

Economic Indicators
for the SA Northern Zone
Rock Lobster Fishery,
2005/06

A report prepared for
Primary Industries and Resources South Australia

Prepared by



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Abbreviations

ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
CPI	consumer price index
EBIT	earnings before interest and tax
FMC	Fishery Management Committee
FRDC	Fisheries Research and Development Corporation
fob	free on board
fte	full time equivalent
GDP	gross domestic product
GSP	gross state product
GVP	gross value of production
NZRL	Northern Zone Rock Lobster
PIRSA	Primary Industries and Resources South Australia
RBA	Reserve Bank of Australia
R&M	repairs and maintenance
SA	South Australia
SARDI	South Australian Research and Development Institute

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1. Introduction

All the major fisheries in South Australia (SA) operate in accordance with fishery management plans that determine the primary management objectives of the fishery. Economic performance indicators are a feature of these plans and annual reports on them are required for the Minister for Agriculture, Food and Fisheries to meet the obligations of section 20 of the *Fisheries Act 1982*.

This report is the ninth annual economic indicators report for the SA Northern Zone Rock Lobster (NZRL) fishery. The first report, prepared for 1997/98, entitled *Economic Indicators for the SA Northern Zone Rock Lobster Fishery 1997/98* (EconSearch 1999a), reported on the results of an initial economic survey of the South Australian NZRL fishery. The second and third annual reports, prepared for 1998/99 and 1999/00 respectively, provided an update of the 1997/98 economic indicators (EconSearch 1999b and 2001). The fourth annual report outlined the fishery's economic performance in 2000/01 based on the results of a second survey of licence holders (EconSearch 2002). The fifth, sixth and seventh reports, prepared for 2001/02 to 2003/04 respectively, provided an update of the economic indicators based on the second survey of licence holders (EconSearch 2003, 2004 and 2005). The eighth report, prepared for 2004/05 reported the results of a third survey of licence holders, conducted in 2006 (EconSearch 2006a).

The objective of this report, *Economic Indicators for the SA Northern Zone Rock Lobster Fishery 2005/06*, was to provide an update of the fishery's recent economic performance based on the third licence holder survey.

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

- gross value of production (catch and price);
- the cost of management of the fishery;
- a summary of factors that affect costs in the fishery;
- financial performance indicators (income, costs, profit, and return on investment);
- economic impact of the fishery, both local and state;
- economic rent;
- external factors influencing the economic condition of the fishery; and
- rock lobster exports (quantity and value).

For purposes of comparison, summary economic indicators for all South Australian commercial fisheries, up to 2004/05, are presented in Appendix 3.

2. Method of Analysis and Definition of Terms

2.1 Survey of Licence Holders in the Fishery, 2004/05

The questionnaire for the 2004/05 survey was based on the previous surveys conducted in 1997/98 and 2000/01¹. It was drafted by the consultants in consultation with the Industry Extension Officer (Mr Roger Edwards).

In February 2006, all licence holders were sent an introductory letter encouraging them to participate in the survey. Licence holders were then contacted and face-to-face surveys were carried out over the period March to April 2006. A total of 26 licence holders participated in the survey, accounting for 49 per cent of total active boats in the fishery². Thus, the economic indicators for 2004/05 were survey-based estimates.

2.2 Updating the Survey Results, 2005/06

The 2005/06 economic indicators for the Northern Zone Rock Lobster (NZRL) fishery were derived using a range of primary and secondary data and survey-based 2004/05 indicators. The following information was used to adjust the 2004/05 indicators to reflect the fishery's performance in 2005/06:

- SARDI data were used to reflect changes in catch size and its value between 2004/05 and 2005/06. Catch and value data were used to determine the gross income in the fishery.
- Changes in the number of licences in the fishery were provided by PIRSA. This information was used to present performance indicators on a 'per licence holder' basis.
- Information from SARDI on the change in fishing effort (number of days fished) between 2004/05 and 2005/06 was used to adjust the costs of inputs that were assumed to vary with fishing effort. These inputs included fuel, repairs and maintenance (R&M), bait and provision costs.
- Price information from input suppliers was used to adjust prices that may have changed, for example, fuel and bait.
- The consumer price index (CPI) for Adelaide was used to adjust the cost of inputs to reflect local levels of inflation (ABS 2006).
- Information from PIRSA on new boat registrations in the fishery during 2005/06, and information from the 2004/05 survey on the value of boats were used to compare the value of new capital entering the fishery with the value of capital depreciation in the fishery.

¹ Surveys conducted in 1997/98 and 2000/01 are described in EconSearch (2005a).

² 15 licence holders indicated that they leased their licence/full quota to other licence holders in the fishery, accordingly, the total number of boats in the fishery is less than the total number of licences.

2.3 Definition of Terms³

Gross value of production (GVP) is the total year's catch for the whole fishery valued at the landed beach price.

Gross income (Total boat cash receipts) is the income received by the individual licence holder from the sale of fish prior to any deductions for freight and selling charges.

Cash costs (Total boat fixed and variable costs) include the payments for hired labour and materials and services (including payments on capital items subject to leasing, rent, interest, licence fees and repairs and maintenance). If family or other labour were unpaid, an estimate of the cost of labour was made based on the time spent on fishing business related activity.

Cash operating surplus (Boat cash income) is the difference between gross income and total cash costs. It has been calculated with the imputed value of unpaid labour included in cash costs.

Depreciation is a non-cash cost representing the wear and tear on capital items during the year. It has been calculated using information on the age, current value and current replacement cost of each item. This was to be used to determine the depreciation rate of fishing equipment.⁴

Earnings before tax is defined as cash operating surplus less depreciation.

Earnings before interest and tax (Boat business profit) is defined as cash operating surplus less depreciation plus interest.

Capital is defined as the value placed on assets employed by the fishing business. It includes the total gross value of the boat, including the value of the hull, engine and other on-board and shore based plant, equipment and structures. Estimates are also reported for the value of licences.

Rate of return to fishing gear and equipment is calculated by expressing earnings before interest and tax as a percentage of the capital value of fishing gear and equipment. The rate of return to fishing gear and equipment provides an indication of the impact of management changes on the fishery.

Rate of return to total capital is calculated by expressing earnings before interest and tax as a percentage of total capital. This gives a measure of the economic performance of the fishery for those interested in investing in a boat and licence.

³ Where possible definitions have been kept consistent with those used by Brown (1997) in ABARE's *Australian Fisheries Survey Report*.

⁴ An allowance for depreciation of a capital item was estimated using the formula $(R-C)/A$ where R = replacement cost of the item, C = current value of the item and A = age of the item in years.

3. Economic Indicators for the SA Northern Zone Rock Lobster Fishery

3.1 Gross Value of Production

The data shown in Table 3.1 for the period 1990/91 to 2005/06 indicate that the total rock lobster catch in the northern zone from 1993/94 to 1996/97 was significantly below the catch levels earlier in the decade. This reduced catch level can be largely attributed to a combination of pot reductions and reductions in the number of days available for fishing in the fishery. Catch levels trended upwards between 1996/97 and 1998/99, but have declined significantly since. This declining trend was reversed in 2005/06 when the catch increased to 476 tonnes, an increase of 7 per cent compared to the previous year.

Table 3.1 South Australian Rock Lobster catch and value of catch, 1990/91 to 2005/06

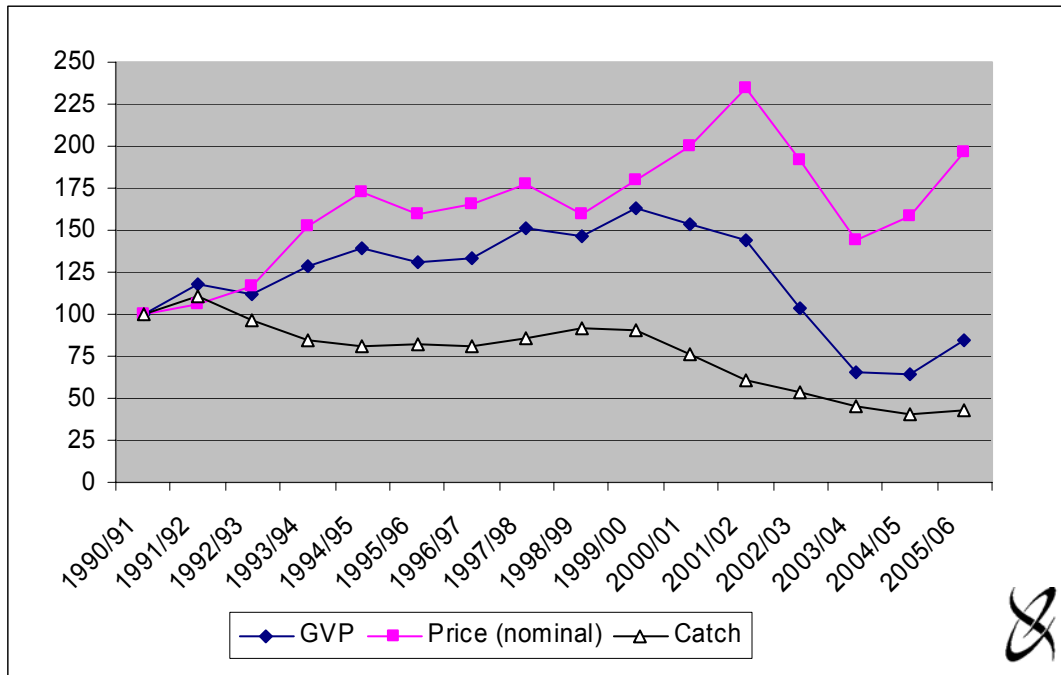
	Southern Zone		Northern Zone		South Australia	
	(tonnes)	(\$m)	(tonnes)	(\$m)	(tonnes)	(\$m)
1990/91	1,562	26.7	1,104	18.2	2,666	44.9
1991/92	1,940	36.3	1,222	21.4	3,162	57.8
1992/93	1,754	34.8	1,064	20.5	2,818	55.3
1993/94	1,669	43.2	930	23.4	2,599	66.6
1994/95	1,720	48.6	891	25.5	2,611	74.0
1995/96	1,684	44.6	903	23.8	2,587	68.4
1996/97	1,635	47.0	893	24.4	2,528	71.4
1997/98	1,680	50.9	942	27.7	2,622	78.6
1998/99	1,713	47.2	1,016	26.7	2,729	73.9
1999/00	1,717	51.2	1,001	29.8	2,718	81.0
2000/01	1,716	54.7	846	28.0	2,562	82.7
2001/02	1,717	65.7	675	26.2	2,392	91.9
2002/03	1,766	63.8	595	18.8	2,361	82.7
2003/04	1,896	49.3	504	12.0	2,400	61.4
2004/05	1,897	54.4	446	11.6	2,343	66.0
2005/06	1,889	65.7	476	15.4	2,365	81.2

Source: SARDI Aquatic Sciences

The decrease in catch since 1998/99 corresponds with a decrease in total effort in the fishery. In 1998/99 total days fished was approximately 12,961 while in 2005/06 this had decreased by almost 32 per cent to 8,685. The decline in catch over the period since 1998/99 is also consistent with a decline in lobster abundance which is discussed further in Section 4.1. A quota system was introduced in the fishery in October 2003 for the 2003/04 season, with a total allowable catch (TAC) of 625 tonnes. The TAC was then reduced for the 2004/05 and 2005/06 seasons to 520 tonnes (Linnane et al. 2006). The total catch in 2005/06 was well below the TAC for the fishery.

Table 3.1 and Figures 3.1 and 3.2 illustrate how the value of the fishery has changed during the 15-year period, 1990/01 to 2005/06. The nominal value of the northern zone catch in 2005/06 was approximately 15 per cent below that in 1990/91. This is the result of a significant fall in catch (57 per cent lower than 1990/91) and despite an increase in price. Figures 3.1 and 3.2 show that the average price of lobster in the northern zone has increased over the 15-year period by 96 per cent in nominal terms.

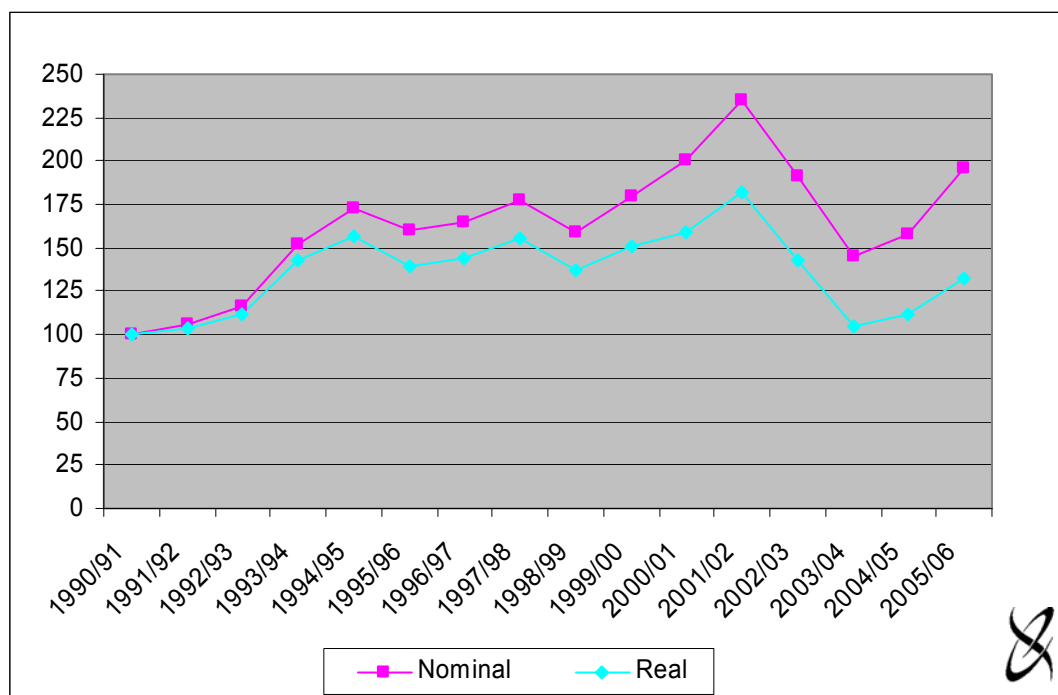
Figure 3.1 GVP, price and catch indices for the SA Northern Zone Rock Lobster fishery (1990/91=100)



Source: SARDI Aquatic Sciences

The rate of price increase for rock lobster was well above the CPI for the decade or so up until 2001/02. In the following two years there was a sharp decline in price, although it recovered slightly in 2004/05 and more significantly 2005/06. Figure 3.2 shows that the nominal price in 2005/06 was 96 per cent above that in 1990/91, which is equivalent to a 32 per cent real price increase. However, as a result of the significant fall in catch and despite the price increase, the value of the northern zone catch in 2005/06 was 43 per cent lower in real terms than it was in 1990/91 (15 per cent lower in nominal terms as noted above).

Figure 3.2 Price index for the SA Northern Zone Rock Lobster fishery (1990/91=100)



Source: SARDI Aquatic Sciences and ABS (2006)

3.2 Costs of Management

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

- annual reports on biological and economic indicators,
- policy and management services,
- regulatory/legislation and licensing services,
- compliance services,
- directorate services,
- extension services,
- research services, including the Fisheries Research and Development Corporation (FRDC) levy, and
- the services of various committees.

For the purpose of this analysis, the cost of providing these management services has been assumed to be equal to the gross receipts from licence fees in the fishery (Will Zacharin, PIRSA, pers. comm.).

Table 3.2 shows actual licence fee receipts for the fishery for the period 1996/97 to 2006/07.

Table 3.2 Costs of management in the SA Northern Zone Rock Lobster fishery, 1996/97 to 2006/07

	Licence Fees (\$,000)	Gross Value of Production (\$,000)	Fees/GVP (%)	Catch (t)	Fee/Catch (\$/kg)	No. Licence Holders (no.)	Fee/Licence Holder (\$/licence)
1996/97	\$868	24,376	3.6%	893	\$0.97	77	\$11,278
1997/98	\$1,216	27,683	4.4%	942	\$1.29	75	\$16,208
1998/99	\$832	26,743	3.1%	1,016	\$0.82	73	\$11,397
1999/00	\$731	29,802	2.5%	1,001	\$0.73	71	\$10,293
2000/01	\$755	27,988	2.7%	846	\$0.89	69	\$10,945
2001/02	\$686	26,190	2.6%	675	\$1.02	69	\$9,938
2002/03	\$805	18,828	4.3%	595	\$1.35	69	\$11,666
2003/04	\$1,029	12,046	8.5%	504	\$2.04	69	\$14,916
2004/05	\$1,076	11,643	9.2%	446	\$2.41	69	\$15,600
2005/06	\$1,088	15,433	7.0%	476	\$2.29	69	\$15,766
2006/07	\$1,164	n.a.	-	n.a.	-	68	\$17,112

Source: PIRSA Fisheries

Since 1996/97 the following trends have emerged.

- Licence fees as a percentage of gross value of production declined from 3.6 per cent in 1996/97 to 2.6 per cent in 2001/02 and have increased significantly since, reaching 9.2 per cent in 2004/05. Fees as a percentage of gross value of production were 7.0 per cent in 2005/06.
- The cost of licence fees per kilogram of landed lobster increased significantly between 1996/97 to 2004/05 from \$0.97 to \$2.41. Licence fees per kilogram of landed lobster decreased slightly in 2005/06 to \$2.29.
- The cost per licence holder fell from \$11,278 in 1996/97 to \$9,938 in 2001/02 but has risen in subsequent years reaching \$15,766 in 2005/06. Between 2005/06 and 2006/07, the cost per licence holder increased a further 8.5 per cent to \$17,112 per licence holder.

There are three main factors that have contributed to the trends observed from 1996/97 to 2005/06. First, aggregate licence fees have increased by approximately 25 per cent, although this has just kept pace with inflation, at a time when the management services have had to increase to accommodate the change to a quota system. Second, the catch in 2005/06 was approximately 47 per cent below that achieved in 1996/97, while the price was approximately 22 per cent higher in nominal terms. Third, the number of licence holders has fallen by around 10 per cent over the period.

3.3 Summary of Factors Affecting Costs in the Fishery

The information outlined in Table 3.3 (and similar data for previous years) was used to adjust the 2004/05 survey based financial performance indicators to reflect the costs incurred in the fishery in 2005/06.

Table 3.3 Factors affecting costs in the SA Northern Zone Rock Lobster fishery, 2004/05 to 2005/06

	2004/05	2005/06	Change
Total Days Fished ^a	8,685	8,861	2.0%
Price of Fuel - Transportation Index ^b	149.0	158.8	6.6%
Price of bait (c/kg) ^c	83	84	1.2%
Interest charges (%/annum) ^d	8.1%	8.2%	1.2%
CPI Adelaide ^e	151.8	157.6	3.8%

^a SARDI Aquatic Sciences (Angelo Tsolos pers. comm.).

^b ABS transportation index for Adelaide (ABS 2006).

^c Price of bait from suppliers.

^d RBA indicator lending rate for small businesses (RBA 2006).

^e Consumer price index for Adelaide (ABS 2006)

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

3.4 Financial Performance Indicators

The major measures of the financial performance of the surveyed boats in the SA NZRL fishery for the years 2001/02 to 2005/06 are shown in Table 3.4. Estimates for 2000/01 to 2003/04 are based on the October 2001 survey. Financial performance estimates for 2004/05 and 2005/06 are based on the March-April 2006 survey of licence holders. Financial performance estimates for 1997/98 to 1999/00 are based on the October 1998 survey of licence holders and these estimates, plus those for 2000/01 are provided in Appendix 4.

Table 3.4 Financial performance in the SA Northern Zone Rock Lobster fishery, 2001/02 to 2005/06 (average per boat)^a

	2001/02		2002/03		2003/04		2004/05		2005/06	
	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC
Gross Income	\$374,708		\$269,377		\$172,345		\$222,293		\$294,654	
Costs										
Fuel	\$41,059	13%	\$35,025	14%	\$36,964	16%	\$45,445	17%	\$45,355	15%
R&M	\$27,744	9%	\$23,946	9%	\$25,607	11%	\$17,466	7%	\$16,983	6%
Bait	\$12,825	4%	\$10,233	4%	\$11,021	5%	\$16,750	6%	\$15,877	5%
Provisions	\$4,213	1%	\$3,636	1%	\$3,888	2%	\$4,609	2%	\$4,482	1%
Labour	\$144,927	47%	\$104,188	41%	\$66,659	29%	\$95,548	36%	\$126,650	42%
Licence fee	\$10,810	4%	\$12,690	5%	\$16,225	7%	\$19,382	7%	\$19,588	7%
Insurance	\$8,958	3%	\$9,317	4%	\$9,598	4%	\$8,439	3%	\$8,761	3%
Interest	\$33,328	11%	\$32,901	13%	\$33,755	15%	\$31,500	12%	\$31,889	11%
Admin and Other	\$21,685	7%	\$22,554	9%	\$23,234	10%	\$29,123	11%	\$30,235	10%
Total Cash Costs	\$305,550	100%	\$254,491	100%	\$226,951	100%	\$268,262	100%	\$299,821	100%
Cash Operating Surplus	\$69,158		\$14,887		-\$54,606		-\$45,968		-\$5,168	
Depreciation	\$61,880		\$65,355		\$65,843		\$55,412		\$57,912	
Earnings Before Tax	\$7,277		-\$50,468		-\$120,448		-\$101,380		-\$63,080	
Earnings Before Interest & Tax	\$40,605		-\$17,568		-\$86,693		-\$69,880		-\$31,190	
Capital										
Fishing Gear & Equipment	\$592,833		\$626,123		\$630,795		\$431,090		\$450,540	
Licence Value	\$2,021,238		\$1,453,068		\$929,661		\$1,374,153		\$1,472,307	
Total Capital	\$2,614,071		\$2,079,192		\$1,560,457		\$1,805,243		\$1,922,847	
Rate of Return to Fishing Gear & Equip	6.8%		-2.8%		-13.7%		-16.2%		-6.9%	
Rate of Return to Total Capital	1.6%		-0.8%		-5.6%		-3.9%		-1.6%	

^a Financial performance estimates for 2004/05 and 2005/06 are based on the March - April 2006 survey of licence holders. Financial performance estimates for 2000/01 to 2003/04 are based on the October 2001 survey of licence holders. Estimates of financial performance for 1997/98 to 1999/00 are based on the October 1998 survey of licence holders and are provided in Appendix 4 of this report.

As a result of the large sample size it was possible to divide the 2004/05 survey responses into four groups (quartiles) according to rate of return to capital. The first quartile comprises the 25 per cent of boats with the lowest rate of return and fourth quartile includes the 25 per cent with the highest rate of return to capital. The financial performance measures for 'return to capital' quartiles for 2005/06 are provided in Table 3.5. These estimates were calculated based on the 2004/05 survey results.

In addition, the survey responses were divided into two groups according to the number of licensed pots held. The first group includes those licence holders with less than 70 pots (approximately 50 per cent of survey respondents) and the second group includes licence holders with 70 pots or more (approximately 50 per cent of survey respondents)⁵. The financial performance estimates for the pot groups for 2005/06 are provided in Table 3.6 as an average per boat and in Table 3.7 as an average per pot. These estimates were calculated based on the 2004/05 survey results

Income...

Total recorded lobster catch increased by 7 per cent between 2004/05 and 2005/06. With an increase in price of 24 per cent, gross receipts from sale of rock lobster increased by 33 per cent over the same period (Table 3.1). The average gross income per surveyed boat in the NZRL fishery was estimated to be just over \$295,000 in 2005/06, compared to an average of over \$222,000 per boat in the previous year, an increase of 33 per cent (Table 3.4).

In 2005/06, the average gross income for boats in the first quartile was approximately 23 per cent below the average, while in the fourth quartile, average gross income was almost 19 per cent above the average recorded for all surveyed boats (Table 3.5).

As expected, the average gross income per boat was positively correlated with the number of pots per boat (Table 3.6). Gross income per pot was approximately 10 per cent greater for licence holders with 70 or more pots when compared with those with less than 70 pots (Table 3.7).

Costs...

Total average cash costs⁶ per boat were estimated to have increased by 12 per cent from 2004/05 to 2005/06. In 2005/06, for the fishery as a whole, approximately 42 per cent of total cash costs were attributable to labour costs, by far the largest individual cost item. The other significant cash costs were fuel (15 per cent), interest (11 per cent), licence fees (7 per cent), repairs and maintenance (6 per cent) and bait (5 per cent) (Table 3.4).

⁵ Number of pots was based on pots owned and leased by the licence holders who participated in the 2006 survey of licence holders.

⁶ Fixed and variable costs have not been differentiated; therefore Boat Gross Margin has not been calculated. Boat Gross Margin is available upon request.

Table 3.5 Financial performance in the SA Northern Zone Rock Lobster fishery by return to capital quartile, 2005/06 (average per boat)

	Average per boat ^a				All Boats
	Lowest 25%	Second Quartile	Third Quartile	Highest 25%	
Gross Income	\$227,218	\$287,991	\$315,767	\$349,702	\$294,654
Costs					
Fuel	\$49,278	\$41,730	\$55,192	\$36,108	\$45,355
R&M	\$19,705	\$14,334	\$15,176	\$18,081	\$16,983
Bait	\$16,371	\$13,397	\$16,715	\$16,791	\$15,877
Provisions	\$3,228	\$5,930	\$4,420	\$4,547	\$4,482
Labour	\$165,266	\$133,577	\$122,869	\$85,339	\$126,650
Licence fee	\$24,817	\$18,754	\$17,872	\$16,546	\$19,588
Insurance	\$9,148	\$8,008	\$8,511	\$9,235	\$8,761
Interest	\$14,035	\$24,927	\$37,150	\$51,202	\$31,889
Admin and Other	\$45,619	\$36,099	\$15,334	\$22,598	\$30,235
Total Cash Costs	\$347,466	\$296,755	\$293,239	\$260,445	\$299,821
Cash Operating Surplus	-\$120,248	-\$8,764	\$22,528	\$89,257	-\$5,168
Depreciation	\$78,015	\$52,396	\$61,618	\$39,360	\$57,912
Earnings Before Tax	-\$198,263	-\$61,160	-\$39,090	\$49,897	-\$63,080
Earnings Before Interest & Tax	-\$184,228	-\$36,233	-\$1,940	\$101,098	-\$31,190
Capital					
Fishing Gear & Equipment	\$485,641	\$409,669	\$558,093	\$358,284	\$450,540
Licence Value	\$1,217,505	\$1,404,216	\$1,936,607	\$1,387,500	\$1,472,307
Total Capital	\$1,703,146	\$1,813,885	\$2,494,700	\$1,745,784	\$1,922,847
Rate of Return to Fishing Gear & Equip	-37.9%	-8.8%	-0.3%	28.2%	-6.9%
Rate of Return to Total Capital	-10.8%	-2.0%	-0.1%	5.8%	-1.6%

^a Totals may not sum due to rounding.

Source: EconSearch analysis.

Table 3.6 Financial performance in the SA Northern Zone Rock Lobster fishery by number of pots, 2005/06 (average per boat)

	Average per boat ^a		
	Less than 70	70 or more	All Boats
Gross Income	\$248,934	\$340,373	\$294,654
Costs			
Fuel	\$32,553	\$58,158	\$45,355
R&M	\$14,898	\$19,069	\$16,983
Bait	\$14,591	\$17,163	\$15,877
Provisions	\$5,123	\$3,840	\$4,482
Labour	\$111,686	\$141,615	\$126,650
Licence fee	\$17,519	\$21,658	\$19,588
Insurance	\$7,090	\$10,432	\$8,761
Interest	\$32,892	\$30,886	\$31,889
Admin and Other	\$24,857	\$35,614	\$30,235
Total Cash Costs	\$261,208	\$338,434	\$299,821
Cash Operating Surplus	-\$12,274	\$1,939	-\$5,168
Depreciation	\$46,168	\$69,655	\$57,912
Earnings Before Tax	-\$58,443	-\$67,716	-\$63,080
Earnings Before Interest & Tax	-\$25,551	-\$36,830	-\$31,190
Capital			
Fishing Gear & Equipment	\$339,016	\$562,064	\$450,540
Licence Value	\$1,301,012	\$1,643,602	\$1,472,307
Total Capital	\$1,640,028	\$2,205,666	\$1,922,847
Rate of Return to Fishing Gear & Equip	-7.5%	-6.6%	-6.9%
Rate of Return to Total Capital	-1.6%	-1.7%	-1.6%
Number of Pots Owned	54	61	58
Number of Pots Leased	4	11	8
Total Number of Pots	58	72	65

^a Totals may not sum due to rounding.

Source: EconSearch analysis.

Table 3.7 Financial performance in the SA Northern Zone Rock Lobster fishery by number of pots, 2005/06 (average per pot)

	Average per pot ^a		
	Less than 70	70 or more	All Boats
Gross Income	\$4,272	\$4,713	\$4,516
Costs			
Fuel	\$559	\$805	\$695
R&M	\$256	\$264	\$260
Bait	\$250	\$238	\$243
Provisions	\$88	\$53	\$69
Labour	\$1,917	\$1,961	\$1,941
Licence fee	\$301	\$300	\$300
Insurance	\$122	\$144	\$134
Interest	\$564	\$428	\$489
Admin and Other	\$427	\$493	\$463
Total Cash Costs	\$4,483	\$4,686	\$4,595
Cash Operating Surplus	-\$211	\$27	-\$79
Depreciation	\$792	\$964	\$888
Earnings Before Tax	-\$1,003	-\$938	-\$967
Earnings Before Interest & Tax	-\$438	-\$510	-\$478
Capital			
Fishing Gear & Equipment	\$5,818	\$7,782	\$6,905
Licence Value	\$22,327	\$22,757	\$22,565
Total Capital	\$28,145	\$30,539	\$29,470
Rate of Return to Fishing Gear & Equip	-7.5%	-6.6%	-6.9%
Rate of Return to Total Capital	-1.6%	-1.7%	-1.6%

^a Totals may not sum due to rounding

Source: EconSearch analysis.

While average income for boats in the first quartile was around 35 per cent below that of boats in the fourth quartile, average total cash costs were 29 per cent higher. The cost items where the largest differences occurred between the first and fourth quartiles were labour (94 per cent higher for boats in the first quartile), licence fees (50 per cent higher) and fuel (37 per cent). Interest costs, however were 265 per cent greater in the fourth quartile compared to the first quartile (Table 3.4). Many of the licence holders in the survey sample were owner operators, while some employed both a skipper and deckhand. This accounts for some of the variation in labour costs between quartiles.

As expected, average total cash costs per boat were positively correlated with the number of pots held (Table 3.6). The cost items where the largest differences occurred were fuel (79 per cent greater for those with 70 or more pots), insurance (47 per cent greater), and repairs and maintenance (28 per cent). On a per pot basis, however, the differences between the two groups for these items are far less and for cash costs in total, the two groups are virtually the same (Table 3.7).

Overall, total cash costs per boat increased by approximately 12 per cent, up from \$268,000 in 2004/05 to almost \$300,000 in 2005/06. The main driver of the increase has been the increase in labour costs due to the increase in gross income in the fishery (Table 3.4).

Cash Income and Profit...

As noted elsewhere, the labour costs reported in Tables 3.4 to 3.7 are comprised of payments to skippers and crew as well as an imputed wage to operators and other family members who are not paid a wage directly by the business. Accordingly, cash operating surplus was calculated by including imputed wages as part of cash costs. The estimated average cash operating surplus for boats operating in the NZRL fishery was estimated to be approximately -\$5,000 in 2005/06. This is a \$40,000 improvement over the estimated cash operating surplus in 2004/05 and is simply due to the increase in gross income (mostly price related) being greater than the increase in overall cash costs.

Cash operating surplus and earnings before tax (business profit) give an indication of the capacity of the operator to remain in the fishery in the short to medium term. Average earnings before tax were estimated to be approximately -\$63,000 per boat in 2005/06, up from -\$101,000 in 2004/05. (Table 3.4).

In 2005/06, the average earnings before tax for boats in the first quartile were approximately -\$198,000. This is significantly less than the average earnings before tax for boats in the fourth quartile (approximately \$50,000 in 2005/06) (Table 3.5).

Average earnings before tax was negatively correlated with the number of pots held on a per boat and per pot basis. The average earnings before tax for licence holders with over 70 pots was approximately -\$68,000 in 2004/05. This is slightly below the average earnings before tax for licence holders with less than 70 pots (approximately -\$58,000 in 2005/06). On a per pot basis, the average earnings before tax were almost identical for the two groups (Tables 3.6 and 3.7).

Average earnings before interest and tax for all boats was estimated to be -\$31,000, well above the 2004/05 estimated at -\$70,000 (Table 3.4).

Return on Investment...

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

The average return on investment for the fishery is reported in Table 3.4. The rate of return to boat capital (i.e. fishing gear and equipment) was estimated to average -14.3 per cent in 2005/06 and the rate of return to total capital was estimated to average -2.8 per cent in 2005/06.

The rate of return to total capital is calculated using EBIT and investment in all capital (i.e. fishing gear and equipment and licence value). The average EBIT per boat in the first quartile was approximately -\$184,000, compared to almost \$50,000 in the fourth quartile. This significant difference is due to the lower average gross income and higher average cash costs in the first quartile, compared to the fourth quartile. The average investment in fishing gear and equipment was higher in the first quartile (approximately \$486,000 in 2005/06) compared to the fourth quartile (approximately \$359,000). Accordingly, in 2005/06, the average rate of return to total capital was estimated to be -10.8 per cent in the first quartile and 5.8 per cent in the fourth quartile (Table 3.4).

In 2005/06, licence holders with less than 70 pots earned an average rate of return to total capital of -1.6 per cent. For licence holders with 70 or more pots the average rate of return to total capital was -1.7 per cent (Table 3.6).

Licence values...

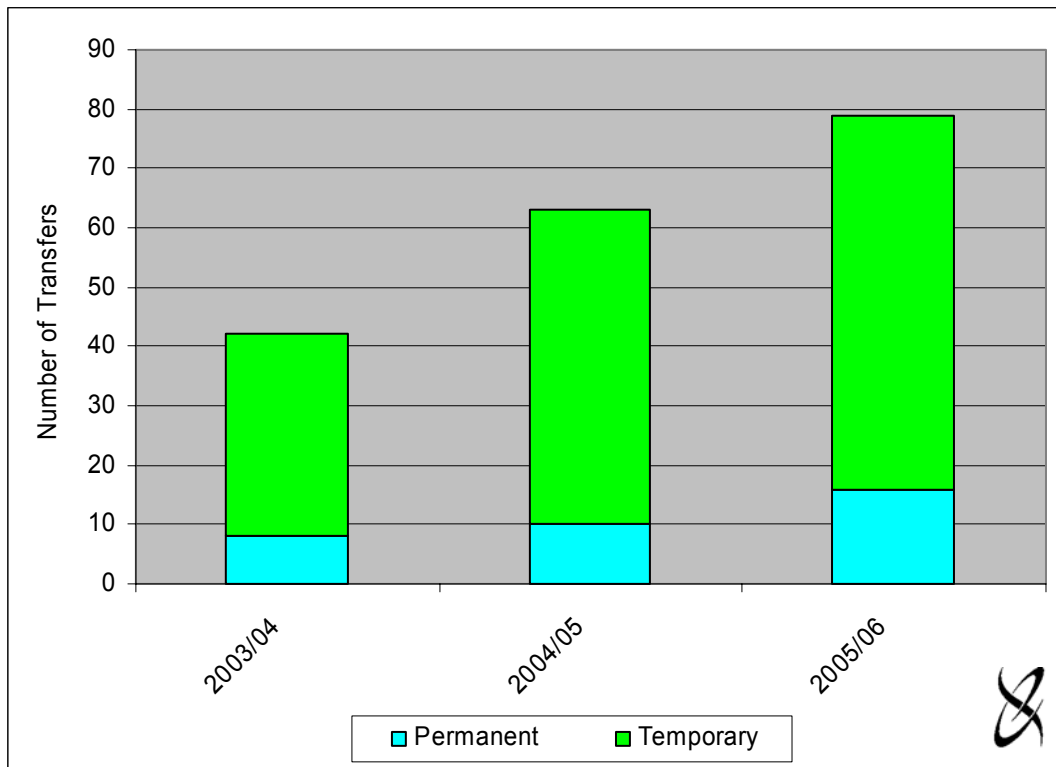
The value of licences represents a significant proportion of the capital used by each licence holder in the fishery. The reported licence value of approximately \$1.47 million per boat for all boats in 2005/06 reflects the licence holders' estimate of the value of their licence for 2004/05 in the March – April 2006 survey and updated for changes in the value of the fishery.

Licence values are determined by both current income earning capacity and expectations about future earnings. There were four licence transfers in 2005/06 and for confidentiality reasons the value of these transfers cannot be reported (PIRSA Fisheries licensing section, pers. comm.).

Quotas were introduced in the fishery in October 2003 for the 2003/04 season. A total of 62,500 quota units were allocated at that time with each unit being equivalent to 10kg. In 2004/05 the TAC was reduced to 8.32 kg per unit or 520 tonnes for the fishery as a whole. In 2005/06 there were 16 permanent quota transfers between licence holders, ranging from 32 units to 400 units. There were 63 temporary quota transfers between licence holders in 2005/06, ranging from 2 to 700 units (PIRSA Fisheries licensing section).

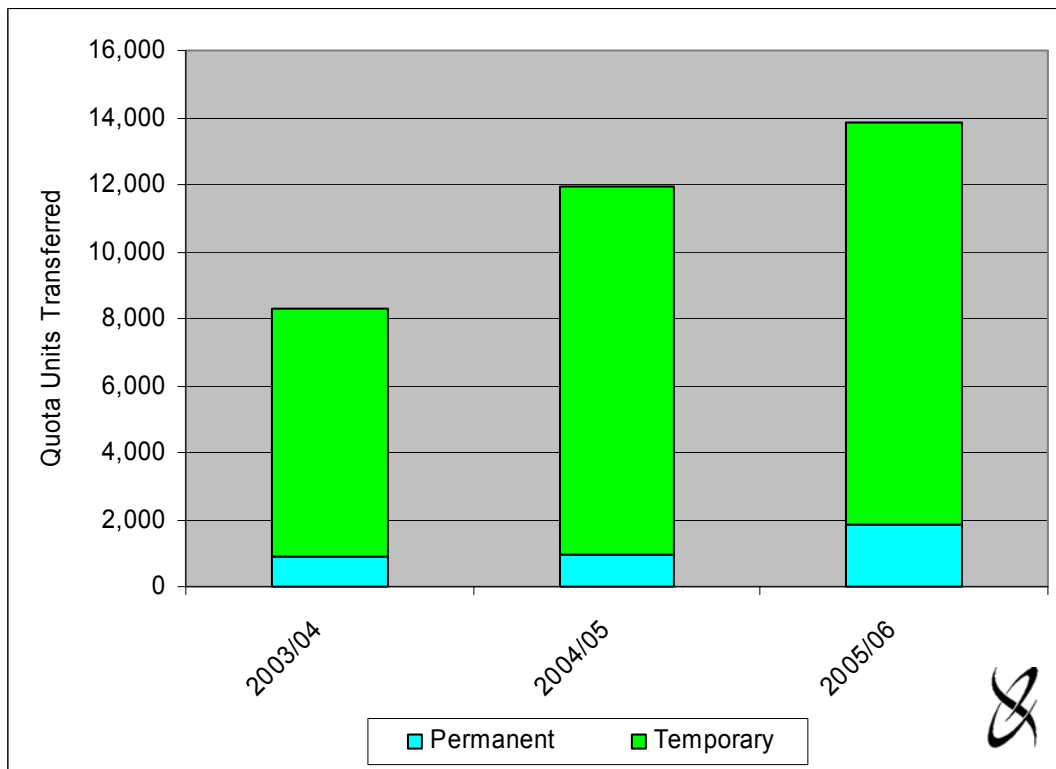
The number of transfers between licence holders and total number of quota units transferred over the period 2003/04 to 2005/06 are detailed in Figures 3.3 and 3.4, respectively.

Figure 3.3 Number of quota transfers, 2002/03 to 2005/06



Source: PIRSA Fisheries Licensing Section.

Figure 3.4 Number of quota units transferred, 2002/03 to 2005/06



Source: PIRSA Fisheries Licensing Section.

Since the initial allocation of quota units in 2003/04 the number of quota transfers between licence holders has risen from 42 to 79, an increase of 88 per cent. This increase was comprised of a 100 per cent increase in permanent transfers and an 85 per cent increase in temporary transfers. The total number of quota units transferred has increased from 8,274 to 13,857, an increase of 67 per cent. This increase comprises a 105 per cent increase in permanent transfer units and a 63 per cent increase in temporary units.

Over the 3 years to 2005/06, an average of 11,365 quota units have been traded each year (10,144 temporary and 1,221 permanent). This average annual trade comprises 18 per cent of the total quota units in the fishery.

3.5 State and Regional Economic Impact

Estimates of the economic impact of the South Australian NZRL fishing industry on the South Australian and regional (Eyre⁷) economies in 2005/06 are outlined below.

3.5.1 Measuring direct and flow-on effects

Estimates of the direct economic impact of the NZRL fishery are consistent with the method employed in PIRSA's *Food for the Future* value-chain analysis, 2004/05⁸.

The following stages in the marketing chain have, therefore, been included in the quantifiable economic impact:

- the landed beach value of production; and
- downstream impacts, including the:
 - net value of local (state and regional) processing;
 - value of local transport services at all stages of the marketing chain; and
 - net value of local retail and food service (e.g. hotels & restaurants) trade⁹.

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

Economic impacts at the state and regional levels were based on models for the state as a whole and for the Eyre region, respectively, prepared for the Regional Communities Consultative Council, Local Government Association of South Australia and Regional Development SA (EconSearch 2005b).

In order to compile a representative cost structure for the fishing sector, costs per boat were derived from data provided by operators in the fishery in the financial survey for 2004/05 and updated to 2005/06, as described earlier. On an item-by-item basis, the expenditures were allocated between those occurring in the Eyre region, those occurring in South Australia and those goods and services imported from outside the state.

⁷ The Eyre region is comprised of the Statistical Division of Eyre as defined by the Australian Bureau of Statistics.

⁸ The relevant information was obtained from Jack Langberg (PIRSA, pers. comm.).

⁹ Estimates of economic impact prepared for this and other commercial fisheries in South Australia (except Lakes and Coorong) for the period 1997/98 to 2002/03 do not include the impact of local retail and food service trade.

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 *Food for the Future* value-chain analysis (*Seafood Scorecard, 2004/05*) (Jack Langberg, PIRSA, pers. comm.). Estimates of the net value of local transport margins and capital expenditure per licence holder were derived from the survey of licence holders.

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

- value of output;
- employment;
- household income; and
- 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.

3.5.2 Economic impacts at the state and regional levels

Estimates of the economic impact generated in 2005/06 by the NZRL fishing industry in South Australia and the Eyre region are outlined in Tables 3.8 and 3.9, respectively.

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

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

Table 3.8 The economic impact of the SA Northern Zone Rock Lobster fishing industry in South Australia, 2005/06

Sector	Output		Employment ^a		Household Income		Contribution to GSP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	15.4	28.2%	185	45.4%	5.8	35.6%	5.2	22.3%
Processing	1.6	3.0%	5	1.3%	0.2	1.5%	0.4	1.6%
Transport	2.8	5.1%	13	3.2%	0.9	5.6%	1.3	5.7%
Retail	0.3	0.5%	4	1.0%	0.1	0.7%	0.1	0.6%
Food services	0.7	1.2%	6	1.4%	0.2	1.0%	0.3	1.1%
Capital expenditure ^b	1.2	2.3%	13	3.2%	0.4	2.5%	0.5	2.2%
Total Direct ^c	22.1	38.1%	226	52.2%	7.6	44.5%	7.9	31.3%
Flow-on effects								
Trade	4.9	9.0%	53	13.1%	1.8	11.2%	2.3	9.7%
Manufacturing	6.8	12.4%	21	5.3%	1.0	6.1%	1.6	6.7%
Business Services	3.5	6.5%	21	5.1%	1.3	7.9%	1.7	7.2%
Transport	1.8	3.3%	8	2.0%	0.6	3.6%	0.9	3.6%
Other Sectors	15.6	28.6%	78	19.1%	4.0	24.3%	9.2	39.2%
Total Flow-on ^c	32.6	59.6%	182	44.6%	8.6	53.1%	15.6	66.5%
Total ^c	54.7	100.0%	408	100.0%	16.3	100.0%	23.5	100.0%
Total/Direct	2.5	-	1.8	-	2.1	-	3.0	-
Total/Tonne	\$114,800	-	0.86	-	\$34,200	-	\$49,300	-

^a Full-time equivalent jobs. Direct employment in the fishing sector was comprised of 119 full-time jobs and 133 part-time jobs, that is, 251 jobs in aggregate.

^b Capital expenditure includes expenditure on boats, fishing gear and equipment, sheds and buildings, motor vehicles and other equipment.

^c Totals may not sum due to rounding.

Source: EconSearch analysis.

Value of output...

The value of output generated directly in South Australia and the Eyre region by Northern Zone Rock Lobster fishing enterprises summed to \$15.4 million in 2005/06 (Tables 3.8 and 3.9), while output generated in South Australia by associated downstream activities (processing, transport, retail/food services and capital expenditure) summed to \$6.6 million (\$3.1 million in the Eyre region, Table 3.9).

Flow-ons to other sectors of the state economy added another \$32.6 million in output (\$13.0 million in the regional economy). The sectors most affected were the manufacturing, trade, business services and transport sectors.

Table 3.9 The economic impact of the SA Northern Zone Rock Lobster fishing industry in the Eyre region, 2005/06

Sector	Output		Employment ^a		Household Income		Contribution to GRP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	15.4	49.0%	185	61.8%	5.8	57.0%	5.2	40.2%
Processing	1.6	5.2%	8	2.6%	0.3	3.0%	0.5	3.5%
Transport	0.5	1.7%	3	1.0%	0.2	1.8%	0.3	2.1%
Retail	0.0	0.0%	0	0.1%	0.0	0.1%	0.0	0.1%
Food services	0.0	0.1%	0	0.1%	0.0	0.1%	0.0	0.1%
Capital expenditure ^b	0.8	2.6%	13	4.4%	0.3	3.3%	0.4	3.2%
Total Direct ^c	18.5	56.1%	210	65.6%	6.6	61.9%	6.4	46.0%
Flow-on effects								
Trade	2.8	8.8%	35	11.5%	1.0	10.0%	1.3	10.0%
Manufacturing	1.4	4.6%	7	2.2%	0.3	2.6%	0.4	3.1%
Business Services	1.0	3.3%	7	2.4%	0.4	3.6%	0.5	3.8%
Transport	0.7	2.1%	4	1.3%	0.2	2.2%	0.3	2.6%
Other Sectors	7.1	22.6%	38	12.6%	1.7	16.3%	4.1	31.2%
Total Flow-on ^c	13.0	41.3%	90	30.0%	3.5	34.8%	6.6	50.7%
Total ^c	31.5	100.0%	300	100.0%	10.2	100.0%	13.0	100.0%
Total/Direct	1.7	-	1.4	-	1.5	-	2.0	-
Total/Tonne	\$66,200	-	0.63	-	\$21,300	-	\$27,300	-

^a Full-time equivalent jobs. Direct employment in the fishing sector was comprised of 119 full-time jobs and 133 part-time jobs, that is, 251 jobs in aggregate.

^b Capital expenditure includes expenditure on boats, fishing gear and equipment, sheds and buildings, motor vehicles and other equipment.

^c Totals may not sum due to rounding.

Source: EconSearch analysis.

Employment and household income...

In 2005/06, the Northern Zone Rock Lobster fishery was responsible for the direct employment of around 185 full-time equivalents and downstream activities created employment of around 41 fte jobs state-wide. Flow-on business activity was estimated to generate a further 182 fte jobs state-wide (90 jobs regionally). These state-wide jobs were concentrated in the trade (53), manufacturing (21) and business services (21) sectors.

Personal income of \$5.8 million was earned in the fishing sector and \$1.8 million in downstream activities in SA. An additional \$8.6 million was earned by wage earners in other businesses in the state as a result of fishing and associated downstream activities. The total household income impact was \$16.3 million in SA (\$10.2 million in the Eyre region).

Contribution to GSP and GRP...

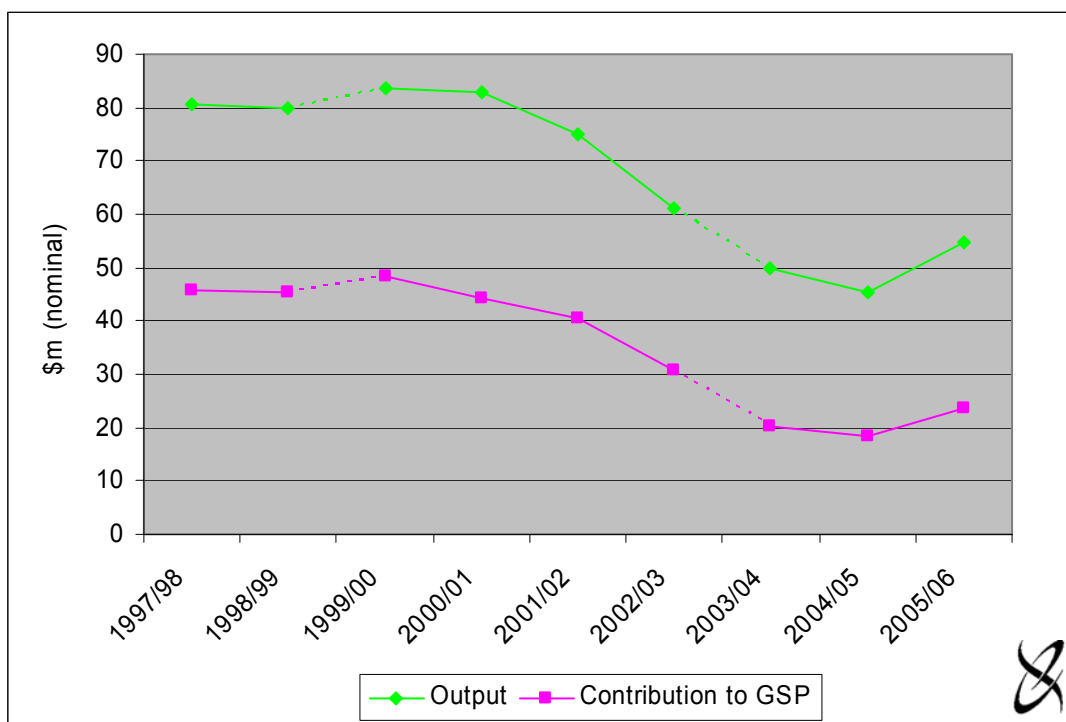
As noted above, contribution to GSP or GRP is measured as value of output less the cost of goods and services (including imports) used in producing the output. In 2005/06, total Northern Zone Rock Lobster fishing industry related contribution to GSP in South Australia was \$23.5 million (\$13.0 million in the Eyre region), \$5.2 million generated by fishing directly, \$2.6 million generated by downstream activities and \$15.6 million generated in other sectors of the state economy.

Total impacts over time...

Figures 3.3 and 3.4 illustrate the total economic impact of the fishery on the SA economy for the eight-year period, 1997/98 to 2005/06. Estimates of economic impact are expressed in nominal terms, accordingly no adjustment has been made to reflect inflation.

Estimates of economic impact for 1997/98 to 1999/00 are based on the October 1998 survey of licence holders. Estimates for 2000/01 to 2003/04 are based on a second survey of licence holders conducted in October 2001. Estimates for 2004/05 and 2005/06 are based on the most recent survey of licence holders conducted in March – April 2006.

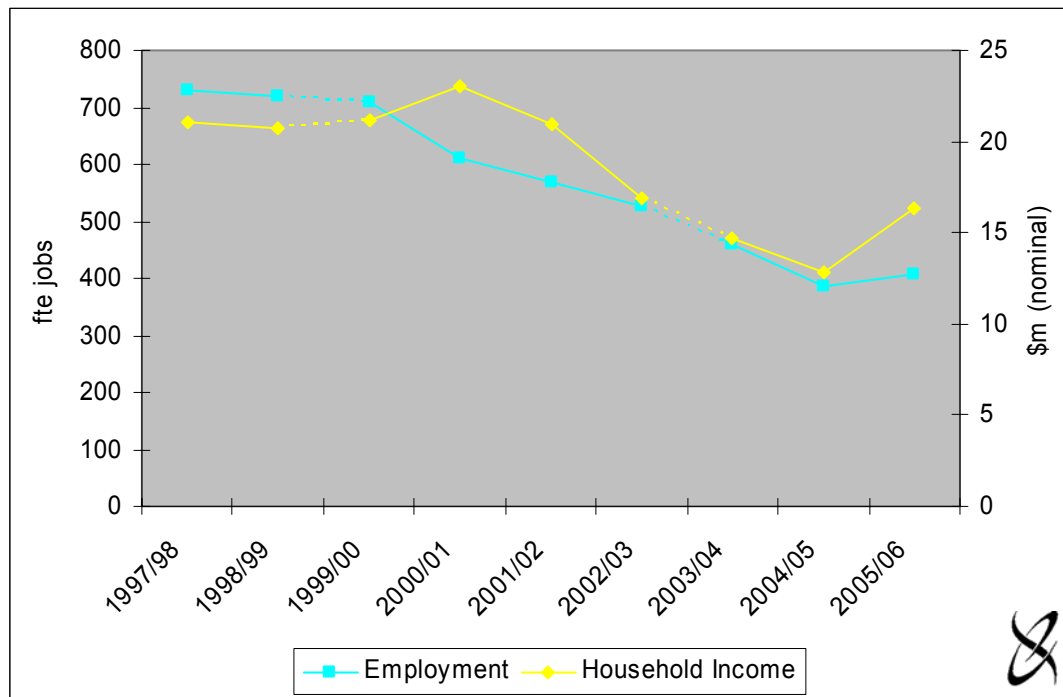
Figure 3.5 Total gross state product and output impact of the SA Northern Zone Rock Lobster fishing industry in SA, 1997/98 to 2005/06 ^a



^a The economic impact of the NZRL fishery in 1997/98 and 1998/99 does not include the direct and flow-on effects of estimated capital expenditure by licensees; these effects have been included in subsequent years. Estimates of economic impact for the period 1997/98 to 2002/03 do not include the impact of local retail and food service trade; these effects have been included in subsequent years.

Source: EconSearch (2005a) and EconSearch analysis.

Figure 3.6 Total employment and household income impact of the SA Northern Zone Rock Lobster fishing industry in SA, 1997/98 to 2005/06 ^a



^a See note for Figure 3.3.

Source: EconSearch (2005a) and EconSearch analysis.

The economic impact of the NZRL fishery in 1997/98 and 1998/99 does not include the direct and flow-on effects of estimated capital expenditure by licensees; these effects have been included in subsequent years. Estimates of economic impact for the period 1997/98 to 2002/03 do not include the impact of local retail and food service trade; these effects have been included in subsequent years.

As economic impact estimates for the years 1997/98 to 2005/06 are based on different survey samples and techniques, some of the variability between years, is therefore, attributable to sampling variability.

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

There has been a significant decline in the economic impact of the fishery between 1997/98 and 2004/05, as illustrated in Figures 3.3 and 3.4. This decrease can be attributed to a combination of factors, including a reduction in the total number of licence holders in the fishery (direct employment) and a decline in catch and value of catch over the 7 year period. This trend was reversed in 2005/06, when there was a slight increase in the total economic impact of the fishery. This increase can be attributed to the 33 per cent increase in the gross value of production of the fishery between 2004/05 and 2005/06.

3.6 Economic Rent

Economic rent¹⁰ 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. In this case the natural resource is the South Australian NZRL fishery and the good produced is the landed lobster.

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

Determining the opportunity cost of capital involves an assessment of the degree of financial risk involved in the activity. For a risk-free operation, an appropriate opportunity cost of capital might be the long-term real rate of return on government bonds. The greater the risks involved, the greater is the necessary return on capital to justify the investment in that particular activity. For this analysis the long term (10 year) real rate of return on government (treasury) bonds of 5 per cent has been used and a risk premium of 5 per cent has been applied.

Given the relatively high-risk nature of the industry (weak property rights therefore short time horizons, exposure to exchange rate fluctuations, general price volatility, problems of resource sustainability and political risk in export countries) an argument could be made for a higher required rate of return.

What remains after the value of these inputs (labour, capital, materials, services) has been netted out is the value of the natural resource itself. The economic rent generated in the NZRL fishery in 2005/06 was estimated to be approximately -\$4.0 million (Table 3.10).

¹⁰ Economic rent is comprised of three types of rent: entrepreneurial rent, quasi-rent and resource rent. As in any business some operators are more skilful than others and will therefore earn more profit. These profits, which are one component of economic rent, are *entrepreneurial rents*. In the short-term fishers may earn large surpluses over costs, which may provide prima facie evidence of substantial resource rents. However, there are some circumstances where such surpluses can occur but they are not true rents. These are referred to as *quasi-rents*. One example is where a fishery is developing or recovering and there may be under-investment in the fishery. Another example is where there is a short-term but unsustainable increase in price due to, for example, exchange rate fluctuations. However, some profits will be obtained because the natural resource being used (i.e. the fishery) has a value. These profits are described as *resource rents* and are also a component of economic rent.

Table 3.10 Economic rent ^a in the SA Northern Zone Rock Lobster fishery, 1997/98 to 2005/06 (\$'000)

	Gross Income	Less Labour	Less Cash Costs	Less Depreciation	Less Opportunity Cost of Capital (@10%)	Economic Rent
1997/98	27,683	9,697	8,323	3,357	2,948	3,359
1998/99	26,743	9,367	7,592	3,639	3,196	2,948
1999/00	29,802	10,439	8,871	4,061	3,567	2,864
2000/01	27,988	10,825	9,750	3,977	3,810	-375
2001/02	26,190	10,130	8,897	4,325	4,144	-1,305
2002/03	18,828	7,282	8,206	4,568	4,376	-5,604
2003/04	12,046	4,659	8,844	4,602	4,409	-10,468
2004/05	11,643	5,004	7,396	2,902	2,258	-5,918
2005/06	15,433	6,634	7,400	3,033	2,360	-3,993

^a Adjusted for sample bias For example, based on the March – April 2006 survey of licence holders gross income in the fishery for 2004/05 was estimated to be \$13.5 million.

Source: EconSearch analysis

When an economic rent is generated in a fishery and there are transferable licences, the rent represents a return to the value of the licences. The 2005/06 aggregate value of licences was estimated to be \$101.6 million (69 licences with an average value of \$1.5 million per licence). An annual economic rent of -\$4.0 million represents a return of -3.9 per cent to the capital value of the fishery.

4. Other Indicators

4.1 External Factors Influencing the Economic Condition of the Fishery

There are a number of factors in 2005/06 that have impacted on the economic performance of the NZRL fishery. Most of these are likely to continue to affect economic outcomes in the future.

Stock Assessment

The priority of the management of the fishery is to ensure the sustainability of lobster stocks. In order to achieve this, biological indicators have been developed with targets and reference points used as a benchmark of performance against objectives. Reference points/targets can be used to trigger a management response when required. The performance indicators used to assess the stock status of the NZRL fishery, include:

- total catch;
- catch per unit of effort;
- mean size;
- exploitation rate; and
- recruitment.

The NZRL biological performance indicators for the 2002/03 to 2005/06 seasons are summarised in Table 4.1 below.

A new management plan for the fishery is currently being developed, which will refine the performance indicators and reference levels. In particular, the draft plan focuses on two key performance indicators, catch rate and pre-recruit index. This plan is expected to be finalised and take effect for the 2007/08 season.

Table 4.1 Biological performance indicators for the SA Northern Zone Rock Lobster fishery, 2002/03 to 2005/06

Indicator	Target	2002/03	2003/04	2004/05	2005/06
Catch (tonnes)	520	595	504	446	476
Catch Rate (kg/pot lift)	1.25 – 1.43	1.04	0.84	0.80	0.81
Exploitation Rate ^a	0.26 – 0.28	-	0.17	0.23	0.24
Biomass	3,228 – 3,999	-	2,935	1,930	1,975
Mean Size	1.06 – 1.13	1.17	1.10	1.08	1.09
Pre-recruit Index ^b	0.18 – 0.29	0.21	0.12	0.11	0.49
Egg production (billions)	679.6 – 852.8	-	571	388	428

^a The exploitation rate is the proportion of the total fishery population that is caught during the fishing season.

^b The pre-recruit index measures the number of juvenile fish entering the fishery.

Source: Linnane et. al. (2004, 2005 and 2006) and Ward et al. (2004).

Export Markets

Hong Kong, Japan and China are the main export destinations for SA rock lobster exports, as outlined in Section 4.3. Traceability systems and a quality assurance program are being developed to assist in securing other export markets such as in the United States (US) and the European Union (EU). The EU is a rapidly growing export market and has a large consumer base.

The Australian Southern Rock Lobster industry is currently undertaking a market development project in the USA. The project focuses on the development of supply chain, distribution and communication tools to facilitate penetration into the Super-Premium-Fine-Dining (SPFD) sector.

Through product trails and training it is intended that the project will provide an avenue for entry into the USA's SPFD sector through:

- establishing the capacity to guarantee a product to the marketplace in accordance with market values / meeting specifications;
- establishing the capacity to deliver quality product to the marketplace on a consistent basis;
- creating the most effective communication tool to engage the marketplace; and
- trialing the standards based supply chain management system to deliver the "Ultimate Offer and Guarantee" to the SPFD sector at an increased value per lobster.

The project is focused on the supply of larger lobsters, 2kg plus, into the high-end of the USA fine dining market, as opposed to the smaller product currently supplied to the Chinese market.

Exchange Rate

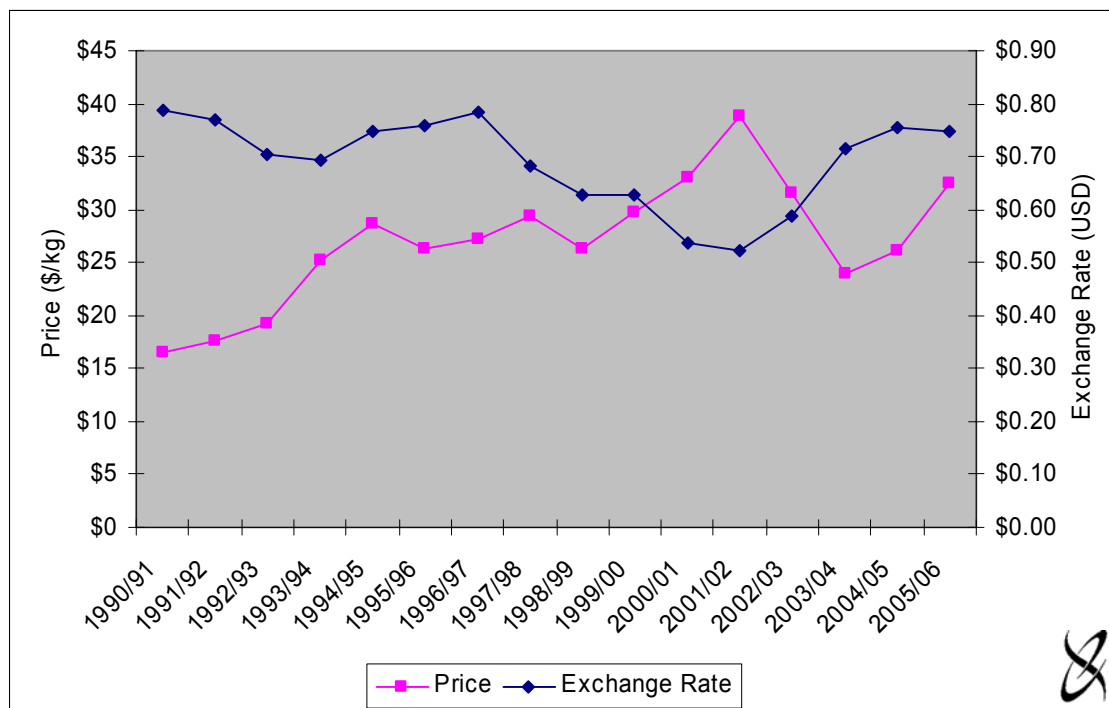
A significant proportion of the South Australian rock lobster catch is exported overseas. Accordingly, the value of the Australian dollar can have a significant impact on the economic performance of the fishery. The value of the Australian dollar influences the price of Australian exports overseas. Significant changes in the value of the Australian dollar have the potential to influence the demand for Australian rock lobster exports. The Australian dollar remained relatively stable throughout 2005/06, ranging between US72 cents and US76 cents. This average rate is slightly lower than 2004/05 when the value of the dollar ranged from US70 cents to US79 cents. There has been incremental growth in the value of the AUD since 2000/01 when the dollar fell to around US50 cents.

The average exchange rate in 2005/06 was US74.63 cents compared to US75.45 cents in 2004/05, a decrease of 1 per cent. Other things held equal, a fall in the value of the currency would have the effect of increasing the price of rock lobster received by Australian exporters between 2004/05 and 2005/06.

The most significant export destination for South Australian rock lobster exports in 2005/06 was Hong Kong. Thus it may be useful to consider the value of the Australian dollar compared with the Hong Kong dollar (HKD). The average rate of exchange in 2005/06 was 5.79 HKD and 5.88 HKD in 2004/05, a decrease of 1.5 per cent.

The relationship between the average price in the NZRL fishery and the exchange rate over the past 15 years can be observed in Figure 4.1.

Figure 4.1 Exchange rate (USD) and average price for SA Northern Zone Rock Lobster, 1990/01 to 2005/06



Source: SARDI Aquatic Sciences and RBA (2006) and previous issues.

A widely used measure of the relationship between two variables, such as price and exchange rate, is the coefficient of correlation. The coefficient of correlation can range in value from 1.0 for a perfect positive correlation to -1.0 for a perfect inverse correlation. The coefficient of correlation between the exchange rate (USD) and the average price in the NZRL fishery for the period 1990/91 to 2005/06 is -0.68 . This indicates that there is a strong inverse relationship between the two variables. Thus, when the Australian dollar appreciates, as it did between 2001/02 and 2004/05, there is, generally, a corresponding decline in the average price in the NZRL fishery.

4.2 Licence Holder Comments

During the 2006 survey licence holders raised several key issues that have potential to affect the economic performance of the fishery.

Financial Performance

Several licence holders who participated in the survey indicated that it was generally no longer viable for investors to own a licence in the fishery as the rate of return on investment was low. They felt that it was only possible to make a positive return in the fishery where the owner of the licence also operated the boat and business. Many licence holders emphasised the importance of price in determining industry returns. As the quantity of catch is limited by quota, changes in price drive the financial performance of the fishery. Many licence holders indicated that, in order to increase prices, export markets needed to be expanded for all lobster products (i.e. not just small, red fish).

Many of the licence holders felt that some of the boats in the fishery were too big and therefore their costs, especially fuel, were extremely high.

Some of the licence holders felt that the 100 pots per licence limit imposed when quota was introduced was prohibitive and prevented them from operating efficiently. This was a particular issue for those in the fishery who have made significant capital investment in vessels, gear and equipment.

The increasing price of fuel was a concern raised by many licence holders who participated in the 2006 survey. This was not only due to the rising fuel costs, but the associated increases in other fishing costs such as bait and freight.

In order to remain in the industry some licence holders have had to take a significant risk and invest further capital into value adding their product. This has involved significant investment of time and capital into research and development of markets and products and investment in capital equipment and infrastructure. Licence holders felt that this investment had been beneficial not only to their business but to the fishery as a whole.

Management

The majority of licence holders who participated in the survey felt that the licence fees were too high and should reflect the rate of return in the fishery. Some licence holders were frustrated by the complexity of the quota transfer process and the fees associated with the transfer. It was suggested that the current system be changed to a system similar to that used in the SA Sardine fishery.

Stock

Many licence holders were concerned that the effects of weather and water temperature were not considered in the assessment of the stock of the fishery. They also indicated that there needed to be more scientific research into stock levels and recruitment, including consultation with the licence holders.

The majority of licence holders who were involved in the survey indicated that the fishery had been showing signs of recovery recently, with a greater number of undersize crays and improved catch per pot lift.

Marine Parks

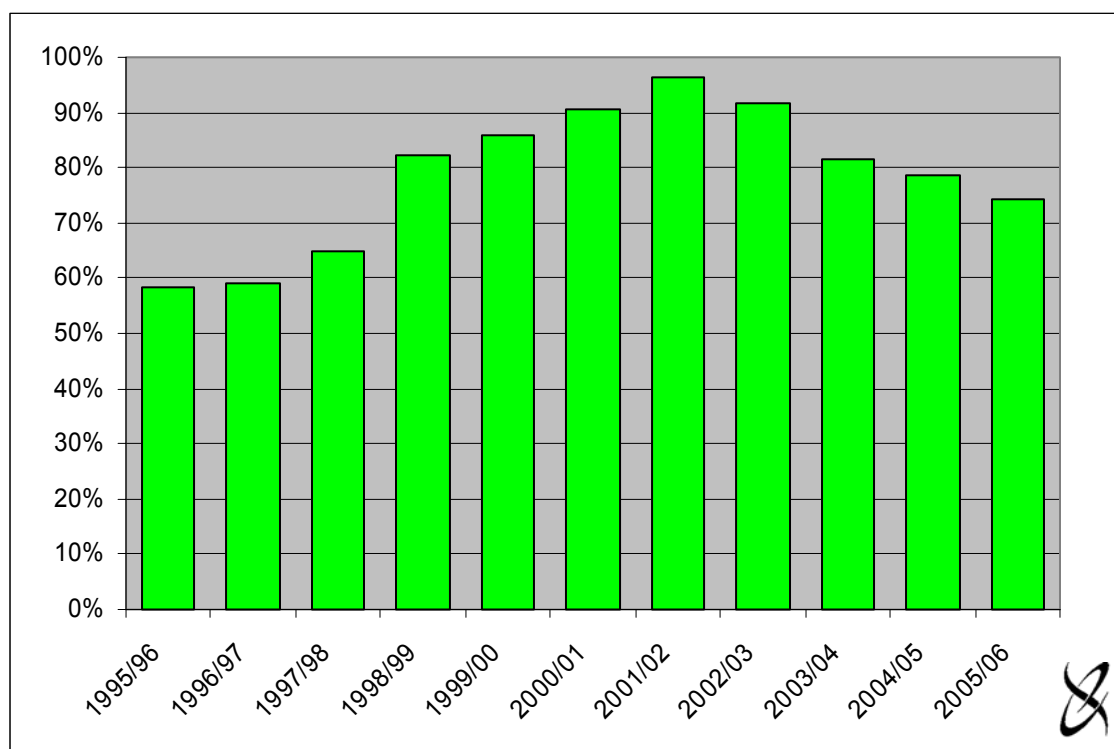
Marine parks were of concern to many licence holders who participated in the survey; many indicated that if marine parks were established, the number of boats in the fishery would need to be reduced. Some licence holders weren't opposed to the idea of marine parks but indicated that, due to the low environmental impact of the fishery, licence holders should still be able to access fishing grounds within the park.

4.3 Rock Lobster Exports from South Australia

Figures 4.2 to 4.6 and the associated data in Appendix Tables 2.1 to 2.4 provide an historical breakdown of total rock lobster exports from SA, by category and country of destination, for the period 1995/96 to 2005/06¹¹.

As a proportion of total rock lobster catch, rock lobster exports from South Australia increased from 58 per cent in 1995/96 to over 95 per cent in 2001/02. The proportion of catch exported has since declined and was 74 per cent in 2005/06 (Figure 4.2).

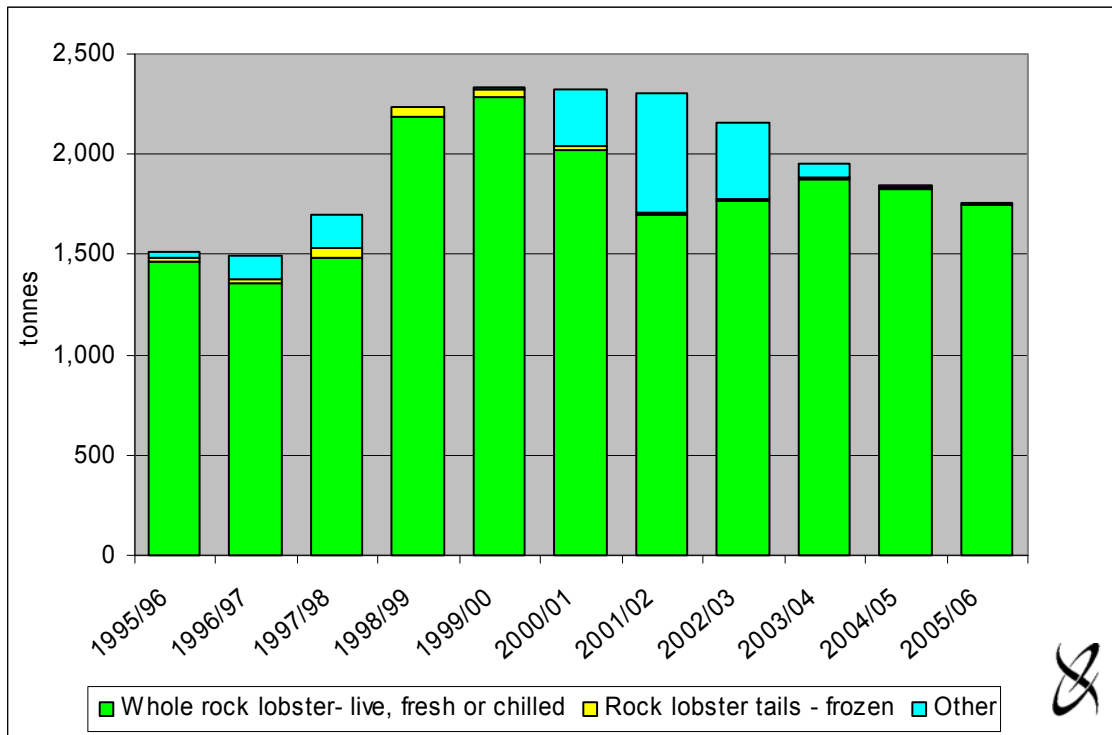
Figure 4.2 Rock lobster exports from South Australia as a proportion of total catch, 1995/96 to 2005/06



Source: Appendix Table 2.1 and Table 3.1

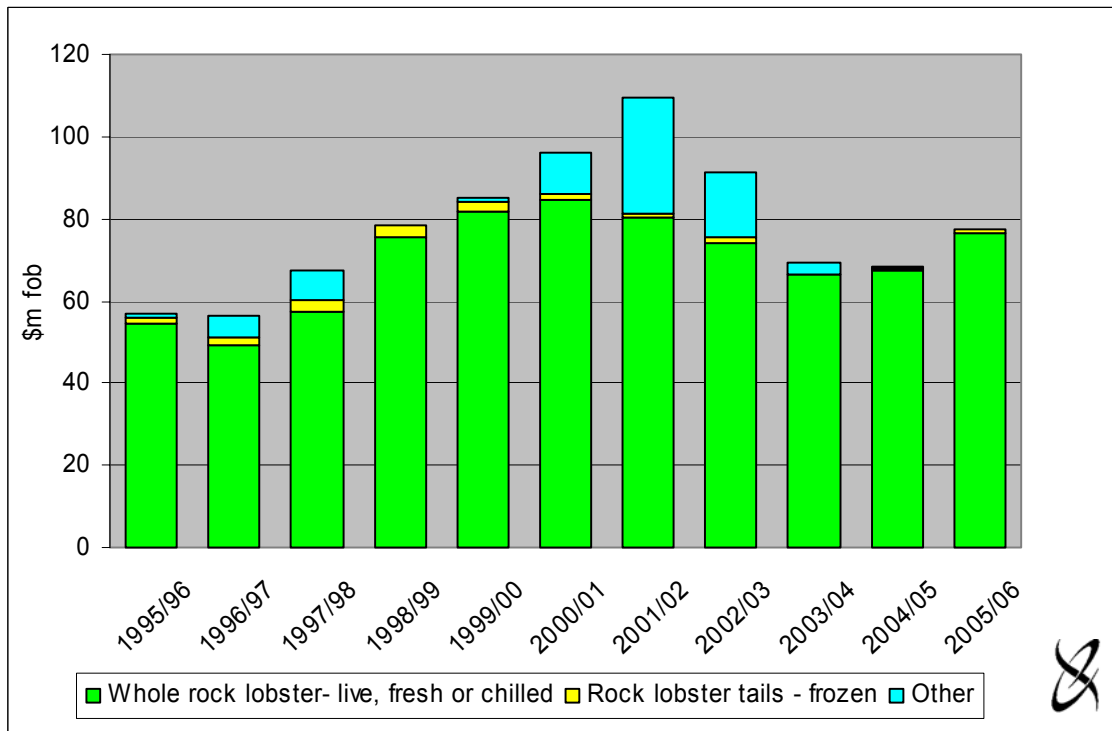
¹¹ That is, exports from the northern and southern rock lobster fisheries in aggregate. These data only include exports direct from South Australia, not product that is shipped interstate and then exported. They could also include product that is shipped from interstate and exported from South Australia.

Figure 4.3 Rock lobster exports from South Australia, quantity (t) by category, 1995/96 to 2005/06



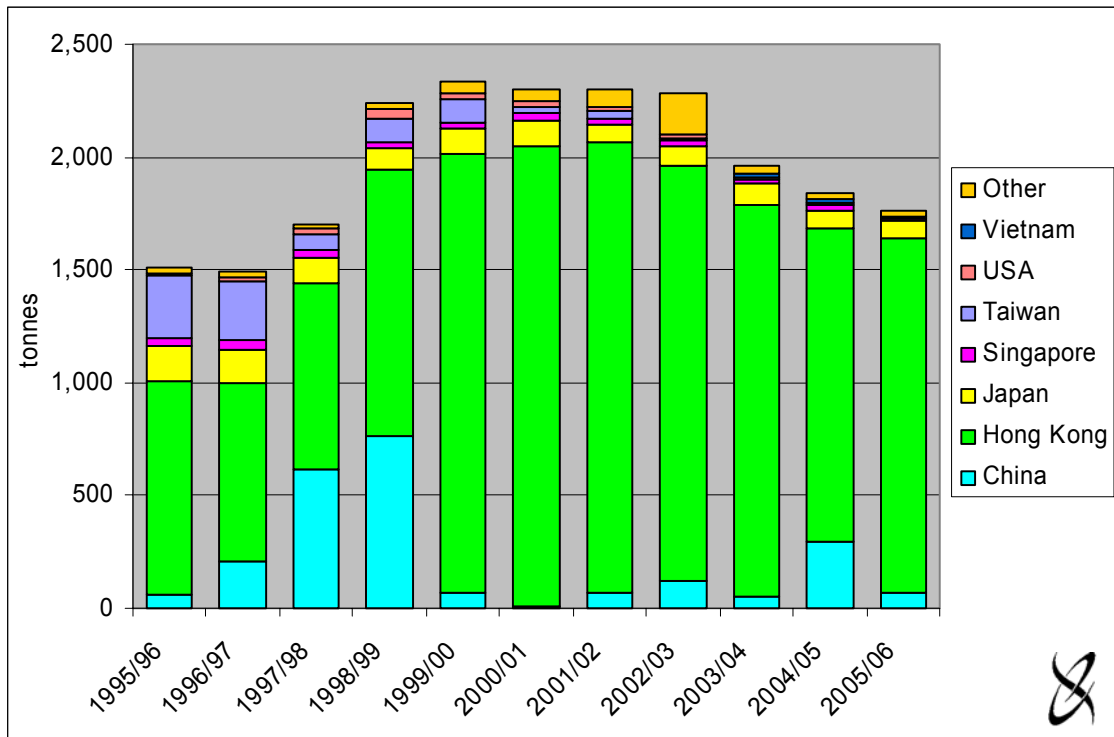
Source: Appendix Table 2.1.

Figure 4.4 Rock lobster exports from South Australia, value (\$m fob) by category, 1995/96 to 2005/06



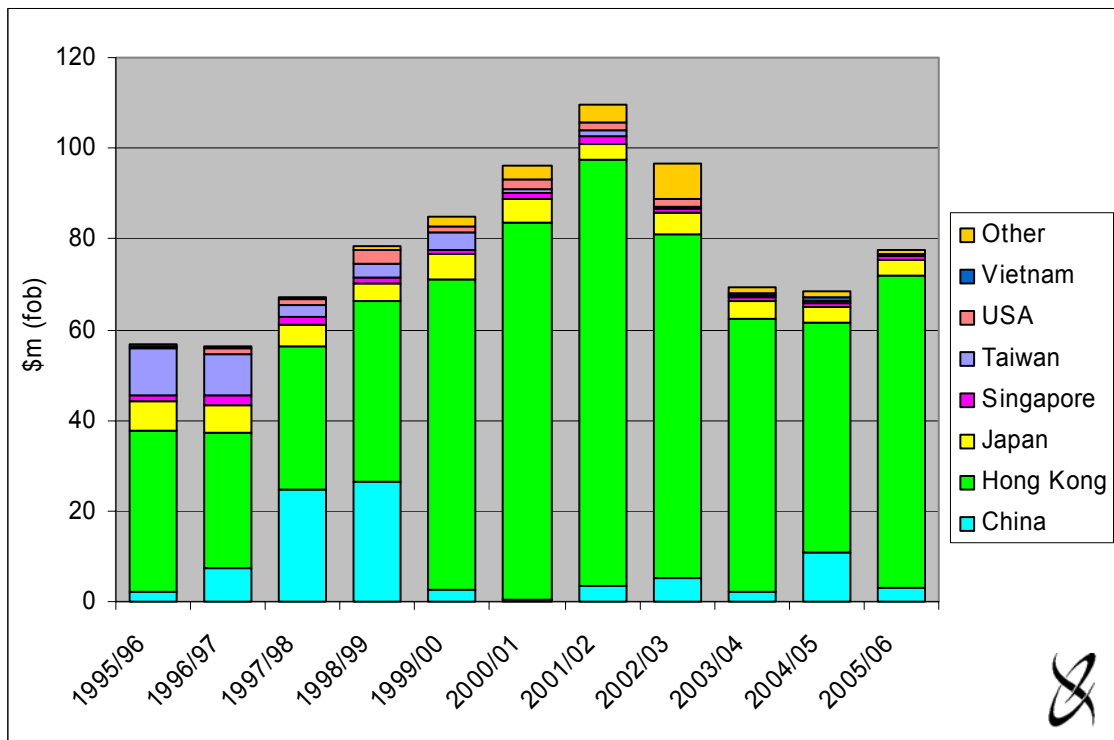
Source: Appendix Table 2.2.

Figure 4.5 Rock lobster exports from South Australia, quantity (t) by country of destination, 1995/96 to 2005/06



Source: Appendix Table 2.3

Figure 4.6 Rock lobster exports from South Australia, value (\$m fob) by country of destination, 1995/96 to 2005/06



Source: Appendix Table 2.4

Between 1995/96 and 2001/02, the total quantity of rock lobster exported from SA increased by approximately 52 per cent. The volume of rock lobster exports has decreased in subsequent years by approximately 24 per cent. The total quantity of rock lobster exported from SA in 2005/06 was approximately 1,760 tonnes. The total value of rock lobster exports increased in nominal terms, by approximately 92 per cent, between 1995/96 and 2001/02 (Figures 4.3 and 4.5).

The value of exports has declined in subsequent years by approximately 30 per cent. In 2005/06, the total value of rock lobster exports from SA was approximately \$78 million (Figures 4.4 and 4.6).

Whole rock lobster (live, fresh or chilled) was the most important category of export in all years of the analysis, accounting for, on average, 92 per cent of total exports by quantity and 91 per cent of total exports by value over the period of analysis (Figures 4.3 and 4.4). For a full breakdown of exports by category refer to Appendix Tables 2.1 and 2.2.

The most significant export destination over the period 1995/96 to 2005/06 was Hong Kong, accounting on average for 73 per cent of the total quantity and 72 per cent of the total value of exports of rock lobster (Figures 4.5 and 4.6). For a full breakdown of exports by country of destination refer to Appendix Tables 2.3 and 2.4.

The demand for seafood from countries within the EU has increased rapidly over the last decade and it has become the world's leading seafood export destination. The demand for seafood and the consumer base of the EU is likely to continue to grow in the future (MCCN May 2005). Currently rock lobster exports to EU member countries are minimal.

Following trials in London and the Napa Valley, lobster exporters are pushing for increased exports to the United Kingdom (UK) and US. Currently, the majority of lobster exports are to Hong Kong and China (Figures 4.5 and 4.6), a large proportion of the exports to Hong Kong are then transported illegally to China to avoid tariffs. A move away from these destinations towards new markets could lead to a significant increase in the value of exports (MCCN March 2005).

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Appendix 1 Economic Impact of the SA Northern Zone Rock Lobster Fishery, 2004/05

Appendix Table 1.7 The economic impact of the Northern Zone Rock Lobster fishing industry in South Australia, 2004/05

Sector	Output		Employment ^a		Household Income		Contribution to GSP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	11.6	25.7%	185	47.9%	3.8	29.8%	2.7	14.8%
Processing	1.5	3.4%	5	1.3%	0.2	1.8%	0.4	2.0%
Transport	2.6	5.8%	13	3.3%	0.9	6.7%	1.3	6.9%
Retail	0.3	0.6%	4	1.1%	0.1	0.9%	0.1	0.7%
Food services	0.6	1.3%	5	1.4%	0.2	1.2%	0.2	1.3%
Capital expenditure ^b	1.2	2.6%	13	3.4%	0.4	3.0%	0.5	2.7%
Total Direct ^c	17.9	36.8%	226	55.1%	5.6	40.4%	5.2	25.7%
Flow-on effects								
Trade	4.1	9.0%	46	12.0%	1.5	11.9%	1.9	10.4%
Manufacturing	5.8	12.8%	19	5.0%	0.9	6.6%	1.4	7.4%
Business Services	3.0	6.7%	19	4.9%	1.1	8.6%	1.4	7.9%
Transport	1.5	3.4%	7	1.9%	0.5	3.9%	0.7	4.0%
Other Sectors	13.0	28.7%	68	17.7%	3.3	25.6%	7.7	41.8%
Total Flow-on ^c	27.5	60.6%	160	41.5%	7.3	56.6%	13.1	71.6%
Total ^c	45.3	100.0%	386	100.0%	12.8	100.0%	18.3	100.0%
Total/Direct	2.5	-	1.7	-	2.3	-	3.5	-
Total/Tonne	\$101,600	-	0.87	-	\$28,700	-	\$40,991	-

^a Full-time equivalent jobs. Direct employment in the fishing sector was comprised of 119 full-time jobs and 133 part-time jobs, that is, 251 jobs in aggregate.

^b Capital expenditure includes expenditure on boats, fishing gear and equipment, sheds and buildings, motor vehicles and other equipment.

^c Totals may not sum due to rounding.

Source: EconSearch analysis.

Appendix Table 1.7 The economic impact of the Northern Zone Rock Lobster fishing industry in the Eyre region, 2004/05

Sector	Output		Employment ^a		Household Income		Contribution to GRP	
	(\$m)	%	(fte jobs)	%	(\$m)	%	(\$m)	%
Direct effects								
Fishing	11.6	45.9%	185	64.4%	3.8	50.8%	2.7	29.3%
Processing	1.5	6.1%	8	2.6%	0.3	3.8%	0.4	4.7%
Transport	0.5	2.0%	3	1.1%	0.2	2.3%	0.3	2.8%
Retail	0.0	0.1%	0	0.1%	0.0	0.1%	0.0	0.1%
Food services	0.0	0.1%	0	0.1%	0.0	0.1%	0.0	0.1%
Capital expenditure ^b	0.8	3.2%	13	4.7%	0.3	4.3%	0.4	4.4%
Total Direct ^c	14.5	54.2%	210	68.3%	4.6	57.0%	3.8	37.0%
Flow-on effects								
Trade	2.3	9.0%	29	10.3%	0.8	11.1%	1.1	11.6%
Manufacturing	1.3	5.0%	6	2.1%	0.2	3.1%	0.4	3.8%
Business Services	0.9	3.4%	6	2.2%	0.3	4.1%	0.4	4.5%
Transport	0.6	2.2%	3	1.2%	0.2	2.5%	0.3	3.1%
Other Sectors	5.8	23.0%	32	11.3%	1.4	17.9%	3.3	35.6%
Total Flow-on ^c	10.8	42.6%	78	27.0%	2.9	38.7%	5.4	58.6%
Total ^c	25.3	100.0%	287	100.0%	7.5	100.0%	9.2	100.0%
Total/Direct	1.7	-	1.4	-	1.6	-	2.4	-
Total/Tonne	\$56,800	-	0.64	-	\$16,900	-	\$20,700	-

^a Full-time equivalent jobs. Direct employment in the fishing sector was comprised of 119 full-time jobs and 133 part-time jobs, that is, 251 jobs in aggregate.

^b Capital expenditure includes expenditure on boats, fishing gear and equipment, sheds and buildings, motor vehicles and other equipment.

^c Totals may not sum due to rounding.

Source: EconSearch analysis.

Appendix 2 Rock Lobster Exports from South Australia, 1995/96 to 2005/06

Appendix Table 2.1 Rock Lobster exports from South Australia, quantity (kg) by category, 1995/96 to 2005/06

Category	Year										
	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
Whole rock lobster - frozen	17,712	254	0	0	0	145,255	24,166	39,382	22,679	5,829	1,177
Whole rock lobster- live, fresh or chilled	1,465,501	1,352,898	1,487,904	2,187,018	2,284,822	2,025,710	1,695,170	1,763,339	1,877,960	1,828,341	1,743,730
Rock lobster tails - frozen	16,624	25,713	40,790	50,833	36,592	18,862	10,187	18,879	3,264	5,044	9,592
Rock lobster tails - fresh or chilled	0	10,244	0	1,190	1,338	941	2,141	1,341	2,681	4,903	2,055
Other	10,685	100,740	168,410	685	15,499	130,230	569,788	338,494	51,378	0	3,015
Total	1,510,522	1,489,849	1,697,104	2,239,726	2,338,251	2,320,998	2,301,452	2,161,435	1,957,962	1,844,117	1,759,569

Source: Australian Bureau of Statistics (by request)

Appendix Table 2.2 Rock Lobster exports from South Australia, value (\$'000 fob) by category, 1995/96 to 2005/06

Category	Year										
	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
Whole rock lobster - frozen	730	14	0	0	0	5,180	1,167	1,864	991	326	114
Whole rock lobster- live, fresh or chilled	54,517	49,154	57,600	75,575	81,678	84,725	80,437	74,221	66,367	67,361	76,611
Rock lobster tails - frozen	1,313	1,914	2,736	2,863	2,586	1,444	1,044	1,466	172	331	750
Rock lobster tails - fresh or chilled	0	918	0	90	100	42	162	130	157	276	90
Other	402	4,443	6,887	22	631	4,597	26,618	13,844	1,580	0	116
Total	56,962	56,443	67,222	78,549	84,995	95,990	109,429	91,525	69,268	68,295	77,681

Source: Australian Bureau of Statistics (by request)

Appendix Table 2.3 Rock Lobster exports from South Australia, quantity (kg) by country of destination, 1995/96 to 2005/06

Country of Destination	Year										
	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
Canada	0	0	0	13	2,180	1,360	110	124,844	0	18	0
China	59,661	208,695	620,032	761,667	70,602	5,284	69,366	124,844	55,805	292,265	70,230
France	0	0	0	6,504	23,763	38,493	34,577	21,899	7,590	3,265	6,799
Germany	0	0	0	300	2,243	0	556	0	0	0	71
Greece	0	0	0	0	0	0	0	0	0	3025	0
Hong Kong	946,297	793,609	818,785	1,178,555	1,941,392	2,042,772	1,995,842	1,833,031	1,732,694	1,387,463	1,574,584
Italy	3,200	5,440	6,130	15,125	14,677	20,950	17,966	15,700	11,070	8,006	5,222
Japan	156,624	140,602	112,604	98,438	119,005	113,411	78,688	89,617	96,529	82,453	74,861
Korea, Republic of	8,975	720	200	2,845	1,525	3,416	3,972	4,888	2,683	1,978	2,244
Malaysia	1,081	2,065	2,282	1,562	2,953	6,624	17,039	8,244	10,041	12,229	4,016
Philippines	117	1,925	959	0	0	0	365	25	40	72	28
Singapore	36,182	50,545	36,043	27,683	24,175	32,710	28,967	26,885	19,502	26,109	11,951
Taiwan	278,819	255,526	72,156	99,460	103,480	28,739	27,983	8,210	806	100	0
Thailand	620	3,944	0	0	2,400	0	9	0	0	0	225
United Arab Emirates	2,460	4,530	1,533	3,865	1,525	1,655	2,934	2,240	1,380	4,670	1,453
United Kingdom	100	0	0	0	300	37	0	0	0	19	385
USA	10,346	22,018	25,630	43,589	27,861	24,595	22,800	22,023	5,979	9,111	7,358
Vietnam	0	0	0	0	0	0	0	0	13,843	13,184	58
Other	6,040	230	750	120	170	952	278	1,426	0	150	87
Total	1,510,522	1,489,849	1,697,104	2,239,726	2,338,251	2,296,366	2,301,452	2,283,876	1,957,962	1,844,117	1,759,572

Source: Australian Bureau of Statistics (by request)

Appendix Table 2.4 Rock Lobster exports from South Australia, value (\$'000 fob) by country of destination, 1995/96 to 2005/06

Country of Destination	Year										
	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
Canada	0	0	0	1	266	40	7	5,246	0	2	0
China	2,328	7,480	24,525	26,368	2,601	225	3,379	5,246	2,004	10,818	2,900
France	0	0	0	232	889	1,512	1,525	981	266	126	296
Germany	0	0	0	13	70	0	24	0	0	0	7
Greece						0	0	0	0	137	0
Hong Kong	35,350	29,860	31,864	40,067	68,521	83,350	93,882	75,895	60,431	50,669	68,924
Italy	103	166	234	532	566	867	890	816	449	331	238
Japan	6,500	5,977	4,784	3,824	5,374	5,023	3,834	4,465	4,015	3,416	3,648
Korea, Republic of	395	24	11	137	60	160	215	253	125	88	106
Malaysia	42	90	88	62	112	290	843	358	342	466	232
Philippines	5	73	41	0	0	0	19	1	1	2	2
Singapore	1,426	2,073	1,479	1,051	1,014	1,383	1,554	1,173	713	1,024	669
Taiwan	10,085	9,040	2,666	3,346	3,757	1,166	1,234	357	25	12	0
Thailand	22	148	0	0	101	0	1	0	0	0	9
United Arab Emirates	94	190	61	127	62	88	162	108	52	173	62
United Kingdom	3	0	0	0	10	4	0	0	0	2	30
USA	465	1,313	1,444	2,785	1,586	1,842	1,844	1,734	332	500	543
Vietnam						0	0	0	511	522	4
Other	144	10	26	4	6	38	16	64	0	7	12
Total	56,962	56,443	67,222	78,549	84,995	94,144	109,429	96,697	69,268	68,295	77,681

Source: Australian Bureau of Statistics (by request)

Appendix 3 Summary Economic Indicators for South Australian Commercial Fisheries

Appendix Table 3.1 Commercial fisheries catch, South Australia, 1990/91 – 2004/05 (tonnes)

Year	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lobster	Nth'n Zone Rock Lobster	Blue Swimmer Crabs	Inland Waters ^a	Sardines	Other Marine Species	Total SA Fisheries ^b
1990/91	863	134	1,951	1,562	1,104	434	2,442	n.a.	7,108	15,598
1991/92	885	0	2,155	1,940	1,222	425	3,143	145	7,750	17,665
1992/93	869	0	1,645	1,754	1,064	511	2,640	1,230	7,499	17,212
1993/94	802	226	1,693	1,669	930	544	2,992	2,377	6,719	17,952
1994/95	851	148	1,911	1,720	891	608	2,884	2,803	9,744	21,560
1995/96	902	258	2,013	1,684	903	655	2,720	3,708	6,301	19,144
1996/97	903	211	1,813	1,635	893	464	2,657	3,428	6,507	18,511
1997/98	812	267	2,492	1,680	942	469	2,595	6,041	5,526	20,824
1998/99	933	336	2,425	1,713	1,016	501	2,355	4,465	4,964	18,708
1999/00	889	400	2,016	1,717	1,001	549	1,995	3,836	4,840	17,243
2000/01	867	384	2,603	1,716	846	556	2,293	7,368	5,132	21,765
2001/02	850	322	2,288	1,717	675	559	1,875	12,165	4,644	25,095
2002/03	890	232	1,508	1,766	595	583	2,030	21,741	4,048	33,393
2003/04	879	172	1,958	1,896	504	611	2,120	33,160	3,712	45,012
2004/05	902	213	1,960	1,897	446	632	2,198	56,952	3,810	69,010

^a Excludes the River fishery for the years 2003/04 and 2004/05.

^b Excludes aquaculture, south east non-trawl, tuna, deep water trawl.

Source: EconSearch 2006b

Appendix Table 3.2 Commercial fisheries gross value of production, South Australia, 1990/91 – 2004/05 (\$m)

Year	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lobster	Nth'n Zone Rock Lobster	Blue Swimmer Crabs	Inland Waters ^a	Sardines	Other Marine Species ^b	Total SA Fisheries ^c
1990/91	14.0	1.7	20.0	26.7	18.2	1.6	2.3	na	17.8	102.4
1991/92	15.1	0.0	19.7	36.3	21.4	1.4	2.6	0.2	21.3	117.9
1992/93	23.7	0.0	19.7	34.8	20.5	1.6	5.3	0.8	20.3	126.7
1993/94	27.2	3.3	20.9	43.2	23.4	1.8	5.6	1.4	19.2	146.0
1994/95	22.8	1.9	22.6	48.6	25.5	2.2	6.3	1.6	24.5	156.1
1995/96	22.5	3.5	22.9	44.6	23.8	2.5	6.0	2.5	21.8	150.1
1996/97	25.2	2.9	22.2	47.0	24.4	2.1	6.3	2.2	20.6	152.9
1997/98	26.9	4.1	29.2	50.9	27.7	2.2	5.5	3.8	16.7	166.9
1998/99	27.2	5.0	34.6	47.2	26.7	2.2	6.3	2.5	18.0	169.7
1999/00	32.4	7.6	36.1	51.2	29.8	2.5	7.5	2.7	19.2	189.1
2000/01	40.0	6.7	46.0	55.1	28.0	3.1	7.8	5.2	20.2	212.0
2001/02	34.8	5.9	41.5	65.7	26.2	3.5	6.0	8.5	18.5	210.5
2002/03	36.3	4.2	28.2	63.8	18.8	3.6	5.1	17.8	20.4	198.3
2003/04	31.6	3.1	40.4	49.3	12.0	3.6	5.4	22.5	21.9	189.9
2004/05	33.8	3.8	32.0	54.4	11.6	3.6	5.5	28.5	20.9	194.1

^a SARDI estimates for the years 1990/91 and 1991/92, revalued SARDI estimates using Baker and Pierce (1998) for the years 1992/93 to 2001/02 and survey based readjustment factors for 2002/03 and 2003/04.

^b Excludes south east non-trawl, tuna, deep water trawl. SARDI estimates for the years 1990/91 to 2002/03, revalued SARDI estimates for 2003/04 using weighted average prices from Sydney and Melbourne fish markets and price data obtained from fishers.

^c Excludes aquaculture, south east non-trawl, tuna, deep water trawl.

Source: EconSearch 2006b.

Appendix Table 3.3 Cost of management in South Australian commercial fisheries, 2004/05

	Licence Fees (\$'000)	GVP (\$'000)	Fees/ GVP (%)	Catch ('000kg)	Fees/ Catch (\$/kg)	Licence Holders (no.)	Fees/ Licence (\$/licence)
Abalone	2,335	33,821	6.9%	902	\$2.59	35	\$66,715
GSV Prawns	259	3,761	6.9%	213	\$1.22	10	\$25,936
SG & WC Prawns	763	32,043	2.4%	1,960	\$0.39	42	\$18,158
Sth'n Zone Rock Lobster	2,497	54,397	4.6%	1,897	\$1.32	180	\$13,870
Nth'n Zone Rock Lobster	1,076	11,643	9.2%	446	\$2.41	69	\$15,600
Blue Crabs - Pots	206	3,322	6.2%	584	\$0.35	8	\$25,695
Blue Crabs – Marine Scale ^a	49	269	18.1%	47	\$1.03	14	\$3,479
Lakes and Coorong ^b	243	5,495	4.4%	2,198	\$0.11	37	\$6,562
Marine Scalefish	1,469	20,878	7.0%	3,810	\$0.39	394	\$3,728
Sardines	991	28,476	3.5%	56,952	\$0.02	14	\$70,783
Total SA	9,887	194,105	5.1%	69,010	\$0.14	803	\$12,312

^a Excludes the River fishery.

Source: EconSearch 2006b.

Appendix Table 3.4 Financial performance in South Australian commercial fisheries, 2004/05, (\$'000) (average per boat)

	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs Pot Sector ^a	Blue Crabs MS Sector ^a	Marine Scalefish ^b	Sardines	Lakes and Coorong
Gross Income	1,015.7	370.2	708.1	314.2	222.3	4,164.7	248.6	55.0	2,422.1	163.2
Costs										
Fuel	14.4	35.9	62.4	18.2	45.4	607.8	42.0	6.4	88.8	10.8
R&M	35.9	20.7	53.5	16.6	17.5	538.0	50.1	5.9	173.2	8.1
Labour	259.5	139.0	237.4	87.0	95.5	1,042.3	84.9	31.2	861.4	66.6
Licence fee	65.1	27.1	20.8	15.8	19.4	205.6	48.7	4.3	70.6	6.4
Insurance	6.6	18.3	19.2	6.2	8.4	62.1	9.3	1.8	38.0	1.3
Interest	4.9	28.6	41.3	21.7	31.5	607.1	8.5	0.3	33.4	4.4
Admin & Other	50.5	24.4	53.7	20.2	50.5	278.0	26.1	10.0	80.1	24.3
Total Cash Costs	436.8	294.0	488.3	185.6	268.3	3,340.9	269.5	60.1	1,345.5	122.0
Cash Operating Surplus	578.9	76.1	219.8	128.6	-46.0	823.9	-21.0	-5.1	1,076.6	41.2
Depreciation	54.3	154.4	160.6	48.0	55.4	337.0	48.3	8.9	146.2	19.3
Earnings Before Tax	524.6	-78.3	59.2	80.6	-101.4	486.8	-69.3	-14.0	930.4	21.9
EBIT^c	529.5	-49.7	100.5	102.3	-69.9	1,094.0	-60.8	-13.7	963.8	26.3
Capital										
Fishing Gear & Equipment	272.2	1,142.6	1,455.9	351.8	431.1	3,373.7	407.4	88.2	1,389.1	116.1
Licence Value	8,525.0	3,100.0	4,040.9	2,682.4	1,374.2	21,394.6	1,180.5	94.0	9,123.9	139.0
Total Capital	8,797.2	4,242.6	5,496.9	3,034.2	1,805.2	24,768.3	1,587.9	182.2	10,513.0	255.0
Rate of Return to Gear/Equip	194.5%	-4.3%	6.9%	29.1%	-16.2%	32.4%	-14.9%	-15.5%	69.4%	22.7%
Rate of Return to Capital	6.0%	-1.2%	1.8%	3.4%	-3.9%	4.4%	-3.8%	-7.5%	9.2%	10.3%

^a Estimates of financial performance for the blue crab fishery have been presented on a whole of sector basis. The survey estimate of gross income for the blue crab – pot sector is higher than the SARDI estimate of \$3.32 million for 2004/05 presented in Appendix Table 3.2. The reason for the difference is likely to be that the SARDI estimate is based on Adelaide prices only, whereas licence holders are selling to the higher priced Sydney and Melbourne markets as well.

^b Excludes the Commonwealth managed fisheries: south east non-trawl, tuna, deep water trawl.

^c Earnings before interest and tax.

Source: EconSearch 2006b.

Appendix Table 3.5 Costs as a percentage of total cash costs in South Australian commercial fisheries, 2004/05

	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs Pot Sector	Blue Crabs MS Sector	Marine Scalefish ^a	Sardines	Lakes & Coorong
Fuel	3%	12%	13%	10%	17%	18%	16%	11%	7%	9%
R&M	8%	7%	11%	9%	7%	16%	19%	10%	13%	7%
Labour	59%	47%	49%	47%	36%	31%	32%	52%	64%	55%
Licence fee	15%	9%	4%	8%	7%	6%	18%	7%	5%	5%
Insurance	2%	6%	4%	3%	3%	2%	3%	3%	3%	1%
Interest	1%	10%	8%	12%	12%	18%	3%	0%	2%	4%
Admin & Other	12%	8%	11%	11%	19%	8%	10%	17%	6%	20%
Total Cash Costs	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

^a Excludes Commonwealth managed fisheries: south east non-trawl, tuna, deep water trawl.

Source: EconSearch 2006b.

Appendix Table 3.6 Economic impacts of South Australian commercial fisheries, 2004/05

	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs	Marine Scalefish	Sardines	Lakes and Coorong	All Fisheries ^a
Output (\$m)										
Direct										
Fishing	33.8	3.8	32.0	54.4	11.6	4.4	20.9	28.5	5.5	194.9
Downstream ^b	5.1	2.0	16.9	24.4	6.2	3.1	11.1	0.8	5.1	74.7
All other sectors (indirect)	29.3	6.5	48.8	73.6	29.9	8.5	45.7	28.2	12.4	282.9
Total	68.2	12.3	97.8	152.4	47.7	16.0	77.7	57.5	23.0	552.5
Total/Direct	1.8	2.1	2.0	1.9	2.7	2.1	2.4	2.0	2.2	2.0
Total/Tonne (\$)	\$75,500	\$57,700	\$49,800	\$80,300	\$107,000	\$25,300	\$20,300	\$1,000	\$10,400	\$12,274
Contribution to GSP (\$m)										
Direct										
Fishing	27.8	2.4	22.9	39.8	2.7	2.4	9.5	22.1	3.6	133.2
Downstream	1.8	0.8	7.0	9.7	2.5	1.0	3.9	0.3	2.0	29.1
All other sectors (indirect)	14.2	3.2	23.3	35.5	14.3	4.0	21.7	13.6	5.9	135.8
Total	43.8	6.4	53.2	84.9	19.5	7.4	35.2	36.0	11.5	298.0
Total/Direct	1.5	2.0	1.8	1.7	3.8	2.1	2.6	1.6	2.1	1.8
Total/Tonne (\$)	\$48,571	\$30,254	\$27,135	\$44,700	\$43,769	\$11,740	\$9,236	\$632	\$5,238	\$6,621
Employment (fte jobs)^c										
Direct										
Fishing	123	37	217	421	185	30	363	52	73	1,501
Downstream	24	21	174	147	41	18	89	7	45	565
All other sectors (indirect)	170	37	288	425	175	50	263	166	74	1,649
Total	317	95	679	994	400	98	715	224	192	3,715
Total/Direct	2.2	1.6	1.7	1.7	1.8	2.0	1.6	3.8	1.6	1.8
Total/Tonne	0.35	0.45	0.35	0.52	0.90	0.15	0.19	0.00	0.09	0.08
Household Income (\$m)										
Direct										
Fishing	9.1	1.4	10.0	15.7	5.7	1.1	9.5	12.1	2.5	67.0
Downstream	1.2	0.6	5.0	6.7	1.7	0.7	2.9	0.2	1.4	20.5
All other sectors (indirect)	7.9	1.7	13.0	19.4	7.9	2.2	12.1	7.3	3.3	75.0
Total	18.2	3.7	28.0	41.8	15.3	4.1	24.5	19.6	7.2	162.5
Total/Direct	1.8	1.9	1.9	1.9	2.1	2.2	2.0	1.6	1.9	1.9
Total/Tonne (\$)	\$20,100	\$17,600	\$14,200	\$22,000	\$34,400	\$6,400	\$6,400	\$300	\$3,200	\$3,609

^a Excludes the River fishery and the Commonwealth managed fisheries: south-east non-trawl, tuna and deep water trawl.

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

^c Full time equivalent jobs. Direct employment in the fishing sector was comprised of 655 full-time and 1,399 part-time, that is, 2,054 jobs in total.

Source: EconSearch 2006b

Appendix Table 3.7 Economic rent in South Australian commercial fisheries, 2004/05 (\$m)

	Abalone	GSV Prawns	SG & WC Prawns	Sth'n Zone Rock Lob	Nth'n Zone Rock Lob	Blue Crabs	Marine Scalefish	Sardines	Lakes and Coorong	All Fisheries ^a
Gross Income	35.5	3.8	32.0	54.4	11.6	4.4	20.9	28.5	5.5	196.7
Less Labour	9.1	1.4	10.7	15.1	5.0	1.1	11.9	10.1	2.2	66.7
Less Materials & Services	6.0	1.3	9.5	13.3	7.4	1.9	10.9	5.3	1.7	57.3
Less Depreciation	1.9	1.6	7.3	8.3	2.9	0.4	3.4	1.7	0.6	28.1
Less Opportunity Cost of Capital (@10%)	1.0	1.2	6.6	6.1	2.3	0.4	3.4	1.6	0.4	22.8
Economic Rent	17.6	-1.7	-2.0	11.6	-5.9	0.7	-8.5	9.7	0.5	21.9

^a Excludes the River fishery and the Commonwealth managed fisheries: south east non-trawl, tuna, deep water trawl.

Source: EconSearch 2006b.

Appendix 4 Financial Performance Indicators, 1997/98 to 2000/01

Appendix Table 4.1 Financial performance in the SA Northern Zone Rock Lobster fishery, 1997/98 to 1999/00 (average per boat)^a

	1997/98		1998/99		1999/00		2000/01	
	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC	All Boats	Share of TCC
Gross Income	\$373,813		\$371,014		\$383,627		\$400,432	
Costs								
Fuel	\$25,302	10%	\$23,099	9%	\$33,275	12%	\$46,473	14%
R&M	\$24,816	9%	\$24,386	10%	\$24,003	9%	\$30,069	9%
Bait	\$14,161	5%	\$13,735	5%	\$13,187	5%	\$16,666	5%
Provisions	\$7,337	3%	\$7,209	3%	\$7,096	3%	\$4,566	1%
Labour	\$130,937	49%	\$129,957	51%	\$134,374	50%	\$154,877	47%
Licence fee	\$13,881	5%	\$9,761	4%	\$8,816	3%	\$11,906	4%
Insurance	\$8,040	3%	\$8,040	3%	\$8,243	3%	\$8,717	3%
Interest	\$22,135	8%	\$20,432	8%	\$22,621	8%	\$35,464	11%
Admin and Other	\$18,845	7%	\$19,093	7%	\$19,573	7%	\$21,100	6%
Total Cash Costs	\$265,455	100%	\$255,713	100%	\$271,188	100%	\$329,836	100%
Cash Operating Surplus	\$108,359		\$115,301		\$112,439		\$70,596	
Depreciation	\$45,324		\$50,487		\$52,275		\$56,905	
Earnings Before Tax	\$63,034		\$64,814		\$60,164		\$13,691	
Earnings Before Interest & Tax	\$85,169		\$85,246		\$82,785		\$49,156	
Capital								
Fishing Gear & Equip	\$398,105		\$443,451		\$459,157		\$545,164	
Licence Value	\$1,494,667		\$1,496,008		\$1,452,826		\$2,160,000	
Total Capital	\$1,892,772		\$1,939,459		\$1,911,983		\$2,705,164	
Rate of Return to Fishing Gear & Equip	21.4%		19.2%		18.0%		9.0%	
Rate of Return to Total Capital	4.5%		4.4%		4.3%		1.8%	

^a Financial performance estimates for 1997/98 to 1999/00 are based on the October 1998 survey of licence holders.

Source: EconSearch 2006a