

In order to achieve these goals the management plan sets out specific biological, ecological, social and economic objectives for the fishery. The economic and social objectives of the Marine Scalefish Fishery, as described in the management plan for the fishery, are summarised in Table 9-1.

Over the last 20 years an annual report on economic indicators for the fishery has been prepared. The economic indicators contained in these reports, most recently in BDO EconSearch (2022e), can assist in measuring the performance of the fishery against management objectives. The economic indicators for the Marine Scalefish Fishery are reported under the following headings:

- catch and gross value of production (GVP) (Section 9.2)
- management costs (Section 9.3)
- boat level financial performance indicators (Section 9.4)
  - average income
  - operating costs
  - cost-price squeeze
  - profitability
  - return on investment
- contribution to the SA economy (Section 9.5)
  - GSP
  - household income
  - employment
- net economic return (Section 9.6).

Indicators relating to the economic performance and objectives for the fishery are reported for the period 2001/02 to 2020/21. It should be noted that economic indicators are based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Table 9-1 Economic and social objectives of the SA Marine Scalefish Fishery[a]

Goal	Objective	Strategies	Performance Indicator	Description	Trigger Reference Point
Goal 2: Optimum utilisation and equitable distribution of the Marine Scalefish Fishery resources	2b. Increase the flow of economic and social benefit from the fishery to the broader community	2b (i). Positively influence fisheries related socioeconomic benefits for regional communities 2b (ii). Communicate information about ESD outcomes of the fishery to the broader community in a timely and publically assessable manner 2b (iii). Develop and maintain positive relationships with the regional communities in the area of the fishery	Contribution of fishery to local economic activity (measured as trends in local and regional expenditure by fishers) Proportion of direct and indirect employment in a region dependent on fishing Level of community support activities	Economic Indicator Report (annual)	Downward trends in employment, expenditure and community support activities
	2c. Improve economic efficiencies and financial returns within the constraints of sustainability imperatives	2c (i). Develop and implement management arrangements that allow commercial operators to maximise operational flexibility, economic efficiency, value and returns 2c (ii). Provide opportunities for diversification and developmental fishing	Key economic indicators: operating surplus, profit at full equity and rate of return on total boat capital Licence value		Declining trends in economic indicators and licence value
	2d. Monitor the economic and social	2d (i). Undertake periodic economic and social surveys of the commercial fishery to assess economic and social performance	Delivery of annual economic reports assessing economic performance of the fishery	An economic and social indicator	N/A

Goal	Objective	Strategies	Performance Indicator	Description	Trigger Reference Point
	performance of the fishery and ensure the collection of economic and social data	against a set of economic and social indicators 2d (ii). Undertake and further refine indicators and trigger reference points as more information becomes available	from periodic economic surveys Social fishery surveys undertaken periodically and reported when data is available	report is currently prepared annually)	
	2f. Provide flexible opportunities to ensure fishers can maintain or enhance their livelihood	2f (i). When implementing management changes, where possible ensure that the management framework does not unnecessarily reduce ability of fishers to successfully run a business 2f (ii). When implementing management changes where possible enable adequate and secure access to fish stocks that is flexible	Provision of a livelihood opportunity: How is the ability of fishers to access livelihood changing Perceptions of flexibility: fishers believe fisheries management processes are flexible enough to adapt to changing conditions (fisher survey)		Cost of entry and of maintaining access have risen relative to returns from the fishery for more than one year The proportion of fishers who think fisheries management is flexible enough and is decreasing over time
	2g. Ensure equitable treatment and access for fishers	2g (ii). Consultation process designed and undertaken for input of different fishers and stakeholders	How equitable/fair fishers feel the processes and outcomes of fisheries management are (fisher survey)		>50% of fishers believe that are treated unfairly on more than one of the relevant survey questions
Goal 4: Cost-effective and participative management of the Marine Scalefish Fishery	4c. Maximise stewardship of fisheries resources	4c (i). Where possible simplify and standardise the regulatory rules, to ensure the rules and easier to comply with, easier to enforce and that fisheries management will be more efficient Ensure any management changes (and reasoning) are communicated with fishers	Proportion of fishers who believe that, overall, most fishers comply with fishing rules (fisher survey) Extent fishers accurately understand regulations (fisher survey)		There is an ongoing decline in the proportion of fishers who agree with the statement 'most fishers comply with fishing rules'

Goal	Objective	Strategies	Performance Indicator	Description	Trigger Reference Point
			Fishers find it easy to comply with fishing rules and regulations (fisher survey)		There is an ongoing decline in the proportion of fishers who correctly identify rules and regulations over time. There is an ongoing decline in the proportion of fishers who agree with the statement 'Fishers find it easy to comply with fishing rules and regulations (survey)

Indicators reported in economic reports

Trigger points that can be calculated from reported economic indicators

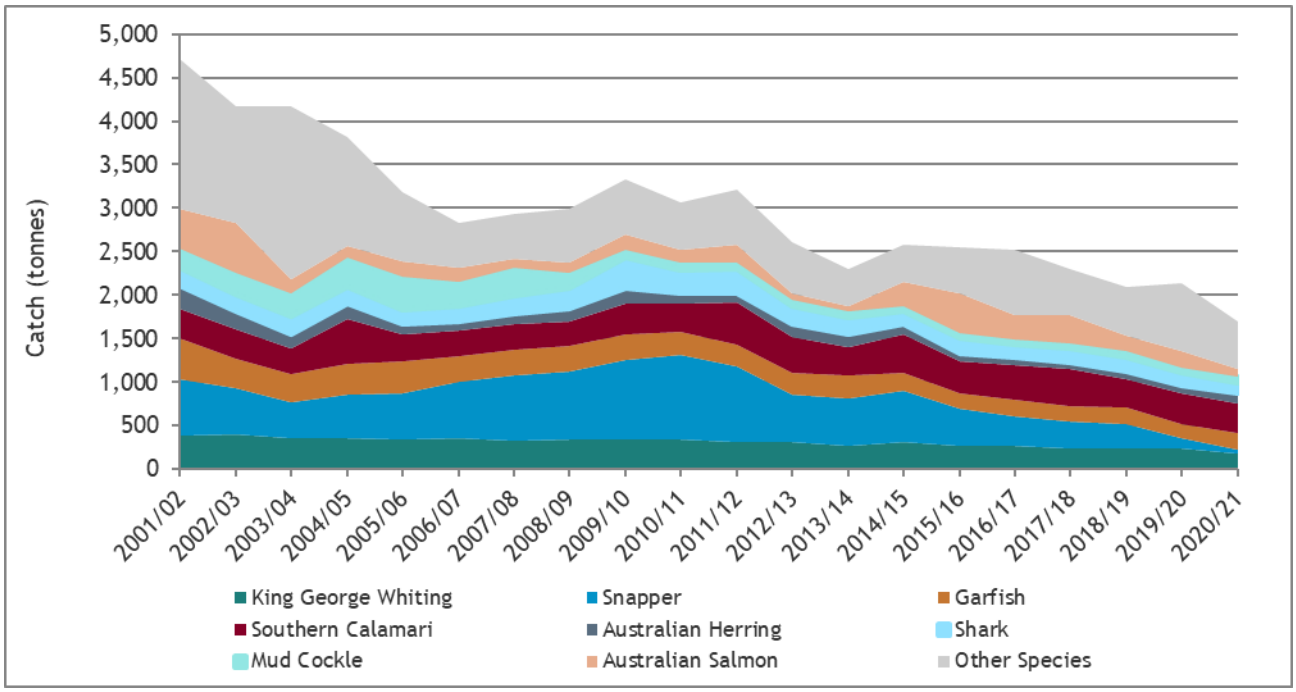
[a] With reference to those objectives reported on in this report.

Source: PIRSA 2013

9.2. Catch and Gross Value of Production

Figure 9-1 illustrates that total catch in the fishery followed a declining trend between 2001/02 and 2020/21. The fall, from 4,722t to 1,689t, is due to a decrease in catch of a number of key species including Australian Salmon, Shark, King George Whiting and Garfish. Catch of Snapper followed an increasing trend between 2003/04 and 2010/11, although it has declined significantly since and the fishery was closed to taking Snapper in November 2019 for a period of three years[6] (Figure 9-1).

Figure 9-1 SA MSF catch, 2001/02 to 2020/21



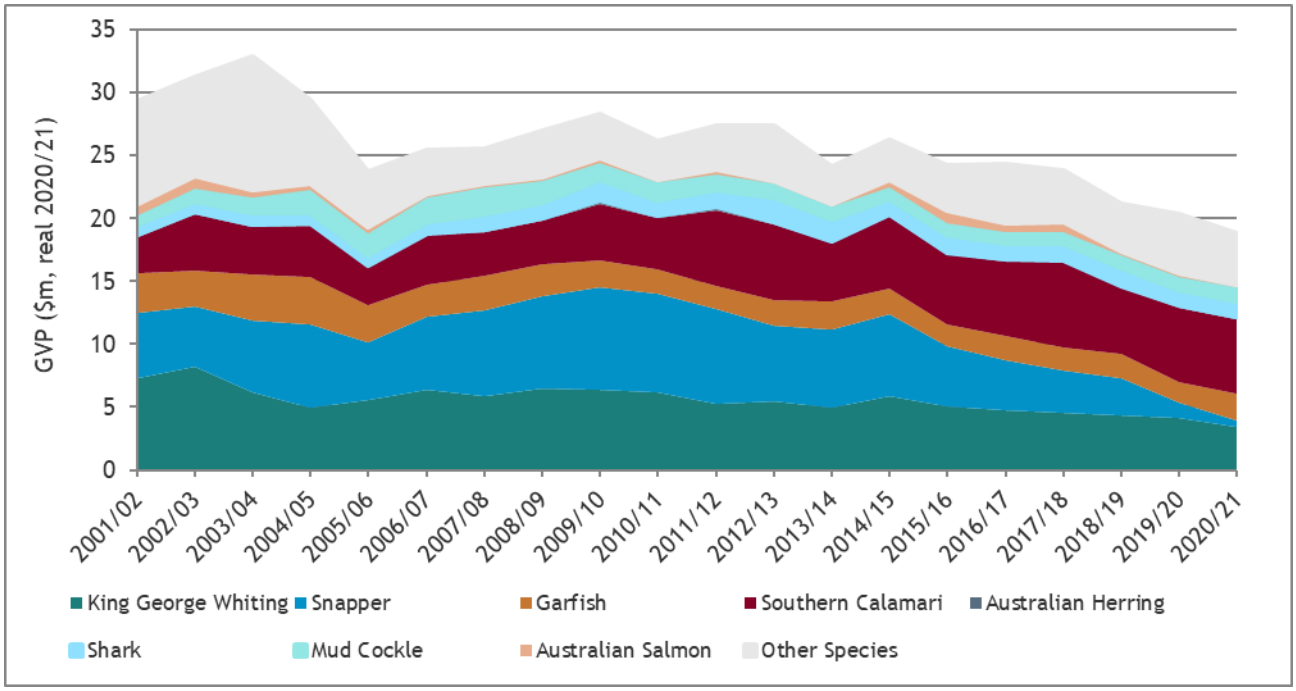
Source: BDO EconSearch (2022e)

The total GVP for the SA MSF for the period 2001/02 to 2020/21 is illustrated in Figure 9-2. The value of catch fluctuated between years but has also followed a decreasing trend since 2001/02. As the average real price of Marine Scalefish species has increased over this period, the fall in GVP is attributable to the decline in catch of key species. This is also highlighted in Figure 9-3 where catch, GVP and price indices for the fishery for 2001/02 to 2020/21 are illustrated.

Figure 9-4 shows that between 2001/02 and 2020/21 the 181 per cent increase in nominal average price of Marine Scalefish species was equivalent to an 80 per cent rise in real price.

[6] Except for a small amount of catch in the South East.

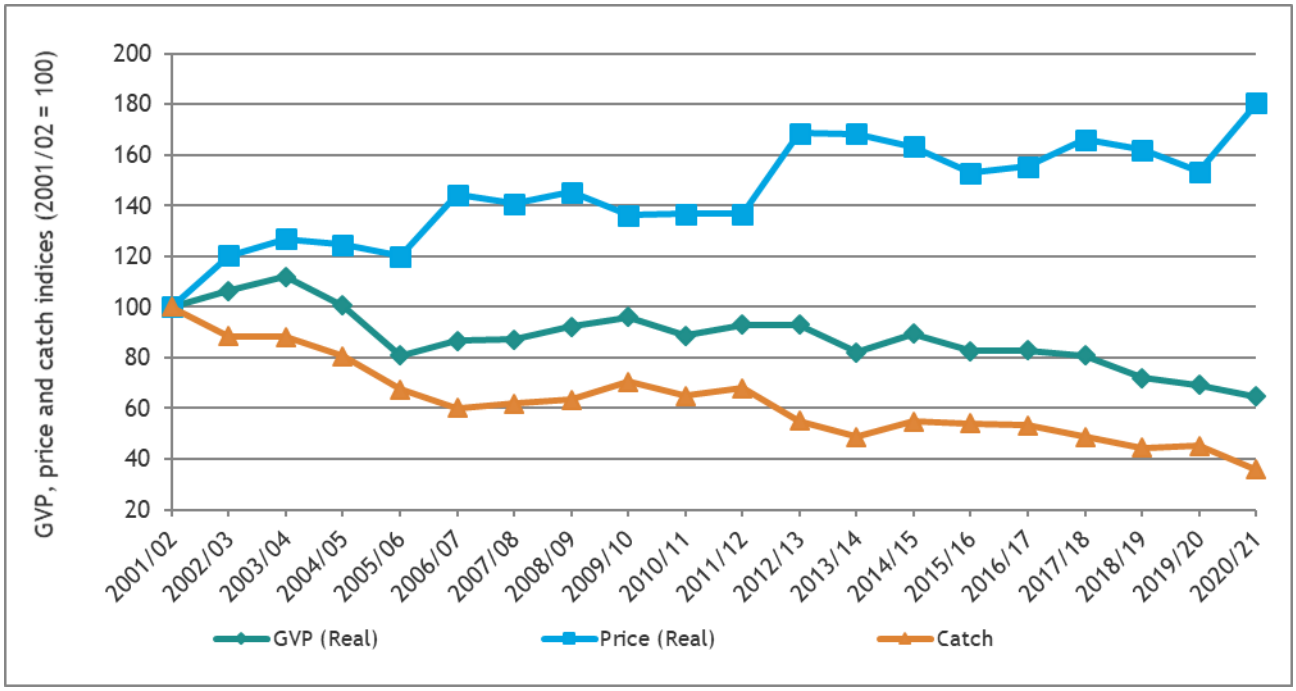
Figure 9-2 SA MSF GVP, 2001/02 to 2020/21[a]



[a] Estimates are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022e)

Figure 9-3 GVP, price and catch indices for the SA MSF[a]



[a] Estimates are expressed in real dollars.

Source: BDO EconSearch (2022e)

Figure 9-4 Price indices for the SA MSF[a,b]

[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 CPI (consumer price index) has been used to make this adjustment (ABS 2021a). It enables meaningful comparisons of prices to be made between years.

[b] Note that by using a single measure of price (aggregate of all species) for a multispecies fishery the index can be influenced by a change in species mix as well as an actual change in market price.

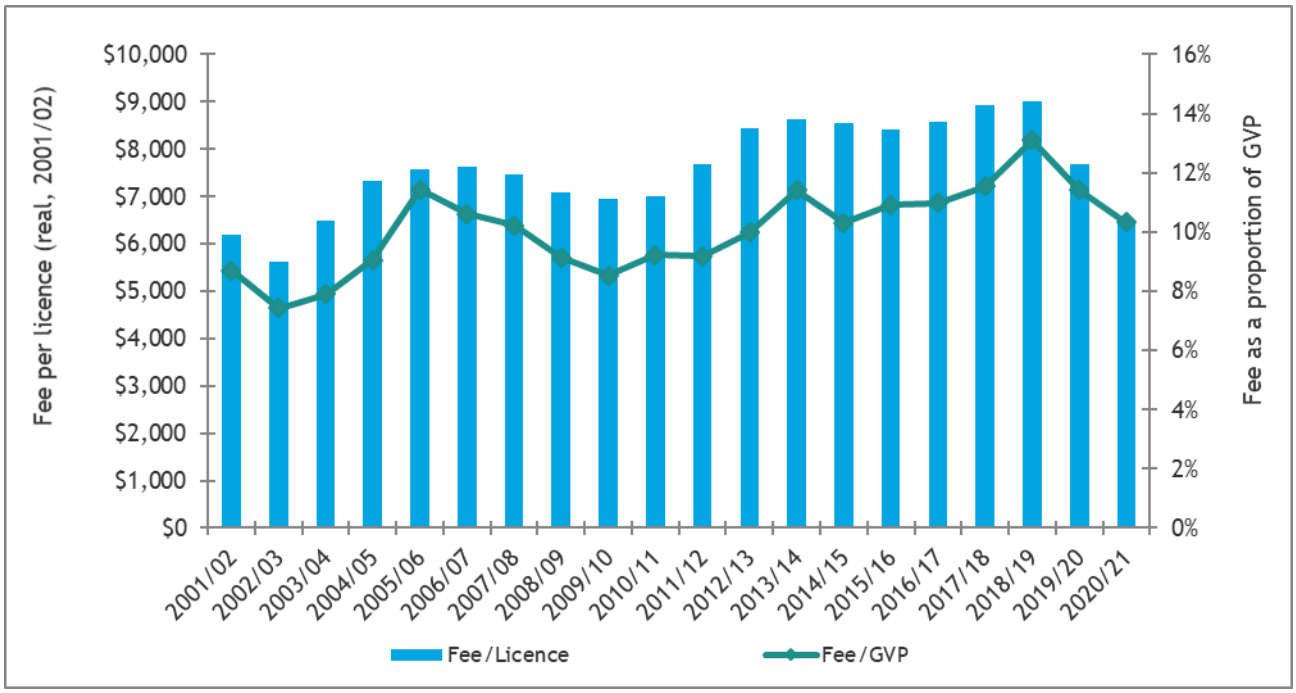
Source: BDO EconSearch (2022e)

9.3. Management Costs

The average management fee per licence holder and licence fees as a proportion of GVP are illustrated in Figure 9-5. Licence fees as a percentage of GVP fluctuated over the period 2001/02 to 2020/21 but followed an increasing trend overall, from 8.7 per cent in 2001/02 to 10.3 per cent in 2020/21. This was the result of a reduction in GVP (35 per cent), and despite a decrease in real aggregate licence fees (23 per cent), over the same period.

Despite being higher in between years, the average management cost per licence holder increased only slightly from $6,191 in 2001/02 to $6,469 in 2020/21, in real terms (Figure 9-5). This increase was mainly a result of a decrease in the number of licence holders (from 416 to 305) over the twenty-year period. As mentioned above real aggregate licence fees decreased by 23 per cent over the same period.

Figure 9-5 Management fee per licence holder and as a proportion of GVP, SA MSF, 2001/02 to 2020/21[a]



[a] Estimates are expressed in real 2020/21 dollars.

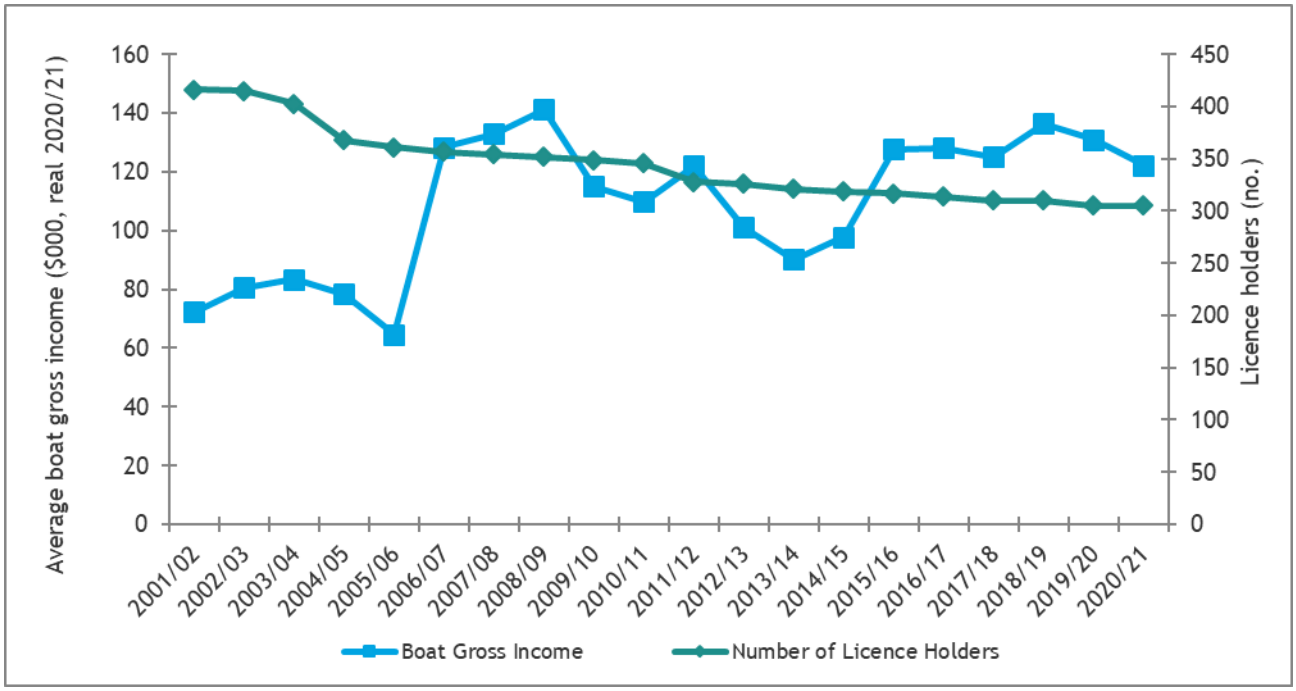
Source: BDO EconSearch (2022e)

9.4. Financial Performance

9.4.1. Average Income

Average income and total number of licences in the fishery for the period 2001/02 to 2020/21 are illustrated in Figure 9-6. The total number of licence holders in the fishery declined from 416 in 2001/02 to 305 in 2020/21. This decrease is due to natural attrition in the restricted MSF, the licence amalgamation scheme in the MSF, the 2005 voluntary net buyback scheme and the implementation of marine parks. As a result of the decrease in the number of licence holders and despite a decrease in fishery GVP, the average income per boat in the fishery has increased from approximately $72,000 in 2001/02 to $122,000 in 2020/21 (real 2020/21 dollars) (Figure 9-6).

Figure 9-6 Average income per licence holder in the SA MSF, 2001/02 to 2020/21[a]



[a] Estimates of average boat gross income are expressed in real 2020/21 dollars.

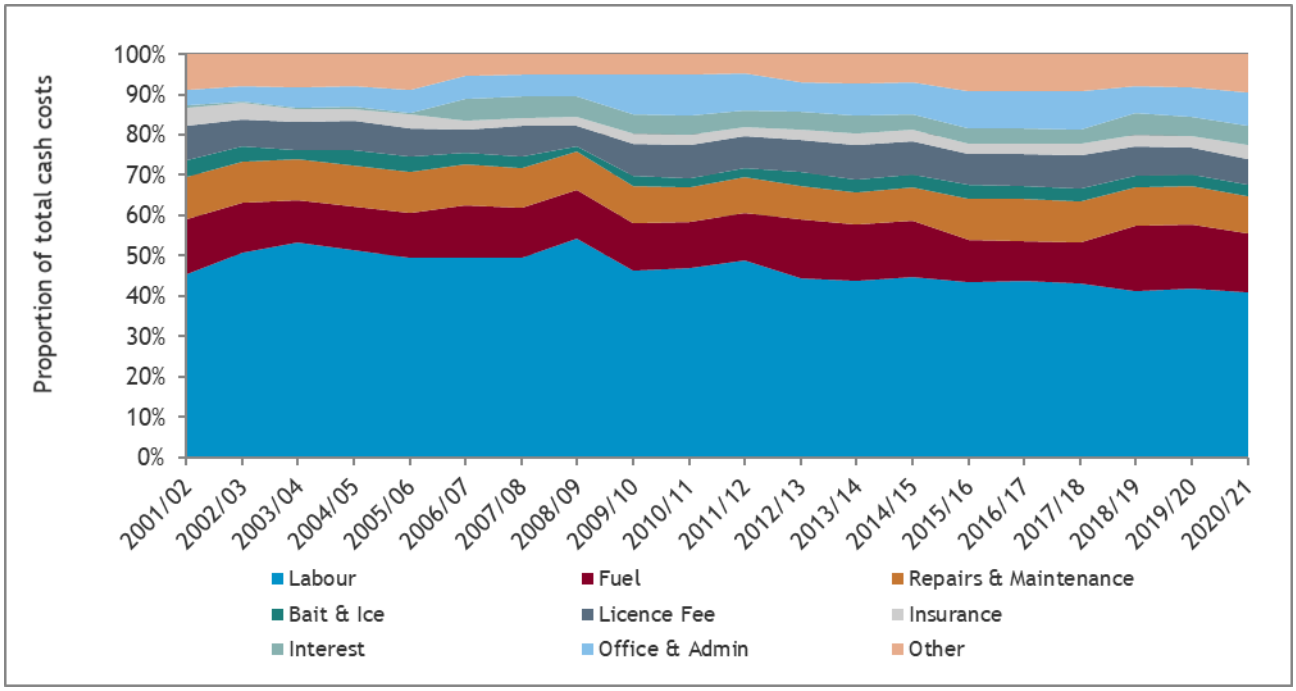
Source: BDO EconSearch (2022e)

9.4.2. Operating costs trends

A breakdown of major cost items as a proportion of total cash costs is illustrated in Figure 9-7. Labour costs accounted for the largest share of total cash costs across the period 2001/02 to 2020/21 (41 per cent). 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, office and admin, and repairs and maintenance (Figure 9-7). Interest payments and office and administration costs show a significant increase from 2005/06 compared to preceding years. Fuel as a proportion of all other costs also increased over the period, although this is a much more gradual change.

The cash costs detailed in Figure 9-7 can be categorised as either variable or fixed costs and are illustrated in Figure 9-8 on an average per boat basis. Total variable costs have fluctuated between years but generally followed an increasing trend over the period 2001/02 to 2020/21. As would be expected, total fixed costs have fluctuated much less from year to year but have also followed an increasing trend over time (Figure 9-8). The variation in average total costs per boat over the 20-year period is due, in part, to a change in the composition of the survey samples, i.e. a higher proportion of line-only licence holders and a corresponding lower proportion of fishers with net entitlements in 2014 compared to 2017.

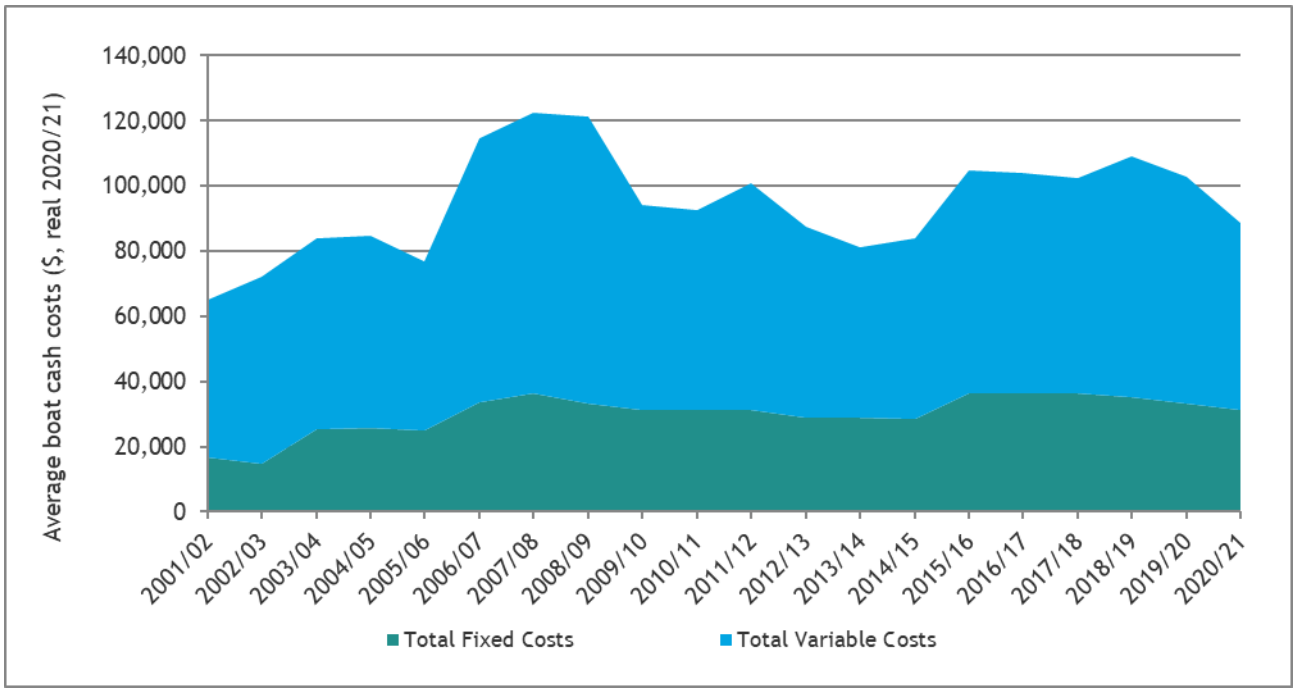
Figure 9-7 Costs shares in the SA MSF, 2001/02 to 2020/21[a]



[a] Financial performance estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Source: BDO EconSearch (2022e)

Figure 9-8 Avaergae total costs in the SA MSF, 2001/02 to 2020/21[a]



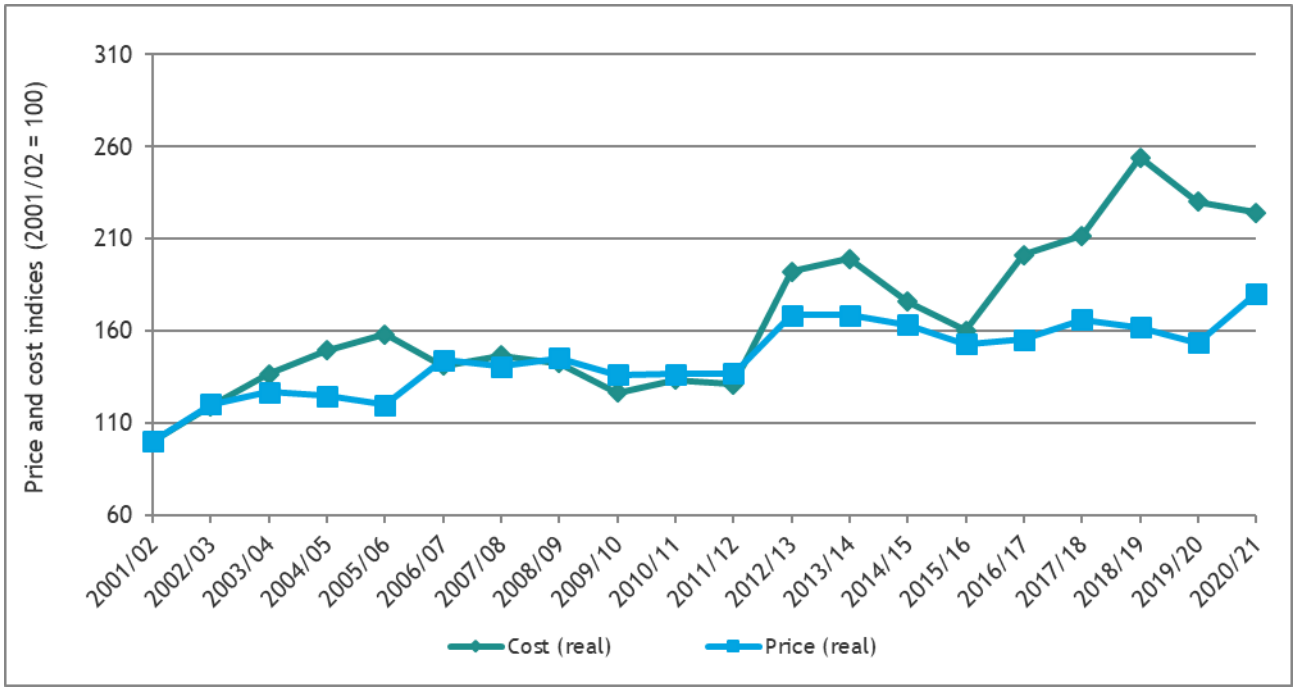
[a] Estimates of average costs are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022e)

9.4.3. Costs price squeeze

Price and cost indices for the years 2001/02 to 2020/21 are summarised in Figure 9-9. These indicators are derived from the average price and average cost per kilogram of catch. Between 2001/02 and 2020/21 the average price of Marine Scalefish species increased by approximately 80 per cent in real terms. The average costs of catching Marine Scalefish species also followed an increasing trend over the same period (124 per cent in real terms) with a steep increase from 2015/16 onwards (Figure 9-9).

Figure 9-9 Price and cost indices for the SA MSF, 2001/02 to 2020/21[a]



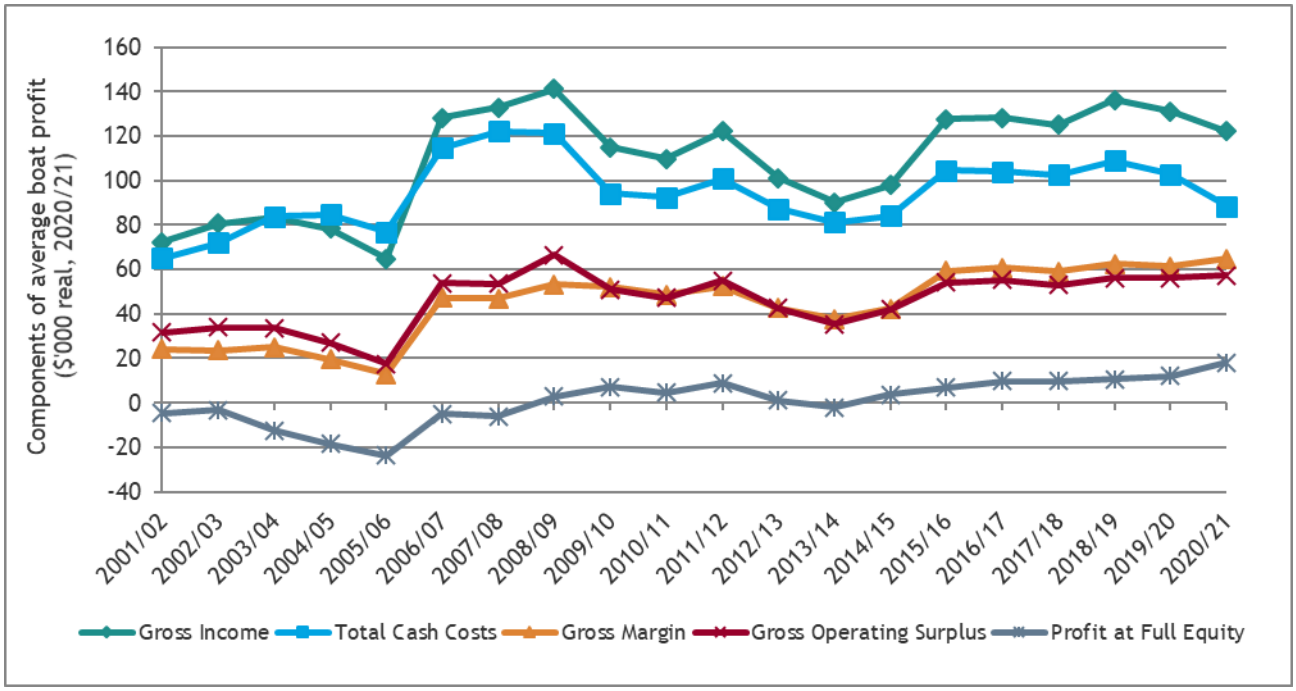
[a] Estimates of price and cost are expressed in real dollars.

Source: BDO EconSearch (2022e)

9.4.4. Profitability

Selected measures of profitability are summarised in Figure 9-10 for the years 2001/02 to 2020/21. Changes in each of the profitability measures for the fishery were closely related to the average income earned. Profitability measures followed an increasing trend between 2001/02 and 2008/09, a declining trend from 2008/09 to 2013/14 and an increasing trend to 2020/21 (Figure 9-10).

Figure 9-10 Average income and profit per boat in the SA MSF, 2001/02 to 2020/21[a]



[a] Estimates of income and profitability measures are expressed in real 2020/21 dollars.

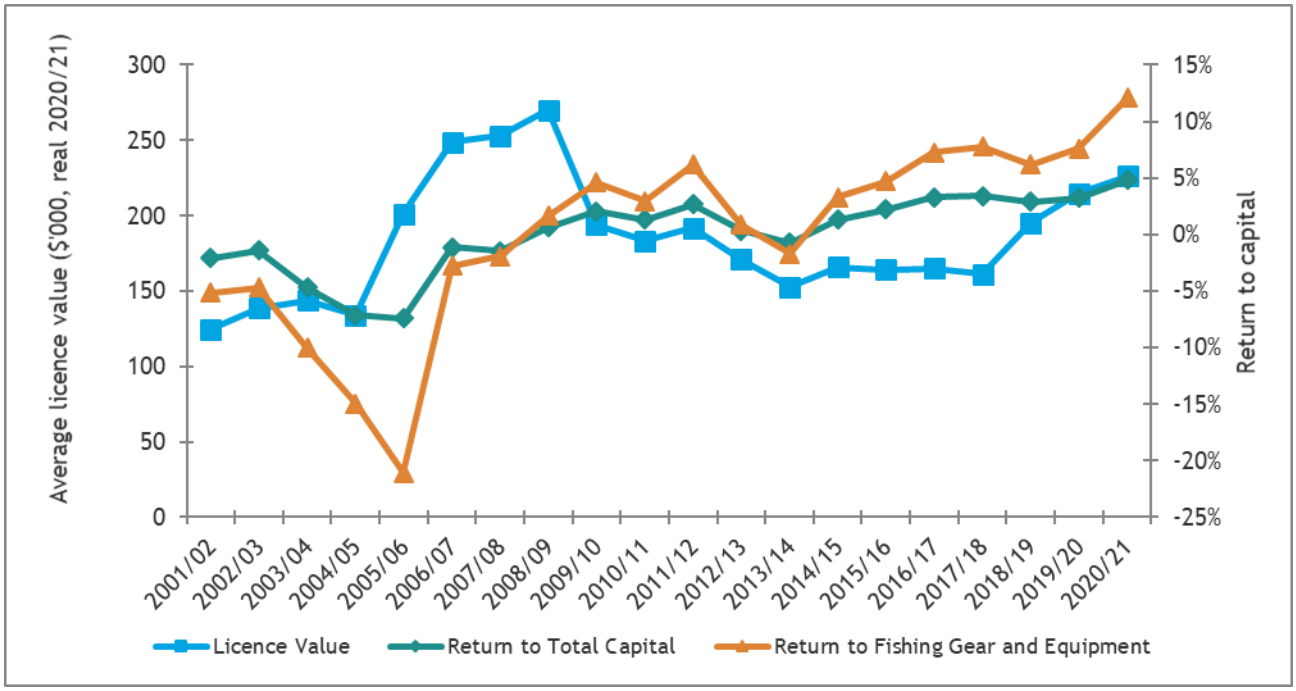
Source: BDO EconSearch (2022e)

9.4.5. Return to capital

Estimates of the average licence value and the rate of return to capital are illustrated in Figure 9-11. Total capital includes boats, licence/quota, fishing gear, sheds, vehicles and other capital items used as part of the fishing enterprise. Return to capital is calculated to be profit at full equity as a percentage of both total capital employed and total capital excluding the licence value.

One of the limit reference points associated with achieving the economic objectives of the fishery is a decreasing trend in annual return to capital over a three-year period. This limit reference point was breached once over the period 2003/04 to 2005/06 when the estimated rate of return to total capital declined in each year. Overall, the rate of return to total capital for the fishery has fluctuated year to year but has generally followed an increasing trend to 2020/21. The average value of licences in the fishery increased steadily between 2001/02 and 2008/09 despite year to year variation. Between 2008/09 to 2013/14, licence values followed a declining trend but this has turned around in subsequent years in real terms (Figure 9-11). The rise in licence value in recent years was possibly in response to raised expectations around a licence buyback scheme.

Figure 9-11 Return on capital in the SA MSF, 2001/02 to 2020/21



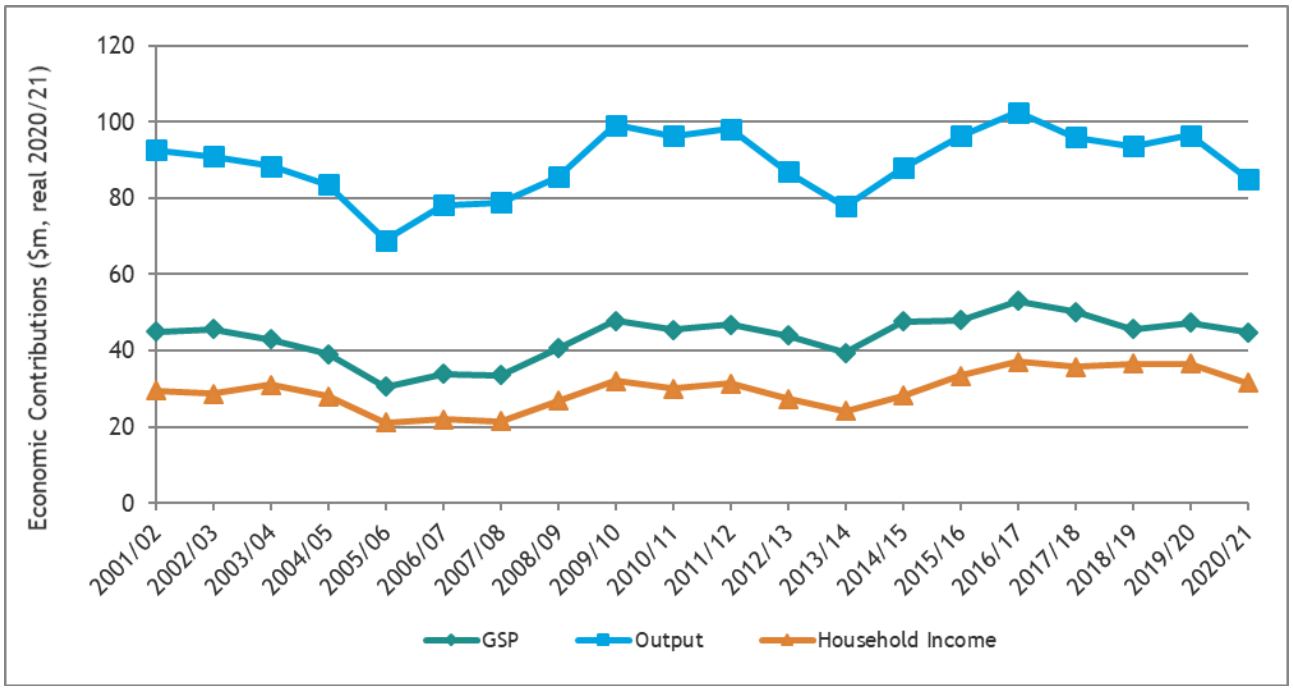
Source: BDO EconSearch (2022e)

9.5. Contribution to SA Economy

Figure 9-12 and Figure 9-13 illustrate the total economic contribution of the fishery on the SA economy for the 20 years, 2001/02 to 2020/21. 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 9-12). Output, household income and GSP all fluctuated in cycles of several years with no clear trend over the period. However, there was a decline in the employment contribution of the fishery between 2001/02 and 2005/06, between 2010/11 and 2013/14, and again between 2016/17 and 2020/21 as illustrated in Figure 9-13. This is mainly due to a decrease in the number of licence holders and a general decline in the fishery overall.

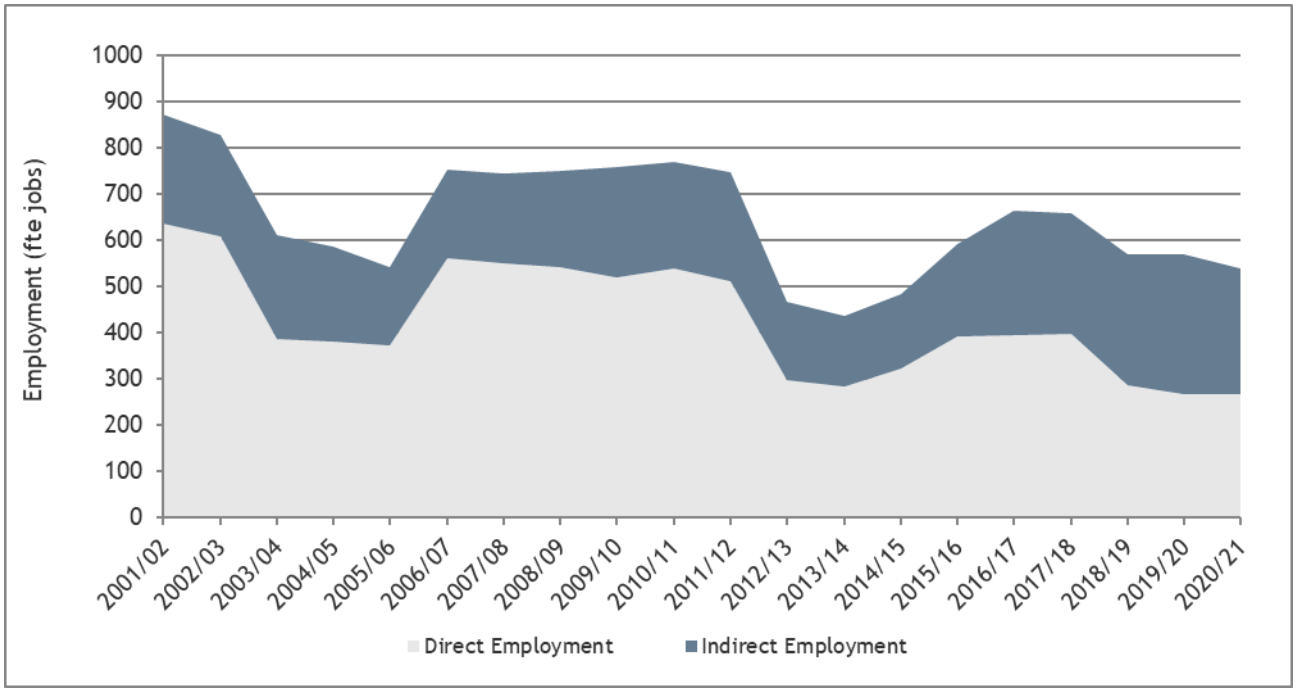
Figure 9-12 Total gross state product, output and household income contribution of the SA MSF in the SA economy, 2001/02 to 2020/21[a]



[a] Estimates of output, GSP and household income are expressed in real 2020/21 dollars. Estimates for 2016/17 onwards exclude the value of Miscellaneous Fishery species.

Source: BDO EconSearch (2022e)

Figure 9-13 Total direct and indirect employment contribution of the SA MSF on the SA economy, 2001/02 to 2020/21[a]



[a] Estimates for 2016/17 onwards exclude the value of Miscellaneous Fishery species.

Source: BDO EconSearch (2022e)

9.6. Net Economic Return

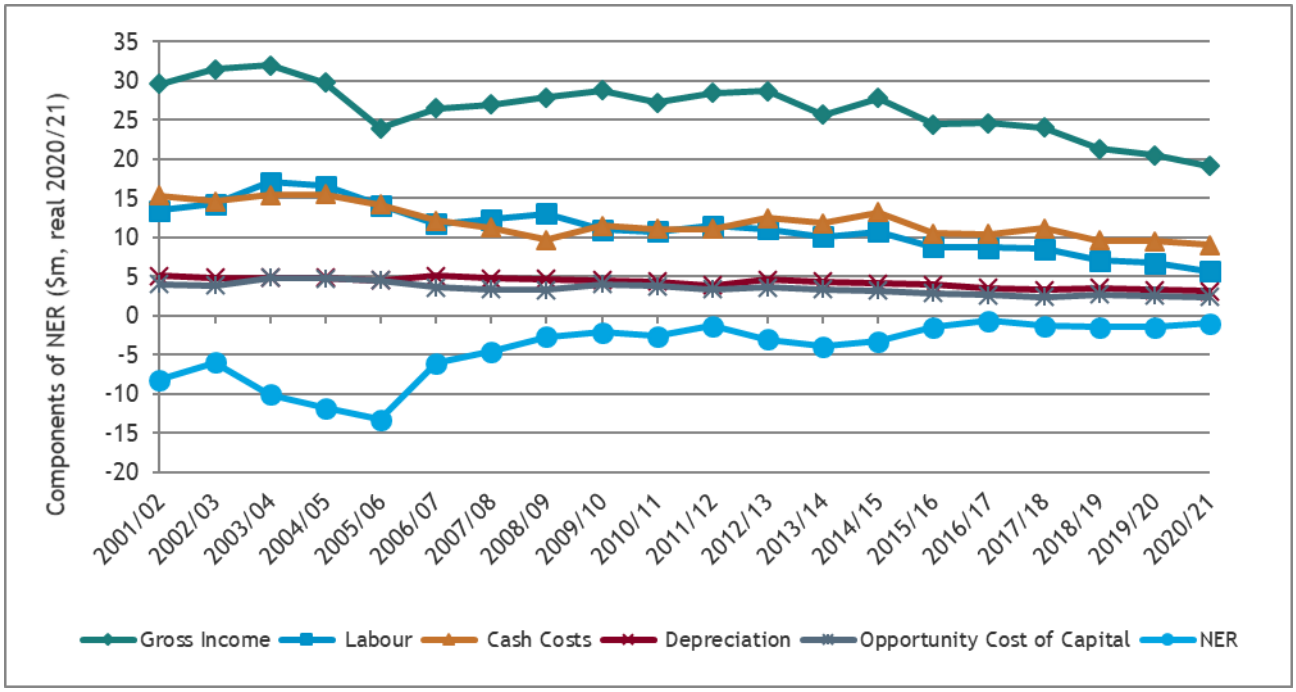
Net economic return (NER) is the return from a fishery after all costs have been met. It is equal to fishing revenue less fishing costs (cost of labour, capital including depreciation, materials and an allowance for "normal" profit). NER is maximised when economic efficiency is maximised. Estimates of the NER generated in the MSF are summarised in Figure 9-14 for the period 2001/02 to 2020/21.

The NER fluctuated between years but improved overall. In 2001/02, NER in the fishery was estimated to be -$8.2 million (real 2020/21 dollars) while in 2020/21 it was -$1.0 million. Under the assumptions of lower opportunity cost for capital and labour, NER would be $1.4 million in 2020/21 and would have followed the same trend as standard NER between 2001/02 and 2020/21.

NER expressed as a percentage of GVP is a useful indicator for analysing a fishery over time and for comparing different fisheries. This indicator is illustrated in Figure 9-15 and shows an overall increase between 2001/02 to 2020/21, despite sharp declines from 2002/03 to 2005/06 and from 2011/12 to 2013/14.

NER represents a return to the aggregate value of licences in the fishery. The aggregate value of licences in the MSF and the return to the aggregate value of licences in the fishery are illustrated in Figure 9-16. The return to the aggregate value of licences in the fishery has fluctuated between years, it was -11 per cent in 2001/02, and it declined to -18 per cent in 2004/05, before improving to -1.6 per cent in 2020/21 (Figure 9-16). Under the alternative assumptions of lower opportunity costs of capital and labour, return to the aggregate value of licences in 2020/21 would be 2 per cent.

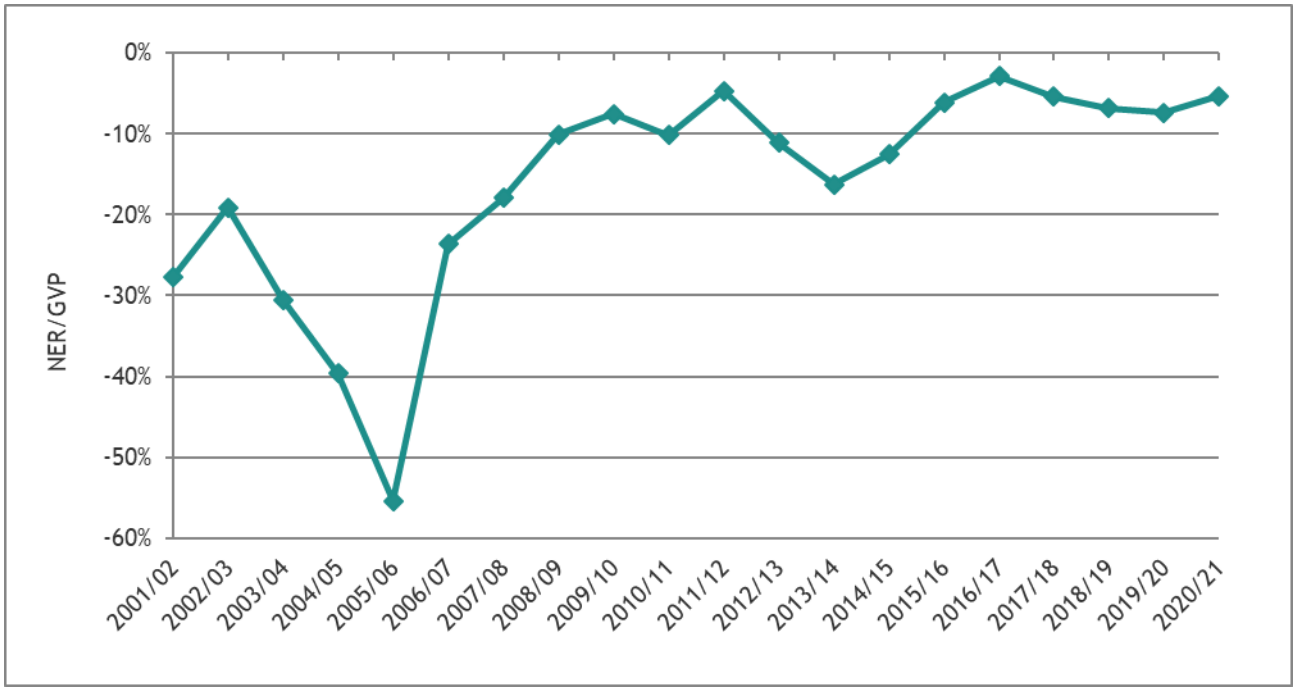
Figure 9-14 Net economic return in the SA MSF, 2001/02 to 2020/21[a]



[a] All indicators are expressed in real 2020/21 dollars.

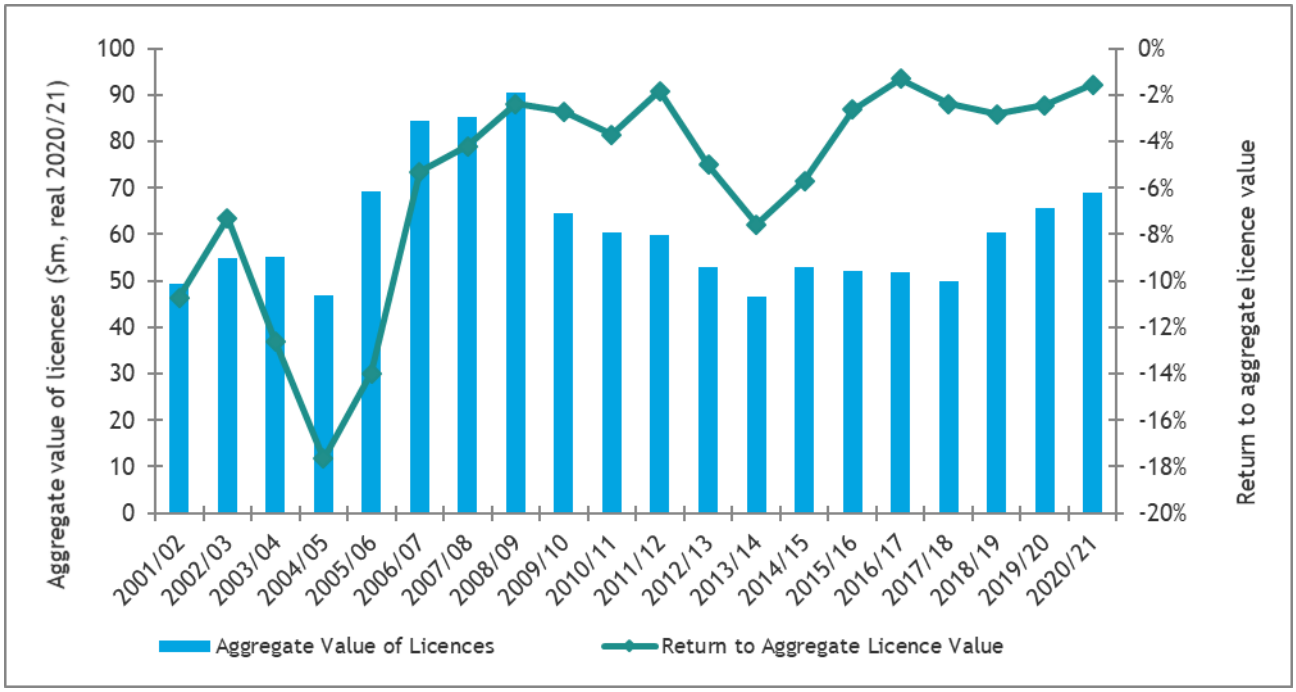
Source: BDO EconSearch (2022e)

Figure 9-15 Net economic return as a proportion of GVP in the SA MSF, 2001/02 to 2020/21



Source: BDO EconSearch (2022e)

Figure 9-16 Aggregate value of licences and return to aggregate licence value in the SA MSF, 2001/02 to 2020/21[a]



[a] The value of licences represents licence holders' estimates of the value of their fishing licence derived from survey responses. Estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability. Estimates are expressed in 2020/21 terms.

Source: BDO EconSearch (2022e)

10. NORTHERN ZONE ROCK LOBSTER FISHERY

10.1. Economic Objective of the Northern Zone Rock Lobster Fishery

According to the *Management Plan for the South Australian Commercial Northern Zone Rock Lobster Fishery* (PIRSA 2021b), management of the fishery has a number of biological, economic, environmental and social objectives.

In order to achieve these objectives the management plan sets out specific biological, ecological, social and economic objectives for the fishery. There are five key management goals for the SA NZRL Fishery:

1. Southern Rock Lobster stocks in South Australia are sustainable
2. Northern Zone Rock Lobster Fishery businesses operate viably
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.

The economic objectives of the NZRL Fishery and related performance indicators, as described in the management plan for the fishery, are summarised in Table 10-1.

Over the last 20 years an annual report on economic indicators for the fishery has been prepared. The economic indicators contained in these reports, most recently reported in BDO EconSearch (2022f), can assist in measuring the performance of the fishery against management objectives. The economic indicators for the NZRL Fishery are reported under the following headings:

- catch and gross value of production (GVP) (Section 10.2)
- management costs (Section 10.3)
- boat level financial performance indicators (Section 10.4)
  - average income
  - operating costs
  - cost-price squeeze
  - profitability
  - return on investment
- contribution to the SA economy (Section 10.5)
  - GSP
  - household income
  - employment
- net economic return (Section 10.6).

Indicators relating to the economic performance and objectives for the fishery are reported for the period 2001/02 to 2020/21. It should be noted that economic indicators are based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Table 10-1 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

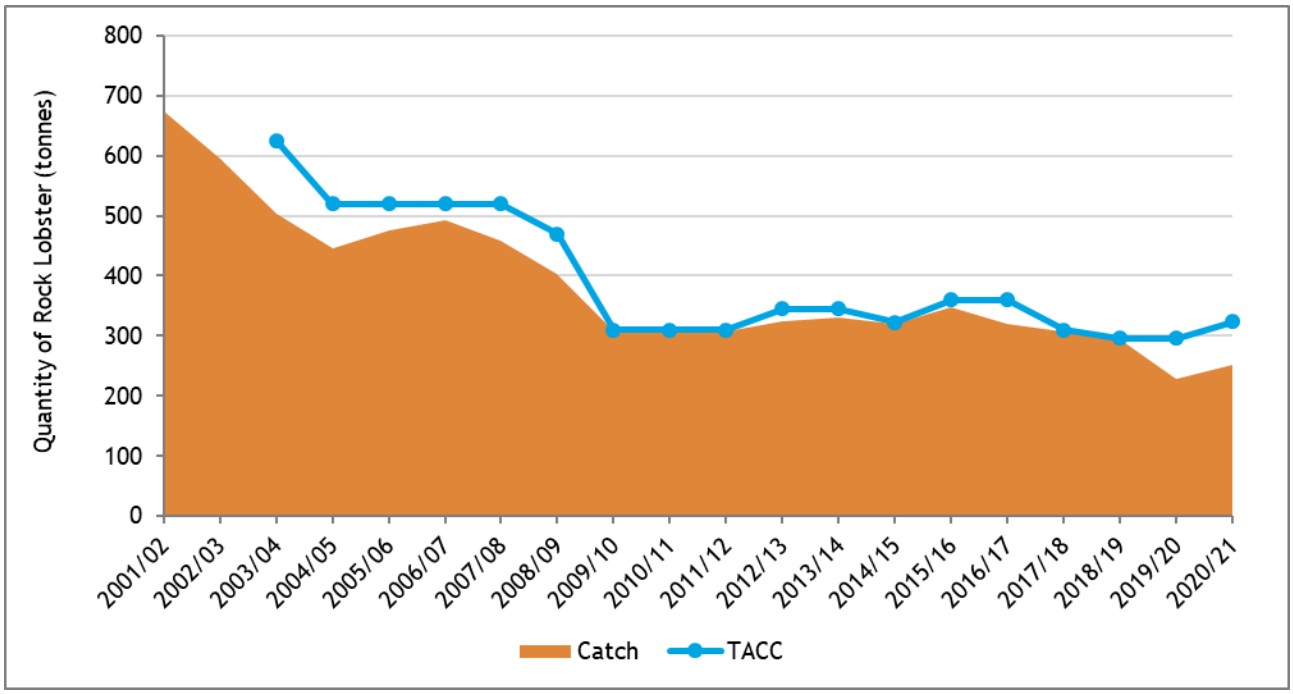
Source: PIRSA 2021b

10.2. Catch and Gross Value of Production

The data in Figure 10-1 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 fell again in 2019/20 to 228t as a result of international market closures as a response to the COVID-19 pandemic, forcing fishing of Rock Lobster to stop for a significant portion of the season. The TACC was then increased to 324t in 2020/21 after the low level of catch seen in 2019/20 allowing stocks to replenish. Whilst catch did increase between 2019/20 and 2020/21, to 251t, it did not reach the TACC for the fishery. Octopus bycatch of 8t was taken in 2020/21 (Figure 10-1).

Figure 10-1 Rock Lobster catch and TACC in the SA NZRL Fishery, 2001/02 to 2020/21

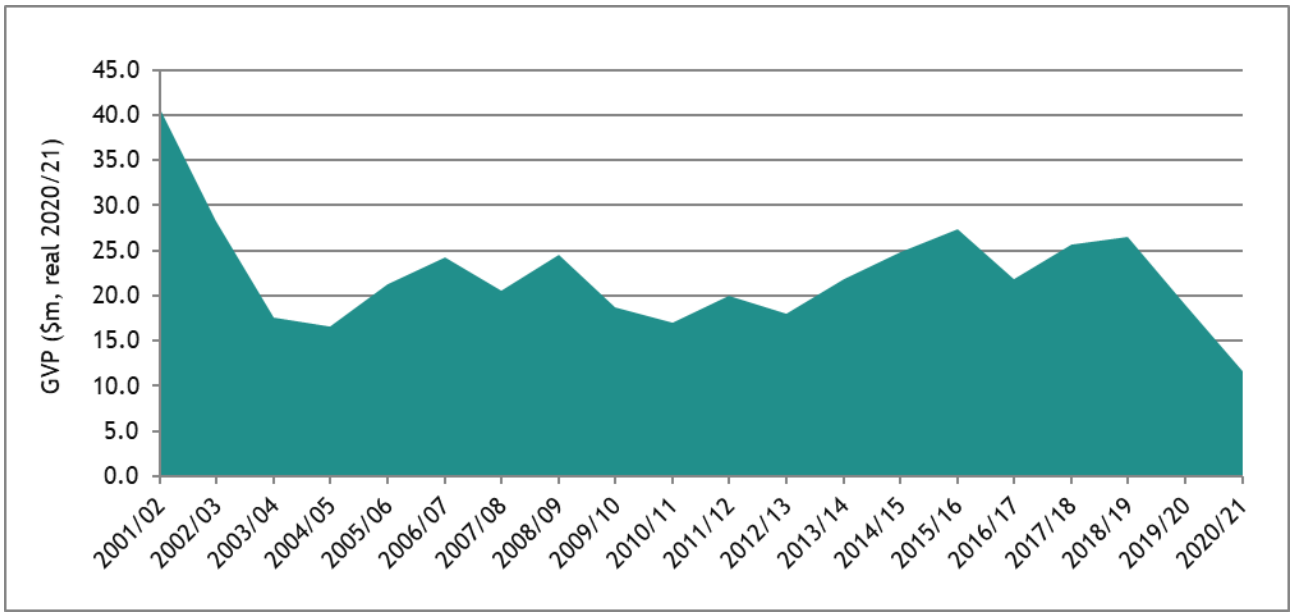


Source: BDO EconSearch (2022f)

Real value of catch in the SA NZRL Fishery between 2001/02 to 2020/21 is illustrated in Figure 10-2. 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 2020/21. As catch levels have been relatively constant between 2009/10 and 2020/21 the changes in GVP for the fishery during this time are directly linked to changes in price. Falls in price in 2010/11, 2012/13 and 2016/17

resulted in a decline in fishery GVP for those years. The fall in 2019/20 is as a result of international market closures as a response to the COVID-19 pandemic, forcing fishing of Rock Lobster to stop for a significant portion of the season and flooding the domestic market with product and forcing the price down. The increase in 2020/21 is a result of export market diversification as borders reopened and ongoing trade disputes between China and Australia required sellers to seek buyers elsewhere. Despite fluctuations, GVP followed an overall decreasing trend in between 2001/02 and 2020/21 due to a decrease in catch (63 per cent) and price (20 per cent real decrease).

Figure 10-2 SA NZRL Fishery GVP, 2001/02 to 2020/21[a]



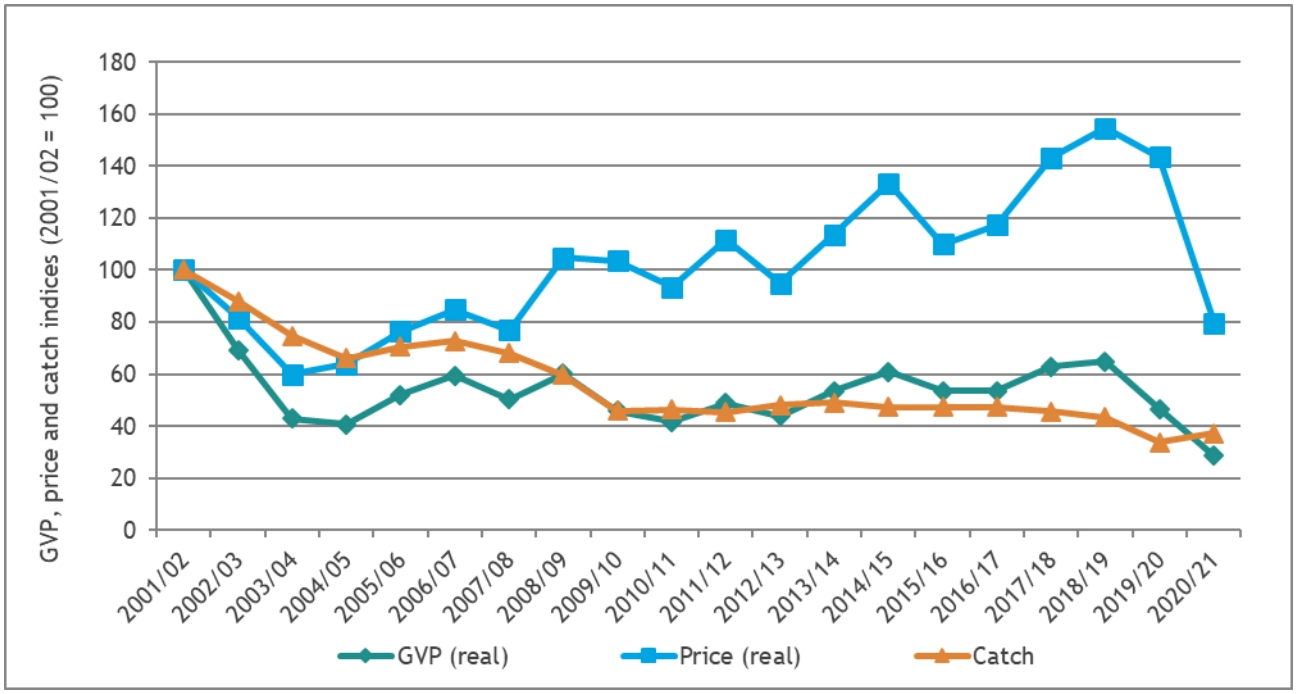
[a] Estimates of GVP are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022f)

Trends in price over the last 20 years are illustrated in Figure 10-3. The value of each indicator shown has been converted to an index with a base year (2001/02) value set to 100. Between 2001/02 and 2020/21, nominal price followed an increasing trend despite some fluctuations. In 2020/21, the nominal price ($46.39/kg) was only 20 per cent higher than the price in 2001/02 ($38.80/kg), which is equivalent to a 20 per cent real price decrease.

A proportion of the South Australian Rock Lobster catch is exported overseas (35 per cent in 2020/21) and so the value of the Australian Dollar can have an impact on the economic performance of the fishery. An inverse relationship between the exchange rate and price is not evident in the data in the long run but year-to-year fluctuations in the exchange rate do appear to lead to fluctuations in price (Figure 10-4).

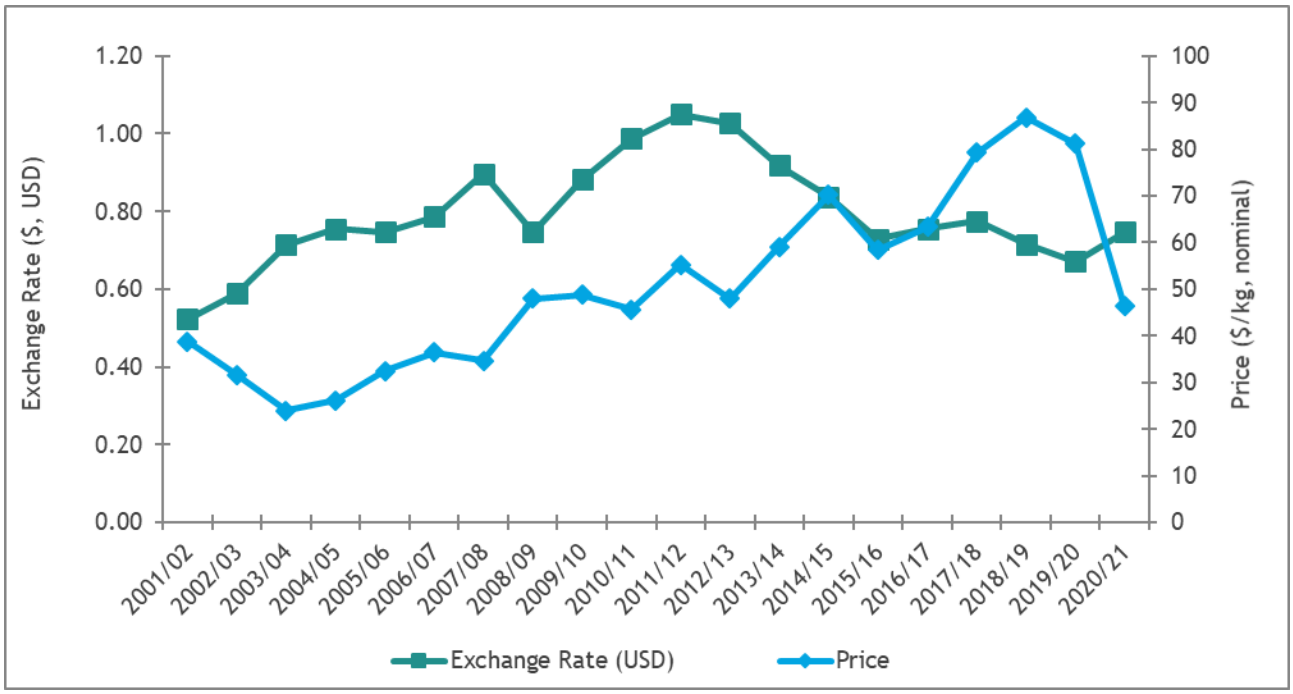
Figure 10-3 GVP, price and catch indicies for the SA NZRL Fishery[a]



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

Source: BDO EconSearch (2022f)

Figure 10-4 Exchange rate (USD) and average price for SA NZRL, 2001/02 to 2020/21



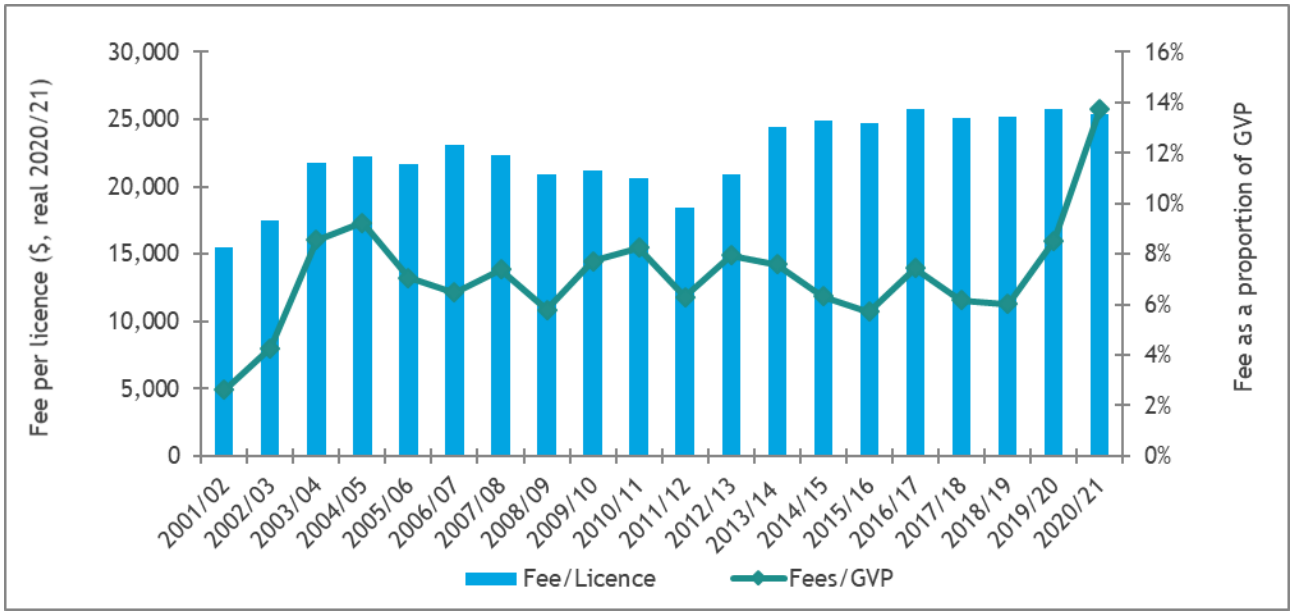
Source: BDO EconSearch (2022f)

10.3. Management Costs

The average management fee per licence and the licence fee as a proportion of GVP are illustrated in Figure 10-5. Since 2001/02 the following trends have emerged.

- Licence fees as a percentage of gross value of production (GVP) increased from 2.6 per cent in 2001/02 to 9.2 per cent in 2004/05. This ratio has decreased slightly since the introduction of quota in 2003/04 but reached 13.8 per cent in 2020/21.
- The licence fees per kilogram of landed lobster increased significantly between 2001/02 and 2020/21 from $1.58/kg to $6.38/kg, reflecting the significantly lower catch.
- The fee per licence has increased from $15,465 in 2001/02 to $25,414 in 2020/21, reflecting a reduction in the number of licences and an increase in licence fees.

Figure 10-5 Management fee per licence and as a proportion of GVP, SA NZRL Fishery, 2001/02 to 2020/21[a]



[a] Estimates of the fee per licence are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022f)

There were three main factors that contributed to the trends observed from 2001/02 to 2020/21. First, aggregate licence fees increased in real terms by approximately 50 per cent, at a time when the management services had to increase to accommodate the change to a quota system. Second, the catch in 2020/21 was 63 per cent below that achieved in 2001/02, while the price was 20 per cent lower in real terms (resulting in the value of catch falling by 71 per cent in real terms). Third, the number of licences fell by 9 per cent (from 69 to 63) between 2001/02 and 2020/21.

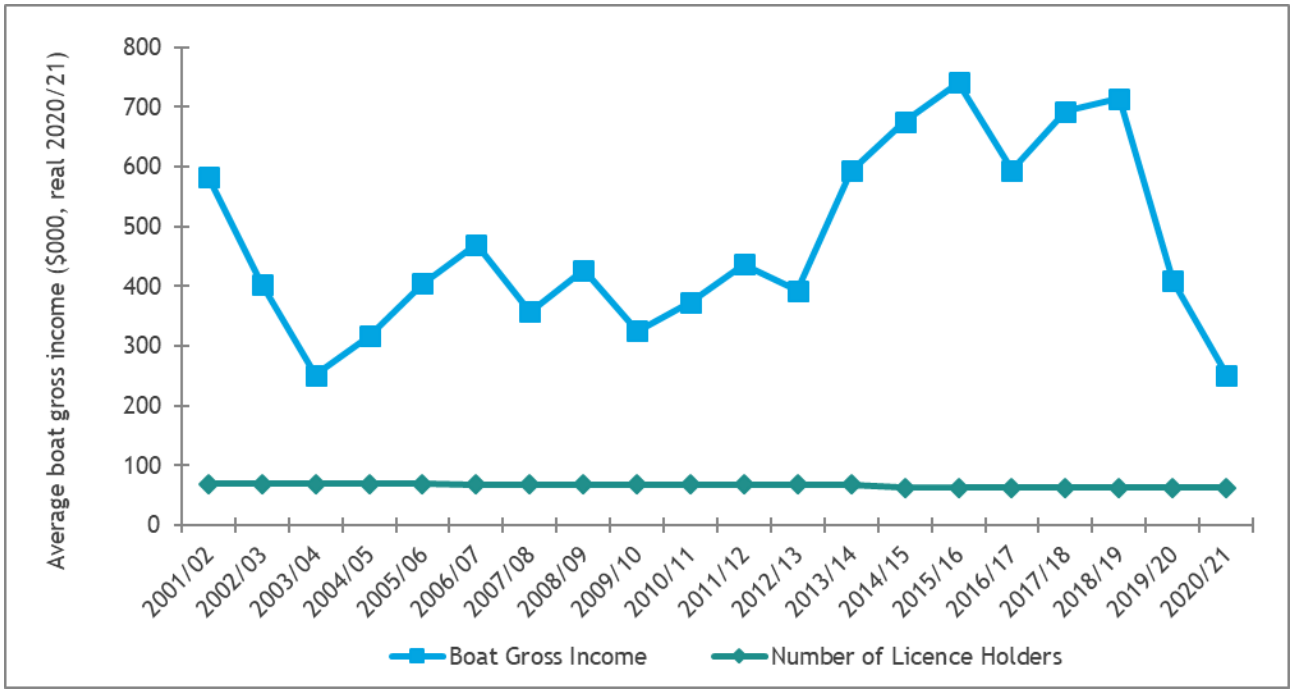
10.4. Financial Performance

10.4.1. Average Income

Average income and total number of licences in the fishery for the period 2001/02 to 2020/21 are illustrated in Figure 10-6. In real terms, average boat income decreased by 57 per cent across this period. The decrease in real boat income can be explained by the decrease in catch (63 per cent over the last 20 years) (Figure

10-1), and a decrease in real price of 20 per cent. The fall in income in 2020/21 was caused primarily by trade disputes between Australia and China leading to the blocking of Rock Lobster exports into China, leading to the value of catch falling in 2020/21 as the domestic market was flushed with supply.

Figure 10-6 Average income per licence holder in the SA NZRL Fishery, 2001/02 to 2020/21[a]



[a] Estimates of the boat gross income are expressed in real 2020/21 dollars.

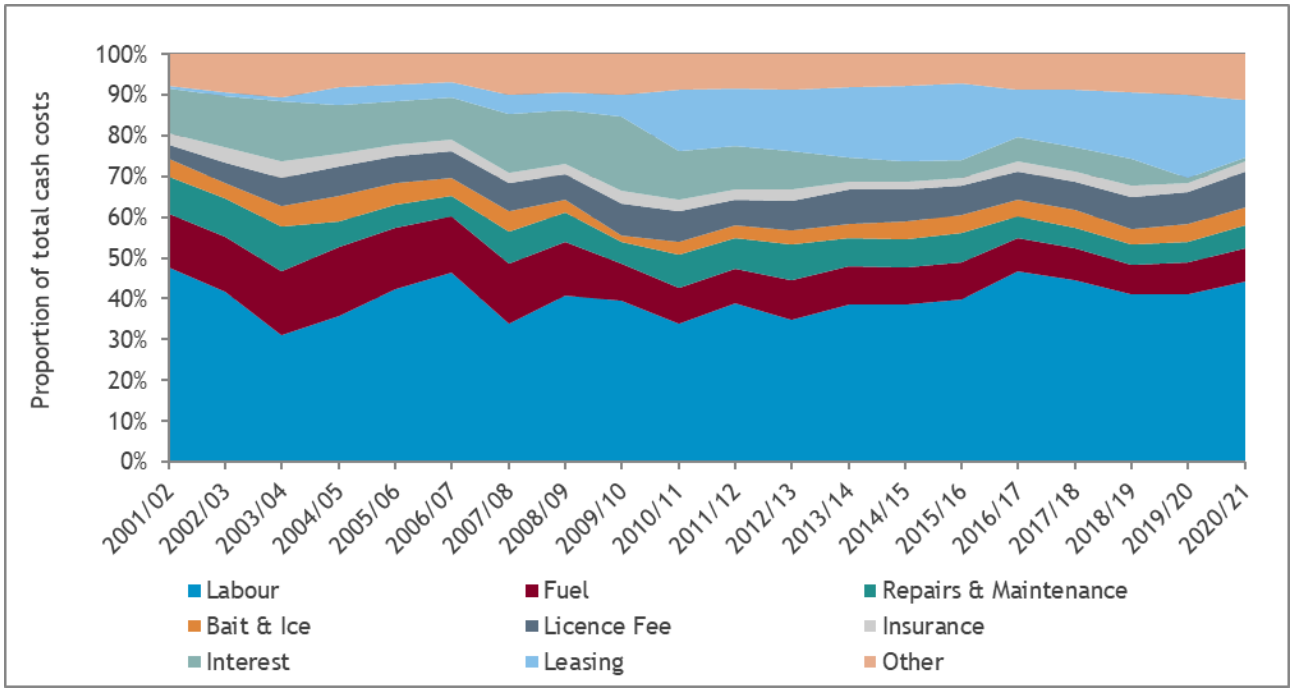
Source: BDO EconSearch (2022f)

10.4.2. Operating costs trends

A breakdown of major cost items as a proportion of total cash costs is illustrated in Figure 10-7. 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.

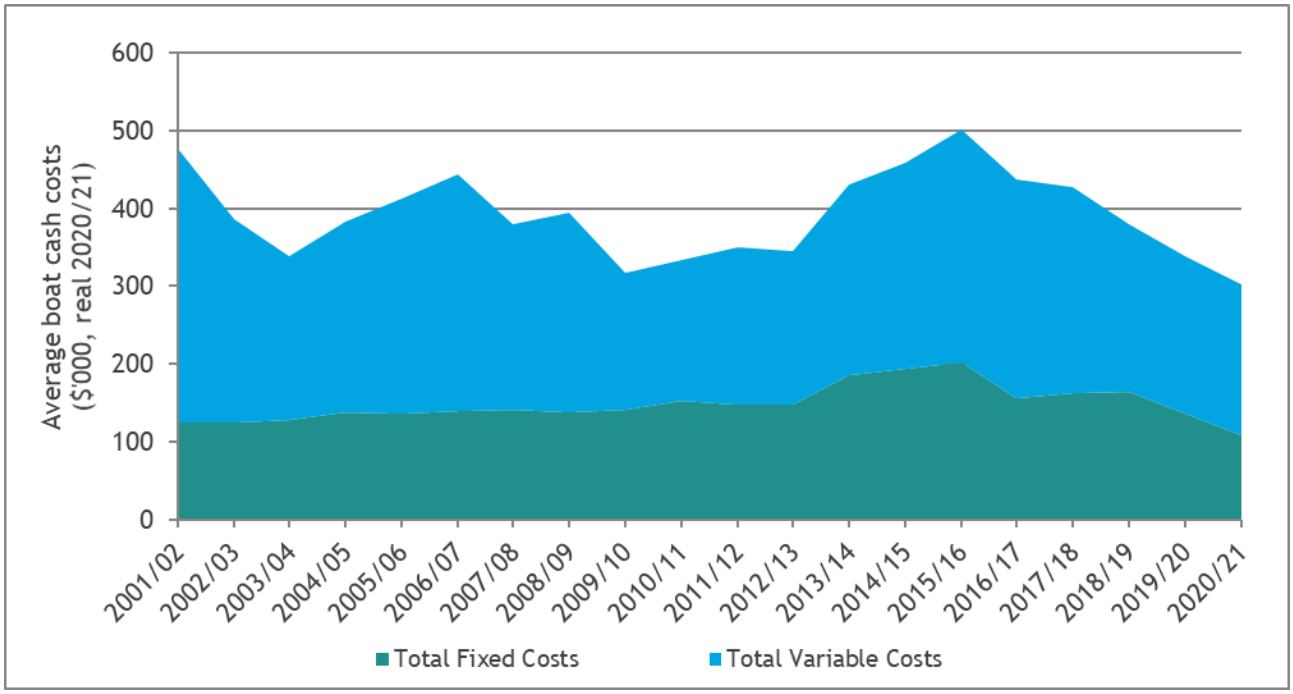
The cash costs detailed in Figure 10-7 can be categorised as either variable or fixed costs and are illustrated in Figure 10-8 on an average per boat basis. Total variable costs have fluctuated between years but generally followed a decreasing trend over the period 2002/03 to 2009/10. Total variable costs have then followed an increasing trend between 2009/10 and 2015/16 when it began to fall through to 2020/21. Total fixed costs have fluctuated much less from year to year and followed an increasing trend over time with the exception of the recent fall between 2019/20 and 2020/21 (Figure 10-8).

Figure 10-7 Cost shares in the SA NZRL Fishery, 2001/02 to 2020/21



Source: BDO EconSearch (2022f)

Figure 10-8 Average total costs in the SA NZRL Fishery 2001/02 to 2020/21[a]



[a] Estimates are expressed in real 2020/21 dollars.

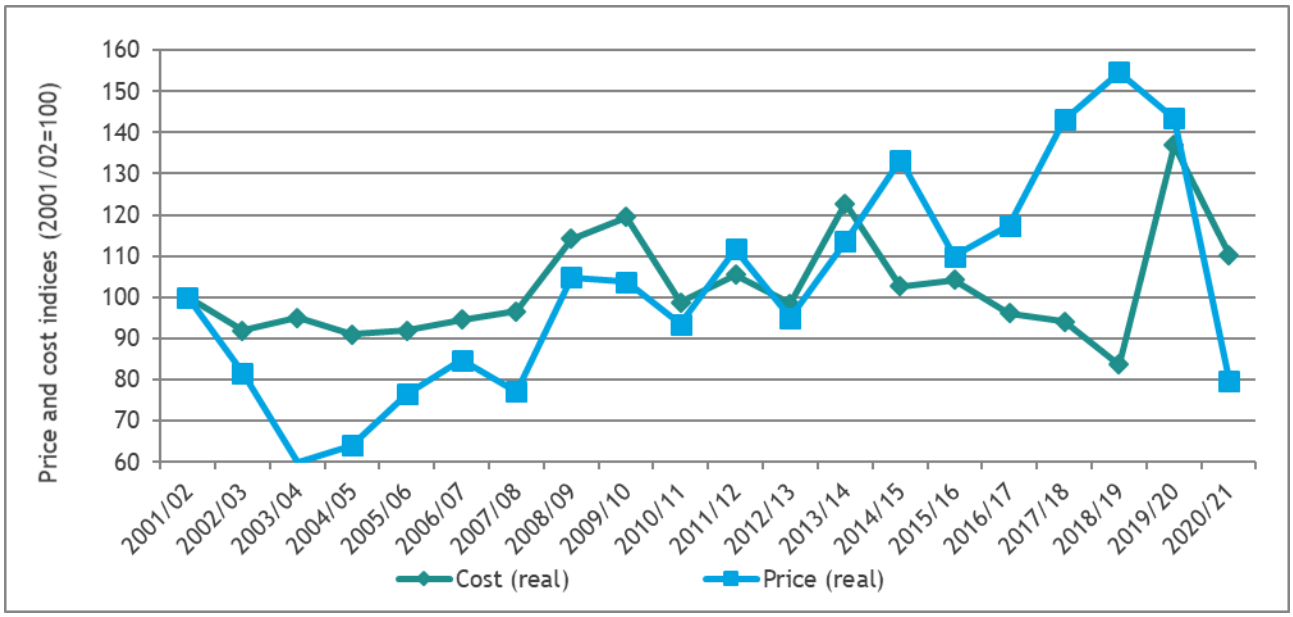
Source: BDO EconSearch (2022f)

10.4.3. Costs price squeeze

Real price and cost indices for the SA NZRL Fishery for the years 2001/02 to 2020/21 are summarised in Figure 10-9. 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 2001/02 and 2020/21, the average price of NZ Rock Lobster decreased by approximately 20 per cent in real terms. The average costs of catching Rock Lobster followed an increasing trend between 2001/02 and 2020/21, 10 per cent (Figure 10-9). 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 slightly adjusted in 2020/21 with a 20 per cent decrease in average costs from 2019/20.

Figure 10-9 Average boat price and cost indices for the SA NZRL Fishery, 2001/02 to 2020/21[a,b]



[a] Estimates of average costs and price are expressed in real 2020/21 terms.

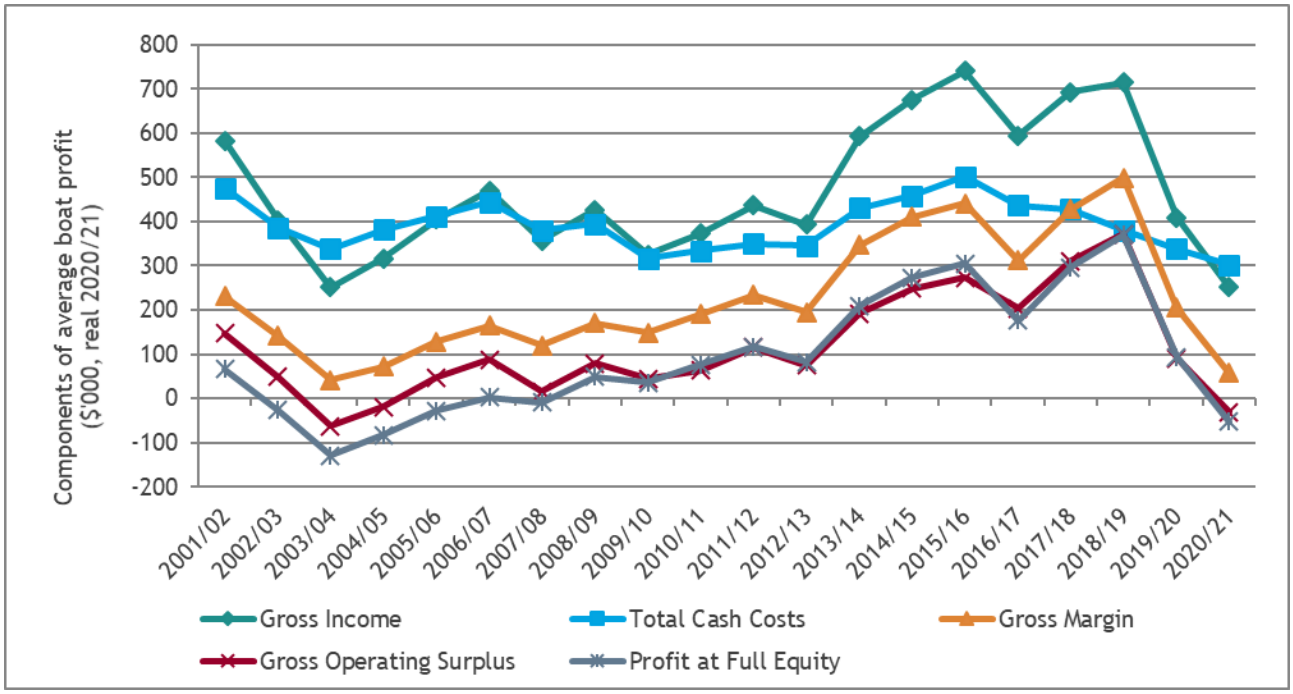
[b] Note, cost estimates include the opportunity cost of labour.

Source: BDO EconSearch (2022f)

10.4.4. Profitability

Selected measures of profitability for the average active boat in the SA NZRL Fishery are summarised in Figure 10-10 for the years 2001/02 to 2020/21. Changes in each of the profitability measures for the fishery were closely related to the average income earned. Profitability followed a decreasing trend between 2001/02 and 2003/04, becoming negative between 2002/03 and 2005/06. Between 2003/04 and 2018/19 profitability has generally followed an increasing trend, and was positive between 2008/09 and 2019/20. Profitability experienced a sharp decline between 2019/20 and 2020/21, caused primarily by the COVID-19 pandemic and international market closures, resulting in profitability becoming negative.

Figure 10-10 Average income and profit in the SA NZRL Fishery, 2001/02 to 2020/21[a]



[a] Estimates are expressed in real 2020/21 dollars.

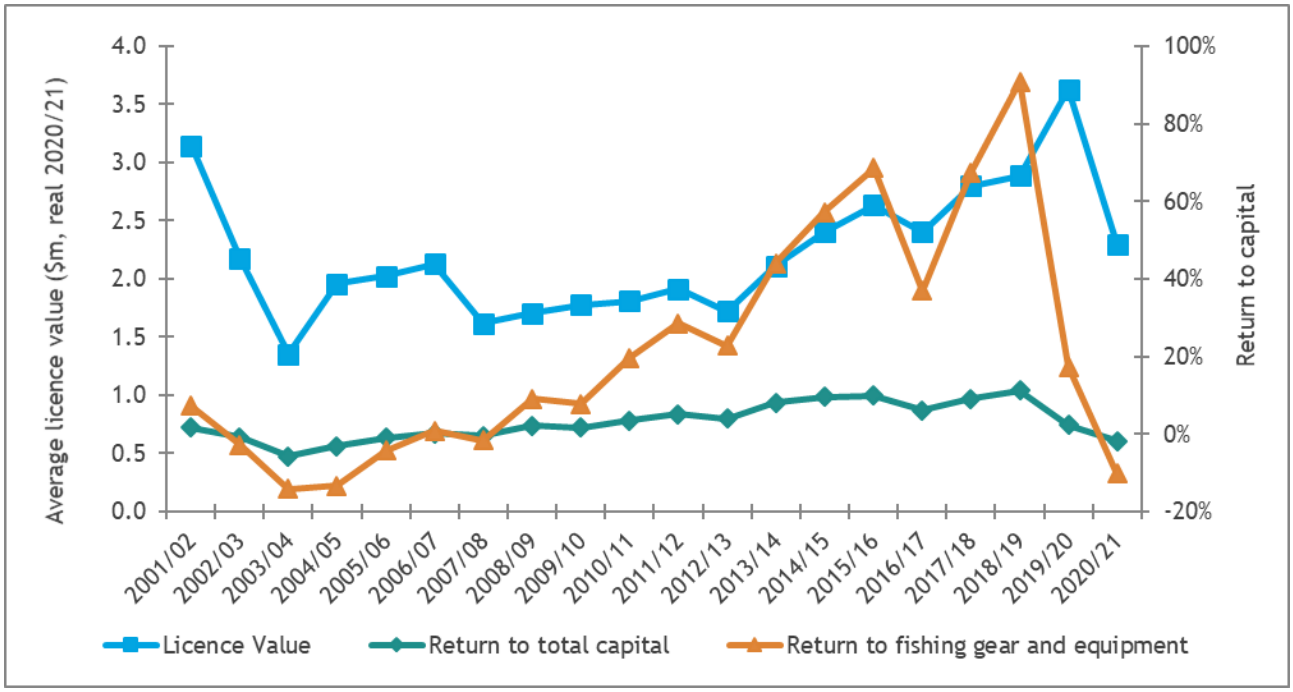
Source: BDO EconSearch (2022f)

10.4.5. Return to capital

Estimates of the average licence value and the rate of return to total capital are illustrated in Figure 10-11. 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.

There was a decline in the average rate of return to capital between 2001/02 and 2003/04. Since that time it improved significantly, rising from -5.7 per cent in 2003/04 to peaking at 11.2 per cent in 2018/19. However, 2020/21 saw the average rate of return to capital fall to -1.9 per cent (Figure 10-11). Similarly, the rate of return to fishing gear and equipment has followed a similar trend, increasing from -14.1 per cent in 2003/04 to a peak of 90.8 per cent in 2018/19 and then falling in 2020/21 to -10.3 per cent.

Figure 10-11 Return to Capital in the SA NZRL Fishery, 2001/02 to 2020/21[a]



[a] Estimates of licence value are expressed in real 2020/21 dollars.

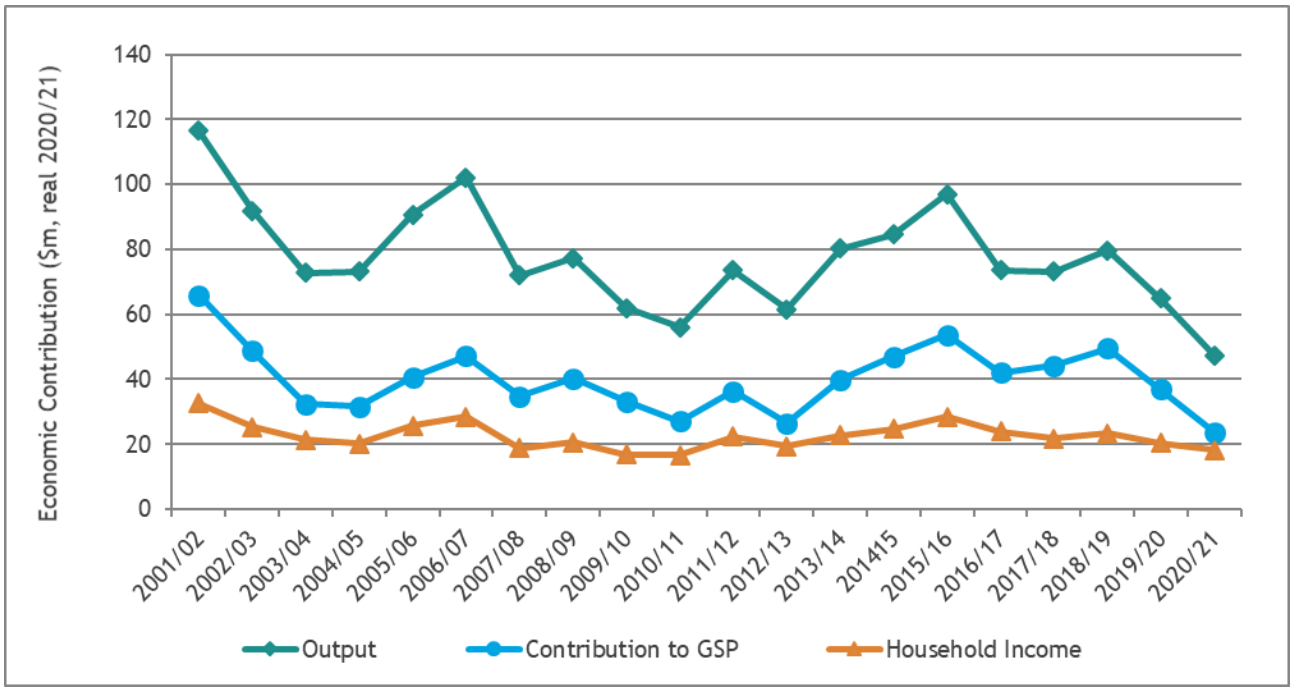
Source: BDO EconSearch (2022f)

10.5. Contribution to SA Economy

Figure 10-12 and Figure 10-13 illustrate the total economic contribution of the fishery on the SA economy for the past 20 years, 2001/02 to 2020/21. 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 10-12). There has been an overall decline in direct employment contribution of the fishery since 2001/02, as illustrated in Figure 10-13. This is mainly due to a decrease in the number of active boats in the fishery. ITQ management facilitates a reduction in the number of vessels and employment by promoting technical efficiency of the fleet (more efficient operators buy quota from less efficient operators) plus through increases in catch rate by constraining catch.

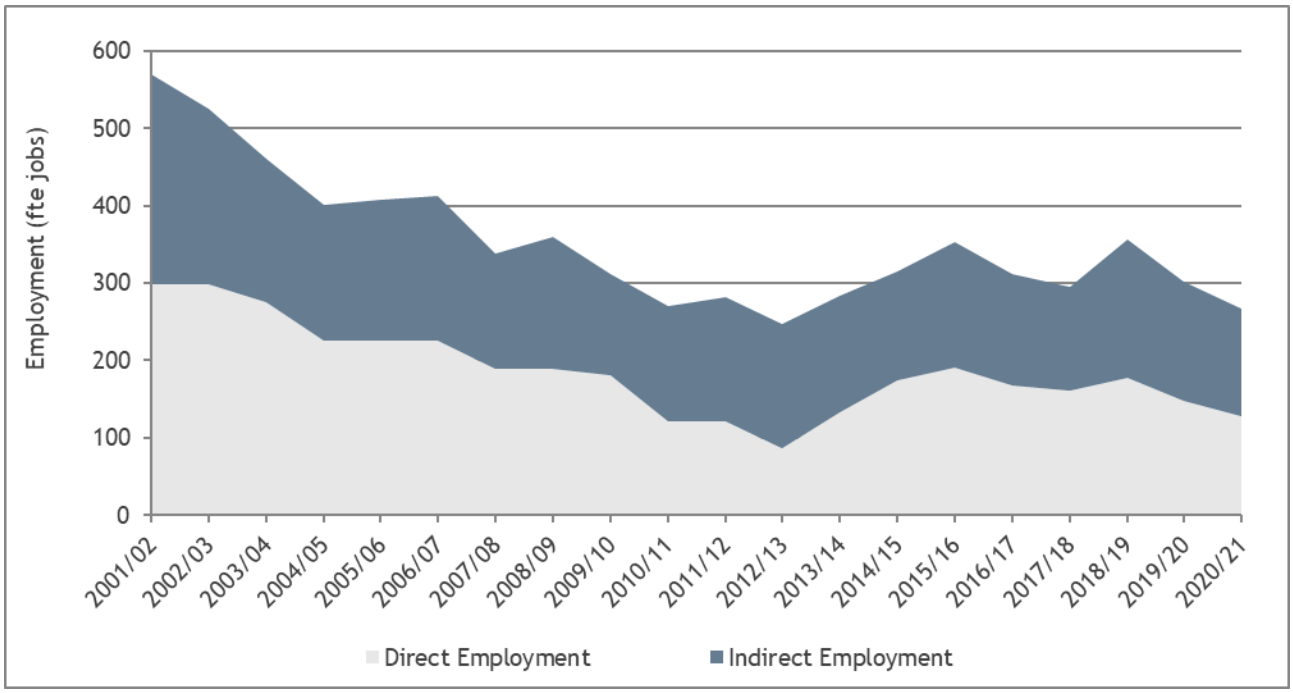
Figure 10-12 Total gross state product, output and household income contribution of the SA NZRL Fishery on the SA economy, 2001/02 to 2020/21[a]



[a] Estimates of output, GSP and household income are expressed in real 2020/21 terms.

Source: BDO EconSearch (2022f)

Figure 10-13 Total direct and indirect employment contribution of the SA NZRL Fishery on the SA economy, 2001/02 to 2020/21



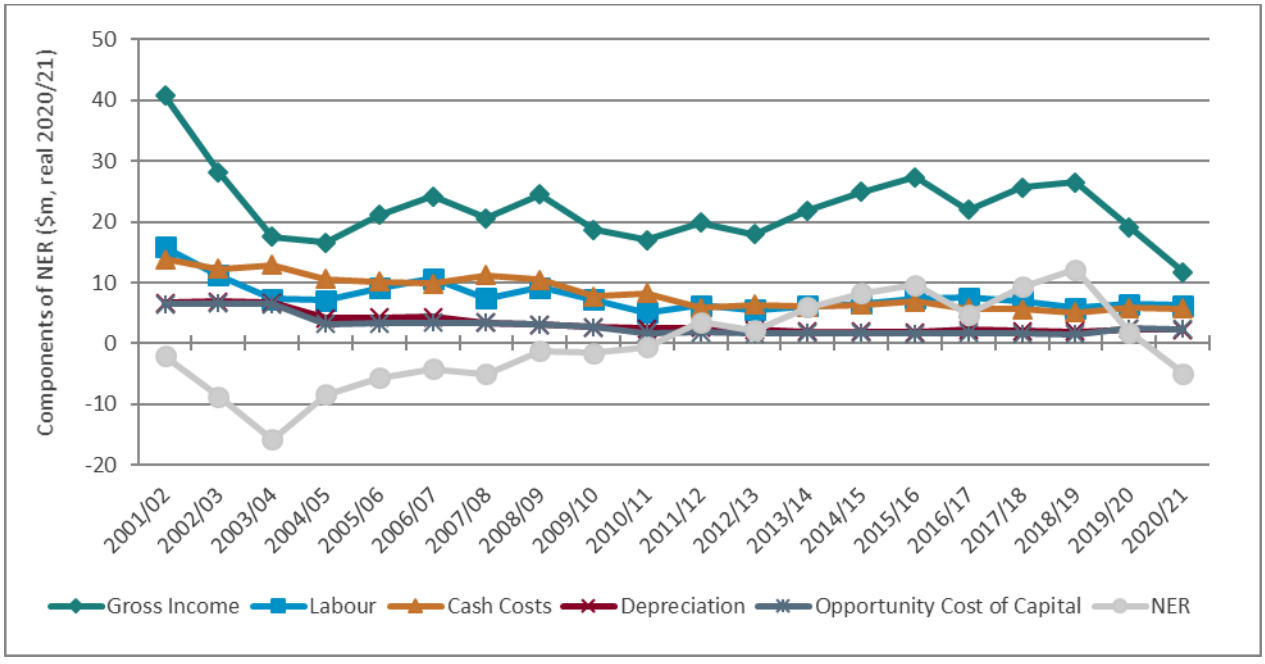
Source: BDO EconSearch (2022f)

10.6. 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 SA NZRL Fishery and the good produced is the landed Rock Lobster. ITQ systems aim to increase NER by reducing costs through higher catch rates and by allowing catch to be shifted to more efficient operators.

Estimates of the net economic return generated in the SA NZRL Fishery are summarised in Figure 10-14 for the period 2001/02 to 2020/21. In 2001/02, estimated NER in the fishery was -$2.1 and declined through to 2003/04 when it was estimated to be -$15.8 million. Since then it has followed an increasing trend and in 2011/12 it was estimated to be approximately $3.5 million. This was the first time that NER had been estimated to be positive in this fishery for more than a decade. In 2018/19, NER increased to almost $12.2 million. Notwithstanding the 2012/13 and 2016/17 declines, the increase in NER since 2003/04 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 quote management system. In 2020/21 NER fell to -$4.9 million as a result of ongoing trade disputes between China and Australia leading to the unofficial ban on Australian Rock Lobster exports (Figure 10-14).

Figure 10-14 Net economic return in the SA NZRL Fishery, 2001/02 to 2020/21m[a]

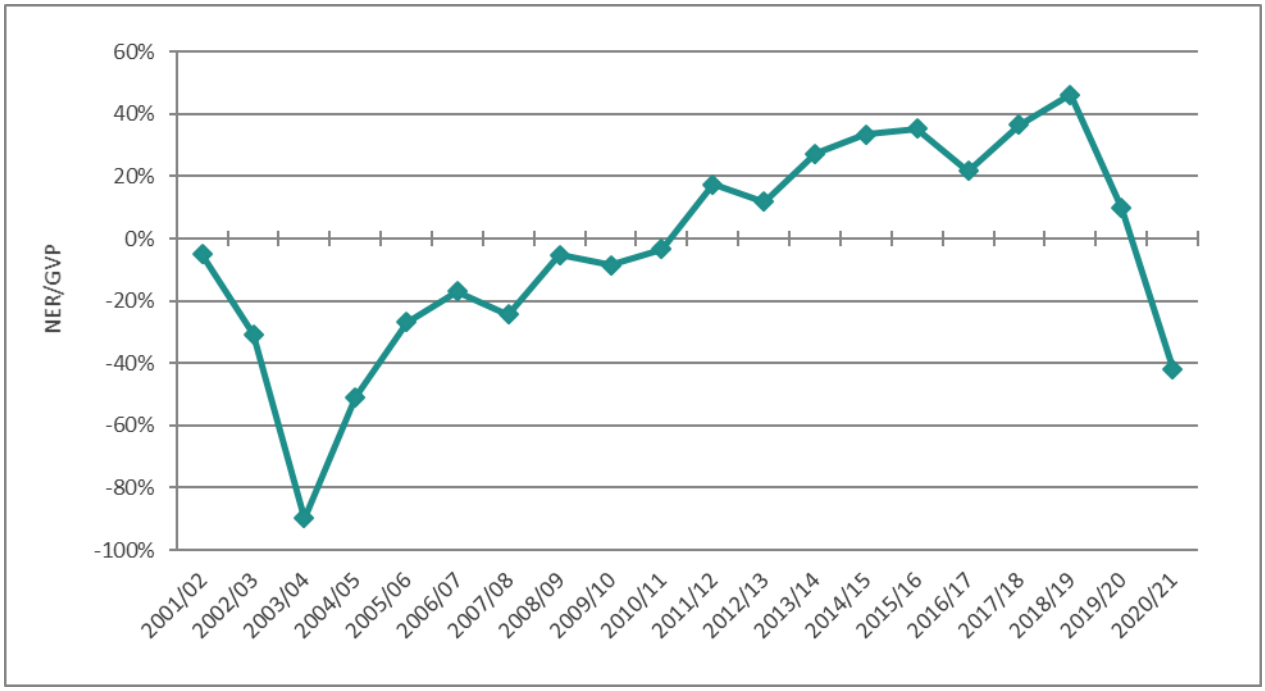


[a] Estimates are expressed in real 2020/21 terms.

Source: BDO EconSearch (2022f)

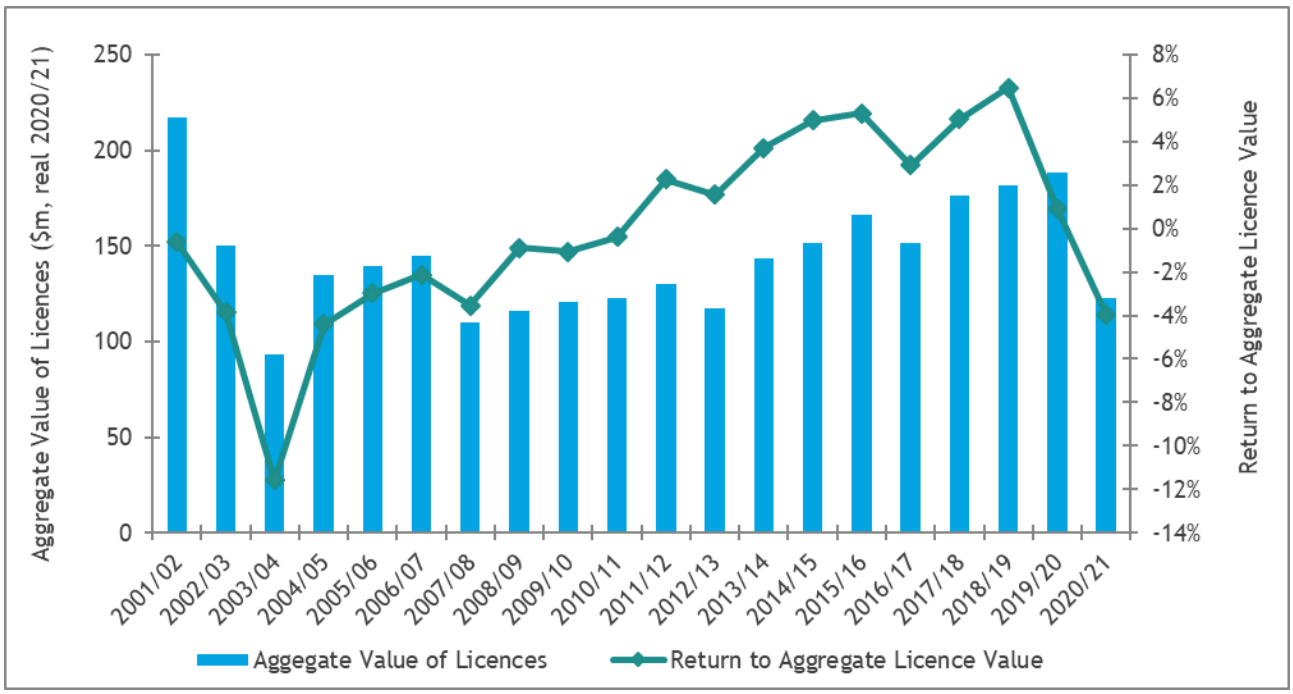
NER expressed as a percentage of GVP is a useful indicator for analysing a fishery over time and for comparing different fisheries. This indicator is illustrated in Figure 10-15 and shows a decrease between 2001/02 and 2003/04 before an increase in subsequent years before falling in 2020/21. NER represents a return to the value of licences in the fishery. The aggregate value of licences in the SA NZRL Fishery and the return to capital value of the fishery are illustrated in Figure 10-16. The return to the capital value of the fishery decreased between 2001/02 and 2003/04 and has followed an increasing trend in subsequent years before falling in 2020/21.

Figure 10-15 Net economic return as a proportion of GVP in the SA NZRL Fishery, 2001/02 to 2020/21



Source: BDO EconSearch (2022f)

Figure 10-16 Aggregate value of licences and return to capital in the SA NZRL Fishery, 2001/02 to 2020/21[a]



[a] Estimates of the aggregate licence value are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022f)

11. SARDINE FISHERY

11.1. Economic Objective of the Sardine Fishery

According to the management plan for the Sardine fishery (PIRSA 2014), management of the fishery has four key goals:

1. Maintain harvest of Sardines at ecologically sustainable levels
2. Optimum utilisation and equitable distribution
3. Protect and conserve aquatic resources, habitats and ecosystems
4. Cost effective and consultative co-management of the fishery

In order to achieve these aims the management plan sets out specific biological, ecological, social and economic objectives for the fishery. The economic objectives of the Sardine fishery, as described in the management plan for the fishery, are summarised in Table 11-1. A new management plan for the Sardine Fishery is currently in development and will be independent of the Marine Scalefish management plan.

Over the last 20 years an annual report on economic indicators for the fishery has been prepared. The economic indicators contained in these reports, most recently reported in BDO EconSearch (2022g), can assist in measuring the performance of the fishery against management objectives. The economic indicators for the Sardine fishery are reported under the following headings:

- catch and gross value of production (GVP) (Section 11.2)
- management costs (Section 11.3)
- boat level financial performance indicators (Section 11.4)
  - average income
  - operating costs
  - cost-price squeeze
  - profitability
  - return on investment
- contribution to the SA economy (Section 11.5)
  - GSP
  - household income
  - employment
- net economic return (Section 11.6).

Indicators relating to the economic performance and objectives for the fishery are reported for the period 2001/02 to 2020/21. It should be noted that economic indicators are based on different survey samples and techniques over time. Some of the difference between years is, therefore, attributable to sampling variability.

Table 11-1 Economic objectives of the SA Sardine Fishery

Goal	Objective	Management Strategies	Performance Indicator	Limit Reference Points
Goal 2: Optimum utilisation and equitable distribution	2a. Maximise value of the fishery to the community within ecologically sustainable limits	2a(i) Undertake economic review on a regular basis 2a(ii) Develop arrangements to improve the operational efficiency of the fishing fleet, while maximising flexibility (e.g. new fishing grounds if appropriate) 2a(iii) Develop arrangements that allow for value-adding strategies, where possible	Gross value of production Gross operating surplus Licence value Number of FTEs directly and indirectly employed	GVP monitored regularly GOS monitored regularly Licence value monitored regularly Economic indicators report conducted regularly
	2b. An economically efficient fleet	2b(i) Consider economic and financial impacts when implementing management arrangements 2b(ii) Undertake economic review on a regular basis 2b(iii) Where appropriate, and if possible, influence other processes that impact on infrastructure development	Gross value of production Gross operating surplus Licence value Economic indicators assessed in economic indicators report	
	2c. Ensure sufficient economic information is used to make informed management decisions	2c(i) Undertake economic surveys to assess the economic performance of the fishery	Economic indicators assessed in economic indicators report	The economic indicators report is published regularly

Goal	Objective	Management Strategies	Performance Indicator	Limit Reference Points
Goal 4: Cost effective and consultative co-management of the fishery	4a. Provide cost-effective and efficient management of the fishery, in line with government's cost recovery policy	4a(vi) Monitor licence fees as a percentage of GVP	Key economic indicators: licence fees as a percentage of gross value of production, gross operating surplus, licence value	

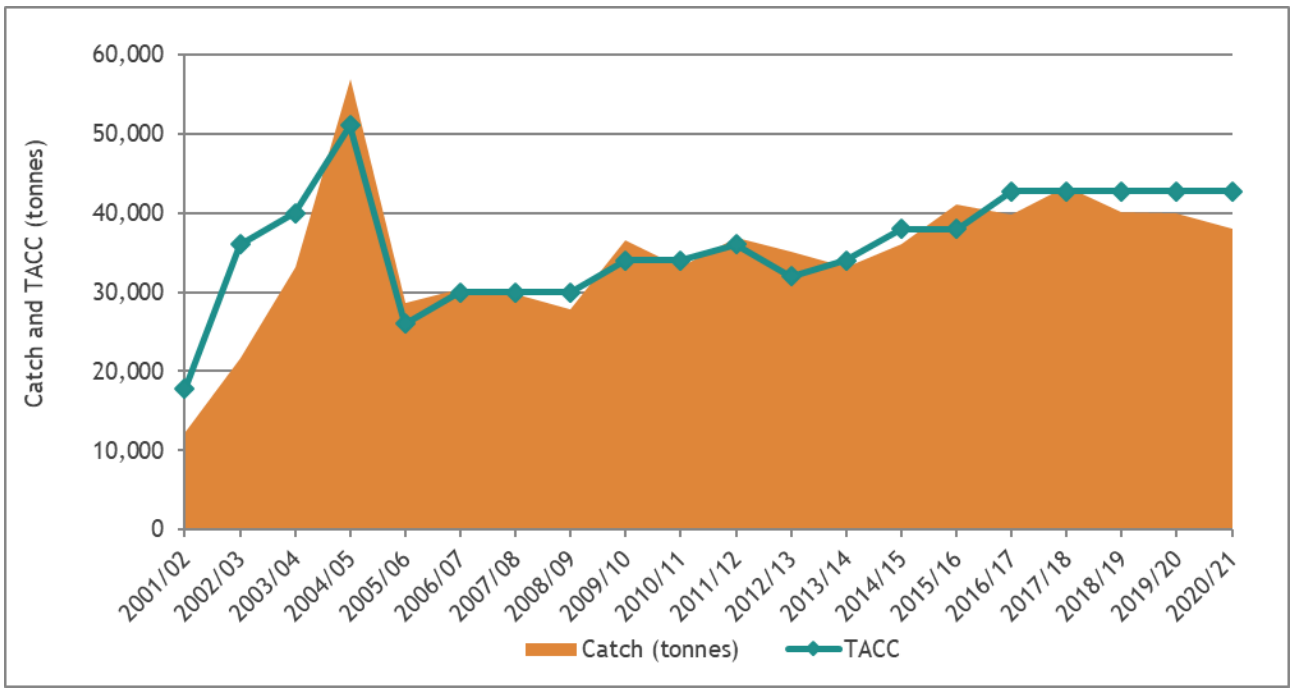
Indicators reported in Economic reports.

Source: PIRSA 2014

11.2. Catch and Gross Value of Production

The data shown in Figure 11-1 indicate that total catch in the fishery followed an increasing trend, mostly constrained by TACC over the period 2001/02 to 2020/21. The figure shows TACC by calendar year and catch by financial year and this can account for the years where catch is greater than TACC and vice versa. Prior to 2000, catch had declined considerably as a result of a significant Sardine mortality event occurring across the entire distribution of the Australian Sardine population from October 1998 to May 1999. Sardine stocks regenerated quickly, however, resulting in a significant increase in catch between 2001 and 2005 made possible by increases in the TACC. This significant increase in value corresponds with increased catches to meet the growing demand for feedstock from Port Lincoln's Tuna farming industry. There was a large reduction in TACC between 2005 and 2006 which resulted in a significant decrease in the catch and value of catch in the fishery. Since 2006, TACC has increased gradually which has allowed an overall increasing trend in catch and GVP.

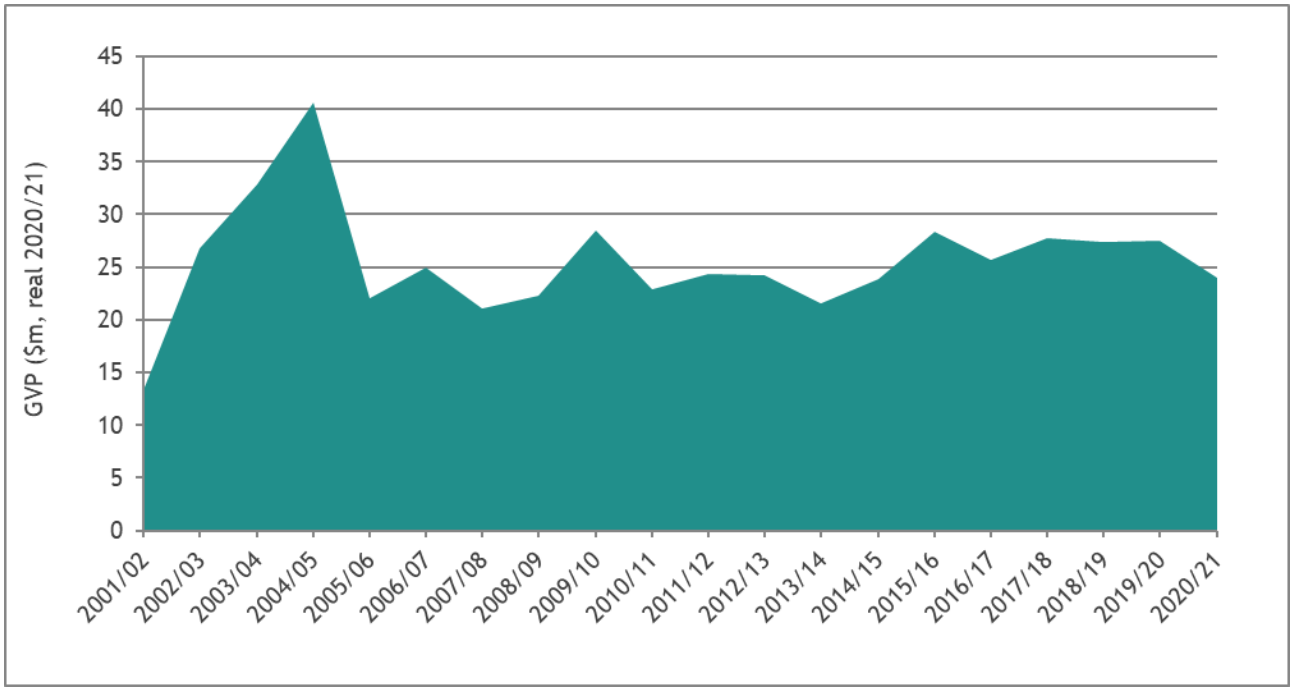
Figure 11-1 SA Sardine Fishery catch (financial year) and TACC (calandar year), 2001/02 to 2020/21



Source: BDO EconSearch (2022g)

The GVP for the Sardine fishery for the period 2001/02 to 2020/21 is illustrated in Figure 11-2. The real value of the Sardine catch increased significantly between 2001/02 and 2004/05 (Figure 11-2). The real value of the Sardine catch fell significantly in 2005/06, due to the 50 per cent reduction in TACC for the 2006 season. GVP fluctuated in subsequent years as a result of small changes in both the level of catch and the price of Sardines but has followed a slight increasing trend since 2005/06. In 2020/21, GVP was estimated to be $24.0 million, a 13 per cent real decrease from the previous year (Figure 11-2). This decrease is attributable to a 9 per cent reduction in price and 5 per cent decline in catch resulting from reduced demand from Tuna farms.

Figure 11-2 SA Sardine Fishery GVP, 2001/02 to 2020/21[a]



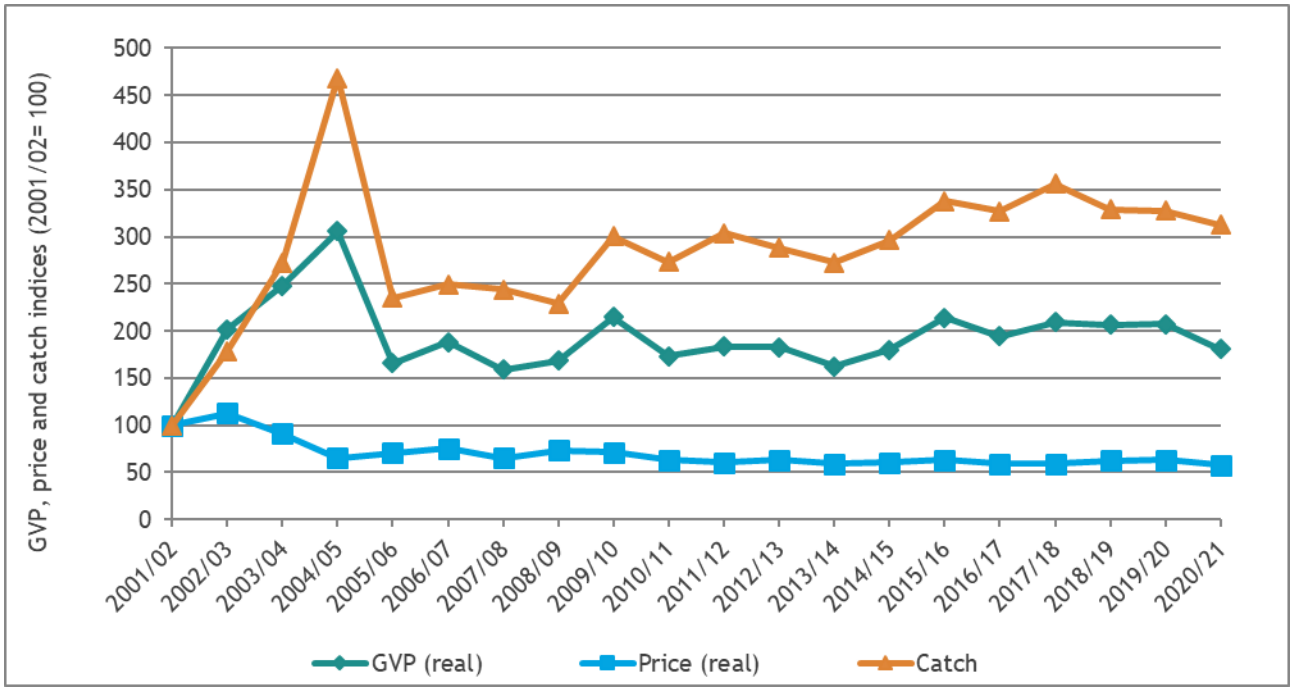
[a] Values have been converted to real 2020/21 dollars.

Source: BDO EconSearch (2022g)

Catch, GVP and price indices for the fishery for 2001/02 to 2020/21 are illustrated in Figure 11-3. Change in GVP over time is strongly influenced by change in catch. Because changes in real price are slight compared to the dramatic shifts in catch, changes in real price have had a lesser impact on GVP. However, the decline in real price since 2005/06 has offset the increase in catch over that period leaving real GVP only slightly larger in 2020/21 than in 2005/06 (9 per cent).

The trends in real and nominal price for Sardines over the last twenty years can be seen in Figure 11-4. The average real price for Sardines has shown a declining trend since 2002/03, decreasing by 42 per cent between 2001/02 and 2020/21. The average nominal price for Sardines decreased by 10 per cent over the same period (Figure 11-4).

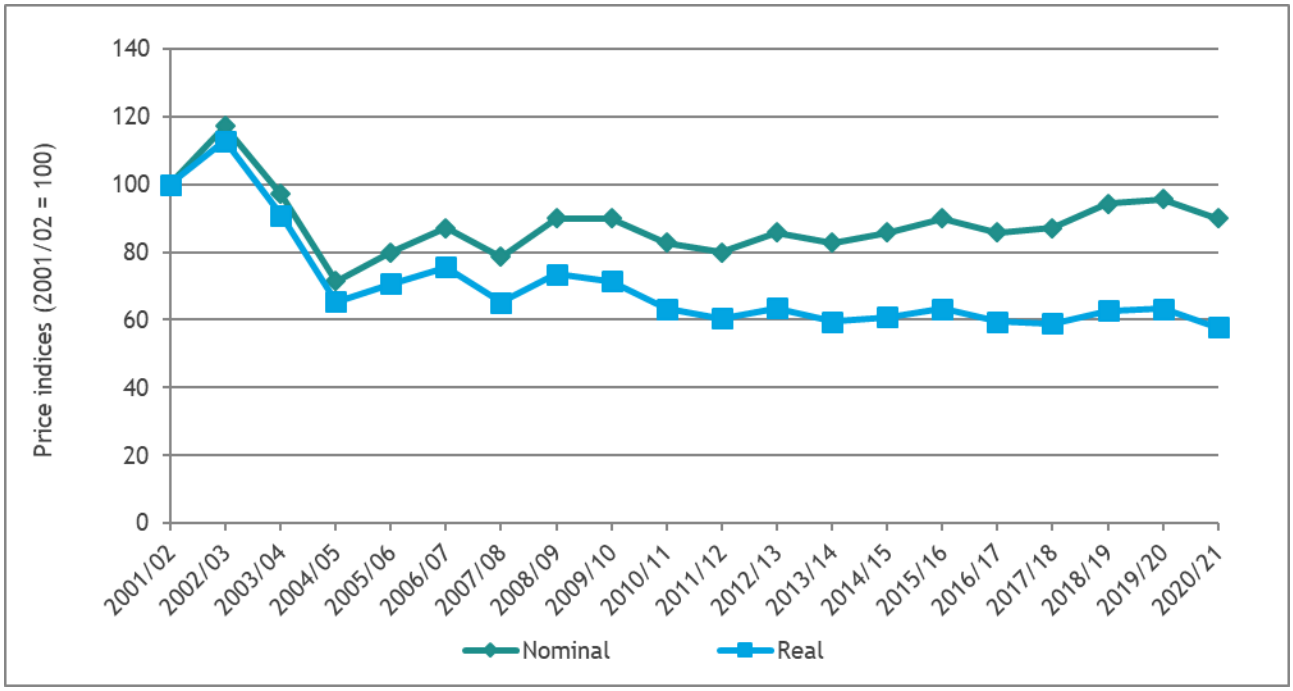
Figure 11-3 GVP, price and catch indices for the SA Sardine Fishery[a]



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

Source: BDO EconSearch (2022g)

Figure 11-4 Price indices for the SA Sardine 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 2021a). It enables meaningful comparisons of prices to be made between years.

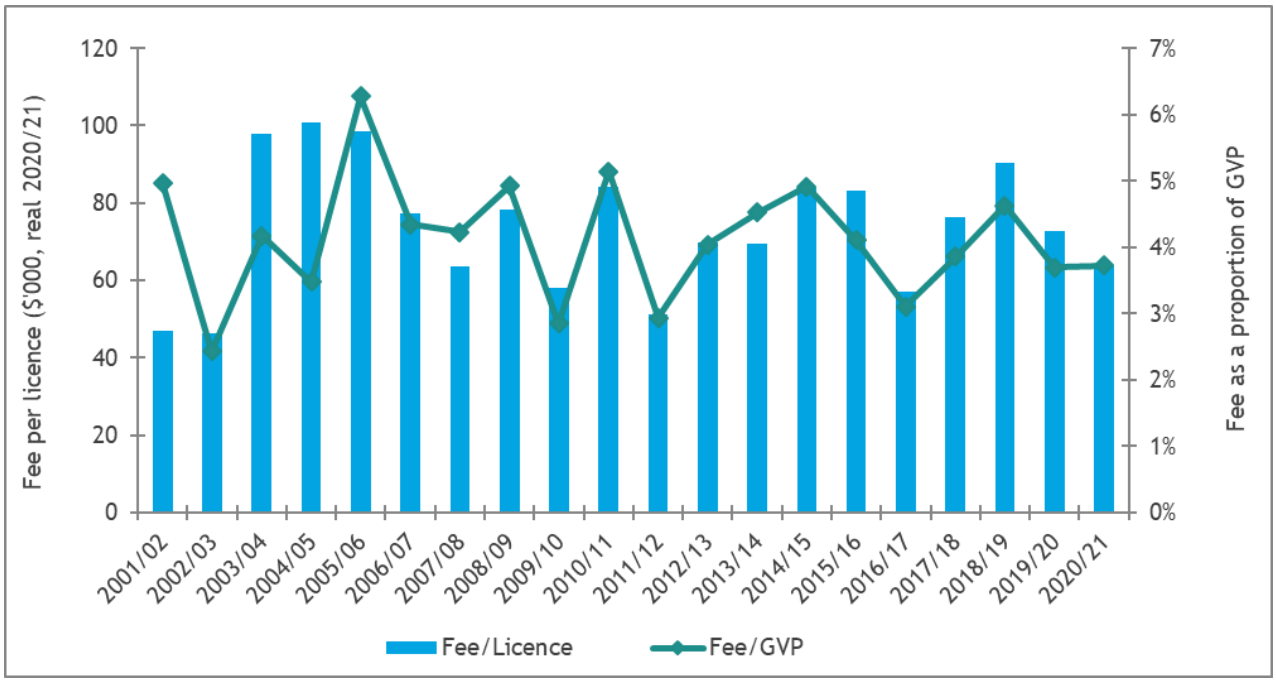
Source: BDO EconSearch (2022g)

11.3. Management Costs

The average management fee per licence and the licence fee as a proportion of GVP, for the period 2001/02 to 2020/21, are illustrated in Figure 11-5. Licence fees as a percentage of GVP fluctuated between years but decreased overall from 5.0 per cent in 2001/02 to 3.7 per cent in 2020/21. This decline can be attributed to an increase in real fishery GVP outweighing the real increase in the cost of managing the fishery.

The average management cost per licence increased (in real terms) from $47,000 in 2001/02 to $100,800 in 2004/05, reflecting an increase in total management costs. Since 2004/05, the average cost per licence has decreased with fluctuations due to changes in observer services, the cycling in the biennial research program and TACC setting process for the fishery and the associated costs. In 2020/21, the management fee per licence was $63,800 (Figure 11-5).

Figure 11-5 Management fee per licence and as a proportion of GVP, SA Sardine Fishery, 2001/02 to 2020/21[a]



[a] Values have been converted to real 2020/21 dollars.

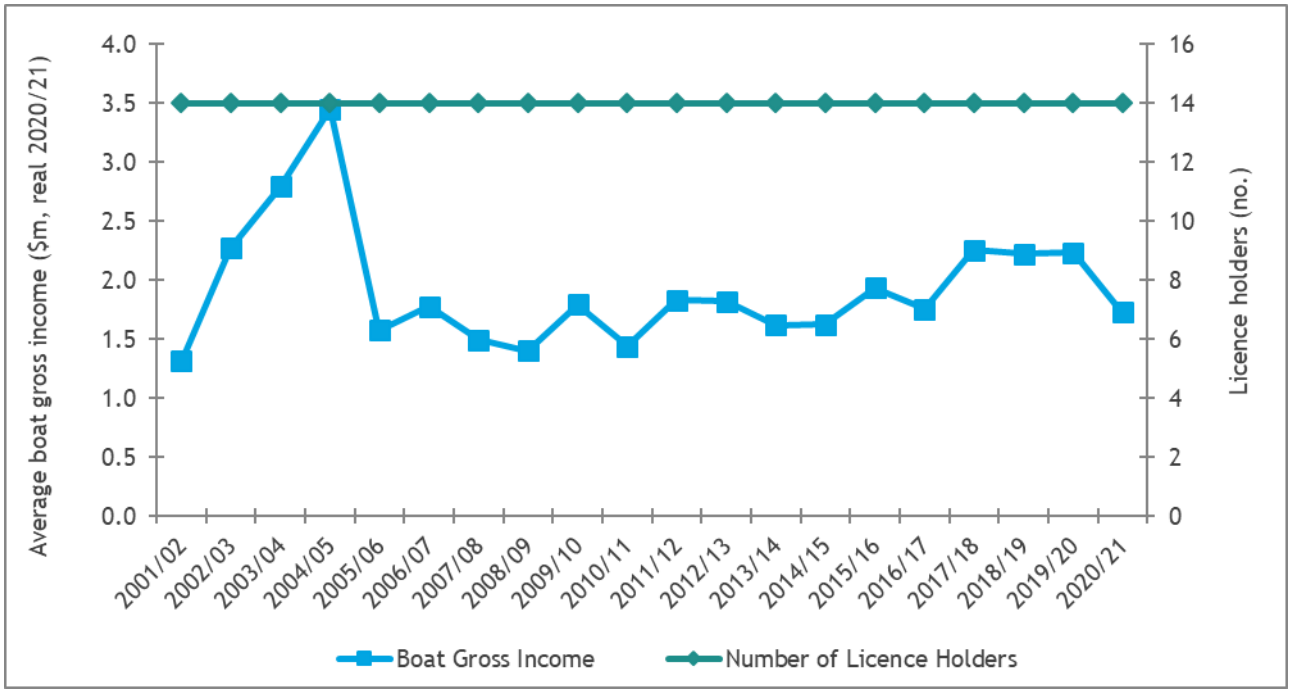
Source: BDO EconSearch (2022g)

11.4. Financial Performance

11.4.1. Average Income

Average income and total number of licences in the fishery for the period 2001/02 to 2020/21 are illustrated in Figure 11-6. The average income per licence (in real 2020/21 dollars) increased from $1.3 million in 2001/02 to over $3.4 million in 2004/05 then declined significantly in 2005/06 (to $1.6 million) as a result of the reduction in TACC. In subsequent years, average income per licence has followed a slight increasing trend until 2019/20 where it reached $2.2 million (Figure 11-6). In 2020/21 average income per licence declined to $1.7 million. The total number of licences in the fishery has not changed over the period of analysis. Accordingly, changes in the average income per licence directly relate to the total real GVP for the fishery. In 2020/21 the decrease is partly attributable to sample variability between the 2021 and 2018 surveys.

Figure 11-6 Average income per licence in the SA Sardine Fishery, 2001/02 to 2020/21[a]



[a] Estimates of average boat gross income are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022g)

11.4.2. Operating costs trends

A breakdown of major cost items as a proportion of total cash costs, for the period 2001/02 to 2020/21, is illustrated in Figure 11-7. Since 2001/02, labour costs have accounted for a large but decreasing (with some fluctuations) 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 contribute to the business, but who are not paid a wage directly by the business.

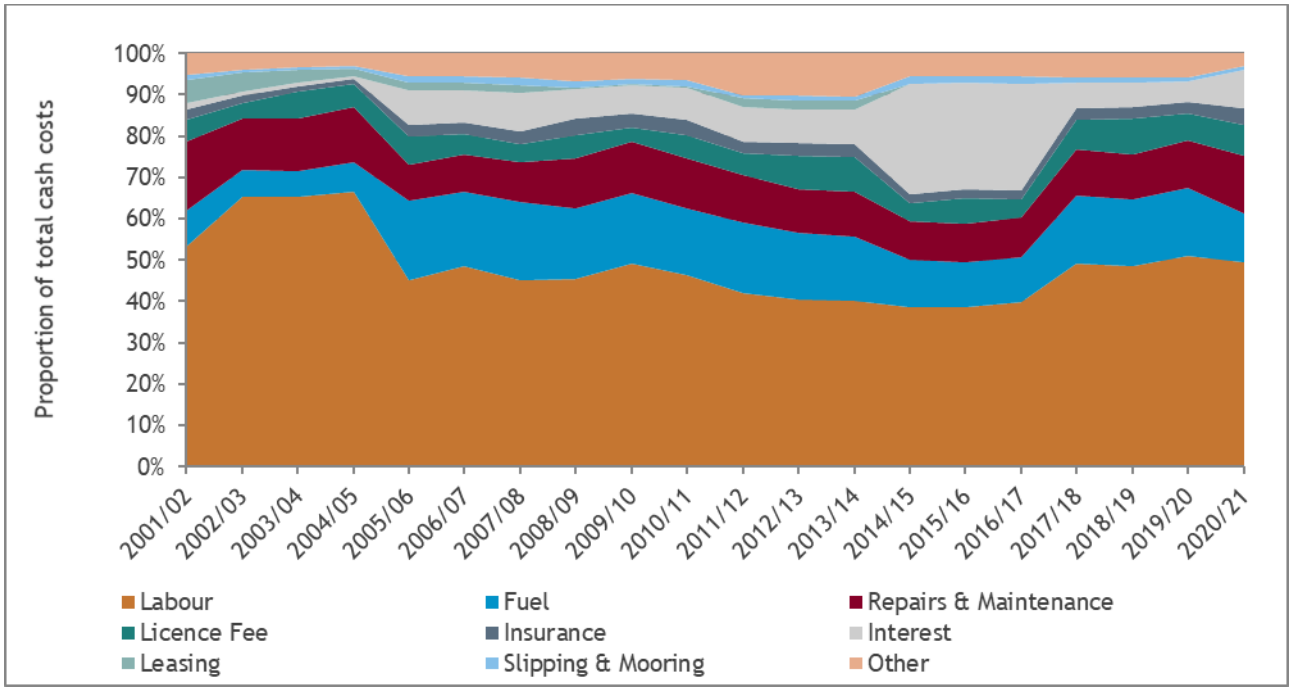
Interest costs became a notable feature of total cash costs over the same period, increasing from 2 per cent of total cash costs in 2001/02 to 26 per cent in 2016/17. Interest costs declined between 2017/18 and 2019/20 and then increased back to 9 per cent of total cash costs in 2020/21. This variance in interest

payments could be due to sampling variability as economic contribution estimates for the years 2001/02 to 2020/21 are based on different survey samples and techniques, some of the differences between years is, therefore, attributable to sampling variability.

Other significant cash costs were fuel, repairs and maintenance and licence fees (Figure 11-7). The proportion of fuel in respect to all cash costs decreased between 2005/06 to 2016/17, reflecting the fishery's improving efficiency and green credentials of their product. From 2017/18 to 2019/20 there was a slight rise in fuel costs before a decline in 2020/21, however this could be caused, in part, by a sampling variation between surveys.

The cash costs detailed in Figure 11-7 can be categorised as either variable or fixed costs and are illustrated in Figure 11-8 on an average per boat basis. Total variable costs increased between 2001/02 and 2004/05, as catch increased, and have fluctuated in subsequent years but generally followed a slight decreasing trend. In 2020/21 variable costs decreased by 34 per cent from 2019/20 due to a reduced demand for Tuna feed leading to a 12 per cent decline in days fished. The price for Sardines was also reduced by 9 per cent over the same period, leading to fishers reducing other variable costs to maintain profit. As would be expected, total fixed costs have fluctuated much less from year to year but followed an increasing trend over the entire period of analysis (Figure 11-8).

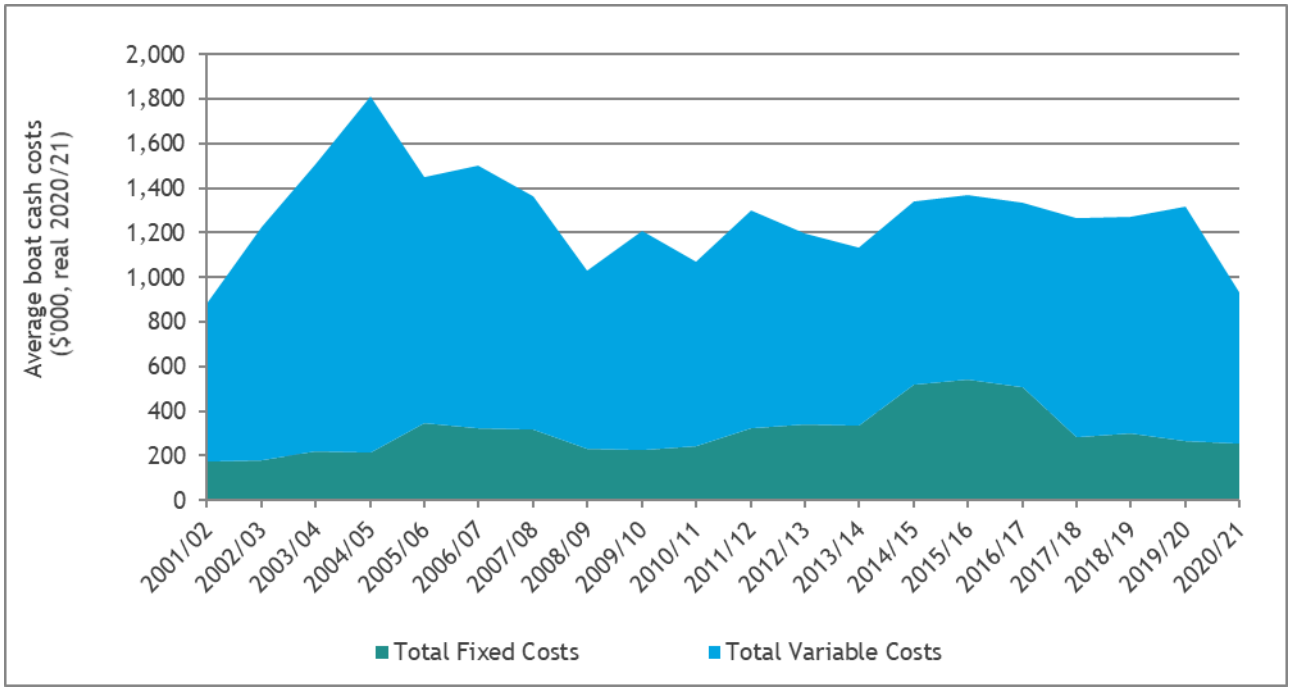
Figure 11-7 Cost shares in the SA Sardine Fishery, 2001/02 to 2020/21[a]



[a] Financial performance estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Source: BDO EconSearch (2022g)

Figure 11-8 Average total costs in the SA Sardine Fishery 2001/02 to 2020/21[a]



[a] Estimates of average costs are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022g)

11.4.3. Costs price squeeze

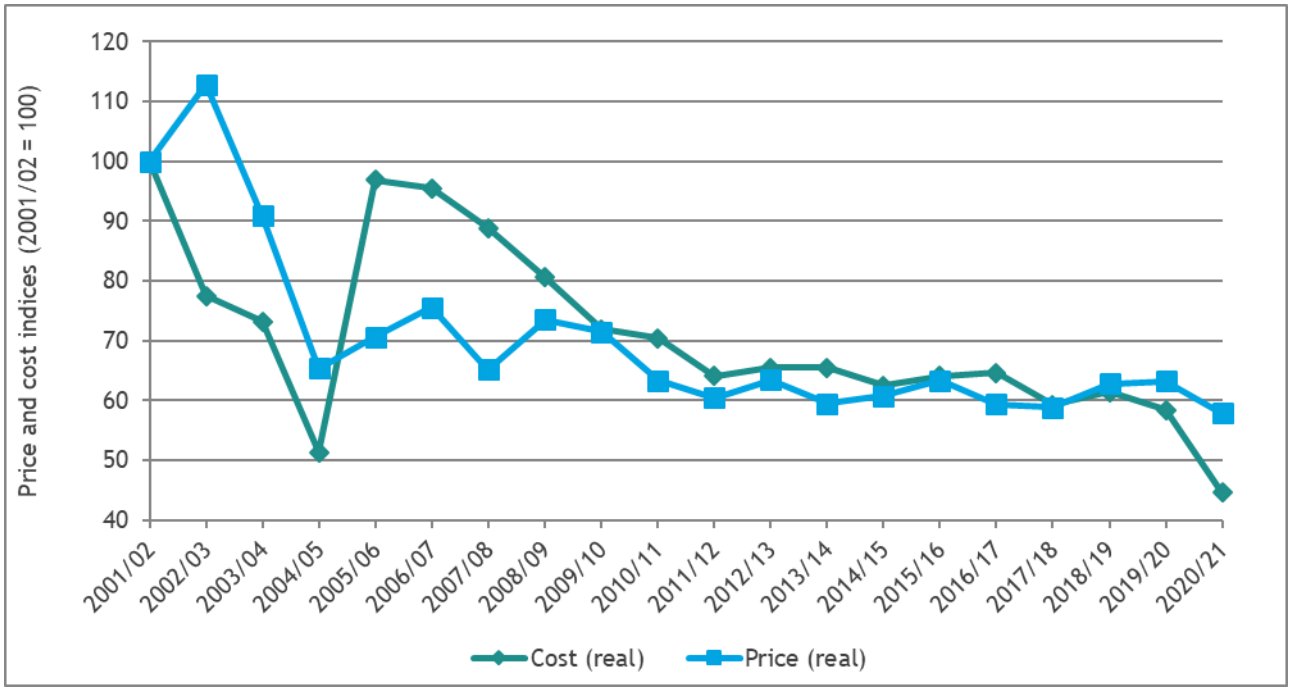
Price and cost indices for the South Australian Sardine Fishery for the years 2001/02 to 2020/21 are summarised in Figure 11-9. These indicators are derived from the average price and average cost per kilogram of catch.

Between 2001/02 and 2020/21 the average price of Sardines decreased by approximately 42 per cent in real terms (10 per cent in nominal terms). The average cost of catching Sardines declined by 55 per cent in real terms over the same period. A declining average cost of catching Sardines, in real terms, reflects productivity improvements (principally in labour and repairs and maintenance) over the period.

Between 2001/02 and 2004/05 both the average price for Sardines and the average cost per kg of catch decreased significantly as catches increased spreading the fixed costs across a larger catch. Since 2004/05 the real price for Sardines has decreased slightly (with some minor fluctuations). The cost of catching Sardines rose dramatically in 2005/06, the year when catch fell dramatically and has been declining gradually since as catches have been increasing

In 2020/21 both the real price and cost declined to the lowest level for the 20 year period. The real price of Sardines fell by 9 per cent between 2019/20 and 2020/21, a result of decreased demand for Tuna feed. As the quantity demanded of Sardine catch was reduced, fishers decreased the number of days fished in the 2020/21 season by 12 per cent and their overall catch by 5 per cent. This decreased the total variable costs of fishers between years.

Figure 11-9 Price and cost indices for the SA Sardine Fishery, 2001/02 to 2020/21



Source: BDO EconSearch (2022g)

11.4.4. Profitability

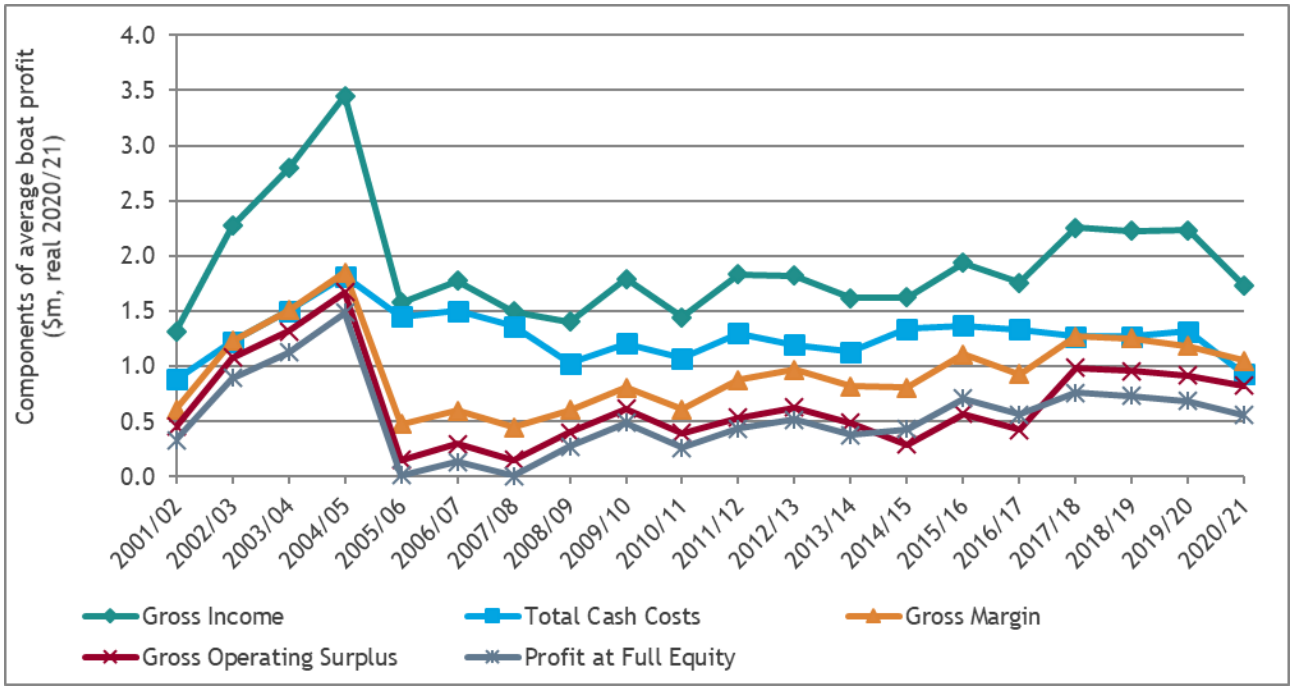
Selected measures of profitability for the South Australian Sardine Fishery are summarised in Figure 11-10 for the years 2001/02 to 2020/21. Changes in each of the profitability measures for the fishery were closely related to the average income earned. Profitability followed an increasing trend between 2001/02 and 2004/05 before declining significantly in 2005/06 as a result of the reduction in TACC. Profitability has fluctuated since 2005/06 but generally followed a slight increasing trend until 2017/18, the result of an increase in GVP and slight decreases in costs. Between 2018/19 and 2020/21 all measures of profitability declined marginally. In 2020/21 gross income fell significantly and total cash costs were reduced by slightly less than income. This resulted in a decline overall in the gross margin, GOS and profit at full equity.

11.4.5. Return to capital

Estimates of the average licence value and the rate of return to capital are illustrated in Figure 11-11. Total capital includes boats, licence/quota, fishing gear, sheds, vehicles and other capital items used as part of the fishing enterprise. Return on investment is calculated to be profit at full equity as a percentage of both total capital employed and total capital excluding licence/quota.

Between 2001/02 and 2004/05 the estimated rate of return on total capital increased from 5 per cent to 10 per cent then fell significantly in 2005/06 (to 0.1 per cent) but improved between 2005/06 and 2015/16. However, return on total capital has shown a declining trend over the last 6 years (2015/16 to 2020/21) principally due to an increase in licence value and boat and equipment value (Figure 11-11). In 2020/21, return on total capital was estimated to be 6.0 per cent. Since the average licence value comprises most of the average total capital value, its movements are closely linked to changes in the estimated profitability of the fishery (Figure 11-11).

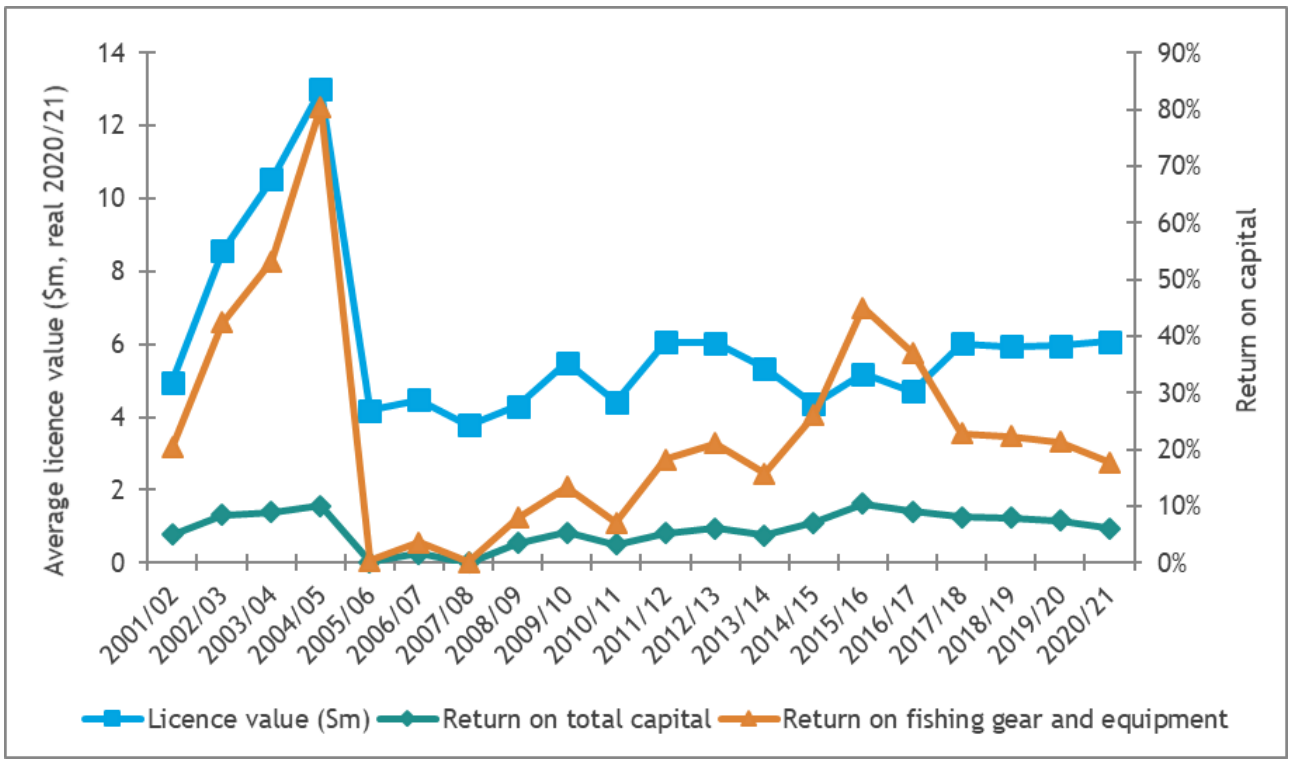
Figure 11-10 Average income and profit in the SA Sardine Fishery, 2001/02 to 2020/21[a]



[a] Estimates of income and profitability measures are expressed in in real 2020/21 dollars.

Source: BDO EconSearch (2022g)

Figure 11-11 Return on capital in the SA Sardine Fishery, 2001/02 to 2020/21



Source: BDO EconSearch (2022g)

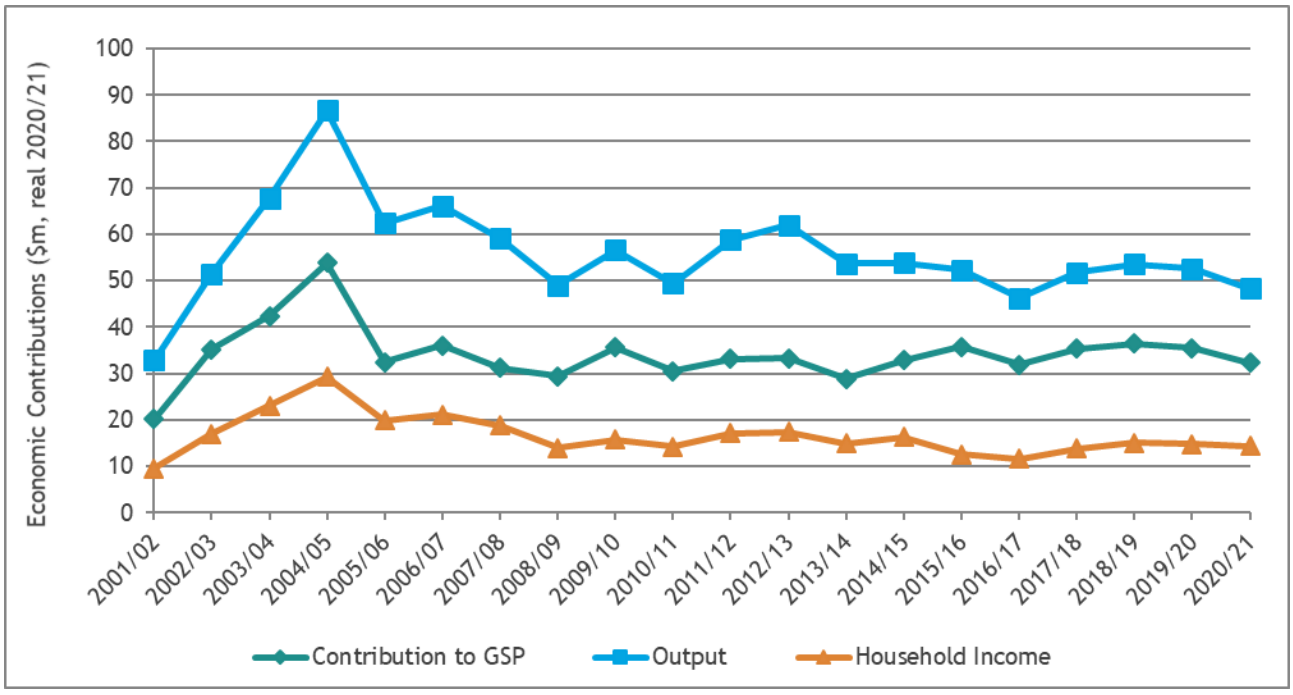
11.5. Contribution to SA Economy

Figure 11-12 and Figure 11-13 illustrate the total economic contribution of the fishery on the SA economy for the period 2001/02 to 2020/21.

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 11-12). GSP, output and household income were all higher in 2020/21 than in 2001/02. Like fishery GVP, these measures increased between 2001/02 and 2004/05 before falling in 2005/06 with a reduction in TACC.

Employment (direct and indirect) increased between 2001/02 and 2004/05 before falling sharply in 2008/09. Total employment has followed a slight increasing trend since 2008/09 (Figure 11-13). Direct employment was 84 fte in 2001/02 and despite increasing and decreasing fluctuations, was 95 fte in 2020/21. Indirect employment has increased over the same period, from 64 fte in 2001/02 to 104 fte in 2020/21.

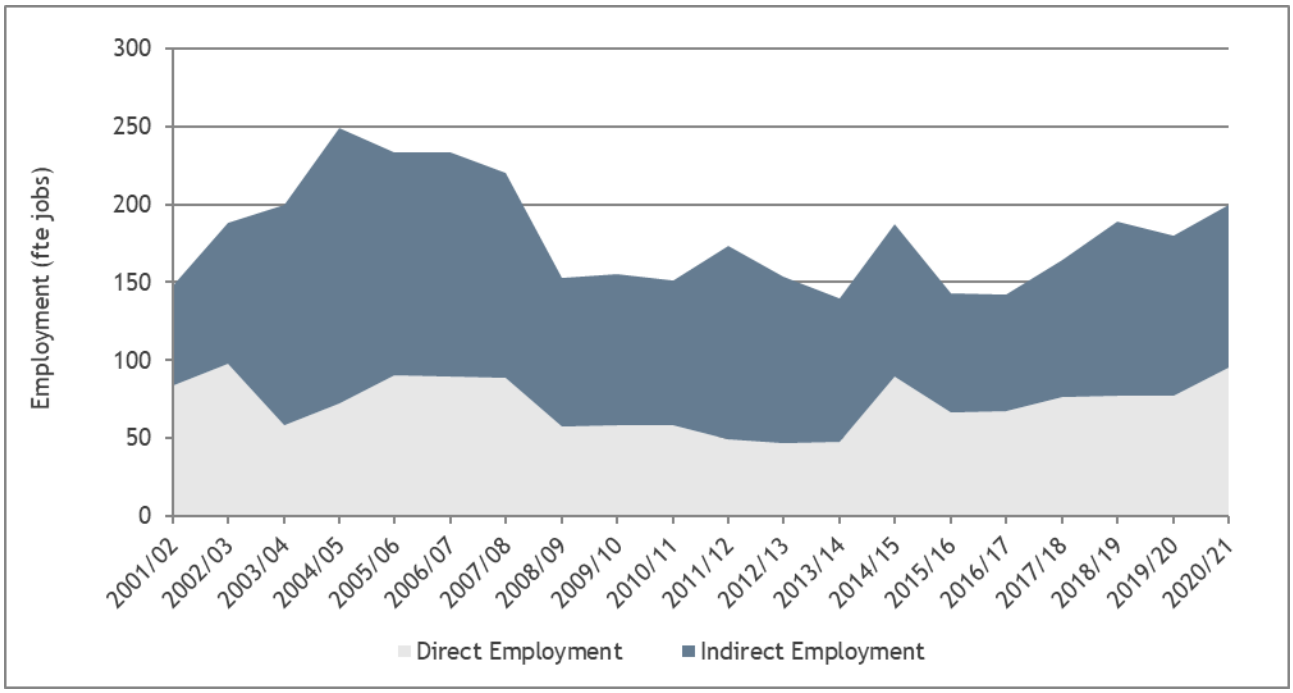
Figure 11-12 Total gross state product, output and household income contribution of the SA Sardine Fishery on the SA economy, 2001/02 to 2020/21[a]



[a] Estimates of output, GSP and household income are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022g)

Figure 11-13 Total direct and indirect employment contribution of the SA Sardine Fishery on the SA economy, 2001/02 to 2020/21



Source: BDO EconSearch (2022g)

11.6. Net Economic Return

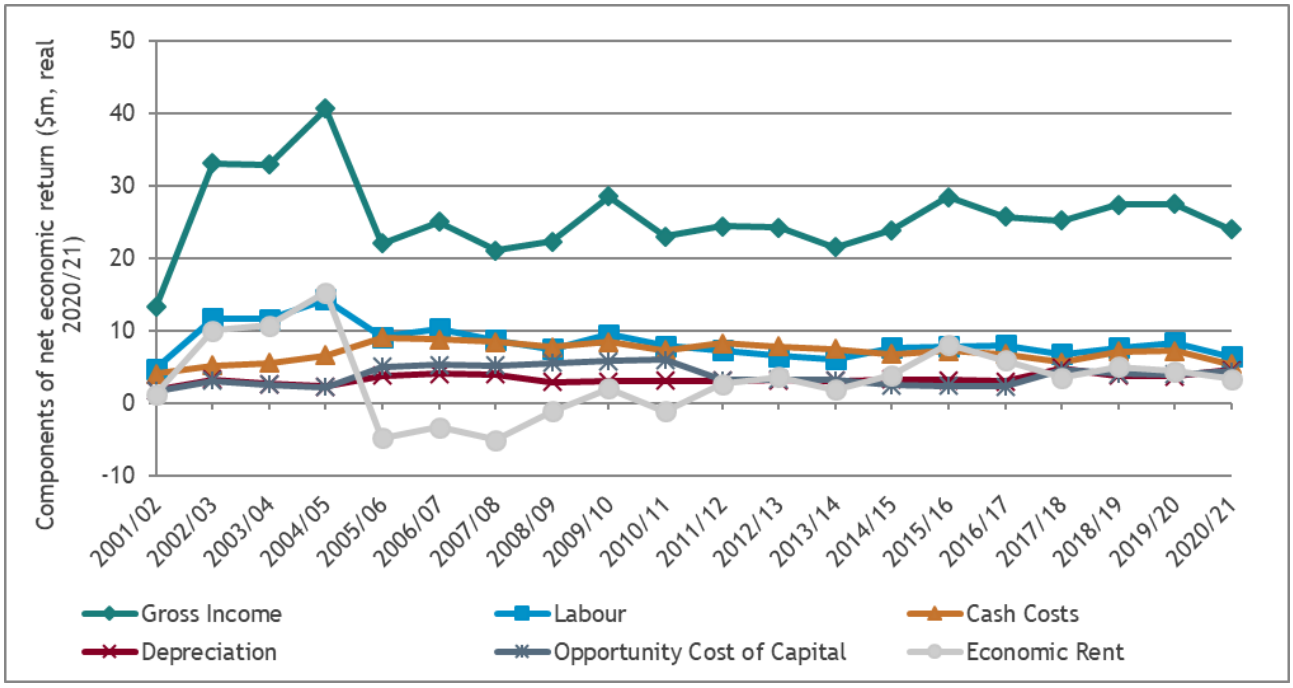
Net economic return (NER) is the return from a fishery after all costs have been met. It is equal to fishing revenue less fishing costs (cost of labour, capital including depreciation, materials and an allowance for "normal" profit). NER is maximised when economic efficiency is maximised. Estimates of the NER generated in the Sardine fishery are summarised in Figure 11-14 for the period 2001/02 to 2020/21.

Real NER increased from almost $1.2 million in 2001/02 to $15.2 million in 2004/05, but fell dramatically in 2005/06 to -$4.9 million. From 2005/06 to 2015/16 net economic return followed an increasing trend until it reached $8.1 million. The increasing trend was largely due to decreasing opportunity cost of capital, depreciation and labour costs, in real terms. NER has declined since and was $3.4 million in 2020/21 (Figure 11-14).

NER expressed as a percentage of GVP is a useful indicator for analysing a fishery over time and for comparing different fisheries. This indicator is illustrated in Figure 11-15 and shows an increase between 2001/02 and 2004/05 before a sharp decline in 2005/06. Despite fluctuations, net economic return as a percentage of GVP then followed an increasing trend until 2015/16 as NER increased at a greater rate than GVP. Since 2015/16 the indicator has declined and was 14 per cent in 2020/21 (Figure 11-15).

NER represents a return to the value of licences in the fishery. The aggregate value of licences in the Sardine fishery and the return to the aggregate value of licences in the fishery are illustrated in Figure 11-16. The return to the aggregate value of licences increased from 1.3 per cent in 2001/02 to 8.4 per cent in 2004/05. The return on aggregate licence value was significantly lower between 2005/06 and 2007/08, increasing until 2015/16 to peak at 11.1 per cent. Since 2015/16, the return to the aggregate value of licences in the fishery has decreased, and was 3.9 per cent in 2020/21 (Figure 11-16).

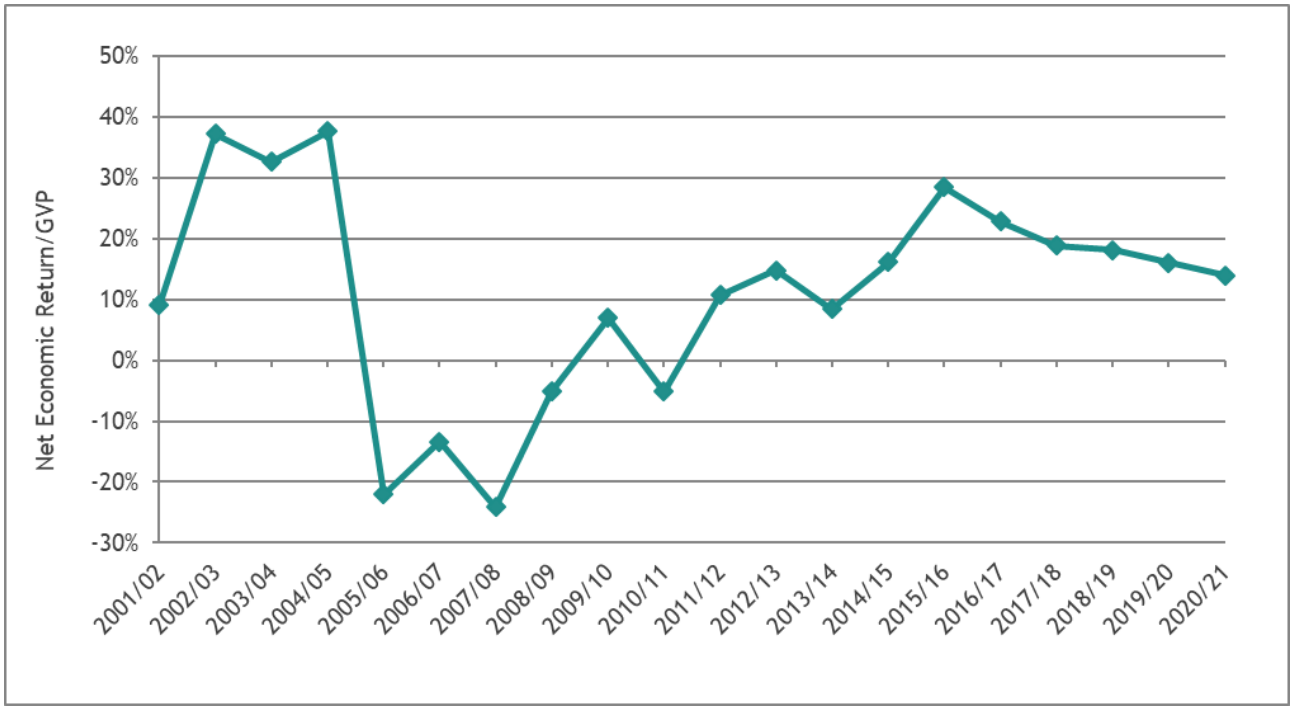
Figure 11-14 Net economic return in the SA Sardine Fishery, 2001/02 to 2020/21 ($'000)[a]



[a] All indicators are expressed in real 2020/21 dollars.

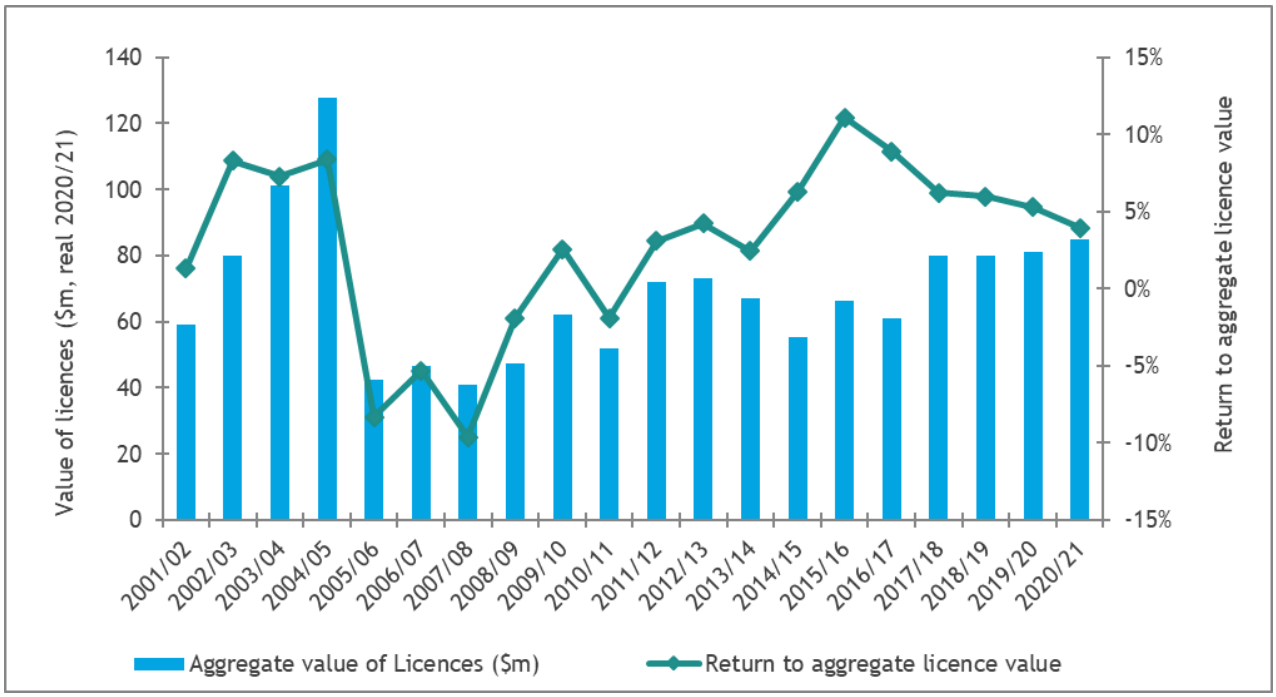
Source: BDO EconSearch (2022g)

Figure 11-15 Net economic return as a proportion of GVP in the SA Sardine Fishery, 2001/02 to 2020/21



Source: BDO EconSearch (2022g)

Figure 11-16 Aggregate value of licences and return to aggregate licence value in the SA Sardine Fishery, 2001/02 to 2020/21[a]



[a] The value of licences represents licence holders' estimates of the value of their fishing licence derived from survey responses. Estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Source: BDO EconSearch (2022g)

12. SPENCER GULF PRAWN FISHERY

12.1. Economic Objective of the Spencer Gulf Prawn Fishery

According to the *Management Plan for the South Australian Commercial Spencer Gulf Prawn Fishery* (PIRSA 2020b), management of the fishery has a number of biological, economic, environmental and social objectives.

In order to achieve these objectives, the management plan sets out specific biological, ecological, social and economic goals for the fishery. There are four key management goals for the Spencer Gulf Prawn Fishery:

1. Maintain ecologically sustainable Prawn biomass
2. Ensure optimum utilisation and equitable distribution
3. Minimise impacts on the ecosystems
4. Enable cost effective and participative management of the fishery

The economic and social performance indicators and reference points of the Spencer Gulf Prawn Fishery, as described in the management plan, are summarised in Table 12-1. These are presented in the following sections.

Over the last 20 years economic indicators for the SG Prawn Fisheries have been prepared annually. The economic indicators contained in these reports, most recently presented in BDO EconSearch (2022h), can assist in measuring the performance of the fisheries against management objectives. Between 2001/02 and 2010/11 economic indicators were prepared for the Spencer Gulf and West Coast Prawn Fisheries together. From 2010/11 to 2020/21 the economic indicators reports have excluded the West Coast Prawn Fishery (due to its small size) and have been prepared for the Spencer Gulf Prawn Fishery only. The economic indicators for the Spencer Gulf Prawn Fisheries are reported under the following headings:

- catch and gross value of production (GVP) (Section 12.2)
- management costs (Section 12.3)
- boat level financial performance indicators (Section 12.4)
  - average income
  - operating costs
  - cost-price squeeze
  - profitability
  - return on investment
- contribution to the SA economy (Section 12.5); and
  - GSP
  - household income
  - employment
- net economic return (Section 12.6).

Indicators relating to the economic performance and objectives for the fisheries are reported for the period 2001/02 to 2020/21. It should be noted that economic indicators are based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Table 12-1 Economic and social objectives of the Spencer Gulf Prawn Fishery

Goal	Objectives	Management Strategies	Performance Indicator	Limit Reference Point
2. Ensure optimal utilisation and equitable distribution.	2a. An economically efficient fleet without compromising sustainability objectives.	2ai. Harvest strategy allows commercial operators to maximise operational flexibility within sustainable limits. 2aii. Economic performance of fishery assessed.	Gross Value of Production (GVP) Return on Investment (ROI) Gross operating surplus (GOS) Economic Indicators report Number of FTEs directly and indirectly employed	GVP monitored regularly ROI monitored regularly GOS monitored regularly Economic indicator report conducted regularly Numbers of FTEs monitored when available
	2b. Provide access to the resource as per Allocation Policy.	2bi. Resource allocation between sectors provided in the management plan. 2bii. Review of allocation plan provided in the management plan.	Allocation reviewed as per Allocation Policy (PIRSA 2011), if appropriate.	Allocation reviewed if appropriate
4. Enable effective and participative management of the fishery	4b. Management arrangements support cohesion and connectedness between fisheries industry and wider community	4bi. Stakeholder input to the management of the fishery, through established co-management process. 4bii. Communicate management arrangements to the wider community.	Ensure stakeholders are involved in development of management arrangements through maintenance of co-management arrangements. Management arrangements allow commercial operators to maximise operational flexibility. Non-fishing stakeholder positions maintained on SGWCPFA Research Subcommittee. Management information is available on PIRSA website.	Membership of industry and non-industry stakeholders on SGWCPFA committees is maintained. Co-management arrangements between SGWCPFA and government are maintained. Fishing strategies are developed through the SGWCPFA. PIRSA website information is updated as required.

Indicators reported in economic reports. Reference points that can be calculated from reported economic indicators

Source: PIRSA 2020b

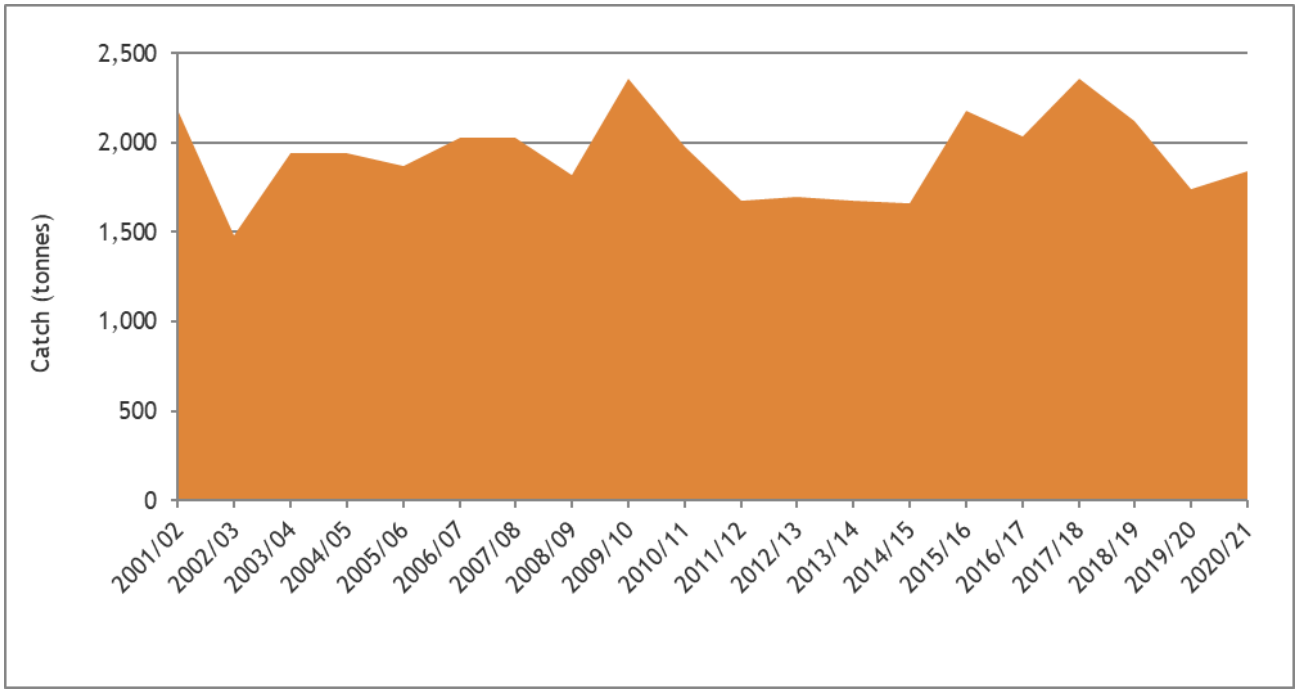
12.2. Catch and Gross Value of Production

The data shown in Figure 12-1 indicate that despite year-to-year fluctuations total catch for the fishery has been relatively constant for the last 20 years. Over the period catch has averaged around 1,900 tonnes per annum with its highest level in 2009/10 and 2017/18 (2,361 tonnes) and lowest level in 2002/03 (1,479 tonnes). Catch fell to 1,743 tonnes in 2019/20 due to a reduction of total nights fished as the result of the introduction of a more conservative fishing strategy in 2019/20. Licence holders supported a conservative fishing approach given the market uncertainty during the COVID-19 pandemic. However, in 2020/21 fishing nights were increased to 2018/19 levels, allowing for catch to recover slightly to 1,837 tonnes.

The Gross Value of Production (GVP) for the Spencer Gulf Prawn Fishery for the period 2001/02 to 2020/21 is illustrated in Figure 12-2. Between 2001/02 and 2011/12, real GVP trended downwards (with fluctuations) mainly due to a declining trend in real price. From 2012/13 real GVP recovered, although is still below its 2001/02 levels.

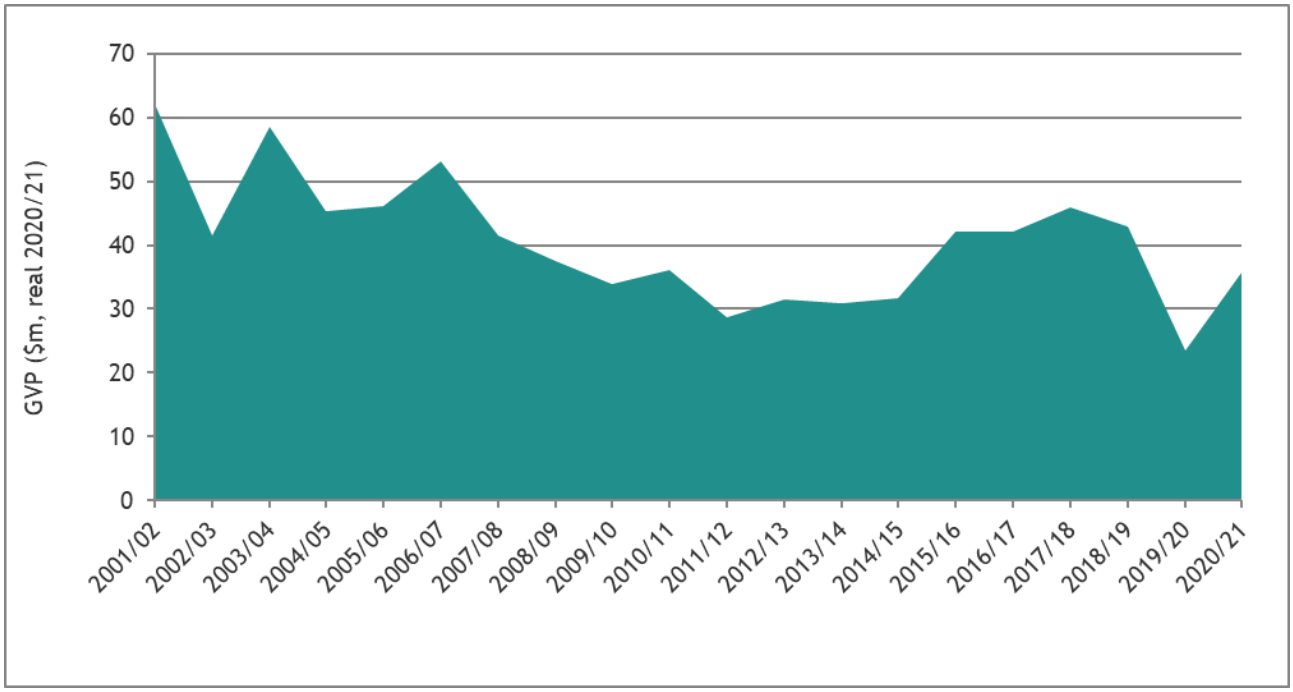
Catch, GVP and price indices for the fishery for the last 20 years are illustrated in Figure 12-3. The trends in this figure highlight how the interaction between catch and price affects GVP. In particular, the decline in the real price for Prawns in 2009/10 coincided with an increase in catch, so that GVP remained constant. While the nominal price for Prawns has been relatively constant (despite some fluctuations) the real price has declined overall despite some fluctuations.

Figure 12-1 Spencer Gulf Prawn Fishery catch, 2001/02 to 2020/21



Source: BDO EconSearch (2022h)

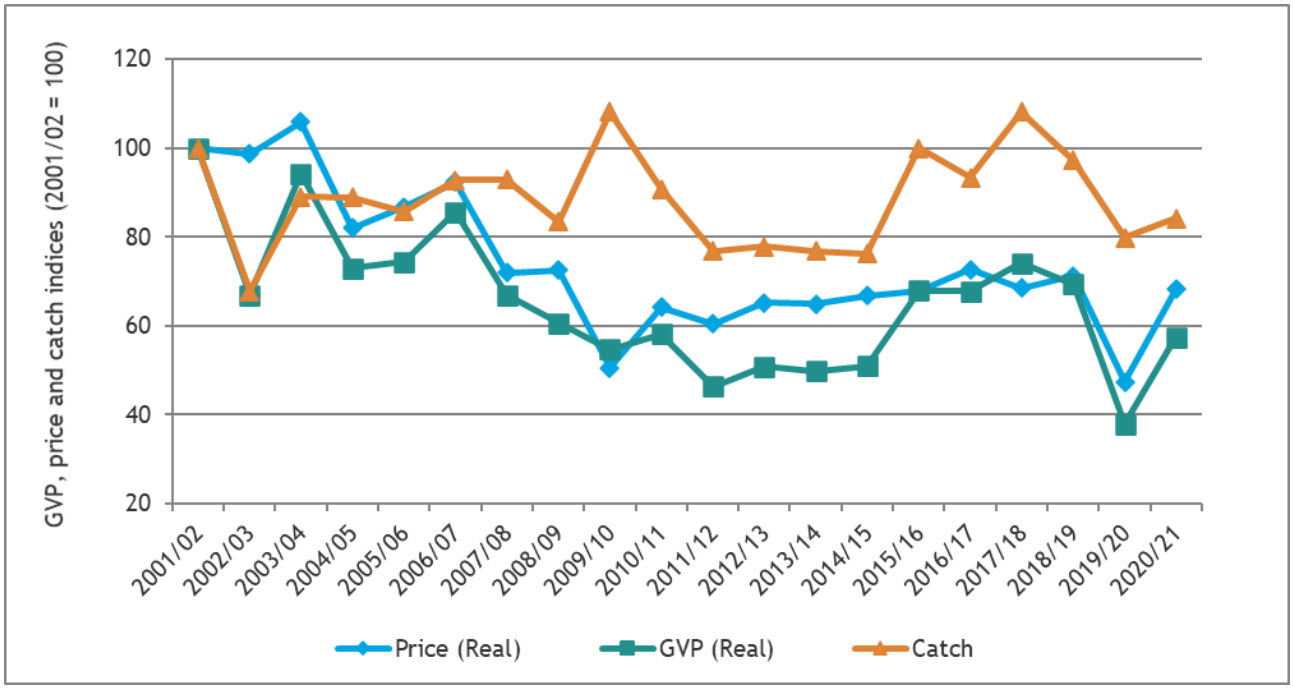
Figure 12-2 Spencer Gulf Prawn Fishery GVP, 2001/02 to 2020/21[a]



[a] GVP is expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022h)

Figure 12-3 GVP, price and catch indices for the Spencer Gulf Prawn Fishery[a]



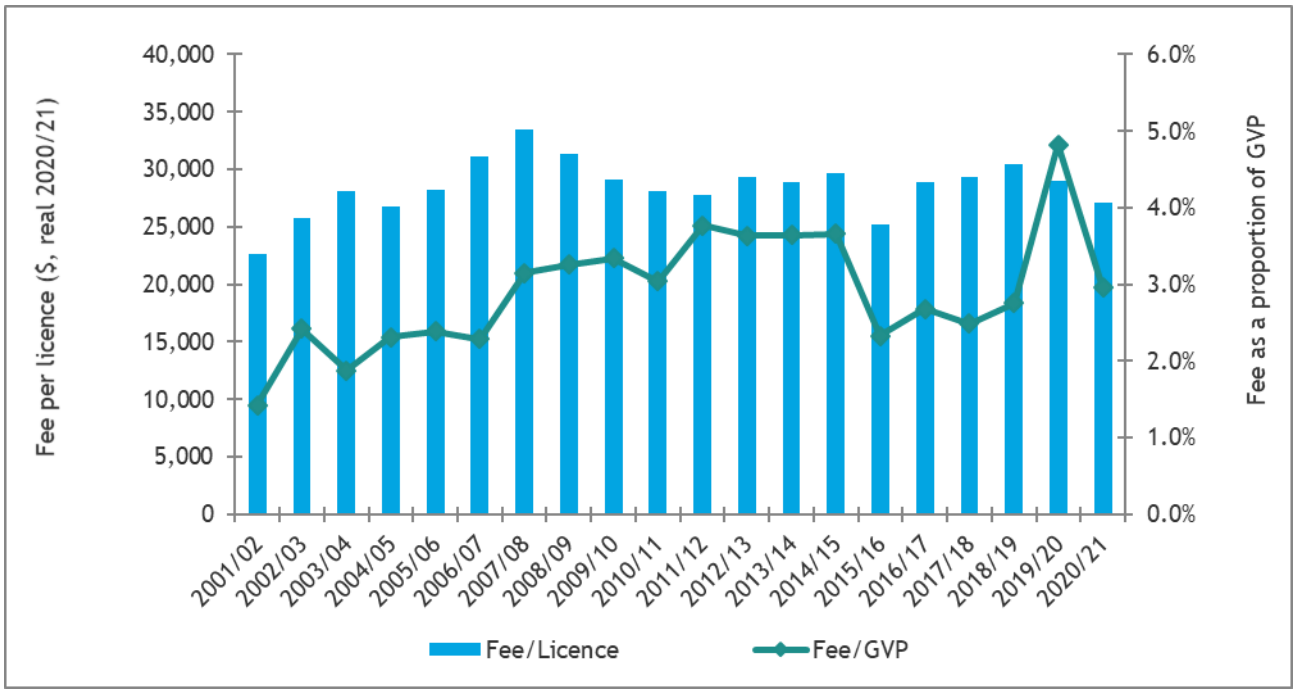
[a] 2001/02 is the reference year against which all other years are compared.

Source: BDO EconSearch (2022h)

12.3. Management Costs

The average management fee per licence holder and the licence fee as a proportion of GVP are illustrated in Figure 12-4. Licence fees as a percentage of GVP fluctuated between years but overall increased from 1.4 per cent in 2001/02 to 4.8 per cent in 2019/20, where it peaked at a 20-year high. It then fell in 2020/21 to 3.0 per cent as a result of an increase in GVP and a fall in aggregate licence fees. In comparison to other fisheries, licence fees as a percentage of GVP have been historically low within the SG Prawn Fishery due to the ongoing efforts of the fishery to progress co-management arrangements which aim to reduce management costs since industry is delegated more responsibility to manage the fishery within its own resources (Spencer Gulf & West Coast Prawn Fishermen's Association Inc. pers. comm.).

Figure 12-4 Management fee per licence holder and as a proportion of GVP, Spencer Gulf Prawn Fishery, 2001/02 to 2020/21[a]



[a] Estimates of management costs and GVP are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022h)

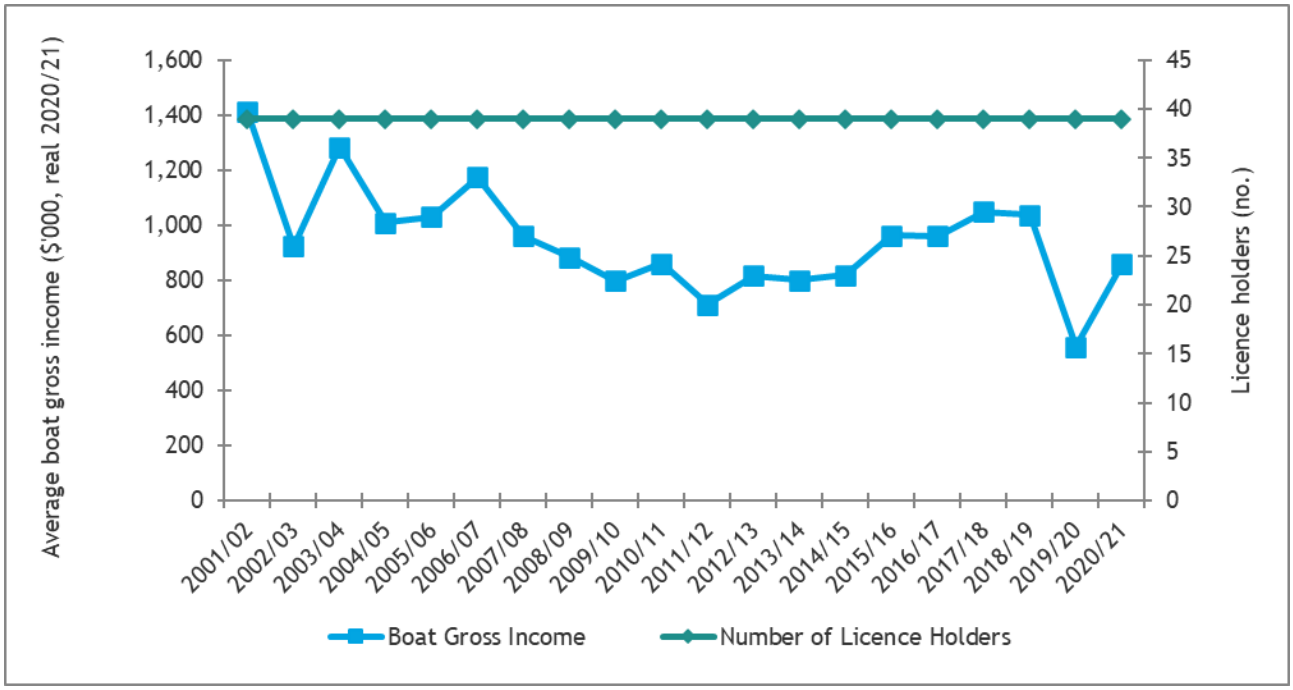
12.4. Financial Performance

12.4.1. Average Income

Average income and total number of licences in the fishery for the last 20 years is illustrated in Figure 12-5. The total number of licence holders in the fishery has not changed over the period of analysis. Accordingly, changes in the average income per boat directly relate to the total GVP for the fishery. The average income per boat (in real terms) decreased from $1.4 million in 2001/02 to approximately $859,000 in 2020/21 to be below the 20-year average of $946,000. The indicator had been steadily increasing from 2011/12 ($712,000) to 2018/19 ($1.0 million) before it fell sharply to a 20-year low in 2019/20. This is due to real GVP also reaching a 20-year low of $23.5 million in 2019/20 due to a drop in catch (18 per cent) and real price for Prawns (34 per cent). The drop in catch was a result of a reduction in the number of nights fished to 40 nights per licence, a 25 per cent decrease from 2018/19, a decision made by industry to take a conservative

fishing approach knowing the instability of the market during this time. The fall in price is due to the closures of restaurants and small retailers triggered by the COVID-19 pandemic, leading to an increased supply of prawns and consequently a decline in price. Average income recovered in 2020/21 to $859,000.

Figure 12-5 Average income per licence holder in the Spencer Gulf Prawn Fishery, 2001/02 to 2020/21[a]



[a] Estimates of average boat gross income are expressed in real 2020/21 dollars.

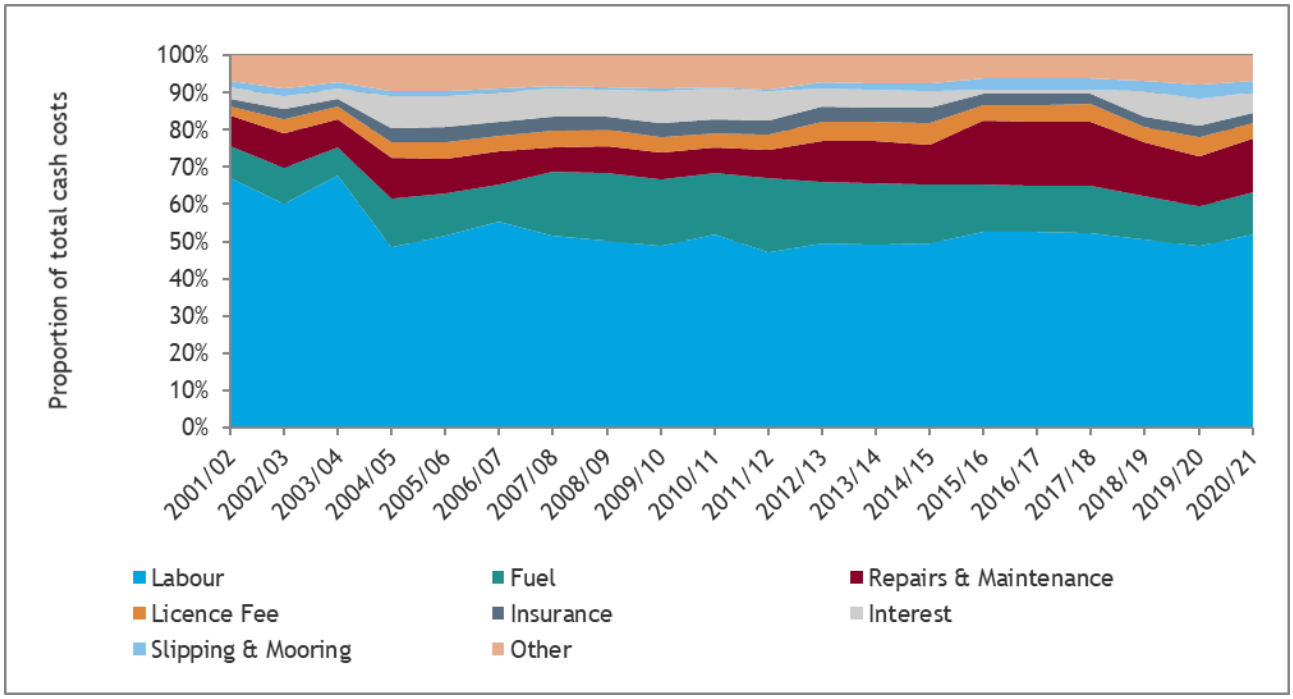
Source: BDO EconSearch (2022h)

12.4.2. Operating costs trends

A breakdown of major cost items as a proportion of total cash costs is illustrated in Figure 12-6. 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, interest, and insurance (Figure 12-6).

The cash costs detailed in Figure 12-6 can be categorised as either variable or fixed costs and are illustrated in Figure 12-7 on an average per boat basis. Total variable costs decreased overall between 2001/02 and 2020/21, with some year to year fluctuations. This appears to be linked to movements in labour costs and repairs and maintenance as fuel and other variable costs have been relatively constant. As gross income has reduced over time, wages (as a percentage of gross income) have declined as well. As would be expected, total fixed costs have not fluctuated significantly from year to year. Fixed costs did follow a very slight decreasing trend until experiencing a rise from 2017/18 due mainly to an increase in interest payments (Figure 12-7).

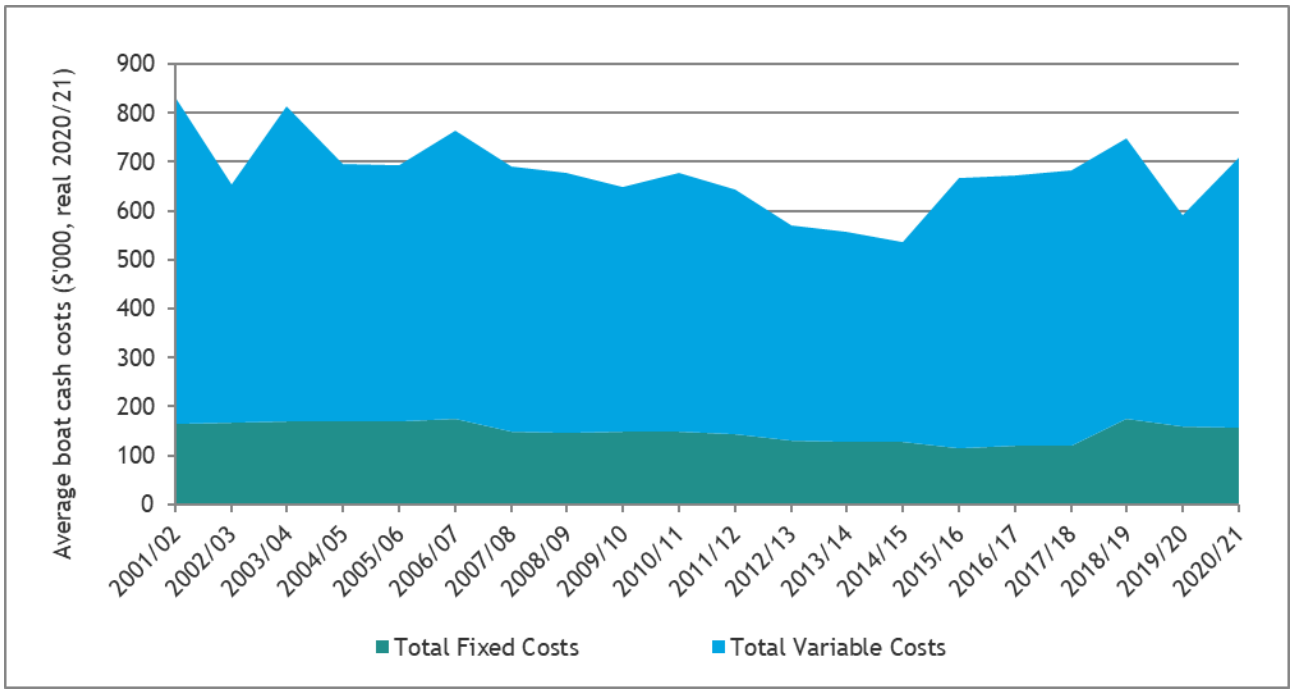
Figure 12-6 Cost shares in the Spencer Gulf Prawn Fishery, 2001/02 to 2020/21[a]



[a] Financial performance estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Source: BDO EconSearch (2022h)

Figure 12-7 Average total costs in the Spencer Gulf Prawn Fishery, 2001/02 to 2020/21[a]



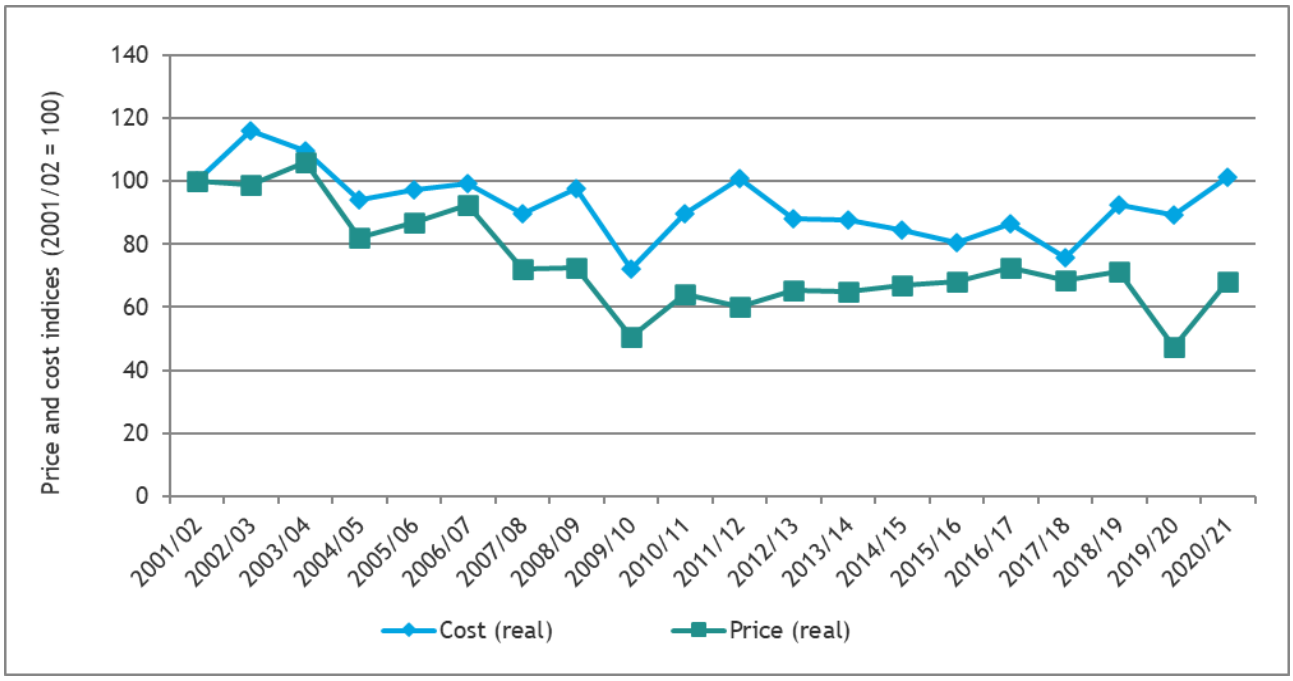
[a] Estimates of average costs are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022h)

12.4.3. Costs price squeeze

Price and cost indices for the Spencer Gulf Prawn Fishery for the last 20 years are summarised in Figure 12-8. These indicators are derived from the average price and average cost per kilogram of catch. The average cost of catching Spencer Gulf Prawns was $15.04/kg in 2020/21, 9 per cent higher than the 20-year average ($13.77 in real 2020/21 terms). Whereas the average price received for Spencer Gulf Prawns in 2020/21 was $19.41, 8 per cent lower than the average over the same period ($21.01 in real terms), reducing the per kg profit for Prawn catch.

Figure 12-8 Price and cost indices for the Spencer Gulf Prawn Fishery, 2001/02 to 2020/21

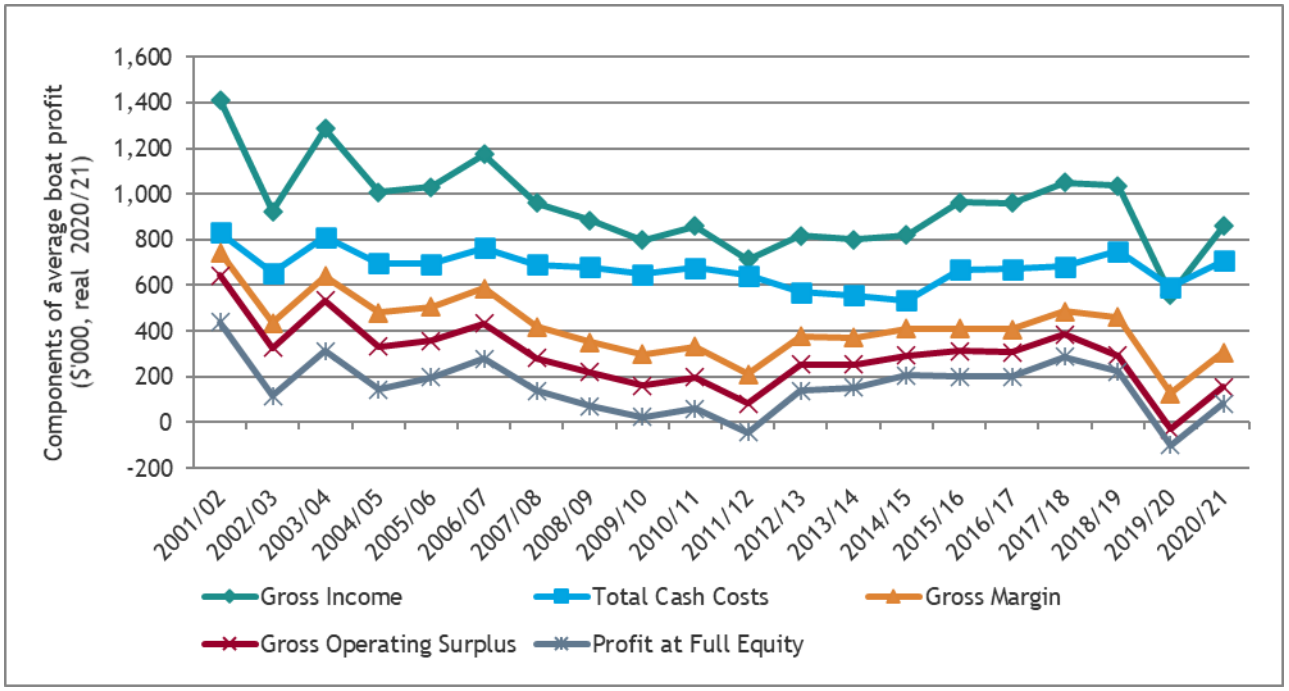


Source: BDO EconSearch (2022h)

12.4.4. Profitability

Selected measures of profitability for the Spencer Gulf Prawn Fishery are summarised in Figure 12-9 for the last 20 years. Changes in each of the profitability measures for the fishery were closely related to the average income earned. Profitability followed overall declining trend despite year to year fluctuations (Figure 12-9).

Figure 12-9 Average income and profit in the Spencer Gulf Prawn Fishery, 2001/02 to 2020/21[a]



[a] Estimates of income and profitability measures are expressed in real 2020/21 dollars.

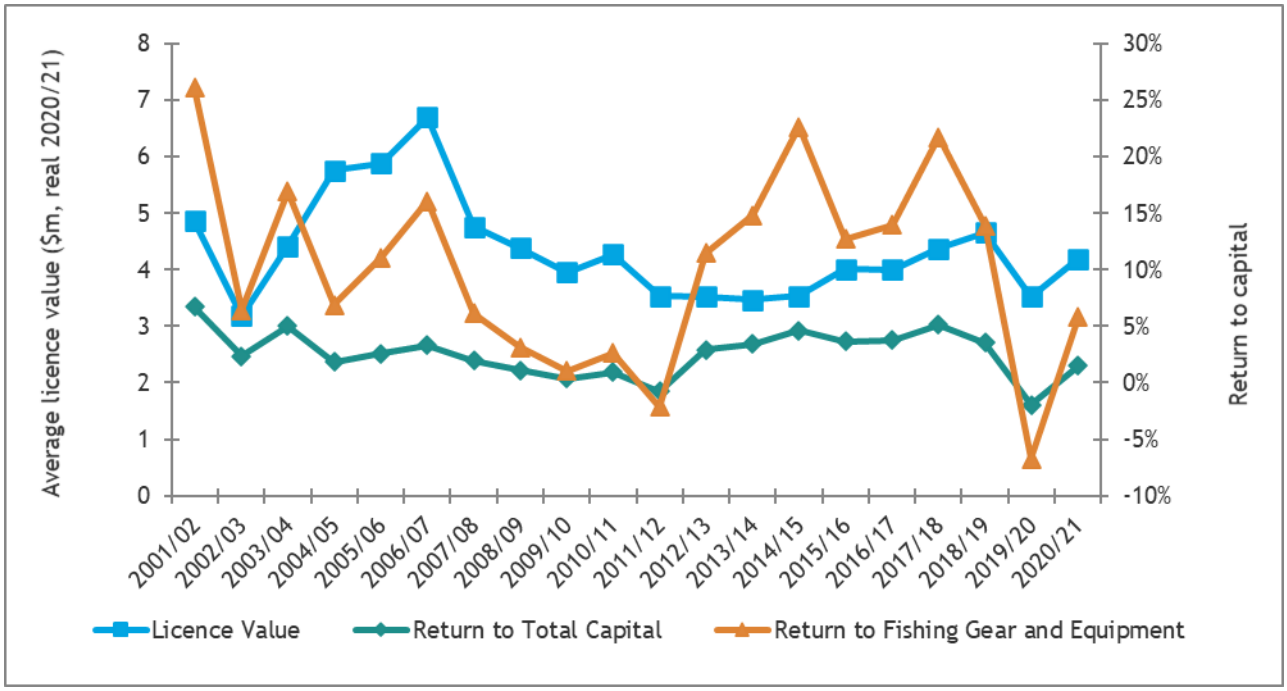
Source: BDO EconSearch (2022h)

12.4.5. Return to capital

Estimates of the average licence value and the rate of return to total capital for the last 20 years are illustrated in Figure 12-10. 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 capital is calculated to be profit at full equity as a percentage of total capital employed.

The estimated rate of return to total capital for the fishery followed overall declining trend despite year to year fluctuations (Figure 12-9). In recent years, the indicator fell significantly to a 20-year low of -2.0 per cent (2019/20), a result of the decreased profitability of the fishery, and recovered to 1.5 per cent in 2020/21.

Figure 12-10 Return to capital in the Spencer Gulf Prawn Fishery, 2001/02 to 2020/21[a]



[a] Estimates of licence value are expressed in real 2020/21 dollars.

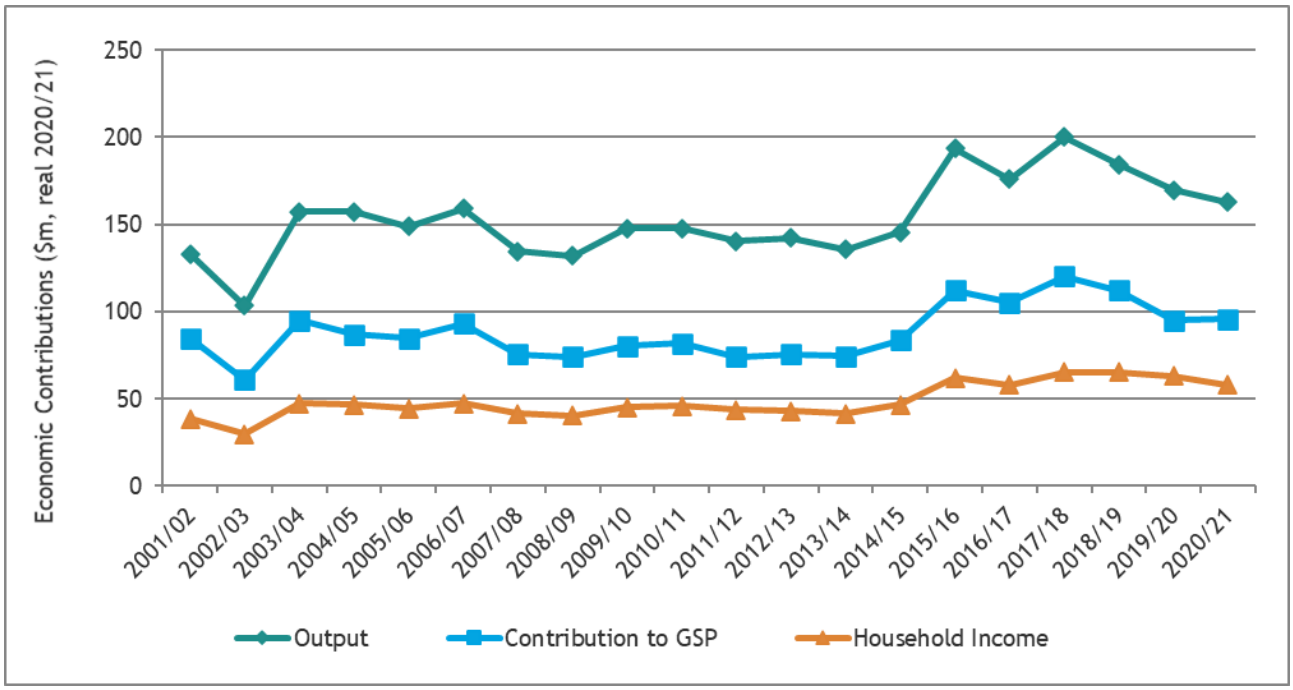
Source: BDO EconSearch (2022h)

12.5. Contribution to SA Economy

Figure 12-11 and Figure 12-12 illustrate the total economic impact of the fishery on the SA economy for the last 20 years. Total economic impact refers to the direct fishing industry impacts (fishing, processing, etc.) and the indirect impacts on other sectors of the economy.

Changes in total output and contribution to GSP are closely linked to changes in fishery GVP (Figure 12-11). There has been an overall increase in these indicators from 2001/02 and 2017/18. However, these indicators fell over the last three years due to decreased GVP. Both direct and indirect employment followed an increasing trend overall between 2001/02 and 2020/21, despite year to year fluctuations (Figure 12-12).

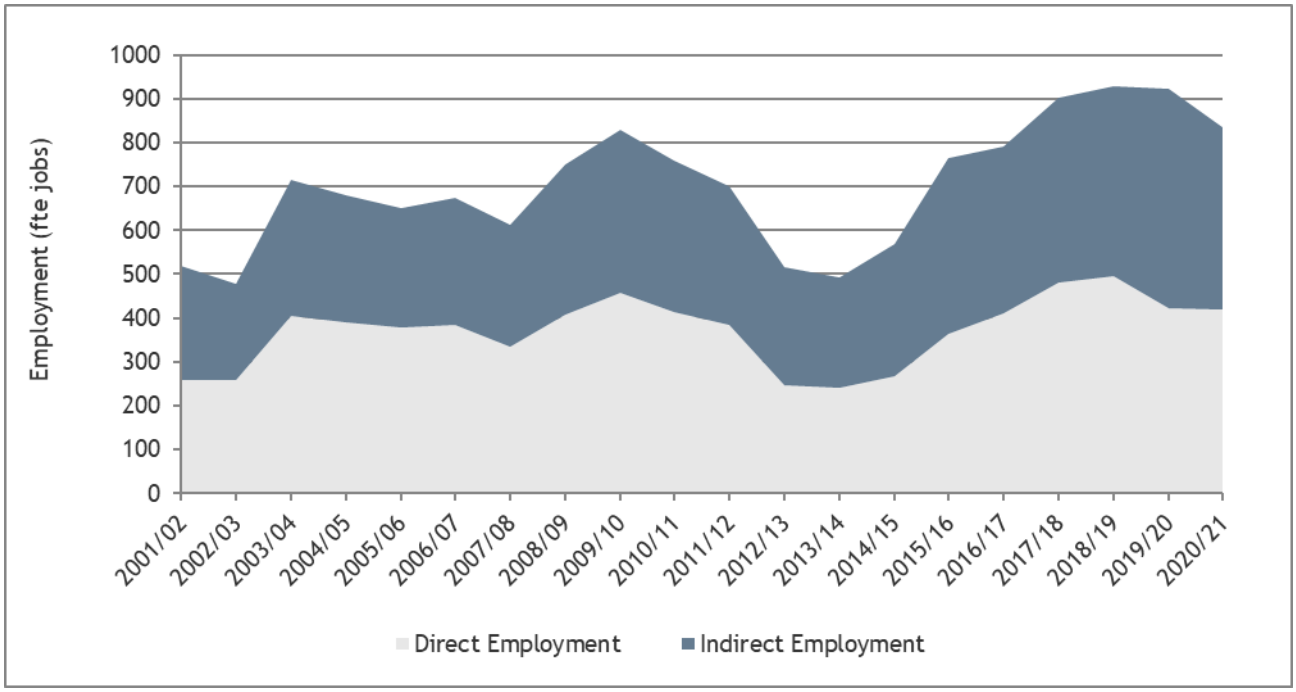
Figure 12-11 Total gross state product, output and household income impact of the Spencer Gulf Prawn Fishery on the SA economy, 2001/02 to 2020/21[a]



[a] Estimates of output, GSP and household income are expressed in real 2020/21 dollars. Estimates for 2016/17 and prior to 2012/13 include the impact of the West Coast Prawn Fishery as well as the Spencer Gulf Prawn Fishery.

Source: BDO EconSearch (2022h)

Figure 12-12 Total direct and indirect employment impact of the Spencer Gulf Prawn Fishery on the SA economy, 2001/02 to 2020/21[a]



[a] See footnotes for Figure 12-11

Source: BDO EconSearch (2022h)

12.6. Net Economic Return

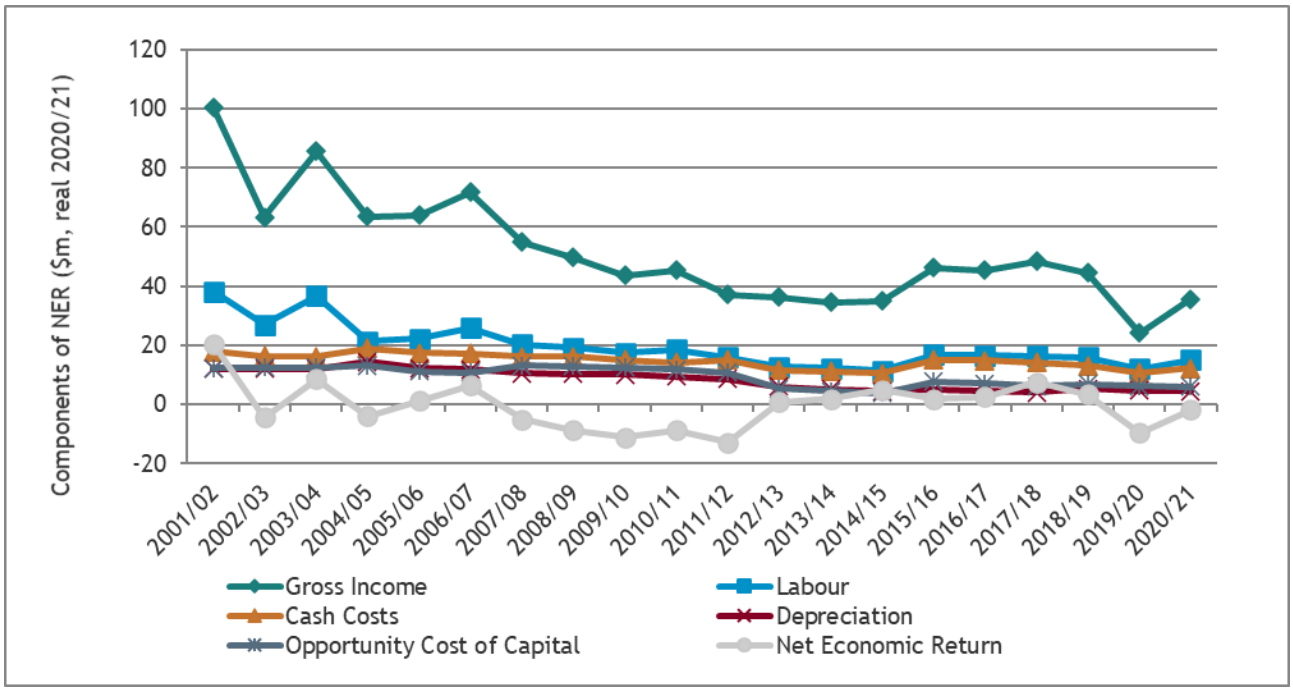
Net economic return (NER) is the return from a fishery after all costs have been met. It is equal to fishing revenue less fishing costs (cost of labour, capital including depreciation, materials and an allowance for "normal" profit). NER is maximised when economic efficiency is maximised. Estimates of the NER generated in the Spencer Gulf Prawn Fishery are summarised in Figure 12-13 for the last 20 years.

NER followed a decreasing trend overall despite year-to-year fluctuations. Fluctuations in rent are closely linked to fluctuations in fishery GVP (Figure 12-14). Labour costs are also linked to fishery GVP because the majority of fishing businesses pay crew a share of catch.

NER expressed as a percentage of GVP is a useful indicator for analysing a fishery over time and for comparing different fisheries. This indicator is illustrated in Figure 12-14 and shows, despite fluctuations, a decreasing trend between 2001/02 2020/21.

NER represents a return to the value of licences in the fishery. The aggregate value of licences in the Spencer Gulf Prawn Fishery and the return to aggregate licence value of the fishery are illustrated in Figure 12-15. The return to the aggregate licence value decreased from 16.8 per cent in 2001/02 to -1.1 per cent in 2020/21, which was only slightly lower than the 20-year average of -0.4 per cent. The overall decrease is a result of a decrease in the NER generated by the fishery and an increase in the aggregate value of licences (in real terms) over the period (Figure 12-15).

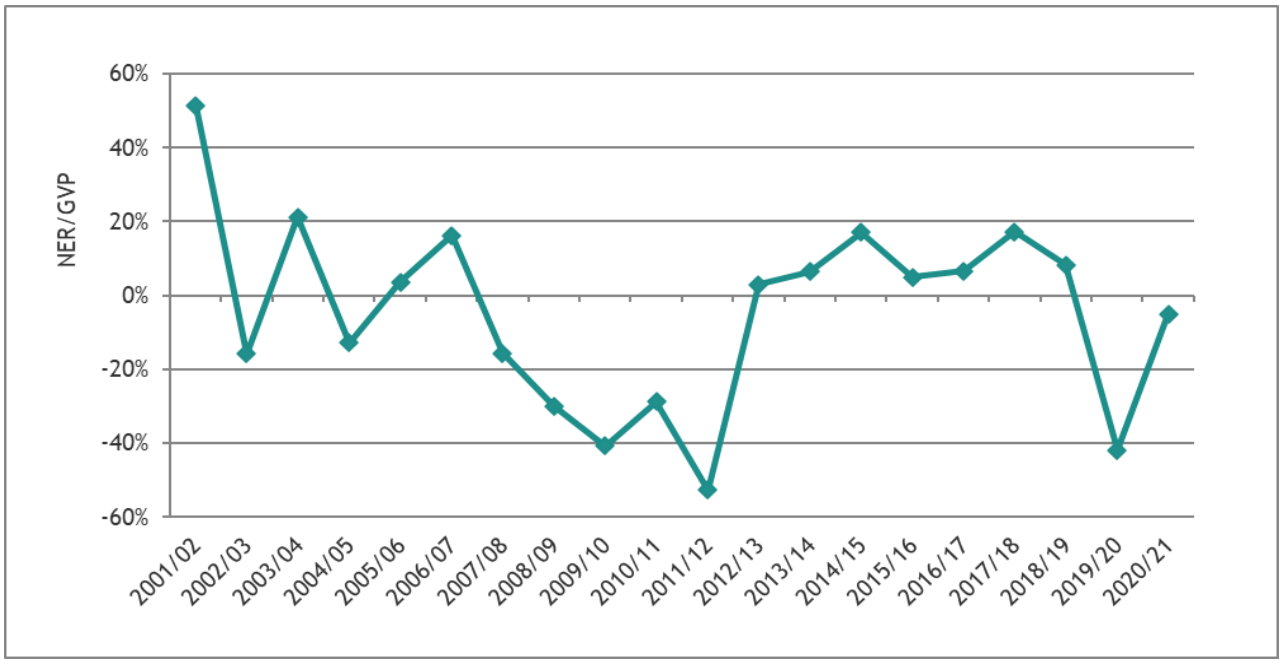
Figure 12-13 Net economic return in the Spencer Gulf Prawn Fishery, 2001/02 to 2020/21 ($m)[a]



[a] All indicators are expressed in real 2020/21 dollars.

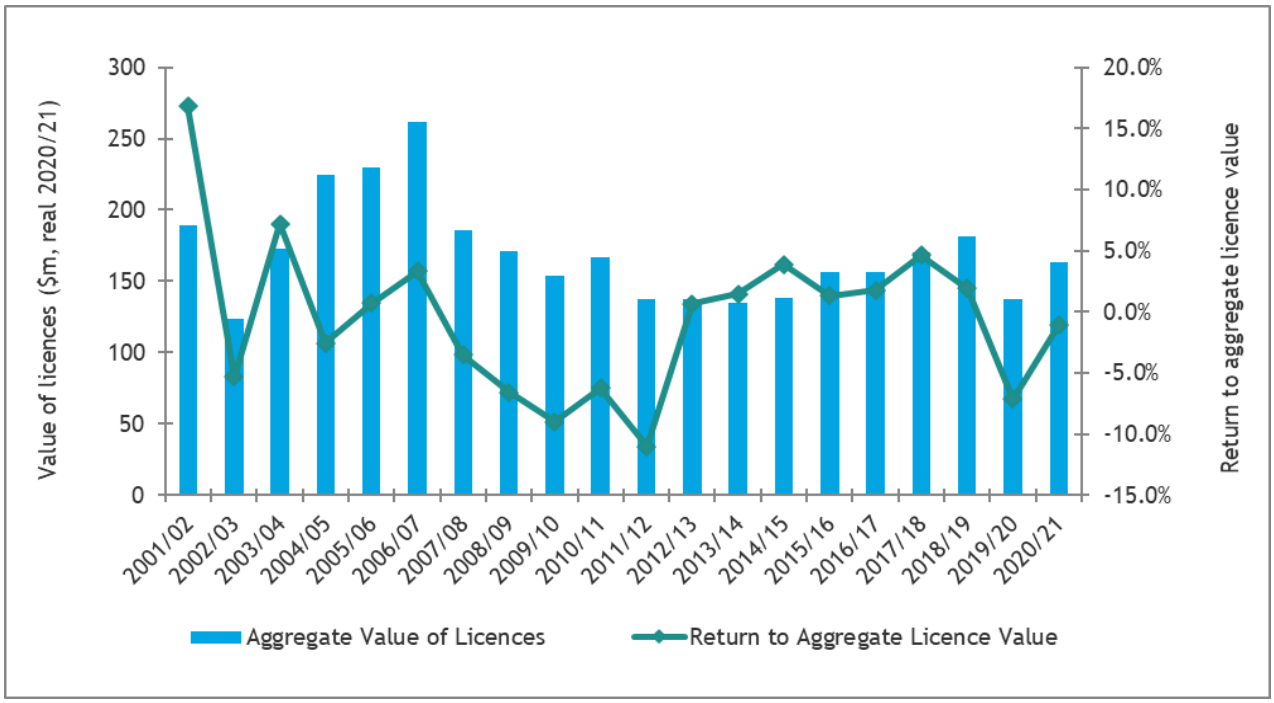
Source: BDO EconSearch (2022h)

Figure 12-14 Net economic return as a proportion of GVP in the Spencer Gulf Prawn Fishery, 2001/02 to 2020/21



Source: BDO EconSearch (2022h)

Figure 12-15 Aggregate value of licences and return to aggregate licence value in the Spencer Gulf Prawn Fishery, 2001/02 to 2020/21[a, b]



[a] The value of licences represents licence holders' estimates of the value of their fishing licence derived from survey responses. Estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

[b] Estimates of licence value are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022h)

13. GULF ST VINCENT PRAWN FISHERY

13.1. Economic Objective of the Gulf St Vincent Prawn Fishery

According to the *Management Plan for the Gulf St Vincent Prawn Fishery* (PIRSA 2017), management of the fishery has a number of biological, economic, environmental and social objectives.

In order to achieve these objectives the management plan sets out specific biological, ecological, social and economic goals for the fishery. There are four key management goals for the Gulf St Vincent Prawn Fishery:

1. Maintain ecologically sustainable Prawn biomass
2. Enable optimum utilisation and equitable distribution
3. Protect and conserve aquatic resources, habitats and ecosystems
4. Enable cost effective and participative management of the fishery

The performance indicators and reference points of the Gulf St Vincent (GSV) Prawn Fishery, as described in the management plan, are summarised in Table 13-1. These are presented in the following sections.

Over the last 20 years economic indicators for the GSV Prawn Fishery have been prepared annually except for 2012/13 and 2013/14 when the fishery was closed. The economic indicators contained in these reports, most recently presented in BDO EconSearch (2022i), can assist in measuring the performance of the fisheries against management objectives. The economic indicators for the GSV Prawn Fishery are reported under the following headings:

- catch and gross value of production (GVP) (Section 13.2)
- management costs (Section 13.3)
- boat level financial performance indicators (Section 13.4)
  - average income
  - operating costs
  - cost-price squeeze
  - profitability
  - return on investment
- contribution to the SA economy (Section 13.5)
  - GSP
  - household income
  - employment
- net economic return (Section 13.6).

Indicators relating to the economic performance and objectives for the fisheries are reported for the period 2001/02 to 2020/21. It should be noted that economic indicators are based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Table 13-1 Economic objectives of the Gulf St Vincent Prawn Fishery

Goal	Objectives	Management Strategies	Performance Indicator	Limit Reference Point
2. Enable optimal utilisation and equitable distribution	2a. Optimise economic performance within biologically sustainable limits	2ai. Ensure economic surveys are undertaken and reported	Economic Indicator reports	The economic indicators report is published regularly
		2aii. Management framework allows for economic optimisation	Gross Value of Production (GVP)	GVP monitored regularly
			Return on Investment (ROI)	ROI monitored regularly
		2aiii. Changes in management arrangements consider economic implications	Gross operating surplus (GOS)	GOS monitored regularly
	2b. Manage allocated shares of the resource as the shares allocated in this plan	2bi. Resource allocation between sectors provided in this management plan	Allocation reviewed when appropriate.	Allocation reviewed when appropriate
		2bii. Review of allocation provided in this management plan.		
4. Enable effective and participative management of the fishery	4b. Maximise stewardship of fisheries resources	4bi. Stakeholders input to the management of the fishery	Membership for non-industry stakeholders on the industry led GSVPFMAC	Membership for non-industry stakeholders on the industry led GSVPFMAC is maintained
				Industry led GSVPFMAC advice is consistent with this management plan and the harvest strategy described within it
		4bii. Communicate management arrangements to the wider community	Management information is available on PIRSA webpage	PIRSA website information is updated as required

Indicators reported in economic reports.

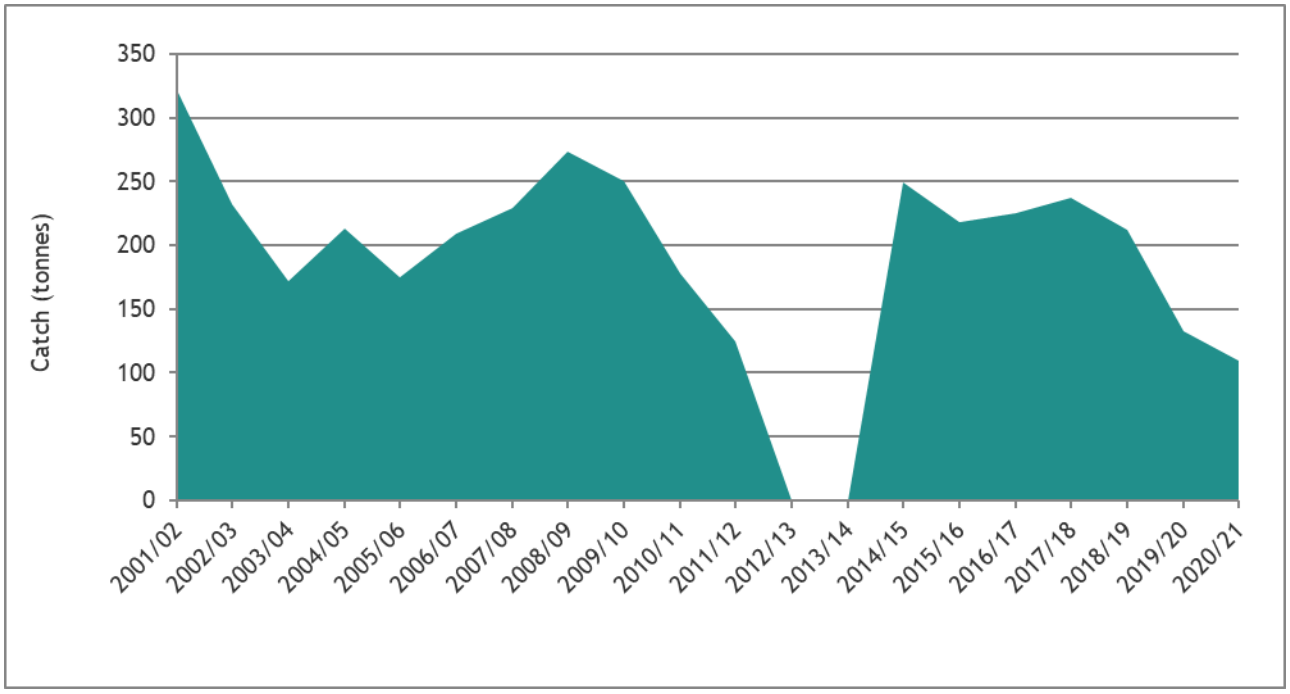
Reference points that can be calculated from reported economic indicators

Source: PIRSA 2017

13.2. Catch and Gross Value of Production

Figure 13-1 shows the annual catch between 2001/02 to 2020/21. Despite fluctuations, catch decreased from 322 tonnes in 2001/02 to 172 tonnes in 2003/04 where it slowly began to recover and reached 273 tonnes in 2008/09. Catch followed a declining trend until 2011/12 when it was only 125 tonnes and the fishery was closed for two years. In 2014/15, catch was 249 tonnes but it has since declined, reaching a 20 year minimum of 110 tonnes in 2020/21.

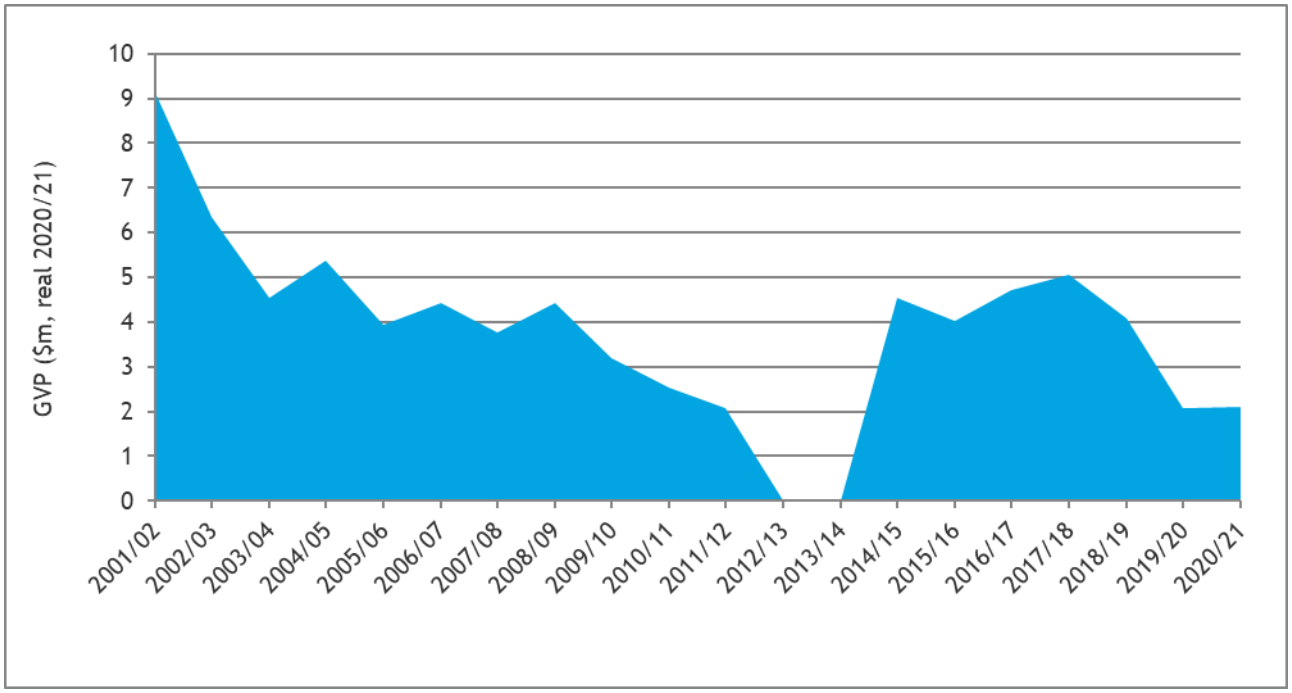
Figure 13-1 GSV Prawn Fishery catch, 2001/02 to 2020/21



Source: BDO EconSearch (2022i)

The real GVP for the GSV Prawn Fishery for the period 2001/02 to 2020/21 is illustrated in Figure 13-2. Despite fluctuations, real GVP declined markedly between 2001/02 ($9.1 million) and 2011/12 ($2.1 million) before the fishery was closed. The increase in catch between 2002/03 and 2008/09 was not matched by an increase in GVP due to a falling price for Prawns. After the fishery reopened in 2014/15 real GVP ($4.4 million) was at its highest level since 2004/05. As with catch, GVP has followed a declining trend since 2014/15. In 2020/21 GVP was $2.1 million, similar to the value in 2011/12, the year before the closure.

Figure 13-2 GSV Prawn Fishery GVP, 2001/02 to 2020/21[a]



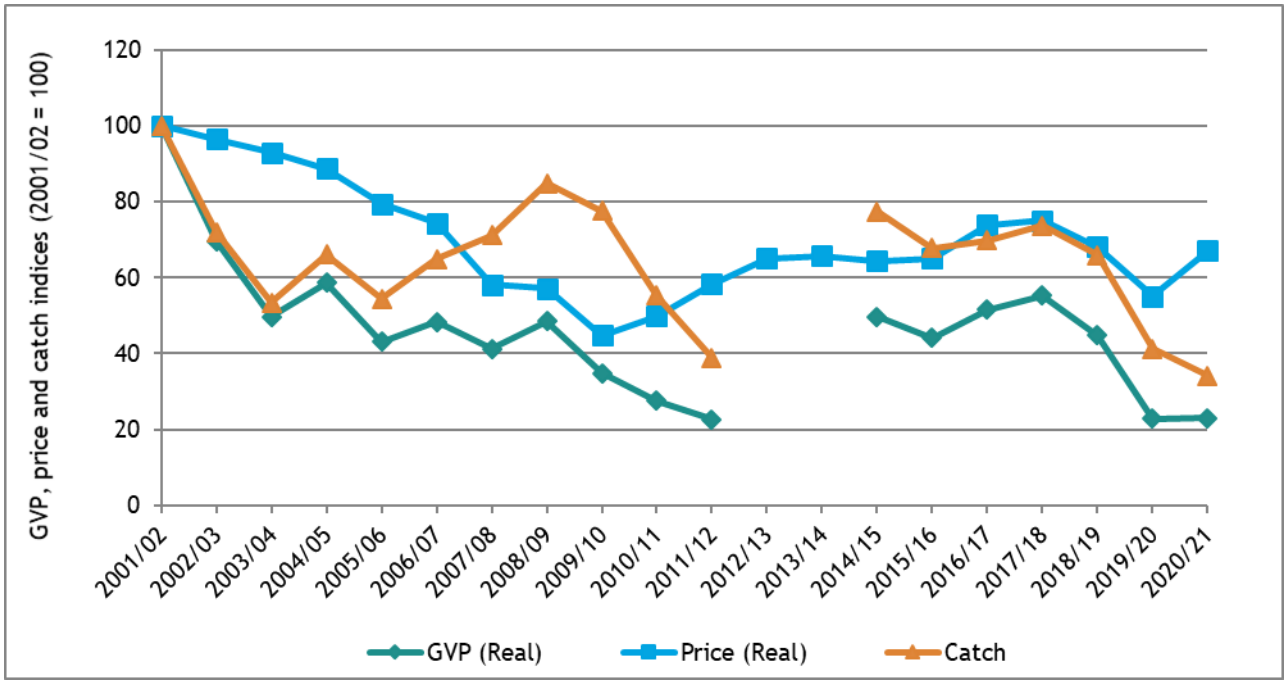
[a] GVP is expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022i)

Figure 13-3 illustrates the trends in catch, real price and real GVP in the GSV Prawn Fishery over the last 20 years. The value for each indicator has been converted to an index with a base year (2001/02) value set to 100. Catch and real GVP are not shown for 2012/13 and 2013/14 as the fishery was closed but the Prawn price in SA is shown as the Spencer Gulf and West Coast Prawn fisheries remained open in these years. Between 2001/02 and 2020/21 real price decreased by around 33 per cent overall. This explains why real GVP decreased (77 per cent) by a greater proportion than catch (66 per cent) over this period. In 2019/20 the price of prawns fell by 19 per cent from the previous year due the impacts of the COVID-19 pandemic on the markets, driven by the shut down on key food service markets that led to a loss of demand and reduction in price. In 2020/21 the real price of prawns returned to 2018/19 levels resulting in GVP increasing slightly from 2019/20 despite the fall in catch.

Figure 13-4 illustrates the trend in both the nominal and the real price for GSV Prawns over the last 20 years. Between 2001/02 and 2009/10 the real price for GSV Prawns, despite fluctuations, declined by 55 per cent (44 per cent in nominal terms) before increasing by 50 per cent in real terms (85 per cent in nominal terms) between 2009/10 and 2020/21. Overall, the nominal price for Prawns was 4 per cent higher in 2020/21 than in 2001/02, but the real price was around 50 per cent lower.

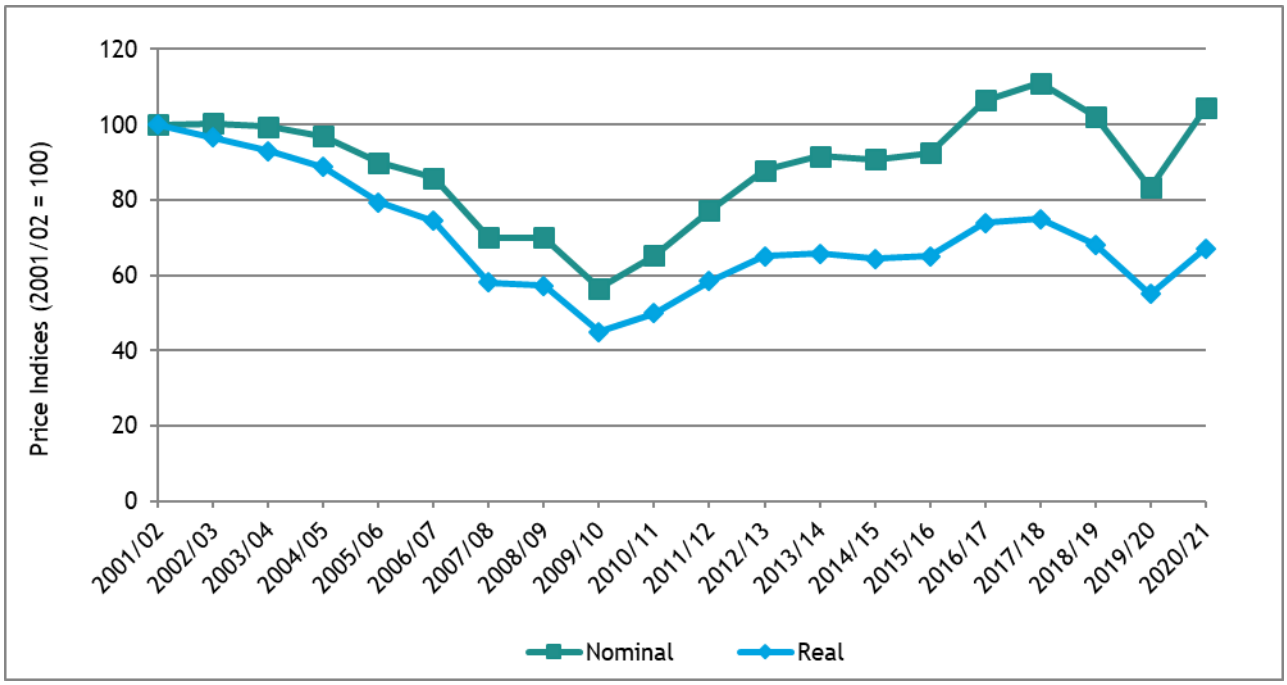
Figure 13-3 GVP, price and catch indices for the GSV Prawn Fishery[a]



[a] GVP and price are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022i)

Figure 13-4 Price indices for the GSV Prawn Fishery[a]



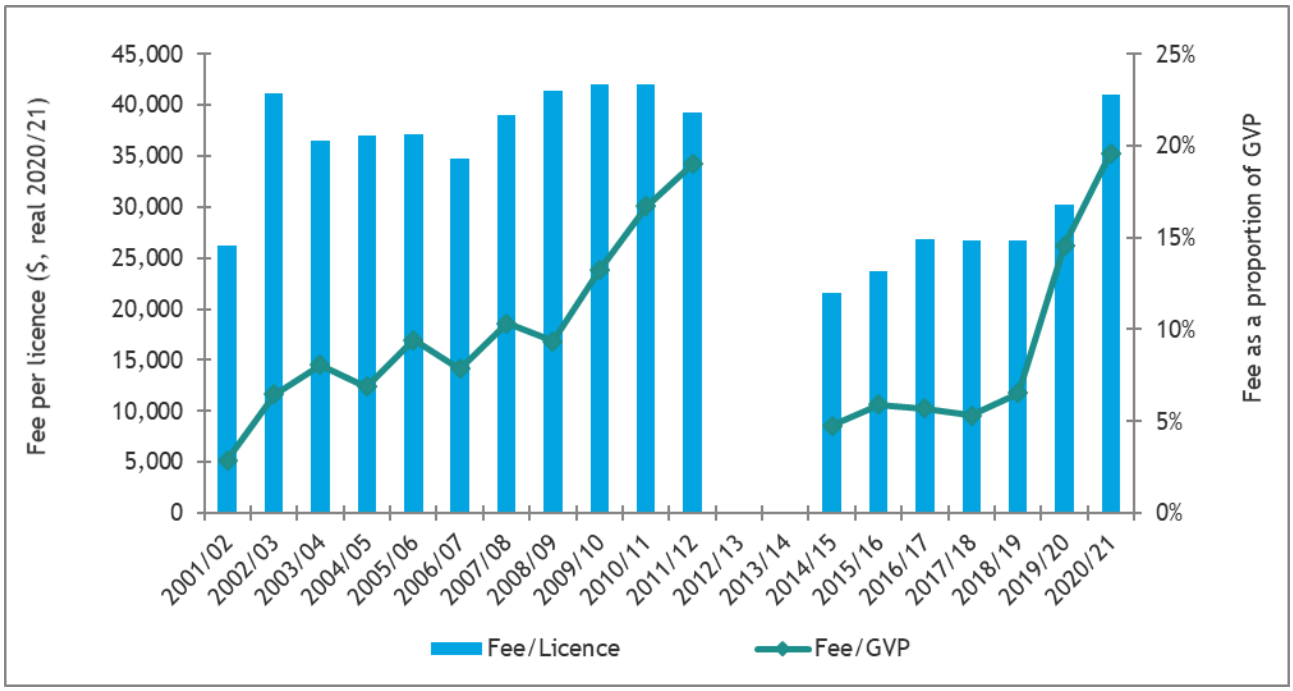
[a] Nominal price refers to the beach price in the current year's dollars. Real price is the nominal price adjusted for the purchasing power of money. The CPI (consumer price index) has been used to make this adjustment (ABS 2021a). It enables meaningful comparisons of prices to be made between years.

Source: BDO EconSearch (2022i)

13.3. Management Costs

The average management fee per licence and the licence fee as a proportion of GVP are illustrated in Figure 13-5. Between 2001/02 and 2011/12 licence fees per licence and as a proportion of GVP both increased steadily in real terms. The total number of licences was unchanged over this period so the increase in licence fees per licence was due to an increase in total licence fees in the fishery. The greater increase in licence fees as a proportion of GVP was due to the decrease in real GVP over this period. A similar trend of licence fees per licence as a proportion of GVP is shown between 2014/15 and 2020/21, increasing gradually until 2018/19 and rising significantly in 2019/20 and 2020/21. Each measure was lower when the fishery was reopened in 2014/15 through to 2018/19 due to reduced licence fees.

Figure 13-5 Management fee per licence holder and as a proportion of GVP, GSV Prawn Fishery, 2001/02 to 2020/21[a]



[a] Estimates of management costs and GVP are expressed in real 2020/21 dollars.

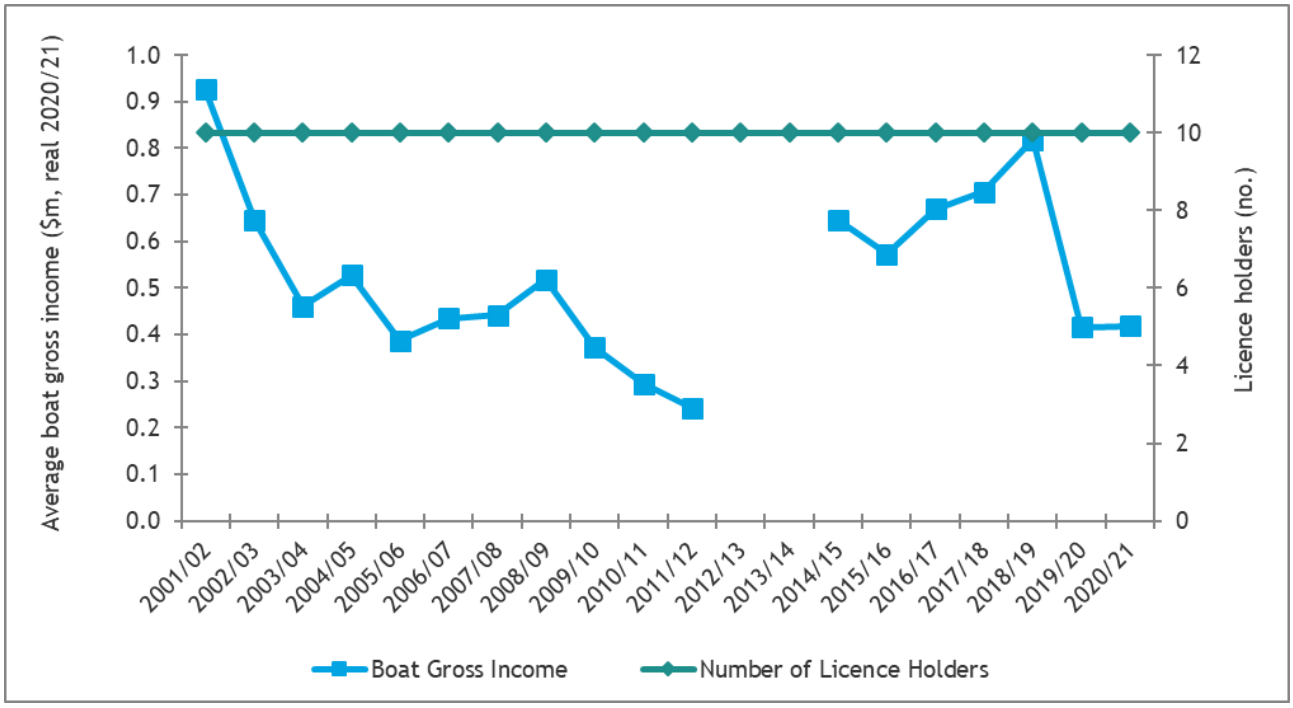
Source: BDO EconSearch (2022i)

13.4. Financial Performance

13.4.1. Average Income

Average income and total number of licences in the fishery for the last 20 years are illustrated in Figure 13-6. Whilst the total number of licence holders has not changed over the period of analysis, the number of boats used in the fishery has declined. Therefore, changes in the average income per boat relate to both total GVP for the fishery and a decline in the number of boats. The average income per boat increased between 2017/18 and 2018/19 as a result of a decline in the number of boats (from 7 to 5) and despite a fall in GVP. The average gross income per surveyed business in the fishery was estimated to be $419,000 in 2020/21, a 1 per cent increase from $404,000 in 2019/20 but a 47 per cent decline from 2018/19 driven by falls in GVP.

Figure 13-6 Average income per licence holder in the GSV Prawn Fishery, 2001/02 to 2020/21 [a,b]



[a] Estimates of average boat gross income are expressed in real 2020/21 dollars.

[b] Estimates for 2018/19 and 2019/20 have been revised based on information received in 2020/21.

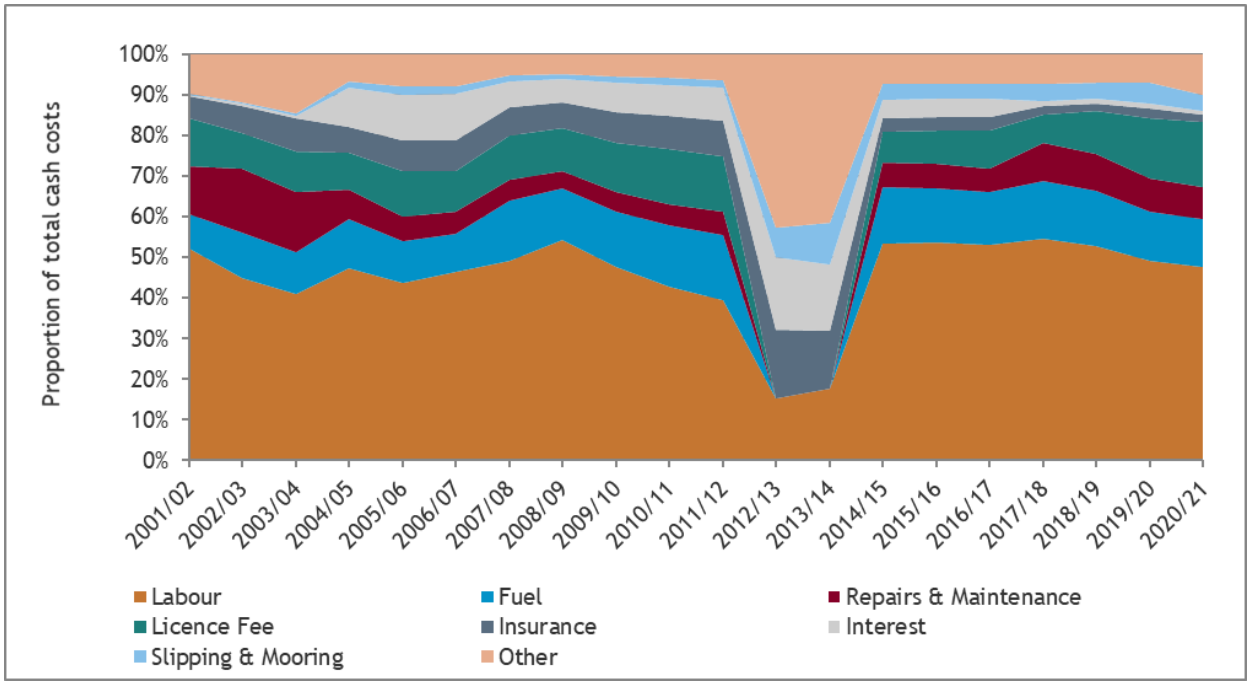
Source: BDO EconSearch (2022i)

13.4.2. Operating costs trends

A breakdown of major cost items as a proportion of total cash costs is illustrated in Figure 13-7. In each year of the analysis labour costs accounted for the largest share of total cash costs, with the exception of 2012/13 and 2013/14, the years that the fishery was closed. 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. The proportion of operating costs made up by labour varies with GVP as the ratio of variable to fixed costs changes. This relationship also holds for other variable costs but it is particularly clear for labour as variable costs are mostly labour costs and labour is usually paid as a proportion of the value of catch. Other significant cash costs were fuel, repairs and maintenance, licence fees, interest and insurance (Figure 13-7).

The cash costs detailed in Figure 13-7 can be categorised as either variable or fixed costs and are illustrated in Figure 13-8 on an average per boat basis. Total variable costs slowly decreased (with some fluctuations) from 2001/02 to 2011/12. This appears to be linked to reductions in labour costs as fuel, repairs and maintenance, and other variable costs have been relatively constant. As gross income has reduced over time, wages (as a percentage of gross income) have declined as well. As would be expected, total fixed costs have not fluctuated significantly from year to year and continued to be incurred by licence holders in 2012/13 and 2013/14, while the fishery was closed. Variable costs increased to levels not seen since 2002/03 once the fishery was reopened in 2014/15 and increased until 2020/21 despite a sharp fall in 2019/20 due to the reduced number of days fished. Fixed costs followed a very slight increasing trend between 2001/02 and 2016/17 before falling slightly until 2019/20. Fixed costs increased in 2020/21 mainly due to increased licence fees (Figure 13-8).

Figure 13-7 Cost shares in the GSV Prawn Fishery, 2001/02 to 2020/21 [a,b]

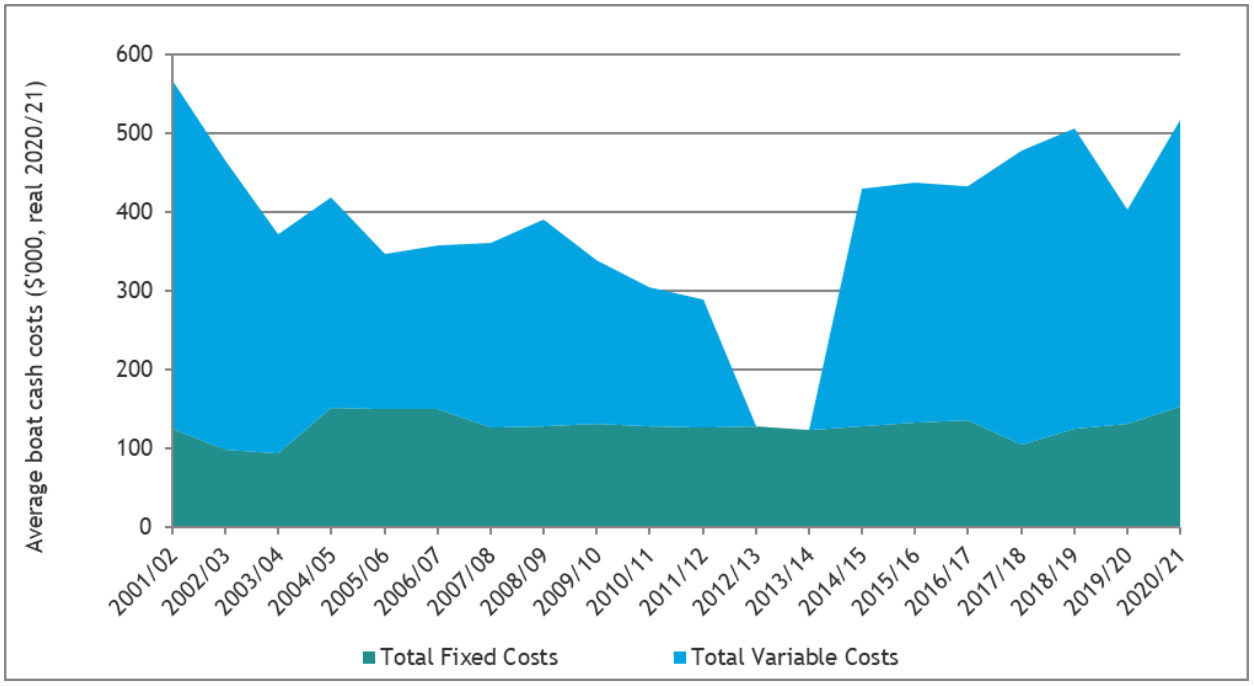


[a] Financial performance estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

[b] Estimates for 2018/19 and 2019/20 have been revised based on information received in 2020/21.

Source: BDO EconSearch (2022i)

Figure 13-8 Average total costs in the GSV Prawn Fishery, 2001/02 to 2020/21 [a,b]



[a] Estimates of average boat gross income are expressed in real 2020/21 dollars.

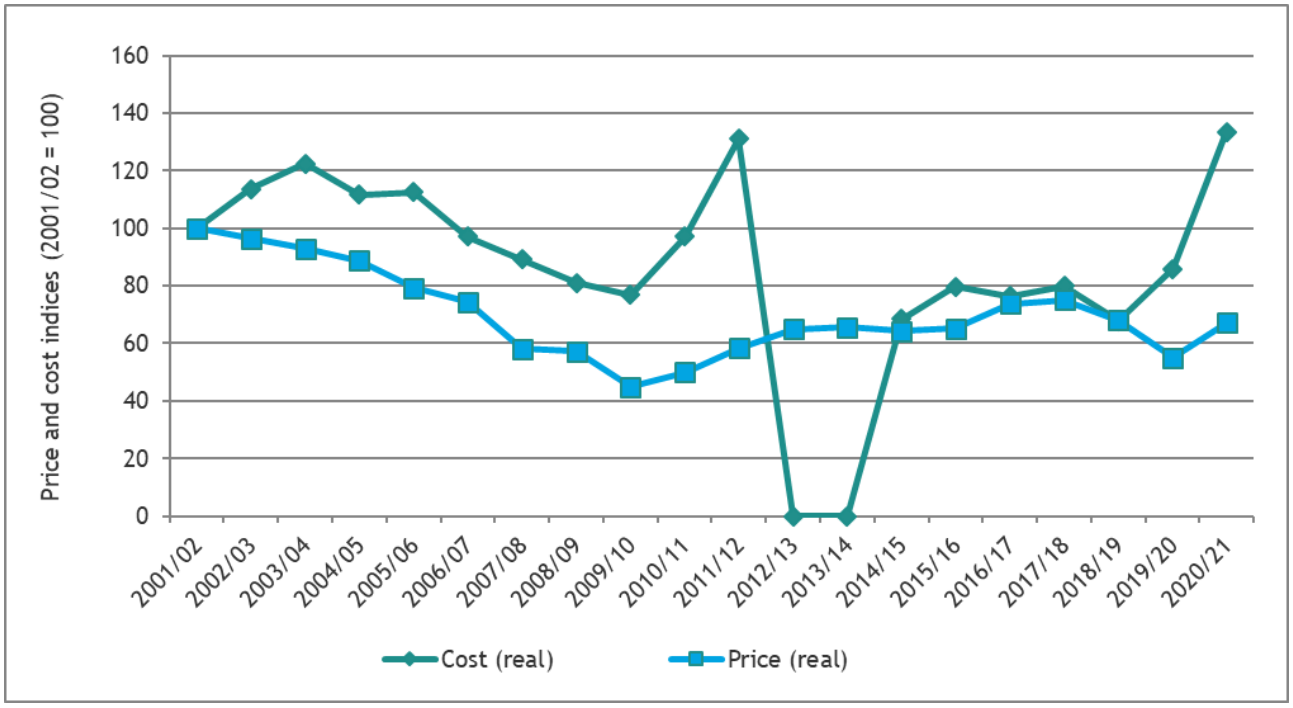
[b] Estimates for 2018/19 and 2019/20 have been revised based on information received in 2020/21.

Source: BDO EconSearch (2022i)

13.4.3. Costs price squeeze

Price and cost indices for the GSV Prawn Fishery for the last 20 years are summarised in Figure 13-9. These indicators are derived from the average price and average cost per kilogram of catch. Over the last 20 years the cost of catching GSV Prawns has increased by 33 per cent in real 2020/21 terms and the price received for GSV Prawns has fallen by 33 per cent, decreasing the per kg profit for Prawn catch. The real cost of catching GSV Prawns in 2020/21 was similar to 2011/12 levels and the real price was slightly higher.

Figure 13-9 Price and cost indices for the GSV Prawn Fishery, 2001/02 to 2020/21

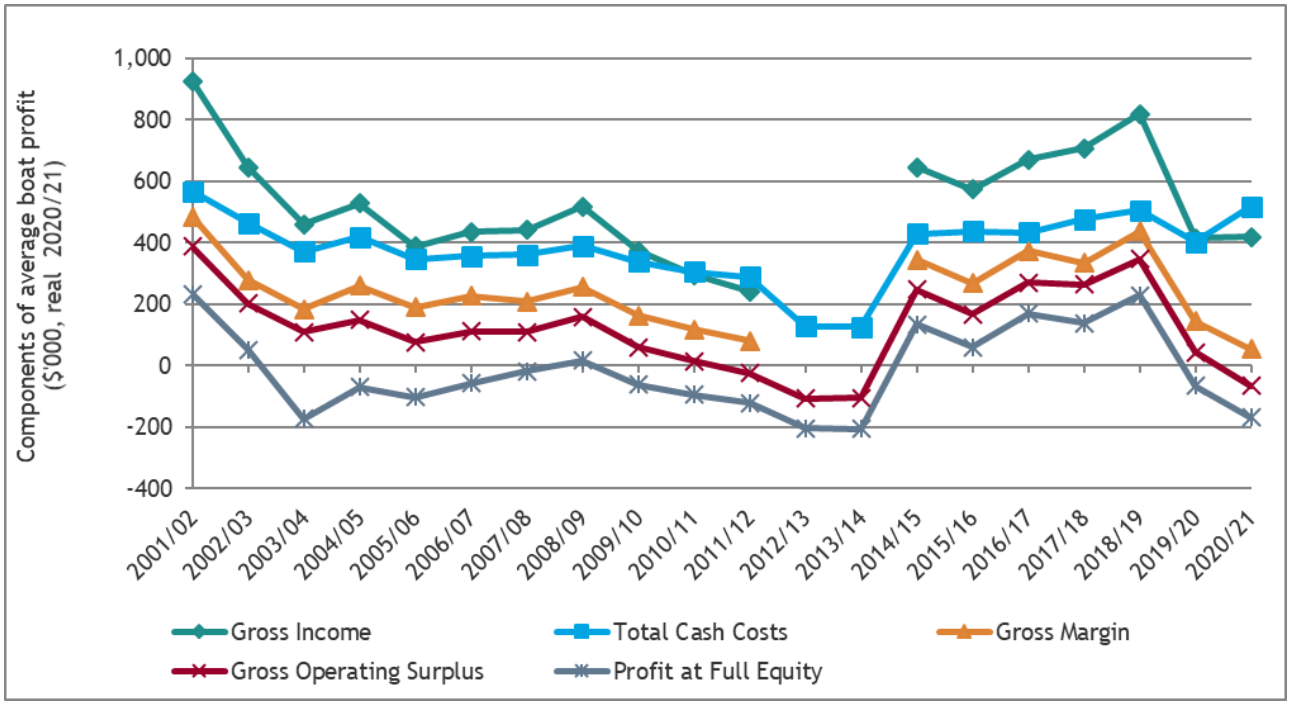


Source: BDO EconSearch (2022i)

13.4.4. Profitability

Changes in each of the profitability measures for the fishery were closely related to the average income earned. Profitability followed a decreasing trend between 2001/02 to 2013/14. Improvements in profitability were observed once the fishery reopened in 2014/15 through to 2018/19. All measures of profitability declined significantly in 2019/20 and 2020/21 principally the result of the significant falls in income. In 2020/21 gross margin, GOS and profit at full equity declined to values below those seen in 2011/12 (the year before the fishery was closed) (Figure 13-10).

Figure 13-10 Average income and profit in the GSV Prawn Fishery, 2001/02 to 2020/21 [a,b]



[a] Estimates of income and profitability measures are expressed in real 2020/21 dollars.

[b] Estimates for 2018/19 and 2019/20 have been revised based on information received in 2020/21.

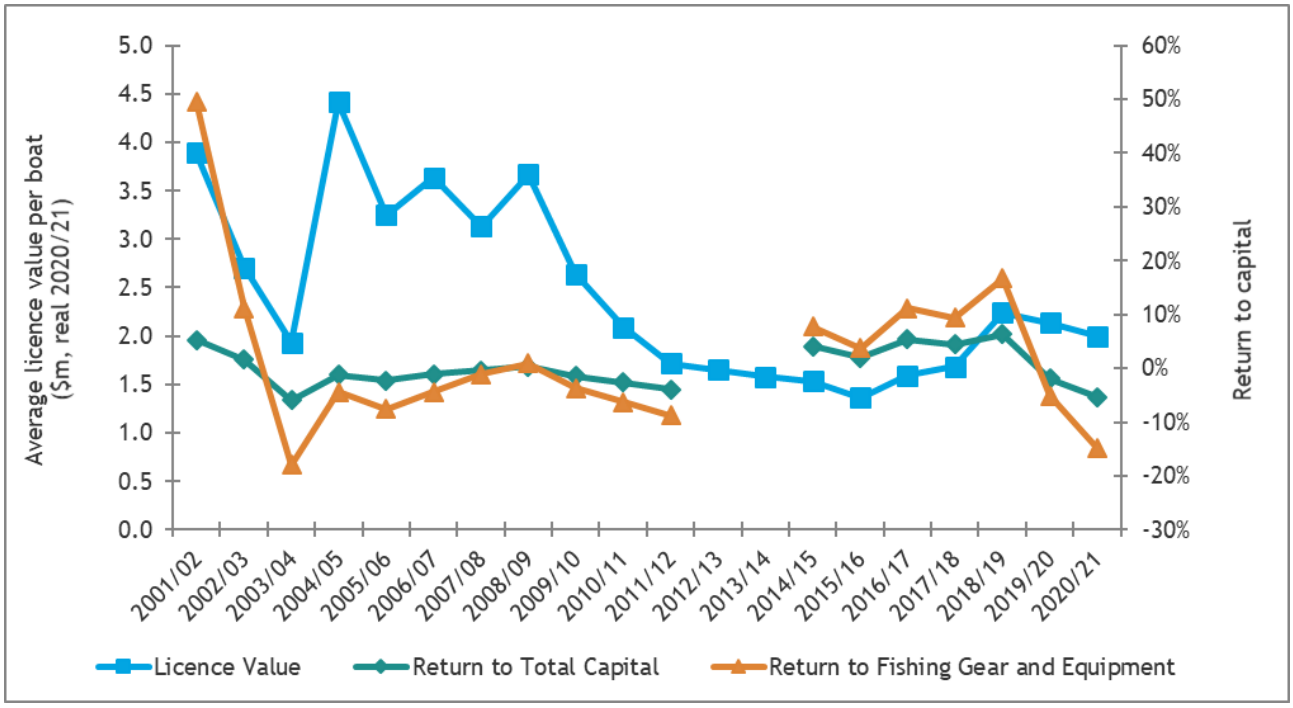
Source: BDO EconSearch (2022i)

13.4.5. Return to capital

Estimates of the average licence value and the rate of return to total capital for the last 20 years are illustrated in Figure 13-11. 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 capital is calculated to be profit at full equity as a percentage of total capital employed.

The estimated rate of return to total capital for the fishery declined across the period 2001/02 to 2003/04 where it began to fluctuate but stayed negative through to 2011/12. However, between 2011/12 and 2018/19 the estimated rate of return to total capital increased from -3.9 per cent to 6.4 per cent. This indicator has since fallen and was -5.4 per cent in 2020/21, driven mainly by a decrease in profitability in the fishery due to the decline in income and an increase in total boat cash costs (Figure 13-10).

Figure 13-11 Return to capital in the GSV Prawn Fishery, 2001/02 to 2020/21 [a,b]



[a] Estimates of licence value are expressed in real 2020/21 dollars.

[b] Estimates for 2018/19 and 2019/20 have been revised based on information received in 2020/21.

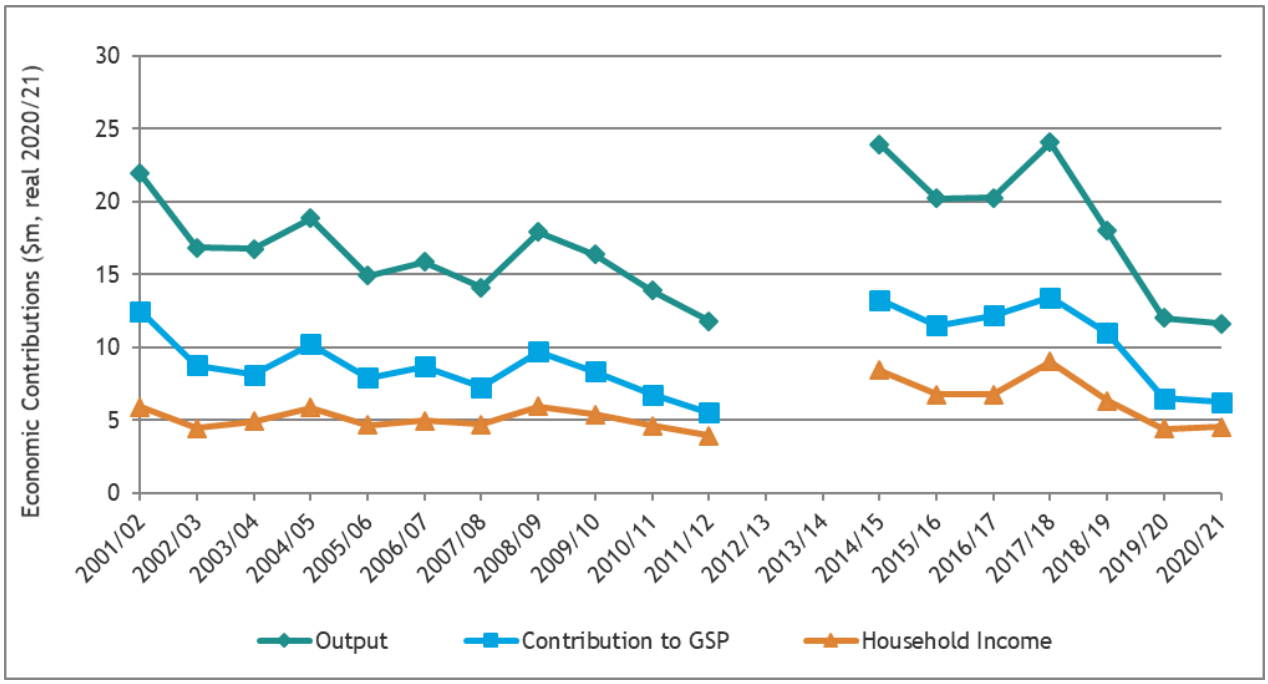
Source: BDO EconSearch (2022i)

13.5. Contribution to SA Economy

Figure 13-12 and Figure 13-13 illustrate the total economic contribution of the fishery on the SA economy for the last 20 years. Total economic contribution refers to the direct fishing industry contributions (fishing, processing, etc.) and the indirect contributions on other sectors of the economy.

Changes in total output and contribution to GSP are closely linked to changes in fishery GVP (Figure 13-12). Between 2001/02 and 2011/12, total output decreased by around 46 per cent and contribution to GSP decreased by around 56 per cent. After the fishery reopened, total output recovered from its 2011/12 levels and remained high until 2017/18. From 2017/18 to 2020/21 output and GSP fell significantly, resulting in output declining by 47 per cent overall between 2001/02 to 2020/21 and GSP declining by 50 per cent over the same period. Employment contributions followed a similar trend over the same period (Figure 13-13). Between 2001/02 and 2011/12, employment declined by 34 per cent. After the fishery reopened in 2014/15, employment was 41 per cent higher than in 2001/02 and remained high through to 2017/18. From 2017/18 to 2020/21 employment fell significantly, resulting in a 36 per cent decline overall between 2001/02 to 2020/21.

Figure 13-12 Total gross state product, output and household income contribution of the GSV Prawn Fishery on the SA economy, 2001/02 to 2020/21 [a,b]

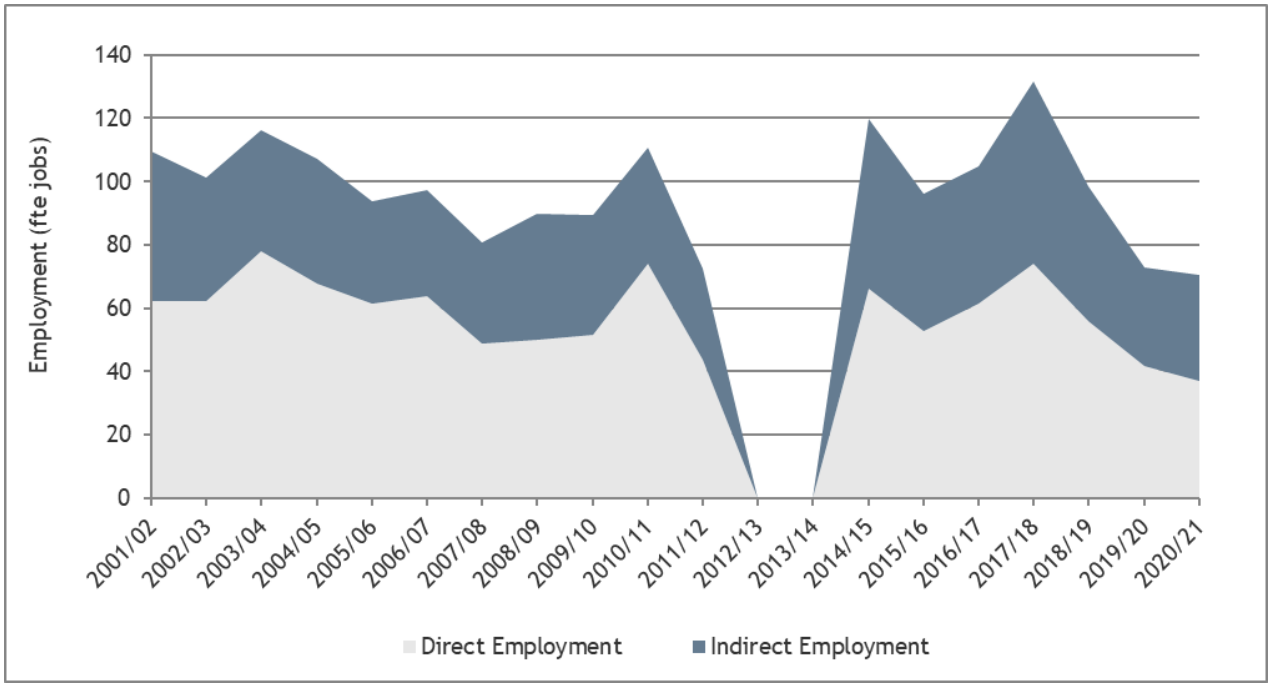


[a] Estimates of output, GSP and household income are expressed in real 2020/21 dollars.

[b] Estimates for 2018/19 and 2019/20 have been revised based on information received in 2020/21.

Source: BDO EconSearch (2022i)

Figure 13-13 Total direct and indirect employment contribution of the GSV Prawn Fishery on the SA economy, 2001/02 to 2020/21 [a]



[a] Estimates for 2018/19 and 2019/20 have been revised based on information received in 2020/21.

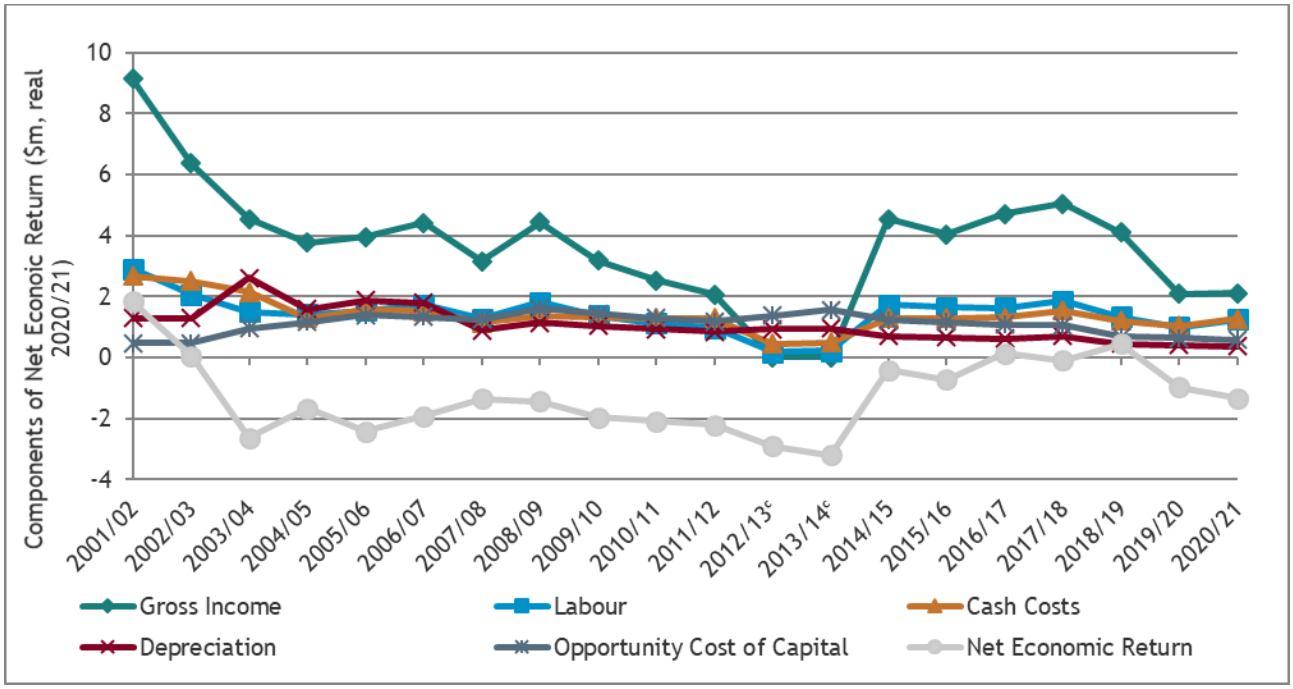
Source: BDO EconSearch (2022i)

13.6. Net Economic Return

Net economic return is defined as the difference between the price of a good produced using a natural resource and the unit costs of turning that natural resource into the good including the opportunity cost of capital. In this case the natural resource is the GSV Prawn Fishery and the good produced is the landed fish. Estimates of the net economic return generated in the GSV Prawn Fishery are summarised in Figure 13-14 for the last 20 years. Net economic return followed a decreasing trend, with some fluctuations through to 2013/14, the second year the fishery was closed. After the fishery reopened, net economic return improved to -$406,000 in 2014/15, before increasing to $434,000 in 2018/19. Since 2018/19 net economic return has decreased, reaching -$1.3 million in 2020/21 (Figure 13-14).

Since the fishery reopened in 2014/15, net economic return has remained higher than for the majority of the period prior to the closure. Although the decline in catch in 2019/20 and 2020/21 reduced net economic return, the benefits of the fisheries restructure are evident in the higher levels of net economic return between 2014/15 and 2020/21. Despite other economic indicators declining to levels last seen in 2011/12, net economic return in 2020/21 remained higher than all values reported between 2003/04 and 2013/14. This indicates that the fishery has been able to successfully adapt to the structural changes that have occurred gradually since 2017/18.

Figure 13-14 Net economic return in the GSV Prawn Fishery, 2001/02 to 2020/21 ($m) [a,b]



[a] All indicators are expressed in real 2020/21 dollars.

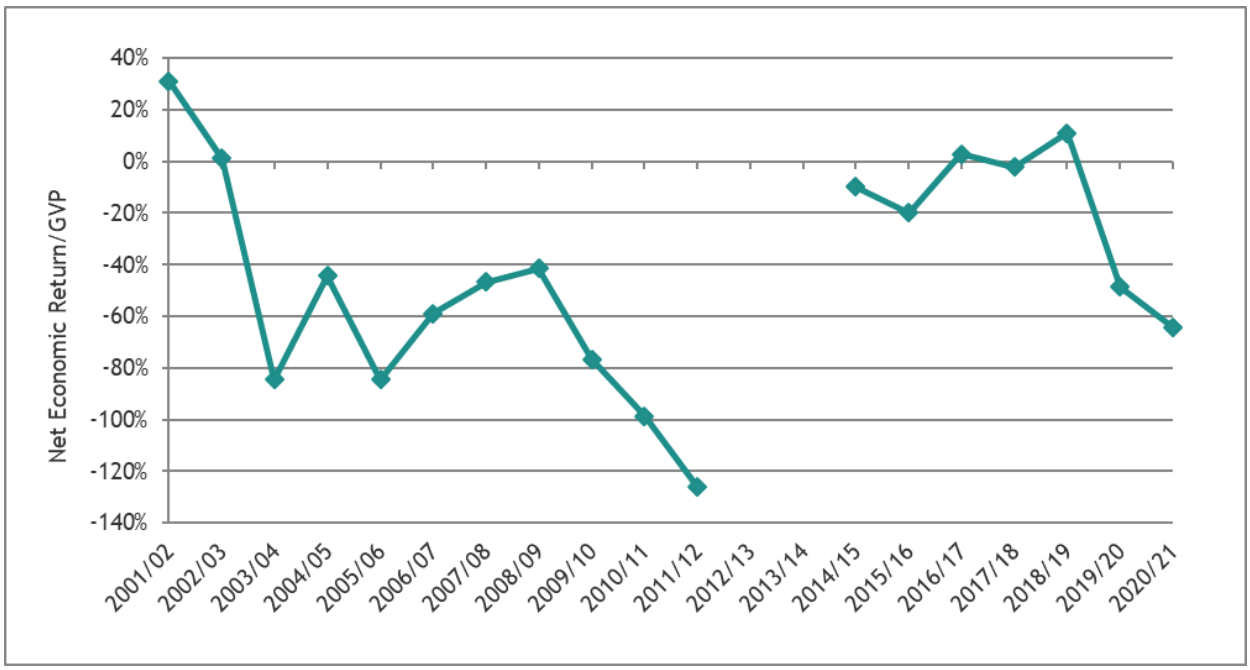
[b] Estimates for 2018/19 and 2019/20 have been revised based on information received in 2020/21.

Source: BDO EconSearch (2022i)

Net economic return expressed as a percentage of GVP is a useful indicator for analysing a fishery over time and for comparing different fisheries. This indicator is illustrated in Figure 13-15 and shows a decreasing trend between 2001/02 (31 per cent) and 2011/12 (-126 per cent) before recovering when the fishery reopened in 2014/15 (-10 per cent) where it increased through to 2018/19 (11 per cent). The indicator then fell significantly in 2019/20 (-49 per cent) and 2020/21 (-64 per cent). The Gulf St Vincent Prawn Fishery has one of the lowest NER/GVP of all commercial fisheries in South Australia and is one of four fisheries with negative NER/GVP.

Net economic return represents a return to the value of licences in the fishery. The aggregate value of licences in the GSV Prawn Fishery and the return to aggregate licence value of the fishery are illustrated in Figure 13-16. The return to the aggregate licence value decreased from 4.7 per cent in 2001/02 to -12.9 per cent in 2011/12 before recovering to 3.9 per cent in 2018/19 and then decreasing to -13.4 per cent in 2020/21 (Figure 13-16).

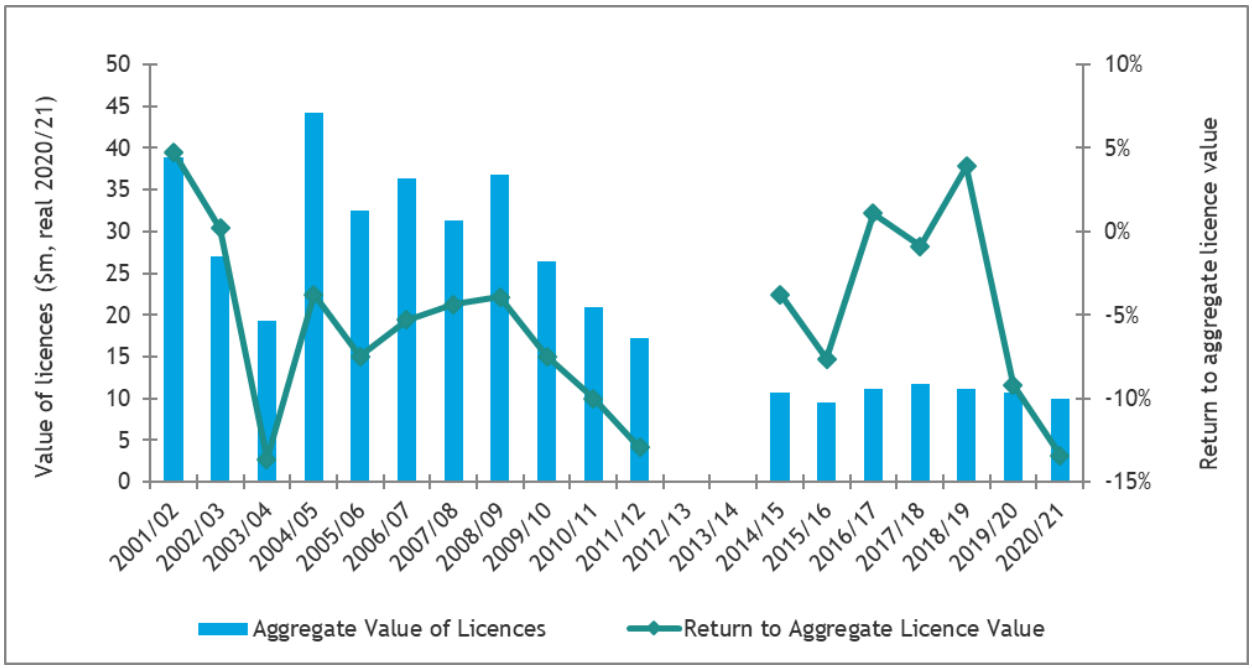
Figure 13-15 Net economic return as a proportion of GVP in the GSV Prawn Fishery, 2001/02 to 2020/21 [a]



[a] Estimates for 2018/19 and 2019/20 have been revised based on information received in 2020/21.

Source: BDO EconSearch (2022i)

Figure 13-16 Aggregate value of licences and return to aggregate licence value in the GSV Prawn Fishery, 2001/02 to 2020/21[a, b, c]



[a] The value of licences represents licence holders' estimates of the value of their fishing licence derived from survey responses. Estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

[b] Estimates of licence value are expressed in real 2020/21 dollars.

[c] Estimates for 2018/19 and 2019/20 have been revised based on information received in 2020/21.

Source: BDO EconSearch (2022i)

14. SOUTHERN ZONE ROCK LOBSTER FISHERY

14.1. Economic Objective of the Southern Zone Rock Lobster Fishery

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

5. Southern Rock Lobster stocks in South Australia are sustainable
6. Southern Zone Rock Lobster Fishery businesses operate efficiently and are viable
7. South Australian Rock Lobster Fishery minimises impacts on the ecosystem
8. economic and social benefits of the South Australian Rock Lobster Fishery are equitably distributed
9. 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 SZRL Fishery and related performance indicators, as described in the management plan for the fishery, are summarised in Table 14-1.

Over the last 20 years an annual report on economic indicators for the SZRL Fishery has been prepared. The economic indicators contained in these reports, most recently reported in BDO EconSearch (2022j), can assist in measuring the performance of the fishery against management objectives. The economic indicators for the SZRL Fishery are reported under the following headings:

- catch and gross value of production (GVP) (Section 14.2)
- management costs (Section 14.3)
- boat level financial performance indicators (Section 14.4)
  - average income
  - operating costs
  - cost-price squeeze
  - profitability
  - return on investment
- contribution to the SA economy (Section 14.5)
  - GSP
  - household income
  - employment
- net economic return (Section 14.6).

Indicators relating to the economic performance and objectives for the fishery are reported for the period 2001/02 to 2020/21. It should be noted that economic indicators are based on different survey samples and techniques over time. Some of the differences between years are, therefore, attributable to sampling variability.

Table 14-1 Economic and social objectives of the SA SZRL Fishery

Goal	Objectives	Strategies	Performance indicators	Trigger points
2. Southern Zone Rock Lobster Fishery businesses operate efficiently and are viable	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	4ai. Develop and implement management arrangements that allow commercial operators to maximise operational flexibility, economic efficiency, value and returns 4aiii. Communicate the sustainability and economic outcomes of the fishery to the wider community 4aiv. 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	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	5ai. Develop and implement management arrangements that are effective at achieving management objectives whilst minimising costs	Licence fee% of GVP	Commercial licence fees > than 10 per cent of GVP in at least 3 years of past 5

Indicators reported in economic reports.

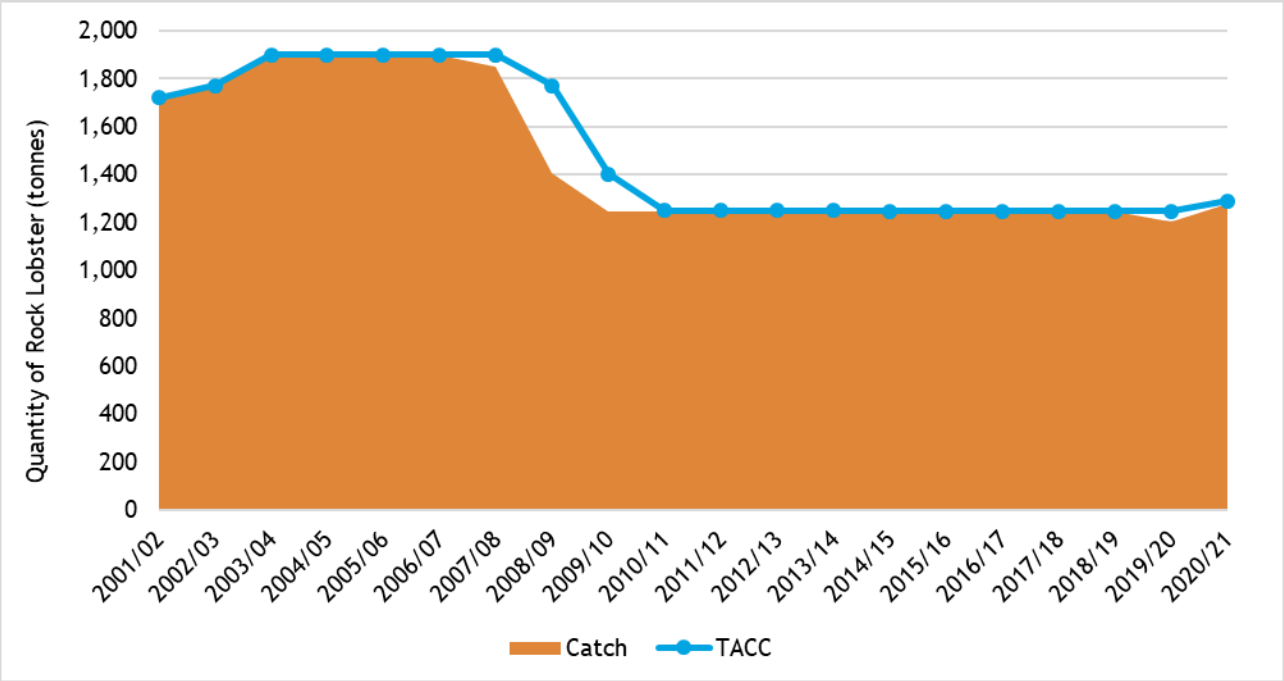
Trigger points that can be calculated from reported economic indicators

Source: PIRSA 2020c

14.2. Catch and Gross Value of Production

Figure 14-1 presents time series for catch and TACC in the SA SZRL Fishery. The figure illustrates that total catch followed the TACC set for the fishery closely until 2007/08 when catch fell below the TACC for three years, 2007/08 to 2009/10. This triggered three subsequent annual reductions of the TACC between 2008/09 and 2010/11 before catch stabilised very close to the TACC until 2019/20 which saw catch fall away from the TACC again to around 1,203t. This reduction in catch in 2019/20 is as a result of international market closures during early 2020, resulting fishing in the SZRL Fishery coming to a halt during its peak harvest and sales period. The TACC was then increased to 1,289t in 2020/21 with 43 tonnes of uncaught quota carried over from 2019/20 into 2020/21; this quota was also almost met in 2020/21 with a total catch of 1,275t.

Figure 14-1 SA SZRL Fishery catch, 2001/02 to 2020/21 [a]



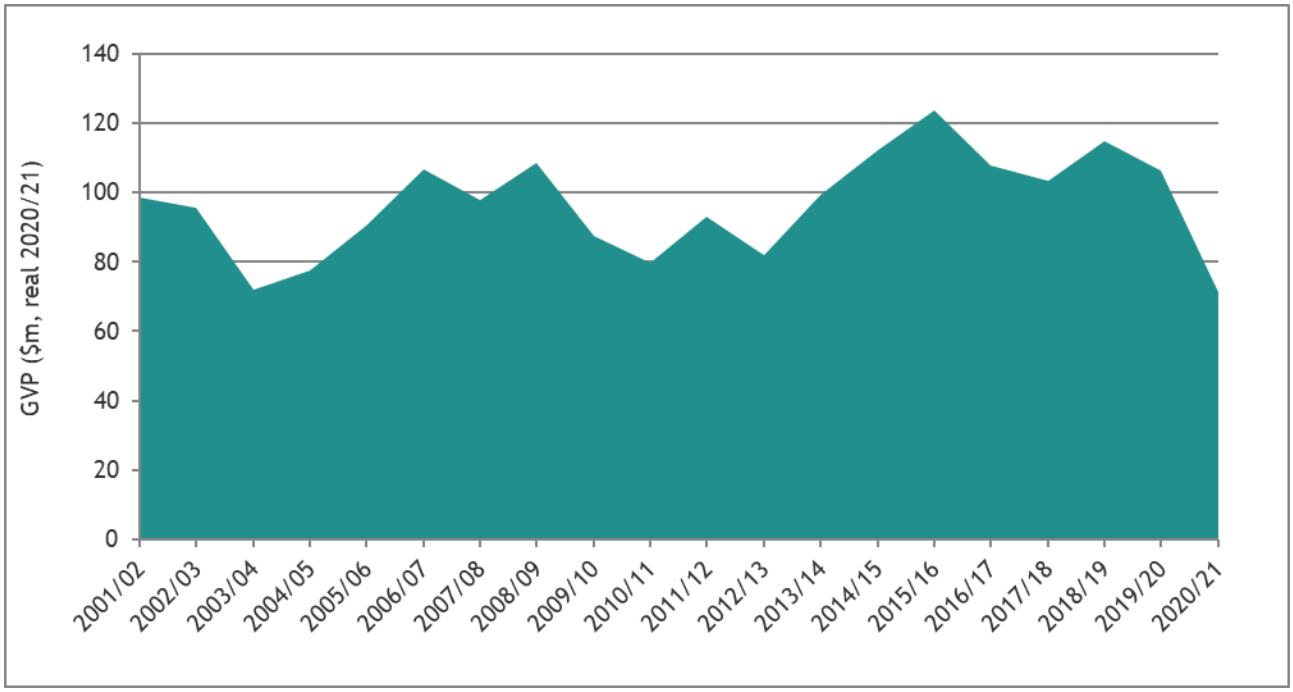
[a] 43 tonnes of uncaught quota was carried over from 2019/20 into 2020/21.

Source: BDO EconSearch (2022j)

The value of catch, in real 2020/21 dollars, in the SZRL Fishery fluctuated between years, but decreased by 28 per cent overall (Figure 14-2) resulting from a real price decrease of 2 per cent and a 26 per cent decline in catch (Figure 14-1). Due to the relatively constant catch between 2001/02 to 2007/08 the nominal value of the fishery gradually increased due, mainly, to an increase in price. Even in 2008/09 the decline in catch was offset by a steep price increase. Overall, between 2001/02 and 2020/21 real GVP decreased by 28 per cent while catch decreased by 26 per cent, highlighting the decrease in real price (2 per cent). The 2 per cent real price decrease was equivalent to a 46 per cent nominal price increase between 2001/02 and 2020/21 (Figure 14-4).

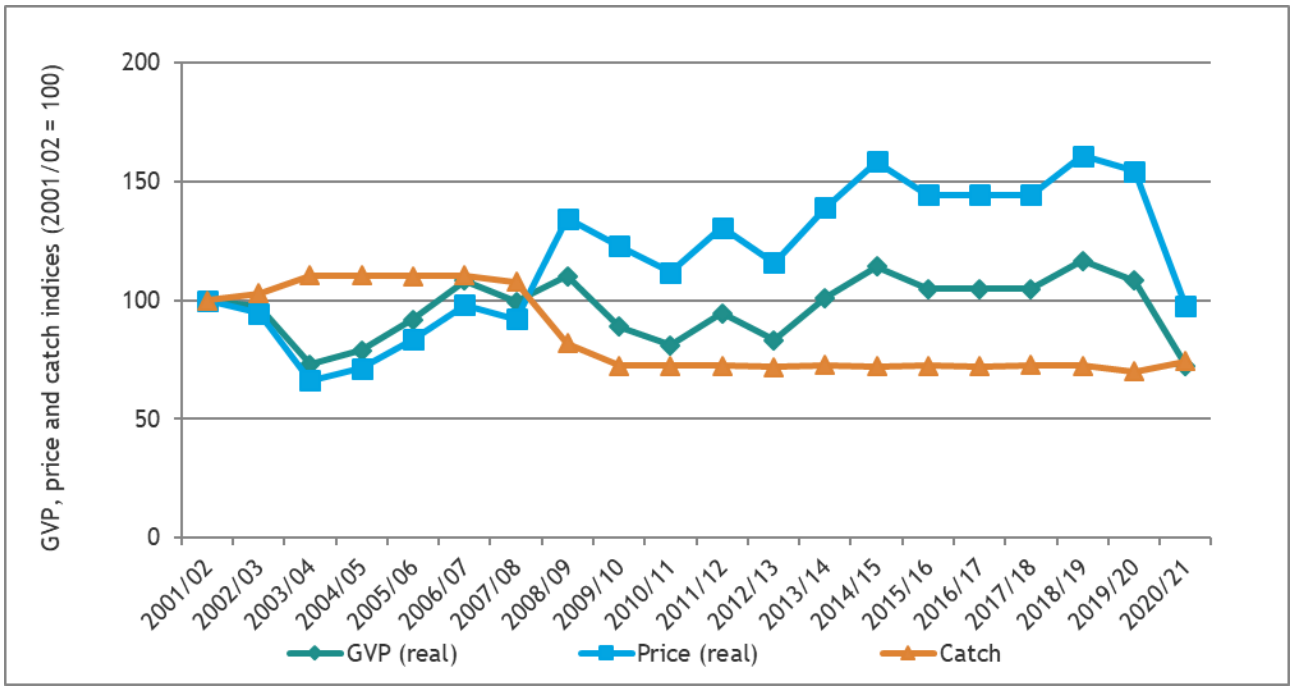
A proportion of the South Australian Rock Lobster catch is exported overseas (35 per cent in 2020/21) and so the value of the Australian Dollar can have an impact on the economic performance of the fishery. An inverse relationship between the exchange rate and price is not evident in the data in the long run but year-to-year fluctuations in the exchange rate do appear to lead to fluctuations in price.

Figure 14-2 SA SZRL Fishery GVP, 2001/02 to 2020/21



Source: BDO EconSearch (2022j)

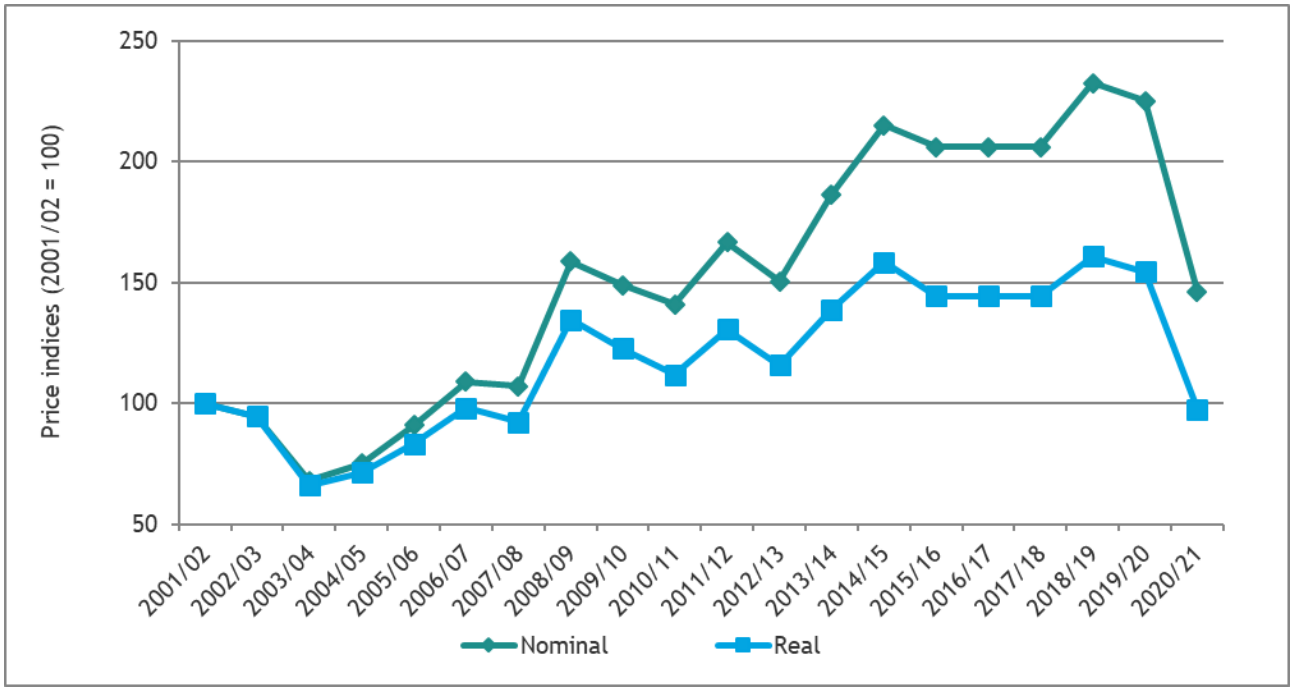
Figure 14-3 GVP, price and catch indicies for the SA SZRL Fishery[a]



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

Source: BDO EconSearch (2022j)

Figure 14-4 Price indicies for the SA SZRL 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 2021a). It enables meaningful comparisons of prices to be made between years.

Source: BDO EconSearch (2022j)

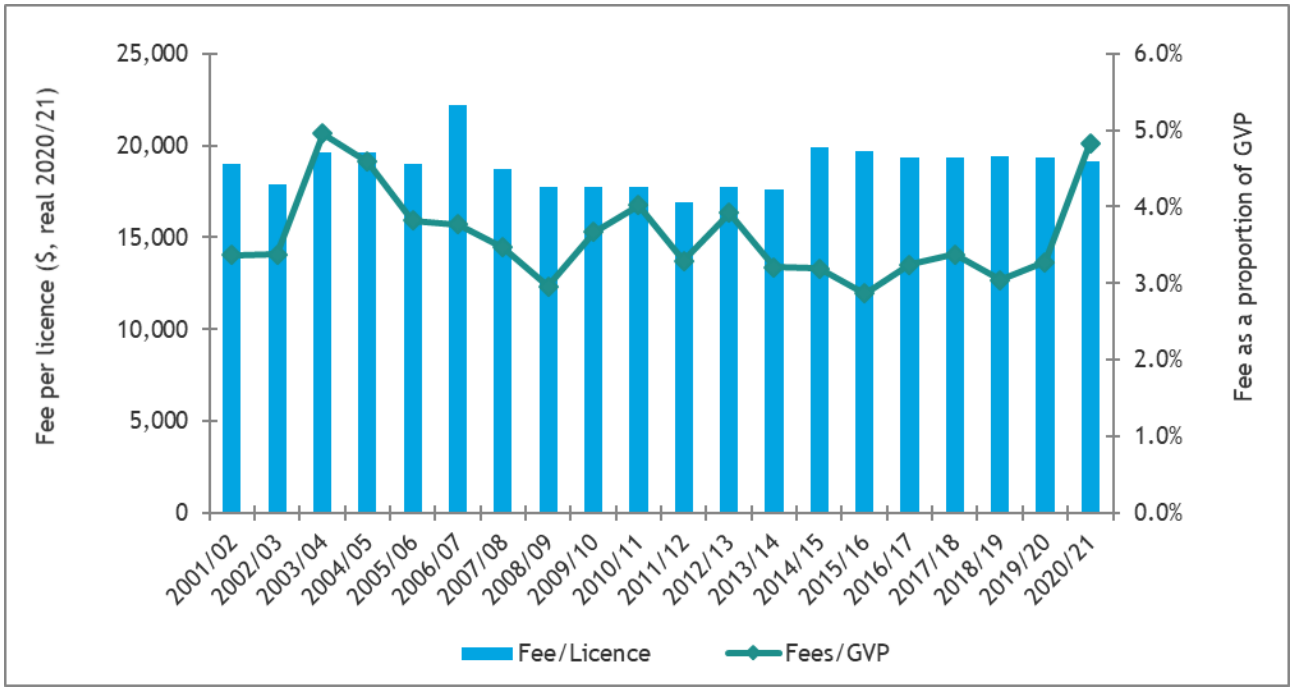
14.3. Management Costs

The average management fee per licence and the licence fee as a proportion of GVP are illustrated in Figure 14-5. Since 2001/02 the following trends have emerged (all values in real 2020/21 dollars).

- Licence fees as a percentage of GVP decreased marginally between 2001/02 (3.4 per cent) and 2019/20 (3.3 per cent) but increased in 2020/21 (4.8 per cent).
- The licence fees per kilogram of landed Rock Lobster increased from $2.00 in 2001/02 to $2.70 in 2020/21.
- The fee per licence peaked at $22,187 in 2006/07 but has since fallen and was $19,131 in 2020/21.
- The total number of licences fell from 181 in 2001/02 to 180 in 2020/21.

There are three main factors that contributed to the observed from 2001/02 to 2020/21. First, aggregate licence fees remained steady in real terms. Second, the catch in 2020/21 was approximately 26 per cent below that achieved in 2001/02, while the price was approximately 2 per cent lower in real terms (resulting in the value of catch decreasing by 28 per cent in real terms). Third, the number of licences fell by less than 1 per cent over the period.

Figure 14-5 Management fee per licence and as aproportion of GVP, 2001/02 to 2020/21[a]



[a] Estimates of the fee per licence are expressed in real 2020/21 terms.

Source: BDO EconSearch (2022j)

14.4. Financial Performance

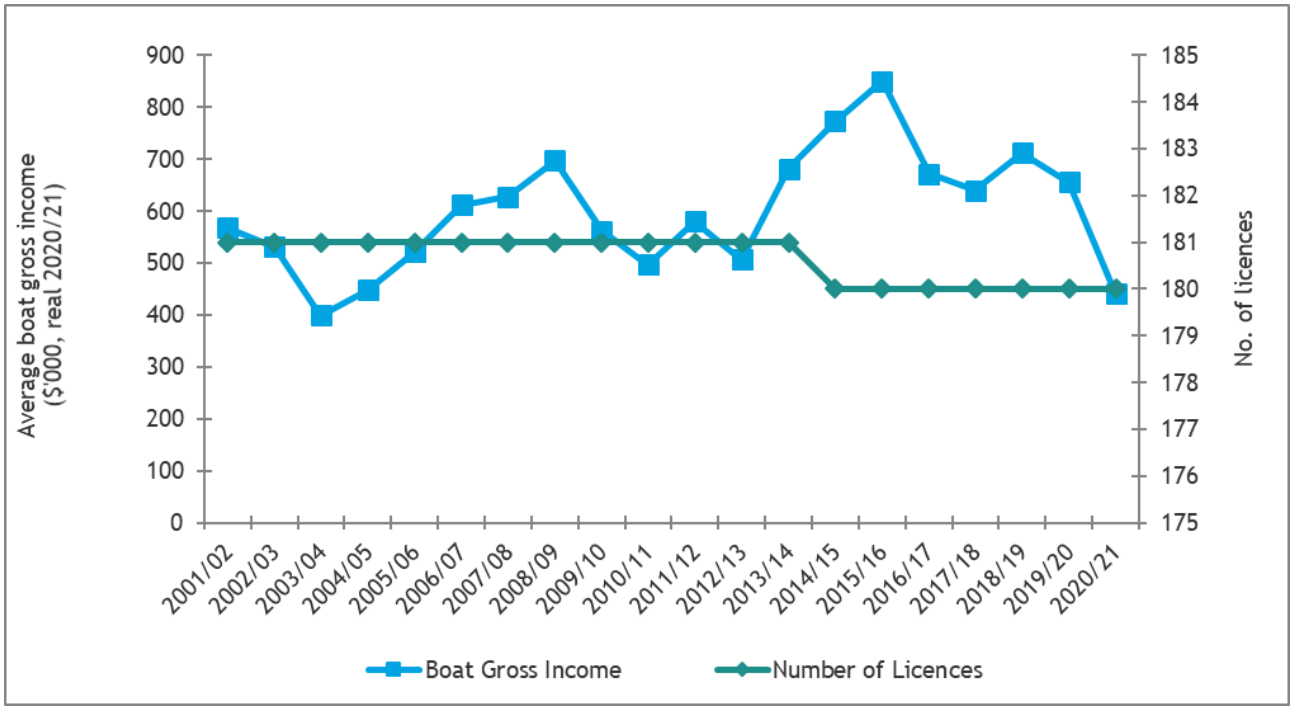
14.4.1. Average Income

Average income and total number of licences in the fishery for the period 2001/02 to 2020/21 is illustrated in Figure 14-6. The total number of licences in the fishery declined from 181 to 180 over this period. In real terms, average boat income decreased by 22 per cent over this period. The decrease in real boat income can be explained by the real decrease in price of 6 per cent and a 26 per cent decline in fishery catch over the same period.

14.4.2. Operating costs trends

A breakdown of major cost items as a proportion of total cash costs is illustrated in Figure 14-7. 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 (Figure 14-7).

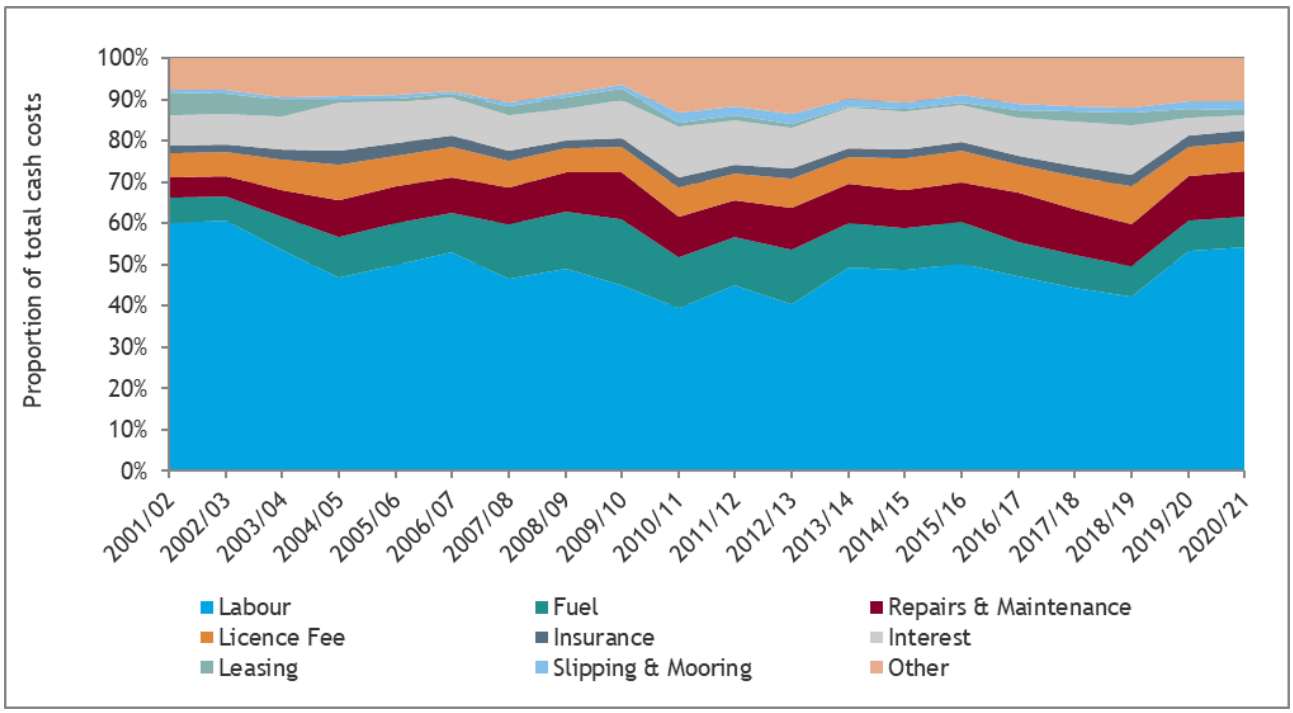
Figure 14-6 Average income per licence in the SA SZRL Fishery, 2001/02 to 2020/21[a]



[a] Estimates of average boat gross income are expressed in real 2020/21 terms.

Source: BDO EconSearch (2022j)

Figure 14-7 Cost shares in the SA SZRL Fishery, 2001/02 to 2020/21[a]

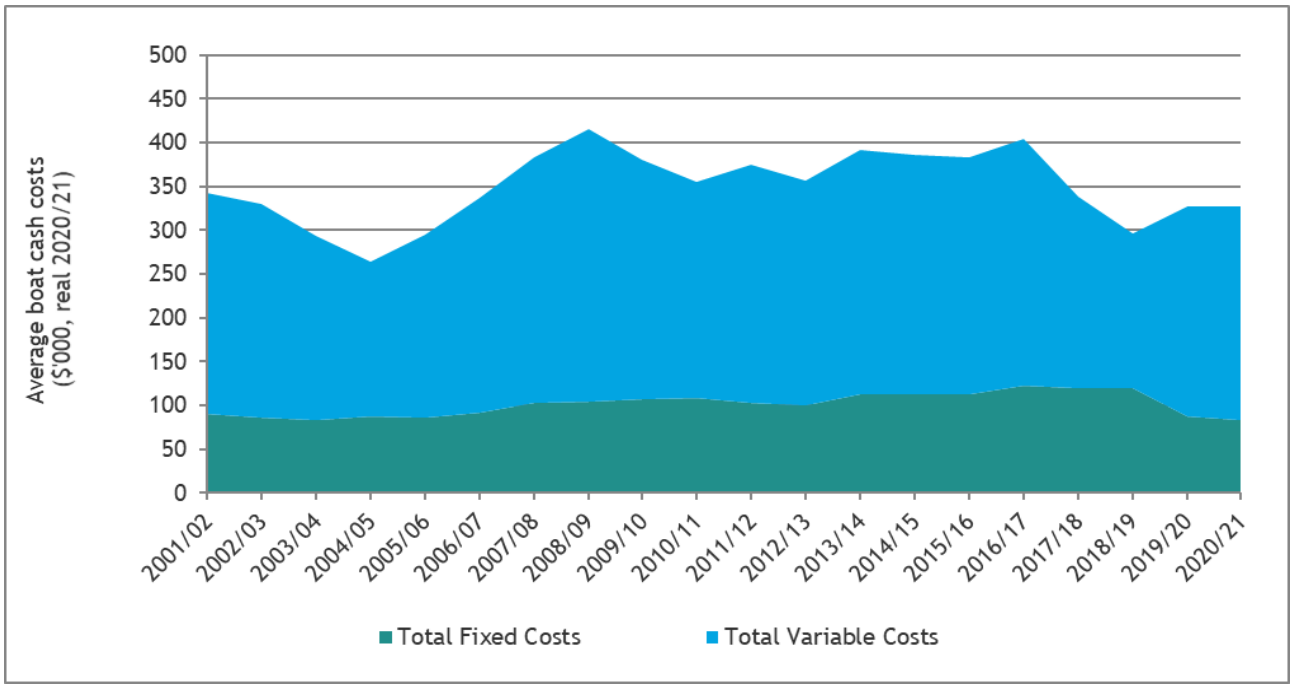


[a] Financial performance estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Source: BDO EconSearch (2022j)

The cash costs detailed in Figure 14-7 can be categorised as either variable or fixed costs and are illustrated in Figure 14-8 on an average per boat basis. Total variable costs have fluctuated between years but generally increased over the period 2001/02 to 2020/21 as effort has declined. Total fixed costs have fluctuated much less from year to year but increased from 2001/02 to 2018/19 before declining in 2019/20 and 2020/21 (Figure 14-8).

Figure 14-8 Average total costs in the SA SZRL Fishery, 2001/02 to 2020/21[a]



[a] Estimates of average costs are expressed in real 2020/21 terms.

Source: BDO EconSearch (2022j)

14.4.3. Costs price squeeze

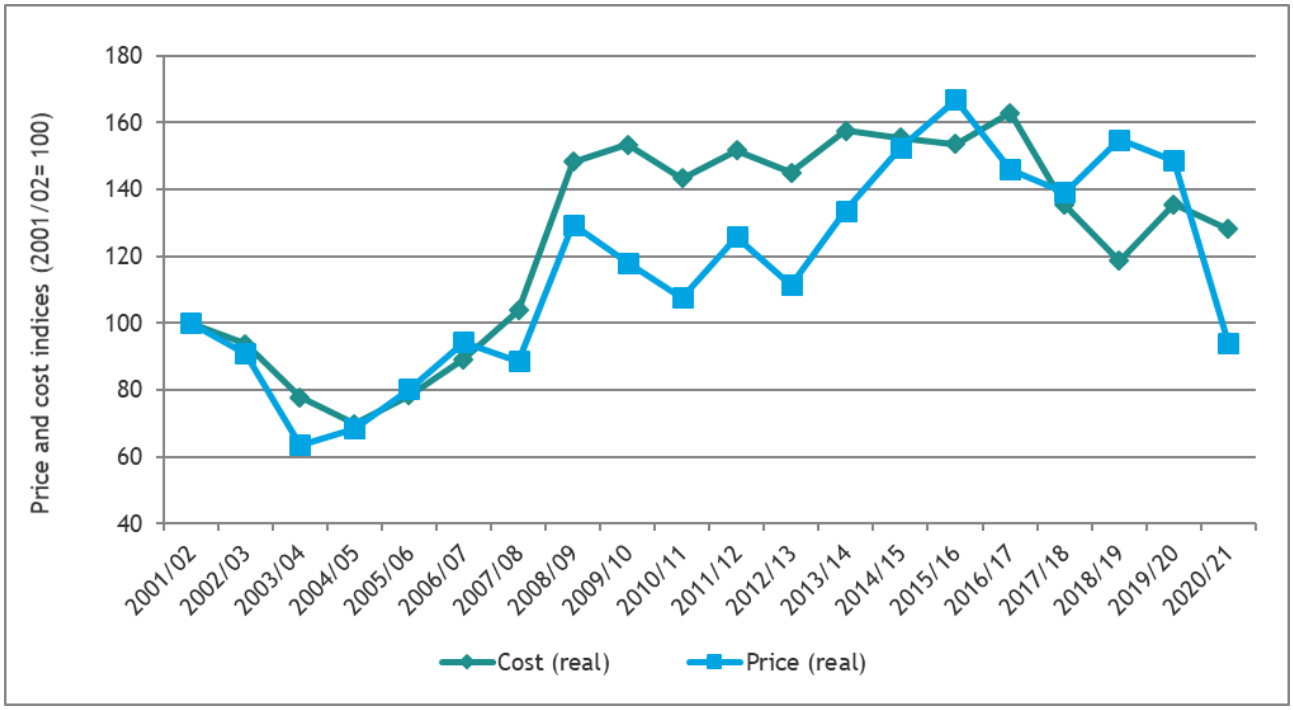
Real price and cost indices (in 2020/21 dollars) for the SZRL Fishery for the years 2001/02 to 2020/21 are summarised in Figure 14-9. These indicators are derived from the average price and average cost per kilogram of catch. Between 2001/02 and 2003/04, the average Rock Lobster price fell by 36 per cent in real terms. Since then the average price has increased before decreasing in 2020/21 as a result of ongoing trade disputes between China and Australia leading to an unofficial ban on Rock Lobster exports into China. Overall, between 2001/02 and 2020/21, it decreased by 6 per cent in real terms.

The average costs of catch in the SA SZRL Fishery fluctuated between years but generally increased. In 2020/21, average real cash costs per kilogram were 28 per cent more than in 2001/02 (Figure 14-9Figure 14-9). This increase is greater than the decrease in price over the same period.

14.4.4. Profitability

Selected measures of profitability for the average active boat in the SZRL Fishery are summarised in Figure 14-10 for the years 2001/02 to 2020/21. Changes in each of the profitability measures for the fishery were closely related to the average income earned. Profitability fluctuated between 2001/02 and 2020/21 but increased between 2001/02 and 2015/16 and then declined until 2020/21 (Figure 14-10).

Figure 14-9 Average boat price and cost indices for the SA SZRL Fishery, 2001/02 to 2020/21[a,b]

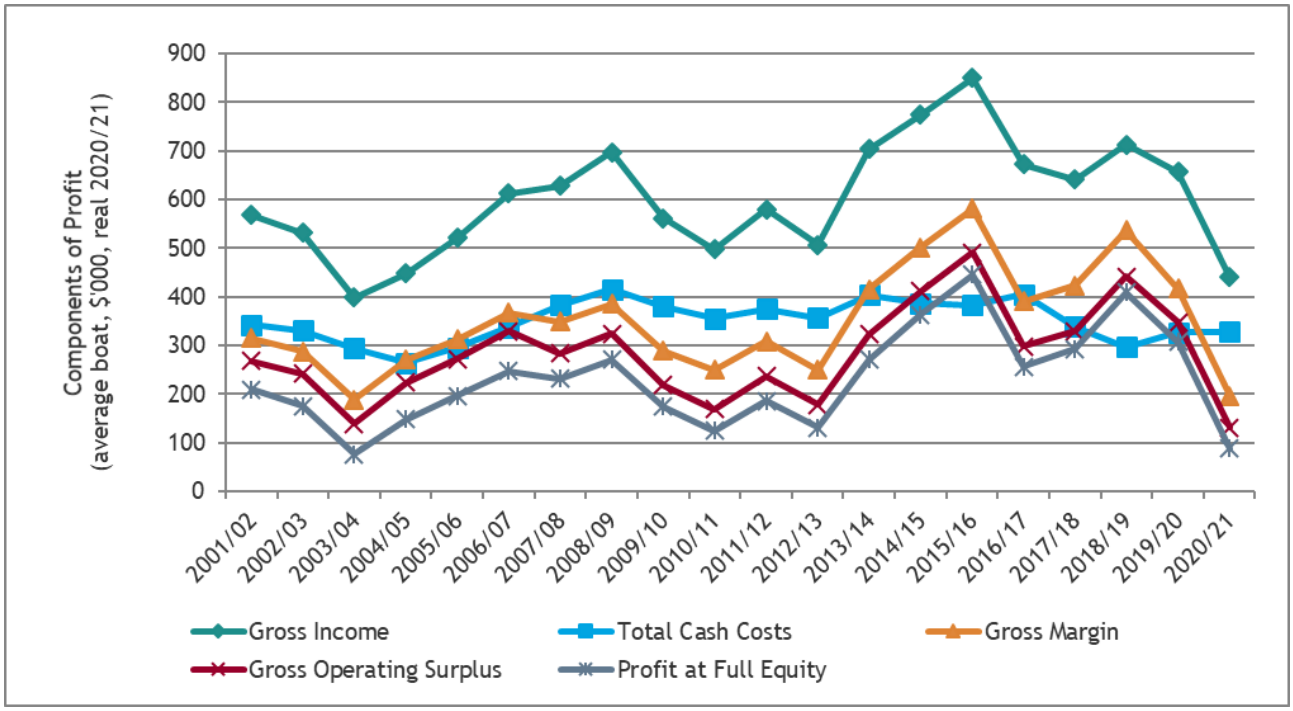


[a] Estimates of average costs and price are expressed in real 2020/21 terms.

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

Source: BDO EconSearch (2022j)

Figure 14-10 Average income and profit per boat in the SA SZRL Fishery, 2001/02 to 2020/21[a]



[a] Estimates of income and profitability measures are expressed in real 2020/21 terms.

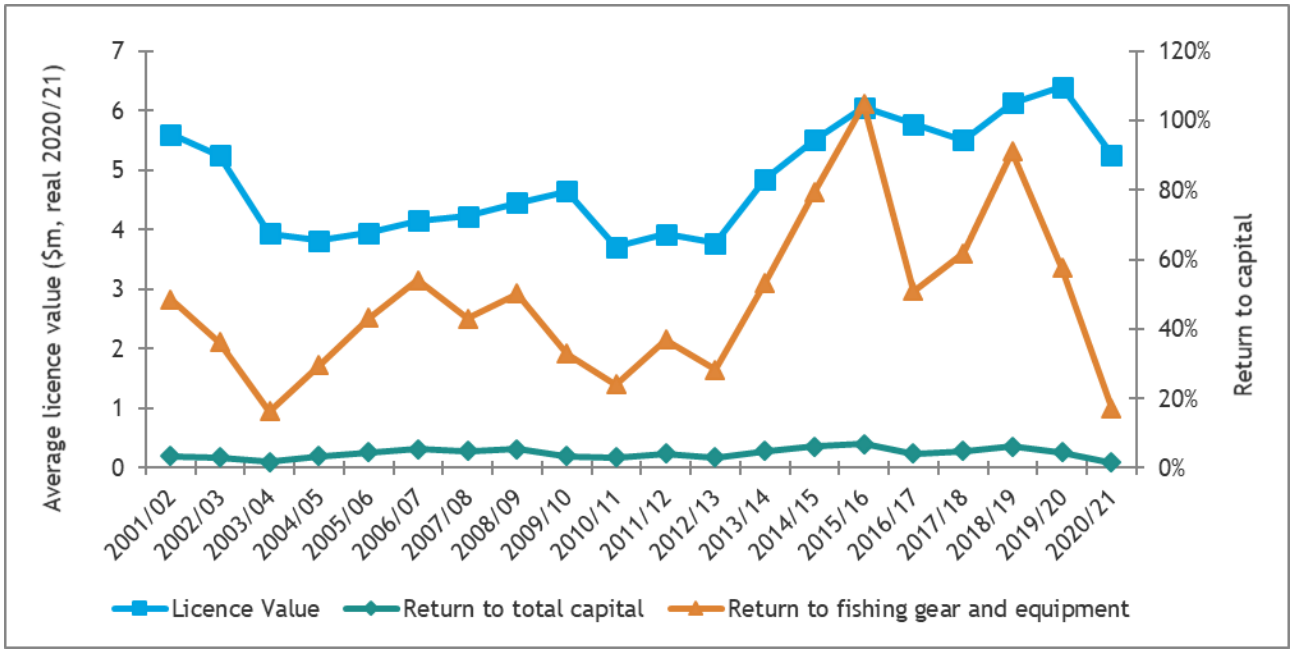
Source: BDO EconSearch (2022j)

14.4.5. Return to capital

Estimates of the total value of licences and the rate of return to capital are illustrated in Figure 14-11. Total capital includes boats, licence/quota, fishing gear, sheds, vehicles and other capital items used as part of the fishing enterprise. 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 decreased overall between 2001/02 (3.5 per cent) and 2020/21 (1.5 per cent). The rate of return to fishing gear and equipment also declined, from 49 per cent in 2001/02 to 17 per cent in 2020/21 reflecting a fall in the value of catch relating to decreased income (Figure 14-11).

Figure 14-11 Return to capital in the SA SZRL Fishery, 2001/02 to 2020/21[a]



[a] Estimates of licence value are expressed in real 2020/21 terms.

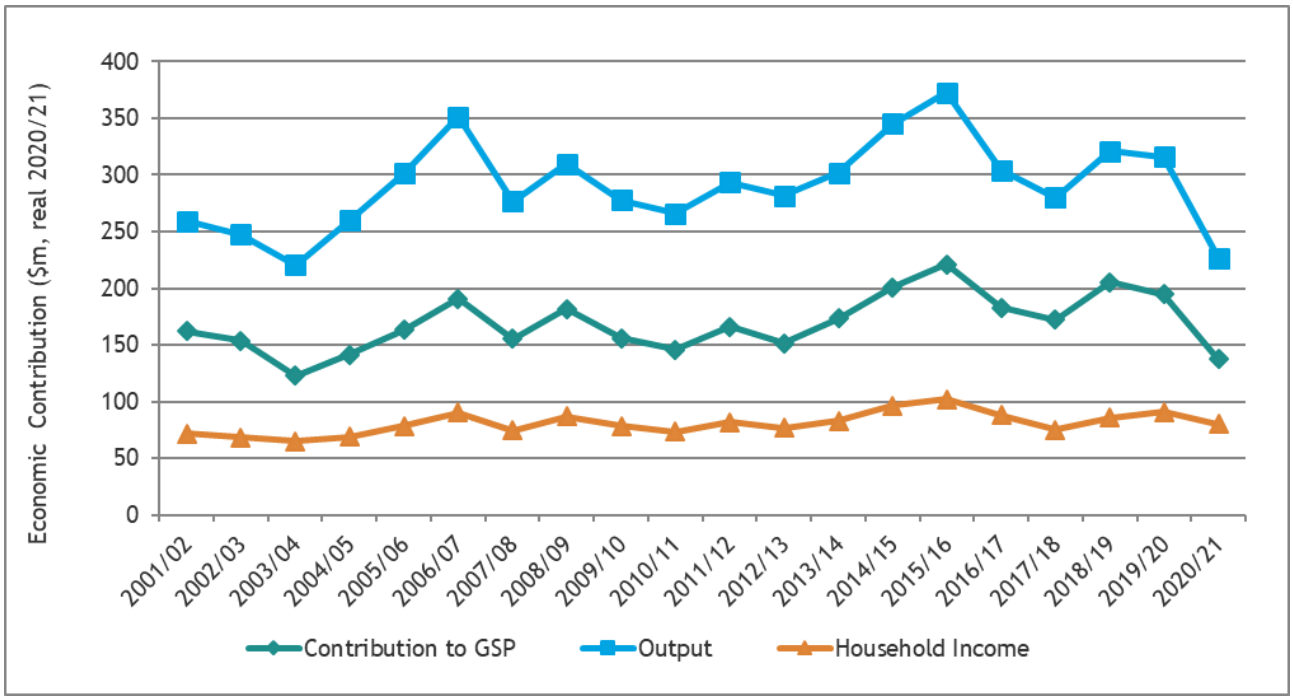
Source: BDO EconSearch (2022j)

14.5. Contribution to SA Economy

Figure 14-12 and Figure 14-13 illustrate the total economic contribution of the fishery on the SA economy for the past 20 years, 2001/02 to 2020/21. 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 gross state product (GSP) contributions are closely related to changes in price and fishery GVP. In 2020/21, the fishery's contribution to GSP was estimated to be almost $137 million, a decrease from 2001/02 ($162 million) (Figure 14-12). There was a decrease in the employment contribution of the fishery between 2001/02 (1,223 fte jobs) and 2020/21 (1,105 fte jobs). This is expected due to the reduction in the total number of active vessels in the fishery (direct employment) and productivity improvements across all related industries. This has also been affected by the decrease in activity of associated downstream sectors (processing, retail trade and food service sectors) (Figure 14-13).

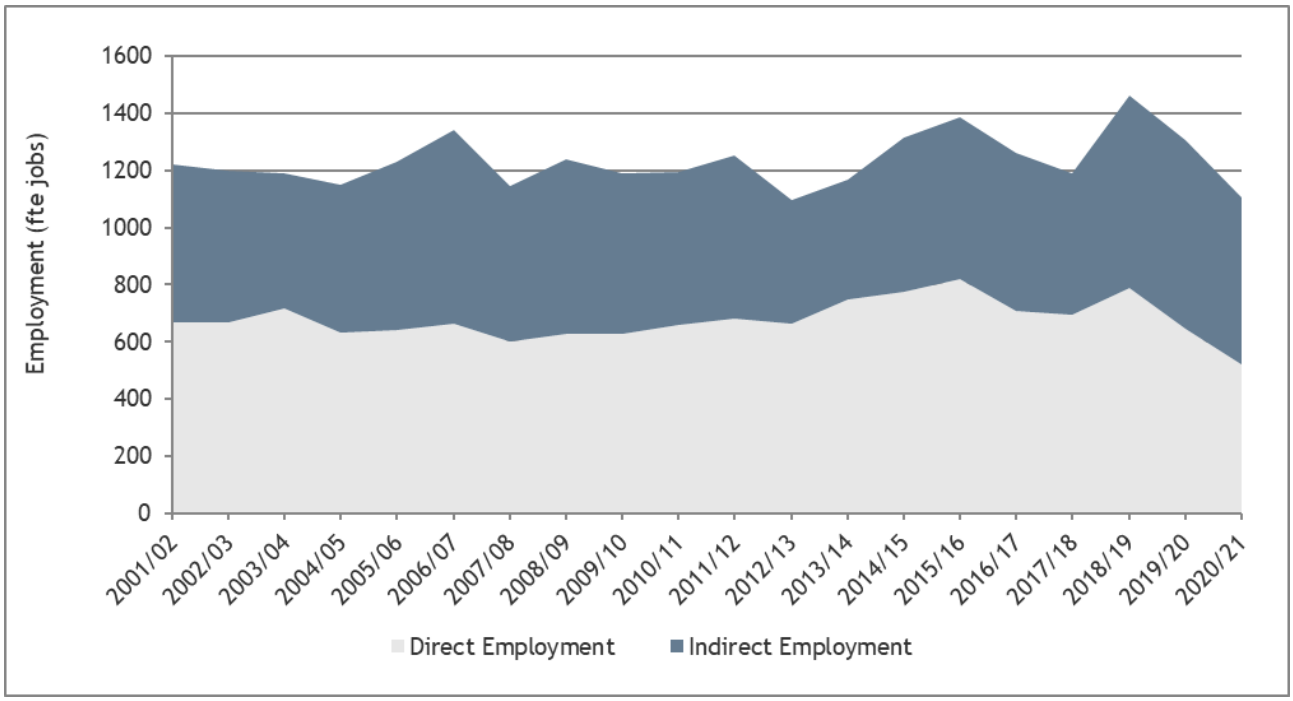
Figure 14-12 Total gross state product, output and household income contribution of the SA SZRL Fishery on the SA economy, 2001/02 to 2020/21[a]



[a] Estimates of output, GSP and household income are expressed in real 2020/21 terms.

Source: BDO EconSearch (2022j)

Figure 14-13 Total direct and indirect employment contribution of the SA SZRL Fishery on the SA economy, 2001/02 to 2020/21



Source: BDO EconSearch (2022j)

14.6. Net Economic Return

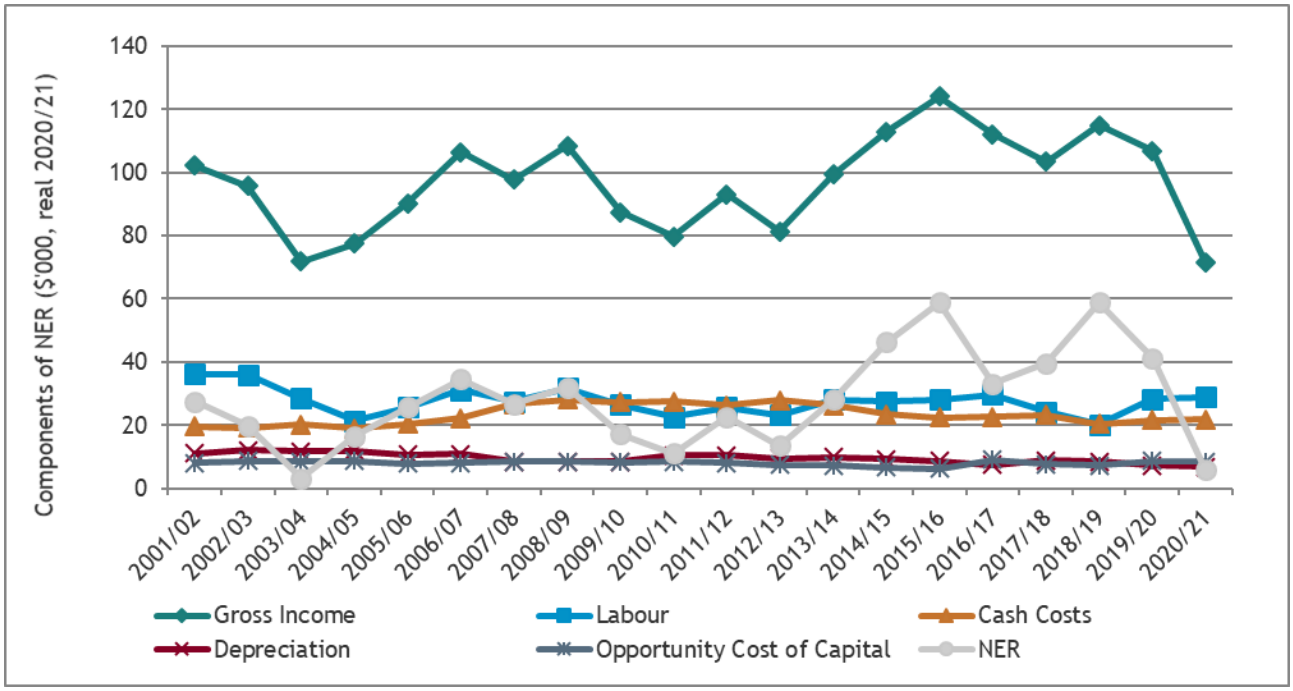
Net economic return (NER) is the return from a fishery after all costs have been met. It is equal to fishing revenue less fishing costs (cost of labour, capital including depreciation, materials and an allowance for "normal" profit). NER is maximised when economic efficiency is maximised. In this case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

Estimates of the NER generated in the SZRL Fishery are summarised in Figure 14-14 for the period 2001/02 to 2020/21. In 2001/02, the estimated real NER in the fishery was $27.4 million which, despite fluctuations and a general increase in between years, decreased to $6.0 million in 2020/21. This decrease occurred principally in 2020/21 through a decrease in GVP associated with the decreased demand for Rock Lobster from trade disputes between China and Australia leading to an unofficial ban on Rock Lobster exports into China.

NER expressed as a percentage of GVP is a useful indicator for analysing a fishery over time and for comparing different fisheries. Despite fluctuations, NER expressed as a percentage of GVP has decreased overall and was estimated to be 8 per cent in 2020/21 (Figure 14-15).

NER represents a return to the value of licences in the fishery. The aggregate value of licences in the SZRL Fishery and the return to capital value of the fishery are illustrated in Figure 14-16. The return to the aggregate value of licences in the fishery fluctuated between 2001/02 and 2020/21 but has decreased overall.

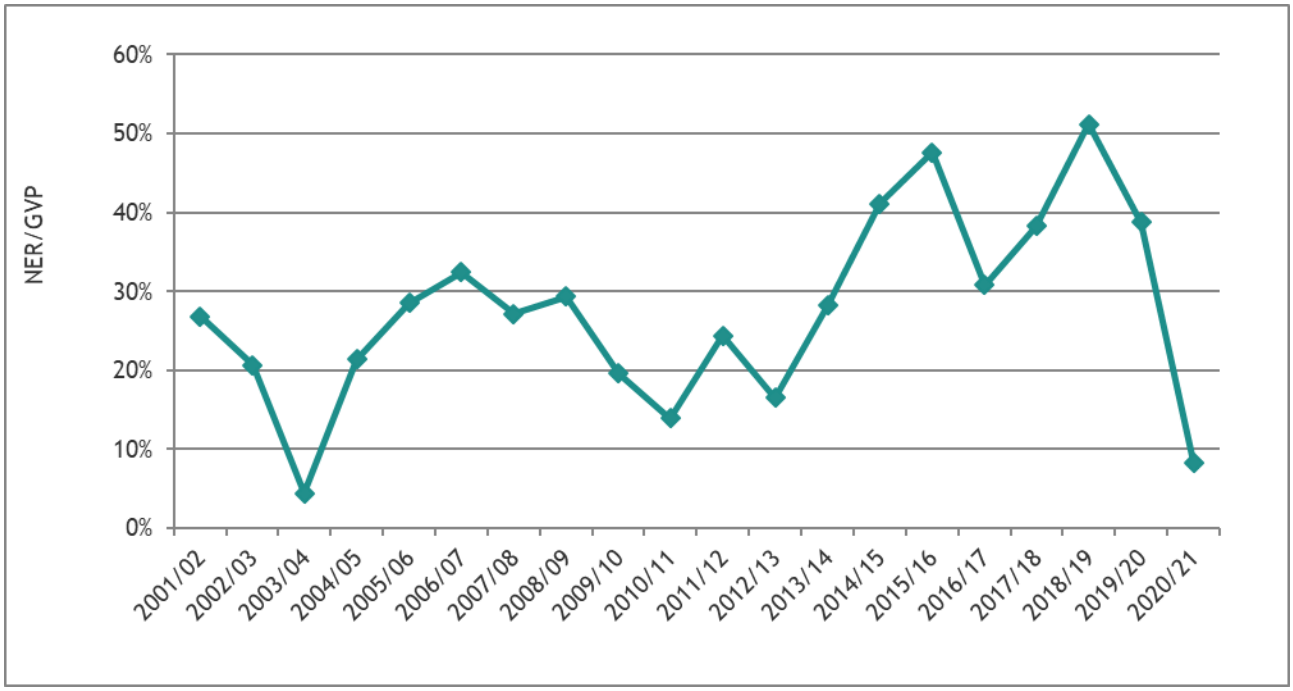
Figure 14-14 Net economic return in the SA SZRL Fishery, 2001/02 to 2020/21[a]



[a] All indicators in real 2020/21 terms.

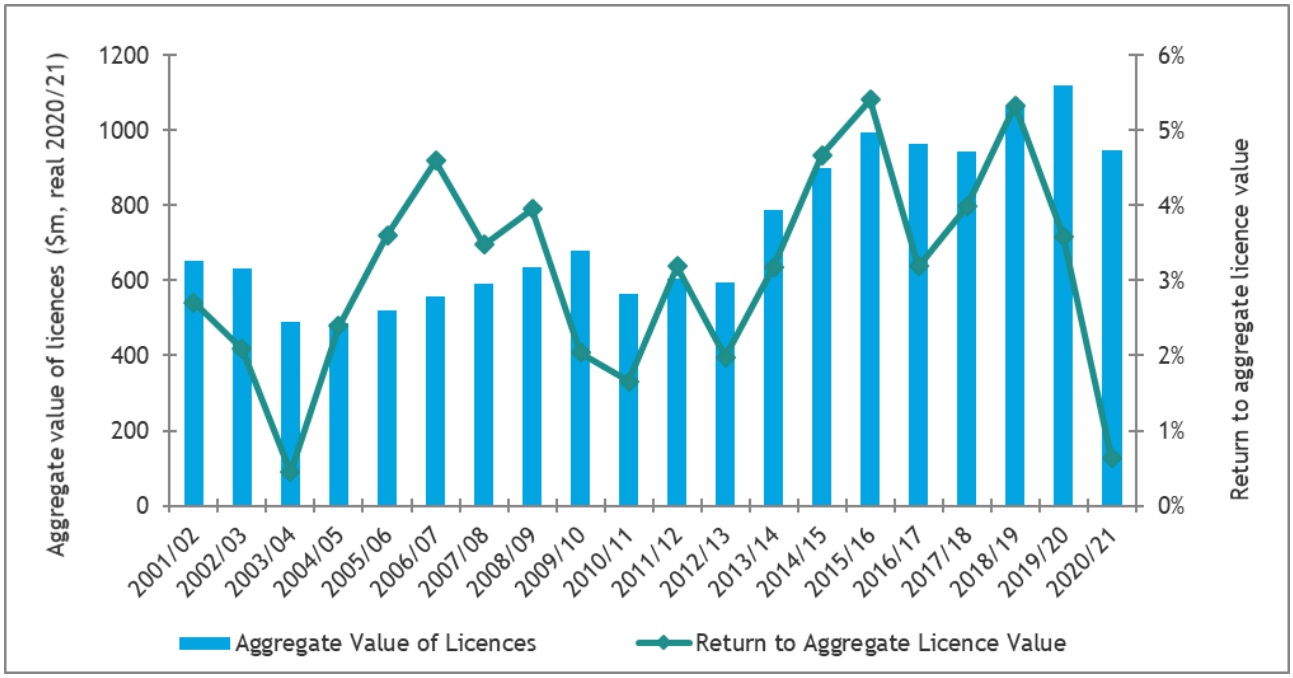
Source: BDO EconSearch (2022j)

Figure 14-15 Net economic return as a proportion of GVP in the SA SZRL Fishery, 2001/02 to 2020/21



Source: BDO EconSearch (2022j)

Figure 14-16 Aggregate value of licences and return to aggregage licence value in the SA SZRL Fishery, 2001/02 to 2020/21[a]



[a] The value of licences represents licence holders' estimates of the value of their fishing licence derived from survey responses. Estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Source: BDO EconSearch (2022j)

15. FISHERIES SUMMARY

15.1. Economic Objectives of SA Commercial Fisheries

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 many of these management plans and are required to be reported periodically to meet the obligations of Section 7 of the *Fisheries Management Act 2007* (see BDO EconSearch 2022a-j).

Over the last 20 years annual economic indicators have been prepared for each SA commercial fishery. The economic performances against stated objectives have been reported for each fishery in Sections 5 to 14. In this section, summary economic indicators comparing performance across fisheries are reported under the following headings:

- catch and gross value of production (GVP) (Section 15.2)
- management costs (Section 15.3)
- financial performance indicators (Section 15.4)
- contribution to the SA economy (Section 15.5)
- net economic return (Section 15.6).

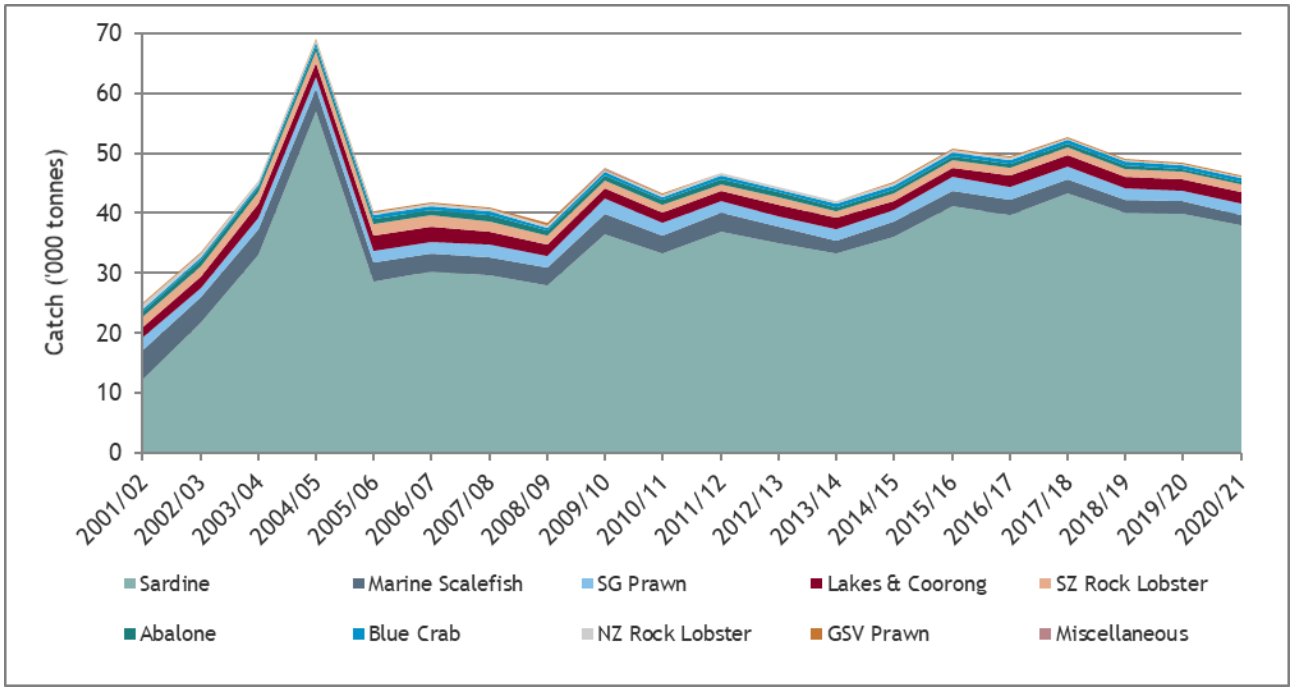
Indicators relating to the economic performance and objectives for the fisheries are reported for the period 2001/02 to 2020/21. It should be noted that economic indicators are based on different survey samples and techniques over time. Some of the difference between years is, therefore, attributable to sampling variability.

15.2. Catch and Gross Value of Production

The data shown in Figure 15-1 and Table 15-1 indicate that total catch in SA commercial fisheries followed an increasing trend between 2001/02 and 2020/21, despite year-to-year fluctuations. Total catch peaked in 2004/05 at 69,089 tonnes. The significant fall in total catch in 2005/06 was a result of a reduction in the TACC for the Sardine fishery. Overall between 2001/02 and 2020/21, total catch increased by 85 per cent, from 24,960 tonnes to 46,245 tonnes. (Figure 15-1). This index is strongly influenced by the Sardine Fishery. Excluding Sardines from Figure 15-1, for example, reveals that total catch across all fisheries other than Sardines decreased by 36 per cent between 2001/02 and 2020/21.

The GVP for SA commercial fisheries for the period 2001/02 to 2020/21 is shown in Figure 15-2 and Table 15-2, in real 2020/21 dollars. Catch, GVP and price indices for all fisheries for 2001/02 to 2020/21 are illustrated in Figure 15-3. Between 2001/02 to 2020/21 GVP across all fisheries declined by 35 per cent in real terms (Figure 15-3). Note that the GVP in 2001/02 was the highest values for the 20 year period and GVP in 2020/21 was the lowest value for the 20 year period. As the 2001/02 GVP was used as the base year, this emphasised the decline for the period. There was a significant fall in GVP in 2019/20 and 2020/21. This is both a result of the decline in price, which was caused by the impact of the COVID-19 pandemic and access to international markets, and a decline in catch in some of the fisheries with typically higher prices. Between 2018/19 and 2020/21 the decline in GVP was mainly attributable to the Southern Zone Rock Lobster Fishery ($43m decline), the Northern Zone Rock Lobster Fishery ($15m decline), the Abalone Fishery ($11m decline) and the Spencer Gulf Prawn Fishery ($7m decline). These fisheries generally have higher levels of GVP, and typically contribute more to total GVP than they did in both 2019/20 and 2020/21. Over the 20 year period there was a fall in average landed price and a rise in total catch.

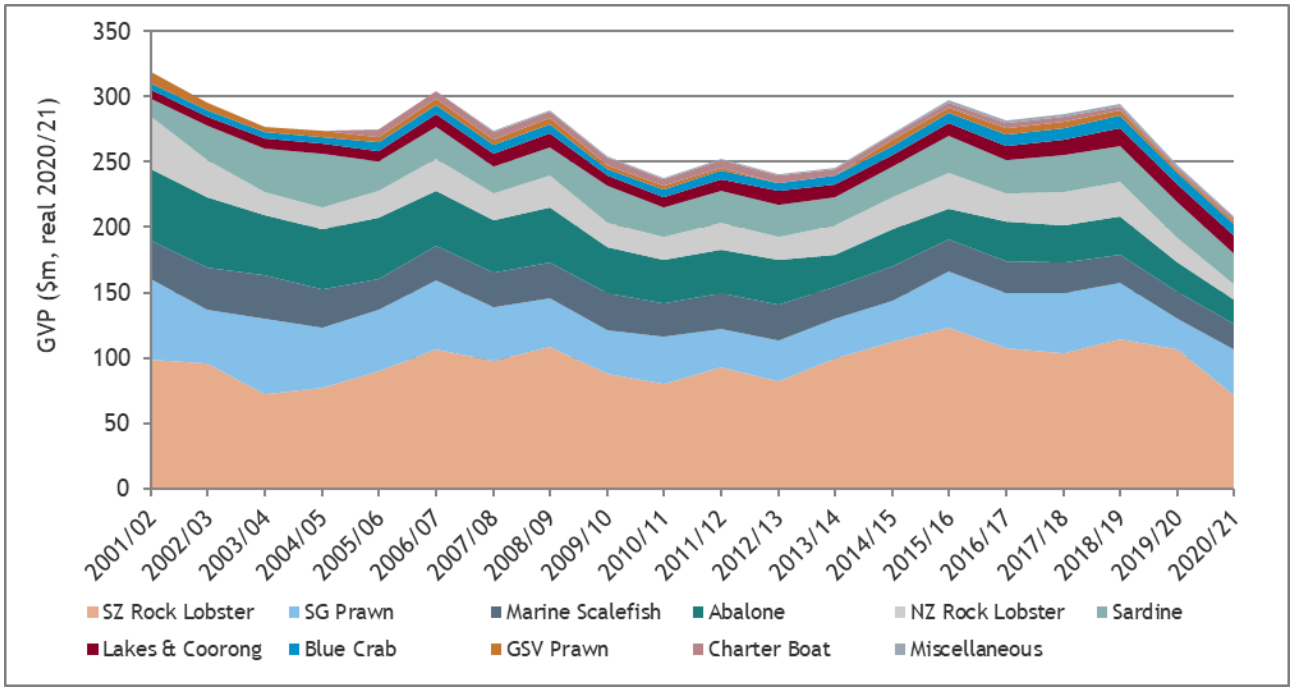
Figure 15-1 SA commercial fisheries catch, 2001/02 to 2020/21[a]



[a] Excludes catch from the Charter Boat Fishery.

Source: BDO EconSearch (2022a-j)

Figure 15-2 SA commercial fisheries GVP, 2001/02 to 2020/21[a]



[a] Estimates are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022a-j)

Table 15-1 Commercial fisheries catch, South Australia, 2001/02 to 2020/21 (tonnes)

Year	Abalone	GSV Prawn[a]	SG Prawn[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, Southern Calamari and bugs (49t of Octopus, 45t of Southern Calamari and 4t of Bugs 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 (2022a-j)

Table 15-2 Commercial fisheries gross value of production, South Australia, 2001/02 to 2020/21 ($m)

Year	Abalone	GSV Prawn[a]	SG Prawn[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	54	9	62	98	41	5	7	13	30	-	-	319
2002/03	54	6	41	96	28	5	7	27	31	-	-	296
2003/04	46	5	58	72	18	5	8	33	33	-	-	277
2004/05	46	5	45	77	17	5	8	41	30	-	-	274
2005/06	46	4	46	90	21	7	8	22	24	-	6	275
2006/07	42	4	53	106	24	7	10	25	26	-	6	305
2007/08	40	4	41	98	21	7	10	21	26	1	5	274
2008/09	41	4	38	108	25	7	11	22	27	1	5	290
2009/10	35	3	34	87	19	5	8	28	28	1	6	254
2010/11	33	3	36	80	17	6	8	23	26	1	5	238
2011/12	34	2	29	93	20	6	9	24	27	1	6	252
2012/13	34	0	32	82	18	6	11	24	28	1	6	241
2013/14	25	0	31	99	22	7	11	21	24	1	5	246
2014/15	28	5	32	112	25	7	9	24	26	1	4	272
2015/16	24	4	42	124	27	8	9	28	24	2	4	297
2016/17	30	5	42	108	22	9	10	26	25	2	4	281
2017/18	29	5	46	103	26	9	12	28	24	2	4	287
2018/19	30	4	43	115	26	9	14	27	21	2	3	295
2019/20	22	2	23	106	19	9	13	27	20	2	2	247
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.

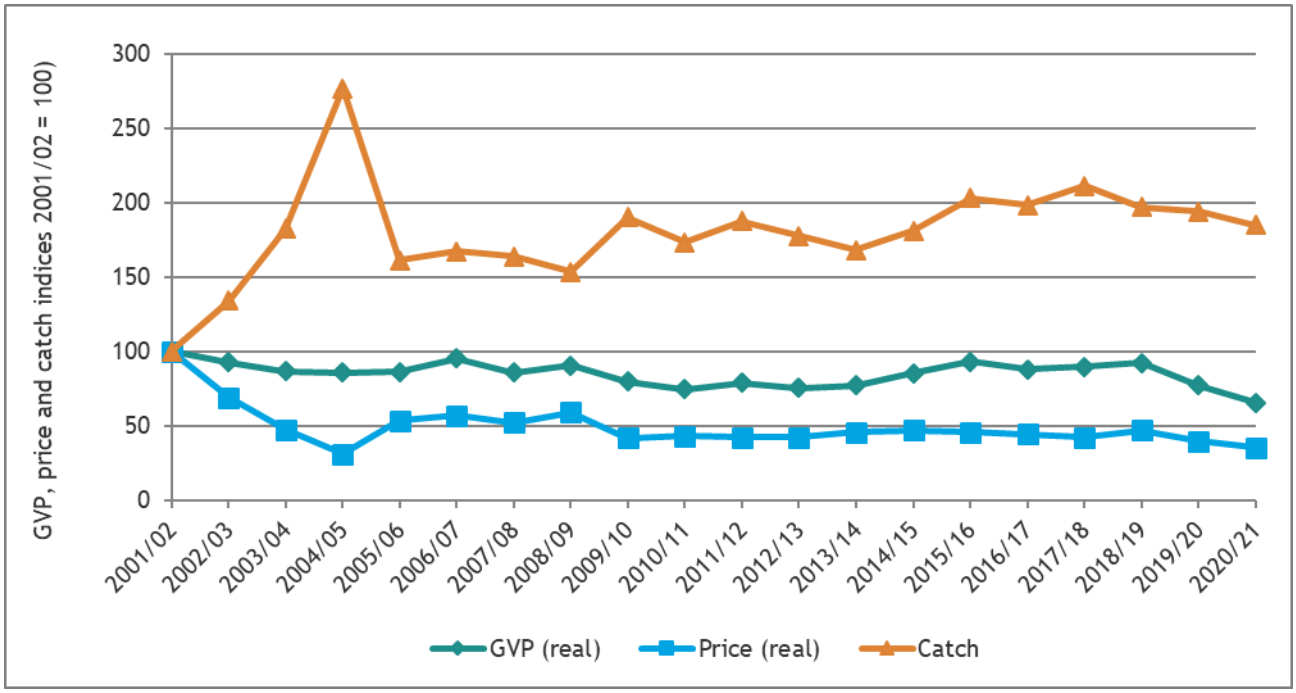
[c] Prior to 2007/08 catch from the Miscellaneous Fishery was included in the Marine Scalefish Fishery.

[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 (2022a-j)

Figure 15-4 shows that between 2001/02 and 2020/21 the 46 per cent decrease in nominal average price in SA commercial fisheries was equivalent to a 65 per cent fall in real price. The average landed real price per kilogram across all fisheries (in 2020/21 dollars) decreased from $12.78 in 2001/02 to $4.51 in 2020/21. As noted above, the decrease in the average landed real price per kilogram across all fisheries between 2001/02 to 2020/21 can be attributed principally to the increase in the absolute and relative contribution of the (relatively low unit value) Sardine catch. The notable decline in prices in 2019/20 and 2020/21 is attributable to the impact of the COVID-19 pandemic and access to international markets.

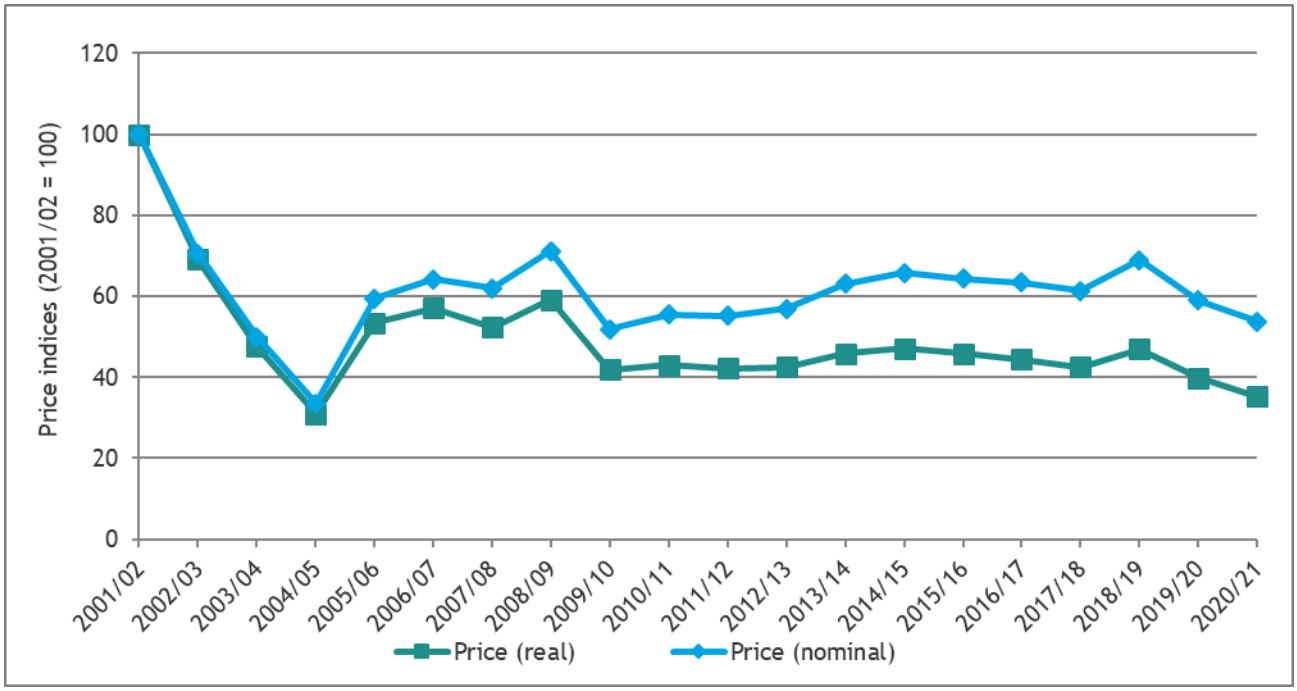
Figure 15-3 GVP, price and catch indices for SA commercial fisheries[a]



[a] Estimates of GVP and price are expressed in real 2020/21 dollars.

Source: BDO EconSearch (2022a-j)

Figure 15-4 Price indices for SA commercial fisheries [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 CPI (consumer price index) has been used to make this adjustment (ABS 2021a). It enables meaningful comparisons of prices to be made between years.

Source: BDO EconSearch (2022a-j)

15.3. Management Costs

Table 15-3 shows the cost of management for all SA commercial fisheries for 2020/21. Licence fees as a proportion of GVP for SA commercial fisheries are illustrated in Figure 15-5 for the period 2001/02 to 2020/21. The ratio for all fisheries increased from 2.4 per cent in 2001/02 to 6.3 per cent in 2020/21, peaking at the highest value for the 20-year period.

Over the 20-year period management costs as a percentage of GVP in the Marine Scalefish, Gulf St Vincent Prawn, Abalone, Charter Boat and Northern Zone Rock Lobster fisheries have remained higher than the SA average. The percentage in the Blue Crab, Lakes and Coorong, Sardine, Southern Zone Rock Lobster and Spencer Gulf Prawn fisheries has been below the SA average over the same period.

Until 2010/11 the Charter Boat Fishery management cost as a percentage of GVP was below the SA average, but subsequently increased and remained above average until 2019/20. In 2019/20, the percentage in the Charter Boat Fishery reached the highest level for any fishery over the 20 year period at 20.9 per cent. It then declined significantly in 2020/21 due to Government waiving a significant proportion of fees to aid operators that had been significantly impacted as a result of COVID-19. The percentage in the Gulf St Vincent Fishery increased significantly in 2020/21 to 19.6 per cent, the highest percentage of all fisheries in 2020/21. The other fisheries with percentages that peaked in 2020/21 were Northern Zone Rock Lobster (13.8 per cent) and Abalone (13.3 per cent). The rises in 2020/21 are mainly attributable to decreased GVP in these fisheries as discussed in Section 15.2.

The average management cost per licence for SA commercial fisheries is illustrated in Figure 15-6, in real 2020/21 dollars. The average cost per licence in all fisheries increased by 7 per cent from $29,261 in 2001/02 to $31,165 (weighted average) in 2020/21, reflecting both a decrease in the total number of commercial licences in SA and an increase in total management costs (Figure 15-6).

Table 15-3 Commercial fisheries cost of management, 2020/21 ($m)[a]

	Licence Fees ($'000)	GVP ($'000)	Fees/ GVP (%)	Catch [b] (t)	Fees/ Catch ($/kg)	Licence Holders (no.)	Fees/ Licence ($/licence)
Abalone	2,431	18,337	13.3%	493	$4.93	34	$71,505
Charter Boats [c]	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	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	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**

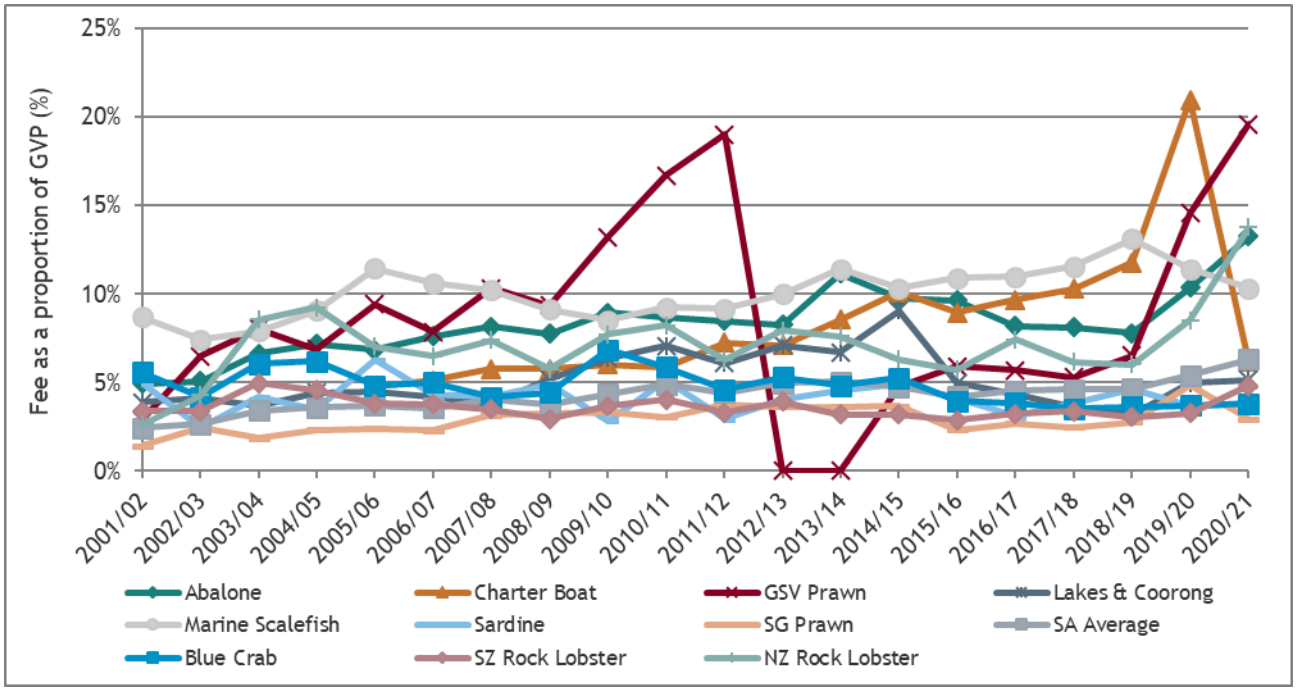
[a] All values are expressed in real 2020/21 dollars.

[b] 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.

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

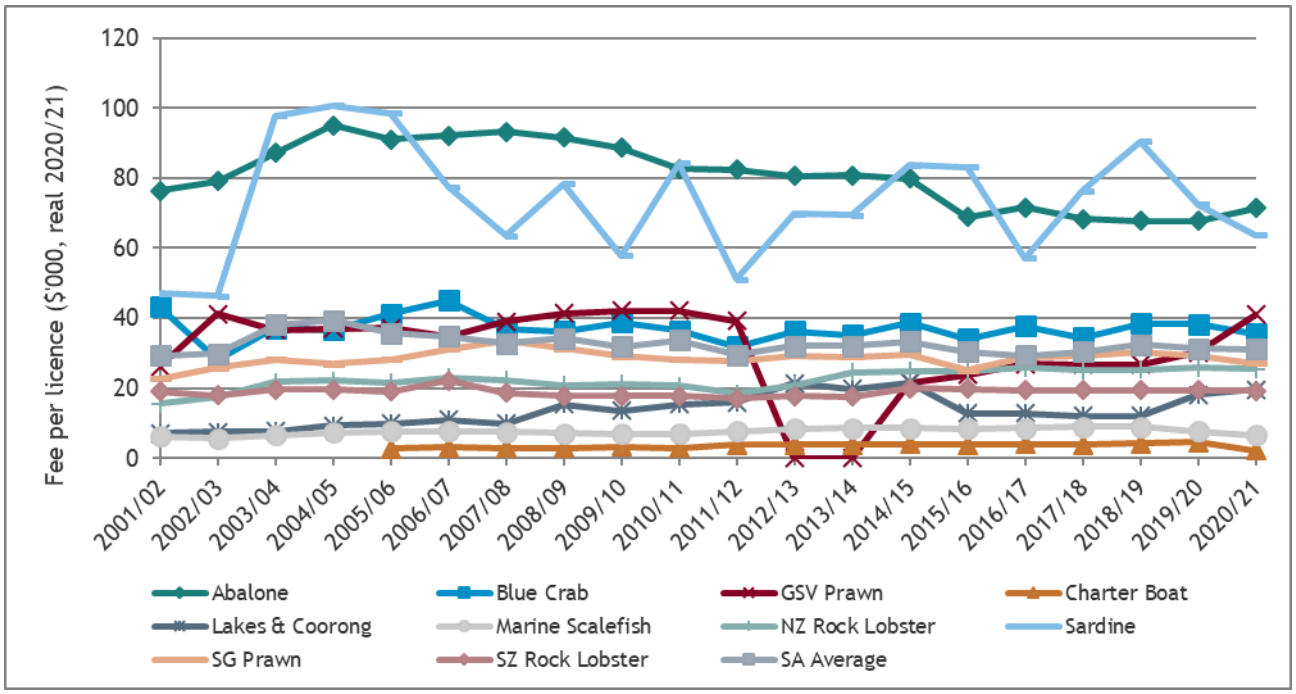
Source: BDO EconSearch (2022a-j) and BDO EconSearch analysis

Figure 15-5 Management fee as a proportion of GVP, SA commercial fisheries, 2001/02 to 2020/21



Source: BDO EconSearch (2022a-j)

Figure 15-6 Management fee per licence, SA commercial fisheries, 2001/02 to 2020/21[a]



[a] All values are expressed in real 2020/21 dollars.

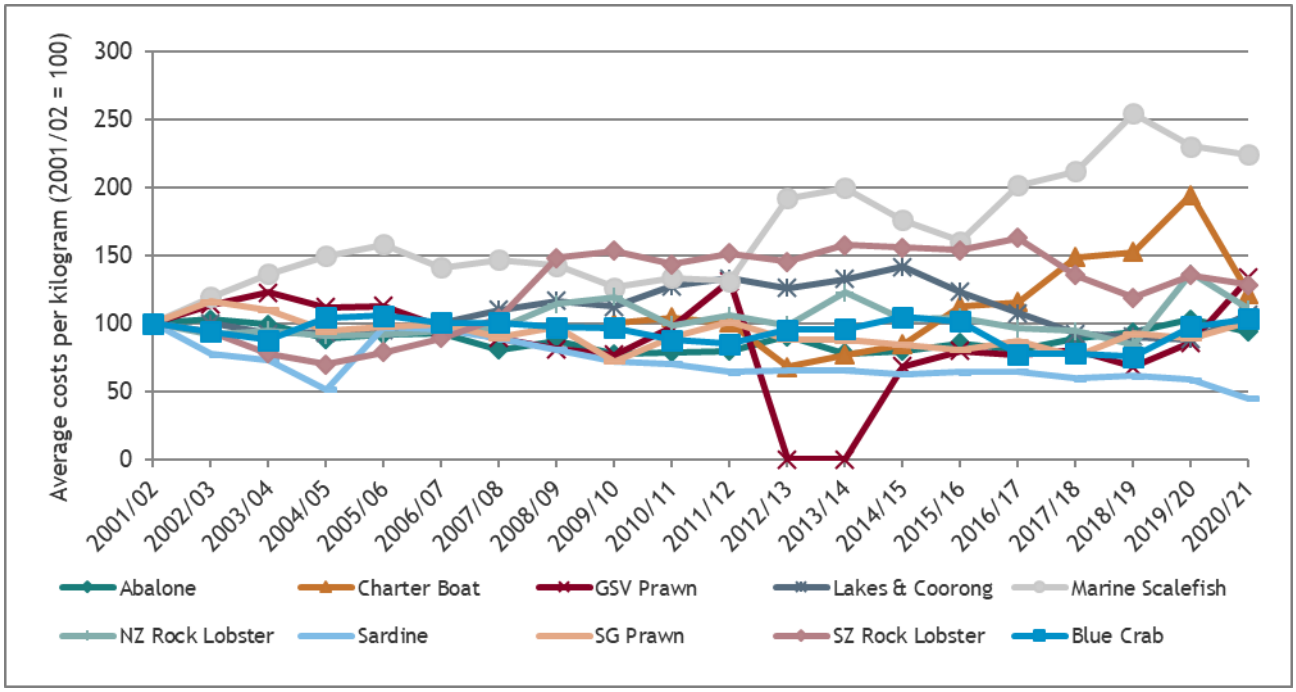
Source: BDO EconSearch (2022a-j)

15.4. Financial Performance

15.4.1. Costs price squeeze

Cost indices for the SA commercial fisheries for the years 2001/02 to 2020/21 are summarised in Figure 15-7. These indicators are derived from the average real (2020/21 dollars) cost per kilogram of catch. Between 2001/02 to 2020/21 the average real cost per kilogram increased across all commercial fisheries except for the Abalone and Sardine fisheries (Figure 15-7). The increase in cost per kilogram was greatest in the Marine Scalefish, Gulf St Vincent Prawn, Southern Zone Rock Lobster and Charter Boat fisheries. Over the same period the average real price across all commercial fisheries decreased by 65 per cent. This decline was mainly due to a change in 'product mix' where the proportion of relatively low value fish (particularly Sardines) in the state's total catch increased significantly over the period and thereby brought down the weighted average price. The recent decline in prices in 2019/20 and 2020/21 is attributable to the impact of the COVID-19 pandemic and access to international markets.

Figure 15-7 Cost indices for SA commercial fisheries, 2001/02 to 2020/21[a,b]



[a] Lakes and Coorong Fishery has 2002/03 as the base year (i.e. 2002/03=100)

[b] Charter Boat Fishery has 2009/10 as the base year (i.e. 2009/10=100).

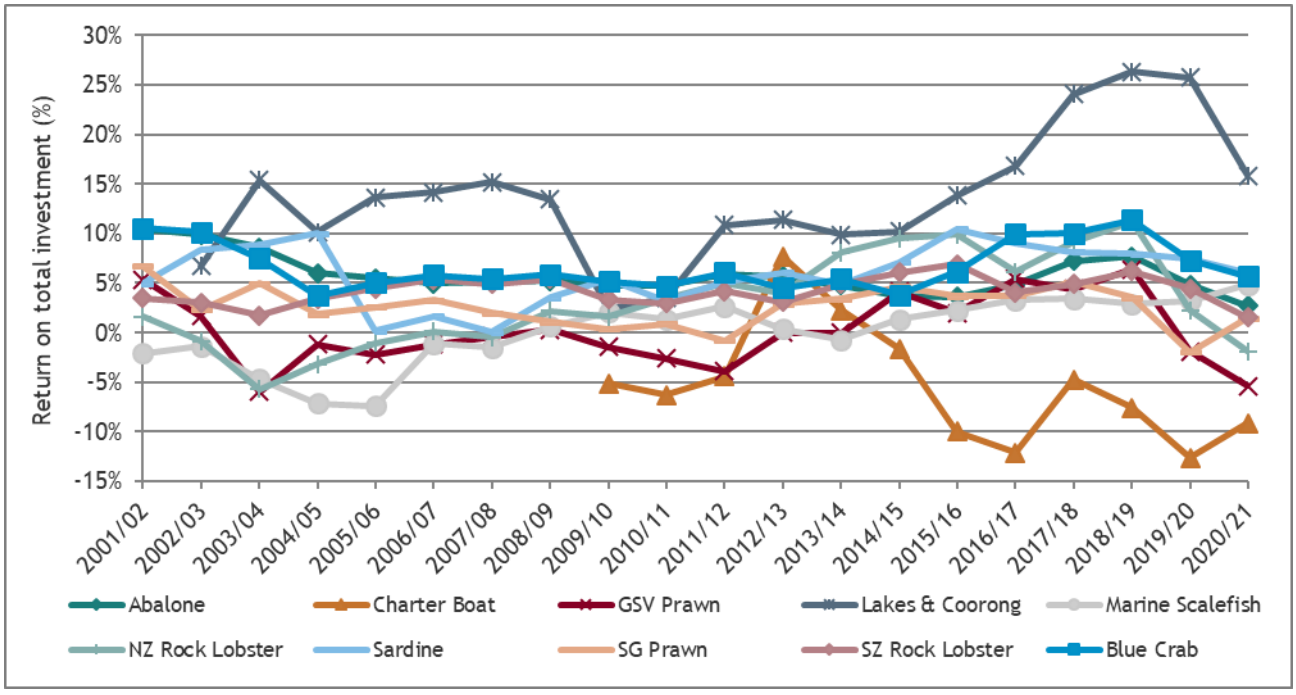
Source: BDO EconSearch (2022a-j)

15.4.2. Return to capital

Estimates of the average rate of return to capital for all commercial fisheries are illustrated in Figure 15-8. Capital includes boats, licence/quota, fishing gear, sheds, vehicles and other capital items used as part of the fishing enterprise. Rate of return to capital is calculated to be profit at full equity as a percentage of total capital employed.

The average rate of return to total capital in 2001/02 was positive for all fisheries except Marine Scalefish. Since then there has been a declining trend in rates of return across most fisheries including the Gulf St Vincent Prawn, Abalone, Spencer Gulf Prawn and Charter Boat fisheries. Rates of return to total capital have increased in the Lakes and Coorong, Marine Scalefish and Sardine fisheries. In the Blue Crab, Northern Zone Rock Lobster and Southern Zone Rock Lobster fisheries, rates of return to total capital were increasing from 2001/02 to 2018/19 before they declined in 2019/20 and 2020/21 (Figure 15-8). The Northern Zone Rock Lobster, Gulf St Vincent Prawn, Lakes and Coorong, Blue Crab, Southern Zone Rock Lobster and Abalone fisheries all declined significantly between 2018/19 and 2020/21, as shown in Figure 15-8. This is attributable to a significant decline in GVP in these fisheries as discussed in Section 15.2. Financial performance for all SA commercial fisheries is detailed in Table 15-4 for 2020/21.

Figure 15-8 Return to capital in SA commercial fisheries, 2001/02 to 2020/21



Source: BDO EconSearch (2022a-j)

Table 15-4 Commercial fisheries financial performance, average per boat, 2020/21

		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] Total for whole fishery.

Source: BDO EconSearch (2022a-j)

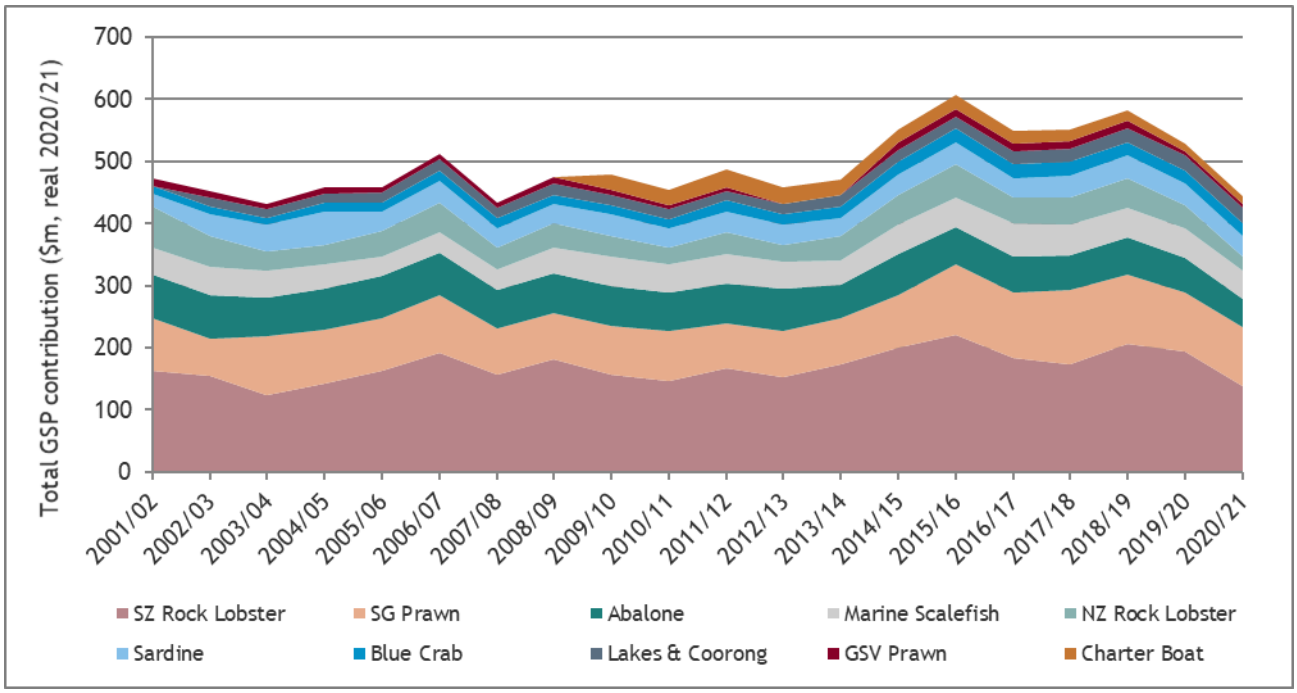
15.5. Contribution to SA Economy

Figure 15-9 and Figure 15-10 illustrate the contribution by individual fisheries to the total economic contribution (GSP and employment) of the commercial fisheries on the SA economy for the 20 years, 2001/02 to 2020/21. Total economic contribution refers to the direct fishing industry contributions (fishing, processing, etc.) and the indirect contributions on other sectors of the economy. The economic contribution of all SA commercial fisheries is detailed in Table 15-5 for 2020/21.

For those commercial fisheries for which the analysis was undertaken, total contribution to GSP in the South Australian economy was $445 million in 2020/21. The largest contributions to the total GSP contribution were by the Southern Zone Rock Lobster ($137m), Spencer Gulf Prawn ($96m), Abalone ($46m) and Marine Scalefish ($45m) fisheries (Table 15-5).

Total employment contribution of the fisheries in 2020/21 was a little below that in 2001/02, as illustrated in Figure 15-10. The Charter Boat and Lakes and Coorong fisheries were not counted in this 2001/02 estimate, indicating that employment in the individual fisheries has decreased more significantly overall since 2001/02. This is most likely due to an improvement in productivity across all sectors as well, relatedly, as a fall in the number of licences.

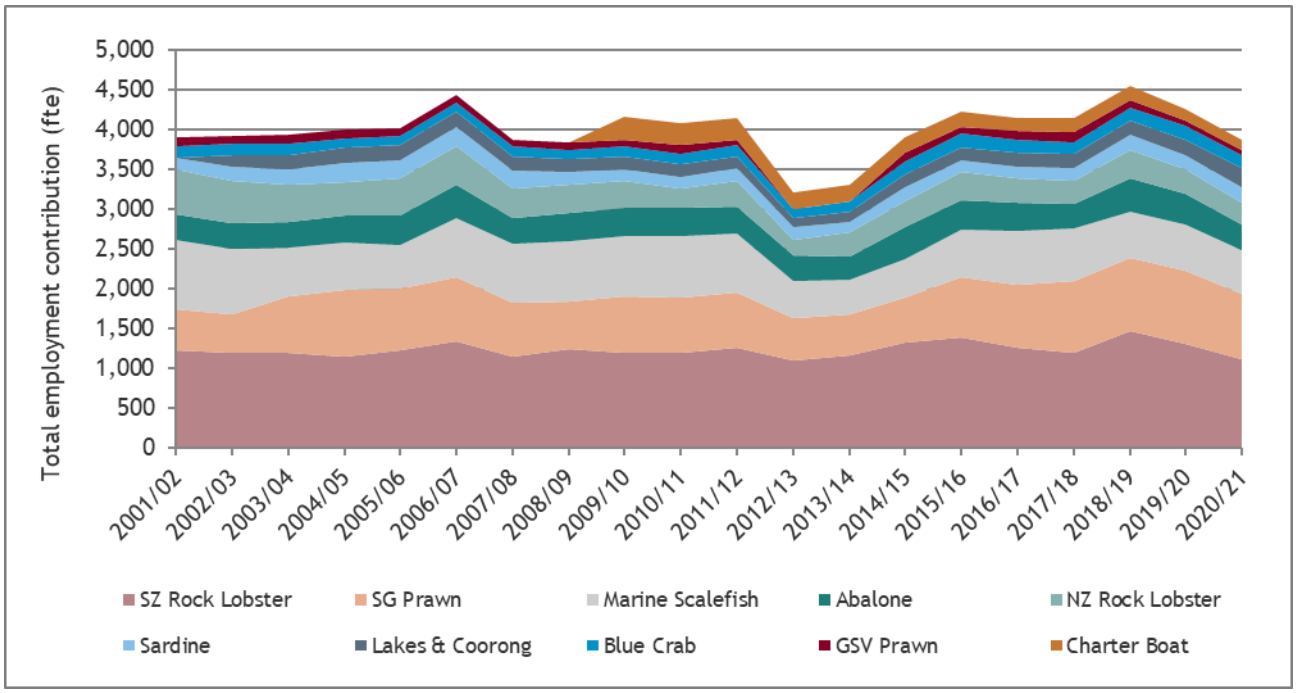
Figure 15-9 Total gross state product contribution of SA commercial fisheries to the state economy, 2001/02 to 2020/21[a]



[a] Values are expressed in real 2020/21 dollars. Prior to 2012/13 estimates include the contribution of the West Coast Prawn Fishery as well as the Spencer Gulf Prawn Fishery. From 2012/13 to 2020/21 contributions are calculated for the Spencer Gulf Prawn Fishery only with the exception of 2016/17.

Source: BDO EconSearch (2022a-j)

Figure 15-10 Total employment contribution of SA commercial fisheries to the SA economy, 2001/02 to 2020/21[a]



[a] Prior to 2012/13 estimates include the contribution of the West Coast Prawn Fishery as well as the Spencer Gulf Prawn Fishery. From 2012/13 to 2020/21 contributions are calculated for the Spencer Gulf Prawn Fishery only with the exception of 2016/17.

Source: BDO EconSearch (2022a-j)

Table 15-5 Commercial fisheries economic contribution, 2020/21

	Abalone	Charter Boats	Gulf St Vincent Prawn	SGWC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs	Marine Scalefish	Sardines	Lakes and Coorong	All Fisheries
Output ($m)											
Direct											
Fishing	18.3	2.9	2.1	35.7	71.7	11.7	8.4	19.1	24.0	13.7	207.6
Downstream	15.2	5.7	2.2	35.9	29.8	6.1	7.5	8.7	2.2	6.6	119.9
All other sectors (indirect)	56.9	14.4	7.3	91.4	125.3	29.5	18.4	57.3	22.1	19.5	442.3
Total	**90.5**	**23.0**	**11.6**	**163.0**	**226.8**	**47.3**	**34.4**	**85.1**	**48.3**	**39.8**	**769.8**
Total/Direct	2.7	2.7	2.7	2.3	2.2	2.7	2.2	3.1	1.8	2.0	2.4
Total/Tonne ($)	$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 (indirect)	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	$9,200
Employment (fte jobs)											
Direct											
Fishing	51	32	18	116	327	89	29	211	82	109	1,064
Downstream	125	29	19	305	194	39	58	55	13	40	876
All other sectors (indirect)	148	68	33	413	584	139	82	274	104	88	1,934
Total	**323**	**128**	**70**	**834**	**1,105**	**268**	**169**	**540**	**199**	**238**	**3,874**
Total/Direct	1.8	2.1	1.9	2.0	2.1	2.1	2.0	2.0	2.1	1.6	2.0
Total/Tonne	0.7	0.0	0.6	0.5	0.8	1.0	0.3	0.3	0.0	0.1	0.1
Household Income ($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 (indirect)	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

Source: BDO EconSearch (2022a-j)

15.6. Net Economic Return

Net economic return 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). Net economic return is maximised when economic efficiency is maximised. Net economic return for all SA commercial fisheries is detailed in Table 15-6 for 2020/21.

Net economic return expressed as a percentage of GVP is a useful indicator for analysing a fishery over time and for comparing different fisheries. This indicator is illustrated in Figure 15-11 and shows an increase in a number of fisheries. Net economic return as a proportion of fishery GVP was highest in the Abalone Fishery for the period 2001/02 to 2013/14. In 2014/15 and 2015/16 the Southern Zone Rock Lobster Fishery had the highest NER to GVP ratio and in 2016/17 to 2020/21 it was the Lakes and Coorong Fishery. Net economic return as a proportion of fishery GVP declined in all fisheries except for the Spencer Gulf Prawn and Marine Scalefish Fisheries between 2019/20 and 2020/21 (Figure 15-11).

Net economic return represents a return to the value of licences in the fishery. The return to capital value of the fisheries is illustrated in Figure 15-12. Over the whole period 2001/02 to 2020/21 there was an increasing trend in the return to capital value in all fisheries except for the Gulf St Vincent Prawn, Spencer Gulf Prawn, Abalone and Blue Crab Fishery. The Northern Zone Rock Lobster and Southern Zone Rock Lobster fisheries had increasing trends until 2019/20 before declining significantly in 2020/21. The return to capital value in all fisheries except for the Spencer Gulf Prawn and Marine Scalefish fisheries declined between 2019/20 and 2020/21 (Figure 15-12).

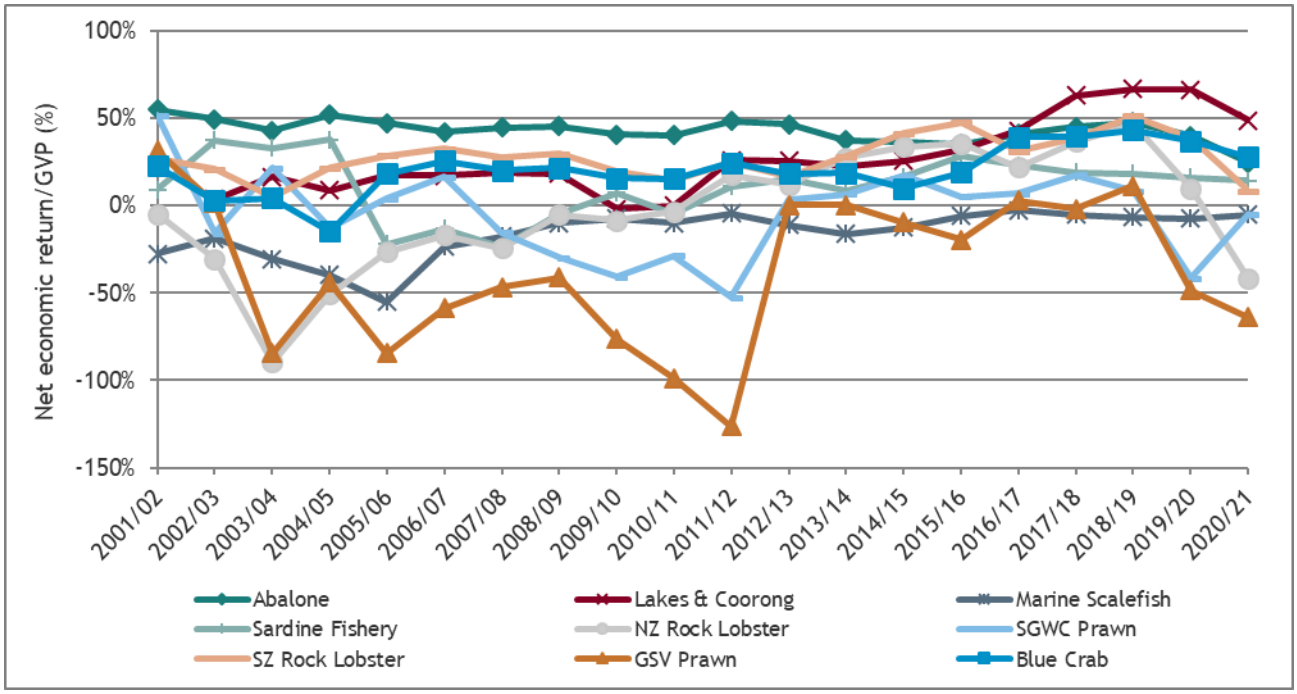
Table 15-6 Commercial fisheries net economic return, 2020/21

	Abalone	GSV Prawn	SG Prawn	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
Net Economic Return	**4**	**-1**	**-2**	**6**	**-5**	**2**	**-1**	**3**	**7**	**14**
NER/GVP	24%	-64%	-5%	8%	-42%	28%	-5%	14%	49%	5%

[a] Excludes the Charter Boat Fishery

Source: BDO EconSearch (2022a-j)

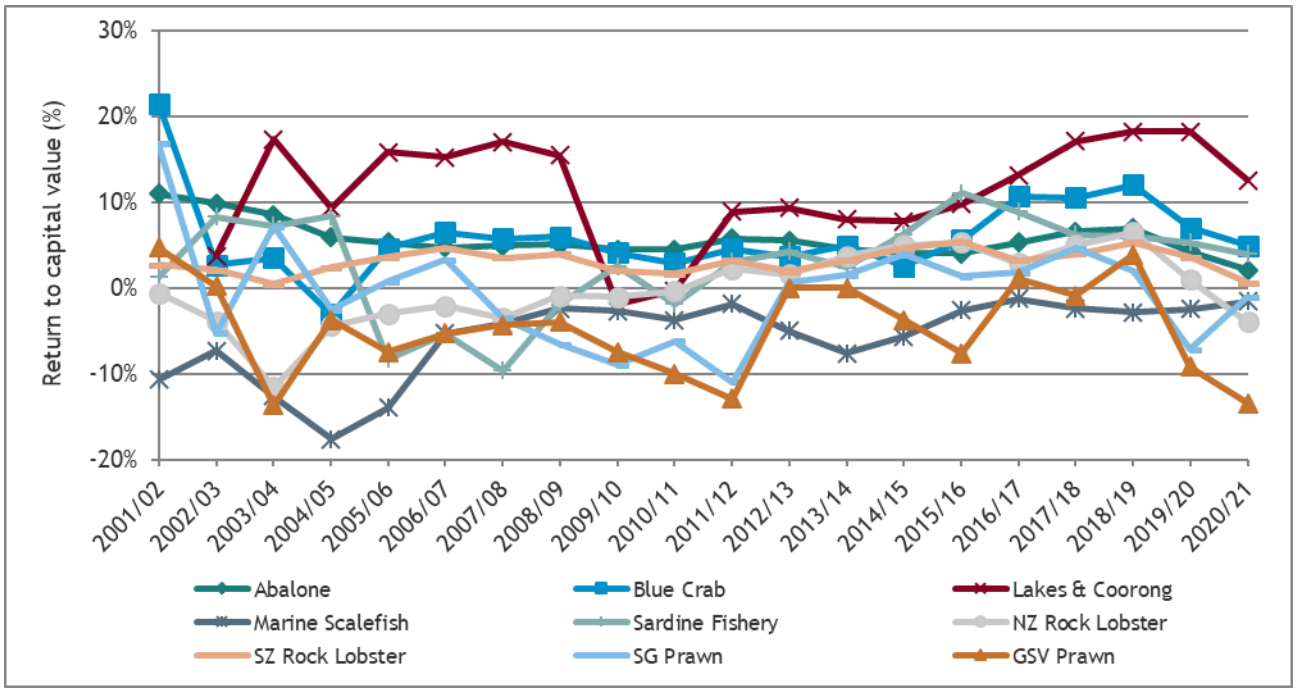
Figure 15-11 Net economic return as a proportion of GVP in SA commercial fisheries, 2001/02 to 2020/21[a]



[a] Excludes the Charter Boat fishery.

Source: BDO EconSearch (2022a-j)

Figure 15-12 Return to capital in SA commercial fisheries, 2001/02 to 2020/21[a]



[a] Excludes the Charter Boat Fishery.

Source: BDO EconSearch (2022a-j)

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Disclaimer

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

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

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

APPENDIX 1 Economic Indicators Defined

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, pots, lines, etc.)
- repairs & maintenance: ongoing (slipping, painting, overhaul motor).

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.

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

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.

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).

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

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 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.

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.

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.

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.

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.

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. 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.

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).

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