Economic Profile of the Barossa Regional Development Australia Region

A report to

Regional Development Australia Barossa



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ABBREVIATIONS

ABS	Australian Bureau of Statistics
ANZSIC	Australia and New Zealand Standard Industrial Classification
ATO	Australian Taxation Office
fte	full-time equivalent
GSP	gross state product
GRP	gross regional product
Ю	Input-Output (analysis)
LGA	local government area
PIRS	Primary Industries and Regions South Australia
RDA	Regional Development Australia
RISE	Regional Industry Structure and Employment (impact model)
SA	South Australia
TRA	Tourism Research Australia

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EXECUTIVE SUMMARY

The Economic Profile of the Barossa Regional Development Australia (Barossa RDA) region provides a statistical summary of key economic information for the region.

Economic Structure of the Regional Economy

The top five contributors to total employment in the region in 2014/15 were manufacturing, health and community services, agriculture, forestry and fishing, retail trade and education and training. In 2014/15 employment in South Australia was approximately 731,900 (total jobs) which means the Barossa RDA region accounts for approximately 3.0 per cent of the total state employment.

In 2014/15, the top five contributors to GRP were manufacturing, agriculture, forestry and fishing, ownership of dwellings, health care and social assistance and education and training. In 2014/15 South Australia's gross state product was \$98.63 billion which means that the Barossa RDA region accounts for approximately 2.7 per cent of the state economy.

Among of the intermediate sectors, the top importers in the region in 2014/15 were the manufacturing and agriculture, forestry and fishing.

Expenditure by tourists (\$245m) contributed approximately 13 per cent of the total value of exports from the region in 2014/15 and was almost 5 per cent of the SA total expenditure by tourists in 2014/15 (\$5.3b). The top contributors to the value of 'other exports' from the region in 2014/15 were the manufacturing (46 per cent) and agriculture, forestry and fishing (26 per cent) sectors.

The Contribution of the Wine Industry to the Regional Economy

In 2014/15, total GRP in the Barossa RDA region attributable to the wine industry was approximately \$548 million which represented 21 per cent of the regional total.

The total employment impact generated by wine industry activities in the Barossa RDA region in 2014/15 was estimated to be about 4,560 fte jobs, which represented 22 per cent of the regional total.

The Contribution of the Agricultural and Food Manufacturing Industries to the Regional Economy

In 2014/15, total GRP in the Barossa RDA region attributable to agricultural and food manufacturing (food) activities was approximately \$1.0 billion which represented 39 per cent of the regional total.

The total employment impact generated by food industry activities in the Barossa RDA region in 2014/15 was estimated to be about 7,761 fte jobs, which represented 38 per cent of the regional total.

Demographic Profile

In 2014/15 the estimated resident population in the Barossa RDA region was 69,313 persons, representing approximately 4.1 per cent of the state total (1.70 million persons). Over the 15 years, 2000/01 to 2014/15, the Barossa RDA region experienced steady population growth (25 per cent or almost 14,000 persons), higher than for SA as a whole (11.5 per cent).

Despite an increase in the number of births, the crude birth rate for the Barossa RDA region decreased from 10.9 in 2000/01 to 10.1 in 2014/15 as a result of a significant population increase. The crude birth rate for SA was higher in 2014/15 (11.5 births per thousand residents) than in 2000/01 (11.4 births per thousand residents). The crude death rate for the Barossa RDA region increased from 7.0 in 2000/01 to 7.8 in 2014/15. The crude death rate for SA was also slightly higher in 2014/15 (8.0 deaths per thousand residents) than in 2000/01 (7.9 deaths per thousand residents) despite slight fluctuations in between years.

A steady increase in the population, together with a fall in the birth rate and an increase in the death rate, would imply significant inward population migration to the Barossa RDA region.

Compared with the age distribution of the state, the Barossa RDA region has a slightly larger than average concentration of younger people (aged 0 to 14 years), a slightly smaller than average share of persons aged 15 to 64 years and a similar proportion of people aged 65 and over. The 15 to 64 year age group could be characterised as the working-age population.

Based on the Planning SA projections, the population in the Barossa RDA region will increase by about 39.6 per cent over the 20 years from 2011 (Census year) whereas the total SA population is expected to increase by around 18.1 per cent.

Labour Force Indicators

The total number of persons in the labour force in the Barossa RDA region, fluctuated over the years 2010 to 2016 ranging from a low of 33,790 in June 2010 to a high of 38,289 in June 2015. Despite some fluctuations, the labour force in SA increased over the period, from 843,000 in March 2010 to 874,000 in June 2016.

Comparison of the two end quarters indicate that the total number of unemployed persons increased by 693 persons (approximately 59 per cent) in the Barossa RDA region. The number of unemployed persons in SA also increased, by approximately 14,000 persons (31 per cent).

The unemployment rate in the Barossa RDA region fluctuated over the period 2010 to 2016 and was estimated to be 5.1 per cent in June 2016. The unemployment rate in the Barossa RDA region was, on average, lower than the rate for SA (6.8 per cent in June 2016) over the same period.

The labour force participation rate for the Barossa RDA region fluctuated over the period 2009/10 to 2014/15 but overall followed an increasing trend. The labour force participation rate in SA fluctuated slightly less over the same period, at 62 per cent. In 2014/15 the labour force participation rate was 69 per cent in the Barossa RDA region, higher than for SA as a whole (62 per cent)

Education and Training

The total number of students enrolled in primary school in the Barossa RDA region increased by 17 per cent between 1996 and 2011 and the total number enrolled in secondary school increased by 33 per cent between 1996 and 2011. Enrolments in non-government schools accounted for 45 per cent of total school enrolments in the Barossa RDA region in 2011. In 1996 the proportion of enrolments in non-government schools was 35 per cent.

Between 1996 and 2011 the total number of Barossa RDA region residents enrolled in a higher education institute increased by 9 per cent. This is a significantly lower increase than for SA as a whole, where the total number of residents undertaking higher education increased by 39 per cent.

In 2011, approximately 48 per cent of all persons aged 15 or over in the Barossa RDA region, held some form of non-school qualification (increasing from 35 per cent in 1996). The level of qualification was generally lower for the Barossa RDA region than for SA with the number of persons aged 15 and over holding some form of non-school qualification in SA being 52 per cent in 2011.

Income and Housing

The proportion of taxable individuals (compared to non-taxable individuals) in the Barossa RDA region fluctuated slightly over the 14 years, overall decreasing from 80 per cent to 75 per cent. The proportion of taxable individuals in SA as a whole decreased over the 14 years (from 81 per cent to 75 per cent) and was similar to the Barossa RDA region in most years.

The mean individual taxable income in the Barossa RDA region was lower than the state average, over the period 2000/01 to 2013/14, in both nominal and real terms. In the Barossa RDA region the mean individual taxable income increased in nominal terms, from around \$33,900 in 2000/01 to almost \$61,000 in 2013/14. For SA the mean individual taxable income (in nominal terms) increased steadily over the 14 years from around \$35,300 in 2000/01 to approximately \$64,800 in 2013/14.

The average value per approval in the Barossa RDA region more than tripled between 2001/02 and 2015/16, from \$113,000 to \$368,000 (227 per cent). For SA, the value per approval increased from \$128,000 in 2001/02 to \$259,000 in 2015/16, an increase of 102 per cent

1. INTRODUCTION

In 2016 EconSearch Pty Ltd was commissioned by Regional Development Australia Barossa to prepare an economic profile of the Barossa Regional Development Australia (Barossa RDA) region and selected sub regions. This report follows previous works prepared by EconSearch for Barossa RDA; these being the socio-economic profile of the Barossa RDA in 2011 (EconSearch 2011) and its subsequent update in 2013 (EconSearch 2013).

This report brings together a wide range of existing Australian Bureau of Statistics (ABS) and some non-ABS data and has been designed, at a broad level, to aid understanding of the composition and economic structure of the region.

The information included in the report is the latest available at the time of preparation. When analysing the data care needs to be taken as time periods, definitions, methodologies, scope and coverage differ between variables. For detailed information please refer to the relevant source publications that are listed in the References.

The Barossa RDA region is located approximately 70 km northeast of Adelaide. The area includes the major centre of Gawler and many major towns including Roseworthy, Freeling, Kapunda, Greenock, Nuriootpa, Tanunda, Angaston, Lyndoch, Hewett, Mallala, Two Wells, Williamstown and Mount Pleasant. The region covers 4 local government areas (LGA):

- The Barossa Council
- The Town of Gawler
- Light Regional Council
- District Council of Mallala.

Despite the availability of the LGA boundaries, there has been interest for the LGA sub regions to be redefined to align with specific economic activities. As indicated by Barossa RDA there are the following broad regions.

- Greater Gawler: which includes the surrounding areas of Kingsford, Concordia, Hewitt and Gawler Belt and other areas which are generally thought of as "Gawler" but are not within the City of Gawler.
- Barossa Zone: which includes the Barossa Wine region (as defined by the Australian Grape and Wine Authority), the balance of the Barossa Council area not within the Barossa Wine region or the Greater Gawler region, and parts of the Light Regional Council from East of Kapunda.
- Mallala residual balance: which covers broadacre, livestock and horticulture areas of the balance of the RDA region.

EconSearch has consulted with Barossa RDA to develop this new regional definition, which will be discussed in further detail in Section 2.

Economic data have been compiled based on the above functional economic geographies and for the region as a whole. Each of the three data sets is compiled by industry (20-sector definition in this report and 78-sector definition in the accompanying files) and the data are estimated for 2014/15. The data sets cover the following three areas:

- Employment, household income and household expenditure
- Components of gross regional product (GRP)
- Value of imports and exports.



2. METHOD OF ANALYSIS

2.1 Regional definition

Following consultation with Barossa RDA, EconSearch has redefined the region into three subregions (functional economic geographies) as mentioned in the Section 1. The regions are predominantly based on the ABS's Statistical Area 2 (SA2) boundaries. However some SA2 regional boundaries are not exactly aligned with the sub-regions.

Statistical Area 1 (SA1) data were used to divide the SA2 regions to better align the data with the required sub-regions. Note that ABS census employment data by place of work are only available down to the SA2 level. Accordingly, SA1 data (employment by place of residence) were used to allocate aggregate jobs to the sub-regions while maintaining the industry structure embodied in the employment by place of work SA2 data. Table 2-1 lists the allocation of SA2 regions to the Barossa RDA sub-regions

Barossa RDA sub-region	Statistical Area 2 (SA2) regions
Barossa – West Light	Barossa - Angaston, Lyndoch, Nuriootpa, Tanunda
Greater Gawler	Gawler South
Mallala – East Light	Lewiston – Two Wells, Mallala
Ambiguous	Light, Gawler North

				-		
Table 2-1	Allocation	ot SA2 re	prions to	Barossa	RDA	sub-regions
	/ 1100001011	01 07 12 13	5010110 10	Darossa		

The data for the two SA2s that comprise the "ambiguous" region (Light and Gawler North) were disaggregated on a proportional basis using SA1 data (with the aid of the ABS Table Builder database) and then allocated to the appropriate sub-region. Appendix 1 shows the allocation of SA1s to the Barossa RDA sub-regions.

Figure 2-1 shows the "ambiguous" area that is comprised of the two SA2s, Light and Gawler North, and how that combined area¹ has been allocated (using component SA1s) to the three Barossa RDA sub-regions: Barossa – West Light (blue); Greater Gawler (green); and Mallala – East Light (red).

The boundaries of the entire Barossa RDA Region and it three sub-regions are shown in Figure 2-2.

¹ The boundaries of the two separate SA2s are not shown in Figure 2-1.





Sources: ABS 1259.0.30.001 – ASGC Digital Boundaries, Australia, July 2011; OpenStreetMap contributors





Figure 2-2 The Barossa RDA region and three sub-regions

Sources: ABS 1259.0.30.001 – ASGC Digital Boundaries, Australia, July 2011; OpenStreetMap contributors



2.2 Data Collection

2.2.1 Data sources

For the collection and collation of regional data, a wide range of reports (published and unpublished) and data sources have been utilised. A Barossa RDA region database was constructed that includes several subsets of data that have both spatial and industry dimensions. Examples include:

- Detailed employment data (place of remuneration) by industry (4-digit ANZSIC²), hours worked and region from the Australian Bureau of Statistics (ABS) 2011 Census of Population and Housing (from the Table Builder database)³.
- Estimates of total employment by industry for 2014/15 from the Labour Force Survey (Department of Education, Employment and Workplace Relations).
- Counts of Australian Businesses by Industry Division, by Statistical Area Level 2, and by Employment Size Ranges as at June 2011 and June 2015 (ABS).
- Detailed household expenditure data by item (approximately 600) from the ABS Household Expenditure Survey, Australia: Detailed Expenditure Items, and more aggregated regional data (by special request).
- The consumer price index values for Adelaide from 2010 to 2015.
- Estimates of residential population by region for 2014/15 from Regional Population Growth, Australia.
- Estimates of value of agricultural output by region from the ABS Agricultural Census and subsequent survey data.
- Estimates of mean taxable income and mean salary and wages by region from the Australian Taxation Office (ATO) Taxation Statistics.
- The 2014/15 Australian National Accounts: State Accounts.
- Tourism industry data as described below.
- Other data sources including industry and region based reports and studies (e.g. EconSearch fisheries and aquaculture reports).

² Australian and New Zealand Standard Industrial Classification (2006 version).

³ Data belonging to SA2 regions which do not fit within a single the economic geography will be apportioned subject to the available SA1 regional data. However due to data limitations, the SA1 data will be based on place of usual residence.

Part of the required data set is the Tourism expenditure⁴. Tourism expenditure is a measure of the value of sales of goods and services to visitors to the region. The following method and data sources were used to estimate tourism expenditure by industry sector for the Barossa RDA region and its sub regions.

- The primary data will be sourced from Tourism Research Australia (TRA).
- These base datasets included total tourism expenditure by SA tourism region and average expenditure profiles, by region, across a range of goods and services (e.g. food and drink, fuel, shopping, etc.).
- Estimates are available for domestic day, domestic overnight and international visitor expenditure.
- The first adjustment to the base data is the development of a concordance between the SA tourism regions and Barossa RDA regions. This concordance is based on an ABS concordance between tourism regions and defined regions' SA2 components.
- The second adjustment to the base data will be the application of a more detailed expenditure breakdown from the *ABS Australian National Accounts: Tourism Satellite Account* for both domestic and international visitor expenditure.
- The third adjustment to the base data will be the conversion of tourism expenditure estimates from purchasers' to basic prices (i.e. reallocation of net taxes (taxes minus subsidies) and marketing and transport margins) to make the data consistent with accounting conventions used in the national, state and regional economic models and data bases. Purchasers' to basic price ratios for tourism expenditure categories were derived from ABS data.
- The final adjustment to the base data will be the allocation of the tourism expenditure data in basic prices to the relevant industry sectors (intermediate sectors, taxes less subsidies or imports) in which the expenditure occurred, thus compiling a profile of sales to final demand. This process will be undertaken for each type of tourism expenditure (domestic day, domestic overnight and international visitor) and the results aggregated to form a single tourism expenditure profile. Profiles will be developed for each sub region and the Barossa RDA region as a whole.

2.2.2 Data limitations

In considering the limitations of the data, particular emphasis should be placed on the use of census data as it forms a principal component in developing the regional profiles for employment, and subsequently the profiles for GRP and Trade. Although the ABS aims to

⁴ Tourism expenditure is a component of a region's exports.

produce census data at a high level of quality, there can be limitations to the data. The data may be subject to response errors⁵ and/or data confidentiality issues⁶.

Additionally, the employment profiles draw on the structure of the economy at the time of the census. Although this structure is updated to the IO model year using labour force estimates, it is not as thorough as the census and therefore will not cover all possible changes to the economy (such as changes within an ANZSIC division) between the years.

Although EconSearch has taken great care to mitigate these data integrity issues, and strives to produce the most robust estimates possible, there may still be some residual data accuracy issues with regards to the economic profiles.

2.2.3 Data tabulation

A database for each major economic indicator (employment, household expenditure, value of output, etc.) was originally prepared as a distinct spreadsheet model. This has now been migrated into a series of program scripts which run in the Matlab environment, allowing greater sophistication in data manipulation. The scripts utilise the above data sources in order to produce 'control' data for the data feed constraints.

Control data include the databases referred to above as well as a wide range of other relevant information. The database scripts contain a series of manipulations to convert source data to a form consistent with the specification and conventions of regional databases and models. For example, to compile the household expenditure data, the detailed data from the Household Expenditure Survey (approximately 600 categories) are aggregated to be consistent with the sector specifications required (e.g. 20 or 78 sectors). A concordance for both 20 and 78 sector aggregations has been developed by EconSearch for this purpose (See Appendix 2). In subsequent modifications these aggregated data were converted from purchasers' prices to basic prices, as the raw data include margins, taxes and subsidies. All monetary values in the tables are expressed as basic values.

The final stage of the database construction process will be to ensure that, for each sub region, estimates by industry and indicator sum to the Barossa RDA region values.

⁶ Resulting in the ABS imposing some degree of randomness to the census data. Note that this can be more pervasive for rural and/or sparsely populated regions.



⁵ Such as respondents mistaking place of work with place of residence.

2.3 Definitions

For the purpose of describing the current level economic activity in the Barossa RDA and the economic geographies, and in order to estimate the regional economic impact of the wine and agricultural industries in the regions, regional input-output (I-O) models were constructed for 2014/15.

The detailed profile of the economic structure of the Barossa RDA region and its economic geographies for 2014/15 (provided below) are consistent with the method and data sources used by the EconSearch in preparing State and regional economic models (RISE models) for the Department of Premier and Cabinet⁷.

Economic activity in the region in 2014/15 is presented in Tables 6-1 to 6-12 in terms of the following indicators:

- employment
- output
- household income
- other value added
- gross regional product (GRP)
- imports
- tourism expenditure
- exports.

Employment is a measure of the number of working proprietors, managers, directors and other employees, in terms of the number of full-time equivalents and total (i.e. full-time and part-time) jobs. Employment is measured by place of remuneration rather than place of residence.

(Value of) Output is a measure of the gross revenue of goods and services produced by commercial organisations (e.g. farm-gate value of production) and gross expenditure by government agencies. Total output needs to be used with care as it includes elements of double counting (e.g. the value of winery output includes the farm-gate value of grapes) and overstates the real contribution to economic activity.

⁷ The RISE model is the standard tool for used by the South Australian Government for regional economic impact analysis. The first set of South Australian RISE models were commissioned by the Regional Communities Consultative Council in 2004. They were updated in 2007 for the SA Department of Trade and Economic Development, and updated again in 2010, 2013, 2014 and 2015 for the SA Department of Premier and Cabinet. EconSearch also developed a set of RISE models at the local government area (non-metropolitan) and regional level for the Victorian Department of Primary Industries in 2010. These models were updated in 2013 for the Department of Environment and Primary Industries.

Household income is a component of GRP and is a measure of wages and salaries paid in cash and in kind, drawings by owner operators and other payments to labour including overtime payments, employer's superannuation contributions and income tax, but excluding payroll tax.

Other value added is another component of GRP and includes gross operating surplus (excluding the drawings of working proprietors) and all taxes, less subsidies.

Gross regional product (GRP) is a measure of the net contribution of an activity to the regional economy⁸. Gross regional product is measured as value of output less the cost of goods and services (including imports) used in producing the output. In other words, it can be measured as household income plus other value added (gross operating surplus and all taxes, less subsidies). It represents payments to the primary inputs of production (labour, capital and land).

Imports are a measure of the value of goods and services purchased by intermediate sectors and by components of final demand in the region/state of interest from other regions, interstate and overseas.

Tourism expenditure is a measure of the value of sales of goods and services to visitors to the state or region.

Exports (other) are a measure of the value of goods and services sold from the region/state of interest to consumers in other regions, interstate and overseas, net of sales to visitors to the region.

The demographic impact of changes in the level of employment in the region was measured using **population** (i.e. the number of people resident in the region) as an indicator.

A brief summary of the regional economic structure of the Barossa RDA region for 2011/12 follows. These data were derived from the regional economic impact model prepared specifically for this project. The economic profile of the regional economy has been prepared in terms of an 18-sector industry classification⁹. Economic activity in the region is described in terms of:

- employment
- gross regional product (GRP)
- imports and exports.

⁸ Similarly, contribution to gross state product (GSP) is a measure of the net contribution of an activity to the state economy.

⁹ The economic profile of the regional economy is also available in terms of a 78-sector industry classification if required.

3. ECONOMIC STRUCTURE OF THE REGIONAL ECONOMY

3.1 Barossa RDA Region

3.1.1 Employment

It was estimated that there were about 22,000 jobs (around 20,600 fte jobs) in the Barossa RDA region in 2014/15 (Table 3-1). A sectoral breakdown of employment, household income and household expenditure for the Barossa RDA region in 2014/15 is provided in Table 3-1. The top five contributors to total employment in the region in 2014/15 were:

- manufacturing (18.5 per cent);
- health and community services (13.0 per cent);
- agriculture, forestry and fishing (11.8 per cent);
- retail trade (10.4 per cent); and
- education and training (9.2 per cent).

In 2014/15 employment in South Australia was approximately 731,900 (total jobs) which means the Barossa RDA region accounts for approximately 3.0 per cent of the total state employment.

3.1.2 Gross Regional Product

GRP in the Barossa RDA region in 2014/15 was estimated to be \$2.6 billion (Table 3-2). The contribution of an individual industry to GRP is calculated as the sum of household income, gross operating surplus and gross mixed income and indirect taxes less subsidies. In 2014/15, the top five contributors to GRP were:

- manufacturing (19.4 per cent);
- agriculture, forestry and fishing (15.5 per cent);
- ownership of dwellings (10.7 per cent);
- health care and social assistance (6.6 per cent); and
- education and training (5.8 per cent).

In 2014/15 South Australia's gross state product was \$98.6 billion which means that the Barossa RDA region accounts for approximately 2.7 per cent of the state economy.



3.1.3 Imports and Exports

A breakdown of the value of imports and exports by industry sector for the Barossa RDA region in 2014/15 is provided in Table 3-3¹⁰. These data were derived from an input-output (I-O) model for the region. Some of the key points to note from these data follow.

- Expenditure by households accounted for almost 34 per cent of the total value of goods and services imported into the region in 2014/15 from intrastate (i.e. other regions within SA), interstate and overseas.
- Among of the intermediate sectors, the top importers in the region in 2014/15 were the manufacturing (14 per cent) and agriculture, forestry and fishing (8 per cent) sectors.
- Expenditure by tourists (\$245m) contributed approximately 13 per cent of the total value of exports from the region in 2014/15. The balance (i.e. 'other exports'), about \$1.6b, represents the value of goods and services purchased by consumers (i.e. households, businesses, governments, etc.) in other regions within SA, interstate and internationally.
- Total regional expenditure by tourists (\$245m) comprised almost 5 per cent of the SA total expenditure by tourists in 2014/15 (\$5.3b).
- The top contributors to the value of 'other exports' from the region in 2014/15 were the manufacturing (47 per cent) and agriculture, forestry and fishing (26 per cent) sectors.
- The trade balance (i.e. exports less imports) in the Barossa RDA region in 2014/15 was approximately -\$461m.

¹⁰ The economic profile of the regional economy is also available in terms of a 78-sector industry classification if required.



	Total Empl	oyment	FTE Emplo	yment	Household	Income	Household Ex	penditure
SECTOR	(jobs)	(%)	(fte)	(%)	(\$m)	(%)	(\$m)	(%)
Agriculture, Forestry and Fishing	2,607	11.8%	2,928	14.2%	151	10.8%	13	0.6%
Mining	85	0.4%	96	0.5%	5	0.4%	0	0.0%
Manufacturing	4,079	18.5%	4,175	20.2%	278	19.9%	100	4.9%
Electricity, Gas, Water and Waste Services	81	0.4%	86	0.4%	8	0.6%	21	1.0%
Construction	1,412	6.4%	1,425	6.9%	118	8.4%	1	0.1%
Wholesale trade	540	2.4%	556	2.7%	57	4.1%	51	2.5%
Retail trade	2,298	10.4%	1,789	8.7%	94	6.7%	162	7.9%
Accommodation and Food Services	1,238	5.6%	907	4.4%	45	3.2%	79	3.9%
Transport, Postal and Warehousing	796	3.6%	905	4.4%	77	5.5%	34	1.7%
Information Media and Telecommunications	180	0.8%	162	0.8%	10	0.7%	24	1.2%
Financial and Insurance Services	247	1.1%	231	1.1%	29	2.1%	34	1.7%
Rental, Hiring and Real Estate Services	211	1.0%	208	1.0%	22	1.6%	2	0.1%
Ownership of dwellings ^b	0	0.0%	0	0.0%	0	0.0%	350	17.2%
Professional, Scientific and Technical Services	851	3.9%	795	3.8%	56	4.0%	8	0.4%
Administrative and Support Services	754	3.4%	594	2.9%	38	2.7%	4	0.2%
Public Administration and Safety	575	2.6%	577	2.8%	48	3.5%	1	0.1%
Education and Training	2,032	9.2%	1,978	9.6%	140	10.0%	81	4.0%
Health Care and Social Assistance	2,864	13.0%	2,196	10.6%	170	12.1%	81	4.0%
Arts and Recreation Services	223	1.0%	163	0.8%	14	1.0%	21	1.0%
Other Services	960	4.4%	877	4.2%	41	2.9%	45	2.2%
Total Intermediate	22,032	100.0%	20,648	100.0%	1,400	100.0%	1,111	54.5%
PRIMARY INPUTS								
Household Income	-	-	-	-	-	-	0	0.0%
GOS and GMI ^c	-	-	-	-	-	-	0	0.0%
Taxes Less Subsidies	-	-	-	-	-	-	142	7.0%
Imports	-	-	-	-	-	-	784	38.5%
Primary Inputs Total	-	-	-	-	-	-	927	45.5%
GRAND TOTAL	22,032	100.0%	20,648	100.0%	1,400	100.0%	2,037	100.0%

Table 3-1 Employment, household income and household expenditure, Barossa RDA region, 2014/15 ^a

^a The economic profile of the regional economy is also available in terms of a 78-sector industry classification if required.

^b The ownership of dwellings sector is a notional sector designed to impute a return to the state's housing stock. Total value of output in this sector is an estimate of rent earned on leased dwellings and imputed rent on the balance of owner-occupied dwellings.

^c Gross operating surplus and gross mixed income.

Source: EconSearch analysis



	Household Income		GOS and	GOS and GMI*		Taxes less Subsidies		Gross Regional Product	
SECTOR	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)	
Agriculture, Forestry and Fishing	151	10.8%	247	27.0%	10	8.3%	408	15.5%	
Mining	5	0.4%	7	0.8%	1	0.5%	13	0.5%	
Manufacturing	278	19.9%	205	22.4%	28	22.0%	511	19.4%	
Electricity, Gas, Water and Waste Services	8	0.6%	11	1.2%	1	0.7%	20	0.8%	
Construction	118	8.4%	0	0.0%	9	7.1%	127	4.8%	
Wholesale trade	57	4.1%	28	3.0%	3	2.4%	87	3.3%	
Retail trade	94	6.7%	26	2.8%	5	4.3%	125	4.8%	
Accommodation and Food Services	45	3.2%	17	1.8%	8	6.1%	69	2.6%	
Transport, Postal and Warehousing	77	5.5%	13	1.4%	8	6.2%	97	3.7%	
Information Media and Telecommunications	10	0.7%	12	1.3%	0	0.4%	22	0.8%	
Financial and Insurance Services	29	2.1%	62	6.7%	5	3.9%	95	3.6%	
Rental, Hiring and Real Estate Services	22	1.6%	14	1.6%	4	3.3%	40	1.5%	
Ownership of dwellings ^b	0	0.0%	253	27.6%	28	22.6%	281	10.7%	
Professional, Scientific and Technical Services	56	4.0%	0	0.0%	2	1.9%	58	2.2%	
Administrative and Support Services	38	2.7%	0	0.0%	2	1.4%	40	1.5%	
Public Administration and Safety	48	3.5%	8	0.9%	2	1.6%	58	2.2%	
Education and Training	140	10.0%	10	1.1%	2	1.9%	153	5.8%	
Health Care and Social Assistance	170	12.1%	0	0.0%	4	3.0%	173	6.6%	
Arts and Recreation Services	14	1.0%	2	0.2%	1	0.4%	17	0.6%	
Other Services	41	2.9%	2	0.2%	2	1.8%	45	1.7%	
Total	1,400	100.0%	916	100.0%	125	100.0%			
Net Taxes in Final Demand							191	7.3%	
Gross Regional Product							2,633	100.0%	

Table 3-2Components of gross regional product in the Barossa RDA region by industry, 2014/15 a

^{a-c} See footnotes for Table 3-1.

Source: EconSearch analysis

	Tourism		Other Exports		Total Exports		Imports	
SECTOR	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)
Agriculture, Forestry and Fishing	0	0.0%	426	26.2%	426	22.8%	196	8.4%
Mining	0	0.0%	13	0.8%	13	0.7%	6	0.3%
Manufacturing	15	6.0%	757	46.5%	772	41.2%	325	13.9%
Electricity, Gas, Water and Waste Services	0	0.0%	6	0.3%	6	0.3%	10	0.4%
Construction	0	0.0%	195	12.0%	195	10.4%	115	4.9%
Wholesale trade	8	3.2%	28	1.7%	36	1.9%	55	2.4%
Retail trade	39	16.0%	0	0.0%	40	2.1%	49	2.1%
Accommodation and Food Services	46	18.7%	6	0.3%	52	2.8%	32	1.4%
Transport, Postal and Warehousing	14	5.8%	50	3.1%	65	3.4%	75	3.2%
Information Media and Telecommunications	0	0.0%	7	0.4%	7	0.4%	16	0.7%
Financial and Insurance Services	0	0.0%	40	2.4%	40	2.1%	31	1.3%
Rental, Hiring and Real Estate Services	3	1.4%	3	0.2%	7	0.4%	17	0.7%
Ownership of dwellings ^b	15	6.0%	2	0.1%	16	0.9%	57	2.4%
Professional, Scientific and Technical Services	0	0.0%	19	1.1%	19	1.0%	37	1.6%
Administrative and Support Services	0	0.0%	8	0.5%	8	0.4%	24	1.0%
Public Administration and Safety	0	0.0%	0	0.0%	0	0.0%	29	1.2%
Education and Training	4	1.6%	27	1.7%	31	1.7%	31	1.3%
Health Care and Social Assistance	0	0.0%	13	0.8%	13	0.7%	29	1.3%
Arts and Recreation Services	3	1.4%	10	0.6%	13	0.7%	17	0.7%
Other Services	1	0.5%	5	0.3%	6	0.3%	27	1.2%
Total Intermediate	148	60.6%	1,615	99.2%	1,764	94.1%	1,178	50.5%
PRIMARY INPUTS								
Household Income	0	0.0%	0	0.0%	0	0.0%	-	-
GOS and GMI ^c	0	0.0%	0	0.0%	0	0.0%	-	-
Taxes Less Subsidies	16	6.4%	1	0.0%	16	0.9%	-	-
Imports	81	33.0%	13	0.8%	94	5.0%	-	-
Primary Inputs Total	97	39.4%	14	0.8%	110	5.9%	-	-
FINAL DEMAND								
Household Expenditure	-	-	-	-	-	-	784	33.6%
Government Expenditure	-	-	-	-	-	-	152	6.5%
Gross Fixed Capital	-	-	-	-	-	-	127	5.4%
Change in Inventories	-	-	-	-	-	-	0	0.0%
Tourism	-	-	-	-	-	-	81	3.5%
Other Exports	-	-	-	-	-	-	13	0.5%
Final Demand Total	-	-	-	-	-	-	1,157	49.5%
GRAND TOTAL	245	100.0%	1,629	100.0%	1,874	100.0%	2,335	100%

Table 3-3Value of imports and exports by industry, Barossa RDA region, 2014/15 a

^{a-c} See footnotes for Table 3-1.

Source: EconSearch analysis.



3.2 Barossa-East Light Region

3.2.1 Employment

It was estimated that there were about 12,200 jobs (almost 11,700 fte jobs) in the Barossa-East Light region in 2014/15 (Table 3-4). A sectoral breakdown of employment, household income and household expenditure for the Barossa-East Light region in 2014/15 is provided in Table 3-4. The top five contributors to total employment in the region in 2014/15 were:

- manufacturing (26.7 per cent);
- agriculture, forestry and fishing (11.0 per cent);
- health and community services (10.7 per cent);
- retail trade (10.0 per cent); and
- education and training (6.6 per cent).

In 2014/15 employment in South Australia was approximately 731,900 (total jobs) which means the Barossa-East Light region accounts for approximately 1.7 per cent of the total state employment.

3.2.2 Gross Regional Product

GRP in the Barossa-East Light region in 2014/15 was estimated to be almost \$1.4 billion (Table 3-5). In 2014/15, the top five contributors to GRP were:

- manufacturing (28.6 per cent);
- agriculture, forestry and fishing (11.1 per cent);
- ownership of dwellings (8.4 per cent);
- health care and social assistance (5.9 per cent); and
- retail trade (5.1 per cent).

In 2014/15 South Australia's gross state product was \$98.6 billion which means that the Barossa-East Light region accounts for approximately 1.4 per cent of the state economy.

3.2.3 Imports and Exports

A breakdown of the value of imports and exports by industry sector for the Barossa-East Light region in 2014/15 is provided in Table 3-6. Some of the key points to note from these data follow.

- Expenditure by households accounted for about 29 per cent of the total value of goods and services imported into the region in 2014/15 from intrastate (i.e. other regions within SA), interstate and overseas.
- Among of the intermediate sectors, the top importers in the region in 2014/15 were the manufacturing (19 per cent) and agriculture, forestry and fishing (6 per cent) sectors.
- Expenditure by tourists (\$167m) contributed approximately 15 per cent of the total value of exports from the region in 2014/15. The balance (i.e. 'other exports'), about \$952m, represents the value of goods and services purchased by consumers (i.e. households, businesses, governments, etc.) in other regions within SA, interstate and internationally.
- Total regional expenditure by tourists (\$167m) comprised about 3 per cent of the SA total expenditure by tourists in 2014/15 (\$5.3b).
- The top contributors to the value of 'other exports' from the region in 2014/15 were the manufacturing (66 per cent) and agriculture, forestry and fishing (12 per cent) sectors.
- The trade balance (i.e. exports less imports) in the Barossa-East Light region in 2014/15 was approximately -\$34m.

	Total Employment		FTE Emplo	FTE Employment		Household Income		Household Expenditure	
SECTOR	(jobs)	(%)	(fte)	(%)	(\$m)	(%)	(\$m)	(%)	
Agriculture, Forestry and Fishing	1,343	11.0%	1,515	13.0%	80	10.4%	5	0.6%	
Mining	79	0.6%	89	0.8%	5	0.7%	0	0.0%	
Manufacturing	3,271	26.7%	3,313	28.4%	204	26.6%	40	4.8%	
Electricity, Gas, Water and Waste Services	47	0.4%	61	0.5%	5	0.7%	7	0.8%	
Construction	659	5.4%	681	5.8%	57	7.4%	0	0.0%	
Wholesale trade	265	2.2%	288	2.5%	29	3.8%	21	2.6%	
Retail trade	1,226	10.0%	1,012	8.7%	53	6.9%	79	9.4%	
Accommodation and Food Services	738	6.0%	552	4.7%	28	3.6%	37	4.4%	
Transport, Postal and Warehousing	421	3.4%	476	4.1%	40	5.3%	14	1.7%	
Information Media and Telecommunications	124	1.0%	93	0.8%	6	0.7%	5	0.6%	
Financial and Insurance Services	121	1.0%	118	1.0%	15	1.9%	11	1.3%	
Rental, Hiring and Real Estate Services	101	0.8%	91	0.8%	9	1.2%	1	0.1%	
Ownership of dwellings ^b	0	0.0%	0	0.0%	0	0.0%	139	16.6%	
Professional, Scientific and Technical Services	412	3.4%	370	3.2%	23	3.0%	2	0.3%	
Administrative and Support Services	536	4.4%	458	3.9%	29	3.7%	2	0.2%	
Public Administration and Safety	239	2.0%	237	2.0%	20	2.6%	0	0.0%	
Education and Training	804	6.6%	809	6.9%	57	7.4%	28	3.3%	
Health Care and Social Assistance	1,308	10.7%	1,025	8.8%	80	10.4%	26	3.1%	
Arts and Recreation Services	88	0.7%	72	0.6%	6	0.8%	8	1.0%	
Other Services	465	3.8%	419	3.6%	22	2.9%	16	1.9%	
Total Intermediate	12,248	100.0%	11,676	100.0%	767	100.0%	441	52.6%	
PRIMARY INPUTS									
Household Income	-	-	-	-	-	-	0	0.0%	
GOS and GMI ^c	-	-	-	-	-	-	0	0.0%	
Taxes Less Subsidies	-	-	-	-	-	-	59	7.0%	
Imports	-	-	-	-	-	-	340	40.5%	
Primary Inputs Total	-	-	-	-	-	-	398	47.4%	
GRAND TOTAL	12,248	100.0%	11,676	100.0%	767	100.0%	839	100.0%	

Table 3-4 Employment, household income and household expenditure, Barossa-East Light region, 2014/15 ^a

^{a-c} See footnotes for Table 3-1.

Source: EconSearch analysis

	Household Income		GOS and	GOS and GMI*		Taxes less Subsidies		Gross Regional Product	
SECTOR	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)	
Agriculture, Forestry and Fishing	80	10.4%	69	15.1%	4	5.7%	153	11.1%	
Mining	5	0.7%	6	1.4%	1	0.9%	12	0.9%	
Manufacturing	204	26.6%	170	37.0%	22	32.4%	397	28.6%	
Electricity, Gas, Water and Waste Services	5	0.7%	9	1.9%	1	1.0%	15	1.0%	
Construction	57	7.4%	0	0.0%	4	6.4%	61	4.4%	
Wholesale trade	29	3.8%	17	3.7%	2	2.4%	48	3.4%	
Retail trade	53	6.9%	14	3.0%	3	4.4%	70	5.1%	
Accommodation and Food Services	28	3.6%	12	2.5%	5	7.1%	44	3.2%	
Transport, Postal and Warehousing	40	5.3%	10	2.3%	5	6.6%	57	4.1%	
Information Media and Telecommunications	6	0.7%	8	1.7%	0	0.4%	14	1.0%	
Financial and Insurance Services	15	1.9%	27	6.0%	2	3.3%	44	3.2%	
Rental, Hiring and Real Estate Services	9	1.2%	5	1.1%	2	2.2%	16	1.1%	
Ownership of dwellings ^b	0	0.0%	104	22.6%	12	16.9%	116	8.4%	
Professional, Scientific and Technical Services	23	3.0%	0	0.0%	1	1.3%	23	1.7%	
Administrative and Support Services	29	3.7%	0	0.0%	1	1.9%	30	2.2%	
Public Administration and Safety	20	2.6%	3	0.7%	1	1.2%	24	1.7%	
Education and Training	57	7.4%	4	0.8%	1	1.3%	61	4.4%	
Health Care and Social Assistance	80	10.4%	0	0.0%	2	2.6%	81	5.9%	
Arts and Recreation Services	6	0.8%	1	0.2%	0	0.3%	7	0.5%	
Other Services	22	2.9%	1	0.3%	1	1.8%	25	1.8%	
Total	767	100.0%	461	100.0%	69	100.0%			
Net Taxes in Final Demand							88	6.3%	
Gross Regional Product							1,386	100.0%	

Table 3-5Components of gross regional product in the Barossa-East Light region by industry, 2014/15 a

^{a-c} See footnotes for Table 3-1.

Source: EconSearch analysis

	Tourism		Other Exp	Other Exports		orts	Imports	
SECTOR	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)
Agriculture, Forestry and Fishing	0	0.0%	111	11.6%	111	9.9%	74	6.4%
Mining	0	0.0%	14	1.4%	14	1.2%	4	0.3%
Manufacturing	12	7.1%	625	65.7%	637	56.9%	218	18.9%
Electricity, Gas, Water and Waste Services	0	0.0%	8	0.8%	8	0.7%	5	0.4%
Construction	0	0.0%	67	7.0%	67	6.0%	53	4.6%
Wholesale trade	5	3.3%	18	1.9%	24	2.1%	33	2.8%
Retail trade	33	19.8%	0	0.0%	33	3.0%	27	2.3%
Accommodation and Food Services	35	20.9%	10	1.0%	45	4.0%	18	1.6%
Transport, Postal and Warehousing	8	4.8%	30	3.2%	38	3.4%	42	3.6%
Information Media and Telecommunications	0	0.0%	6	0.6%	6	0.5%	6	0.5%
Financial and Insurance Services	0	0.0%	24	2.5%	24	2.1%	13	1.1%
Rental, Hiring and Real Estate Services	2	1.1%	7	0.7%	9	0.8%	8	0.7%
Ownership of dwellings ^b	10	5.8%	2	0.3%	12	1.1%	27	2.4%
Professional, Scientific and Technical Services	0	0.0%	5	0.5%	5	0.4%	12	1.1%
Administrative and Support Services	0	0.0%	3	0.3%	3	0.2%	16	1.4%
Public Administration and Safety	0	0.0%	0	0.0%	0	0.0%	9	0.8%
Education and Training	2	1.5%	6	0.6%	8	0.7%	10	0.8%
Health Care and Social Assistance	0	0.0%	6	0.6%	6	0.5%	13	1.2%
Arts and Recreation Services	2	1.3%	2	0.2%	4	0.4%	5	0.4%
Other Services	1	0.5%	1	0.1%	2	0.2%	12	1.1%
Total Intermediate	110	66.0%	944	99.2%	1,055	94.3%	604	52.4%
PRIMARY INPUTS								
Household Income	0	0.0%	0	0.0%	0	0.0%	-	-
GOS and GMI ^c	0	0.0%	0	0.0%	0	0.0%	-	-
Taxes Less Subsidies	11	6.4%	0	0.0%	11	1.0%	-	-
Imports	46	27.6%	7	0.7%	53	4.7%	-	-
Primary Inputs Total	57	34.0%	7	0.8%	64	5.7%	-	-
FINAL DEMAND								
Household Expenditure	-	-	-	-	-	-	340	29.5%
Government Expenditure	-	-	-	-	-	-	106	9.2%
Gross Fixed Capital	-	-	-	-	-	-	51	4.4%
Change in Inventories	-	-	-	-	-	-	0	0.0%
Tourism	-	-	-	-	-	-	46	4.0%
Other Exports	-	-	-	-	-	-	7	0.6%
Final Demand Total	-	-	-	-	-	-	549	47.6%
GRAND TOTAL	167	100.0%	952	100.0%	1,119	100.0%	1,153	100%

Table 3-6	Value of imports and exports	by industry, Barossa-East	Light region, 2014/15 ^a
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^{a-c} See footnotes for Table 3-1.

Source: EconSearch analysis.



3.3 Mallala-West Light Region

3.3.1 Employment

It was estimated that there were about 3,100 jobs (almost 3,200 fte jobs) in the Mallala-West Light region in 2014/15 (Table 3-7). A sectoral breakdown of employment, household income and household expenditure for the Mallala-West Light region in 2014/15 is provided in Table 3-7. The top five contributors to total employment in the region in 2014/15 were:

- agriculture, forestry and fishing (35.7 per cent);
- manufacturing (10.0 per cent);
- construction (9.0 per cent);
- transport, postal and warehousing (7.9 per cent); and
- education and training (6.1 per cent).

In 2014/15 employment in South Australia was approximately 731,900 (total jobs) which means the Mallala-West Light region accounts for approximately 0.4 per cent of the total state employment.

3.3.2 Gross Regional Product

GRP in the Mallala-West Light region in 2014/15 was estimated to be about \$483 million (Table 3-8). In 2014/15, the top five contributors to GRP were:

- agriculture, forestry and fishing (43.2 per cent);
- ownership of dwellings (11.4 per cent);
- manufacturing (8.1 per cent);
- transport, postal and warehousing (5.7 per cent); and
- construction (5.0 per cent).

In 2014/15 South Australia's gross state product was \$98.6 billion which means that the Mallala-West Light region accounts for approximately 0.5 per cent of the state economy.

3.3.3 Imports and Exports

A breakdown of the value of imports and exports by industry sector for the Mallala-West Light region in 2014/15 is provided in Table 3-9. Some of the key points to note from these data follow.

- Expenditure by households accounted for about 38 per cent of the total value of goods and services imported into the region in 2014/15 from intrastate (i.e. other regions within SA), interstate and overseas.
- Among of the intermediate sectors, the top importers in the region in 2014/15 were agriculture, forestry and fishing (21 per cent) and the construction (5 per cent) sectors.
- Expenditure by tourists (\$27m) contributed approximately 6 per cent of the total value of exports from the region in 2014/15. The balance (i.e. 'other exports'), about \$424m, represents the value of goods and services purchased by consumers (i.e. households, businesses, governments, etc.) in other regions within SA, interstate and internationally.
- Total regional expenditure by tourists (\$27m) comprised about 1 per cent of the SA total expenditure by tourists in 2014/15 (\$5.3b).
- The top contributors to the value of 'other exports' from the region in 2014/15 were the agriculture, forestry and fishing (74 per cent) and manufacturing (9 per cent) sectors.
- The trade balance (i.e. exports less imports) in the Mallala-West Light region in 2014/15 was approximately -\$125m.



	Total Empl	oyment	FTE Emplo	yment	Household	Income	Household Expenditure	
SECTOR	(jobs)	(%)	(fte)	(%)	(\$m)	(%)	(\$m)	(%)
Agriculture, Forestry and Fishing	1,118	35.7%	1,237	39.2%	62	29.6%	2	0.5%
Mining	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Manufacturing	312	10.0%	312	9.9%	26	12.2%	15	3.8%
Electricity, Gas, Water and Waste Services	25	0.8%	16	0.5%	2	1.0%	0	0.0%
Construction	281	9.0%	262	8.3%	23	11.1%	0	0.0%
Wholesale trade	131	4.2%	122	3.9%	13	6.0%	11	2.7%
Retail trade	121	3.9%	122	3.9%	6	3.1%	8	2.0%
Accommodation and Food Services	110	3.5%	105	3.3%	5	2.4%	10	2.5%
Transport, Postal and Warehousing	247	7.9%	287	9.1%	25	11.8%	6	1.6%
Information Media and Telecommunications	3	0.1%	6	0.2%	0	0.1%	0	0.0%
Financial and Insurance Services	4	0.1%	6	0.2%	0	0.2%	0	0.1%
Rental, Hiring and Real Estate Services	14	0.4%	13	0.4%	1	0.7%	0	0.0%
Ownership of dwellings ^b	0	0.0%	0	0.0%	0	0.0%	69	17.3%
Professional, Scientific and Technical Services	90	2.9%	76	2.4%	6	3.0%	2	0.4%
Administrative and Support Services	56	1.8%	27	0.9%	1	0.6%	0	0.1%
Public Administration and Safety	92	3.0%	94	3.0%	8	3.9%	0	0.1%
Education and Training	191	6.1%	201	6.4%	15	7.3%	12	2.9%
Health Care and Social Assistance	179	5.7%	122	3.9%	10	4.6%	4	0.9%
Arts and Recreation Services	22	0.7%	25	0.8%	2	1.1%	4	1.0%
Other Services	131	4.2%	120	3.8%	3	1.5%	5	1.3%
Total Intermediate	3,128	100.0%	3,155	100.0%	210	100.0%	149	37.4%
PRIMARY INPUTS								
Household Income	-	-	-	-	-	-	0	0.0%
GOS and GMI ^c	-	-	-	-	-	-	0	0.0%
Taxes Less Subsidies	-	-	-	-	-	-	28	7.0%
Imports	-	-	-	-	-	-	222	55.6%
Primary Inputs Total	-	-	-	-	-	-	249	62.6%
GRAND TOTAL	3,128	100.0%	3,155	100.0%	210	100.0%	398	100.0%

 Table 3-7
 Employment, household income and household expenditure, Mallala-West Light region, 2014/15 a

^{a-c} See footnotes for Table 3-1.

Source: EconSearch analysis

Table 3-8 Components of gross regional	product in the Mallala-West Light region by industr	y, 2014/15 °
		// - / -

	Household Income		GOS and	GOS and GMI*		Taxes less Subsidies		Gross Regional Product	
SECTOR	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)	
Agriculture, Forestry and Fishing	62	29.6%	141	65.3%	5	27.2%	209	43.2%	
Mining	0	0.0%	0	0.0%	0	0.0%	0	0.0%	
Manufacturing	26	12.2%	12	5.5%	2	8.3%	39	8.1%	
Electricity, Gas, Water and Waste Services	2	1.0%	0	0.2%	0	0.6%	3	0.6%	
Construction	23	11.1%	0	0.0%	2	7.9%	24	5.0%	
Wholesale trade	13	6.0%	6	2.6%	1	3.2%	19	3.9%	
Retail trade	6	3.1%	0	0.0%	0	1.5%	7	1.4%	
Accommodation and Food Services	5	2.4%	1	0.6%	1	3.9%	7	1.5%	
Transport, Postal and Warehousing	25	11.8%	2	0.9%	2	11.2%	28	5.7%	
Information Media and Telecommunications	0	0.1%	0	0.0%	0	0.0%	0	0.0%	
Financial and Insurance Services	0	0.2%	1	0.3%	0	0.2%	1	0.2%	
Rental, Hiring and Real Estate Services	1	0.7%	0	0.2%	0	1.1%	2	0.4%	
Ownership of dwellings ^b	0	0.0%	49	22.9%	6	27.6%	55	11.4%	
Professional, Scientific and Technical Services	6	3.0%	0	0.0%	0	1.6%	8	1.7%	
Administrative and Support Services	1	0.6%	0	0.0%	0	0.3%	1	0.3%	
Public Administration and Safety	8	3.9%	1	0.6%	0	1.6%	10	2.0%	
Education and Training	15	7.3%	2	0.8%	0	1.4%	17	3.6%	
Health Care and Social Assistance	10	4.6%	0	0.0%	0	1.2%	11	2.2%	
Arts and Recreation Services	2	1.1%	1	0.2%	0	0.4%	3	0.6%	
Other Services	3	1.5%	0	0.0%	0	0.8%	3	0.7%	
Total	210	100.0%	216	100.0%	20	100.0%			
Net Taxes in Final Demand							36	7.5%	
Gross Regional Product							483	100.0%	

^{a-c} See footnotes for Table 3-1.

Source: EconSearch analysis
	Touris	m	Other Exp	oorts	Total Exp	orts	Import	S
SECTOR	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)
Agriculture, Forestry and Fishing	0	0.0%	315	74.3%	315	69.9%	119	20.7%
Mining	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Manufacturing	1	7.7%	37	8.8%	38	8.5%	23	3.9%
Electricity, Gas, Water and Waste Services	0	0.0%	1	0.2%	1	0.2%	0	0.0%
Construction	0	0.0%	37	8.7%	37	8.2%	30	5.2%
Wholesale trade	1	7.7%	5	1.2%	6	1.3%	11	1.9%
Retail trade	3	23.6%	0	0.0%	3	0.6%	3	0.6%
Accommodation and Food Services	4	30.9%	0	0.0%	4	0.8%	2	0.4%
Transport, Postal and Warehousing	1	8.3%	20	4.6%	21	4.6%	23	4.1%
Information Media and Telecommunications	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Financial and Insurance Services	0	0.0%	0	0.0%	0	0.0%	0	0.1%
Rental, Hiring and Real Estate Services	0	0.0%	0	0.1%	0	0.1%	1	0.1%
Ownership of dwellings ^b	2	15.4%	2	0.4%	4	0.8%	15	2.5%
Professional, Scientific and Technical Services	0	0.0%	1	0.3%	1	0.2%	5	0.8%
Administrative and Support Services	0	0.0%	0	0.1%	0	0.1%	1	0.1%
Public Administration and Safety	0	0.0%	0	0.0%	0	0.0%	4	0.7%
Education and Training	0	1.9%	0	0.1%	0	0.1%	5	0.8%
Health Care and Social Assistance	0	0.0%	0	0.0%	0	0.0%	1	0.2%
Arts and Recreation Services	0	3.4%	2	0.4%	2	0.5%	2	0.4%
Other Services	0	1.0%	0	0.0%	0	0.0%	2	0.3%
Total Intermediate	11	42.7%	421	99.4%	433	96.0%	248	43.0%
PRIMARY INPUTS								
Household Income	0	0.0%	0	0.0%	0	0.0%	-	-
GOS and GMI ^c	0	0.0%	0	0.0%	0	0.0%	-	-
Taxes Less Subsidies	2	8.6%	0	0.0%	2	0.5%	-	-
Imports	13	48.8%	2	0.6%	15	3.4%	-	-
Primary Inputs Total	15	57.3%	3	0.6%	18	4.0%	-	-
FINAL DEMAND								
Household Expenditure	-	-	-	-	-	-	222	38.5%
Government Expenditure	-	-	-	-	-	-	48	8.3%
Gross Fixed Capital	-	-	-	-	-	-	43	7.5%
Change in Inventories	-	-	-	-	-	-	0	0.0%
Tourism	-	-	-	-	-	-	13	2.3%
Other Exports	-	-	-	-	-	-	2	0.4%
Final Demand Total	-	-	-	-	-	-	328	57.0%
GRAND TOTAL	27	100.0%	424	100.0%	451	100.0%	576	100%

Table 3-9Value of imports and exports by industry, Mallala-West Light region, 2014/15 °

^{a-c} See footnotes for Table 3-1.

Source: EconSearch analysis.



3.4 Greater Gawler Region

3.4.1 Employment

It was estimated that there were almost 6,700 jobs (about 5,800 fte jobs) in the Greater Gawler region in 2014/15 (Table 3-10). A sectoral breakdown of employment, household income and household expenditure for the Greater Gawler region in 2014/15 is provided in Table 3-10. The top five contributors to total employment in the region in 2014/15 were:

- health and community services (20.7 per cent);
- education and training (15.6 per cent);
- retail trade (14.3 per cent);
- manufacturing (7.4 per cent); and
- construction (7.1 per cent);.

In 2014/15 employment in South Australia was approximately 731,900 (total jobs) which means the Greater Gawler region accounts for approximately 0.9 per cent of the total state employment.

3.4.2 Gross Regional Product

GRP in the Greater Gawler region in 2014/15 was estimated to be about \$763 million (Table 3-11). In 2014/15, the top five contributors to GRP were:

- ownership of dwellings (14.5 per cent);
- health care and social assistance (10.7 per cent);
- manufacturing (9.8 per cent);
- education and training (9.7 per cent);
- financial and insurance services (6.5 per cent).

In 2014/15 South Australia's gross state product was \$98.6 billion which means that the Greater Gawler region accounts for approximately 0.8 per cent of the state economy.

3.4.3 Imports and Exports

A breakdown of the value of imports and exports by industry sector for the Greater Gawler region in 2014/15 is provided in Table 3-12. Some of the key points to note from these data follow.

- Expenditure by households accounted for about 49 per cent of the total value of goods and services imported into the region in 2014/15 from intrastate (i.e. other regions within SA), interstate and overseas.
- Among of the intermediate sectors, the top importers in the region in 2014/15 were the manufacturing (9 per cent) and agriculture, forestry and fishing (4 per cent) sectors.
- Expenditure by tourists (\$51m) contributed approximately 15 per cent of the total value of exports from the region in 2014/15. The balance (i.e. 'other exports'), about \$297m, represents the value of goods and services purchased by consumers (i.e. households, businesses, governments, etc.) in other regions within SA, interstate and internationally.
- Total regional expenditure by tourists (\$51m) comprised about 1 per cent of the SA total expenditure by tourists in 2014/15 (\$5.3b).
- The top contributors to the value of 'other exports' from the region in 2014/15 were the construction (23 per cent) and manufacturing (21 per cent) sectors.
- The trade balance (i.e. exports less imports) in the Greater Gawler region in 2014/15 was approximately -\$301m.

	Total Empl	oyment FTE Employment		Household	Income	Household Ex	kpenditure	
SECTOR	(jobs)	(%)	(fte)	(%)	(\$m)	(%)	(\$m)	(%)
Agriculture, Forestry and Fishing	141	2.1%	172	3.0%	8	1.9%	4	0.6%
Mining	5	0.1%	7	0.1%	0	0.1%	0	0.0%
Manufacturing	495	7.4%	550	9.5%	48	11.5%	32	4.0%
Electricity, Gas, Water and Waste Services	9	0.1%	9	0.2%	1	0.2%	3	0.3%
Construction	471	7.1%	481	8.3%	38	9.0%	0	0.0%
Wholesale trade	143	2.2%	146	2.5%	15	3.6%	18	2.3%
Retail trade	951	14.3%	656	11.3%	34	8.1%	71	8.8%
Accommodation and Food Services	390	5.9%	250	4.3%	12	2.8%	27	3.4%
Transport, Postal and Warehousing	128	1.9%	142	2.4%	12	2.8%	7	0.9%
Information Media and Telecommunications	53	0.8%	63	1.1%	4	1.0%	5	0.6%
Financial and Insurance Services	122	1.8%	107	1.8%	14	3.2%	13	1.6%
Rental, Hiring and Real Estate Services	97	1.5%	104	1.8%	11	2.6%	1	0.1%
Ownership of dwellings ^b	0	0.0%	0	0.0%	0	0.0%	139	17.4%
Professional, Scientific and Technical Services	349	5.2%	349	6.0%	27	6.4%	3	0.4%
Administrative and Support Services	162	2.4%	108	1.9%	8	1.9%	1	0.2%
Public Administration and Safety	243	3.7%	246	4.2%	20	4.8%	1	0.1%
Education and Training	1,037	15.6%	968	16.7%	68	16.1%	35	4.4%
Health Care and Social Assistance	1,377	20.7%	1,050	18.1%	80	18.9%	37	4.7%
Arts and Recreation Services	113	1.7%	65	1.1%	6	1.4%	8	1.0%
Other Services	364	5.5%	338	5.8%	15	3.6%	18	2.2%
Total Intermediate	6,650	100.0%	5,813	100.0%	423	100.0%	424	53.0%
PRIMARY INPUTS								
Household Income	-	-	-	-	-	-	0	0.0%
GOS and GMI ^c	-	-	-	-	-	-	0	0.0%
Taxes Less Subsidies	-	-	-	-	-	-	56	7.0%
Imports	-	-	-	-	-	-	320	40.0%
Primary Inputs Total	-	-	-	-	-	-	376	47.0%
GRAND TOTAL	6,650	100.0%	5,813	100.0%	423	100.0%	800	100.0%

 Table 3-10
 Employment, household income and household expenditure, Greater Gawler region, 2014/15 a

^{a-c} See footnotes for Table 3-1.

Source: EconSearch analysis

	Household	Income	GOS and	GMI*	Taxes less Si	ubsidies	Gross Regional Product	
SECTOR	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)
Agriculture, Forestry and Fishing	8	1.9%	37	15.4%	1	2.7%	46	6.0%
Mining	0	0.1%	1	0.3%	0	0.2%	1	0.2%
Manufacturing	48	11.5%	23	9.6%	4	9.8%	75	9.8%
Electricity, Gas, Water and Waste Services	1	0.2%	2	0.7%	0	0.2%	3	0.3%
Construction	38	9.0%	0	0.0%	3	8.2%	41	5.4%
Wholesale trade	15	3.6%	5	2.2%	1	2.0%	21	2.8%
Retail trade	34	8.1%	12	5.0%	2	5.8%	48	6.3%
Accommodation and Food Services	12	2.8%	4	1.7%	2	5.6%	18	2.4%
Transport, Postal and Warehousing	12	2.8%	1	0.2%	1	2.8%	13	1.6%
Information Media and Telecommunications	4	1.0%	4	1.7%	0	0.6%	8	1.1%
Financial and Insurance Services	14	3.2%	34	14.1%	3	7.2%	50	6.5%
Rental, Hiring and Real Estate Services	11	2.6%	9	3.8%	2	6.5%	23	3.0%
Ownership of dwellings ^b	0	0.0%	99	41.4%	11	30.9%	110	14.5%
Professional, Scientific and Technical Services	27	6.4%	0	0.0%	1	3.0%	27	3.6%
Administrative and Support Services	8	1.9%	0	0.0%	0	1.0%	8	1.1%
Public Administration and Safety	20	4.8%	3	1.4%	1	2.4%	25	3.2%
Education and Training	68	16.1%	5	2.0%	1	3.1%	74	9.7%
Health Care and Social Assistance	80	18.9%	0	0.0%	2	5.0%	81	10.7%
Arts and Recreation Services	6	1.4%	0	0.2%	0	0.6%	7	0.9%
Other Services	15	3.6%	1	0.2%	1	2.4%	17	2.2%
Total	423	100.0%	240	100.0%	36	100.0%		
Net Taxes in Final Demand							67	8.8%
Gross Regional Product							763	100.0%

 Table 3-11
 Components of gross regional product in the Greater Gawler region by industry, 2014/15 a

^{a-c} See footnotes for Table 3-1.

Source: EconSearch analysis

Table 3-12	Value of imports and	exports by industry,	Greater Gawler region,	, 2014/15 ^a
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	Touris	m	Other Exp	oorts	Total Exp	orts	Import	S
SECTOR	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)	(\$m)	(%)
Agriculture, Forestry and Fishing	0	0.0%	52	17.4%	52	14.9%	27	4.1%
Mining	0	0.0%	0	0.1%	0	0.1%	1	0.1%
Manufacturing	2	3.6%	61	20.6%	63	18.1%	57	8.7%
Electricity, Gas, Water and Waste Services	0	0.0%	0	0.1%	0	0.1%	0	0.1%
Construction	0	0.0%	69	23.4%	69	20.0%	23	3.6%
Wholesale trade	1	2.8%	5	1.6%	6	1.8%	9	1.3%
Retail trade	8	14.8%	1	0.2%	8	2.4%	19	2.9%
Accommodation and Food Services	7	14.0%	0	0.1%	7	2.1%	10	1.5%
Transport, Postal and Warehousing	2	4.1%	4	1.3%	6	1.7%	5	0.7%
Information Media and Telecommunications	0	0.0%	4	1.3%	4	1.1%	3	0.4%
Financial and Insurance Services	0	0.0%	19	6.3%	19	5.4%	8	1.2%
Rental, Hiring and Real Estate Services	1	2.7%	3	1.2%	5	1.4%	8	1.2%
Ownership of dwellings ^b	3	5.5%	3	0.9%	5	1.6%	15	2.3%
Professional, Scientific and Technical Services	0	0.0%	6	2.1%	6	1.8%	12	1.9%
Administrative and Support Services	0	0.0%	1	0.2%	1	0.2%	2	0.3%
Public Administration and Safety	0	0.0%	1	0.2%	1	0.2%	7	1.1%
Education and Training	1	1.6%	33	11.0%	33	9.6%	14	2.2%
Health Care and Social Assistance	0	0.0%	28	9.6%	28	8.2%	15	2.2%
Arts and Recreation Services	1	1.7%	3	1.1%	4	1.1%	4	0.7%
Other Services	0	0.5%	1	0.3%	1	0.3%	9	1.4%
Total Intermediate	26	51.1%	293	98.8%	319	91.8%	246	38.0%
PRIMARY INPUTS								
Household Income	0	0.0%	0	0.0%	0	0.0%	-	-
GOS and GMI ^c	0	0.0%	0	0.0%	0	0.0%	-	-
Taxes Less Subsidies	3	5.0%	0	0.1%	3	0.8%	-	-
Imports	22	43.8%	3	1.1%	26	7.4%	-	-
Primary Inputs Total	25	48.9%	4	1.2%	28	8.2%	-	-
FINAL DEMAND								
Household Expenditure	-	-	-	-	-	-	320	49.4%
Government Expenditure	-	-	-	-	-	-	23	3.6%
Gross Fixed Capital	-	-	-	-	-	-	33	5.1%
Change in Inventories	-	-	-	-	-	-	0	0.0%
Tourism	-	-	-	-	-	-	22	3.4%
Other Exports	-	-	-	-	-	-	3	0.5%
Final Demand Total	-	-	-	-	-	-	402	62.0%
GRAND TOTAL	51	100.0%	297	100.0%	348	100.0%	648	100%

^{a-c} See footnotes for Table 3-1.

Source: EconSearch analysis.



4. THE CONTRIBUTION OF THE WINE AND AGRICULTURAL INDUSTRIES TO THE REGIONAL ECONOMY

4.1 Method of Analysis

It is clear that the wine and agricultural industries makes a significant economic contribution to the Barossa RDA region. However, estimates of employment, value of output and gross regional product for the regional wine, viticulture and other agricultural sectors do not take account of the flow-on or indirect effects of these activities.

To illustrate this, consider the example of a vineyard that, in the course of its operation, purchases goods and services from other sectors. These goods and services would include fuel, chemicals and, of course, labour. Suppliers and employees, in turn, engage in further expenditure, and so on. These flow-on or indirect effects are part of the impact of the vineyard on the regional economy. They must be added to the direct effects (which are expenditures made in immediate support of the vineyard itself) in order to arrive at a measure of the total impact of the vineyard.

The flow-on effects of the wine and agricultural industries in the Barossa RDA region have been estimated using I-O analysis. Regional I-O models for the Barossa-East light and Mallala-West Light regions for 2014/15 were prepared specifically for this project, consistent with the method and data sources in EconSearch (2015).

Estimates of regional economic impact or economic contribution of the wine and agricultural industries are presented in terms of

- direct impacts;
- flow-on (or indirect) impacts; and
- total impacts.

Direct impacts are the initial round of output, employment and household income generated by an economic activity. Estimates of the direct economic impact of the wine industry in the Barossa RDA region are consistent with the method employed in PIRSA's *Regional Scorecards* value-chain analysis, 2006/07. The following stages in the marketing chain have, therefore, been included in the quantifiable economic impact:

- the direct value of output of the viticulture, wine and other agricultural and food manufacturing sectors; and
- downstream impacts, including the net value of local retail and food service (e.g. hotels & restaurants) trade.



Estimates of the net value of local retail and food service trade margins were derived from PIRSA's *Food Scorecard 2014-15* and *Wine Scorecard 2014-15* (PIRSA 2016a and 2016b).

Flow-on (or indirect) impacts are the sum of production-induced effects and consumptioninduced effects. Production-induced effects are additional output, employment and household income resulting from re-spending by firms (e.g. spraying contractors) that receive payments from the sale of goods and services to firms undertaking, for example, winegrape production. Consumption-induced effects are additional output, employment and household income resulting from re-spending by households that receive income from employment in direct and indirect activities.

Total impacts are the sum of direct and flow-on impacts.

Estimates of the total (direct plus flow-on) regional economic impact of the wine industry on the Barossa RDA and Barossa-East Light regional economy in 2014/15 are provided in Table 4-1 and Table 4-2 respectively. The direct impact measures wine industry (i.e. viticulture and wine) and downstream activities (i.e. retail/food services). The flow-on impact measures the economic effects in other sectors of the economy (trade, transport, manufacturing, etc.) generated by the wine industry activity, that is, the multiplier effect. Table 4-3 and Table 4-4, provide similar estimates of the regional economic impact of the agricultural and food manufacturing industries on the Barossa RDA and Mallala-West Light region.

4.2 Results of the Wine Impact Analysis

4.2.1 Barossa RDA

Value of output...

The value of output generated directly in the regional economy from wine industry activities (i.e. viticulture and wine) was estimated to be approximately \$751 million in 2014/15 (Table 4-1), while output generated in the region by associated downstream activities (i.e. retail/food services) summed to \$2 million.

Gross regional product...

As noted above, GRP is measured as value of output less the cost of goods and services (including imports) used in producing the output. In 2014/15, total GRP in the Barossa RDA region attributable to the wine industry was approximately \$548 million, \$68 million generated by viticulture directly, \$290 million generated by the wine sector directly, \$1 million generated by downstream activities and \$189 million generated in other sectors of the regional economy. Total GRP attributable to the wine industry represented 21 per cent of the regional total.



Employment...

The wine industry (i.e. viticulture and wine) was responsible for the direct employment of around 3,222 full-time equivalents (fte) and downstream activities created employment for a further 16 fte in the region in 2014/15. Flow-on business activity was estimated to generate a further 1,322 fte jobs. These jobs were concentrated in the other manufacturing (326 fte), trade (247), property and business services (230), transport (93), accommodation, restaurants and cafes (79). The total employment impact generated by wine industry activities in the Barossa RDA region in 2014/15 was estimated to be almost 4,560 fte jobs, which represented 22 per cent of the regional total.

	Value of Output ^a	GRP	Employment	Household Income
	\$m	\$m	fte	\$m
Direct Impact				
Viticulture ^b	115	68	933	50
Wine	636	290	2,289	124
Retail	0	0	0	0
Food Services	2	1	15	1
Total Direct Impact	753	359	3,238	174
Flow-on Impact				
Trade		23	247	17
Transport		10	93	8
Property and business services		22	230	18
Other manufacturing		41	326	22
Accommodation, restaurants and cafes		6	79	4
Ownership of dwellings		36	-	-
Other sectors		50	347	28
Total Flow-on Impact		189	1,322	96
Total Impact		548	4,560	270
Regional total		2,633	20,648	1,400
Proportion of regional total		21%	22%	19%

Table 4-1The direct and indirect impact of the wine industry on the Barossa RDA regional
economy, 2013/14

^a Flow-on (indirect) and total output impacts are not reported as there are problems with double counting which can give a misleading impression of the significance of individual industries. For example, the value of winegrapes processed locally is included in both the wine and viticulture sectors. If the two values were added together the farm-gate value of winegrapes would be included twice.

^b The value of output for the viticultural sector is established from the 2015 South Australia Winegrape Crush Survey (Vinehealth Australia 2015).

Source: EconSearch analysis.



Household income...

Household income of approximately \$50 million was earned in the viticulture sector (wages of employees and estimated drawings by owner/operators), \$124 million in the wine sector and approximately \$1 million in downstream activities in the Barossa RDA region in 2014/15. An additional \$96 million was earned by wage earners in other businesses in the region as a result of wine industry and associated downstream activities. The total household income impact was approximately \$270 million in 2014/15, which represented 19 per cent of the regional total.

4.2.2 Barossa-East Light

Value of output...

The value of output generated directly in the regional economy from wine industry activities (i.e. viticulture and wine) was estimated to be approximately \$703 million in 2014/15 (Table 4-2), while output generated in the region by associated downstream activities (i.e. retail/food services) summed to \$2 million.

Gross regional product...

In 2014/15, total GRP in the Barossa-East Light region attributable to the wine industry was approximately \$505 million, \$63 million generated by viticulture directly, \$280 million generated by the wine sector directly, \$1 million generated by downstream activities and \$161 million generated in other sectors of the regional economy. Total GRP attributable to the wine industry represented 36 per cent of the regional total.

Employment...

The wine industry was responsible for the direct employment of around 3,075 full-time equivalents (fte) and downstream activities created employment for a further 14 fte in the region in 2014/15. Flow-on business activity was estimated to generate a further 1,244 fte jobs. These jobs were concentrated in the other manufacturing (322 fte), trade (241), property and business services (210), transport (87), accommodation, restaurants and cafes (76). The total employment impact generated by wine industry activities in the Barossa-East Light region in 2014/15 was estimated to be almost 4,333 fte jobs, which represented 37 per cent of the regional total.

Household income...

Household income of approximately \$46 million was earned in the viticulture sector (wages of employees and estimated drawings by owner/operators), \$119 million in the wine sector and approximately \$1 million in downstream activities in the Barossa-East Light region in 2014/15. An additional \$88 million was earned by wage earners in other businesses in the region as a result of wine industry and associated downstream activities. The total household income impact was approximately \$767 million in 2014/15, which represented 33 per cent of the regional total.

	Value of Output ^a	GRP	Employment	Household Income	
	\$m	\$m	fte	\$m	
Direct Impact					
Viticulture ^b	106	63	865	46	
Wine	596	280	2,210	119	
Retail	0	0	0	0	
Food Services	2	1	14	1	
Total Direct Impact	705	344	3,090	166	
Flow-on Impact					
Trade		23	241	16	
Transport		10	87	7	
Property and business services		16	210	13	
Other manufacturing		40	322	21	
Accommodation, restaurants and cafes		5	76	4	
Ownership of dwellings		32	-	-	
Other sectors		35	308	26	
Total Flow-on Impact		161	1,244	88	
Total Impact		505	4,333	254	
Regional total		1,386	11,676	767	
Proportion of regional total		36%	37%	33%	

Table 4-2 The direct and indirect impact of the wine industry on the Barossa-East Light regional economy, 2013/14

^{a-b} See footnotes for Table 4-1. Source: EconSearch analysis.

4.3 Results of the Agricultural Impact Analysis

4.3.1 Barossa RDA

Value of output...

The value of output generated directly in the regional economy from agricultural and food manufacturing (food) activities was estimated to be about \$1.6 billion in 2014/15, while output generated in the region by associated downstream activities (i.e. retail/food services) summed to \$12 million.

Table 4-3The direct and indirect impact of the agricultural and food manufacturing
industries on the Barossa RDA regional economy, 2014/15

	Value of Output ^a	GRP	Employment	Household Income
-	\$m	\$m	fte	\$m
Direct Impact				
Primary sectors				
Sheep	40	19	315	16
Grains	178	85	530	28
Beef cattle	4	2	163	4
Dairy cattle	5	2	58	2
Poultry	140	67	166	7
Pigs	99	48	168	8
Other Livestock	37	18	131	6
Viticulture ^b	115	68	933	50
Vegetables	60	31	279	14
Fruit & nuts	0	0	26	1
Other agriculture	88	52	30	2
Manufacturing Sectors				
Meat & Meat Products	39	9	118	6
Dairy Products	3	1	5	0
Fruit & Vegetable Products	92	28	133	18
Oils and Fats Manufacturing	0	0	0	0
Grain Mill & Cereal Products	3	1	10	1
Other Food Products	107	34	288	28
Wine & Spirits	636	290	2,289	124
Service Sectors				
Retail	7	4	63	3
Food Services	4	2	32	1
Total Direct Impact	1,658	761	5,736	320
Flow-on Impact				
Trade		44	448	30
Transport		22	207	18
Property and business services		34	352	27
Other manufacturing		20	164	13
Accommodation, restaurants and cafes		2	17	1
Ownership of dwellings		62	-	-
Other sectors		79	837	62
Total Flow-on Impact		262	2,025	151
Total Impact		1,023	7,761	471
Regional total		2,633	20,648	1,400
Proportion of regional total		39%	38%	34%

^{a-b} See footnotes for Table 4-1.

Source: EconSearch analysis.



Gross regional product...

In 2014/15, total GRP in the Barossa RDA region attributable to the food industry was approximately \$1.0 billion, \$392 million generated by agriculture directly, \$363 million generated by food manufacturing sectors directly, \$7 million generated by downstream activities and \$262 million generated in other sectors of the regional economy. Total GRP attributable to the food industry represented 39 per cent of the regional total.

Employment...

The food industry was responsible for the direct employment of around 5,642 full-time equivalents (fte) and downstream activities created employment for a further 94 fte in the region in 2014/15. Flow-on business activity was estimated to generate a further 2,025 fte jobs. These jobs were concentrated in the trade (448 fte), property and business services (352), transport (207), other manufacturing (164), accommodation, restaurants and cafes (17). The total employment impact generated by food industry activities in the Barossa RDA region in 2014/15 was estimated to be almost 7,761 fte jobs, which represented 38 per cent of the regional total.

Household income...

Household income of approximately \$139 million was earned in the agricultural sectors (wages of employees and estimated drawings by owner/operators), \$177 million in the food manufacturing sectors and approximately \$5 million in downstream activities in the Barossa RDA region in 2014/15. An additional \$151 million was earned by wage earners in other businesses in the region as a result of the food industry and associated downstream activities. The total household income impact was approximately \$471 million in 2014/15, which represented 34 per cent of the regional total.

4.3.2 Mallala-West Light

Value of output...

The value of output generated directly in the regional economy from food activities was estimated to be about \$490 million in 2014/15, while output generated in the region by associated downstream activities (i.e. retail/food services) summed to \$1 million.

Gross regional product...

In 2014/15, total GRP in the Mallala-West Light region attributable to the food industry was approximately \$263 million, \$206 million generated by agriculture directly, \$21 million generated by food manufacturing sectors directly, less than \$1 million generated by downstream activities and \$36 million generated in other sectors of the regional economy. Total GRP attributable to the food industry represented 54 per cent of the regional total.

Table 4-4The direct and indirect impact of the agricultural and food manufacturing
industries on the Mallala-West Light regional economy, 2014/15

	Value of Output ^a	GRP	Employment	Household Income
-	\$m	\$m	fte	\$m
Direct Impact				
Primary sectors				
Sheep	17	8	135	7
Grains	131	63	390	21
Beef cattle	1	0	84	2
Dairy cattle	1	1	10	1
Poultry	104	50	123	6
Pigs	88	42	150	7
Other Livestock	12	6	36	1
Viticulture ^b	5	3	38	2
Vegetables	50	26	232	12
Fruit & nuts	0	0	0	0
Other agriculture	12	7	5	0
Manufacturing Sectors				
Meat & Meat Products	10	2	29	2
Dairy Products	0	0	0	0
Fruit & Vegetable Products	10	3	14	2
Oils and Fats Manufacturing	0	0	0	0
Grain Mill & Cereal Products	0	0	0	0
Other Food Products	37	10	74	7
Wine & Spirits	11	5	38	2
Service Sectors				
Retail	0	0	5	0
Food Services	0	0	2	0
Total Direct Impact	491	227	1,364	72
Flow-on Impact				
Trade		7	56	5
Transport		6	67	6
Property and business services		2	23	2
Other manufacturing		2	16	1
Accommodation, restaurants and cafes		0	2	0
Ownership of dwellings		12	-	-
Other sectors		6	81	8
Total Flow-on Impact		36	246	22
Total Impact		263	1,610	94
Regional total		483	3,155	208
Proportion of regional total		54%	51%	45%

^{a-b} See footnotes for Table 4-1.

Source: EconSearch analysis.



Employment...

The food industry was responsible for the direct employment of around 1,357 full-time equivalents (fte) and downstream activities created employment for a further 7 fte in the region in 2014/15. Flow-on business activity was estimated to generate a further 246 fte jobs. These jobs were concentrated in the transport (67), trade (56 fte), property and business services (23), other manufacturing (16), accommodation, restaurants and cafes (2). The total employment impact generated by food industry activities in the Mallala-West Light region in 2014/15 was estimated to be almost 1,610 fte jobs, which represented 51 per cent of the regional total.

Household income...

Household income of approximately \$59 million was earned in the agricultural sectors (wages of employees and estimated drawings by owner/operators), \$13 million in the food manufacturing sectors and approximately less than \$1 million in downstream activities in the Mallala-West Light region in 2014/15. An additional \$22 million was earned by wage earners in other businesses in the region as a result of the food industry and associated downstream activities. The total household income impact was approximately \$94 million in 2014/15, which represented 45 per cent of the regional total.



5. DEMOGRAPHIC PROFILE

5.1 Estimated Resident Population

The estimated resident population (ERP) for the Barossa RDA region and SA are illustrated in Figure 5-1 and for the Barossa RDA region by sub-region in Figure 5-2, for the period 2000/01 to 2014/15.

Figure 5-1 Estimated resident population in the Barossa RDA region and SA, 2000/01 to 2014/15



Source: ABS (2016d)

In 2014/15 the ERP in the Barossa RDA region was 69,313 persons, representing approximately 4.1 per cent of the state total (1.70 million persons). Over the 15 years, 2000/01 to 2014/15, the Barossa RDA region experienced steady population growth and the total population increased by 25 per cent (almost 14,000 persons). Similarly, SA experienced steady population growth over these years, although at a slower rate, with the population increasing by over 12 per cent.

Population growth in the Barossa RDA region was a result of a significant increase in the population of Greater Gawler (34 per cent) and more modest increases in Mallala-West Light (23 per cent) and Barossa-East Light (18 per cent) (Figure 5-2).





Source: ABS (2016d)

5.2 Crude Birth Rates and Death Rates

Crude birth rates¹¹ are illustrated for the Barossa RDA region and SA in Figure 5-3 and for the Barossa RDA region by sub-region in Figure 5-4, for the period 2000/01 to 2014/15. The number of births in the Barossa RDA region rose from 607 in 2000/01 to a peak of 831 in 2006/07 but has fallen since and was 703 in 2014/15. In SA the number of births rose from 17,281 in 2000/01 to a peak of 20,433 in 2011/12 but has also fallen since and was to 19,587 in 2014/15.

As a result of a significant population increase and despite an increase in the number of births, the crude birth rate for the Barossa RDA region fell from 10.9 in 2000/01 to 10.1 in 2014/15. The crude birth rate for SA was similar in 2014/15 (11.5 births per thousand residents) to 2000/01 (11.4 births per thousand residents) (Figure 5-3).

In 2014/15, the highest birth rate in the Barossa RDA region was recorded in Greater Gawler where there were 10.4 births per 1,000 residents. The lowest birth rate was in the Barossa-East Light where there were 10.0 births per 1,000 residents (Figure 5-4).

¹¹ The number of births are calculated on the basis of usual residence of the mother regardless of where in Australia the birth occurred. The crude birth rate is the number of live births registered in the 12 months ending 30 June per 1,000 residents. The number of residents is equivalent to the ERP.



Figure 5-3 Crude birth rates in the Barossa RDA region and SA, 2000/01 to 2014/15

Source: ABS (2016d,f)





Source: ABS (2016d,f)

Crude death rates¹² are illustrated for the Barossa RDA region and SA in Figure 5-5 and for the Barossa RDA region by sub-region in Figure 5-6, for the period 2000/01 to 2014/15.

The annual crude death rate in the Barossa RDA region increased over the 15 years to 2014/15 but remained consistently below that for SA as a whole. In 2000/01, there were 386 deaths in the region and in 2014/15 there were 541 deaths in the region. The crude death rate for the Barossa RDA region increased from 7.0 in 2000/01 to 7.8 in 2014/15 despite the large population increase.

The crude death rate for SA was similar in 2014/15 (8.0 deaths per thousand residents) than in 2000/01 (7.9 deaths per thousand residents). The total number of deaths rose from 11,891 deaths in SA in 2000/01 to 13,647 in 2014/15 (Figure 5-5). The rise in the number of deaths was not reflected in a significant increase in the death rate as the population also increased over this period for SA.

In 2014/15, the highest death rate in the Barossa RDA region was in the Barossa-East Light (8.5 deaths per thousand residents). The lowest death rate in Mallala-West Light where there were 5.8 deaths per thousand residents Figure 5-6.



Figure 5-5 Crude death rates in the BAROSSA RDA region and SA, 2000/01 to 2014/15

Source: ABS (2016d,g)

¹² The number of deaths are calculated on the basis of usual residence of the deceased, regardless of where in Australia the death occurred. The crude death rate is the number of deaths registered in the 12 months ending 30 June per 1,000 residents. The number of residents is equivalent to the ERP.



Figure 5-6 Crude death rates in the Barossa RDA sub-regions, 2000/01 to 2014/15

Source: ABS (2016d,g)

5.3 Age Distribution

The age structures of the population for the Barossa RDA region and SA for 2006 and 2011 (Census years) are summarised in Table 5-1.

	- (-	/						
		Barossa RDA		S	South Australia			
Age	2006	2011	% change from 2006	2006	2011	% change from 2006		
0 to 14	12,464	12,959	4%	280,825	286,937	2%		
15 to 64	38,953	42,025	8%	1,000,381	1,052,085	5%		
65 or older	8,304	9,848	19%	233,130	257,547	10%		
Total	59,721	64,832	9%	1,514,336	1,596,569	5%		

Table 5-1Age distribution of the population for the Barossa RDA region and SA, 2006 and
2011 (no. of persons)

Source: ABS (2012a)

Comparison with South Australia highlights some significant differences in changes in the age structure of the state and regional populations, between 2006 and 2011.

- Number of persons aged 0 to 14 years increased by 4 per cent in the Barossa RDA region and by 2 per cent in SA.
- Number of persons aged 15 to 64 years increased by 8 per cent in the Barossa RDA region and 5 per cent in SA.

• Number of persons aged 65 years or older – increased by 19 per cent in the Barossa RDA region and 10 per cent in SA.

The population age structure is summarised on an annual basis for the years 2001/02 to 2014/15 in Table 5-2. In 2014/15, 19 per cent of the region's population was under the age of 15 years, the majority of the population (approximately 64 per cent) was aged between 15 and 64 years and approximately 17 per cent of the population was aged over 65 years (Table 2-2).

Compared with the age distribution of the state, the Barossa RDA region has a larger than average concentration of younger people (aged 0 to 14 years) and a slightly smaller than average share of persons aged 15 to 64 years and a similar proportion of people aged 65 and over. The 15 to 64 year age group could be characterised as the working-age population.

Table 5-2Age distribution of the population for the Barossa RDA region and SA, 2000/01
to 2014/15 °

Age														
	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15
Barossa RDA														
0 to 14	21%	21%	21%	21%	21%	20%	20%	20%	20%	20%	20%	20%	20%	19%
15 to 64	65%	66%	66%	66%	66%	66%	66%	66%	65%	65%	65%	64%	64%	64%
65 or older	13%	13%	13%	13%	14%	14%	14%	14%	15%	15%	16%	16%	16%	17%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
South Austra	alia													
0 to 14	19%	19%	19%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%
15 to 64	66%	66%	66%	66%	67%	67%	67%	67%	67%	66%	66%	66%	65%	65%
65 or older	15%	15%	15%	15%	15%	15%	15%	15%	16%	16%	16%	17%	17%	17%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

^a Totals may not sum due to rounding.

Source: ABS (2016h)

A notable shift in the age structure of the population has occurred in Mallala-West Light. Between 2006 and 2011 the total number of person aged 65 or over living in Mallala, increased by 20 per cent (Appendix Table 4-1).

5.4 Population Change

Population statistics for the two latest census years for the Barossa RDA region (disaggregated by sub-region) and South Australia are detailed in Table 5-3. Overall the population in the Barossa RDA region increased by 8.6 per cent between 2006 and 2011. This increase is comprised of 11.2 per cent population growth in Greater Gawler, 7.1 per cent growth in Barossa–East Light and 6.8 per cent growth in Mallala–West Light. The population of South Australia as a whole increased by 5.4 per cent between 2006 and 2011 (Table 5-3).

	Census	% shange from 2000	
	2006	2011	% change from 2006
Barossa RDA Region			
Barossa-East Light	25,370	27,167	7.1%
Greater Gawler	22,404	24,903	11.2%
Mallala-West Light	11,948	12,762	6.8%
Total Barossa RDA Region	59,721	64,832	8.6%
South Australia	1,514,336	1,596,569	5.4%

Table 5-3Population change, Barossa RDA region and SA, 2006 and 2011 (no. of persons)

Source: ABS (2012a)

5.5 Population Projections

It is possible to derive broad population projections for the Barossa RDA region and SA for the period 2011 to 2031 based on information published by the Department of Planning, Transport and Infrastructure. Population projections for the Barossa RDA region and SA, for the period 2011 to 2031 are detailed in Table 5-4 and illustrated in Figure 5-7 and Figure 5-8.

The projections are based on ABS 2011 Census resident population estimates and trends in mortality, fertility and overseas and interstate migration. The 30-Year Plan for Greater Adelaide sets a target for growth in total population in the Barossa RDA region of 110,000 people over the next 30 years (Department of Planning and Local Government 2010b). This would be an increase of approximately 40,700 people or 59 per cent on the 2014/15 population level for the region (around 69,300). Based on the Planning SA projections, the population in the Barossa RDA region will increase by about 39.6 per cent over the 20 years from 2011 (Census year) whereas the total SA population is expected to increase by around 18.1 per cent (Figure 5-7).

Population projections for persons aged 0 to 14 years indicate that there will be an increase (29 per cent from 2011) in this age cohort. The working age population (15 to 64 years) is projected to increase (by 26 per cent from 2011). The population projections for persons 65 or older indicate that an increase of around 114 per cent in this age cohort is expected over the 20 years (Table 5-4).

Population is projected to increase in each of the component local government areas by 41 per cent in the Barossa-East Light and Mallala-West Light and by 37 per cent in Greater Gawler Figure 5-8.

	2011		20:	16	202	21	202	26	2031		
Age	Population		Population	Change from 2011							
	no.		no.	%	no.	%	no.	%	no.	%	
Barossa RDA											
0-14	13,069	0.0%	14,331	9.7%	15,744	20.5%	16,561	26.7%	16,816	28.7%	
15-64	43,039	0.0%	46,106	7.1%	48,847	13.5%	51,323	19.2%	54,139	25.8%	
65+	9,871	0.0%	12,105	22.6%	14,547	47.4%	17,899	81.3%	21,153	114.3%	
Total	65,979	0.0%	72,542	9.9%	79,138	19.9%	85,783	30.0%	92,108	39.6%	
SA											
0-14	290,659	0.0%	304,557	4.8%	318,849	9.7%	326,328	12.3%	328,519	13.0%	
15-64	1,087,362	0.0%	1,107,895	1.9%	1,129,698	3.9%	1,153,799	6.1%	1,184,999	9.0%	
65+	261,593	0.0%	302,847	15.8%	343,220	31.2%	386,588	47.8%	423,294	61.8%	
Total	1,639,614	0.0%	1,715,299	4.6%	1,791,767	9.3%	1,866,715	13.9%	1,936,812	18.1%	

Table 5-4Population projections for the Barossa RDA region and SA, 2011 to 2031

Source: Department of Planning, Transport and Infrastructure, Government of South Australia (2016)





Source: Department of Planning, Transport and Infrastructure, Government of South Australia (2016)



Figure 5-8 Population projections for the Barossa RDA sub-regions, change from 2011

Source: Department of Planning, Transport and Infrastructure, Government of South Australia (2016)



6. LABOUR FORCE INDICATORS

This section reports on the major labour force characteristics relevant to the Barossa RDA region and SA. The major labour force statistics include:

- labour force¹³;
- number of unemployed persons;
- unemployment rate¹⁴; and
- participation rate¹⁵.

6.1 Labour Force

The total number of persons in the labour force is illustrated for the Barossa RDA region and SA in Figure 6-1 and for the Barossa RDA sub-regions in Figure 6-2, for the period 2010 to 2016 (June quarter).



Figure 6-1 Labour force in the Barossa RDA region and SA, 2010 to 2016 (June quarter)



¹³ The labour force is defined as the total number of employed and unemployed persons.

¹⁴ The unemployment rate is defined as the number of unemployed persons expressed as a percentage of the total labour force.

¹⁵ The participation rate is a measure of the total labour force as a proportion of the civilian population (persons aged 15 and over) (ABS 2007).

The total number of persons in the labour force in the Barossa RDA region fluctuated over the years 2010 to 2016 ranging from a low of 33,790 in June 2010 to a high of 38,289 in June 2015. Despite some fluctuations, the labour force in SA increased over the period, from 843,300 in March 2010 to 874,200 in June 2016.





Overall the labour force in the Barossa RDA region increased by 7 per cent between 2010 and 2016 (June quarter). This increase reflects 9 per cent labour force growth in Greater Gawler, 6 per cent growth in Mallala-West Light and 5 per cent growth in Barossa-East Light (Figure 6-2).

6.2 Unemployment

The number of unemployed persons is illustrated for the Barossa RDA region and SA in Figure 6-3 and for the Barossa RDA sub-regions in Figure 6-4, for the period 2010 to 2016 (June quarter). The number of unemployed persons in the Barossa RDA region fluctuated over the period. The total number of unemployed persons in the region ranged between 1,166 in June 2010 and 2,196 in December 2015. Comparison of the two end quarters indicate that the total number of unemployed persons increased by 693 persons (approximately 59 per cent) in the Barossa RDA region. The number of unemployed persons in SA also increased, by 14,022 persons (approximately 31 per cent), but also fluctuated over the years (Figure 6-3).

Overall the number of unemployed persons in the Barossa RDA region increased by 59 per cent between 2010 and 2016 (June quarter). This is comprised of an increase in the number of persons unemployed of 110 per cent in Barossa-East Light, 48 per cent in Mallala-West Light and 42 per cent in Greater Gawler Figure 6-4.

Source: Australian Department of Employment (2016)



Figure 6-3 Unemployed persons in the Barossa RDA region and SA, 2010 to 2016 (June quarter)

Source: Australian Government Department of Employment (2016)



Figure 6-4 Unemployed persons in the Barossa RDA sub-regions, 2010 to 2016 (June quarter)

Source: Australian Government Department of Employment (2016)



6.3 Unemployment Rate

The unemployment rates are illustrated for the Barossa RDA region and SA in Figure 6-5 and for the Barossa RDA sub-region in Figure 6-6, for the period 2010 to 2016 (June quarter). The unemployment rate in the Barossa RDA region fluctuated over the period and was estimated to be 5.1 per cent in June 2016 (Figure 6-5). The unemployment rate in the Barossa RDA region was, on average, lower than the rate for SA (6.8 per cent in June 2016) over the same period.



Figure 6-5 Unemployment rate in the Barossa RDA region and SA, 2010 to 2016 (June quarter)

Source: Australian Government Department of Employment (2016)

The unemployment rate in each of the sub-regions in the Barossa RDA region fluctuated over the period. In June 2016, the unemployment rates for the sub-regions were, 3.7 per cent in the Barossa-East Light, 5.0 per cent in Mallala-West Light and 6.6 per cent in Greater Gawler (Figure 6-6).



Figure 6-6 Unemployment rate in the Barossa RDA sub-regions, 2010 to 2016 (June quarter)

Source: Australian Government Department of Employment (2016)

6.4 Participation Rate

The participation rate is illustrated for the Barossa RDA region and SA in Figure 6-7and for the Barossa RDA sub-region in Figure 6-8, for the period 2009/10 to 2014/15¹⁶.

The labour force participation rate for the Barossa RDA region fluctuated over the six years but overall followed an increasing trend. The labour force participation rate in SA fluctuated slightly less over the same period. In 2014/15 the labour force participation rate was 69 per cent in the Barossa RDA region, higher than for SA as a whole (62 per cent) (Figure 6-7).

In the Barossa RDA region the labour force participation rate in 2014/15 was highest in the Barossa-East Light where it was 74 per cent and lowest in Greater Gawler where it was 62 per cent (Figure 6-8).

¹⁶ Due to the latest population by age data (ABS 2016h) being available for 2014/15, the participation rate can only be calculated up until 2014/15, despite having employment data up until June 2016.



Figure 6-7 Participation rate in the Barossa RDA region and SA, 2009/10 to 2014/15

Source Australian Government Department of Employment (2016), ABS (2016h) and EconSearch analysis



Figure 6-8 Participation rate in the Barossa RDA sub-regions, 2009/10 to 2014/15

Source Australian Government Department of Employment (2016), ABS (2016h) and EconSearch analysis

7. EDUCATION AND TRAINING

7.1 School Students

Total enrolments for government and non-government schools located within the Barossa RDA region and SA are detailed in Table 7-1 for the four census years 1996, 2001, 2006 and 2011. The total number of students enrolled in primary school in the Barossa RDA region increased by 17 per cent between 1996 and 2011. This increase was comprised of a 1 per cent increase in enrolments in government schools and a 53 per cent increase in enrolments at non-government schools.

		Census	Year	
—	1996	2001	2006	2011
Barossa RDA				
Pre-school	556	563	563	897
Primary				
- Government	3,858	3,510	3,316	3,886
- Non-Government	1,732	2,892	2,253	2,644
Total Primary Student	5,590	6,402	5,569	6,530
Secondary Students				
- Government	1,765	1,814	1,717	1,952
- Non-Government	1,305	1,707	1,897	2,116
Total Secondary Students	3,070	3,521	3,614	4,068
South Australia				
Pre-school	17,218	18,166	18,577	20,579
Primary				
- Government	112,199	103,630	93,512	87,779
- Non-Government	38,615	43,142	46,003	48,763
Total Primary Student	150,814	146,772	139,515	136,542
Secondary Students				
- Government	55,044	57,533	52,037	52,221
- Non-Government	27,665	31,557	35,259	38,731
Total Secondary Students	82,709	89,090	87,296	90,952

Table 7-1School enrolment in the Barossa RDA region and SA, 1996, 2001, 2006 and 2011
(no. of persons)

Source: ABS (2012a)

The total number of Barossa RDA region students enrolled in secondary school increased by 33 per cent between 1996 and 2011. The increase was comprised of a 62 per cent increase in non-government school enrolments and an 11 per cent rise in government school enrolments.

Enrolments in non-government schools accounted for 45 per cent of total school enrolments in the Barossa RDA region in 2011. In 1996 the proportion of enrolments in non-government schools was 35 per cent.

7.2 Tertiary Enrolments

Enrolments at universities, technical colleges and other education institutes for four census years (1996, 2001, 2006 and 2011) are summarised in Table 7-2 for the Barossa RDA region and South Australia. Between 1996 and 2011 the total number of Barossa RDA region residents enrolled in a higher education institute increased by 9 per cent. This is a significantly lower increase than for SA as a whole, where the total number of residents undertaking higher education increased by 39 per cent.

		Baross	sa RDA		South Australia						
	1996	2001	2006	2011	1996	2001	2006	2011			
TAFE											
Full-time students	528	605	687	331	8,743	10,616	9 <i>,</i> 581	12,075			
Part-time students	1,144	1,239	1,241	1,127	25,333	25,896	22,725	22,374			
Not Stated	136	181	208	17	255	227	441	390			
Total	1,808	2 <i>,</i> 025	2,136	1,475	34,331	36,739	32,747	34,839			
University											
Full-time students	558	500	720	838	29,712	31,303	37,104	47,223			
Part-time students	848	857	1,085	560	17,283	17,528	16,309	18,387			
Not Stated	101	91	92	3	158	164	313	354			
Total	1,507	1,448	1,897	1,401	47,153	48,995	53,726	65,964			
Other											
Full-time students	129	166	197	83	2,282	2,675	2,654	3,469			
Part-time students	577	747	753	259	4,455	7,796	6,842	7,380			
Not Stated	148	127	137	9	109	188	245	246			
Total	854	1,040	1,087	351	6,846	10,659	9,741	11,095			
Institute type and/or status not stated	1,905	1,390	3,072	3,392	63,526	52,718	105,797	98,693			
Total	6 <i>,</i> 074	5,903	8,192	6,619	151,856	149,111	202,011	210,591			

Table 7-2Higher education enrolments for the Barossa RDA region and South Australia,1996, 2001, 2006 and 2011 a (no. of persons)

^a 'Other education institution' includes residents who did not state the type of educational institution. Source: ABS (2012a)

7.3 Qualifications

The level of qualification held by residents in the Barossa RDA region and SA are detailed in Table 7-3, for the years 1996, 2001, 2006 and 2011. The total number of residents in the Barossa RDA region with a non-school qualification increased steadily over the four Census years. In 2011, approximately 48 per cent of all persons aged 15 or over in the Barossa RDA region, held some form of non-school qualification (increasing from 35 per cent in 1996). The level of qualification was generally lower for the Barossa RDA region than for SA with the number of persons aged 15 and over holding some form of non-school qualification in SA being 52 per cent in 2011.

Qualification	Barossa RDA										
Qualification	199	6	200	1	200	6	2011				
Postgraduate Degree	180	1%	235	1%	376	2%	576	2%			
Graduate Diploma & Graduate Certificate	347	2%	434	3%	460	2%	621	3%			
Bachelor Degree	1,621	12%	2,326	15%	3,055	15%	3,859	16%			
Advanced Diploma & Diploma	2,174	16%	2,140	13%	2,872	14%	3,739	15%			
Certificate:											
Certificate Level, nfd(b)	n.a.	-	203	1%	838	4%	957	4%			
Certificate III & IV	4,328	31%	6,063	38%	7,707	37%	9,882	40%			
Certificate I & II	1,267	9%	847	5%	636	3%	813	3%			
Level of education not described	317	2%	521	3%	686	3%	529	2%			
Level of education not stated	3,728	27%	3,194	20%	4,384	21%	3,814	15%			
Total	13,962	100%	15,963	100%	21,014	100%	24,790	100%			
	South Australia										
	199	6	200	1	200	6	2011				
Postgraduate Degree	11,790	3%	15,203	3%	22,897	4%	35,999	5%			
Graduate Diploma & Graduate Certificate	12,680	3%	14,361	3%	16,098	3%	20,277	3%			
Bachelor Degree	73,761	17%	95,812	20%	120,979	20%	152,185	22%			
Advanced Diploma & Diploma	64,328	15%	63,469	13%	79,698	13%	95,689	14%			
Certificate:											
Certificate Level, nfd(b)	n.a.	-	5,775	1%	21,172	4%	21,518	3%			
Certificate III & IV	120,797	27%	155,056	32%	176,066	30%	205,850	30%			
Certificate I & II	35,905	8%	24,298	5%	15,343	3%	18,387	3%			
Level of education not described	8,447	2%	14,999	3%	15,940	3%	13,792	2%			
Level of education not stated	112,132	25%	100,201	20%	127,186	21%	116,517	17%			
Total	439,840	100%	489,174	100%	595,379	100%	680,214	100%			

Table 7-3Highest level of qualifications for persons aged 15 and over in the Barossa RDA
region and SA, 1996, 2001, 2006 and 2011

Source: ABS (2012a)

8. INCOME AND HOUSING

8.1 Household Income

This section provides information on average annual income relevant to the Barossa RDA region and SA. The proportion of taxable individuals and the mean taxable income are presented in Table 8-1 for the Barossa RDA region and SA, for the period 2000/01 to 2013/14.

The proportion of taxable individuals¹⁷ (compared to non-taxable individuals¹⁸) in the Barossa RDA region fluctuated slightly over the 14 years, overall decreasing from 80 per cent to 75 per cent. In the 2013/14, there was approximately 28,500 taxable and almost 9,300 non-taxable individuals in the Barossa RDA region. The proportion of taxable individuals in SA as a whole decreased over the 14 years (from 81 per cent to 75 per cent) and was similar to the Barossa RDA region in most years.

The mean individual taxable incomes in the Barossa RDA region and SA for the period 2000/01 to 2013/14 are illustrated in Figure 8-1 (nominal terms) and Figure 8-3 (real terms). Over the same period, the mean individual taxable incomes in the Barossa RDA sub-regions are illustrated in nominal and real terms in Figure 8-2 and Figure 8-4, respectively.

Taxable income is the amount remaining after deducting from assessable income all allowable deductions under the Income Tax Assessment Act 1936. Taxable income is the amount to which tax rates are applied. Average taxable income in an area is the taxable income per person (calculated by dividing the total taxable income for the region by the total number of taxable individuals).

The mean individual taxable income in the Barossa RDA region was lower than the state average, over the period 2000/01 to 2013/14, in both nominal and real terms. In the Barossa RDA region the mean individual taxable income increased in nominal terms, from around \$33,900 in 2000/01 to \$60,970 in 2013/14. For SA the mean individual taxable income (in nominal terms) increased steadily over the 14 years from around \$35,300 in 2000/01 to approximately \$64,800 in 2013/14 (Table 8-1 and Figure 8-1).

¹⁷ Refers to personal taxpayers who submitted a return with net tax payable of more than \$0.

¹⁸ An individual is considered non-taxable when the net tax payable by the individual is equal to zero.

	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Barossa RDA														
Proportion of taxable individuals (%) ^a	80%	81%	81%	81%	81%	81%	78%	78%	75%	74%	75%	78%	74%	75%
Mean taxable income - nominal (\$) ^b	33,936	35,169	36,298	38,127	39,822	40,879	44,515	46,147	49,461	51,460	54,215	56,202	59,469	60,970
Mean taxable income - real (\$) ^c	33,936	34,216	34,469	35,403	36,088	35,674	38,185	37,944	40,144	40,587	41,208	42,166	43,492	43,369
South Australia														
Proportion of taxable individuals (%) ^a	81%	81%	81%	81%	81%	82%	79%	78%	75%	74%	74%	77%	74%	75%
Mean taxable income - nominal (\$') ^b	35,256	36,406	37,857	39,644	41,513	42,778	46,643	48,669	51,932	54,349	57,448	58,929	63,048	64,808
Mean taxable income - real (\$) ^c	35 <i>,</i> 256	35,419	35 <i>,</i> 950	36,812	37,621	37,332	40,010	40,018	42,149	42,866	43,665	44,211	46,109	46,100

Table 8-1Taxable individuals and taxable income in the Barossa RDA region and SA, 2000/01 to 2013/14

^a Refers to personal taxpayers who submitted a return with net tax payable of more than \$0.

^b Mean (average) taxable income refers only to taxable individuals and is calculated by dividing net taxable income of the region as a whole by the number of taxable individuals.

^a The real mean individual taxable income is the nominal income adjusted by the purchasing power of money. The consumer price index (CPI) has been used to make this adjustment (ABS 2016b). It enables meaningful comparisons of incomes to be made between years.

Source: ATO (2016) and ABS (2016b)





Figure 8-1 Nominal mean individual taxable income in the Barossa RDA region and SA, 2000/01 to 2013/14

Source: ATO (2016)





Source: ATO (2016)


Figure 8-3 Real mean individual taxable income in the Barossa RDA region and SA, 2000/01 to 2013/14 ^a

^a In 2000/01 dollars.

Source: ATO (2016) and ABS (2016b)





^a In 2000/01 dollars.

Source: ATO (2016) and ABS (2016b)

8.2 Building Approvals

This section provides the number and value of approvals for new residential dwellings in the Barossa RDA region and SA. The number and total value of approvals in the Barossa RDA region and SA are illustrated in Figure 8-5 and Figure 8-6, respectively, for the period 2001/02 to 2015/16.





Source: ABS (2016i)

The total number of building approvals in the Barossa RDA region decreased overall from 659 in 2001/02 to 574 in 2015/16, a fall of 13 per cent. Despite this fall, the total value of approvals increased over the same period, from \$74 million in 2001/02 to \$211 million in 2015/16, an increase of 185 per cent (Figure 8-5).

Comparison of the two end years (2001/02 and 2015/16) highlights the significant increase in the value of building approvals in SA as well. Despite the total number of approvals only 10 per cent higher in 2015/16 than in 2001/02, the total value was 122 per cent higher (Figure 8-6).

The average value per approval in the Barossa RDA region and SA is illustrated in Figure 8-7 and for the Barossa RDA sub-regions in Figure 8-8 (2011/12 to 2015/16 only). The average value per approval in the Barossa RDA region more than tripled between 2001/02 and 2015/16, from \$113,000 to \$368,000 (227 per cent). For SA, the value per approval increased from \$128,000 in 2001/02 to \$259,000 in 2015/16, an increase of 102 per cent (Figure 8-7).



Figure 8-6 Number and value of new residential dwelling approvals in SA, 2001/02 to 2015/16

Source: ABS (2016i)





Source: ABS (2016i)



Figure 8-8 Average value per approval in the Barossa RDA sub-regions, 2011/12 to 2015/16

Source: ABS (2016i)

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Disclaimer

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APPENDIX 1 REGIONAL ALLOCATIONS OF SA1 GEOGRAPHIES

SA1 Code	RDA sub-region	SA1 Code	RDA sub-region
40201102501	Mallala – East Light	40501111103	Barossa – West Light
40201102502	Mallala – East Light	40501111104	Mallala – East Light
40201102503	Mallala – East Light	40501111105	Mallala – East Light
40201102504	Mallala – East Light	40501111106	Barossa – West Light
40201102505	Greater Gawler	40501111107	Barossa – West Light
40201102506	Greater Gawler	40501111108	Mallala – East Light
40201102507	Greater Gawler	40501111109	Mallala – East Light
40201102508	Greater Gawler	40501111110	Barossa – West Light
40201102509	Greater Gawler	40501111111	Barossa – West Light
40201102510	Greater Gawler	40501111112	Barossa – West Light
40201102511	Greater Gawler	40501111113	Barossa – West Light
40201102512	Greater Gawler	40501111114	Mallala – East Light
40201102513	Greater Gawler	40501111115	Mallala – East Light
40201102514	Greater Gawler	40501111116	Mallala – East Light
40201102515	Greater Gawler	40501111117	Barossa – West Light
40201102516	Greater Gawler	40501111118	Barossa – West Light
40201102517	Greater Gawler	40501111119	Barossa – West Light
40201102518	Greater Gawler	40501111120	Barossa – West Light
40201102519	Greater Gawler	40501111121	Barossa – West Light
40201102520	Greater Gawler	40501111122	Barossa – West Light
40201102521	Greater Gawler	40501111123	Mallala – East Light
40201102522	Greater Gawler	40501111124	Barossa – West Light
40201102523	Greater Gawler	40501111124	Barossa – West Light
40501111101	Barossa – West Light	40501111125	Mallala – East Light
40501111102	Barossa – West Light		

APPENDIX 2 SECTOR DEFINITIONS

A uniform sector specification comprised of 78 and 20 intermediate industry sectors was applied to the Barossa RDA region and the economic geographies. Regional economic data at the 20-sector level are presented in this report and the 78-sector has been provided separately in electronic format. The sector specifications in terms of the national input-output sectors are detailed below.

	National I-O 111 Sectors	Barossa RDA, 78 Sectors	\Box	Barossa RDA, 20 Sectors
101	Sheep, Grains, Beef and Dairy Cattle	1 Sheep	1	Agriculture, Forestry and Fishing
		2 Grains	1	
		3 Beef Cattle	1	
		4 Dairy Cattle	1	
102	Poultry and Other Livestock	5 Poultry		
		6 Pigs	1	
		7 Other Livestock	1	
103	Other Agriculture	8 Winegrapes		
		9 Vegetables	1	
		10 Fruit and Nuts	1	
		11 Other Agriculture	1	
201	Aquaculture	12 Aquaculture		
301	Forestry and Logging	13 Forestry and Logging	-	
401	Fishing, hunting and trapping	14 Fishing, Hunting and Trapping		
501	Agriculture, Forestry and Fishing	15 Agriculture Forestry and Fishing	1	
501	Support Services	Support Services		
601	Coal mining	16 Coal Mining	2	Mining
701	Oil and gas extraction	17 Oil and Gas Extraction		
801	Iron Ore Mining	18 Iron & Non-ferrous Ore Mining		
802	Non Ferrous Metal Ore Mining	1		
901	Non Metallic Mineral Mining	19 Non Metallic Mineral Mining		
1001	Exploration and Mining Support	20 Exploration and Mining Support		
	Services	Services		
1101	Meat and Meat product	21 Meat and Meat Product	3	Manufacturing
	Manufacturing	Manufacturing		
1102	Processed Seafood Manufacturing	22 Processed Seafood Manufacturing		
1103	Dairy Product Manufacturing	23 Dairy Product Manufacturing		
1104	Fruit and Vegetable Product	24 Fruit and Vegetable Product		
1105	Manufacturing	Manufacturing		
1105	Grain Mill and Coroal Product	26 Grain Mill and Coroal Product		
1100	Manufacturing	Manufacturing		
1107	Bakery Product Manufacturing	27 Other Food Product Manufacturing		
1108	Sugar and Confectionary Mfg			
1109	Other Food Product Manufacturing	1		
1201	Soft Drinks, Cordials and Syrup	28 Other Beverages		
	Manufacturing	5		
1202	Beer Manufacturing	29 Beer Manufacturing		
1205	Wine, Spirits and Tobacco	30 Wine, Spirits and Tobacco Mfg		
1301	Textile Manufacturing	31 Textiles, Clothing and Footwear Mfg	1	
1302	Tanned Leather, Dressed Fur and]		
	Leather Product Manufacturing	4		
1303	Textile Product Manufacturing	4		
1304	Knitted Product Manufacturing	1		
1305	Clothing Manufacturing		1	
1306		4		
	Footwear Manufacturing			
1401	Footwear Manufacturing Sawmill Product Manufacturing	32 Sawmill Product Manufacturing		

	National I O 111 Sectors		Baraga BDA 78 Castara	T	Baraga BDA 20 Costara
	National I-O 111 Sectors		Barossa RDA, 78 Sectors	-	Barossa RDA, 20 Sectors
1501	Pulp, Paper and Paperboard	34	Pulp, Paper and Paperboard	3	Manufacturing (cont.)
	Manufacturing		Manufacturing	-	
1502	Paper Stationery and Other	35	Paper Stationery and Other		
	Converted Paper Product		Converted Paper Product		
1 C 0 1	Manufacturing	26	Manufacturing		
1001	Printing (including the reproduction	30	Printing (including the reproduction		
1701	Potroloum and Coal Product	27	Potroloum and Coal Product		
1/01	Manufacturing	57	Manufacturing		
1801	Human Pharmaceutical and	38	Pharmaceutical & Other Chemical		
1001	Medicinal Product Manufacturing	50	Product Manufacturing		
1802	Veterinary Pharmaceutical and		rioductiviananaetaring		
1001	Medicinal Product Manufacturing				
1803	Basic Chemical Manufacturing				
1804	Cleaning Compounds and Toiletry				
100.	Preparation Manufacturing				
1901	Polymer Product Manufacturing				
1902	Natural Rubber Product				
1001	Manufacturing				
2001	Glass and Glass Product	39	Non-metallic Mineral Product	1	
	Manufacturing		Manufacturing		
2002	Ceramic Product Manufacturing		5		
2003	Cement, Lime and Readv-Mixed				
	Concrete Manufacturing				
2004	Plaster and Concrete Product				
	Manufacturing				
2005	Other Non-Metallic Mineral Product				
	Manufacturing				
2101	Iron and Steel Manufacturing	40	Iron and Steel Manufacturing		
2102	Basic Non-Ferrous Metal	41	Basic Non-Ferrous Metal	1	
	Manufacturing		Manufacturing		
2201	Forged Iron and Steel Product	42	Metal Product Manufacturing		
	Manufacturing				
2202	Structural Metal Product				
	Manufacturing				
2203	Metal Containers and Other Sheet				
2204	Other Fabricated Motal Broduct				
2204	manufacturing				
2301	Motor Vehicles and Parts: Other	43	Motor Vehicles and Parts: Other		
2301	Transport Equipment manufacturing	73	Transport Equipment Manufacturing		
2302	Ships and Boat Manufacturing	44	Other Machinery & Equipment Mfg	1	
2303	Bailway Bolling Stock Manufacturing				
2303	Aircraft Manufacturing				
2304					
2401	Protessional, Scientific, Computer				
	And Electronic Equipment				
2402	Flectrical Equipment Manufacturing				
2403	Domostic Appliance Manufacturing				
2404	Considered and athen Manufacturing				
2405	specialised and other Machinery				
2501		15	Eurniture Manufacturing	1	
2501	Other Manufactured Dreducts	40	Other Manufactured Dreducts	-	
2502		40			
2601	Electricity Generation	47	Electricity Generation	4	Electricity, Gas, Water and Waste services
2605	Electricity Transmission,	48	Electricity Supply]	
	Distribution, On Selling and				
L	Electricity Market Operation			1	
2701	Gas Supply	49	Gas Supply		
2801	Water Supply, Sewerage and	50	Water Supply, Sewerage and		
	Drainage Services		Drainage Services	1	
2901	Waste Collection, Treatment and	51	Waste Collection, Treatment and		
1	Disposal Services		Disposal Services	1	

	National I-O 111 Sectors		Barossa RDA, 78 Sectors		Barossa RDA, 20 Sectors
3001	Residential Building Construction	52	Residential Building Construction	5	Construction
3002	Non-Residential Building	53	Other Construction		
	Construction				
3101	Heavy and Civil Engineering				
	Construction				
3201	Construction Services	54	Construction Services		
3301	Wholesale Trade	55	Wholesale Trade	6	Wholesale Trade
3901	Retail Trade	56	Retail Trade	7	Retail Trade
4401	Accommodation	57	Accommodation	8	Accommodation and Food Services
4501	Food and Beverage Services	58	Food and Beverage Services		
4601	Road Transport	59	Road Transport	9	Transport, postal and warehousing
4701	Rail Transport	60	Rail Transport		
4801	Water, Pipeline and Other Transport	61	Water, Pipeline and Other Transport		
4901	Air and Space Transport	62	Air and Space Transport		
5101	Postal and Courier Pick-up and Delivery Service	63	Transport Support Services and Storage		
5201	Transport Support services and		C C		
5401	Publishing (except Internet and	64	Publishing (except Internet and	10	Information, Media and
5501	Motion Picture and Sound Recording	65	Communication Services		rerecommunications
5601	Broadcasting (excent Internet)	05	communication services		
5701	Internet Publishing and				
5701	Broadcasting and Services				
	Providers, Websearch Portals and				
	Data Processing Services				
5801	Telecommunication Services				
6001	Library and Other Information				
6004	Services	6.6			
6201	Finance	66	Finance	11	Finance and Insurance
6301	Insurance and Superannuation	67	Insurance & Other Financial		
6401	Auxiliary Finance and Insurance		Services		
0101	Services				
6601	Rental and Hiring Services (except Real Estate)	68	Rental, Hiring and Real Estate	12	Rental, Hiring and Real Estate
6701	Ownership of Dwellings	69	Ownership of Dwellings	13	Ownership of Dwellings
6702	Non-Residential Property Operators	68	Rental, Hiring and Real Estate	12	Rental, Hiring and Real Estate
	and Real Estate Services		Services (cont.)		Services (cont.)
6901	Professional, Scientific and	70	Professional, Scientific and	14	Professional, Scientific and
	Technical Services		Technical Services		Technical Services
7001	Computer Systems Design and				
7201	Building Cleaning Pest Control	71	Administrative and Support Services	15	Administrative and Support Services
	Administrative and Other Support			10	
	Services				
7501	Public Administration and	72	Public Administration and	16	Public Administration and Safety
= 6 0 4	Regulatory Services	=0	Regulatory Services		
/601	Derence	73	Derence		
//01	Public Order and Safety	74	Public Order and Safety		
8001	Education and Training	75	Education and Training	17	Education and Training
8401	Health Care Services	/6	Health & Community Services	18	Health & Community Services
8601	Assistance Services				
8901	Heritage, Creative and Performing Arts	77	Cultural & Recreational Services	19	Cultural & Recreational Services
9101	Sports and Recreation				
9201	Gambling				
9401	Automotive Repair and Maintenance	78	Personal & Other Services	20	Personal & Other Services
9402	Other Repair and Maintenance				
9501	Personal Services				
9502	Other Services				

APPENDIX 3 AN OVERVIEW OF ECONOMIC IMPACT ANALYSIS USING THE INPUT-OUTPUT METHOD

Economic impact analysis based on an input-output (I-O) model provides a comprehensive economic framework that is extremely useful in the resource planning process. Broadly, there are two ways in which the I-O method can be used.

First, the I-O model provides a numerical picture of the size and shape of an economy and its essential features. The I-O model can be used to describe some of the important features of an economy, the interrelationships between sectors and the relative importance of the individual sectors.

Second, I-O analysis provides a standard approach for the estimation of the economic impact of a particular activity. The I-O model is used to calculate industry multipliers that can then be applied to various development or change scenarios.

The input-output database

Input-output analysis, as an accounting system of inter-industry transactions, is based on the notion that no industry exists in isolation. This assumes, within any economy, each firm depends on the existence of other firms to purchase inputs from, or sell products to, for further processing. The firms also depend on final consumers of the product and labour inputs to production. An I-O database is a convenient way to illustrate the purchases and sales of goods and services taking place in an economy at a given point in time.

As noted above, I-O models provide a numerical picture of the size and shape of the economy. Products produced in the economy are aggregated into a number of groups of industries and the transactions between them recorded in the transactions table. The rows and columns of the I-O table can be interpreted in the following way:

- The rows of the I-O table illustrate sales for intermediate usage (i.e. to other firms in the region) and for final demand (e.g. household consumption, exports or capital formation).
- The columns of the I-O table illustrate purchases of intermediate inputs (i.e. from other firms in the region), imported goods and services and purchases of primary inputs (i.e. labour, land and capital).
- Each item is shown as a purchase by one sector and a sale by another, thus constructing two sides of a double accounting schedule.



In summary, the I-O model can be used to describe some of the important features of a state or regional economy, the interrelationships between sectors and the relative importance of the individual sectors. The model is also used for the calculation of sector multipliers and the estimation of economic impacts arising from some change in the economy.

Using input-output analysis for estimation of economic impacts

The I-O model conceives the economy of the region as being divided up into a number of sectors and this allows the analyst to trace expenditure flows. To illustrate this, consider the example of a vineyard that, in the course of its operation, purchases goods and services from other sectors. These goods and services would include fertiliser, chemicals, transport services, and, of course, labour. The direct employment created by the vineyard is regarded in the model as an expenditure flow into the household sector, which is one of several non-industrial sectors recognised in the I-O model.

Upon receiving expenditure by the vineyard, the other sectors in the regional economy engage in their own expenditures. For example, as a consequence of winning a contract for work with vineyard, a spraying contractor buys materials from its suppliers and labour from its own employees. Suppliers and employees in turn engage in further expenditure, and so on. These indirect and induced (or flow-on) effects19, as they are called, are part of the impact of the vineyard on the regional economy. They must be added to the direct effects (which are expenditures made in immediate support of the vineyard itself) in order to arrive at a measure of the total impact of the vineyard.

It may be thought that these flow-on effects (or impacts) go on indefinitely and that their amount adds up without limit. The presence of leakages, however, prevents this from occurring. In the context of the impact on a regional economy, an important leakage is expenditure on imports, that is, products or services that originate from outside the region, state or country (e.g. machinery).

Thus, some of the expenditure by the vineyard (i.e. expenditure on imports to the region) is lost to the regional economy. Consequently, the flow-on effects get smaller and smaller in successive expenditure rounds due to this and other leakages. Hence the total expenditure created in the regional economy is limited in amount, and so (in principle) it can be measured.

Using I-O analysis for estimation of regional economic impacts requires a great deal of information. The analyst needs to know the magnitude of various expenditures and where they occur. Also needed is information on how the sectors receiving this expenditure share their expenditures among the various sectors from whom they buy, and so on, for the further expenditure rounds.

¹⁹ A glossary of I-O terminology is provided in Appendix 3.

In applying the I-O model to economic impact analysis, the standard procedure is to determine the direct or first-round expenditures only. No attempt is made to pursue such inquiries on expenditure in subsequent rounds, not even, for example, to trace the effects in the regional economy on household expenditures by vineyard employees on food, clothing, entertainment, and so on, as it is impracticable to measure these effects for an individual case, here the vineyard.

The I-O model is instead based on a set of assumptions about constant and uniform proportions of expenditure. If households in general in the regional economy spend, for example, 13.3 per cent of their income on food and non-alcoholic beverages, it is assumed that those working in vineyards do likewise. Indeed, the effects of all expenditure rounds after the first are calculated by using such standard proportions (i.e. multiplier calculations). Once a transactions table has been compiled, simple mathematical procedures can be applied to derive multipliers for each sector in the economy.

Input-output multipliers

Input-output multipliers are an indication of the strength of the linkages between a particular sector and the rest of the state or regional economy. As well, they can be used to estimate the impact of a change in that particular sector on the rest of the economy.

Detailed explanations on calculating I-O multipliers, including the underlying assumptions, are provided in any regional economics or I-O analysis textbook (see, for example, Jensen and West (1986)). They are calculated through a routine set of mathematical operations based on coefficients derived from the I-O transactions model, as outlined below.

The transactions table may be represented by a series of equations thus:

$X_1 = X_{11} + X_{12} + \dots$	$\dots + X_{1n} + Y_1$
$X_2 = X_{21} + X_{22} + \dots$	$\dots + X_{2n} + Y_2$
$X_n = X_{n1} + X_{n2} + \dots$	$\dots + X_{nn} + Y_n$

where X_i = total output of intermediate sector *i* (row totals);

- X_{ij} = output of sector *i* purchased by sector *j* (elements of the intermediate quadrant); and
- Y_j = total final demand for the output of sector *i*.

It is possible, by dividing the elements of the columns of the transactions table by the respective column totals to derive coefficients, which represent more clearly the purchasing pattern of each sector. These coefficients, termed 'direct' or 'I-O' coefficients, are normally denoted as aij, and represent the direct or first round requirements from the output of each sector following an increase in output of any sector.

In equation terms the model becomes:

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$$X_{1} = a_{11}X_{1} + a_{12}X_{2} + \dots + a_{1n}X_{n} + Y_{1}$$

$$X_{2} = a_{21}X_{1} + a_{22}X_{2} + \dots + a_{2n}X_{n} + Y_{2}$$

$$X_{n} = a_{n1}X_{11} + a_{n2}X_{2} + \dots + a_{nn}X_{n} + Y_{n}$$

where a_{ij} (the direct coefficient) = X_{ij}/X_j . This may be represented in matrix terms:

$$X = AX + Y$$

where $A = [a_{ij}]$, the matrix of direct coefficients.

The previous equation can be extended to:

$$(I-A)X = Y$$

where (I-A) is termed the Leontief matrix,

or $X = (I - A)^{-1}Y$

where $(I-A)^{-1}$ is termed the 'general solution', the 'Leontief inverse' or simply the inverse of the open model.

The general solution is often represented by:

$$Z = (I-A)^{-1} = [z_{ij}]$$

The I-O table can be 'closed' with respect to certain elements of the table. Closure involves the transfer of items from the exogenous portions of the table (final demand and primary input quadrants) to the endogenous section of the table (intermediate quadrant). This implies that the analyst considers that the transferred item is related more to the level of local activity than to external influences. Closure of I-O tables with respect to households is common and has been adopted in this project.

The 'closed' direct coefficients matrix may be referred to as A^* . The inverse of the Leontief matrix formed from A^* is given by:

$$Z^* = (I - A^*)^{-1} = [Z^*_{ij}]$$

 Z^* is referred to as the 'closed inverse' matrix.

A multiplier is essentially a measurement of the impact of an economic stimulus. In the case of I-O multipliers the stimulus is normally assumed to be an increase of one dollar in sales to final demand by a sector. The impact in terms of output, contribution to gross regional product, household income and employment can be identified in the categories discussed below.

(i) The initial impact: refers to the assumed dollar increase in sales. It is the stimulus or the cause of the impacts. It is the unity base of the output multiplier and provides the identity

matrix of the Leontief matrix. Associated directly with this dollar increase in output is an own-sector increase in household income (wages and salaries, drawings by owner operators etc.) used in the production of that dollar. This is the household income coefficient h_j . Household income, together with other value added (OVA), provide the total gross regional product from the production of that dollar of output. The gross regional product coefficient is denoted v_j . Associated also will be an own-sector increase in employment, represented by the size of the employment coefficient. This employment coefficient e_j represents an employment/output ratio and is usually calculated as 'employment per million dollars of output'.

- (ii) The first round impact: refers to the effect of the first round of purchases by the sector providing the additional dollar of output. In the case of the output multiplier this is shown by the direct coefficients matrix $[a_{ij}]$. The disaggregated effects are given by individual a_{ij} coefficients and the total first-round effect by Σa_{ij} . First-round household income effects are calculated by multiplying the first-round output effects by the appropriate household income coefficient (h_j) . Similarly, the first-round gross regional product and employment effects are calculated by multiplying the first-round output effects by the appropriate gross regional product (v_j) and employment (e_j) coefficients.
- (iii) Industrial-support impacts. This term is applied to 'second and subsequent round' effects as successive waves of output increases occur in the economy to provide industrial support, as a response to the original dollar increase in sales to final demand. The term excludes any increases caused by increased household consumption. Output effects are calculated from the open Z inverse, as a measure of industrial response to the first-round effects. The industrial-support output requirements are calculated as the elements of the columns of the Z inverse, less the initial dollar stimulus and the first-round effects. The industrial support household income, gross regional product and employment effects are defined as the output effects multiplied by the respective household income, gross regional product and employment coefficients. The first-round and industrial-support impacts are together termed the production-induced impacts.
- (iv) Consumption-induced impacts: are defined as those induced by increased household income associated with the original dollar stimulus in output. The consumption-induced output effects are calculated in disaggregated form as the difference between the corresponding elements in the open and closed inverse (i.e. $z^*_{ij} z_{ij}$, and in total as $\Sigma(z^*_{ij} z_{ij})$. The consumption-induced household income, gross regional product and employment effects are simply the output effects multiplied by the respective household income, gross regional product and employment coefficients.
- (v) Flow-on impacts: are calculated as total impact less the initial impact. This allows for the separation of 'cause and effect' factors in the multipliers. The cause of the impact is given by the initial impact (the original dollar increase in sales to final demand), and the effect is represented by the first-round, industrial-support and consumption-induced effects, which together constitute the flow-on effects.

Each of the five impacts are summarised in Appendix Table 2.1. It should be noted that household income, gross regional product and employment multipliers are parallel concepts, differing only by their respective coefficients h_j , v_j and e_j .

Impacts	General formula					
Output multipliers (\$)						
Initial	1					
First-round	$\sum_{i} \alpha_{ij}$					
Industrial-support	$\sum_i z_{ij}$ -1- $\sum_i \alpha_{ij}$					
Consumption-induced	$\sum_i \mathbf{Z}^*_{ij} - \sum_i \mathbf{Z}_{ij}$					
Total	$\sum_i \mathbf{Z}^*_{ij}$					
Flow-on	$\sum_i z^*_{ij}$ -1					
Household Income multipliers (\$)						
Initial	hj					
First-round	$\Sigma_i a_{ij} h_i$					
Industrial-support	$\sum_{i} z_{ij} h_{i} - h_{j} - \sum_{i} \alpha_{ij} h_{i}$					
Consumption-induced	$\sum_i z^*_{ij} h_i - \sum_i z_{ij} h_i$					
Total	$\sum_i z^*_{ij} h_i$					
Flow-on	$\sum_{i} z^*_{ij} h_i - h_j$					
Gross regional product multipliers (\$)						
Initial	Vj					
First-round	$\sum_i \alpha_{ij} v_i$					
Industrial-support	$\sum_{i} Z_{ij} V_{i} - V_{j} - \sum_{i} \alpha_{ij} V_{i}$					
Consumption-induced	$\sum_{i} \mathbf{Z}^*_{ij} \mathbf{V}_i - \sum_{i} \mathbf{Z}_{ij} \mathbf{V}_i$					
Total	$\sum_{i} \mathbf{Z}^*_{ij} \mathbf{V}_i$					
Flow-on	$\sum_{i} Z^{*}_{ij} V_{i} - V_{j}$					
Employment multipliers (full time equivalents)						
Initial	ej					
First-round	$\sum_i a_{ij} e_i$					
Industrial-support	$\sum_i Z_{ij} e_i - e_j - \sum_i \alpha_{ij} e_i$					
Consumption-induced	$\sum_{i} \mathbf{Z}^*_{ij} \mathbf{e}_i - \sum_{i} \mathbf{Z}_{ij} \mathbf{e}_i$					
Total	$\sum_{i} \mathbf{Z}^*_{ij} \mathbf{e}_i$					
Flow-on	$\sum_i z^*_{ii} e_i - e_i$					

Appendix Table 2.1 The structure of input-output multipliers for sector *i* ^a

^a In a DECON model, Z^{*} (the 'closed inverse' matrix), includes a population and an unemployed row and column (see below for details).

The output multipliers are calculated on a 'per unit of initial effect' basis (i.e. output responses to a one dollar change in output). Household income, gross regional product and employment multipliers, as described above, refer to changes in household income per initial change in output, changes to gross regional product per initial change in output and changes in employment per initial change in output. These multipliers are conventionally converted to ratios, expressing a 'per unit' measurement, and described as Type I and Type II ratios. For example, with respect to employment:

Type I employment ratio = [initial + first round + industrial support]/initial

and

Type II employment ratio = $[initial + production induced^{20} + consumption induced]/initial$

Model assumptions

There are a number of important assumptions in the I-O model that are relevant in interpreting the analytical results.

- Industries in the model have a linear production function, which implies constant returns to scale and fixed input proportions.
- Another model assumption is that firms within a sector are homogeneous, which implies they produce a fixed set of products that are not produced by any other sector and that the input structure of the firms are the same. Thus it is preferable to have as many sectors as possible specified in the models and the standard models for this study were compiled with 66 sectors (see Appendix 1 for further detail).
- The model is a static model that does not take account of the dynamic processes involved in the adjustment to an external change, such as a permanent change in natural resources management.

Extending the standard economic impact model as a DECON model

Based on work undertaken by EconSearch (2009 and 2010a) and consistent with Mangan and Phibbs (1989), the I-O model developed for this project was extended as demographic-economic (DECON) model. The two key characteristics of the DECON model, when compared with a standard economic model, are as follows.

- 1. The introduction of a population 'sector' (or row and column in the model) makes it possible to estimate the impact on local population levels of employment growth or decline.
- 2. The introduction of an unemployed 'sector' makes it possible to account for the consumption-induced impact of the unemployed in response to economic growth or decline.

²⁰ Where (first round + industrial support) = production induced.

The population 'sector'

The introduction of a population 'sector' to the standard I-O model allows for the calculation of population multipliers. These multipliers measure the flow-on population impact resulting from an initial population change attributable to employment growth or decline in a particular sector of the regional economy.

Calculation of population multipliers is made possible by inclusion of a population row and column in the 'closed' direct coefficients matrix of the I-O model.

Population row: the population coefficient (pj) for sector j of the DECON model is represented as:

 $p_j = -rho_j * e_j * family size_j$

where *rho_j* = the proportion of employees in sector *j* who remain in the region after they lose their job (negative employment impact) or the proportion of new jobs in sector *j* filled by previously unemployed locals (positive employment impact);

 e_i = the employment coefficient for sector *j*; and

 $family size_j$ = average family size for sector *j*.

Population column: the population column of the DECON model is designed to account for growth or decline in those sectors of the economy that are primarily population-driven (i.e. influenced by the size of the population) rather than market-driven (i.e. dependent upon monetary transactions). Clearly, many of the services provided by the public sector fit this description and, for the purpose of this analysis, it was assumed that the following intermediate sectors were primarily population-driven:

- public administration and defence;
- education;
- health and community services; and
- cultural and recreational services.

Thus, the non-market coefficient for sector j of the DECON model is represented as expenditure on that non-market service (by governments) in \$million per head of population.

The population multiplier for sector *j* is represented as: z_{pj}^* / p_{pj}

- where $z_{pj}^* =$ coefficient of the 'closed inverse' matrix in the population row for sector *j*; and
 - p_{pj} = coefficient of the direct coefficients matrix in the population row for sector *j*.

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Sources of local data for the population sector of the DECON models used in this project included the following.

- rho: little or no published data are available to assist with estimation of this variable, particularly at a regional level. The DECON models have been constructed to enable the analyst to estimate this variable on the basis of the availability superior data or assumptions.
- Family size: in order to estimate average family size by industry, relevant data were extracted from the Australian Bureau of Statistics 2011 Census of Population and Housing using the TableBuilder database. These data were modified by the consultants in order to ensure consistency with the specification and conventions of the I-O models.

The unemployed 'sector'

As outlined above, the introduction of an unemployed 'sector' to the standard I-O model makes it possible to account for the consumption-induced impact of the unemployed in response to economic growth or decline.

Through the inclusion of an unemployed row and column in the 'closed' direct coefficients matrix of the standard I-O model it is possible to calculate Type III multipliers (for output, gross regional product, household income and employment).

The key point to note is that, in the situation where at least some of the unemployed remain in a region after losing their job (negative employment impact) or some of the new jobs in a region are filled by previously unemployed locals (positive employment impact), Type III multipliers will be smaller than the more frequently used Type II multipliers.

Unemployed row: the unemployed coefficient (u_j) for sector j of the DECON model is represented as:

 $u_j = -rho_j * (1-ess_j) * e_j$

where *rho_j* = the proportion of employees in sector *j* who remain in the region after they lose their job (negative employment impact) or the proportion of new jobs in sector *j* filled by previously unemployed locals (positive employment impact);

 ess_j = the proportion of employed in sector *j* who are not eligible for welfare benefits when they lose their job; *and*

 e_j = the employment coefficient for sector *j*.

Unemployed column: the unemployed column of the DECON model is an approximation of total consumption expenditure and the consumption pattern of the unemployed. It is represented as dollars per unemployed person rather than \$million for the region as a whole, as is the case for the household expenditure column in a standard I-O model.

Sources of local (i.e. state and regional) data for the unemployed sector of the DECON models used in this study included the following.



- ess: in order to estimate the proportion of employed by industry who are not eligible for welfare benefits when they lose their job, relevant data were were extracted from the Australian Bureau of Statistics 2011 Census of Population and Housing using the TableBuilder database. These data were modified by the consultants in order to ensure consistency with the specification and conventions of the I-O models.
- Unemployed consumption: total consumption expenditure by the unemployed was based on an estimate of the Newstart Allowance whilst the pattern of consumption expenditure was derived from household income quintiles in the 2009/10 Household Expenditure Survey (ABS 2011).

Incorporating a tourism demand profile in the I-O model

Tourism expenditure is a measure of the value of sales of goods and services to visitors to the state or region. The following method and data sources were used to estimate tourism expenditure by industry sector for the region.

- The primary data were sourced from Tourism Research Australia (TRA).
- Base datasets included total tourism expenditure by TRA tourism region and average expenditure profiles, by region, across a range of goods and services (e.g. food and drink, fuel, shopping, etc.).
- Estimates were available for domestic day, domestic overnight and international visitor expenditure.
- The first adjustment to the base data was the development of a concordance between the TRA tourism regions and I-O model regions and the allocation of these base data to the relevant I-O model region. These allocations were based, in turn, on an ABS concordance between TRA tourism regions and SLAs.
- The second adjustment to the base data was the application of a more detailed expenditure breakdown from the ABS Australian National Accounts: Tourism Satellite Account for both domestic and international visitor expenditure (ABS 2010d).
- The third adjustment to the base data was the conversion of tourism expenditure estimates from purchasers' to basic prices (i.e. reallocation of net taxes (taxes minus subsidies) and marketing and transport margins) to make the data consistent with accounting conventions used in the national, state and regional I-O models. Purchasers' to basic price ratios for tourism expenditure categories were derived from ABS data.
- The final adjustment to the base data was the allocation of the tourism expenditure data in basic prices to the relevant input-output sectors (intermediate sectors, taxes less subsidies or imports) in which the expenditure occurred, thus compiling a profile of sales to final demand. This process was undertaken for each type of tourism expenditure (domestic day, domestic overnight and international visitor) and the results aggregated

to form a single tourism demand profile. Profiles were developed at the state and regional levels.

Constructing a RISE v3.0 economic impact model

In the final model construction stage the data described above were incorporated into a *Microsoft Excel®* spreadsheet based economic impact model for the region and state (i.e. *RISE* v3.0)²¹. This model allows for description of the structure of the economy. It can also be used for the estimation of economic impacts over time in response to the introduction of a new industry or a change in the final demand for the output of one or many sectors. Model assumptions can be modified to account for:

- price changes between the model construction year (2009/10) and the base year for the analysis;
- labour productivity change over time (as above and for the subsequent years);
- the level of regional migration (e.g. for a positive employment impact, the proportion of new jobs filled by previously unemployed locals).

Type III multiplier is a modified Type II multiplier, calculated by including a population and unemployed row and column in the 'closed' direct coefficients matrix of the standard I-O model. Calculated as (direct effects + production-induced effects + consumption-induced effects + offsetting consumption effects)/direct effects.

²¹ For further details on the use and application of this type of model see EconSearch (2010b).



APPENDIX 4 AGE DISTRIBUTION BY SUB-REGION

Appendix Table 4-1

Age distribution of the population for the Barossa RDA sub-regions, 2006 and 2011

	Census Year		% change from	
_	2006	2011	2006	
Barossa-East Light				
0 to 14	5,079	5,417	6.7%	
15 to 64	16,559	17,364	4.9%	
65 and older	3,731	4,386	17.6%	
Total	25,370	27,167	7.1%	
Greater Gawler				
0 to 14	4,706	4,889	3.9%	
15 to 64	14,336	16,009	11.7%	
65 and older	3,362	4,005	19.1%	
Total	22,404	24,903	11.2%	
Mallala-West Light				
0 to 14	2,679	2,653	-1.0%	
15 to 64	8,057	8,652	7.4%	
65 and older	1,211	1,457	20.3%	
Total	11,948	12,762	6.8%	

Source: ABS (2012a, 2016d)