Economic Indicators for the Commercial Fisheries of South Australia
Summary Report 2014/15

A report to

PIRSA Fisheries and Aquaculture

Prepared by

EconSearch Pty Ltd
214 Kensington Road
Marryatville SA 5068
Tel: (08) 8431 5533
Fax: (08) 8431 7710

www.econsearch.com.au
CONTENTS

Contents ............................................................................................................................................... iii
Tables ............................................................................................................................................... vi
Figures .............................................................................................................................................. vii
Abbreviations .................................................................................................................................. xii
Document History and Status ........................................................................................................ xiv

1. Introduction .................................................................................................................................. 1
   1.1 Background ................................................................................................................................. 1
   1.2 Report Format ............................................................................................................................. 1

2. Objectives of Fisheries Management in SA .............................................................................. 3

3. Measuring Performance Against Fisheries Management Objectives ....................................... 4
   3.1 Catch and GVP ............................................................................................................................. 4
   3.2 Management Costs ..................................................................................................................... 4
   3.3 Financial Performance Indicators ............................................................................................... 5
       3.3.1 Operating income .................................................................................................................. 5
       3.3.2 Operating costs ...................................................................................................................... 5
       3.3.3 Profitability .......................................................................................................................... 6
       3.3.4 Return to capital ................................................................................................................... 6

4. Factors that Influence the Economic Condition of Fisheries .................................................... 7
   4.1 Fuel Prices ................................................................................................................................. 7
   4.2 Interest Rates ............................................................................................................................. 7
   4.3 Wage Rates ............................................................................................................................... 8
   4.4 Prices for Inputs .......................................................................................................................... 9
   4.5 Exchange Rates ......................................................................................................................... 10

5. Abalone Fishery ............................................................................................................................. 12
   5.1 Economic Objectives of the Abalone Fishery .......................................................................... 12
   5.2 Catch and Gross Value of Production ...................................................................................... 15
   5.3 Management Costs ................................................................................................................... 18
   5.4 Financial Performance Indicators ............................................................................................. 19
       5.4.1 Average income .................................................................................................................... 19
       5.4.2 Operating cost trends .......................................................................................................... 20
       5.4.3 Cost price squeeze .............................................................................................................. 22
       5.4.4 Profitability ......................................................................................................................... 22
       5.4.5 Return to capital .................................................................................................................. 23
   5.5 Contribution to SA Economy ..................................................................................................... 24
   5.6 Economic Rent .......................................................................................................................... 26

6. Blue Crab Fishery .......................................................................................................................... 28
   6.1 Economic Objectives of the Blue Crab Fishery ...................................................................... 28
   6.2 Catch and Gross Value of Production ....................................................................................... 30
6.3 Management Costs............................................................... 32
6.4 Financial Performance Indicators......................................... 33
   6.4.1 Total income..................................................................... 33
   6.4.2 Operating cost trends...................................................... 34
   6.4.3 Cost price squeeze.......................................................... 36
   6.4.4 Profitability..................................................................... 36
   6.4.5 Return to capital.............................................................. 37
6.5 Contribution to SA Economy ................................................ 38
6.6 Economic Rent..................................................................... 40

7. Charter Boat Fishery ................................................................ 43
   7.1 Economic Objectives of the Charter Boat Fishery.................. 43
   7.2 Catch and Gross Value of Production................................... 44
   7.3 Management Costs............................................................. 46
   7.4 Financial Performance Indicators....................................... 46
      7.4.1 Average income............................................................ 46
      7.4.2 Operating costs............................................................. 48
      7.4.3 Cost price squeeze......................................................... 49
      7.4.4 Profitability.................................................................. 49
      7.4.5 Return to capital........................................................... 51
   7.5 Contribution to SA Economy .............................................. 51

8. Lakes and Coorong Fishery..................................................... 53
   8.1 Economic Objectives of the Lakes and Coorong Fishery....... 53
   8.2 Catch and Gross Value of Production.................................. 62
   8.3 Management Costs............................................................. 65
   8.4 Financial Performance Indicators....................................... 66
      8.4.1 Average income............................................................ 66
      8.4.2 Operating cost trends...................................................... 67
      8.4.3 Cost price squeeze........................................................ 69
      8.4.4 Profitability.................................................................. 69
      8.4.5 Return to capital........................................................... 70
   8.5 Contribution to SA Economy .............................................. 71
   8.6 Economic Rent.................................................................. 73

9. Marine Scalefish Fishery......................................................... 76
   9.1 Economic Objectives of the Marine Scalefish Fishery.......... 76
   9.2 Catch and Gross Value of Production.................................. 81
   9.3 Management Costs............................................................. 83
   9.4 Financial Performance Indicators....................................... 84
      9.4.1 Average income............................................................ 84
      9.4.2 Operating cost trends...................................................... 85
      9.4.3 Cost price squeeze........................................................ 87
      9.4.4 Profitability.................................................................. 87
      9.4.5 Return to capital........................................................... 88
9.5 Contribution to SA Economy ................................................................. 89
9.6 Economic Rent .................................................................................. 91

10. Northern Zone Rock Lobster Fishery .................................................. 93
10.1 Economic Objectives of the Northern Zone Rock Lobster Fishery ........ 93
10.2 Catch and Gross Value of Production ............................................... 96
10.3 Management Costs ........................................................................... 99
10.4 Financial Performance Indicators ..................................................... 99
  10.4.1 Average income ............................................................................ 99
  10.4.2 Operating cost trends ................................................................. 101
  10.4.3 Cost price squeeze ..................................................................... 102
  10.4.4 Profitability .................................................................................. 103
  10.4.5 Return to capital ......................................................................... 104
10.5 Contribution to SA Economy ............................................................. 105
10.6 Economic Rent .................................................................................. 107

11. Sardine Fishery .................................................................................. 109
11.1 Economic Objectives of the Sardine Fishery ...................................... 109
11.2 Catch and Gross Value of Production ............................................... 112
11.3 Management Costs ........................................................................... 115
11.4 Financial Performance Indicators ..................................................... 115
  11.4.1 Average income ............................................................................ 115
  11.4.2 Operating cost trends ................................................................. 116
  11.4.3 Cost price squeeze ..................................................................... 118
  11.4.4 Profitability .................................................................................. 118
  11.4.5 Return to capital ......................................................................... 119
11.5 Contribution to SA Economy ............................................................. 120
11.6 Economic Rent .................................................................................. 122

12. Spencer Gulf Prawn Fishery ................................................................. 124
12.1 Economic Objectives of the Spencer Gulf Prawn Fishery .................. 124
12.2 Catch and Gross Value of Production ............................................... 127
12.3 Management Costs ........................................................................... 130
12.4 Financial Performance Indicators ..................................................... 130
  12.4.1 Average income ............................................................................ 130
  12.4.2 Operating cost trends ................................................................. 131
  12.4.3 Cost price squeeze ..................................................................... 133
  12.4.4 Profitability .................................................................................. 133
  12.4.5 Return to capital ......................................................................... 134
12.5 Contribution to SA Economy ............................................................. 135
12.6 Economic Rent .................................................................................. 137

13. Gulf St Vincent Prawn Fishery ............................................................. 140
13.1 Economic Objectives of the Gulf St Vincent Prawn Fishery ............... 140
13.2 Catch and Gross Value of Production ............................................... 143
13.3 Management Costs ........................................................................... 146
13.4 Financial Performance Indicators ......................................................... 146
  13.4.1 Average income .............................................................................. 146
  13.4.2 Operating cost trends ................................................................. 147
  13.4.3 Cost price squeeze ....................................................................... 149
  13.4.4 Profitability .................................................................................. 149
  13.4.5 Return to capital ........................................................................... 150
13.5 Contribution to SA Economy ............................................................. 151
13.6 Economic Rent .................................................................................. 153
14. Southern Zone Rock Lobster Fishery ..................................................... 155
  14.1 Economic Objectives of the Southern Zone Rock Lobster Fishery ....... 155
  14.2 Catch and Gross Value of Production ............................................. 158
  14.3 Management Costs .......................................................................... 160
  14.4 Financial Performance Indicators .................................................... 161
    14.4.1 Average income ........................................................................... 161
    14.4.2 Operating cost trends ................................................................. 162
    14.4.3 Cost price squeeze ....................................................................... 164
    14.4.4 Profitability .................................................................................. 164
    14.4.5 Return to capital ........................................................................... 165
  14.5 Contribution to SA Economy ............................................................. 166
  14.6 Economic Rent .................................................................................. 168
15. Fisheries Summary ................................................................................ 170
  15.1 Economic Objectives of SA Commercial Fisheries ......................... 170
  15.2 Catch and Gross Value of Production ............................................. 170
  15.3 Management Costs .......................................................................... 174
  15.4 Financial Performance Indicators .................................................... 176
    15.4.1 Cost price squeeze ....................................................................... 176
    15.4.2 Return to capital ........................................................................... 176
  15.5 Contribution to SA Economy ............................................................. 178
  15.6 Economic Rent .................................................................................. 180
References .................................................................................................. 183
Appendix 1 Economic Indicators Defined .................................................. 185

TABLES

Table 5-1 Economic objectives of the South Australian Abalone Fishery ......... 13
Table 6-1 Economic objectives of the Blue Crab Fishery ................................ 29
Table 8-1 Economic objectives of the Lakes and Coorong Fishery .................. 55
Table 9-1 Economic objectives of the Marine Scalefish Fishery ..................... 77
Table 10-1 Economic objectives of the NZRL Fishery ................................... 94
Table 11-1 Economic objectives of the Sardine Fishery ................................. 110
Table 12-1 Economic objectives of the Spencer Gulf Prawn Fishery .............. 125
Table 13-1 Economic objectives of the Gulf St Vincent Prawn Fishery ........................................ 141
Table 14-1 Economic objectives of the SZRL Fishery ........................................................................ 156
Table 15-1 Commercial fisheries catch, South Australia, 2000/01 to 2014/15 (tonnes) .......................................................... 171
Table 15-2 Commercial fisheries gross value of production, South Australia, 2000/01 to 2014/15 ($m) a .......................................................... 172
Table 15-3 Commercial fisheries cost of management, 2014/15 ($m) a ......................................................... 174
Table 15-4 Commercial fisheries financial performance, average per boat, 2014/15 ............... 177
Table 15-5 Commercial fisheries economic impact, 2014/15 ......................................................... 180
Table 15-6 Commercial fisheries economic rent, 2014/15 .............................................................. 180

FIGURES

Figure 4-1 Transportation index for Adelaide, 2000/01 to 2014/15 ............................................................. 8
Figure 4-2 Interest rates for Adelaide, 2000/01 to 2014/15 ........................................................................ 8
Figure 4-3 SA labour price index, 2000/01 to 2014/15 .......................................................................... 9
Figure 4-4 Consumer price index for Adelaide, 2000/01 to 2014/15 .......................................................... 10
Figure 4-5 Exchange rate indices, 2000/01 to 2014/15 ........................................................................ 11
Figure 5-1 Total catch from the SA Abalone Fishery, 2000/01 to 2014/15 ................................................ 16
Figure 5-2 SA Abalone Fishery GVP, 2000/01 to 2014/15 ................................................................. 17
Figure 5-3 Exchange rate (USD) and price for South Australian Abalone, 2000/01 to 2014/15 .................................................................................. 18
Figure 5-4 Management fee per licence and as a proportion of GVP in the SA Abalone Fishery, 2000/01 to 2014/15 a ................................................. 19
Figure 5-5 Average real income per licence holder in the SA Abalone Fishery, 2000/01 to 2014/15 a ............................................................. 20
Figure 5-6 Cost shares in the SA Abalone Fishery, 2000/01 to 2014/15a ............................................. 21
Figure 5-7 Average total costs in the SA Abalone Fishery 2000/01 to 2014/15a .................................. 21
Figure 5-8 Price and cost indices for the SA Abalone Fishery, 2000/01 to 2014/15a .......................... 22
Figure 5-9 Average income and profit per boat in the SA Abalone Fishery, 2000/01 to 2014/15 a ............................................................. 23
Figure 5-10 Return to capital in the SA Abalone Fishery, 2000/01 to 2014/15 ................................. 24
Figure 5-11 Total gross state product, output and household income impact of the SA Abalone Fishery on the SA economy, 2000/01 to 2014/15a ............... 25
Figure 5-12 Total direct and indirect employment impact of the SA Abalone Fishery on the SA economy, 2000/01 to 2014/15 ................................................. 25
Figure 5-13 Economic rent in the SA Abalone Fishery, 2000/01 to 2014/15 ($’000)a .......................... 26
Figure 5-14 Economic rent as a proportion of GVP in the SA Abalone Fishery, 2000/01 to 2014/15 ................................................................. 27
Figure 5-15 Aggregate value of licences and return to aggregate licence value in the SA Abalone Fishery, 2000/01 to 2014/15a ........................................... 27
Figure 6-1 SA Blue Crab Fishery catch, 2000/01 to 2014/15 ................................................................. 30
Figure 6-2 SA Blue Crab Fishery GVP, 2000/01 to 2014/15 a ................................................................. 31
Figure 6-3 GVP, price and catch indices for the SA Blue Crab Fishery (2000/01=100) a ................................................................. 31
Coorong Fishery, 2000/01 to 2014/15

- Management fee per licence and as a proportion of GVP, Lakes and Coorong Fishery (2000/01 = 100) ........................................ 32
- Price indices for the Lakes and Coorong Fishery (2000/01=100) ........................................ 33
- Fishery income and number of licences in the SA Blue Crab Fishery, 2000/01 to 2014/15 ................................. 34
- Cost shares in the SA Blue Crab Fishery, 2000/01 to 2014/15 ................................................................. 35
- Total costs in the SA Blue Crab Fishery, 2000/01 to 2014/15 ................................................................. 35
- Price and cost indices for the SA Blue Crab Fishery, 2000/01 to 2014/15 (2000/01 = 100) ........................................ 36
- Income and profit in the SA Blue Crab Fishery, 2000/01 to 2014/15 ................................................................. 37
- Return to capital in the SA Blue Crab Fishery, 2000/01 to 2014/15 ................................................................. 38
- Total gross state product, output and household income impact of the SA Blue Crab Fishery on the SA economy, 2000/01 to 2014/15 ................................................................. 39
- Total direct and indirect employment impact of the SA Blue Crab Fishery on the SA economy, 2000/01 to 2014/15 ................................................................. 39
- Economic rent in the SA Blue Crab Fishery, 2000/01 to 2014/15 ($’000) ................................................................. 41
- Economic rent as a proportion of GVP in the SA Blue Crab Fishery, 2000/01 to 2014/15 ................................................................. 41
- Aggregate value of licences and return to aggregate licence value in the SA Blue Crab Fishery, 2000/01 to 2014/15 ................................................................. 42
- SA Charter Boat Fishery clients and GVP, 2005/06 to 2014/15 ................................................................. 44
- GVP, price and clients indices for the SA Charter Boat Fishery (2005/06 = 100) ................................................................. 45
- Price indices for the Charter Boat Fishery (2005/06 = 100) ................................................................. 45
- Management fee per licence and as a proportion of GVP, Charter Boat Fishery, 2005/06 to 2014/15 ................................................................. 46
- Fishery income and number of licence holders in the SA Charter Boat Fishery, 2009/10 to 2014/15 ................................................................. 47
- Cost shares in the SA charter Boat Fishery, 2009/10 to 2014/15 ................................................................. 48
- Total costs in the SA Charter Boat Fishery, 2009/10 to 2014/15 ................................................................. 49
- Price and cost indices for the SA Charter Boat Fishery, 2009/10 to 2014/15 (2009/10 = 100) ................................................................. 50
- Income and profit in the SA Charter Boat Fishery, 2009/10 to 2014/15 ................................................................. 50
- Return to capital in the SA Charter Boat Fishery, 2009/10 to 2014/15 ................................................................. 51
- Total gross state product, output and household income impact of the SA Charter Boat Fishery on the SA economy, 2009/10 to 2014/15 ................................................................. 52
- Total direct and indirect employment impact of the SA Charter Boat Fishery on the SA economy, 2009/10 to 2014/15 ................................................................. 52
- Lakes and Coorong Fishery catch, 2000/01 to 2014/15 ................................................................. 62
- Lakes and Coorong Fishery GVP, 2000/01 to 2014/15 ................................................................. 63
- Average price for Lakes and Coorong Fishery species, 2000/01 to 2014/15 ................................................................. 64
- GVP and catch Indices for the Lakes and Coorong Fishery (2000/01=100) ................................................................. 64
- Price indices for the Lakes and Coorong Fishery (2000/01 = 100) ................................................................. 65
- Management fee per licence and as a proportion of GVP, Lakes and Coorong Fishery, 2000/01 to 2014/15 ................................................................. 66
Figure 8-7 Average income per licence holder in the Lakes and Coorong Fishery, 2002/03 to 2014/15 a ................................................................. 67
Figure 8-8 Cost shares in the Lakes and Coorong Fishery, 2002/03 to 2014/15 a .................. 68
Figure 8-9 Average total costs in the Lakes and Coorong Fishery 2002/03 to 2014/15 a ................................................................. 68
Figure 8-10 Price and cost indices for the Lakes and Coorong Fishery, 2002/03 to 2014/15 a ................................................................. 69
Figure 8-11 Average income and profit per boat in the Lakes and Coorong Fishery, 2002/03 to 2014/15 a ................................................................. 70
Figure 8-12 Return to capital in the Lakes and Coorong Fishery, 2002/03 to 2014/15 ........... 71
Figure 8-13 Total gross state product, output and household income impact of the Lakes and Coorong Fishery on the SA economy, 2002/03 to 2014/15 a ................................................................. 72
Figure 8-14 Total direct and indirect employment impact of the Lakes and Coorong Fishery on the SA economy, 2002/03 to 2014/15 ................................................................. 73
Figure 8-15 Economic rent in the Lakes and Coorong Fishery, 2002/03 to 2014/15 ($’000) a ................................................................. 74
Figure 8-16 Economic rent as a proportion of GVP in the Lakes and Coorong Fishery, 2002/03 to 2014/15 ................................................................. 75
Figure 8-17 Aggregate value of licences and return to aggregate licence value in the Lakes and Coorong Fishery, 2002/03 to 2014/15 a ................................................................. 75
Figure 9-1 SA Marine Scalefish Fishery catch, 2000/01 to 2014/15 ................................................................. 81
Figure 9-2 SA Marine Scalefish Fishery GVP, 2000/01 to 2014/15 a ................................................................. 82
Figure 9-3 GVP, price and catch indices for the SA Marine Scalefish Fishery a ............... 82
Figure 9-4 Price indices for the Marine Scalefish Fishery for aggregate of all species a, b ........................................................................................................ 83
Figure 9-5 Management fee per licence and as a proportion of GVP, SA Marine Scalefish Fishery, 2000/01 to 2014/15 a ................................................................. 84
Figure 9-6 Average income per licence holder in the SA Marine Scalefish Fishery, 2000/01 to 2014/15 a ................................................................. 85
Figure 9-7 Cost shares in the SA Marine Scalefish Fishery, 2000/01 to 2014/15 a ........... 86
Figure 9-8 Average total costs in the SA Marine Scalefish Fishery 2000/01 to 2014/15 a ................................................................. 86
Figure 9-9 Price and cost indices for the SA Marine Scalefish Fishery, 2000/01 to 2014/15 a ................................................................. 87
Figure 9-10 Average income and profit per boat in the SA Marine Scalefish Fishery, 2000/01 to 2014/15 a ................................................................. 88
Figure 9-11 Return to capital in the SA Marine Scalefish Fishery, 2000/01 to 2014/15 ........ 89
Figure 9-12 Total gross state product, output and household income impact of the SA Marine Scalefish Fishery on the SA economy, 2000/01 to 2014/15 a ................................................................. 90
Figure 9-13 Total direct and indirect employment impact of the SA Marine Scalefish Fishery on the SA economy, 2000/01 to 2014/15 ................................................................. 90
Figure 9-14 Economic rent in the SA Marine Scalefish Fishery, 2000/01 to 2014/15 a ........ 91
Figure 9-15 Economic rent as a proportion of GVP in the SA Marine Scalefish Fishery, 2000/01 to 2014/15 ................................................................. 92
Figure 9-16 Aggregate value of licences and return to aggregate licence value in the SA Marine Scalefish Fishery, 2000/01 to 2014/15 a ................................................................. 92
Figure 10-1 NZRL Fishery catch, 2000/01 to 2014/15 ................................................................. 96
Figure 12-2  SG Prawn Fishery GVP, 2000/01 to 2014/15 a .................................................. 128
Figure 12-3  GVP, price and catch indices for the SG Prawn Fishery a ........................................ 129
Figure 12-4  Price indices for the SG Prawn Fishery a .............................................................. 129
Figure 12-5  Management fee per licence and as a proportion of GVP, SG Prawn Fishery, 2000/01 to 2014/15 a .......................................................... 130
Figure 12-6  Average income per licence holder in the SG Prawn Fishery, 2000/01 to 2014/15 a .......... 131
Figure 12-7  Cost shares in the SG Prawn Fishery, 2000/01 to 2014/15 a ...................................... 132
Figure 12-8  Average total costs in the SG Prawn Fishery, 2000/01 to 2014/15 a ........ .......................... 132
Figure 12-9  Price and cost indices for the SG Prawn Fishery, 2000/01 to 2014/15 ...................... 133
Figure 12-10 Financial performance indicators per boat in the SG Prawn Fishery, 2000/01 to 2014/15 a .......................................................... 134
Figure 12-11 Return to capital in the SG Prawn Fishery, 2000/01 to 2014/15 a .............................. 135
Figure 12-12 Total gross state product, output and household income impact of the SG Prawn Fishery on the SA economy, 2000/01 to 2014/15 a .......... 136
Figure 12-13 Total direct and indirect employment impact of the SG Prawn Fishery on the SA economy, 2000/01 to 2014/15 a ........................................ 136
Figure 12-14 Economic rent in the SG Prawn Fishery, 2000/01 to 2014/15 ($m) a ......................... 137
Figure 12-15 Economic rent as a proportion of GVP in the SG Prawn Fishery, 2000/01 to 2014/15 .......................................................... 138
Figure 12-16 Aggregate value of licences and return to aggregate licence value in the SG Prawn Fishery, 2000/01 to 2014/15 a, b ........................................ 139
Figure 13-1  GSV Prawn Fishery catch, 2000/01 to 2014/15 ......................................................... 144
Figure 13-2  GSV Prawn Fishery GVP, 2000/01 to 2014/15 a .......................................................... 144
Figure 13-3  GVP, price and catch indices for the GSV Prawn Fishery a ........................................ 145
Figure 13-4  Price indices for the GSV Prawn Fishery a .............................................................. 145
Figure 13-5  Management fee per licence and as a proportion of GVP, GSV Prawn Fishery, 2000/01 to 2014/15 a .......................................................... 146
Figure 13-6  Average income per licence holder in the GSV Prawn Fishery, 2000/01 to 2014/15 a ......... 147
Figure 13-7  Cost shares in the GSV Prawn Fishery, 2000/01 to 2014/15 a ........................................ 148
Figure 13-8  Average total costs in the GSV Prawn Fishery, 2000/01 to 2014/15 a ...................... .......................... 148
Figure 13-9  Price and cost indices for the GSV Prawn Fishery, 2000/01 to 2014/15 ..................... 149
Figure 13-10 Financial performance indicators per boat in the GSV Prawn Fishery, 2000/01 to 2014/15 a .......................................................... 150
Figure 13-11 Return to capital in the GSV Prawn Fishery, 2000/01 to 2014/15 a .............................. 151
Figure 13-12 Total gross state product, output and household income impact of the GSV Prawn Fishery on the SA economy, 2000/01 to 2014/15 a .......... 152
Figure 13-13 Total direct and indirect employment impact of the GSV Prawn Fishery on the SA economy, 2000/01 to 2014/15 a ........................................ 152
Figure 13-14 Economic rent in the GSV Prawn Fishery, 2000/01 to 2014/15 ($m) a ......................... 153
Figure 13-15 Economic rent as a proportion of GVP in the GSV Prawn Fishery, 2000/01 to 2014/15 .......................................................... 154
Figure 13-16 Aggregate value of licences and return to aggregate licence value in the GSV Prawn Fishery, 2000/01 to 2014/15 a, b ........................................ 154
Figure 14-1  SZRL Fishery catch, 2000/01 to 2014/15 .............................................................. 158
### ABBREVIATIONS

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<thead>
<tr>
<th>Abbreviation</th>
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<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>CPI</td>
<td>consumer price index</td>
</tr>
<tr>
<td>ESD</td>
<td>Ecologically Sustainable Development</td>
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<tr>
<td>GOS</td>
<td>gross operating surplus</td>
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<td>GSP</td>
<td>Gross State Product</td>
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<td>GSV</td>
<td>Gulf St Vincent</td>
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<td>GVP</td>
<td>gross value of production</td>
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<td>ITQ</td>
<td>individual transferable quota</td>
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<td>PIRSA</td>
<td>Primary Industries and Regions South Australia</td>
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<td>SA</td>
<td>South Australia</td>
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<tr>
<td>SARDI</td>
<td>South Australian Research and Development Institute</td>
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<td>TACC</td>
<td>total allowable commercial catch</td>
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1. INTRODUCTION

1.1 Background

For 18 years, 1997/98 to 2014/15, 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 15 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
- economic rent.
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 15 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
- Blue Crab Fishery
- Charter Boat Fishery
- Lakes and Coorong Fishery
- Marine Scalefish Fishery
- Northern Zone Rock Lobster Fishery
- Sardine Fishery
- Spencer Gulf Prawn Fishery
- Gulf St Vincent Prawn Fishery
- Southern Zone Rock Lobster Fishery.

Indicators were not prepared for the West Coast Prawn fishery in 2014/15. Due to the small number of participants economic indicators were not required.

Section 15 is presented in a format similar to Sections 5 to 14, providing aggregate data for all commercial fisheries over the 15 year period, 2000/01 to 2014/15.
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
- economic rent.

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 ($)
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 13 for the years 2000/01 to 2014/15 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 2000/01 to 2014/15 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.
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 2000/01 to 2014/15 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 2000/01 to 2014/15 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 15 years. The average cost of transport (largely determined by fuel) increased by 31 per cent between 2000/01 and 2014/15 (Figure 4-1).

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 2000/01 to 2014/15.

Interest rates for small businesses generally increased between 2000/01 and 2010/11, but have declined since (Figure 4-2). An increase in interest rates has the effect of increasing the overhead costs of a fishing business.
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 2000/01 to 2014/15.

The cost of labour increased steadily over the entire 15 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, 2000/01 to 2014/15

![SA labour price index, 2000/01 to 2014/15](image)

Source: Australian Bureau of Statistics (2015b)

### 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 2000/01 to 2014/15.

The CPI for Adelaide increased steadily over the 15 year period from 2000/01 to 2014/15 (Figure 4-4). An increasing CPI highlights a general increase in the cost of inputs for fishing.
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 2000/01 and 2014/15 despite a significant fall in 2008/09. The trend of the

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**Figure 4-4** Consumer price index for Adelaide, 2000/01 to 2014/15

Source: Australian Bureau of Statistics (2015a)
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 in 2013/14 and 2014/15 (Figure 4-5).

Figure 4-5  Exchange rate indices, 2000/01 to 2014/15

Source: Reserve Bank of Australia (2015b)
5. ABALONE FISHERY

5.1 Economic Objectives of the Abalone Fishery

According to the Management Plan for the South Australian Commercial Abalone Fishery (PIRSA Fisheries and Aquaculture 2012), 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 economic utilisation and equitable distribution of the abalone resource
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 EconSearch (2016a), 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
- economic rent (Section 5.6).
Table 5-1  Economic objectives of the South Australian Abalone Fishery

<table>
<thead>
<tr>
<th>Goal</th>
<th>Objectives</th>
<th>Strategies</th>
<th>Performance indicators</th>
<th>Trigger points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Ensure optimum utilisation and equitable distribution</td>
<td>2b. Maintain a flow of economic benefit from the fishery to the broader community</td>
<td>2bi. Develop and implement management arrangements that allow commercial operators to maximise operational flexibility, economic efficiency and returns</td>
<td>Gross Value of Product (GVP)</td>
<td>Negative trend one or more economic performance indicators for more than 3 consecutive years</td>
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<tr>
<td></td>
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<td>2bii. Communicate sustainability and economic outcomes of the fishery to the broader community</td>
<td>Gross Operating Surplus (GOS)</td>
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<td></td>
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<td>Profit at full equity</td>
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<td></td>
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<td>Licence value</td>
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<td></td>
<td></td>
<td></td>
<td>Value of quota units</td>
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<td>Economic rent</td>
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<td></td>
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<td>Economic rent</td>
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<tr>
<td>2e. Ensure sufficient economic information exists to make informed management decisions</td>
<td>2ei. Undertake periodic economic surveys of the commercial fishery to assess economic performance against a set of economic indicators</td>
<td>Delivery of periodic economic surveys assessing economic performance of fishery</td>
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<td></td>
<td></td>
<td>2eii. Develop and implement methods to improve estimates of the total value of recreational fishing to regional economies and the broad community</td>
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<tr>
<td>4. Enable effective and participative</td>
<td>4a. Promote cost-effective and efficient management of the fishery, in line with</td>
<td>4aii. Develop and implement management arrangements that are effective at achieving management objectives whilst minimising costs</td>
<td>Cost of management services</td>
<td>Commercial licence fees &gt; than 10 per cent of GVP</td>
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<td></td>
<td></td>
<td></td>
<td>Cost of licence fees</td>
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<tr>
<td>management of the fishery</td>
<td>the governments cost recovery policy</td>
<td>4a.ii. Determine and discuss the real costs of management, research and compliance for the fishery on an annual basis</td>
<td>GVP</td>
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<td></td>
<td>4a.iii. Recover licence fees from commercial licence holders, sufficient to cover the attributed costs of management, research and compliance of fishery, in accordance with the Governments</td>
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<tr>
<td>4b. Ensure management arrangements reflect concerns and interests of the wider community</td>
<td>4b.i. Promote stakeholder input to the management of the fishery through co-management processes and communication strategies</td>
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<td></td>
<td>4b.iv. Communicate management plan with the wider community</td>
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</table>

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

Source: PIRSA Fisheries and Aquaculture (2012a)
Indicators are reported in the following sections for the period 2000/01 to 2014/15. 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.

5.2 Catch and Gross Value of Production

The data presented in Figure 5-1 indicate that the total catch of Abalone in SA remained relatively steady between 2000/01 and 2012/13. However, the catch in 2013/14 (661 tonnes) was 25 per cent lower than the previous year (875 tonnes) and was the first year to drop below 800 tonnes in the past 15 seasons. In 2014/15, the catch recovered to 744 tonnes but this is still lower than in any year between 2000/01 to 2012/13.

The drop in catch in 2013/14 was not due to one significant impact, but rather a collection of impacts that had a cumulative effect on the industry’s performance. These included:

- a single licence being removed from the Western Zone as a result of the establishment of marine parks
- bad weather and fish kills in the Southern Zone
- reduced fishing in the Western Zone with Western Abalone Producers asking most fishing in 2013 to be completed in the first half of the year (hence the 50 tonne increase between 2011/12 and 2012/13) so they could upgrade storage and processing facilities in July 2013
- a poor start to the 2014 season in the Western Zone due to low catch rates (declining performance of the fishery) and the newly imposed limit on catch of Greenlip Abalone per licence of 500kg per month in January and February. In the past, 40 per cent of the catch has been taken during these months\(^1\), though the restriction shifted effort to other months.

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\(^1\) Lianos Triantafillos, pers. comm.
The total GVP for the SA Abalone Fishery for the period 2000/01 to 2014/15 is illustrated in Figure 5-2. The value of the catch in each zone steadily declined over the period leading to an overall decrease in real value of catch of 57 per cent. This was primarily due to a decrease in real price (49 per cent) as the volume of catch decreased by much less (14 per cent) over the same period. The real price of South Australian Abalone (in 2014/15 dollars) declined from $66.97/kg in 2000/01 to $33.92/kg in 2014/15.

The average nominal price of South Australian Abalone declined from $46.15/kg in 2000/01 (or $66.97 in real 2014/15 dollars) to $33.92/kg in 2014/15. The average price of Abalone in 2014/15 in the Western Zone ($35.70/kg) was higher than both the Central Zone ($34.72/kg) and the Southern Zone ($27.06/kg). The average price of Abalone in the Southern Zone was lower as the catch was 95 per cent Blacklip Abalone, which was less valuable than Greenlip Abalone.
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 15 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.
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 2000/01 and 2014/15 from 4.0 per cent to 9.8 per cent. Notably, licence fees as a percentage of GVP were greater than 10 per cent (an Abalone indicator trigger point) in 2013/14. This peak was largely a result of the decline in the overall fishery GVP but fees per licence also increased in real terms in 2013/14 and 2014/15.

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. Licence fee per licence followed an increasing trend between 2000/01 and 2007/08 then a decreasing trend through to 2014/15 (Figure 5-4).

Since 2013/14, the total number of licences has been reduced by one in the Western Zone as a result of the introduction of marine parks in the state. The Southern and Central Zones licence numbers remain unchanged. Though the removal of a licence does have an impact on fees as a proportion of GVP, it would be only minimal.
Figure 5-4  Management fee per licence and as a proportion of GVP in the SA Abalone Fishery, 2000/01 to 2014/15

Estimates of the fee per licence holder are expressed in real 2014/15 terms.

Source: EconSearch (2016a)

5.4 Financial Performance Indicators

5.4.1 Average income

Average real income and total number of licences in the fishery for the period 2000/01 to 2014/15 is illustrated in Figure 5-5. In 2013/14, the total number of licences was reduced by one in the Western Zone as a result of the introduction of marine parks in the state. The Southern and Central Zones licence numbers remained unchanged. Average real income per licence steadily decreased, with small fluctuations, between 2000/01 ($1.7 million) and 2014/15 ($0.7 million). The decrease follows the overall decrease in GVP in the fishery over the same period (Figure 5-2).
Operating cost 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 2000/01, though the share has decreased over time from 74 per cent in 2000/01 to 40 per cent in 2014/15. 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 interest, licence fees, repairs and maintenance and fuel. Interest payments were around 1 per cent of operating costs between 2000/01 and 2006/07 then increased to around 16 per cent by 2014/15.

The cash costs detailed in Figure 5-6 can be categorised as either variable or fixed costs. Total variable costs and total fixed costs 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 2000/01 to 2014/15. Total fixed costs have fluctuated much less from year to year but have followed an increasing trend over the same period (Figure 5-7). Average costs per boat followed a decreasing trend over the period as the downward trend in variable costs was stronger than the upward trend in fixed costs.

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*Estimates of average boat gross income are expressed in real 2014/15 terms.*

Source: EconSearch (2016a)
Figure 5-6  Cost shares in the SA Abalone Fishery, 2000/01 to 2014/15

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

Source: EconSearch (2016a)

Figure 5-7  Average total costs in the SA Abalone Fishery 2000/01 to 2014/15

Estimates of average costs are expressed in real 2014/15 dollars.

Source: EconSearch (2016a)
5.4.3 Cost price squeeze

Real price and cost indices (in 2014/15 dollars) for the SA Abalone Fishery for the years 2000/01 to 2014/15 are summarised in Figure 5-8. These indicators are derived from the average price and average cost per kilogram of catch. The average price followed a downward trend over the 15 year period, with some fluctuations, decreasing by 49 per cent in real terms to $33.92 per kilogram.

The average costs of catching Abalone fluctuated between years but also followed a downward trend over the 15 year period. The trend of real average costs per kilogram (33 per cent decrease over the period) was weaker than that of price. In 2014/15, the real average cost per kilogram for catching Abalone was $19.77 (Figure 5-8).

Figure 5-8 Price and cost indices for the SA Abalone Fishery, 2000/01 to 2014/15°

° Estimates of price and cost are expressed in real 2014/15 dollars.

Source: EconSearch (2016a)

5.4.4 Profitability

Selected measures of profitability for the SA Abalone Fishery are summarised in Figure 5-9 for the years 2000/01 to 2014/15. 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 2000/01 and 2014/15 due largely to a decrease in average income driven by a decline in average product price over the period (Figure 5-9).
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 declined rapidly between 2000/01 and 2004/05 then declined more slowly, with some fluctuations, through to 2014/15. This was a result of a decrease in profitability in the fishery (Figure 5-9). While this measure of return on investment has declined, it should be noted that the fishery is still highly profitable. 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).
5.5 Contribution to SA Economy

Figure 5-11 and Figure 5-12 illustrate the total economic impact of the fishery on the SA economy for the 15 years, 2000/01 to 2014/15. Total economic impact refers to the direct fishing industry impacts (fishing, processing, etc.) and the indirect impacts on other sectors of the economy.

The change in total output and GSP impacts are closely related to changes in price and fishery GVP (Figure 5-11). Employment (direct and indirect) increased between 2000/01 and 2006/07, but each has followed a decreasing trend since (Figure 5-12). Output and household income were slightly higher in 2014/15 than in 2000/01 but neither shows any clear trend. Contribution to GSP followed a slight downward trend, decreasing by around 20 per cent over the 15 year period.

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

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a Estimates of licence value are expressed in real 2014/15 dollars.

Source: EconSearch (2016a)
**Figure 5-11** Total gross state product, output and household income impact of the SA Abalone Fishery on the SA economy, 2000/01 to 2014/15

Estimates of output, GSP and household income are expressed in real 2014/15 dollars.

Source: EconSearch (2016a)

**Figure 5-12** Total direct and indirect employment impact of the SA Abalone Fishery on the SA economy, 2000/01 to 2014/15

Source: EconSearch (2016a)
5.6 Economic Rent

Economic rent is defined as the difference between the price of a good produced using a natural resource and the unit cost of turning that natural resource into the good (Section 3.6). In this case the natural resource is the Abalone fishery and the good produced is the landed Abalone. Estimates of the economic rent generated in the Abalone fishery are summarised in Figure 5-13 for the period 2000/01 to 2014/15.

The economic rent generated in the SA Abalone Fishery followed a downward trend, with some fluctuations, over the 15 year period between 2001/01 and 2014/15. Rent decreased by 74 per cent over the period to $8.7 million in 2014/15.

Figure 5-13 Economic rent in the SA Abalone Fishery, 2000/01 to 2014/15 ($’000)\(^a\)

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\(^a\) All indicators are expressed in real 2014/15 dollars.

Source: EconSearch (2016a)

Economic rent 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 2000/01 and 2014/15. In 2014/15, rent as a percentage of GVP was 35 per cent.

Economic rent 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 steep downward trend between 2000/01 and 2004/05 then continued on a slow downward trend thereafter, with some fluctuations (Figure 5-13). Aggregate licence value increased in 2003/04 then followed a slow downward trend thereafter (Figure 5-15).
Figure 5-14 Economic rent as a proportion of GVP in the SA Abalone Fishery, 2000/01 to 2014/15

Source: EconSearch (2016a)

Figure 5-15 Aggregate value of licences and return to aggregate licence value in the SA Abalone Fishery, 2000/01 to 2014/15

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: EconSearch (2016a)
6. BLUE CRAB FISHERY

6.1 Economic Objectives of the Blue Crab Fishery

Management of the Blue Crab fishery is undertaken to achieve the following objectives (PIRSA 2012):

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.
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 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 EconSearch (2016b), 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
- economic rent (Section 6.6).
### Table 6-1 Economic objectives of the Blue Crab Fishery

<table>
<thead>
<tr>
<th>Goal</th>
<th>Objective</th>
<th>Management Strategies</th>
<th>Performance Indicator</th>
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</thead>
</table>
| **Goal 2:** Allocate access to Blue Swimmer Crab resources to achieve optimum utilisation and equitable distribution to the benefit of the community. | Maintain a flow of economic benefit from the fishery to the broader community. | Develop and implement management arrangements that allow commercial operators to maximise operational flexibility, economic efficiency, value and returns. | Economic indicators are monitored and reported annually:  
- Gross Value of Production (GVP)  
- Cost price squeeze  
- Profitability  
- Total economic impact  
- Total Gross State Product  
- Level of full-time equivalent employment provided by the fishery  
- Economic rent  
- Gross operating surplus  
- Profit at full equity  
- Licence value  
- Value of quota units |
| **Goal 4:** Cost effective and participative management of the fishery. | 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  
- Proportion of total cash costs |

Indicators reported in Economic reports.

Source: PIRSA (2012b)
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 off 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 (EconSearch 2016e).

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 2000/01 (469t) to 2014/15 (576t). The total GVP for the Blue Crab fishery for the 15 year period 2000/01 to 2014/15 is illustrated in Figure 6-2 and catch, price and GVP indices for the fishery are illustrated in Figure 6-3. The real value of catch in the fishery increased significantly over the 15 years, from $3.8 million in 2000/01 to $6.4 million in 2014/15. The increase in GVP is a result of both an increase in catch (23 per cent increase) and price (39 per cent real increase).

Figure 6-1  SA Blue Crab Fishery catch, 2000/01 to 2014/15

Source: EconSearch (2016b)
The nominal price of Blue Crabs fluctuated between 2000/01 and 2014/15 but followed an increasing trend overall. Figure 6-4 shows that the 102 per cent increase in nominal price over the period 2000/01 to 2014/15 is equivalent to a 39 per cent rise in the real price (that is the nominal price adjusted for inflation).

Figure 6-2  SA Blue Crab Fishery GVP, 2000/01 to 2014/15  

*a* Estimates of GVP are expressed in real 2014/15 dollars.  
Source: EconSearch (2016b)

Figure 6-3  GVP, price and catch indices for the SA Blue Crab Fishery (2000/01=100)  

*a* Estimates of GVP and price are expressed in real 2014/15 dollars.  
Source: EconSearch (2016b)
Figure 6-4  
Price Indices for the SA Blue Crab Fishery (2000/01=100)  

<table>
<thead>
<tr>
<th>Year</th>
<th>Nominal</th>
<th>Real</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000/01</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2001/02</td>
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<tr>
<td>2002/03</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2003/04</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2004/05</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2005/06</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2006/07</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2007/08</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2008/09</td>
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<td>100</td>
</tr>
<tr>
<td>2009/10</td>
<td>100</td>
<td>100</td>
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<tr>
<td>2010/11</td>
<td>100</td>
<td>100</td>
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<tr>
<td>2011/12</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2012/13</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2013/14</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2014/15</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

*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 2015a). It enables meaningful comparisons of prices to be made between years.*

Source: EconSearch (2016b)

6.3 Management Costs

The average management fee per licence holder 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 15 years but generally followed a declining trend. From 2013/14 to 2014/15 licence fees as a percentage of GVP increased from 4.9 per cent to 5.0 per cent. This change was a result of both an increase in the total cost of management of the fishery and despite an increase in fishery GVP. The average real management fee per active licence holder decreased significantly between 2000/01 ($54,000) and 2014/15 ($35,000).
6.4 Financial Performance Indicators

6.4.1 Total income

Total income and total number of licences in the fishery for the period 2000/01 to 2014/15 are illustrated in Figure 6-6. The total number of licences in the fishery declined steadily over the 15 years, from 27 in 2000/01 to 9 in 2014/15 due to 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.
6.4.2 Operating cost 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 were fuel, repairs and maintenance and interest charges.

The cash costs detailed in Figure 6-7 can be categorised as either variable or fixed costs. Total variable costs and total fixed costs are illustrated in Figure 6-8. Total variable costs have fluctuated between years but generally followed an increasing trend over the period 2000/01 to 2014/15. 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.
Financial performance estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

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

Source: EconSearch (2016b)

Estimates of total costs are expressed in real 2014/15 dollars.

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

Source: EconSearch (2016b)
6.4.3 Cost price squeeze

Real price and cost indices (in 2014/15 dollars) for the Blue Crab fishery for the years 2000/01 to 2014/15 are summarised in Figure 6-9. These indicators are derived from the average price and average cost per kilogram of catch. Overall, between 2000/01 and 2014/15, the average price of Blue Crabs increased by 39 per cent in real terms. The average costs of catching Blue Crabs has also generally followed an increasing trend. In 2014/15, average cash costs per kilogram were 10 per cent higher, in real terms, than in 2000/01.

Figure 6-9 Price and cost indices for the SA Blue Crab Fishery, 2000/01 to 2014/15 (2000/01 = 100) \(^{a,b}\)

\[\text{Cost (real)} \quad \text{Price (real)}\]

\(^{a}\) Estimates of average price and cost are expressed in real 2014/15 dollars.

\(^{b}\) Estimates from 2010/11 onwards relate to the pot sector only.

Source: EconSearch (2016b)

6.4.4 Profitability

Selected measures of profitability for the Blue Crab fishery are summarised in Figure 6-10 for the years 2000/01 to 2014/15. Changes in each of the profitability measures for the fishery were closely related to the total gross income earned. Overall profits increased between 2000/01 and 2014/15, principally the result of an increase in fishery income and improved fishing productivity.
Estimates of income and profitability measures are expressed in real 2014/15 dollars.

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

Source: EconSearch (2016b)

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 2000/01 (9.3 per cent) and 2014/15 (5.5 per cent). This was caused by total boat capital (including licence value) within the fishery increasing at a faster rate than profitability (which also increased). Similarly, the rate of return to fishing gear and equipment followed a slight decreasing trend, from 38.1 per cent in 2000/01 to 36.8 per cent in 2014/15 (Figure 6-11). This also reflects the relatively faster rate of increase in the value of fishing gear and equipment within the fishery relative to profitability.
Figure 6-11 Return to capital in the SA Blue Crab Fishery, 2000/01 to 2014/15 \( ^{a,b} \)

<table>
<thead>
<tr>
<th>Year</th>
<th>Licence Value ($m)</th>
<th>Return to Total Capital</th>
<th>Return to Fishing Gear and Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999/00</td>
<td>1</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>2000/01</td>
<td>2</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>2001/02</td>
<td>3</td>
<td>30%</td>
<td>15%</td>
</tr>
<tr>
<td>2002/03</td>
<td>4</td>
<td>40%</td>
<td>20%</td>
</tr>
<tr>
<td>2003/04</td>
<td>5</td>
<td>50%</td>
<td>25%</td>
</tr>
<tr>
<td>2004/05</td>
<td>6</td>
<td>60%</td>
<td>30%</td>
</tr>
<tr>
<td>2005/06</td>
<td>7</td>
<td>70%</td>
<td>35%</td>
</tr>
<tr>
<td>2006/07</td>
<td>8</td>
<td>80%</td>
<td>40%</td>
</tr>
<tr>
<td>2007/08</td>
<td>9</td>
<td>90%</td>
<td>45%</td>
</tr>
<tr>
<td>2008/09</td>
<td>10</td>
<td>100%</td>
<td>50%</td>
</tr>
<tr>
<td>2009/10</td>
<td>11</td>
<td>110%</td>
<td>55%</td>
</tr>
<tr>
<td>2010/11</td>
<td>12</td>
<td>120%</td>
<td>60%</td>
</tr>
<tr>
<td>2011/12</td>
<td>13</td>
<td>130%</td>
<td>65%</td>
</tr>
<tr>
<td>2012/13</td>
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<td>140%</td>
<td>70%</td>
</tr>
<tr>
<td>2013/14</td>
<td>15</td>
<td>150%</td>
<td>75%</td>
</tr>
</tbody>
</table>

\( ^a \) Estimates of licence value are expressed in real 2014/15 dollars.

\( ^b \) Estimates from 2010/11 onwards relate to the pot sector only.

Source: EconSearch (2016b)

### 6.5 Contribution to SA Economy

Figure 6-12 and Figure 6-13 illustrate the total economic impact of the fishery on the SA economy for the 15 years, 2000/01 to 2014/15. Total economic impact refers to the direct fishing industry impacts (fishing, processing, etc.) and the indirect impacts on other sectors of the economy.

The change in total output and GSP impacts are closely related to changes in price and fishery GVP. Output, household income and contribution to GSP all followed a slight increasing trend between 2000/01 and 2014/15 (Figure 6-12). There has been a slight increase in the total employment impact of the fishery between 2000/01 and 2014/15 (Figure 6-13). This increase can be attributed to the increased activity of associated downstream sectors (processing, retail trade and food service sectors) which have had their workforce expand. This increase has been 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 impact of the SA Blue Crab Fishery on the SA economy, 2000/01 to 2014/15 \textsuperscript{a,b}

\[\text{Economic Impacts (\text{\$m, Real 2014/15})}\]

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure6-12}
\caption{Total gross state product, output and household income impact of the SA Blue Crab Fishery on the SA economy, 2000/01 to 2014/15 \textsuperscript{a,b}}
\textsuperscript{a} Estimates of output, GSP and household income are expressed in real 2014/15 dollars.
Source: EconSearch (2016b)

Figure 6-13  Total direct and indirect employment impact of the SA Blue Crab Fishery on the SA economy, 2000/01 to 2014/15 \textsuperscript{a}

\[\text{Employment (fte jobs)}\]

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure6-13}
\caption{Total direct and indirect employment impact of the SA Blue Crab Fishery on the SA economy, 2000/01 to 2014/15 \textsuperscript{a}}
Source: EconSearch (2016b)
6.6 Economic Rent

Economic rent 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 SA Blue Crab fishery and the good produced is the landed Blue Crab. Estimates of the economic rent generated in the SA Blue Crab fishery are summarised in Figure 6-14 for the period 2000/01 to 2014/15.

The economic rent increased from $0.6 million in 2000/01 to a peak of $1.8 million in 2006/07. It then decreased with some fluctuations through to 2014/15 where it was estimated to be just below $1.3 million (Figure 6-14). The decrease in economic rent between 2006/07 and 2014/15 can be somewhat equally attributed to an increase in costs ($0.27 million increase) and a decrease in gross income ($0.26 million decrease). The increase in costs were due to higher labour costs, higher depreciation and a higher opportunity cost of capital (due to a higher licence value), but were somewhat offset by lower cash costs.

Economic rent expressed as a percentage of GVP is a useful indicator for analysing a fishery over time and for comparing different fisheries. This measure followed a similar pattern to economic rent, increasing from 2000/01 (13 per cent), peaking in 2006/07 (27 per cent) then decreasing through to 2014/15 (20 per cent). A transient peak in 2011/12 (28 per cent) resulted from a particularly high GVP and low cash costs for that year (Figure 6-15).

Economic rent represents a return to the value of licence in the fishery. The aggregate value of licences in the SA Blue Crab fishery and the return to the aggregate value of licences in the fishery are illustrated in Figure 6-16. The return to the aggregate value of licences in the fishery increased between 2000/01 and 2001/02 as a result of an increase in economic rent generated by the fishery. The return on aggregate licence value declined between 2001/02 and 2004/05 due to an increase in the aggregate licence value of the fishery and a decrease in economic rent. Since then return to aggregate value of licences has fluctuated from year to year but has followed a slight increasing trend overall.
Figure 6-14  Economic rent in the SA Blue Crab Fishery, 2000/01 to 2014/15 (S’000) \(^a\)

\[\text{Components of rent (Sn, real 2014/15)}\]

- Gross Income
- Labour
- Cash Costs
- Depreciation
- Opportunity Cost of Capital
- Economic Rent

\(^a\) All indicators are expressed in real 2014/15 dollars.
Source: EconSearch (2016b)

Figure 6-15  Economic rent as a proportion of GVP in the SA Blue Crab Fishery, 2000/01 to 2014/15

Source: EconSearch (2016b)
Figure 6-16  Aggregate value of licences and return to aggregate licence value in the SA Blue Crab Fishery, 2000/01 to 2014/15

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: EconSearch (2016b)
7. CHARTER BOAT FISHERY

7.1 Economic Objectives of the Charter Boat Fishery

The management plan for the South Australian Charter Boat fishery (PIRSA 2011) sets out four goals, namely:

- Goal 1 - Charter Boat fishery resources harvested within ecologically sustainable limits
- Goal 2 - Optimum utilisation and equitable distribution of the Charter Boat fishery resources for the benefit of the community
- Goal 3 - Fishery impacts on the ecosystem are minimised
- Goal 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. The economic objectives of the fishery, as described in the management plan, are as follows:

- 2a - Ensure allocation framework provides for development of the Charter Boat Fishery
- 2d - Sufficient economic information to ensure management decisions are properly informed
- 4a – Cost-effective and efficient management of the fishery, in line with government’s cost recovery policy.

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 EconSearch (2016c), 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\(^3\). Indicators relating to the financial performance of the fishery are reported for 2009/10 to 2014/15\(^4\).

### 7.2 Catch and Gross Value of Production

Figure 7-1 illustrates that the total number of clients in the fishery decreased between 2005/06 and 2014/15, from 19,540 clients in 2005/06 to 15,129 clients in 2014/15 (23 per cent decline). Together with a 13 per cent decline in real price over the same period, this decreased real GVP for the fishery by 33 per cent between 2005/06 ($5.3m) and 2014/15 ($3.6m). This is also highlighted in Figure 7-2 where catch, GVP and price indices for the fishery for 2005/06 to 2014/15 are illustrated. The downward trend in GVP in Figure 7-2 shows that, although the December Snapper closure may have affected GVP in recent years, it was reducing slightly in real terms before the closures were put in place.

Figure 7-3 shows that between 2005/06 and 2014/15 the 8 per cent increase in nominal average price per Charter Boat client was equivalent to a 13 per cent decline in real price.

**Figure 7-1** SA Charter Boat Fishery clients and GVP, 2005/06 to 2014/15

![Graph](image)

Source: EconSearch (2016c)

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\(^3\) Year the fishery was first licenced.

\(^4\) Boat level financial performance indicators were not prepared prior to 2009/10.
Figure 7-2  GVP, price and clients indices for the SA Charter Boat Fishery (2005/06 = 100) a

![Graph showing GVP, price, and clients indices for the SA Charter Boat Fishery (2005/06 = 100)]

a Estimates of GVP are expressed in real 2014/15 dollars.

Source: EconSearch (2016c)

Figure 7-3  Price indices for the Charter Boat Fishery (2005/06 = 100) a

![Graph showing price indices for the Charter Boat Fishery (2005/06 = 100)]

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 2015a). It enables meaningful comparisons of prices to be made between years.

Source: EconSearch (2016c)
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 2014/15, from 4.7 per cent in 2005/06 to 10.5 per cent in 2014/15. This is the result of a reduction in GVP and an increase in aggregate fees, in real terms.

The average management cost per licence holder increased from $2,525 in 2005/06 to $3,663 in 2014/15, in real terms (Figure 7-4). This rise is a result of an increase in the real cost of management and despite an increase in the number of licence holders (from 99 to 102) over the period.

Figure 7-4 Management fee per licence and as a proportion of GVP, Charter Boat Fishery, 2005/06 to 2014/15 a

![Management fee per licence and as a proportion of GVP, Charter Boat Fishery, 2005/06 to 2014/15](image)

a Estimates of the fee per licence holder are expressed in real 2014/15 dollars.

Source: EconSearch (2016c)

7.4 Financial Performance Indicators^5

7.4.1 Average income

Average income and total number of licences in the fishery for the period 2009/10 to 2014/15 are illustrated in Figure 7-5. The total number of active licence holders in the fishery declined

^5 Economic indicators for the Charter Boat fishery were not prepared prior to 2009/10. Accordingly, financial performance indicators are reported only for 2009/10 onwards.
from 77 in 2009/10 to 61 by the end of 2014/15. 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 $145,000 in 2009/10 to $96,000 in 2014/15 (real 2014/15 dollars) (Figure 7-5).

Figure 7-5  Fishery income and number of licence holders in the SA Charter Boat Fishery, 2009/10 to 2014/15 a

a Estimates of average boat gross income are expressed in real 2014/15 dollars.

Source: EconSearch (2016c)
7.4.2 Operating costs

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 2013/14. 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 cash costs detailed in Figure 7-6 can be categorised as either variable or fixed costs. Total variable costs and total fixed costs 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 2013/14. As would be expected, total fixed costs have fluctuated much less from year to year but have also followed a slight decreasing trend over time (Figure 7-7). The decline in average total costs per boat in 2011/12 and 2012/13 is due, in part, to a change in the composition of the survey sample.

Figure 7-6 Cost shares in the SA charter Boat Fishery, 2009/10 to 2014/15

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

Source: EconSearch (2016c)
7.4.3 Cost price squeeze

Price and cost indices for the years 2009/10 to 2014/15 are summarised in Figure 7-8. These indicators were derived from the average price and average cost per kilogram of catch. Between 2009/10 and 2014/15 the average price per Charter Boat client declined by approximately 1 per cent in real terms. The average cost of operating Charter Boats also followed a declining trend over the same period, decreasing by 16 per cent in real terms.

7.4.4 Profitability

Selected measures of profitability are summarised in Figure 7-9 for the years 2009/10 to 2014/15. 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 2009/10 and 2012/13 but declined over the two years to 2014/15.
Figure 7-8  Price and cost indices for the SA Charter Boat Fishery, 2009/10 to 2014/15 (2009/10= 100) \(^{a,b}\)

 Estimates of average price and cost are expressed in real 2014/15 dollars.

Source: EconSearch (2016c)

Figure 7-9  Income and profit in the SA Charter Boat Fishery, 2009/10 to 2014/15 \(^{a}\)

 Estimates of profit are expressed in real 2014/15 dollars.

Source: EconSearch (2016c)
7.4.5 Return to capital

Estimates of the average licence value and the rate of return to capital are illustrated in 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 has fluctuated year to year but generally followed an increasing trend. The average value of licences in the fishery increased between 2009/10 and 2011/12 but has declined considerably since (Figure 7-10).

Figure 7-10 Return to capital in the SA Charter Boat Fishery, 2009/10 to 2014/15

![Graph showing return to capital](image)

* Estimates of licence value are expressed in real 2014/15 dollars.

Source: EconSearch (2016c)

7.5 Contribution to SA Economy

Figure 7-11 and Figure 7-12 illustrate the total economic impact of the fishery on the SA economy for the 6 years, 2009/10 to 2014/15. Total economic impact refers to the direct fishing industry impacts (Charter Boat fishing and other visitor expenditure) and the indirect impacts of these activities on other sectors of the economy.

The change in total output and GSP impacts are closely related to changes in fishery GVP. Output, household income, contribution to GSP and employment all followed a declining trend in the fishery since 2009/10, as illustrated in Figure 7-11 and Figure 7-12. The significant decrease in employment between 2011/12 and 2012/13 is in part due to the update of survey...
data. Since 2012/13, the decrease of impacts can be explained by the reduced GVP of the fishery which may be due, in part, to the December Snapper closure starting in 2013.

Figure 7-11  Total gross state product, output and household income impact of the SA Charter Boat Fishery on the SA economy, 2009/10 to 2014/15 a,b

* Estimates of output, GSP and household income are expressed in real 2014/15 dollars.

Source: EconSearch (2016c)

Figure 7-12  Total direct and indirect employment impact of the SA Charter Boat Fishery on the SA economy, 2009/10 to 2014/15 a

Source: EconSearch (2016c)
8. LAKES AND COORONG FISHERY

8.1 Economic Objectives 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:

- Ensure the Lakes and Coorong Fishery resources are harvested within ecologically sustainable limits
- Optimum utilisation and equitable distribution of the Lakes and Coorong Fishery resources
- Minimise impacts on the ecosystem
- 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 13 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 (2016d), 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
- economic rent (Section 8.6).

Indicators relating to the financial performance for the fishery are reported for the period 2002/03 to 2014/15. 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.

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6 Boat level financial performance indicators were not prepared prior to 2002/03.
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<th>Goal</th>
<th>Objective</th>
<th>Strategies</th>
<th>Performance Indicators</th>
<th>Description</th>
<th>Triggers / Reference Points</th>
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<tr>
<td>Goal 2</td>
<td>Optimum utilisation and equitable distribution of Lakes and Coorong Fishery resources</td>
<td>2b Increase the flow of economic and social benefit from the fishery to the broader community</td>
<td>2b(i) Positively influence the fishery’s socio-economic benefits for the broader community</td>
<td>Contribution of fisheries to the local economic and social activity</td>
<td>A downward trend in employment, expenditure and community support activities over a three year period</td>
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<td>2b(ii) Communicate information about ESD outcomes of the fishery to the broader community in a timely and publicly assessable manner</td>
<td>Proportion of direct and indirect employment in a region dependant on fishing</td>
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<td>2b(iii) Develop and maintain positive relationships with the regional communities in the area of the fishery</td>
<td>Demonstrate availability of Lakes and Coorong Fishery information through website, correspondence, media releases, licence holder letters, Fishcare volunteer program, industry publications and compliance officers</td>
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<td>2b(iv) Industry to maintain adherence to existing occupational health, safety and welfare requirements and procedures</td>
<td>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</td>
<td>Level of community support activities</td>
<td></td>
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<tr>
<td>2c Improve economic</td>
<td>2c(i) Develop and implement management arrangements that</td>
<td>Key economic indicators: operating surplus, profit</td>
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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 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
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<th>Goal</th>
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<td></td>
<td>efficiencies and financial returns within the constraints of sustainability imperatives</td>
<td>allow commercial operators to maximise operational flexibility, economic efficiency, value and returns</td>
<td>at full equity and rate of return on total boat capital Licence value Product value</td>
<td>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.</td>
<td>A declining trend in economic indicators and licence value over a three year period</td>
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<tr>
<td>2d</td>
<td>Monitor the economic and social performance of the fishery and ensure the collection of economic and social fishery data</td>
<td>2d(i) Undertake periodic economic and social surveys of the commercial fishery to assess performance against a set of economic and social indicators</td>
<td>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</td>
<td>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.</td>
<td>Economic and social data not collected on an annual basis</td>
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<td></td>
<td>2d(ii) Review and update the research and monitoring plan regularly</td>
<td>2d(iii) Develop appropriate indicators of social performance of the fishery</td>
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<td>2f</td>
<td>Provide flexible opportunities to ensure fishers can maintain or enhance their livelihood</td>
<td>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</td>
<td>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</td>
<td>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</td>
<td>The proportion of fishers who think fisheries management is flexible is &gt;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</td>
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<td>Goal</td>
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<tr>
<td>2f(ii)</td>
<td>When implementing management changes where possible enable adequate and secure access to fish stocks that is flexible</td>
<td>allow them to adapt to changing conditions</td>
<td></td>
<td>The proportion of fishers who think fisheries management is flexible enough is decreasing over time or is &lt;50% and stable or decreasing</td>
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<tr>
<td>2g (i)</td>
<td>Decision making processes develop and use clear principles, incorporating consideration of equity principles</td>
<td>Level of fisher perceived equity/fairness of the processes and outcomes of fisheries management</td>
<td>A majority of fishers perceive allocation, gear restrictions, access to areas, and decision-making processes, as equitable</td>
<td>&lt;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)</td>
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<tr>
<td>2g (ii)</td>
<td>Consultation process designed and undertaken for input of different fishers and stakeholders</td>
<td></td>
<td></td>
<td>&gt;50% of fishers believe they are treated unfairly on more than one of the four dimensions of equity measured, or &lt;50% believe this, but the proportion feeling they are treated unfairly is increasing</td>
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<tr>
<td>Goal 4</td>
<td>Cost-effective and participative management of the fishery</td>
<td>4c Ensure transparency of decision-making process by management bodies</td>
<td>Documentation of fisheries management decisions will be accessible to all stakeholders</td>
<td>Fishers understand how fisheries management decisions are made, and feel that the reasoning behind decisions as well as the process are consistent and clearly communicated</td>
<td>The process by which fisheries management decisions will be made is clearly documented and accessible to all stakeholders; and this documented process has been followed in all decision-making during the past 12 months</td>
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<td>Goal</td>
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<tr>
<td>4d</td>
<td>Stakeholders have a high level of trust in the management of fisheries</td>
<td>4d(i) Open and transparent discussions on management decisions</td>
<td>The level of fishers trust / confidence in PIRSA Fisheries and Aquaculture</td>
<td>Stakeholders indicate a high level of trust in the both the process of fisheries management, and the outcomes of this management</td>
<td>The proportion of fishers indicating they don’t trust the fisheries management agency is &lt;50%, and stable or continuing to decline</td>
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<td>The proportion of fishers indicating they don’t trust the fisheries management agency is &gt;50%, but declining</td>
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<td>The proportion of fishers indicating they don’t trust the fisheries management agency is &gt;50% and stable or increasing, or is &lt;50% but increasing over time</td>
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<td>Goal</td>
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<td>4e</td>
<td>Maximise stewardship of fisheries resources</td>
<td>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</td>
<td>Improve community understanding and recognition of the high level of fishery management and regulation</td>
<td>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)</td>
<td>&gt;80% of fishers agree that it is easy to comply with fishing rules and regulations</td>
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<td>4e(ii) Ensure any management changes (and reasoning) are communicated with fishers</td>
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<td>Between 60-80% of fishers agree that it is easy to comply, or if &gt;80% agree but there is a decline over time in the proportion who agree</td>
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<td>4e(iii) PIRSA/industry collaborating to promote fishery stewardship</td>
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<td>There is ongoing decline in the proportion of fishers who agree with the statement, or &lt;60% agree with it</td>
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<td>4e(iv) Strengthen links with licence holders through improved communication</td>
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<td>4e(v) Support the use of external accreditation processes to underpin the integrity of management processes</td>
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<td>4f</td>
<td>Maximise the fishers cultural, recreational and lifestyle benefits (including health benefits) of fishing</td>
<td>4f(i) When implementing management changes, where possible ensure that the management framework does not unnecessarily impact on their cultural, community and lifestyle benefits</td>
<td>Level of satisfaction fishers are achieving with the cultural, community, recreational and lifestyle benefits important to them from fishing</td>
<td>Identification of the extent to which different benefits are important to or desired by fishers and which of these benefits are being achieved</td>
<td>&gt;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</td>
</tr>
<tr>
<td>Goal</td>
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<tr>
<td>4g</td>
<td>Facilitate and support the cohesion and connectedness of fishers with their regional communities through fisheries management</td>
<td>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</td>
<td>Level of recognition of key social and community needs in fisheries management processes</td>
<td>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.</td>
<td>over time, suggesting that there is positive change but continuing action is needed</td>
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<td>A declining proportion of fishers are indicating they are satisfied with their ability to achieve the benefits they find highly important from, or &lt;50% are satisfied and there is no change in satisfaction</td>
</tr>
<tr>
<td>4h</td>
<td>Maximise community trust in fisheries</td>
<td>4h(i) Fishcare volunteers to provide information at public at events about the management of the fishery.</td>
<td>Level of fisheries management agency involvement in community</td>
<td>Stakeholders indicate a high level of trust in the both the process of fisheries</td>
<td>This indicator is being met if: issues are being actively identified, addressed in management processes, and signed off by concerned parties</td>
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<td>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</td>
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<td>There is an urgent need for management action if: no issues known or unknown are being identified or addressed</td>
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<td>Education and training opportunities are being provided (whether directly or indirectly), and the number is</td>
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<td>Goal</td>
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<td>agencies to manage fisheries</td>
<td>4h(ii) Develop appropriate material for community to understand decision-making process</td>
<td>education/outreach activities</td>
<td>management, and the outcomes of this management</td>
<td>remaining stable or increasing over time.</td>
</tr>
<tr>
<td>4i</td>
<td>Ensure fisheries management contributes to the maintenance of cultural and heritage values related to fishing activities</td>
<td>4i(i) Identify cultural and heritage values</td>
<td>Number of cultural and heritage values associated with fishing are identified and managed as part of fisheries management</td>
<td>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</td>
<td>Fisheries management identifies cultural and heritage values, and consults with two or more external stakeholders to help identify these values (e.g. local experts).</td>
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<td>Fisheries management identifies cultural and heritage values, but primarily based on their own knowledge with little or no consultation with other groups</td>
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<td>Fisheries management doesn’t identify cultural and heritage values at all.</td>
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</table>

Source: PIRSA 2016b
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 2000/01 and 2006/07 but declined between 2006/07 and 2011/12 primarily due to a decrease in Pipi quota. Total catch increased once again through to 2013/14 as a result of increases in catch of Mulloway and European Carp and a small increase in the Pipi quota. Total catch reduced in 2014/15 primarily due to a decrease in catch of Yellow-Eye Mullet, European Carp, Bony Bream and Mulloway.

Figure 8-1 Lakes and Coorong Fishery catch, 2000/01 to 2014/15

The GVP for the Lakes and Coorong Fishery for the period 2000/01 to 2014/15 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 in 2014/15 due to a decrease in catch and price. The value of catch in 2014/15 was slightly lower than in 2000/01 though large fluctuations occurred in the intermediate years (Figure 8-2).
Another performance objective 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 nominal terms.

Catch, GVP and price indices for the fishery for 2000/01 to 2014/15 are illustrated in Figure 8-4. Despite a sharp fall in 2009/10, the real value of the Lakes and Coorong Fishery followed an increasing trend over the 15 year period. Figure 8-5 shows that between 2000/01 and 2014/15 the 78 per cent increase in nominal average price of Lakes and Coorong Fishery species was equivalent to a 23 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 8-3  Average price for Lakes and Coorong Fishery species, 2000/01 to 2014/15

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: EconSearch (2016d)

Figure 8-4  GVP and catch Indices for the Lakes and Coorong Fishery (2000/01=100)

Source: EconSearch (2016d)
Figure 8-5  Price indices for the Lakes and Coorong Fishery (2000/01 = 100) 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 2015a). It enables meaningful comparisons of prices to be made between years.

Source: EconSearch (2016d)

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 2000/01 and 2014/15 and 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 slight decline in 2013/14 due to a small decrease in aggregate licence fees and a marginal increase in GVP but this was steeply reversed in 2014/15 as the aggregate licence fees increased while GVP decreased.

The average real (2014/15 dollars) management cost per licence holder increased from $6,818 in 2000/01 to $8,907 in 2007/08, reflecting a decrease in the number of licence holders (from 38 to 37) and an increase in total management costs (Figure 8-6). Between 2007/08 and 2014/15 average management fees have more than doubled principally due to the introduction of the Pipi quota system. The average management cost per licence holder was approximately $19,556 in 2014/15.

A portion of the increased management cost has been contributed to by the PIRSA initiative to support industry associations in their developing the capacity to effectively participate in the
fisheries management process, supporting industry based research and development initiatives and the MSC certification process.

Figure 8-6  Management fee per licence and as a proportion of GVP, Lakes and Coorong Fishery, 2000/01 to 2014/15

![Graph showing management fee per licence and as a proportion of GVP](image)

* Estimates of the average fee per licence holder are expressed in real 2014/15 dollars.
Source: EconSearch (2016d)

8.4 Financial Performance Indicators

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 2014/15 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 2014/15. 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 $180,000 in 2002/03 to around $267,000 in 2007/08. Average income fell to $192,000 in 2009/10 but has since recovered and was $285,000 in 2014/15 (Figure 8-7).
Estimates of average boat gross income are expressed in real 2014/15 dollars.
Source: EconSearch (2016d)

8.4.2 Operating cost 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 has been a large increase in licence fees since 2010/11 which coincides with the increase in 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 (Figure 8-8).

The cash costs detailed in Figure 8-8 can be categorised as either variable or fixed costs. Total variable costs and total fixed costs are illustrated in Figure 8-9 on an average per boat basis. Both total variable costs and total fixed costs have generally followed an increasing trend over the period 2002/03 to 2014/15. Fixed costs have risen considerably mainly as a result of an increase in licence fees and interest. Variable and fixed costs decreased in 2014/15 primarily due to decreases in variable labour and fixed interest costs.
Financial performance estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Source: EconSearch (2016d)

Estimates of average costs are expressed in real 2014/15 dollars.

Source: EconSearch (2016d)
8.4.3 Cost price squeeze

Real price and cost indices\(^7\) for the Lakes and Coorong Fishery for the years 2002/03 to 2014/15 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 2014/15 the average price of Lakes and Coorong Fishery species increased by approximately 59 per cent in real terms. The average cost of catching Lakes and Coorong Fishery species also followed an increasing trend. Between 2002/03 and 2014/15 the average cost per kilogram increased by approximately 42 per cent in real terms (Figure 8-10).

Figure 8-10 Price and cost indices for the Lakes and Coorong Fishery, 2002/03 to 2014/15

Estimates of price and cost indices are expressed in real 2014/15 dollars.

Source: EconSearch (2016d)

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 2014/15. Changes in each of the profitability measures for the

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\(^7\) An index based on total boat cash costs which includes the opportunity cost of labour. It is important to note that when total boat cash costs equals price, the fishers are still making money, i.e. they are drawing a wage from the business.
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.

Figure 8-11  Average income and profit per boat in the Lakes and Coorong Fishery, 2002/03 to 2014/15

Figure 8-11

![Graph: Average income and profit per boat in the Lakes and Coorong Fishery, 2002/03 to 2014/15]

Estimates of income and profitability measures are expressed in real 2014/15 dollars.

Source: EconSearch (2016d)

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.

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8 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.
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 2008/09, fell sharply in 2009/10 before recovering in 2010/11. Return to fishing gear and equipment fell sharply again in 2014/15 (Figure 8-12).

Figure 8-12 Return to capital in the Lakes and Coorong Fishery, 2002/03 to 2014/15

![Graph showing return to capital in the Lakes and Coorong Fishery, 2002/03 to 2014/15.](image)

Source: EconSearch (2016d)

8.5 Contribution to SA Economy

Figure 8-13 and Figure 8-14 illustrate the total economic impact of the fishery on the SA economy for the 12 years, 2002/03 to 2014/15. Total economic impact refers to the direct fishing industry impacts (fishing, processing, etc.) and the indirect impacts on other sectors of the economy.

The change in total output and GSP impacts 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 survey was higher than in 2013 which explains the increase in direct employment in 2014/15. This may be due, in part, to sampling variability.
One of the performance indicators for the fishery is the trend in annual total economic impact of the commercial fishery (Table 8-1). GSP, output and household income followed an increasing trend between 2002/03 and 2014/15 despite fluctuations (Figure 8-13).

Figure 8-13 Total gross state product, output and household income impact of the Lakes and Coorong Fishery on the SA economy, 2002/03 to 2014/15

Estimates of output, GSP and household income are expressed in real 2014/15 dollars.

Source: EconSearch (2016d)
Figure 8-14  Total direct and indirect employment impact of the Lakes and Coorong Fishery on the SA economy, 2002/03 to 2014/15

Source: EconSearch (2016d)

8.6 Economic Rent

Economic rent 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 economic rent generated in the Lakes and Coorong Fishery are summarised in Figure 8-15 for the period 2002/03 to 2014/15.

The real economic rent increased from $618,000 in 2004/05 to $1.8m in 2008/09 before falling sharply to -$149,000 in 2009/10 due principally to the fall in fishery income (Figure 8-15) resulting from particularly adverse environmental conditions (low water and high salinity). The Economic rent has improved since, to approximately $2.0m in 2014/15. This is an interesting example of economic rent 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.
Economic rent 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 8-16 and shows an overall increase between 2004/05 and 2014/15 despite a significant fall in 2009/10. Economic rent 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 8-17. The return to the aggregate value of licences in the fishery increased from 9.3 per cent in 2004/05 to 17.0 per cent in 2007/08 before falling below zero in 2009/10 and 2010/11. Since 2010/11, the return to the aggregate value of licences in the fishery increased steadily and reached 7.8 per cent in 2014/15, primarily as the result of an increase in GVP.
Figure 8-16  Economic rent as a proportion of GVP in the Lakes and Coorong Fishery, 2002/03 to 2014/15

![Graph showing economic rent as a proportion of GVP for the Lakes and Coorong Fishery from 2002/03 to 2014/15.](image)

Source: EconSearch (2016d)

Figure 8-17  Aggregate value of licences and return to aggregate licence value in the Lakes and Coorong Fishery, 2002/03 to 2014/15

![Graph showing aggregate value of licences and return to aggregate licence value for the Lakes and Coorong Fishery from 2002/03 to 2014/15.](image)

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: EconSearch (2016d)
9. MARINE SCALEFISH FISHERY

9.1 Economic Objectives 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.

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 17 years an annual report on economic indicators for the fishery has been prepared. The economic indicators contained in these reports, most recently in EconSearch (2016e), 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
- economic rent (Section 9.6).
### Economic objectives of the Marine Scalefish Fishery

<table>
<thead>
<tr>
<th>Goal</th>
<th>Objective</th>
<th>Strategies</th>
<th>Performance Indicator</th>
<th>Description</th>
<th>Trigger Reference Point</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal 2:</strong> Optimum utilisation and equitable distribution of the Marine Scalefish Fishery resources</td>
<td>2b. Increase the flow of economic and social benefit from the fishery to the broader community</td>
<td>2b (i). Positively influence fisheries related socioeconomic benefits for regional communities</td>
<td>Contribution of fishery to local economic activity (measured as trends in local and regional expenditure by fishers)</td>
<td>Economic Indicator Report (annual)</td>
<td>Downward trends in employment, expenditure and community support activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2b (ii). Communicate information about ESD outcomes of the fishery to the broader community in a timely and publically assessable manner</td>
<td>Proportion of direct and indirect employment in a region dependent on fishing</td>
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<td></td>
<td>2b (iii). Develop and maintain positive relationships with the regional communities in the area of the fishery</td>
<td>Level of community support activities</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>2c. Improve economic efficiencies and financial returns within the constraints of sustainability imperatives</td>
<td>2c (i). Develop and implement management arrangements that allow commercial operators to maximise operational flexibility, economic efficiency, value and returns</td>
<td>Key economic indicators: operating surplus, profit at full equity and rate of return on total boat capital</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>2c (ii). Provide opportunities for diversification and developmental fishing</td>
<td>Licence value</td>
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<tr>
<td></td>
<td></td>
<td>2c (iii). Communicate information about ESD outcomes of the fishery to the broader community in a timely and publically assessable manner</td>
<td>Proportion of direct and indirect employment in a region dependent on fishing</td>
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<td></td>
<td></td>
<td>2c (iii). Develop and maintain positive relationships with the regional communities in the area of the fishery</td>
<td>Level of community support activities</td>
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<tr>
<td>Goal</td>
<td>Objective</td>
<td>Strategies</td>
<td>Performance Indicator</td>
<td>Description</td>
<td>Trigger Reference Point</td>
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<tr>
<td>2d.</td>
<td>Monitor the economic and social performance of the fishery and ensure the collection of economic and social data</td>
<td>2d (i). Undertake periodic economic and social surveys of the commercial fishery to assess economic and social performance against a set of economic and social indicators</td>
<td>Delivery of annual economic reports assessing economic performance of the fishery from periodic economic surveys</td>
<td>An economic and social indicator report is currently prepared annually</td>
<td>N/A</td>
</tr>
<tr>
<td>2d (ii). Undertake and further refine indicators and trigger reference points as more information becomes available</td>
<td></td>
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<tr>
<td>2f.</td>
<td>Provide flexible opportunities to ensure fishers can maintain or enhance their livelihood</td>
<td>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</td>
<td>Provision of a livelihood opportunity: How is the ability of fishers to access livelihood changing</td>
<td>Cost of entry and of maintaining access have risen relative to returns from the fishery for more than one year</td>
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<tr>
<td></td>
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<td>2f (ii). When implementing management changes where possible enable adequate and secure access to fish stocks that is flexible</td>
<td>Perceptions of flexibility: fishers believe fisheries management processes are flexible enough to adapt to changing conditions (fisher survey)</td>
<td>The proportion of fishers who think fisheries management is flexible enough and is decreasing over time</td>
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<tr>
<td>Goal</td>
<td>Objective</td>
<td>Strategies</td>
<td>Performance Indicator</td>
<td>Description</td>
<td>Trigger Reference Point</td>
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<tr>
<td>2g. Ensure equitable treatment and access for fishers</td>
<td>2g (ii). Consultation process designed and undertaken for input of different fishers and stakeholders</td>
<td>How equitable/fair fishers feel the processes and outcomes of fisheries management are (fisher survey)</td>
<td>&gt;50% of fishers believe that are treated unfairly on more than one of the relevant survey questions</td>
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<tr>
<td><strong>Goal 4:</strong> Cost-effective and participative management of the Marine Scalefish Fishery</td>
<td>4c. Maximise stewardship of fisheries resources</td>
<td>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</td>
<td>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 (fisher survey)</td>
<td>There is an ongoing decline in the proportion of fishers who agree with the statement ‘most fishers comply with fishing rules’ 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</td>
<td></td>
</tr>
<tr>
<td>Goal</td>
<td>Objective</td>
<td>Strategies</td>
<td>Performance Indicator</td>
<td>Description</td>
<td>Trigger Reference Point</td>
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</tbody>
</table>

Indicators reported in economic reports

Trigger points that can be calculated from reported economic indicators

Source: PIRSA Fisheries and Aquaculture (2013)
Indicators relating to the economic performance and objectives for the fishery are reported for the period 2000/01 to 2014/15. 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.

9.2 Catch and Gross Value of Production

Figure 9.1 illustrates that total catch in the fishery followed a declining trend between 2000/01 and 2014/15. The fall 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 until 2010/11 before moving to a decreasing trend through to 2014/15.

Figure 9.1  SA Marine Scalefish Fishery catch, 2000/01 to 2014/15

Source: EconSearch (2016e)

The total GVP for the SA Marine Scalefish Fishery for the period 2000/01 to 2014/15 is illustrated in Figure 9-2. The value of catch in the Marine Scalefish Fishery fluctuated between years but has followed a decreasing trend since 2000/01. 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 2000/01 to 2014/15 are illustrated.

Figure 9-4 shows that between 2000/01 and 2014/15 the 152 per cent increase in nominal average price of Marine Scalefish species was equivalent to a 74 per cent rise in real price.
Figure 9-2  SA Marine Scalefish Fishery GVP, 2000/01 to 2014/15

Estimates are expressed in real 2014/15 dollars.
Source: EconSearch (2016e)

Figure 9-3  GVP, price and catch indices for the SA Marine Scalefish Fishery

Estimates are expressed in real 2014/15 dollars.
Source: EconSearch (2016e)
Figure 9.4  Price indices for the Marine Scalefish Fishery for aggregate of all species \textsuperscript{a,b}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure9.4.png}
\caption{Price indices for the Marine Scalefish Fishery for aggregate of all species \textsuperscript{a,b}}
\end{figure}

\textsuperscript{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 2015a). It enables meaningful comparisons of prices to be made between years.

\textsuperscript{b} It is worth noting the problem of using a single measure of price for a multispecies fishery in that it can be driven by species mix rather than actual change in market prices.

Source: EconSearch (2016e)

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 have fluctuated over the period 2000/01 to 2014/15 but followed an increasing trend overall, from 8 per cent in 2000/01 to 10 per cent in 2014/15. This is the result of a reduction in GVP combined with a small increase in aggregate fees, in real terms.

The average management cost per licence holder increased from $5,823 in 2000/01 to $8,048 in 2014/15, in real terms (Figure 9.5). This increase is a result of a decrease in the number of licence holders (from 428 to 307) combined with the small increase in the real cost of management over the fifteen year period.
Figure 9-5  Management fee per licence and as a proportion of GVP, SA Marine Scalefish Fishery, 2000/01 to 2014/15 *

* Estimations are expressed in real 2014/15 dollars.

Source: EconSearch (2016e)

9.4 Financial Performance Indicators

9.4.1 Average income

Average income and total number of licences in the fishery for the period 2000/01 to 2014/15 are illustrated in Figure 9-6. The total number of licence holders in the fishery declined from 428 in 2000/01 to 307 by the end of 2014/15. This decrease is due to natural attrition in the restricted Marine Scalefish Fishery, the licence amalgamation scheme in the Marine Scalefish Fishery, 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 slight decrease in fishery GVP, the average income per boat in the fishery has increased from approximately $71,000 in 2000/01 to $89,000 in 2014/15 (real 2014/15 dollars) (Figure 9-6).
9.4.2 Operating cost 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 2000/01 to 2014/15. 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 around 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. Total variable costs and total fixed costs are illustrated in Figure 9-8 on an average per boat basis. Total variable costs have fluctuated between years but generally followed a slight increasing trend over the period 2000/01 to 2014/15. 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 decline in average total costs per boat between 2012/13 and 2014/15 (compared to previous years) is due, in part, to a change in the composition of the 2014 survey sample, i.e. a higher proportion of line-only licence holders and a corresponding lower proportion of fishers with net entitlements.

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*Figure 9-6 Average income per licence holder in the SA Marine Scalefish Fishery, 2000/01 to 2014/15*

Source: EconSearch (2016e)
Figure 9-7 Cost shares in the SA Marine Scalefish Fishery, 2000/01 to 2014/15

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

Source: EconSearch (2016e)

Figure 9-8 Average total costs in the SA Marine Scalefish Fishery 2000/01 to 2014/15

* Estimates of average costs are expressed in real 2014/15 dollars.

Source: EconSearch (2016e)
9.4.3 Cost price squeeze

Price and cost indices for the years 2000/01 to 2014/15 are summarised in Figure 9-9. These indicators are derived from the average price and average cost per kilogram of catch. Between 2000/01 and 2014/15 the average price of Marine Scalefish species increased by approximately 67 per cent in real terms. The average costs of catching Marine Scalefish species also followed an increasing trend over the same period, by 69 per cent in real terms.

Figure 9-9  Price and cost indices for the SA Marine Scalefish Fishery, 2000/01 to 2014/15

![Price and cost indices for the SA Marine Scalefish Fishery, 2000/01 to 2014/15](image)

* Estimates of price and cost are expressed in real 2014/15 dollars.

Source: EconSearch (2016e)

9.4.4 Profitability

Selected measures of profitability are summarised in Figure 9-10 for the years 2000/01 to 2014/15. 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 2000/01 and 2008/09 but have declined since.
Estimates of income and profitability measures are expressed in real 2014/15 dollars.

Source: EconSearch (2016e)

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 three years from 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. The average value of licences in the fishery increased steadily between 2000/01 and 2008/09 despite year to year variation. Since 2008/09, licence values have followed a generally decreasing trend in real terms (Figure 9-11).
9.5 Contribution to SA Economy

Figure 9-12 and Figure 9-13 illustrate the total economic impact of the fishery on the SA economy for the 15 years, 2000/01 to 2014/15. Total economic impact refers to the direct fishing industry impacts (fishing, processing, etc.) and the indirect impacts on other sectors of the economy.

The change in total output and GSP impacts 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 has been an overall decline in the employment impact of the fishery since 2000/01, as illustrated in Figure 9-13. This is mainly due to a decrease in the number of licence holders in the fishery. The significant decrease in employment between 2011/12 and 2012/13 is in part due to the update of survey data.
Figure 9-12  Total gross state product, output and household income impact of the SA Marine Scalefish Fishery on the SA economy, 2000/01 to 2014/15

* Estimates of output, GSP and household income are expressed in real 2014/15 dollars.
Source: EconSearch (2016e)

Figure 9-13  Total direct and indirect employment impact of the SA Marine Scalefish Fishery on the SA economy, 2000/01 to 2014/15

Source: EconSearch (2016e)
9.6 Economic Rent

Economic rent 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 Marine Scalefish Fishery and the good produced is the landed fish. Estimates of the economic rent generated in the Marine Scalefish Fishery are summarised in Figure 9-14 for the period 2000/01 to 2014/15.

The economic rent fluctuated between years but improved overall. In 2000/01, economic rent in the fishery was estimated to be -$6.8 million (real 2014/15 dollars) while in 2014/15 it was -$3.0 million.

Economic rent 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 2000/01 and 2014/15, despite sharp declines from 2003/04 to 2005/06 and from 2011/12 to 2013/14.

Economic rent represents a return to the aggregate value of licences in the fishery. The aggregate value of licences in the Marine Scalefish Fishery 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 -9 per cent in 2000/01 and -7 per cent in 2014/15 (Figure 9-16).

Figure 9-14  Economic rent in the SA Marine Scalefish Fishery, 2000/01 to 2014/15 a

* All indicators are expressed in real 2014/15 dollars.

Source: EconSearch (2016e)
Figure 9-15  Economic rent as a proportion of GVP in the SA Marine Scalefish Fishery, 2000/01 to 2014/15

Source: EconSearch (2016e)

Figure 9-16  Aggregate value of licences and return to aggregate licence value in the SA Marine Scalefish Fishery, 2000/01 to 2014/15

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 2014/15 dollars.

Source: EconSearch (2016e)
10. NORTHERN ZONE ROCK LOBSTER FISHERY

10.1 Economic Objectives of the Northern Zone Rock Lobster Fishery

According to the management plan for the Northern Zone Rock Lobster (NZRL) Fishery (PIRSA 2014d), management of the fishery has four key goals:

1. Ensure the resource is sustainably harvested
2. Ensure optimum economic utilisation and equitable distribution of Rock Lobster stocks
3. Minimise impacts on the ecosystem
4. Cost effective 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. 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 18 years an annual report on economic indicators for the fishery has been prepared. The economic indicators contained in these reports, most recently reported in EconSearch (2016f), 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
- economic rent (Section 10.6).
## Table 10-1  Economic objectives of the NZRL Fishery

<table>
<thead>
<tr>
<th>Goal</th>
<th>Objectives</th>
<th>Strategies</th>
<th>Performance indicators</th>
<th>Limit reference point</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Ensure optimum utilisation and equitable distribution of the</td>
<td>2b. Maintain a flow of economic benefit from the fishery to the broader community</td>
<td>2bi. Develop and implement management arrangements that allow commercial operators to maximise operational flexibility, economic efficiency, value and returns</td>
<td>Gross Value of Product (GVP)</td>
<td>Negative trend one or more economic performance indicators for more than 3 consecutive years</td>
</tr>
<tr>
<td>Rock Lobster in the Northern Zone</td>
<td></td>
<td>2biii. Communicate sustainability and economic outcomes of the fishery to the broader community</td>
<td>Gross Operating Surplus (GOS)</td>
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<td>Profit at full equity</td>
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<td></td>
<td>2e. Ensure sufficient economic information exists to make informed management decisions</td>
<td>2ei. Undertake periodic economic surveys of the commercial fishery to assess economic performance against a set of economic indicators</td>
<td>Licence value</td>
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<td>2eii. Develop and implement methods to improve estimates of the total value of recreational fishing to regional economies and the broad community</td>
<td>Value of quota units</td>
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<td></td>
<td></td>
<td></td>
<td>Economic rent</td>
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<td>Return on capital</td>
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</tr>
<tr>
<td>4. Cost effective and participative</td>
<td>4a. Promote cost-effective and efficient management of the fishery, in line with</td>
<td>4ai. Develop and implement management arrangements that are effective at achieving management objectives whilst minimising costs</td>
<td>Cost of management services</td>
<td>Commercial licence fees &gt; than 10 per cent of GVP</td>
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<tr>
<td></td>
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<td>Cost of licence fees</td>
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<tr>
<td>Indicators reported in economic reports.</td>
<td>Trigger points that can be calculated from reported economic indicators.</td>
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</table>

Source: PIRSA (2014d)

<table>
<thead>
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<th>management of the fishery</th>
<th>the governments cost recovery policy</th>
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<tbody>
<tr>
<td>4aii. Determine and discuss the real costs of management, research and compliance for the fishery on an annual basis</td>
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<tr>
<td>4aiii. Recover licence fees from commercial licence holders, sufficient to cover the attributed costs of management of the fishery, in accordance with the Governments cost-recovery plan</td>
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</table>

Source: PIRSA (2014d)
Indicators relating to the economic performance and objectives for the fishery are reported for the period 2000/01 to 2014/15. 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.

### 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 15 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 625 tonnes, did not constrain total catch until 2009/10 when a TACC of 310 tonnes was set. The TACC was subsequently increased to 345 tonnes between 2012/13 and 2013/14 but catch only increased to 325 tonnes then 331 tonnes over this period. The TACC was reduced to 323 in 2014/15 and total catch of Rock Lobster was 321 tonnes (a 3 per cent decrease from 2013/14).

**Figure 10-1  NZRL Fishery catch, 2000/01 to 2014/15**

Real value of catch in the SA NZ Rock Lobster Fishery between 2000/01 and 2014/15 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 2000/01 and 2004/05 (slightly offset by a price peak in 2001/02) followed by a growth period up to 2006/07. As catch levels have been relatively constant since 2009/10 the changes in GVP for the fishery are directly linked to changes in price. Falls in price in 2010/11 and 2012/13 resulted in a decline in fishery GVP for those years. Strong growth in price since 2012/13 has resulted in a GVP increase in 2013/14 ($19.6 million) and 2014/15 ($22.5 million).
Trends in price over the last 15 years are illustrated in Figure 10-3. The value of each indicator shown has been converted to an index with a base year (2000/01) value set to 100. The price of Rock Lobster increased between 2000/01 and 2001/02 before falling sharply in the next two years, partly as a result of the SARS outbreak which affected demand for Rock Lobster from Hong Kong and other Asian export destinations. Between 2003/04 and 2014/15, nominal price followed an increasing trend despite falls in 2007/08, 2010/11 and 2012/13. In 2014/15, the nominal price ($70.27/kg) was 112 per cent above the price in 2000/01 ($30.22/kg), which is equivalent to a 46 per cent real price increase.

A significant proportion of the South Australian Rock Lobster catch is exported overseas (39 per cent in 2014/15) 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 (Figure 10-4), but year-to-year fluctuations in the exchange rate do appear to lead to fluctuations in price.
Figure 10-3 GVP, price and catch indices for the NZRL Fishery

2000/01 is the reference year against which all other years are compared.

Source: EconSearch (2016f)

Figure 10-4 Exchange rate (US$) and average price for NZRL, 2000/01 to 2014/15

Source: EconSearch (2016f)
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 2000/01 the following trends have emerged.

- Licence fees as a percentage of gross value of production (GVP) increased from 2.7 per cent in 2000/01 to 4.3 per cent in 2002/03. This ratio has increased significantly since the introduction of quota in 2003/04 and was 6.3 per cent in 2014/15.

- The licence fees per kilogram of landed lobster increased significantly between 2000/01 to 2014/15 from $1.30/kg to $4.44/kg, reflecting the significantly lower catch and the high licence fees associated with quota management.

- The fee per licence fell from $15,883 in 2000/01 to $14,021 in 2001/02 but increased in subsequent years. The cost per licence in 2014/15 ($22,606) was 42 per cent higher than in 2000/01, reflecting the 9 per cent reduction in the number of licences, and the 30 per cent increase in licence fees.

There were three main factors that contributed to the trends observed from 2000/01 to 2014/15. First, aggregate licence fees increased in real terms by approximately 30 per cent, at a time when the management services had to increase to accommodate the change to a quota system. Second, the catch in 2014/15 was approximately 62 per cent below that achieved in 2000/01, while the price was approximately 46 per cent higher in real terms (resulting in the value of catch falling by 45 per cent in real terms). Third, the number of licences fell by around 9 per cent (from 69 to 63) between 2000/01 and 2014/15.

10.4 Financial Performance Indicators

10.4.1 Average income

Average income and total number of licences in the fishery for the period 2000/01 to 2014/15 are illustrated in Figure 10-6. In real terms, average boat income increased by 5 per cent across this period. The increase in real boat income can be explained by an increase in real price (41 per cent) and the reduction in the number or licences which was only slightly offset by the decline in catch (a decrease of 25 per cent over the last 15 years).
Figure 10-5  Management fee per licence and as a proportion of GVP, NZRL Fishery, 2000/01 to 2014/15

* Estimates of the fee per licence holder are expressed in real 2014/15 dollars.
Source: EconSearch (2016f)

Figure 10-6  Average income per licence holder in the NZRL Fishery, 2000/01 to 2014/15

* Estimates of average boat gross income are expressed in real 2014/15 dollars.
Source: EconSearch (2016f)
10.4.2 Operating cost 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, interest 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. Total variable costs and total fixed costs 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 2000/01 to 2009/10. Since then total variable costs have followed an increasing trend. Total fixed costs have fluctuated much less from year to year and followed an increasing trend over time.

Figure 10-7  Cost shares in the NZRL Fishery, 2000/01 to 2014/15

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

Source: EconSearch (2016f)
10.4.3 Cost price squeeze

Real price and cost indices for the SA NZ Rock Lobster Fishery for the years 2000/01 to 2014/15 are summarised in Figure 10-9. These indicators are derived from the average price and average cost per kilogram of catch. 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 2000/01 and 2014/15, the average price of NZ Rock Lobster increased by approximately 41 per cent in real terms. The average costs of catching Rock Lobster also followed an increasing trend. Between 2000/01 and 2014/15, the average cost per kilogram increased by approximately 16 per cent, below the increase in price (Figure 10-9). Note that cost in these analyses includes depreciation of capital and labour, including the unpaid labour involved with fishing and on-shore activities.
Figure 10-9 Price and cost indices for the NZRL Fishery, 2000/01 to 2014/15

* Estimates of price and costs are expressed in real 2014/15 dollars.

Source: EconSearch (2016f)

10.4.4 Profitability

Selected measures of profitability for the SA NZ Rock Lobster Fishery are summarised in Figure 10-10 for the years 2000/01 to 2014/15. Changes in each of the profitability measures for the fishery were closely related to the average income earned. Profitability followed a decreasing trend between 2000/01 and 2003/04, becoming negative between 2002/03 and 2005/06 (Figure 10-10). Since 2003/04, profitability has generally followed an increasing trend, and has been positive since 2006/07.
Estimates of income and profitability measures are expressed in real 2014/15 dollars.

Source: EconSearch (2016f)

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 significant decline in the average rate of return to capital between 2000/01 and 2003/04. Since that time it has improved significantly, rising from -5.7 per cent in 2003/04 to 9.5 per cent in 2014/15 (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 57.1 per cent in 2014/15.
Estimates of licence value are expressed in real 2014/15 dollars.

Source: EconSearch (2016f)

10.5 Contribution to SA Economy

Figure 10-12 and Figure 10-13 illustrate the total economic impact of the fishery on the SA economy for the past 15 years, 2000/01 to 2014/15. Total economic impact refers to the direct fishing industry impacts (fishing, processing, etc.) and the indirect impacts on other sectors of the economy.

The change in total output and GSP impacts are closely related to changes in price and fishery GVP (Figure 10-12). There has been an overall decline in direct employment impact of the fishery since 2000/01, 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 though increases in catch rate by constraining catch.
Figure 10-12  Total gross state product, output and household income impact of the NZRL Fishery on the SA economy, 2000/01 to 2014/15

* Estimates of output, GSP and household income are expressed in real 2014/15 dollars.

Source: EconSearch (2016f)

Figure 10-13  Total direct and indirect employment impact of the NZRL Fishery on the SA economy, 2000/01 to 2014/15

Source: EconSearch (2016f)
10.6 Economic Rent

Economic rent 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 SA NZ Rock Lobster Fishery and the good produced is the landed Rock Lobster. ITQ systems aim to increase economic rent by reducing costs through higher catch rates and through allowing catch to be shifted to more efficient operators. Estimates of the economic rent generated in the SA NZ Rock Lobster Fishery are summarised in Figure 10-14 for the period 2000/01 to 2014/15.

Economic rent fluctuated between years but increased overall. In 2000/01, estimated economic rent in the fishery was -$544,000 and declined in each year through to 2003/04 when it was estimated to be -$14.3 million. Since then it has followed an increasing trend and in 2011/12 it was estimated to be approximately $3.1 million (Figure 10-14). This was the first time that economic rent had been estimated to be positive in this fishery for more than a decade. In 2014/15, economic rent increased to $7.5 million. Notwithstanding the 2012/13 decline, the increase in economic rent since 2003/04 is attributable to a combination of a reduction in labour, capital and operating costs. In other words, the rising trend in economic rent is largely due to significant improvements in economic efficiency.

Figure 10-14  Economic rent in the NZRL Fishery, 2000/01 to 2014/15 ($'000)

All indicators are expressed in real 2014/15 dollars.
Source: EconSearch (2016f)

Economic rent 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 2000/01 and 2003/04 before an increase in subsequent years.
Economic rent represents a return to the value of licences in the fishery. The aggregate value of licences in the SA NZ Rock Lobster 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 2000/01 and 2003/04 and has followed an increasing trend in subsequent years.

Figure 10-15 Economic rent as a proportion of GVP in the NZRL Fishery, 2000/01 to 2014/15

![Graph showing economic rent as a proportion of GVP](image)

Source: EconSearch (2016f)

Figure 10-16 Aggregate value of licences and return to aggregate licence value in the NZRL Fishery, 2000/01 to 2014/15

![Graph showing aggregate value of licences and return to aggregate licence value](image)

*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: EconSearch (2016f)
11. SARDINE FISHERY

11.1 Economic Objectives of the Sardine Fishery

According to the management plan for the Sardine (Pilchard) fishery (PIRSA 2014a), 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.

Over the last 14 years an annual report on economic indicators for the fishery has been prepared. The economic indicators contained in these reports, most recently reported in EconSearch (2015g), 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
- economic rent (Section 11.6).
### Table 11-1: Economic objectives of the Sardine Fishery

<table>
<thead>
<tr>
<th>Goal</th>
<th>Objective</th>
<th>Management Strategies</th>
<th>Performance Indicator</th>
<th>Limit Reference Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal 2: Optimum utilisation and equitable distribution</td>
<td>2a. Maximise value of the fishery to the community within ecologically sustainable limits</td>
<td>2a(i) Undertake economic review on a regular basis</td>
<td>Gross value of production, Gross operating surplus, Licence value, Number of FTEs directly and indirectly employed</td>
<td>GVP monitored regularly, GOS monitored regularly, Licence value monitored regularly, Economic indicators report conducted regularly</td>
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<tr>
<td></td>
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<td>2a(ii) Develop arrangements to improve the operational efficiency of the fishing fleet, while maximising flexibility (e.g. new fishing grounds if appropriate)</td>
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<td>2a(iii) Develop arrangements that allow for value-adding strategies, where possible</td>
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<tr>
<td></td>
<td>2b. An economically efficient fleet</td>
<td>2b(i) Consider economic and financial impacts when implementing management arrangements</td>
<td>Gross value of production, Gross operating surplus, Licence value</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2b(ii) Undertake economic review on a regular basis</td>
<td>Economic indicators assessed in economic indicators report</td>
<td></td>
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<td></td>
<td></td>
<td>2b(iii) Where appropriate, and if possible, influence other processes that impact on infrastructure development</td>
<td>Economic indicators assessed in economic indicators report</td>
<td></td>
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<tr>
<td></td>
<td>2c. Ensure sufficient economic information is used to make informed management decisions</td>
<td>2c(i) Undertake economic surveys to assess the economic performance of the fishery</td>
<td>Economic indicators assessed in economic indicators report</td>
<td>The economic indicators report is published regularly</td>
</tr>
<tr>
<td>Goal</td>
<td>Objective</td>
<td>Management Strategies</td>
<td>Performance Indicator</td>
<td>Limit Reference Points</td>
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<tr>
<td>Goal 4: Cost effective and consultative co-management of the fishery</td>
<td>4a. Provide cost-effective and efficient management of the fishery, in line with government’s cost recovery policy</td>
<td>4a(vi) Monitor licence fees as a percentage of GVP</td>
<td>Key economic indicators: licence fees as a percentage of gross value of production, gross operating surplus, licence value</td>
<td></td>
</tr>
</tbody>
</table>

Indicators reported in Economic reports.

Source: PIRSA (2014a)
Indicators relating to the economic performance and objectives for the fishery are reported for the period 2001/02 to 2014/15\(^9\). 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.

### 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, constrained by TACC, between 2000 and 2014. The figure shows data by calendar year since this is the period for which TACC is set. 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. 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. Some TACC from 2013 was moved to 2012 to meet increased demand for sardines at the time.

![SA Sardine Fishery catch, by calendar year, 2001 to 2014](image)

Source: EconSearch (2016g)

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\(^9\) A specialised Sardine Fishery was not established until 2001/02 and, as a result, boat level financial performance indicators were not prepared prior to 2001/02.
The GVP for the Sardine fishery for the period 2000/01 to 2014/15 is illustrated in Figure 11-2. The real value of the Sardine catch increased significantly between 2000/01 and 2004/05. This significant increase in value corresponds with increased catches to meet the growing demand for feedstock from Port Lincoln’s Tuna farming industry. 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. It fluctuated in subsequent years as a result of small changes in both the level of catch and the price of Sardines but hasn’t shown any clear trend since 2005/06. In 2014/15, GVP was estimated to be $21.6 million, a 12 per cent increase from the previous year (Figure 11-2).

Figure 11-2 SA Sardine Fishery GVP, 2000/01 to 2014/15

![Graph showing GVP for Sardine fishery from 2000/01 to 2014/15.](image)

*Estimates are expressed in real 2014/15 dollars.

Source: EconSearch (2016g)

Catch, GVP and price indices for the fishery for 2000/01 to 2014/15 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, as noted above, the decline in real price since 2005/06 has offset the increase in catch over that period leaving real GVP largely the same in 2014/15 as in 2005/06.

The trends in real and nominal price for Sardines over the last fifteen years can be seen in Figure 11-4. The average real price for Sardines increased by 10 per cent between 2000/01 and 2002/03 then decreased to 64 per cent of its 2000/01 level by 2004/05. Since 2004/05, average nominal price has fluctuated at around 80 percent of its 2000/01 level leading to a decrease in real price at around the rate of inflation. Overall, between 2000/01 and 2014/15 the average nominal price for Sardines declined by 14 per cent which is equivalent to a 41 per cent decline in real price (Figure 11-4).
Figure 11-3  GVP, price and catch indices for the SA Sardine Fishery

![Graph of GVP, price and catch indices for the SA Sardine Fishery]

* Estimates of GVP and price are expressed in real 2014/15 dollars.
Source: EconSearch (2016g)

Figure 11-4  Price indices for the SA Sardine Fishery

![Graph of price indices for the SA Sardine Fishery]

* 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 2015a). It enables meaningful comparisons of prices to be made between years.
Source: EconSearch (2016g)
11.3 Management Costs

The average management fee per licence holder and the licence fee as a proportion of GVP, for the period 2000/01 to 2014/15, are illustrated in Figure 11-5. Licence fees as a percentage of GVP fluctuated between years but overall decreased from 6.4 per cent in 2000/01 to 3.2 per cent in 2014/15. This decrease can be attributed to an increase in fishery GVP and is despite a real increase in the cost of managing the fishery.

The average management cost per licence holder increased (in real terms) from $34,294 in 2000/01 to $91,410 in 2004/05, reflecting an increase in total management costs. Since 2004/05, the average cost per licence holder 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 2014/15, the management fee per licence was $49,666 (Figure 11-5).

Figure 11-5  Management fee per licence and as a proportion of GVP, SA Sardine Fishery, 2001/02 to 2014/15 a

* Estimates are expressed in real 2014/15 dollars.
Source: EconSearch (2016g)

11.4 Financial Performance Indicators

11.4.1 Average income

Average income and total number of licences in the fishery for the period 2001/02 to 2014/15 are illustrated in Figure 11-6. Average income is reported in real 2014/15 dollars. The average income per licence (in real 2014/15 dollars) increased from almost $1.2 million in 2001/02 to
$3.1 million in 2004/05 then declined significantly in 2005/06 (to $1.4 million) as a result of the reduction in TACC. In subsequent years, average income per licence fluctuated around $1.5 million and the average income per licence holder was just under $1.5 million in 2014/15 (Figure 11-6). 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.

Figure 11-6  Average income per licence holder in the SA Sardine Fishery, 2001/02 to 2014/15

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Estimates of average boat gross income are expressed in real 2014/15 dollars.
Source: EconSearch (2016g)

11.4.2 Operating cost trends

A breakdown of major cost items as a proportion of total cash costs, for the last 14 years, is illustrated in Figure 11-7. Since 2001/02, labour costs have accounted for a large but decreasing 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 27 per cent in 2014/15. Other significant cash costs were fuel, repairs and maintenance, and licence fees (Figure 11-7).

The cash costs detailed in Figure 11-7 can be categorised as either variable or fixed costs. Total variable costs and total fixed costs 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. 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 2014/15

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

Source: EconSearch (2016g)

Figure 11-8 Average total costs in the SA Sardine Fishery 2001/02 to 2014/15

* Estimates of average costs are expressed in real 2014/15 dollars.

Source: EconSearch (2016g)
11.4.3 Cost price squeeze

Price and cost indices for the South Australian Sardine Fishery for the years 2001/02 to 2014/15 are summarised in Figure 10-9. These indicators are derived from the average price and average cost per kilogram of catch.

Between 2001/02 and 2014/15 the average price of Sardines decreased by approximately 41 per cent in real terms (14 per cent in nominal terms). The average cost of catching Sardines declined by 39 per cent in real terms over the same period. A declining average cost of catching Sardines, in real terms, reflects productivity improvements 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.

Figure 11-9 Price and cost indices for the SA Sardine Fishery, 2001/02 to 2014/15

* Estimates are expressed in real 2014/15 dollars.

Source: EconSearch (2016g)

11.4.4 Profitability

Selected measures of profitability for the South Australian Sardine Fishery are summarised in Figure 10-10 for the years 2001/02 to 2014/15. 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 (Figure 10-10). Profitability has fluctuated since 2005/06 but has
generally followed a slight increasing trend, the result of an increase in GVP and slight decreases in costs over the past nine years. Between 2013/14 and 2014/15, profit at full equity and gross operating surplus moved in opposite directions due to an increase in interest costs estimated from the 2016 licence holder survey.

Figure 11-10  Average financial performance indicators per boat in the SA Sardine Fishery, 2001/02 to 2014/15

Estimates of income and profitability measures are expressed in real 2014/15 dollars.

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 almost 10 per cent then fell significantly in 2005/06 but has improved in subsequent years (despite falls in 2007/08, 2010/11 and 2013/14) (Figure 11-11). In 2014/15, return on total capital was estimated to be over 7 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.
11.5 Contribution to SA Economy

Figure 11-12 and Figure 11-13 illustrate the total economic impact of the fishery on the SA economy for the 14 years, 2001/02 to 2014/15.

Total economic impact refers to the direct fishing industry impacts (fishing, processing, etc.) and the indirect impacts on other sectors of the economy. The change in total output and GSP impacts are closely related to changes in price and fishery GVP (Figure 11-12). GSP, output and household income were all higher in 2014/15 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. Each has followed a slight decreasing trend since.

Employment (direct and indirect) increased between 2000/01 and 2005/06 but has followed a slight decreasing trend since (Figure 11-13). An increase in employment in 2014/15 was estimated from the 2016 licence holder survey bringing direct and indirect employment in 2014/15 (89 fte and 98 fte respectively) to a higher level than in 2001/02 (84 fte and 64 fte respectively). Overall, total employment generated by the SA Sardine Fishery in SA was estimated to increase by 39 fte jobs between 2001/02 and 2014/15.
Figure 11-12  Total gross state product, output and household income impact of the SA Sardine Fishery on the SA economy, 2001/02 to 2014/15

* Estimates of output, GSP and household income are expressed in real 2014/15 dollars.

Source: EconSearch (2016g)

Figure 11-13  Total direct and indirect employment impact of the SA Sardine Fishery on the SA economy, 2001/02 to 2014/15

Source: EconSearch (2016g)
11.6 Economic Rent

Economic rent 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 Sardine fishery and the good produced is the landed fish. Estimates of the economic rent generated in the Sardine fishery are summarised in Figure 11-14 for the period 2001/02 to 2014/15.

The economic rent increased from $1.5 million in 2001/02 to $13.8 million in 2004/05, but fell dramatically in 2005/06 to -$4.4 million. Since 2005/06 economic rent has fluctuated but has generally followed an increasing trend. The increasing trend was largely due to decreasing opportunity cost of capital, cash costs and labour costs, in real terms. Economic rent was $3.5m in 2014/15 (Figure 11-14).

Figure 11-14 Economic rent in the SA Sardine Fishery, 2001/02 to 2014/15 ($’000)

Economic rent 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, economic rent as a percentage of GVP has followed an increasing trend in subsequent years as economic rent has increased while GVP remained somewhat stable.

Economic rent 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 2.4 per cent in 2001/02 to 7.8 per cent in 2004/05. This increase was a result of an increase in the
economic rent generated by the fishery and despite an increase in the aggregate value of licences over the period. The return on aggregate licence value was significantly lower between 2005/06 and 2007/08, but has increased since. In 2014/15 the return to the aggregate value of licences in the fishery was 6.3 per cent (Figure 11-16).

Figure 11-15 Economic rent as a proportion of GVP in the SA Sardine Fishery, 2001/02 to 2014/15

![Economic rent as a proportion of GVP in the SA Sardine Fishery, 2001/02 to 2014/15](source: EconSearch (2016g))

Figure 11-16 Aggregate value of licences and return to aggregate licence value in the SA Sardine Fishery, 2001/02 to 2014/15

![Aggregate value of licences and return to aggregate licence value in the SA Sardine Fishery, 2001/02 to 2014/15](source: EconSearch (2016g))

* 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: EconSearch (2016g)
12. SPENCER GULF PRAWN FISHERY

12.1 Economic Objectives of the Spencer Gulf Prawn Fishery

According to the management plan for the Spencer Gulf (SG) Prawn Fishery (PIRSA 2014b), 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 management goals for the Spencer Gulf Prawn Fishery:

5. Maintain ecologically sustainable stock levels
6. Ensure optimum utilisation and equitable distribution
7. Minimise impacts on the ecosystem
8. Enable effective management with greater industry involvement

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

Over the last 18 years economic indicators for the SG Prawn Fishery have been prepared annually. The economic indicators contained in these reports, most recently presented in EconSearch (2016h)\(^\text{10}\), can assist in measuring the performance of the fisheries against management objectives. Between 1997/98 and 2010/11 economic indicators were prepared for the Spencer Gulf and West Coast Prawn Fisheries together. From 2010/11 onwards 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 Fishery are reported under the following headings:

- catch and gross value of production (GVP) (Section 12.2);
- management costs (Section 12.3);

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\(^{10}\) Economic Indicator reports were not prepared for 2010/11 or 2011/12 but economic indicators have been updated to continue the time series in this report.
Table 12-1  Economic objectives of the Spencer Gulf Prawn Fishery

<table>
<thead>
<tr>
<th>Goal</th>
<th>Objectives</th>
<th>Management Strategies</th>
<th>Performance Indicator</th>
<th>Limit Reference Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Ensure optimal utilisation and equitable distribution.</td>
<td>2a. An economically efficient fleet without compromising sustainability objectives.</td>
<td>2ai. Harvest strategy allows commercial operators to maximise operational flexibility and economic efficiency.</td>
<td>Gross Value of Production (GVP) &lt;br&gt; Return on Investment (ROI) &lt;br&gt; Gross operating surplus (GOS)</td>
<td>GVP monitored regularly &lt;br&gt; ROI monitored regularly &lt;br&gt; GOS monitored regularly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2aii. Economic performance of fishery assessed.</td>
<td>Economic Indicators report</td>
<td>Economic indicator report conducted regularly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Number of FTEs directly and indirectly employed</td>
<td>Numbers of FTEs monitored when available</td>
</tr>
<tr>
<td>2b. Manage allocated shares of the resource as per Allocation policy.</td>
<td>2b. Resource allocation between sectors provided in the management plan.</td>
<td>Allocation reviewed as per Allocation Policy (PIRSA 2011), if appropriate.</td>
<td>Allocation reviewed if appropriate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2bii. Review of allocation plan provided in the management plan.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 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. | 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. |

| 4bii. Communicate management arrangements to the wider community. |

Indicators reported in economic reports.

Reference points that can be calculated from reported economic indicators

Source: PIRSA (2014b)
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

economic rent (Section 12.6).

Indicators relating to the economic performance and objectives for the fisheries are reported for the period 2000/01 to 2014/15. 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.

12.2 Catch and Gross Value of Production

The data shown in Figure 12-1 indicate that total catch for the fishery has been relatively constant for the last 15 years. Catch reached its highest level (2,522 tonnes) in 2000/01, before falling to its lowest level for this period in 2002/03 (1,479 tonnes). Since then, annual catch has remained fairly close to 2,000 tonnes per annum, with the most significant peak occurring in 2009/10 (2,361 tonnes) followed by a moderate fall to 1,675 tonnes in 2011/12. Catch has remained relatively stable since and was 1,664 tonnes in 2014/15.

The Gross Value of Production (GVP) for the Spencer Gulf Prawn Fishery for the period 2000/01 to 2014/15 is illustrated in Figure 12-2. Like catch, GVP increased markedly in 2000/01 and then fell significantly in 2002/03. The increase in catch in 2009/10 was not matched by an increase in GVP due to a falling price for Prawns. Since 2003/04 real GVP has trended downwards mainly due to a declining trend in real price, although there has been stability since 2009/10.

Catch, GVP and price indices for the fishery for the last 15 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.

Figure 12-4 illustrates the trend in both the nominal and the real price for Prawns over the last 15 years. While the nominal price for Prawns has been relatively constant (despite fluctuations) the real price has been consistently declining, although with some stability since 2009/10.
Figure 12-1  SG Prawn Fishery catch, 2000/01 to 2014/15

Figure 12-2  SG Prawn Fishery GVP, 2000/01 to 2014/15

GVP is expressed in real 2014/15 dollars.

Source: EconSearch (2016h)
Figure 12-3  GVP, price and catch indices for the SG Prawn Fishery

Figure 12-3  GVP, price and catch indices for the SG Prawn Fishery

GVP and price are expressed in real 2014/15 dollars.
Source: EconSearch (2016h)

Figure 12-4  Price indices for the SG Prawn Fishery

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 2015a). It enables meaningful comparisons of prices to be made between years.

Source: EconSearch (2016h)
12.3 Management Costs

The average management fee per licence holder and the licence fee as a proportion of GVP are illustrated in Figure 12-5.

Licence fees as a percentage of GVP fluctuated between years but overall increased from 1.4 per cent in 2000/01 to 3.7 per cent in 2014/15 (Figure 12-5). This increase can be attributed to a significant decrease in fishery GVP (in real terms) and is despite a slight decrease in the real cost of managing the fishery.

Figure 12-5 Management fee per licence and as a proportion of GVP, SG Prawn Fishery, 2000/01 to 2014/15

Estimates of management costs and GVP are expressed in real 2014/15 dollars.
Source: EconSearch (2016h)

12.4 Financial Performance Indicators

12.4.1 Average income

Average income and total number of licences in the fishery for the last 15 years is illustrated in Figure 11-6. 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 approximately $1,458,000 in 2000/01 to approximately $743,000 in 2014/15.
Figure 12-6  Average income per licence holder in the SG Prawn Fishery, 2000/01 to 2014/15

A breakdown of major cost items as a proportion of total cash costs is illustrated in Figure 12-7. 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, interest, and insurance.

The cash costs detailed in Figure 12-7 can be categorised as either variable or fixed costs. Total variable costs and total fixed costs are illustrated in Figure 12-6 on an average per boat basis. Total variable costs decreased between 2000/01 and 2002/03. While this was followed by an increase in 2003/04, variable costs continued to slowly decrease (with some fluctuations) from 2004/05 to 2014/15. 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. Fixed costs did follow a very slight increasing trend between 2000/01 and 2006/07 and have followed a very slight decreasing trend since (Figure 12-8).

\[\text{Source: EconSearch (2016h)}\]

12.4.2 Operating cost trends

Estimates of average boat gross income are expressed in real 2014/15 dollars.
Figure 12-7  Cost shares in the SG Prawn Fishery, 2000/01 to 2014/15\(^a\)

<table>
<thead>
<tr>
<th>Proportion of total cash costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>-------:</td>
</tr>
<tr>
<td>Labour</td>
</tr>
<tr>
<td>100%</td>
</tr>
</tbody>
</table>

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

Source: EconSearch (2016h)

Figure 12-8  Average total costs in the SG Prawn Fishery, 2000/01 to 2014/15\(^a\)

<table>
<thead>
<tr>
<th>Average boat cash costs ($1000, real 2014/15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>--------</td>
</tr>
<tr>
<td>Total Fixed Costs</td>
</tr>
<tr>
<td>Total Variable Costs</td>
</tr>
</tbody>
</table>

\(^a\) Estimates of average costs are expressed in real 2014/15 dollars.

Source: EconSearch (2016h)
12.4.3 Cost price squeeze

Price and cost indices for the Spencer Gulf Prawn Fishery for the last 15 years are summarised in Figure 12-9. These indicators are derived from the average price and average cost per kilogram of catch. Over the last 15 years the cost of catching Spencer Gulf Prawns has fallen by just over 10 per cent in real 2014/15 terms and the price received for Spencer Gulf Prawns has fallen by around 33 percent, reducing the per kg profit for Prawn catch.

Figure 12-9  Price and cost indices for the SG Prawn Fishery, 2000/01 to 2014/15

*Estimates are expressed in real 2014/15 dollars.
Source: EconSearch (2016h)

12.4.4 Profitability

Selected measures of profitability for the Spencer Gulf Prawn Fishery are summarised in Figure 12-10 for the last 15 years. Changes in each of the profitability measures for the fishery were closely related to the average income earned. Profitability followed a decreasing trend between 2000/01 and 2014/15 with some fluctuations, including a slight improvement over the past two years (Figure 12-10).
Figure 12-10  Financial performance indicators per boat in the SG Prawn Fishery, 2000/01 to 2014/15

Estimates of income and profitability measures are expressed in real 2014/15 dollars.

Source: EconSearch (2016h)

### 12.4.5 Return to capital

Estimates of the average licence value and the rate of return to total capital for the last 15 years are illustrated in Figure 12-11. 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 2000/01 to 2011/12. Between 2011/12 and 2014/15 the estimated rate of return to total capital increased from -0.8 per cent to 4.6 per cent. This is a result of an increase in profitability in the fishery (Figure 12-10) and a marginal decline in the estimated value of fishing licences.

It is worth noting, however, that the fishery itself is still highly profitable and that 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). The profitability of the fishery is evident in the estimated return on fishing gear and equipment (22.6 per cent in 2014/15) and the aggregate economic rents ($4.0 million in 2014/15) generated by the fishery.
Figure 12-11 Return to capital in the SG Prawn Fishery, 2000/01 to 2014/15

* Estimates of licence value are expressed in real 2014/15 dollars.

Source: EconSearch (2016h)

12.5 Contribution to SA Economy

Figure 12-12 and Figure 12-13 illustrate the total economic impact of the fishery on the SA economy for the last 15 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. There has been an overall increase in these indicators over the past 15 years.

Direct employment increased significantly between 2000/01 and 2009/10. Indirect employment increased slightly over the same period. Both direct and indirect employment have decreased each year since 2009/10. The significant decrease in employment between 2011/12 and 2012/13 is partly due to the revisions from a 5-year gap in the fishery survey and partly due to an update of the economic models used to calculate impacts which reflect changes in the structure of the state and regional economies.
Figure 12-12  Total gross state product, output and household income impact of the SG Prawn Fishery on the SA economy, 2000/01 to 2014/15

Estimates of output, GSP and household income are expressed in real 2014/15 dollars. Estimates prior to 2012/13 include the impact of the West Coast Prawn Fishery as well as the Spencer Gulf Prawn Fishery.

Source: EconSearch (2016h)

Figure 12-13  Total direct and indirect employment impact of the SG Prawn Fishery on the SA economy, 2000/01 to 2014/15

Estimates prior to 2012/13 include the impact of the West Coast Prawn Fishery as well as the Spencer Gulf Prawn Fishery.

Source: EconSearch (2016h)
12.6 Economic Rent

Economic rent 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 Spencer Gulf Prawn Fishery and the good produced is the landed fish. Estimates of the economic rent generated in the Spencer Gulf Prawn Fishery are summarised in Figure 12-14 for the last 15 years.

Economic rent has followed a decreasing trend, with some fluctuations over the last 15 years. 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.

Figure 12-14 Economic rent in the SG Prawn Fishery, 2000/01 to 2014/15 ($m)

Economic rent 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 12-15 and shows a decreasing trend over the last 15 years despite a significant improvement between 2012/13 and 2014/15. This recent improvement is partly due to reduced costs in the fishery that were captured in the recent 2014 survey.

Economic rent 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 12-16. The return to the aggregate licence value decreased from...
7.3 per cent in 2000/01 to 3.2 per cent in 2014/15. This decrease is a result of a decrease in the economic rent generated by the fishery and a slight increase in the aggregate value of licences (in real terms) over the period (Figure 12-16).

Figure 12-15  Economic rent as a proportion of GVP in the SG Prawn Fishery, 2000/01 to 2014/15

Source: EconSearch (2016h)
Figure 12-16  Aggregate value of licences and return to aggregate licence value in the SG Prawn Fishery, 2000/01 to 2014/15\(^a,b\)

\[^a\] 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 2014/15 dollars.

Source: EconSearch (2016h)
13. GULF ST VINCENT PRAWN FISHERY

13.1 Economic Objectives of the Gulf St Vincent Prawn Fishery

According to the draft management plan for the Gulf St Vincent Prawn Fishery (PIRSA 2016), 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 Prawn Fishery, as described in the draft management plan, are summarised in Table 5-1. These are presented in the following sections.

Over the last 15 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 EconSearch (2016)], can assist in measuring the performance of the fisheries against management objectives. The economic indicators for the Gulf St Vincent 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); and
  - GSP
  - household income
  - employment
- economic rent (Section 13.6).
### Table 13-1 Economic objectives of the Gulf St Vincent Prawn Fishery

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

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

Source: PIRSA 2016a
Indicators relating to the economic performance and objectives for the fisheries are reported for the period 2000/01 to 2014/15. 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.

13.2 Catch and Gross Value of Production

Catch in the Gulf St Vincent Fishery averaged around 417 tonnes per annum in the first half of the 1980s and around 222 tonnes in the second half (EconSearch 2016). A catch of 134 tonnes in 1990/91 triggered a two year closure before the fishery recovered to catch of 400 tonnes in 1999/00. Figure 13-1 shows the annual catch between 2000/01 and 2014/15. Catch declined from 384 tonnes in 2000/01 to 175 tonnes in 2005/06 before recovering to 273 tonnes in 2008/09. Catch declined again until 2011/12 when it was 125 tonnes and the fishery was closed again for two years. In 2014/15, catch was 249 tonnes.

The real GVP for the Gulf St Vincent Prawn Fishery for the period 2000/01 to 2014/15 is illustrated in Figure 13-2. Like catch, GVP declined markedly between 2000/01 and 2003/04 but then fluctuated around $4 million through to 2008/09 and declined further to less than $2 million in 2011/12 before the fishery was closed. The increase in catch between 2003/04 and 2008/09 was not matched by an increase in GVP due to a falling price for Prawns.

Catch, GVP and price indices for the fishery for the last 15 years are illustrated in Figure 13-3. 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 between 2003/04 and 2008/09 coincided with an increase in catch, so that GVP remained roughly constant.

Figure 13-4 illustrates the trend in both the nominal and the real price for Prawns over the last 15 years. While the nominal price for Prawns was only slightly lower in 2014/15 than in 2000/01, the real price was around 34 per cent lower due to a slow decrease over time.
Figure 13-1  GSV Prawn Fishery catch, 2000/01 to 2014/15

Source: EconSearch (2016j)

Figure 13-2  GSV Prawn Fishery GVP, 2000/01 to 2014/15  

* GVP is expressed in real 2014/15 dollars.

Source: EconSearch (2016j)
Figure 13-3  GVP, price and catch indices for the GSV Prawn Fishery a

GVP and price are expressed in real 2014/15 dollars.

Source: EconSearch (2016j)

Figure 13-4  Price indices for the GSV Prawn Fishery 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 2015a). It enables meaningful comparisons of prices to be made between years.

Source: EconSearch (2016j)
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 2000/01 and 2011/12 licence fees per licence and as a proportion of GVP both increased somewhat 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 both to the increase in total licence fees and to the decrease in real GVP over this period. Each measure was lower when the fishery was reopened in 2014/15 due to discounted licence fees.

Figure 13-5  Management fee per licence and as a proportion of GVP, GSV Prawn Fishery, 2000/01 to 2014/15

Estimates of management costs and GVP are expressed in real 2014/15 dollars.

Source: EconSearch (2016j)

13.4 Financial Performance Indicators

13.4.1 Average income

Average income and total number of licences in the fishery for the last 15 years are illustrated in Figure 13-6. 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 approximately $968,000 in 2000/01 to approximately $586,000 in 2014/15.
13.4.2 Operating cost 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. 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, interest and insurance (Figure 13-7).

The cash costs detailed in Figure 13-7 can be categorised as either variable or fixed costs. Total variable costs and total fixed costs are illustrated in Figure 13-8 on an average per boat basis.

Total variable costs decreased between 2000/01 and 2002/03. While this was followed by an increase in 2003/04, variable costs continued to slowly decrease (with some fluctuations) from 2004/05 to 2014/15. 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. Fixed costs did follow a very slight increasing trend between 2000/01 and 2006/07 and have followed a very slight decreasing trend since (Figure 13-8).
Financial performance estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Source: EconSearch (2016j)

Estimates of average costs are expressed in real 2014/15 dollars.

Source: EconSearch (2016j)
13.4.3 Cost price squeeze

Price and cost indices for the Gulf St Vincent Prawn Fishery for the last 15 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 15 years the cost of catching Gulf St Vincent Prawns has increased by 18 per cent in real 2014/15 terms and the price received for Gulf St Vincent Prawns has fallen by around 34 percent, reducing the per kg profit for Prawn catch.

Figure 13-9 Price and cost indices for the GSV Prawn Fishery, 2000/01 to 2014/15

\[\text{Price and cost indices for the GSV Prawn Fishery, 2000/01 to 2014/15}\]

Estimates are expressed in real 2014/15 dollars.
Source: EconSearch (2016j)

13.4.4 Profitability

Selected measures of profitability for the Gulf St Vincent Prawn Fishery are summarised in Figure 13-10 for the last 15 years. Changes in each of the profitability measures for the fishery were closely related to the average income earned. Profitability followed a decreasing trend between 2000/01 and 2014/15 with some fluctuations, including an improvement between 2011/12 and 2014/15. Despite the improvement, measures of profitability in 2014/15 were still below 2000/01 levels (Figure 13-10).
Figure 13-10  Financial performance indicators per boat in the GSV Prawn Fishery, 2000/01 to 2014/15

* Estimates of income and profitability measures are expressed in real 2014/15 dollars.

Source: EconSearch (2016)

13.4.5 Return to capital

Estimates of the average licence value and the rate of return to total capital for the last 15 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 2000/01 to 2011/12. Between 2011/12 and 2014/15 the estimated rate of return to total capital increased from -3.9 per cent to 4.1 per cent. This is a result of an increase in profitability in the fishery (Figure 13-10) and a marginal decline in the estimated value of fishing licences.
13.5 Contribution to SA Economy

Figures 13-12 and 13-13 illustrate the total economic impact of the fishery on the South Australian economy for the last 15 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 13-12). Between 2000/01 and 2011/12, total output decreased by around 49 per cent and contribution to GSP decreased by around 64 per cent. After the fishery reopened, total output recovered to 4 per cent above its 2000/01 level and GSP recovered to 14 per cent below its 2000/01 level.

Employment impacts varied less over the same period (Figure 13-13). Between 2000/01 and 2011/12, direct employment increased by 4 per cent and indirect employment decreased by 33 per cent. After the fishery reopened in 2014/15, direct employment was 58 per cent higher than in 2000/01 and indirect employment was 24 per cent higher.

---

Figure 13-11  Return to capital in the GSV Prawn Fishery, 2000/01 to 2014/15  

Estimates of licence value are expressed in real 2014/15 dollars.

Source: EconSearch (2016j)
Figure 13-12 Total gross state product, output and household income impact of the GSV Prawn Fishery on the SA economy, 2000/01 to 2014/15

Estimates of output, GSP and household income are expressed in real 2014/15 dollars.

Source: EconSearch (2016j)

Figure 13-13 Total direct and indirect employment impact of the GSV Prawn Fishery on the SA economy, 2000/01 to 2014/15

Source: EconSearch (2016j)
13.6 Economic Rent

Economic rent 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 Gulf St Vincent Prawn Fishery and the good produced is the landed fish. Estimates of the economic rent generated in the Gulf St Vincent Prawn Fishery are summarised in Figure 13-14 for the last 15 years.

Economic rent has followed a decreasing trend, with some fluctuations over the last 15 years. It was 177 per cent lower in 2011/12 than in 2000/01. After the fishery reopened, economic rent increased in 2014/15 to 114 per cent below its 2000/01 level. Fluctuations in rent are closely linked to fluctuations in fishery GVP (Figure 13-14). Labour costs are also linked to fishery GVP because the majority of fishing businesses pay crew a share of catch.

Figure 13-14  Economic rent in the GSV Prawn Fishery, 2000/01 to 2014/15 ($m) a

<table>
<thead>
<tr>
<th>Year</th>
<th>Gross Income</th>
<th>Labour</th>
<th>Cash Costs</th>
<th>Opportunity Cost of Capital</th>
<th>Economic Rent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000/01</td>
<td>10.0</td>
<td>2.0</td>
<td>3.0</td>
<td>1.0</td>
<td>4.0</td>
</tr>
<tr>
<td>2001/02</td>
<td>9.5</td>
<td>2.5</td>
<td>3.5</td>
<td>1.5</td>
<td>3.0</td>
</tr>
<tr>
<td>2002/03</td>
<td>9.0</td>
<td>3.0</td>
<td>4.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>2003/04</td>
<td>8.5</td>
<td>3.5</td>
<td>4.5</td>
<td>2.5</td>
<td>1.5</td>
</tr>
<tr>
<td>2004/05</td>
<td>8.0</td>
<td>4.0</td>
<td>5.0</td>
<td>3.0</td>
<td>1.0</td>
</tr>
<tr>
<td>2005/06</td>
<td>7.5</td>
<td>4.5</td>
<td>5.5</td>
<td>3.5</td>
<td>0.5</td>
</tr>
<tr>
<td>2006/07</td>
<td>7.0</td>
<td>5.0</td>
<td>6.0</td>
<td>4.0</td>
<td>-0.5</td>
</tr>
<tr>
<td>2007/08</td>
<td>6.5</td>
<td>5.5</td>
<td>6.5</td>
<td>4.5</td>
<td>-1.0</td>
</tr>
<tr>
<td>2008/09</td>
<td>6.0</td>
<td>6.0</td>
<td>7.0</td>
<td>5.0</td>
<td>-1.5</td>
</tr>
<tr>
<td>2009/10</td>
<td>5.5</td>
<td>6.5</td>
<td>7.5</td>
<td>5.5</td>
<td>-2.0</td>
</tr>
<tr>
<td>2010/11</td>
<td>5.0</td>
<td>7.0</td>
<td>8.0</td>
<td>6.0</td>
<td>-2.5</td>
</tr>
<tr>
<td>2011/12</td>
<td>4.5</td>
<td>7.5</td>
<td>8.5</td>
<td>6.5</td>
<td>-3.0</td>
</tr>
<tr>
<td>2012/13</td>
<td>4.0</td>
<td>8.0</td>
<td>9.0</td>
<td>7.0</td>
<td>-3.5</td>
</tr>
<tr>
<td>2013/14</td>
<td>3.5</td>
<td>8.5</td>
<td>9.5</td>
<td>7.5</td>
<td>-4.0</td>
</tr>
<tr>
<td>2014/15</td>
<td>3.0</td>
<td>9.0</td>
<td>10.0</td>
<td>8.0</td>
<td>-4.5</td>
</tr>
</tbody>
</table>

a  All indicators are expressed in real 2014/15 dollars.

Source: EconSearch (2016j)

Economic rent 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 2000/01 and 2011/12 before recovering when the fishery reopened in 2014/15.

Economic rent represents a return to the value of licences in the fishery. The aggregate value of licences in the Gulf St Vincent 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 6.5 per cent in 2000/01 to -12.9 per cent in 2011/12 before recovering significantly to -2.6 per cent after the fishery reopened in 2014/15. This overall decrease is a result of economic rent decreasing from a positive to a negative value over the period (Figure 13-16).
Figure 13-15 Economic rent as a proportion of GVP in the GSV Prawn Fishery, 2000/01 to 2014/15

Source: EconSearch (2016)

Figure 13-16 Aggregate value of licences and return to aggregate licence value in the GSV Prawn Fishery, 2000/01 to 2014/15\(a, b\)

\(a\) 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 2014/15 dollars.

Source: EconSearch (2016)
14. SOUTHERN ZONE ROCK LOBSTER FISHERY

14.1 Economic Objectives of the Southern Zone Rock Lobster Fishery

According to the management plan in place for the Southern Zone Rock Lobster (SZRL) Fishery (PIRSA 2014c), management of the fishery has four key goals:

1. Ensure the Rock Lobster in the Southern Zone is sustainably harvested.
2. Ensure optimum utilisation and equitable distribution of Rock Lobster stocks.
4. Cost effective 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. 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 18 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 EconSearch (2016i), 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 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
- economic rent (Section 13.6).
### Table 14-1  Economic objectives of the SZRL Fishery

<table>
<thead>
<tr>
<th>Goal</th>
<th>Objectives</th>
<th>Strategies</th>
<th>Performance indicators</th>
<th>Limit reference point</th>
</tr>
</thead>
</table>
| 2. Ensure optimum utilisation and equitable distribution of the Rock Lobster in the Southern Zone | 2b. Maintain a flow of economic benefit from the fishery to the broader community | 2bi. Develop and implement management arrangements that allow commercial operators to maximise operational flexibility, economic efficiency, value and returns | Gross Value of Product (GVP)  
Gross Operating Surplus (GOS)  
Profit at full equity  
Licence value  
Value of quota units  
Economic rent  
Return on capital | Negative trend one or more economic performance indicators for more than 3 consecutive years |
|                                                                     | 2b.ii. Communicate sustainability and economic outcomes of the fishery to the broader community |                                                                            |                                                                                           |                                                                                        |
| 2e. Ensure sufficient economic information exists to make informed management decisions | 2e.ii. Develop and implement methods to improve estimates of the total value of recreational fishing to regional economies and the broad community |                                                                            |                                                                                           |                                                                                        |
|                                                                     | 2ei. Undertake periodic economic surveys of the commercial fishery to assess economic performance against a set of economic indicators |                                                                            | Delivery of periodic economic surveys assessing economic performance of fishery |                                                                                        |
|                                                                     | 4. Cost effective and participative | 4a. Promote cost-effective and efficient management of the fishery, in line with | Cost of management services  
Cost of licence fees | Commercial licence fees > than 10 per cent of GVP |
<table>
<thead>
<tr>
<th>management of the fishery</th>
<th>the governments cost recovery policy</th>
<th>4a(ii). Determine and discuss the real costs of management, research and compliance for the fishery on an annual basis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>4a(iii). Recover licence fees from commercial licence holders, sufficient to cover the attributed costs of management, research and compliance of fishery, in accordance with the Governments</td>
</tr>
</tbody>
</table>

GVP

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

Source: (PIRSA 2014c)
Indicators relating to the economic performance and objectives for the fishery are reported for the period 2000/01 to 2014/15. 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.

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 at around 1,250 tonnes through to 2014/15.

Figure 14-1  SZRL Fishery catch, 2000/01 to 2014/15

Source: EconSearch (2016i)

The value of catch, in real 2014/15 dollars, in the SZRL Fishery fluctuated between years, experiencing a low period between 2003/04 and 2005/06 due to a temporary decrease in price (Figure 14-3). Between 2005/06 and 2014/15, GVP fluctuated around an increase of 25 per cent due to a 91 per cent increase in price and despite a 32 per cent decrease in catch (Figure 14-2 and Figure 14-3).
Figure 14-2  
SZRL Fishery GVP, 2000/01 to 2014/15

* Estimates of GVP are expressed in real 2014/15 dollars.

Source: EconSearch (2016i)

Figure 14-3  
GVP, price and catch indices for the SZRL Fishery

* Estimates of GVP and price are expressed in real 2014/15 dollars.

Source: EconSearch (2016i)

A significant proportion of the South Australian Rock Lobster catch is exported overseas (39 per cent in 2014/15) 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 (Figure 14-4), but year-to-year fluctuations in the exchange rate do appear to lead to fluctuations in price.

Figure 14-4  Exchange rate (US$) and average price for SA SZRL, 2000/01 to 2014/15

Source: EconSearch (2016i)

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 2000/01 the following trends have emerged (all values in real 2014/15 dollars).

- Licence fees as a percentage of GVP decreased between 2000/01 and 2002/03 from 3.8 per cent to 3.4 per cent but then increased to 5.1 per cent in 2003/04. Since 2003/04, licence fees as a percentage of GVP have fluctuated year to year and in 2014/15 they were 3.2 per cent.

- The licence fees per kilogram of landed Rock Lobster decreased from $1.78 in 2000/01 to $1.66 in 2002/03 but have since risen to reach $2.63 in 2014/15.

- The fee per licence peaked at $20,115 in 2006/07 but has since fallen and was $18,063 in 2014/15.

- The total number of licences fell over the 15 year period, from 182 in 2000/01 to 180 in 2014/15.
There are three main factors that contributed to the trends observed from 2000/01 to 2014/15. First, aggregate licence fees increased in real terms by approximately 7 per cent. Second, the catch in 2014/15 was approximately 28 per cent below that achieved in 2000/01, while the price was approximately 78 per cent higher in real terms (resulting in the value of catch increasing by 28 per cent in real terms). Third, the number of licences fell by around 1 per cent over the period.

14.4 Financial Performance Indicators

14.4.1 Average income

Average income and total number of licences in the fishery for the period 2000/01 to 2014/15 is illustrated in Figure 14-6. The total number of licences in the fishery declined from 182 to 180 over this period. In real terms, average boat income increased by 61 per cent over this period. The rise in real boat income can be explained by a decline in catch (decrease of 25 per cent over the last 15 years) which has been partially offset by the reduction in the number of licences and the real increase in price of 79 per cent over the same period.
14.4.2 Operating cost 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, interest and licence fees (Figure 14-7).

The cash costs detailed in Figure 14-7 can be categorised as either variable or fixed costs. Total variable costs and total fixed costs are illustrated in Figure 14-8 on an average per boat basis. Total variable costs have fluctuated between years but generally followed an increasing trend over the period 2000/01 to 2014/15. Total fixed costs have fluctuated much less from year to year and also followed an increasing trend over time (Figure 14-8).
Financial performance estimates were based on different survey samples and techniques. Some of the difference between years is, therefore, attributable to sampling variability.

Source: EconSearch (2016i)

Estimates of average costs are expressed in real 2014/15 dollars.

Source: EconSearch (2016i)
14.4.3 Cost price squeeze

Real price and cost indices (in 2014/15 dollars) for the SZRL Fishery for the years 2000/01 to 2014/15 are summarised in Figure 14-9. These indicators are derived from the average price and average cost per kilogram of catch. Between 2000/01 and 2003/04, the average Rock Lobster price fell by 26 per cent in real terms. Since then the average price has increased. Overall, between 2000/01 and 2014/15, it increased by 78 per cent in real terms.

The average costs of catch in the SA SZRL Fishery fluctuated between years but generally followed a rising trend. In 2014/15, average real cash costs per kilogram were 67 per cent more than in 2000/01 (Figure 14-9). This increase is less than the rise in price over the same period.

14.4.4 Profitability

Selected measures of profitability for the SZRL Fishery are summarised in Figure 14-10 for the years 2000/01 to 2014/15. Changes in each of the profitability measures for the fishery were closely related to the average income earned. Profitability increased between 2000/01 and 2001/02 before dipping significantly, particularly from 2002/03 to 2003/04. Average profits earned in the fishery followed an increasing trend between 2003/04 and 2008/09 and again between 2012/13 and 2014/15.

Figure 14-9 Price and cost indices for the SZRL Fishery, 2000/01 to 2014/15

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* Estimates of average costs and price are expressed in real 2014/15 dollars.

Source: EconSearch (2016i)
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 has increased overall between 2000/01 (3.4 per cent) and 2014/15 (6.1 per cent). Similarly, the rate of return to fishing gear and equipment has followed an increasing trend, from 32.0 per cent in 2000/01 to 79.4 per cent in 2014/15 (Figure 14-11).
Estimates of licence value are expressed in real 2014/15 dollars.

Source: EconSearch (2016)

14.5 Contribution to SA Economy

Figure 14-12 and Figure 14-13 illustrate the total economic impact of the fishery on the SA economy for the past 15 years, 2000/01 to 2014/15. Total economic impact refers to the direct fishing industry impacts (fishing, processing, etc.) and the indirect impacts on other sectors of the economy.

The change in total output and GSP impacts are closely related to changes in price and fishery GVP (Figure 14-12). Output, household income and contribution to GSP all followed an increasing trend between 2000/01 and 2014/15. There has been a slight increase in direct employment impact of the fishery since 2000/01, as illustrated in Figure 14-13. This increase can be attributed to the increased activity of associated downstream sectors (processing, retail trade and food service). This increase has been 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 14-12  Total gross state product, output and household income impact of the SZRL Fishery on the SA economy, 2000/01 to 2014/15 *

* Estimates of output, GSP and household income are expressed in real 2014/15 dollars.
Source: EconSearch (2016i)

Figure 14-13  Total direct and indirect employment impact of the SZRL Fishery on the SA economy, 2000/01 to 2014/15

Source: EconSearch (2016i)
14.6 Economic Rent

Economic rent 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 SZRL Fishery and the good produced is the landed Rock Lobster.

Estimates of the economic rent generated in the SZRL Fishery are summarised in Figure 14-14 for the period 2000/01 to 2014/15. Economic rent fluctuated between $2.9 million and $31.3 million over the period with no clear trend. Rent peaked in 2001/02 ($24.1 million) and 2006/07 ($31.3 million) with a trough of $2.9 million in between. In the two years between 2012/13 and 2014/15 rent more than tripled from $12.2 million to $41.9 million, the highest level in 15 years.

Economic rent expressed as a percentage of GVP is a useful indicator for analysing a fishery over time and for comparing different fisheries. Despite fluctuations, economic rent expressed as a percentage of GVP has increased overall and was estimated to be 41 per cent in 2014/15 (Figure 14-15).

Economic rent 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 increased between 2000/01 and 2001/02 as a result of an increase in economic rent then declined through to 2003/04 due to an increase in the aggregate licence value of the fishery and a decrease in economic rent. Since then, return to aggregate value of licences has fluctuated yearly but has followed an increasing trend overall.

Figure 14-14 Economic rent in the SZRL Fishery, 2000/01 to 2014/15 ($’000)  

*All indicators are expressed in real 2014/15 dollars.*

Source: EconSearch (2016i)
Figure 14-15  Economic rent as a proportion of GVP in the SZRL Fishery, 2000/01 to 2014/15

Source: EconSearch (2016i)

Figure 14-16  Aggregate value of licences and return to aggregate licence value in the SZRL Fishery, 2000/01 to 2014/15

* 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: EconSearch (2016i)
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 EconSearch 2016a-j).

Over the last 18 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)
- economic rent (Section 15.6).

Indicators relating to the economic performance and objectives for the fisheries are reported for the period 2000/01 to 2014/15. 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 2000/01 and 2014/15, despite year-to-year fluctuations. The significant fall in total catch in 2005/06 was a result of a reduction in the TACC for the Sardine fishery. Between 2000/01 and 2014/15 total catch increased from 21,608 tonnes to 45,300 tonnes, an increase of 110 per cent. Total catch peaked in 2004/05 at 69,089 tonnes (Figure 15-1).

The GVP for SA commercial fisheries for the period 2000/01 to 2014/15 is shown in Figure 15-2 and Table 15-2, in real 2014/15 dollars. Catch, GVP and price indices for all fisheries for 2000/01 to 2014/15 are illustrated in Figure 15-3. Over the period 2000/01 to 2014/15 GVP across all fisheries declined by 19 per cent in real terms (Figure 15-3). Over this period there was a fall in average landed price and a rise in total catch. These indices are strongly influenced by the Sardine Fishery. Excluding Sardines from Figures 15-1 and 15-2, for example, reveals that total catch across all fisheries other than Sardines decreased by 53 per cent between 2000/01 and 2014/15 and GVP (excluding Sardines) decreased by 33 per cent.
Figure 15-1  SA commercial fisheries catch, 2000/01 to 2014/15

<table>
<thead>
<tr>
<th>Year</th>
<th>Abalone</th>
<th>GSV Prawns</th>
<th>Spencer Gulf Prawns</th>
<th>Sth’n Zone Rock Lobster</th>
<th>Nth’n Zone Rock Lobster</th>
<th>Blue Crabs</th>
<th>Lakes and Coorong</th>
<th>Sardines</th>
<th>Other Marine Species</th>
<th>Total SA Fisheries</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000/01</td>
<td>867</td>
<td>384</td>
<td>2,603</td>
<td>1,716</td>
<td>846</td>
<td>469</td>
<td>2,013</td>
<td>7,368</td>
<td>5,342</td>
<td>21,608</td>
</tr>
<tr>
<td>2001/02</td>
<td>850</td>
<td>322</td>
<td>2,309</td>
<td>1,717</td>
<td>675</td>
<td>481</td>
<td>1,640</td>
<td>12,165</td>
<td>4,801</td>
<td>24,960</td>
</tr>
<tr>
<td>2002/03</td>
<td>890</td>
<td>232</td>
<td>1,508</td>
<td>1,766</td>
<td>595</td>
<td>515</td>
<td>1,979</td>
<td>21,741</td>
<td>4,243</td>
<td>33,469</td>
</tr>
<tr>
<td>2003/04</td>
<td>879</td>
<td>172</td>
<td>1,958</td>
<td>1,896</td>
<td>504</td>
<td>559</td>
<td>2,180</td>
<td>33,160</td>
<td>4,221</td>
<td>45,529</td>
</tr>
<tr>
<td>2004/05</td>
<td>902</td>
<td>213</td>
<td>1,960</td>
<td>1,897</td>
<td>446</td>
<td>584</td>
<td>2,277</td>
<td>56,952</td>
<td>3,857</td>
<td>69,089</td>
</tr>
<tr>
<td>2005/06</td>
<td>896</td>
<td>175</td>
<td>1,891</td>
<td>1,889</td>
<td>476</td>
<td>600</td>
<td>2,440</td>
<td>28,626</td>
<td>3,234</td>
<td>40,227</td>
</tr>
<tr>
<td>2006/07</td>
<td>883</td>
<td>209</td>
<td>2,024</td>
<td>1,895</td>
<td>492</td>
<td>617</td>
<td>2,443</td>
<td>30,355</td>
<td>2,855</td>
<td>41,773</td>
</tr>
<tr>
<td>2007/08</td>
<td>889</td>
<td>229</td>
<td>2,088</td>
<td>1,850</td>
<td>459</td>
<td>625</td>
<td>2,146</td>
<td>29,692</td>
<td>2,953</td>
<td>40,931</td>
</tr>
<tr>
<td>2008/09</td>
<td>837</td>
<td>273</td>
<td>1,915</td>
<td>1,407</td>
<td>403</td>
<td>604</td>
<td>2,023</td>
<td>27,850</td>
<td>3,026</td>
<td>38,338</td>
</tr>
<tr>
<td>2009/10</td>
<td>855</td>
<td>224</td>
<td>2,445</td>
<td>1,243</td>
<td>310</td>
<td>539</td>
<td>1,916</td>
<td>36,573</td>
<td>3,354</td>
<td>47,459</td>
</tr>
<tr>
<td>2010/11</td>
<td>815</td>
<td>178</td>
<td>2,115</td>
<td>1,244</td>
<td>313</td>
<td>591</td>
<td>1,681</td>
<td>33,220</td>
<td>3,092</td>
<td>43,249</td>
</tr>
<tr>
<td>2011/12</td>
<td>822</td>
<td>125</td>
<td>1,840</td>
<td>1,242</td>
<td>307</td>
<td>611</td>
<td>1,641</td>
<td>36,962</td>
<td>3,233</td>
<td>46,783</td>
</tr>
<tr>
<td>2012/13</td>
<td>875</td>
<td>0</td>
<td>1,881</td>
<td>1,234</td>
<td>325</td>
<td>511</td>
<td>1,811</td>
<td>35,065</td>
<td>2,631</td>
<td>44,333</td>
</tr>
<tr>
<td>2013/14</td>
<td>661</td>
<td>0</td>
<td>1,805</td>
<td>1,247</td>
<td>331</td>
<td>571</td>
<td>1,852</td>
<td>33,197</td>
<td>2,324</td>
<td>41,988</td>
</tr>
<tr>
<td>2014/15</td>
<td>744</td>
<td>249</td>
<td>1,848</td>
<td>1,238</td>
<td>321</td>
<td>576</td>
<td>1,598</td>
<td>36,020</td>
<td>2,706</td>
<td>45,300</td>
</tr>
</tbody>
</table>

Source: EconSearch (2016a-j)

- Figures for Spencer Gulf Prawns include the West Coast Prawn fishery for all years.
- 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.
- Excludes Charter Boats, aquaculture, south east non-trawl and deep water trawl.
Figure 15-2  SA commercial fisheries GVP, 2000/01 to 2014/15

Source: EconSearch (2016a-j)

Table 15-2  Commercial fisheries gross value of production, South Australia, 2000/01 to 2014/15 ($m)

<table>
<thead>
<tr>
<th>Year</th>
<th>Abalone</th>
<th>GSV Prawns</th>
<th>Spencer Gulf Prawns</th>
<th>Sth’n Zone Rock Lobster</th>
<th>Nth’n Zone Rock Lobster</th>
<th>Blue Crabs</th>
<th>Lakes and Coorong</th>
<th>Sardines</th>
<th>Other Marine Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000/01</td>
<td>58</td>
<td>10</td>
<td>67</td>
<td>79</td>
<td>41</td>
<td>4</td>
<td>8</td>
<td>7</td>
<td>31</td>
</tr>
<tr>
<td>2001/02</td>
<td>49</td>
<td>8</td>
<td>59</td>
<td>93</td>
<td>37</td>
<td>4</td>
<td>6</td>
<td>12</td>
<td>27</td>
</tr>
<tr>
<td>2002/03</td>
<td>49</td>
<td>6</td>
<td>38</td>
<td>87</td>
<td>26</td>
<td>4</td>
<td>6</td>
<td>24</td>
<td>29</td>
</tr>
<tr>
<td>2003/04</td>
<td>42</td>
<td>4</td>
<td>53</td>
<td>65</td>
<td>16</td>
<td>4</td>
<td>7</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>2004/05</td>
<td>44</td>
<td>5</td>
<td>41</td>
<td>70</td>
<td>15</td>
<td>4</td>
<td>7</td>
<td>37</td>
<td>27</td>
</tr>
<tr>
<td>2005/06</td>
<td>42</td>
<td>4</td>
<td>42</td>
<td>82</td>
<td>19</td>
<td>6</td>
<td>7</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>2006/07</td>
<td>38</td>
<td>4</td>
<td>48</td>
<td>97</td>
<td>22</td>
<td>6</td>
<td>9</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>2007/08</td>
<td>36</td>
<td>3</td>
<td>39</td>
<td>89</td>
<td>19</td>
<td>6</td>
<td>9</td>
<td>19</td>
<td>24</td>
</tr>
<tr>
<td>2008/09</td>
<td>37</td>
<td>4</td>
<td>35</td>
<td>98</td>
<td>22</td>
<td>6</td>
<td>10</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>2009/10</td>
<td>31</td>
<td>3</td>
<td>32</td>
<td>79</td>
<td>17</td>
<td>5</td>
<td>7</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>2010/11</td>
<td>30</td>
<td>2</td>
<td>35</td>
<td>72</td>
<td>15</td>
<td>5</td>
<td>7</td>
<td>21</td>
<td>25</td>
</tr>
<tr>
<td>2011/12</td>
<td>31</td>
<td>2</td>
<td>29</td>
<td>84</td>
<td>18</td>
<td>6</td>
<td>9</td>
<td>22</td>
<td>26</td>
</tr>
<tr>
<td>2012/13</td>
<td>31</td>
<td>0</td>
<td>31</td>
<td>74</td>
<td>16</td>
<td>3</td>
<td>10</td>
<td>22</td>
<td>26</td>
</tr>
<tr>
<td>2013/14</td>
<td>22</td>
<td>0</td>
<td>30</td>
<td>90</td>
<td>20</td>
<td>4</td>
<td>10</td>
<td>19</td>
<td>23</td>
</tr>
<tr>
<td>2014/15</td>
<td>25</td>
<td>4</td>
<td>31</td>
<td>102</td>
<td>23</td>
<td>4</td>
<td>8</td>
<td>22</td>
<td>26</td>
</tr>
</tbody>
</table>

a  All values are expressed in real 2014/15 dollars.
b  SARDI estimates for the years 2000/01 to 2002/03, revalued SARDI estimates for 2003/04 to 2014/15 using weighted average prices from Sydney and Melbourne fish markets and price data obtained from fishers.
d  Excludes aquaculture, south east non-trawl, tuna, deep water trawl.

Source: EconSearch (2016a-j)
Figure 15-3  GVP, price and catch indices for SA commercial fisheries a

![Graph showing GVP, price and catch indices for SA commercial fisheries.](image)

a Estimates of GVP and price are expressed in real 2014/15 dollars.

Source: EconSearch (2016a-j)

Figure 15-4 shows that between 2000/01 and 2014/15 the 44 per cent decrease in nominal average price in SA commercial fisheries was equivalent to a 61 per cent fall in real price. The average landed real price per kilogram across all fisheries (in 2014/15 dollars) decreased from $14.08 in 2000/01 to $5.48 in 2014/15 (Figure 15-4). As noted above, the decrease in the average landed real price per kilogram across all fisheries between 2000/01 and 2014/15 can be attributed principally to the increase in the absolute and relative contribution of the (relatively low unit value) Sardine catch.

Figure 15-4  Price indices for SA commercial fisheries a

![Graph showing price indices for SA commercial fisheries.](image)

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 2015a). It enables meaningful comparisons of prices to be made between years.

Source: EconSearch (2016a-j)
15.3 Management Costs

Table 15-3 shows the cost of management for all SA commercial fisheries for 2014/15. Licence fees as a proportion of GVP for SA commercial fisheries are illustrated in Figure 15-5 for the period 2000/01 to 2014/15. The ratio increased from 3.5 per cent in 2000/01 to 5.2 per cent in 2014/15.

Over the 15 year period management costs as a percentage of GVP in the Abalone, Marine Scalefish, Northern Zone Rock Lobster and Charter Boat fisheries have remained higher than the SA average. The percentage in the Blue Crab, Sardine, Spencer Gulf Prawn and Southern Rock Lobster Fisheries has been below the SA average over the same period. The percentage increased in the Gulf St Vincent Prawn Fishery between 2006/07 until the fishery closed due to declining catch in 2012/13. Until 2010/11 the percentage in the Lakes and Coorong Fishery was below the SA average but subsequently increased and remained above average until 2014/15.

The average management cost per licence for SA commercial fisheries is illustrated in Figure 15-6, in real 2014/15 dollars. The average cost per licence in all fisheries increased by 98 per cent from $8,222 in 2000/01 to $16,305 (weighted average) in 2014/15, 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, 2014/15 ($m) a

<table>
<thead>
<tr>
<th></th>
<th>Licence Fees</th>
<th>GVP</th>
<th>Fees/GVP</th>
<th>Catch</th>
<th>Fees/Catch</th>
<th>Licence Holders</th>
<th>Fees/Licence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>($'000)</td>
<td>($'000)</td>
<td>(%)</td>
<td>(t)</td>
<td>($/kg)</td>
<td>(no.)</td>
<td>($)</td>
</tr>
<tr>
<td>Abalone</td>
<td>2,463</td>
<td>25,237</td>
<td>9.8%</td>
<td>744</td>
<td>$3.31</td>
<td>34</td>
<td>$72,438</td>
</tr>
<tr>
<td>Charter Boats</td>
<td>374</td>
<td>3,558</td>
<td>10.5%</td>
<td>15,129</td>
<td>$24.69</td>
<td>102</td>
<td>$3,663</td>
</tr>
<tr>
<td>GSV Prawns</td>
<td>196</td>
<td>4,118</td>
<td>4.8%</td>
<td>249</td>
<td>$0.79</td>
<td>10</td>
<td>$19,600</td>
</tr>
<tr>
<td>Spencer Gulf Prawns b</td>
<td>1,050</td>
<td>28,663</td>
<td>3.7%</td>
<td>1,664</td>
<td>$0.63</td>
<td>39</td>
<td>$26,915</td>
</tr>
<tr>
<td>Sth’n Zone Rock Lobster</td>
<td>3,251</td>
<td>101,842</td>
<td>3.2%</td>
<td>1,238</td>
<td>$2.63</td>
<td>180</td>
<td>$18,063</td>
</tr>
<tr>
<td>Nth’n Zone Rock Lobster</td>
<td>1,424</td>
<td>22,530</td>
<td>6.3%</td>
<td>321</td>
<td>$4.44</td>
<td>63</td>
<td>$22,606</td>
</tr>
<tr>
<td>Blue Crabs</td>
<td>319</td>
<td>6,428</td>
<td>5.0%</td>
<td>576</td>
<td>$0.55</td>
<td>9</td>
<td>$35,403</td>
</tr>
<tr>
<td>Lakes and Coorong</td>
<td>704</td>
<td>7,774</td>
<td>9.1%</td>
<td>1,598</td>
<td>$0.44</td>
<td>36</td>
<td>$19,556</td>
</tr>
<tr>
<td>Marine Scalefish</td>
<td>2,471</td>
<td>25,210</td>
<td>9.8%</td>
<td>2,604</td>
<td>$0.95</td>
<td>307</td>
<td>$8,048</td>
</tr>
<tr>
<td>Sardines</td>
<td>695</td>
<td>21,612</td>
<td>3.2%</td>
<td>36,020</td>
<td>$0.02</td>
<td>14</td>
<td>$49,666</td>
</tr>
<tr>
<td>Total SA</td>
<td>12,946</td>
<td>246,972</td>
<td>5.2%</td>
<td>60,143</td>
<td>$0.22</td>
<td>794</td>
<td>$16,305</td>
</tr>
</tbody>
</table>

a All values are expressed in real 2014/15 dollars.

b Figures exclude the West Coast Prawn fishery.

Source: EconSearch (2016a-j) and EconSearch analysis
Figure 15-5  Management fee as a proportion of GVP, SA commercial fisheries, 2000/01 to 2014/15

Source: EconSearch (2016a-j)

Figure 15-6  Management fee per licence, SA commercial fisheries, 2000/01 to 2014/15 a

Source: EconSearch (2016a-j)

a All values are expressed in real 2014/15 dollars.
15.4 Financial Performance Indicators

15.4.1 Cost price squeeze

Cost indices for the SA commercial fisheries for the years 2000/01 to 2014/15 are summarised in Figure 15-7. These indicators are derived from the average real (2014/15 dollars) cost per kilogram of catch. Between 2000/01 and 2014/15 the average real cost per kilogram increased across all commercial fisheries except for the Sardine, Charter Boat, Abalone and Spencer Gulf Prawn Fisheries (Figure 15-7). The increase in cost per kilogram was greatest in the Marine Scalefish, Southern Zone Rock Lobster and Lakes and Coorong fisheries. Over the same period the average nominal price for all commercial fisheries decreased by 49 per cent. This decline is mainly due to a change in ‘product mix’ where the proportion of relatively low value fish (particularly Sardines) in the state’s total catch has increased significantly over the period and thereby brought down the weighted average price.

Figure 15-7  Cost indices for SA commercial fisheries, 2000/01 to 2014/15  

Excludes the Charter Boat Fishery.  
Source: EconSearch (2016a-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. Financial performance for all SA commercial fisheries is detailed in Table 15-4 for 2014/15.

The average rate of return to total capital in 2000/01 was positive for all fisheries except Marine Scalefish. Since then there has been a declining trend in rates of return across a number of
Table 15-4  Commercial fisheries financial performance, average per boat, 2014/15

<table>
<thead>
<tr>
<th>Zone Rock Lobster</th>
<th>of return</th>
<th>PIRSA</th>
<th>Abalone</th>
<th>Charter Boats</th>
<th>Gulf St Vincent Prawns</th>
<th>Spencer Gulf Prawns</th>
<th>Sth'n Zone Rock Lob</th>
<th>Nth'n Zone Rock Lob</th>
<th>Blue Crabs</th>
<th>Marine Scalefish</th>
<th>Sardine</th>
<th>Lakes and Coorong</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Boat Gross Income</td>
<td>660,332</td>
<td>95,676</td>
<td>585,531</td>
<td>742,574</td>
<td>701,234</td>
<td>612,106</td>
<td>6,428,160</td>
<td>88,766</td>
<td>1,474,219</td>
<td>285,046</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variable Costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel</td>
<td>13,610</td>
<td>14,078</td>
<td>54,224</td>
<td>75,343</td>
<td>35,627</td>
<td>37,753</td>
<td>629,990</td>
<td>10,571</td>
<td>137,362</td>
<td>13,778</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repairs &amp; Bait/lce</td>
<td>27,203</td>
<td>6,355</td>
<td>23,317</td>
<td>46,619</td>
<td>32,447</td>
<td>29,023</td>
<td>480,223</td>
<td>6,246</td>
<td>114,602</td>
<td>11,859</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provisions</td>
<td>56</td>
<td>911</td>
<td>4,405</td>
<td>5,336</td>
<td>618</td>
<td>4,846</td>
<td>36,653</td>
<td>546</td>
<td>11,026</td>
<td>34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour - paid</td>
<td>164,121</td>
<td>14,007</td>
<td>178,917</td>
<td>233,403</td>
<td>149,428</td>
<td>132,115</td>
<td>1,916,027</td>
<td>8,755</td>
<td>465,797</td>
<td>57,820</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour - unpaid</td>
<td>1,051</td>
<td>8,065</td>
<td>5,657</td>
<td>2,537</td>
<td>6,661</td>
<td>13,636</td>
<td>111,103</td>
<td>21,172</td>
<td>45</td>
<td>25,786</td>
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<td></td>
</tr>
<tr>
<td>Other</td>
<td>42,979</td>
<td>4,412</td>
<td>6,434</td>
<td>522</td>
<td>2,078</td>
<td>4,049</td>
<td>4,066</td>
<td>513</td>
<td>12,343</td>
<td>4,279</td>
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<tr>
<td>Total Variable Costs</td>
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<td>50,971</td>
<td>272,953</td>
<td>369,885</td>
<td>246,576</td>
<td>239,634</td>
<td>3,299,922</td>
<td>50,311</td>
<td>742,704</td>
<td>114,738</td>
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<tr>
<td>Fixed Costs</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Licence Fee</td>
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<td>29,620</td>
<td>27,500</td>
<td>26,276</td>
<td>31,966</td>
<td>317,673</td>
<td>6,240</td>
<td>49,896</td>
<td>25,519</td>
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</tr>
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<td>Insurance</td>
<td>8,336</td>
<td>3,883</td>
<td>13,461</td>
<td>20,581</td>
<td>7,665</td>
<td>8,262</td>
<td>168,020</td>
<td>2,125</td>
<td>27,415</td>
<td>4,284</td>
<td></td>
<td></td>
</tr>
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<td>Interest</td>
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<td>3,693</td>
<td>17,429</td>
<td>21,843</td>
<td>32,017</td>
<td>21,188</td>
<td>436,000</td>
<td>3,011</td>
<td>325,153</td>
<td>3,352</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour - unpaid</td>
<td>8,058</td>
<td>7,363</td>
<td>23,086</td>
<td>5,031</td>
<td>14,278</td>
<td>14,288</td>
<td>74,358</td>
<td>4,256</td>
<td>2,816</td>
<td>8,034</td>
<td></td>
<td></td>
</tr>
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<td>Leasing</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<td>208,742</td>
<td>74</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Legal &amp; Accounting</td>
<td>10,368</td>
<td>1,094</td>
<td>7,721</td>
<td>11,120</td>
<td>4,321</td>
<td>4,817</td>
<td>45,541</td>
<td>1,353</td>
<td>2,771</td>
<td>2,736</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telephone etc.</td>
<td>3,594</td>
<td>2,078</td>
<td>3,543</td>
<td>3,323</td>
<td>1,908</td>
<td>2,058</td>
<td>11,423</td>
<td>1,262</td>
<td>1,800</td>
<td>2,805</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slipping &amp; Mooring</td>
<td>498</td>
<td>1,916</td>
<td>15,064</td>
<td>8,985</td>
<td>6,212</td>
<td>5,140</td>
<td>42,415</td>
<td>676</td>
<td>21,023</td>
<td>385</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel</td>
<td>2,141</td>
<td>534</td>
<td>250</td>
<td>1,328</td>
<td>1,194</td>
<td>2,497</td>
<td>6,157</td>
<td>319</td>
<td>2,925</td>
<td>913</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office &amp; Admin</td>
<td>12,256</td>
<td>3,167</td>
<td>6,300</td>
<td>15,819</td>
<td>6,853</td>
<td>8,398</td>
<td>75,261</td>
<td>5,910</td>
<td>36,102</td>
<td>10,035</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Fixed Costs</td>
<td>183,168</td>
<td>27,623</td>
<td>116,474</td>
<td>115,530</td>
<td>102,779</td>
<td>175,753</td>
<td>1,385,590</td>
<td>52,893</td>
<td>469,901</td>
<td>58,061</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Boat Cash Costs (3 + 7)</td>
<td>432,569</td>
<td>78,593</td>
<td>389,428</td>
<td>485,415</td>
<td>349,355</td>
<td>415,387</td>
<td>4,685,512</td>
<td>76,203</td>
<td>1,212,605</td>
<td>172,799</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boat Gross Margin (1 - 3)</td>
<td>410,931</td>
<td>44,705</td>
<td>312,577</td>
<td>372,689</td>
<td>345,657</td>
<td>372,472</td>
<td>3,128,238</td>
<td>38,456</td>
<td>731,514</td>
<td>170,308</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Unpaid Labour (2 + 5)</td>
<td>9,109</td>
<td>15,427</td>
<td>28,577</td>
<td>7,568</td>
<td>20,939</td>
<td>27,924</td>
<td>185,461</td>
<td>25,428</td>
<td>3,281</td>
<td>33,819</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross Operating Surplus (1-8+9)</td>
<td>236,872</td>
<td>32,510</td>
<td>224,846</td>
<td>264,726</td>
<td>372,817</td>
<td>224,644</td>
<td>1,928,109</td>
<td>37,991</td>
<td>264,894</td>
<td>146,067</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boat Cash Income (1 - 8)</td>
<td>227,763</td>
<td>17,083</td>
<td>196,103</td>
<td>257,158</td>
<td>351,878</td>
<td>196,719</td>
<td>1,742,648</td>
<td>12,563</td>
<td>261,613</td>
<td>112,247</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>46,085</td>
<td>23,472</td>
<td>91,201</td>
<td>92,604</td>
<td>56,900</td>
<td>48,041</td>
<td>629,220</td>
<td>12,981</td>
<td>199,858</td>
<td>22,838</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boat Business Profit (10 - 11)</td>
<td>181,678</td>
<td>-6,389</td>
<td>104,902</td>
<td>164,554</td>
<td>294,979</td>
<td>148,679</td>
<td>1,113,428</td>
<td>-418</td>
<td>61,755</td>
<td>89,409</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profit at Full Equity (12 + 4 + 6)</td>
<td>249,096</td>
<td>-2,696</td>
<td>122,330</td>
<td>186,397</td>
<td>329,050</td>
<td>247,005</td>
<td>1,758,170</td>
<td>3,334</td>
<td>386,908</td>
<td>92,761</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boat Capital</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fishing Gear &amp; Equip Licence Value</td>
<td>205,787</td>
<td>145,737</td>
<td>1,585,786</td>
<td>823,633</td>
<td>414,261</td>
<td>432,251</td>
<td>4,771,203</td>
<td>101,770</td>
<td>1,488,600</td>
<td>207,165</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Boat Capital</td>
<td>6,718,184</td>
<td>162,238</td>
<td>2,978,643</td>
<td>4,034,484</td>
<td>5,402,473</td>
<td>2,610,150</td>
<td>31,821,426</td>
<td>252,094</td>
<td>5,442,120</td>
<td>911,318</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate of Return on Fishing Gear &amp; Equip (13 / 14 * 100)</td>
<td>121.0%</td>
<td>-1.8%</td>
<td>7.7%</td>
<td>22.6%</td>
<td>79.4%</td>
<td>57.1%</td>
<td>36.8%</td>
<td>3.3%</td>
<td>26.0%</td>
<td>44.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate of Return on Total Boat Capital (13 / 15 * 100)</td>
<td>3.7%</td>
<td>-1.7%</td>
<td>4.1%</td>
<td>4.6%</td>
<td>6.1%</td>
<td>9.5%</td>
<td>5.5%</td>
<td>1.3%</td>
<td>7.1%</td>
<td>10.2%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Total for whole fishery.
Source: EconSearch (2016a-j)
Figure 15-8  Return to capital in SA commercial fisheries, 2000/01 to 2014/15

Source: EconSearch (2016a-j)

15.5 Contribution to SA Economy

Figure 15-9 and Figure 15-10 illustrate the contribution by individual fisheries to the total economic impact (GSP and employment) of the commercial fisheries on the SA economy for the 15 years, 2000/01 to 2014/15. Total economic impact refers to the direct fishing industry impacts (fishing, processing, etc.) and the indirect impacts on other sectors of the economy. The economic impact of all SA commercial fisheries is detailed in Table 15-5 for 2014/15.

For those commercial fisheries for which the analysis was undertaken, total contribution to GSP in the South Australian economy was approximately $473 million in 2014/15. The largest contributions to the total GSP impact were by the Southern Zone Rock Lobster, Spencer Gulf Prawn, Abalone and Marine Scalefish fisheries (Table 15-5).

Total employment impact of the fisheries in 2014/15 was close to that of 2000/01, as illustrated in Figure 15-10. Although, the Charter Boat, Lakes and Coorong and Sardines fisheries were not counted in this 2000/01 estimate, indicating that employment has decreased since then overall. 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 impact of SA commercial fisheries on the state economy, 2000/01 to 2014/15

*Estimates of output, GSP and household income are expressed in real 2014/15 dollars.

Source: EconSearch (2016a-j)

Figure 15-10  Total employment impact of SA commercial fisheries on the SA economy, 2000/01 to 2014/15

Source: EconSearch (2016a-j)
TABLE 15-5  Commercial fisheries economic impact, 2014/15

<table>
<thead>
<tr>
<th>Output ($m)</th>
<th>Fishing</th>
<th>Downstream</th>
<th>All other sectors (indirect)</th>
<th>Total</th>
<th>Total/Tonne ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>25.2</td>
<td>21.6</td>
<td>66.6</td>
<td>113.5</td>
<td>$171,700</td>
</tr>
<tr>
<td></td>
<td>0.6</td>
<td>0.6</td>
<td>2.6</td>
<td>2.7</td>
<td>$1,300</td>
</tr>
<tr>
<td></td>
<td>21.8</td>
<td>22.6</td>
<td>25.2</td>
<td>22.6</td>
<td>$21,500</td>
</tr>
<tr>
<td></td>
<td>1.7</td>
<td>3.8</td>
<td>4.9</td>
<td>11.2</td>
<td>$11,400</td>
</tr>
<tr>
<td></td>
<td>4.9</td>
<td>3.8</td>
<td>1.1</td>
<td>11.2</td>
<td>$400</td>
</tr>
<tr>
<td></td>
<td>2.2</td>
<td>4.9</td>
<td>3.8</td>
<td>11.2</td>
<td>$6,300</td>
</tr>
<tr>
<td></td>
<td>2.1</td>
<td>2.2</td>
<td>2.1</td>
<td>2.1</td>
<td>$5,300</td>
</tr>
<tr>
<td></td>
<td>2.2</td>
<td>2.2</td>
<td>2.1</td>
<td>2.1</td>
<td>$6,300</td>
</tr>
<tr>
<td></td>
<td>2.2</td>
<td>2.2</td>
<td>2.1</td>
<td>2.1</td>
<td>$6,300</td>
</tr>
<tr>
<td></td>
<td>2.2</td>
<td>2.2</td>
<td>2.1</td>
<td>2.1</td>
<td>$6,300</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contribution to GSP ($m)</th>
<th>Fishing</th>
<th>Downstream</th>
<th>All other sectors (indirect)</th>
<th>Total</th>
<th>Total/Tonne ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>16.4</td>
<td>6.4</td>
<td>35.7</td>
<td>58.5</td>
<td>$154,200</td>
</tr>
<tr>
<td></td>
<td>1.7</td>
<td>2.0</td>
<td>7.4</td>
<td>9.5</td>
<td>$4,900</td>
</tr>
<tr>
<td></td>
<td>3.8</td>
<td>6.5</td>
<td>20.2</td>
<td>28.2</td>
<td>$2,600</td>
</tr>
<tr>
<td></td>
<td>11.2</td>
<td>13.8</td>
<td>25.8</td>
<td>39.2</td>
<td>$3,900</td>
</tr>
<tr>
<td></td>
<td>6.9</td>
<td>6.5</td>
<td>14.9</td>
<td>21.4</td>
<td>$2,100</td>
</tr>
<tr>
<td></td>
<td>2.9</td>
<td>2.1</td>
<td>2.1</td>
<td>2.1</td>
<td>$600</td>
</tr>
<tr>
<td></td>
<td>41.9</td>
<td>47.4</td>
<td>47.4</td>
<td>47.4</td>
<td>$4,700</td>
</tr>
<tr>
<td></td>
<td>5.5</td>
<td>9.5</td>
<td>14.9</td>
<td>24.7</td>
<td>$2,400</td>
</tr>
<tr>
<td></td>
<td>2.1</td>
<td>7.5</td>
<td>11.0</td>
<td>18.5</td>
<td>$1,800</td>
</tr>
<tr>
<td></td>
<td>1.1</td>
<td>11.0</td>
<td>12.1</td>
<td>13.2</td>
<td>$1,300</td>
</tr>
<tr>
<td></td>
<td>1.2</td>
<td>11.0</td>
<td>12.1</td>
<td>13.2</td>
<td>$1,300</td>
</tr>
<tr>
<td></td>
<td>1.2</td>
<td>11.0</td>
<td>12.1</td>
<td>13.2</td>
<td>$1,300</td>
</tr>
<tr>
<td></td>
<td>1.2</td>
<td>11.0</td>
<td>12.1</td>
<td>13.2</td>
<td>$1,300</td>
</tr>
<tr>
<td></td>
<td>1.2</td>
<td>11.0</td>
<td>12.1</td>
<td>13.2</td>
<td>$1,300</td>
</tr>
<tr>
<td></td>
<td>1.2</td>
<td>11.0</td>
<td>12.1</td>
<td>13.2</td>
<td>$1,300</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employment (fte jobs)</th>
<th>Fishing</th>
<th>Downstream</th>
<th>All other sectors (indirect)</th>
<th>Total</th>
<th>Total/Tonne ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>100</td>
<td>51</td>
<td>255</td>
<td>405</td>
<td>$88,500</td>
</tr>
<tr>
<td></td>
<td>39</td>
<td>28</td>
<td>53</td>
<td>108</td>
<td>$600</td>
</tr>
<tr>
<td></td>
<td>490</td>
<td>287</td>
<td>540</td>
<td>567</td>
<td>$44,700</td>
</tr>
<tr>
<td></td>
<td>102</td>
<td>72</td>
<td>141</td>
<td>131</td>
<td>$116,700</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>44</td>
<td>83</td>
<td>115</td>
<td>$16,100</td>
</tr>
<tr>
<td></td>
<td>263</td>
<td>59</td>
<td>161</td>
<td>315</td>
<td>$700</td>
</tr>
<tr>
<td></td>
<td>80</td>
<td>9</td>
<td>19</td>
<td>154</td>
<td>$10,200</td>
</tr>
<tr>
<td></td>
<td>76</td>
<td>19</td>
<td>69</td>
<td>187</td>
<td>$9,800</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Household Income ($m)</th>
<th>Fishing</th>
<th>Downstream</th>
<th>All other sectors (indirect)</th>
<th>Total</th>
<th>Total/Tonne ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>5.9</td>
<td>4.2</td>
<td>20.9</td>
<td>30.9</td>
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</tr>
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<td>5.9</td>
<td>$120,000</td>
</tr>
<tr>
<td></td>
<td>9.4</td>
<td>3.9</td>
<td>4.1</td>
<td>5.9</td>
<td>$5,800</td>
</tr>
<tr>
<td></td>
<td>27.4</td>
<td>18.1</td>
<td>18.1</td>
<td>18.1</td>
<td>$2,800</td>
</tr>
<tr>
<td></td>
<td>6.7</td>
<td>4.5</td>
<td>4.5</td>
<td>4.5</td>
<td>$0.6</td>
</tr>
<tr>
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<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
<td>$0.6</td>
</tr>
<tr>
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<td>9.7</td>
<td>3.7</td>
<td>3.7</td>
<td>3.7</td>
<td>$0.6</td>
</tr>
<tr>
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<td>3.4</td>
<td>3.4</td>
<td>3.4</td>
<td>$0.6</td>
</tr>
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<td>$0.6</td>
</tr>
<tr>
<td></td>
<td>23.9</td>
<td>47.0</td>
<td>47.0</td>
<td>47.0</td>
<td>$4,700</td>
</tr>
</tbody>
</table>

Source: EconSearch (2016a-j)

15.6 Economic Rent

Economic rent 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 fishery and the good produced is the landed fish. Economic rent for all SA commercial fisheries is detailed in Table 15-6 for 2014/15.

TABLE 15-6  Commercial fisheries economic rent, 2014/15

<table>
<thead>
<tr>
<th>Gross Income</th>
<th>Less Labour</th>
<th>Less Materials &amp; Services</th>
<th>Less Depreciation</th>
<th>Less Opportunity Cost of Capital (@10%)</th>
<th>Economic Rent</th>
<th>Rent/GVP</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.2</td>
<td>6.6</td>
<td>7.3</td>
<td>1.8</td>
<td>0.8</td>
<td>8.7</td>
<td>35%</td>
</tr>
<tr>
<td>28.7</td>
<td>9.3</td>
<td>8.6</td>
<td>3.6</td>
<td>3.2</td>
<td>4.0</td>
<td>14%</td>
</tr>
<tr>
<td>102.3</td>
<td>24.9</td>
<td>21.2</td>
<td>8.3</td>
<td>6.0</td>
<td>41.9</td>
<td>41%</td>
</tr>
<tr>
<td>22.6</td>
<td>5.9</td>
<td>5.8</td>
<td>1.8</td>
<td>1.6</td>
<td>7.5</td>
<td>33%</td>
</tr>
<tr>
<td>6.4</td>
<td>25.2</td>
<td>19.9</td>
<td>1.8</td>
<td>0.5</td>
<td>1.3</td>
<td>33%</td>
</tr>
<tr>
<td>21.6</td>
<td>6.9</td>
<td>6.1</td>
<td>2.9</td>
<td>2.2</td>
<td>3.0</td>
<td>16%</td>
</tr>
<tr>
<td>7.8</td>
<td>239.9</td>
<td>65.1</td>
<td>23.3</td>
<td>17.7</td>
<td>65.9</td>
<td>27%</td>
</tr>
</tbody>
</table>

a Excludes the Charter Boat Fishery

Source: EconSearch (2016a-j)
Economic rent 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. Economic rent as a proportion of fishery GVP was highest in the Abalone Fishery in all years of the analysis except 2014/15 when the Southern Zone Rock Lobster Fishery was higher (Figure 15-11).

Economic rent 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. There was an increasing trend in the return to capital value in the Marine Scalefish and Northern and Southern Zone Rock Lobster fisheries between 2000/01 and 2014/15. The return to capital value followed a declining trend in the Abalone, Blue Crab, Gulf St Vincent Prawn, Lakes & Coorong, Sardine and Spencer Gulf Prawn fisheries over the same period, though a recovery in the Sardine and Spence Gulf Prawn fisheries took place in the few years up to 2014/15 (Figure 15-12).

Figure 15-11 Economic rent as a proportion of GVP in SA commercial fisheries, 2000/01 to 2014/15

![Graph showing economic rent as a percentage of GVP over time for various fisheries.]

a Excludes the Charter Boat fishery.

Source: EconSearch (2016a-j)
Figure 15-12  Return to capital in SA commercial fisheries, 2000/01 to 2014/15

Excludes the Charter Boat Fishery.

Source: EconSearch (2016a-j)
REFERENCES


EconSearch 2016a, *Economic and Social Indicators for the South Australian Abalone Fishery 2014/15*, prepared for Primary Industries and Regions South Australia.

EconSearch 2016b, *Economic Indicators for the South Australian Blue Crab Fishery, 2014/15*, prepared for Primary Industries and Regions South Australia.


EconSearch 2016e, *Economic Indicators for the South Australian Marine Scalefish Fishery, 2014/15*, prepared for Primary Industries and Regions South Australia.

EconSearch 2016f, *Economic Indicators for the South Australian Northern Zone Rock Lobster Fishery, 2014/15*, prepared for Primary Industries and Regions South Australia.

EconSearch 2016g, *Economic and Social Indicators for the South Australian Sardine Fishery, 2014/15*, prepared for Primary Industries and Regions South Australia.

EconSearch 2016h, *Economic Indicators for the Spencer Gulf Prawn Fishery, 2014/15*, prepared for Primary Industries and Regions South Australia.

EconSearch 2016i, *Economic Indicators for the South Australian Southern Zone Rock Lobster Fishery, 2014/15*, prepared for Primary Industries and Regions South Australia.

EconSearch 2016j, *Economic Indicators for the Gulf St Vincent Prawn Fishery, 2014/15*, prepared for Primary Industries and Regions South Australia.


PIRSA 2014c, Management Plan for the South Australian Southern Zone Rock Lobster Fishery, Primary Industries and Resources South Australia


Reserve Bank of Australia 2015a, Reserve Bank Bulletin.


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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).